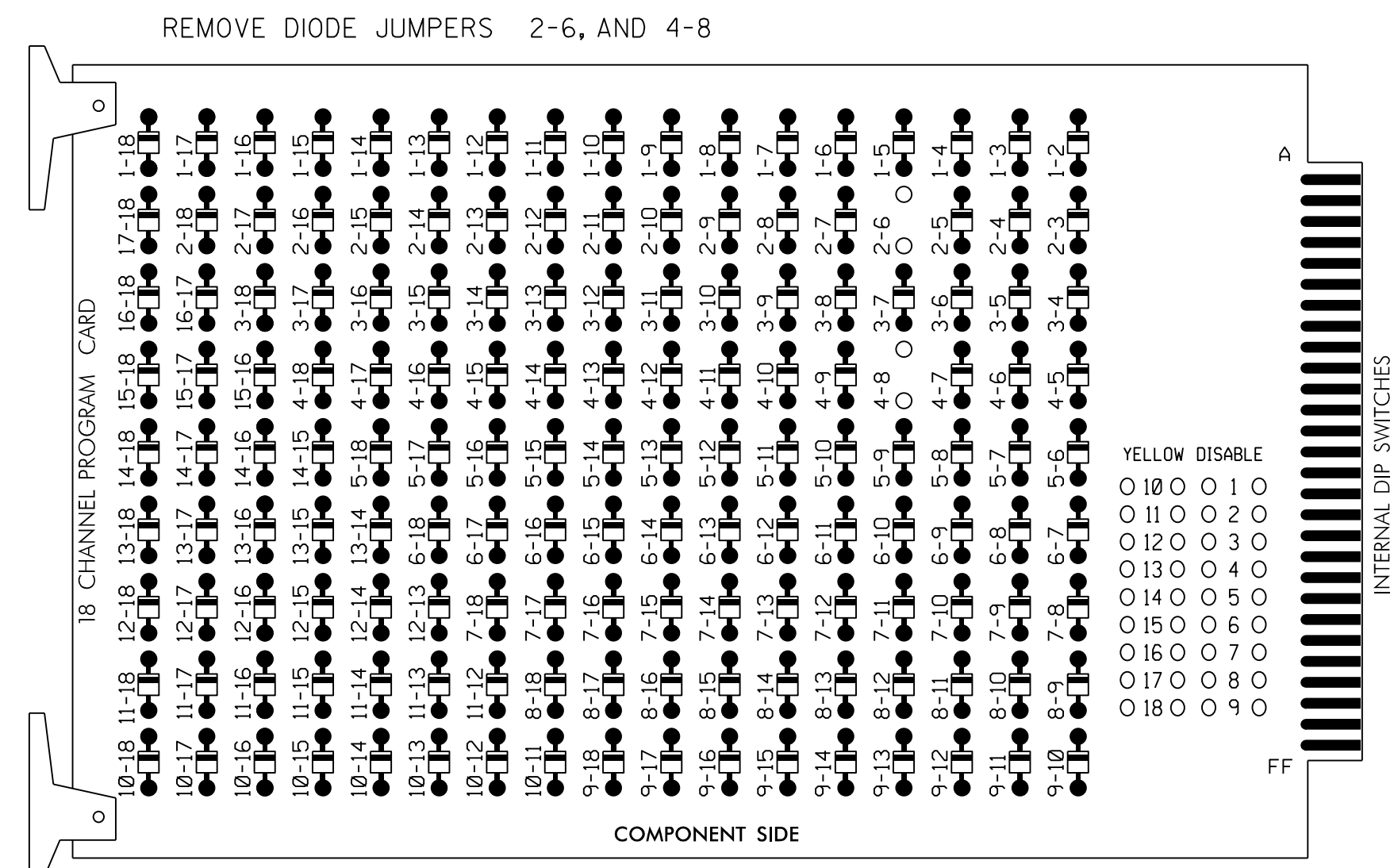


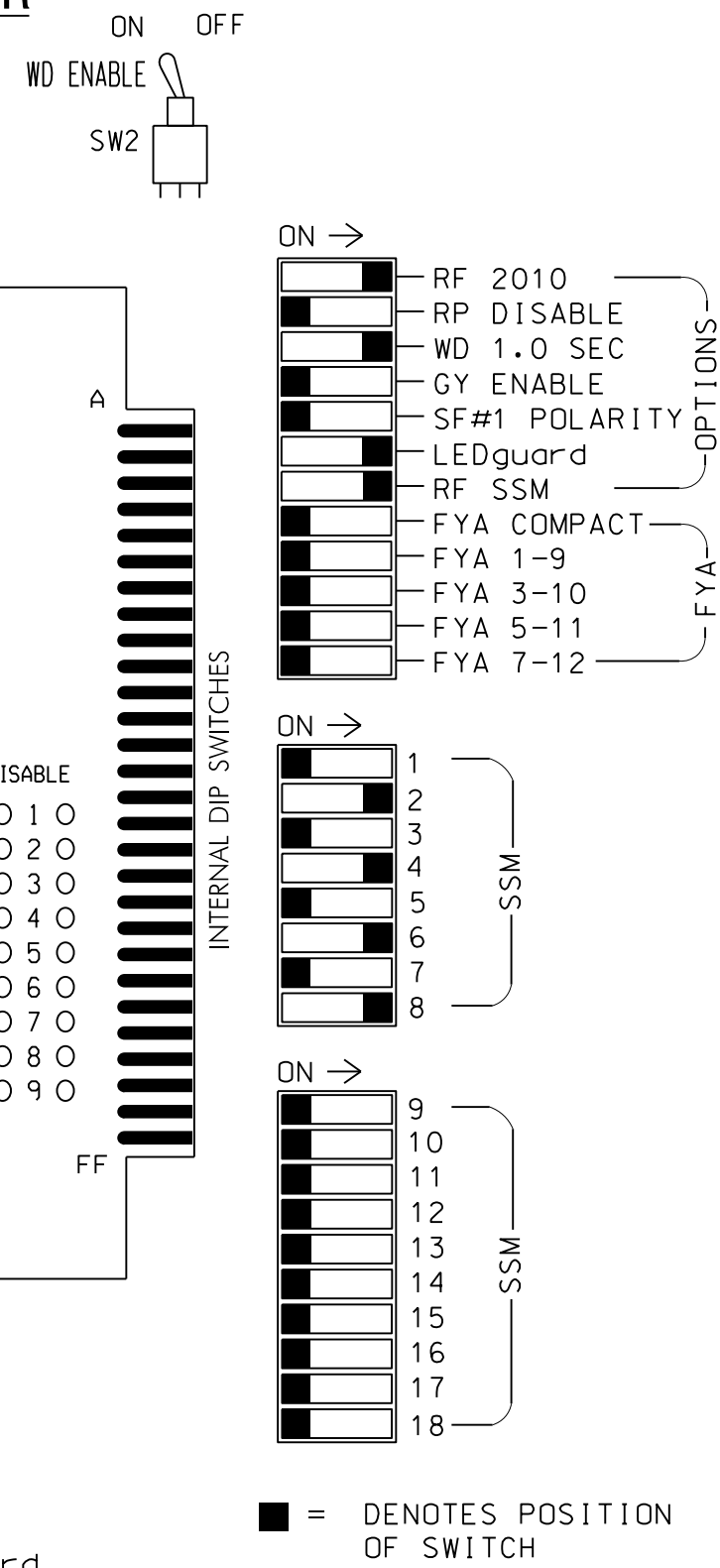
EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green and 6 Green.
4. The cabinet and controller are part of Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET336
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

FILE "I" L	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	S	S	S	∅ 4	S	S	SYS. DET. S5	∅ 8	S	S	S	S	S	FS
	4A			NOT USED			SYS. DET. S6	NOT USED						DC ISOLATOR
														ST
														DC ISOLATOR

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

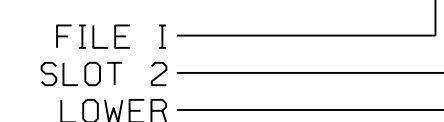
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB21-7,8	I4U	41	4	4	YES		10		N
* S5	TB21-13,14	I7U	57	7						N
* S6	TB23-13,14	I7L	50	28						N
8A	TB22-1,2	I8U	42	8	8	YES		10		N

* SYSTEM DETECTOR ONLY. REMOVE ANY ASSIGNED VEHICLE PHASES.

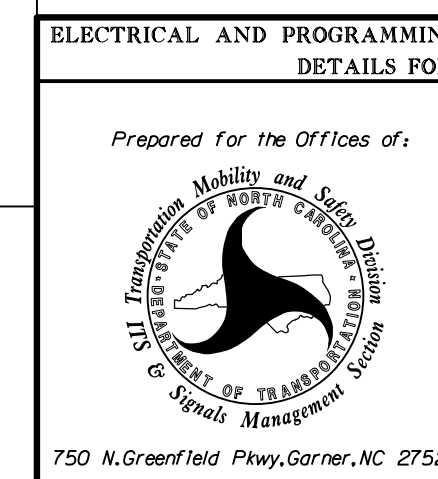
INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0114
 DESIGNED: JULY 2003
 SEALED: 05/15/20
 REVISED:



1 Glenwood Avenue
 Raleigh, NC 27603
 Tel:919.789.9977
 Fax:919.789.9591
 License: C-2197



ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 74-76 BUSINESS (JEFFERSON STREET)
 at
 SR 1953 (FRANKLIN STREET)

DIVISION 06 COLUMBUS COUNTY WHITEVILLE

PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe

PREPARED BY: M. Copple REVIEWED BY:

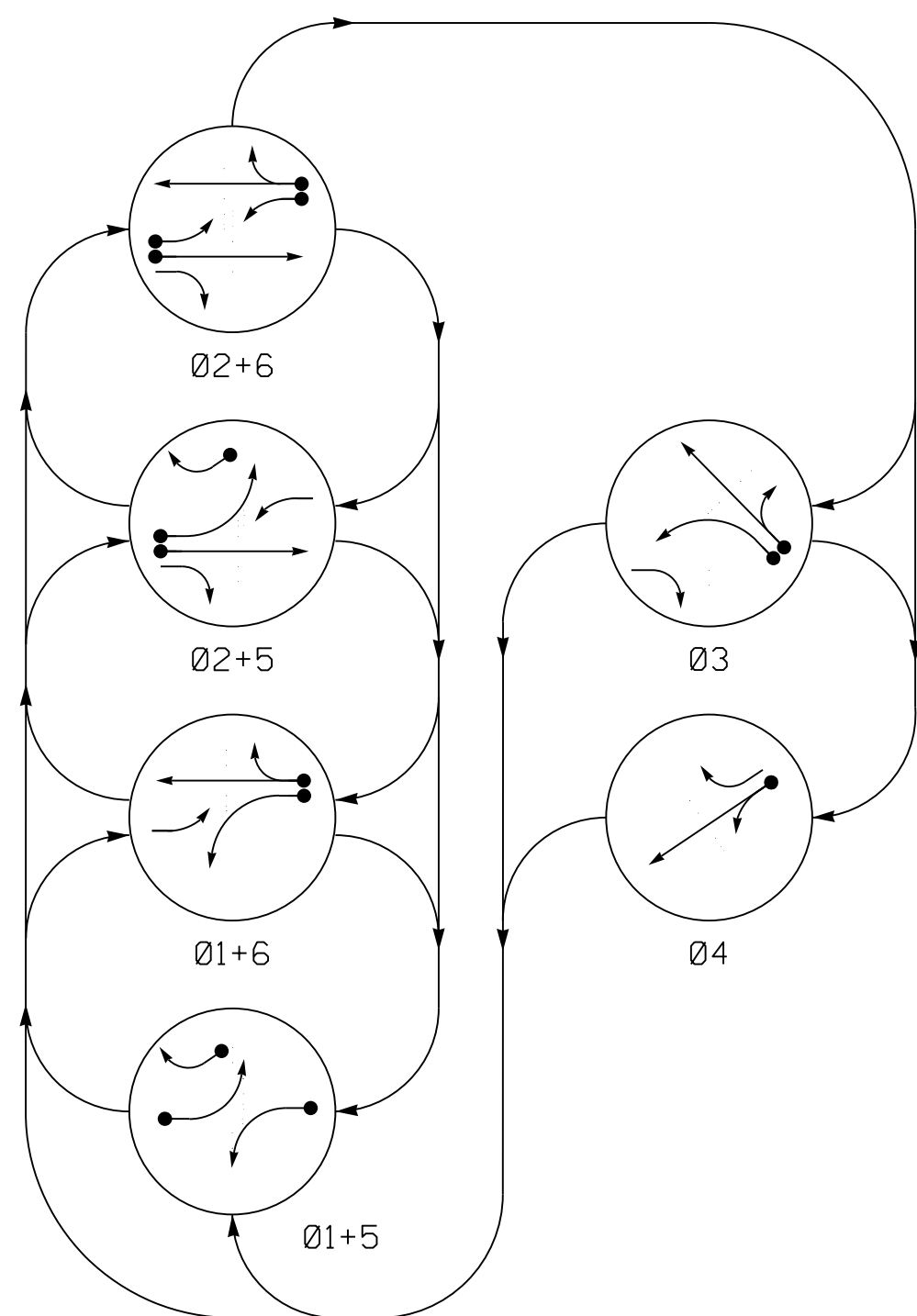
REVISIONS	INIT.	DATE

SEAL

SIGNATURE DATE

SIG. INVENTORY NO. 06-0114

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE						FLASH
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 3	Ø 4	
11	←	←	←	←	←	←	Y
21	R	R	G	G	R	R	Y
22	R	R	G	G	R	R	Y
31	R	R	R	R	G	R	R
32,33	R	R	R	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
51	←	←	←	←	←	←	Y
61,62	R	G	R	G	R	R	Y

ASC/3 DETECTOR INSTALLATION CHART

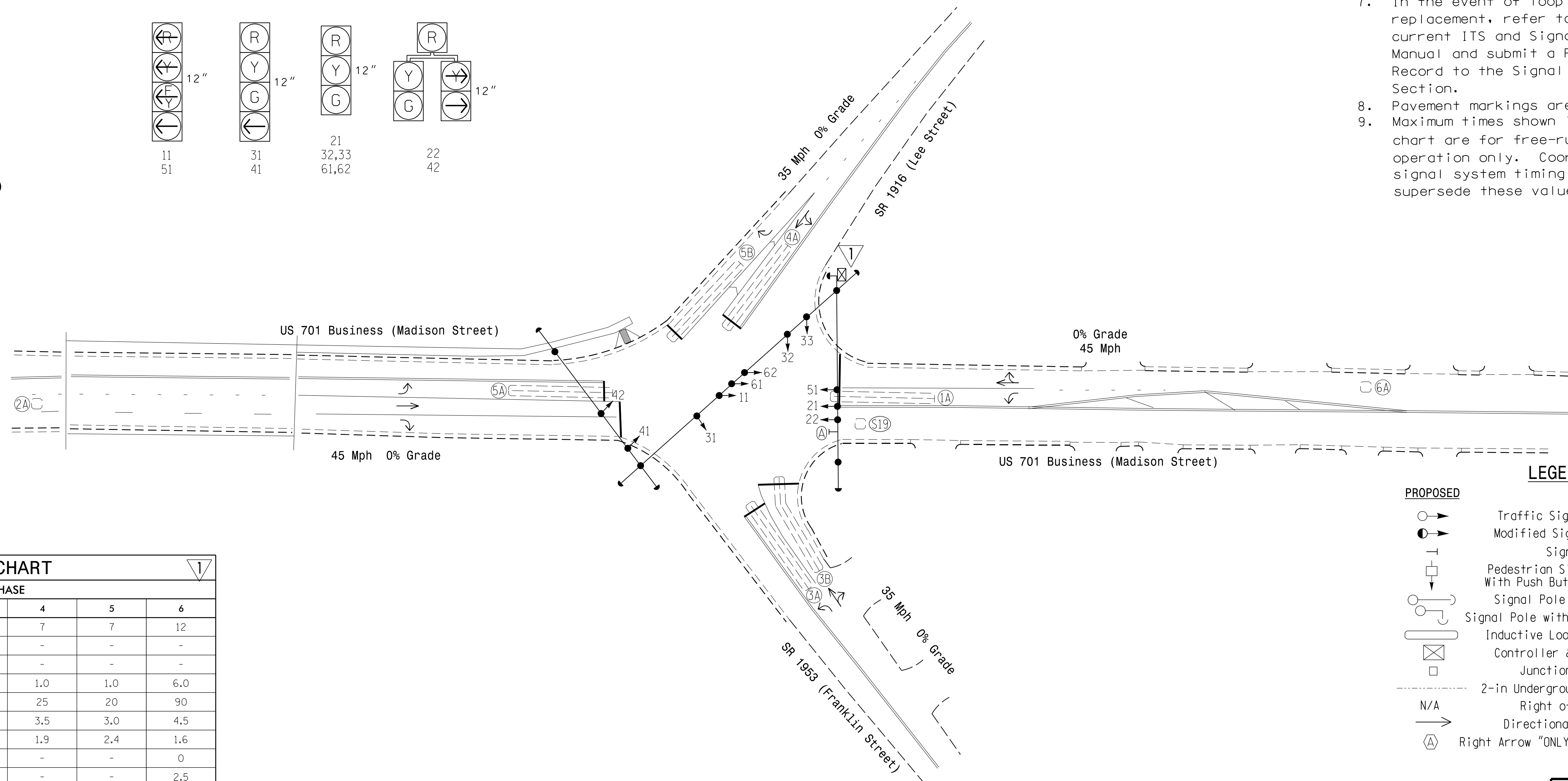
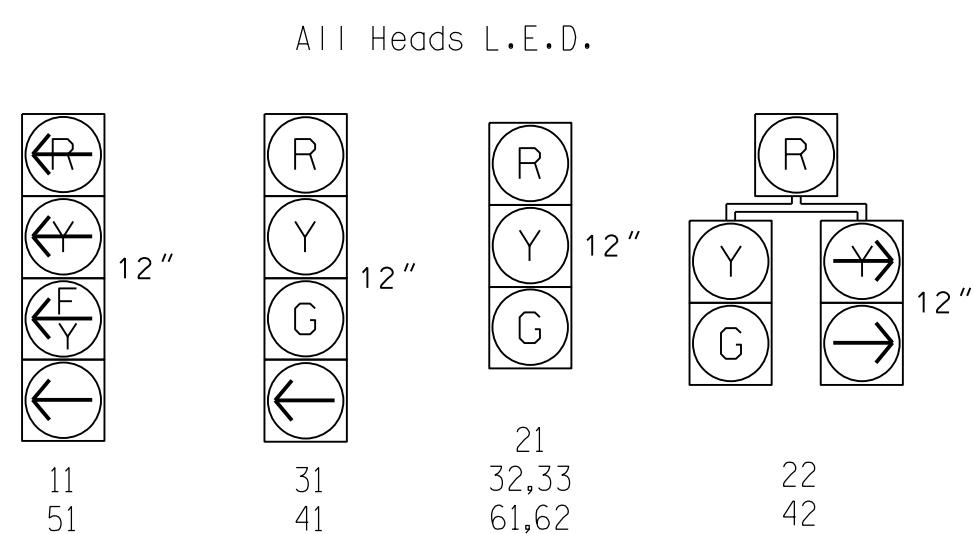
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
1A	6X60	+5	2-4-2	-	1	Yes	-	15	-	N	-	-
2A	6X6	300	EXIST	-	2	Yes	-	-	X	N	-	-
3A	6X60	+5	2-4-2	-	3	Yes	-	3	-	N	-	-
3B	6X60	+5	2-4-2	-	3	Yes	-	10	-	N	-	-
4A	6X60	+5	2-4-2	-	4	Yes	-	3	-	N	-	-
5A	6X60	+5	2-4-2	-	5	Yes	-	15	-	N	-	-
5B	6X60	+5	2-4-2	-	5	Yes	-	15	-	N	-	-
6A	6X6	300	EXIST	-	6	Yes	-	-	X	N	-	-
S19	6X6	+135	EXIST	-	-	No	-	-	-	N	X	-

6 Phase Fully Actuated System #10605

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.
- Disable Backup Protect for phases 2 and 6.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.



LEGEND

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
○ Right of Way	○ N/A
○ Directional Arrow	○ N/A
○ Right Arrow "ONLY" Sign (R3-5R)	○ N/A

ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	12	7	7	7	12
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	1.0	6.0	1.0	1.0	1.0	6.0
Max 1 *	20	90	45	25	20	90
Yellow	3.0	4.5	3.5	3.5	3.0	4.5
Red Clear	3.1	1.6	2.3	1.9	2.4	1.6
Actuations B4 Add *	-	0	-	-	-	0
Seconds / Actuation *	-	2.5	-	-	-	2.5
Max Initial *	-	34	-	-	-	34
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Locking Detector	-	X	-	-	-	X
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	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 Revision

Revision Seal
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 14543
 C. G. MURPHY, JR.

Prepared for:
 TRANSPORTATION MOBILITY AND SAFETY DIVISION
 STATE OF NORTH CAROLINA
 SIGNAL DESIGN SECTION
 750 N. Greenfield Pkwy, Garner, NC 27529

US 701 Business (Madison Street) at SR 1916 (Lee Street) / SR 1953 (Franklin Street)
 Division 6 Columbus County Whiteville
 PLAN DATE: November 2012 REVIEWED BY:
 PREPARED BY: Jeff Spence REVIEWED BY:
 REVISIONS: Controller changed to ASC/3 with new cabinet. GGM 05/15/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

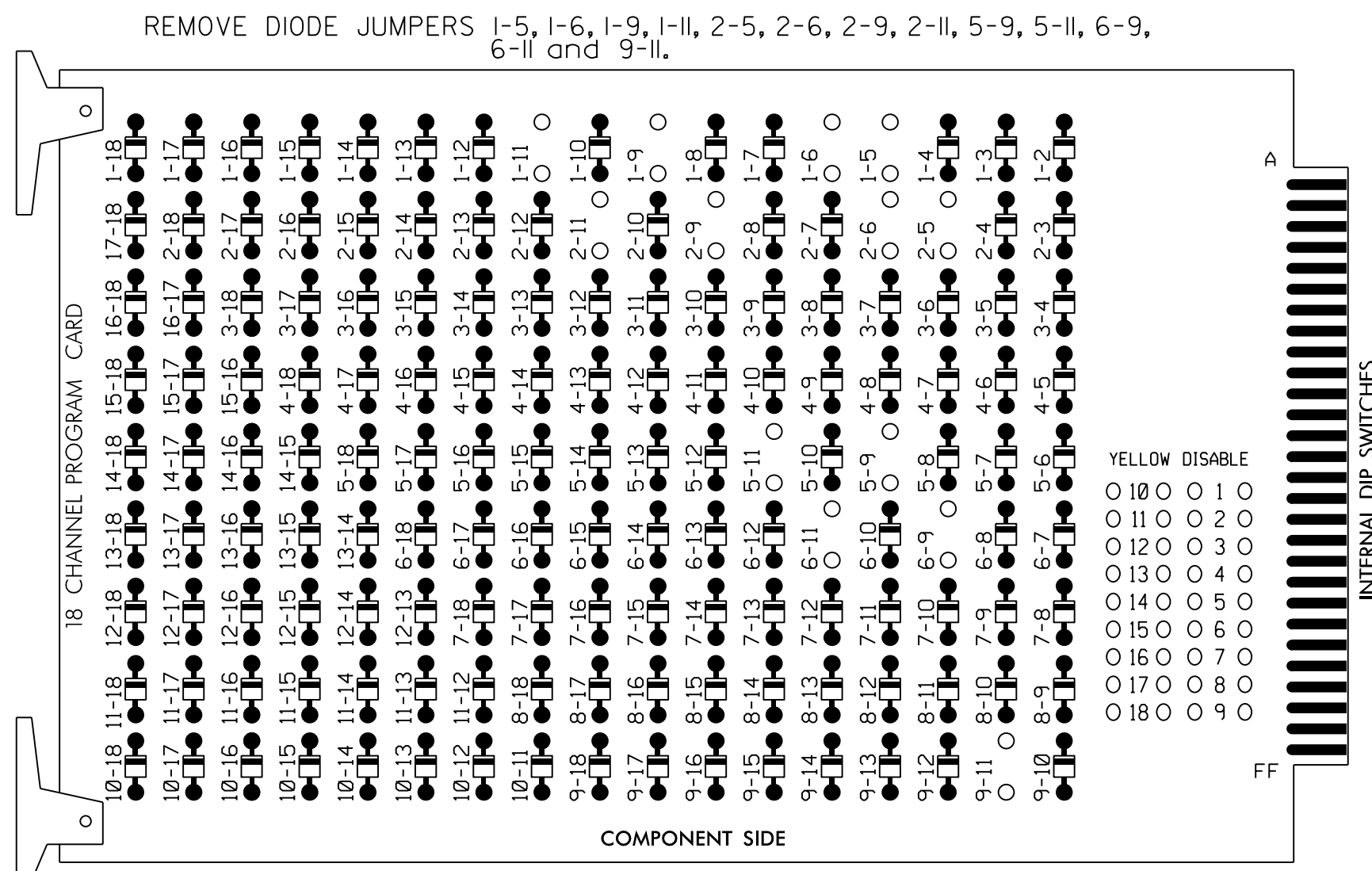
SEAL
 Not a certified document. This document originally issued and sealed by Pamela L. Alexander, P.E. no. 23489 on (2/04/13). This document shall not be considered a certified document.
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0404

SEPI
 Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9597
 License: C-2197

SCALE 0 40
 1" = 40'

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

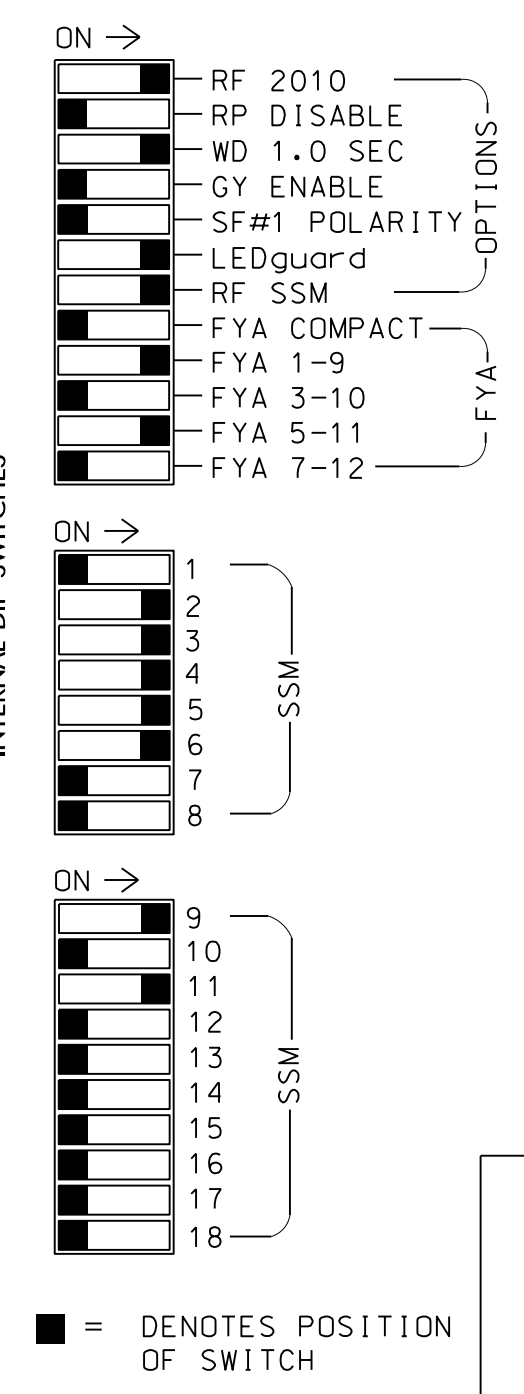
(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	11	21,22	NU	31	32,33	22	41	42	NU	51	42	61,62	NU	NU	NU	11	NU	51	NU
RED		128		116	116		101	101			*	134							
YELLOW	*	129		117	117		102	102				135							
GREEN		130		118	118		103	103				136							
RED ARROW																	A121		A114
YELLOW ARROW							117					132					A122		A115
FLASHING YELLOW ARROW																	A123		A116
GREEN ARROW	127			118	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 below.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 /W/ AUX
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,AUXS1,AUXS4.
 PHASES USED.....1,2,3,4,5,6.
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 2	∅ 1S	∅ 3	∅ 4	∅ 3	S	SYS. DET. S19	S	S	S	S	S	FS
L	1A	2A	NOT USED	3A	4A	3B	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	DC ISOLATOR
U	∅ 5	∅ 6	∅ 5	∅ 1S	∅ 3	∅ 4	S	S	S	S	S	S	S	S
L	5A	6A	5B	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	DC ISOLATOR

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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

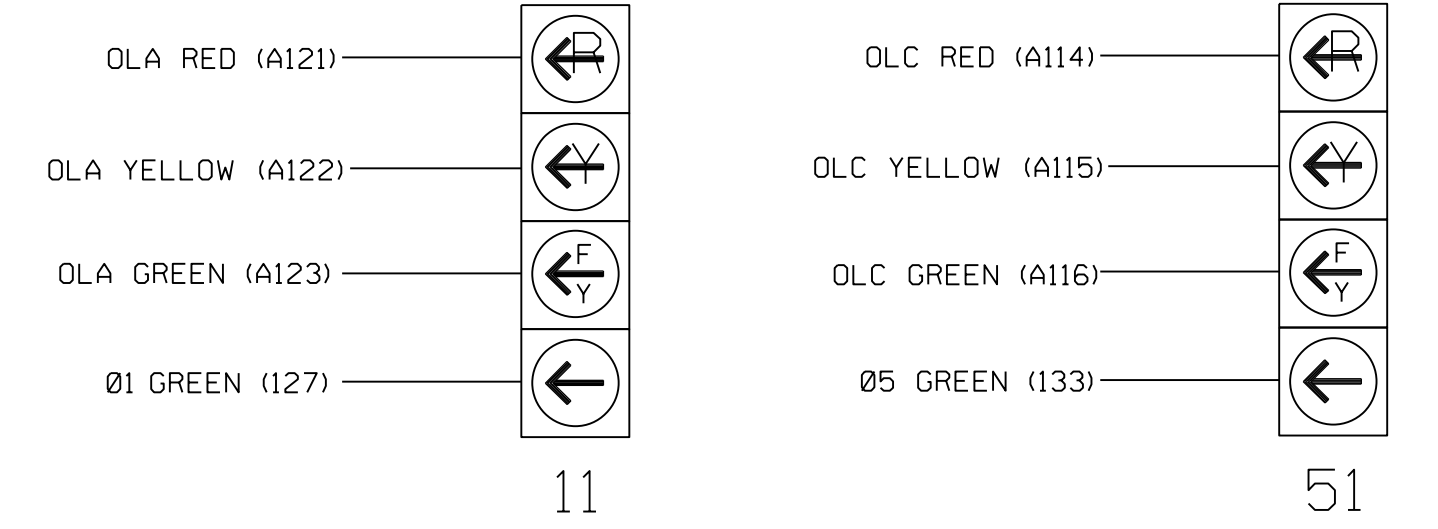
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		N
	-	J4U	48	26	6	YES		3		G
2A	TB2-5,6	I2U	39	2	2	YES			X	N
3A	TB4-5,6	I5U	58	3	3	YES		3		N
4A	TB4-9,10	I6U	41	4	4	YES		3		N
3B	TB6-1,2	I7U	65	34	3	YES		10		N
* S19	TB6-9,10	I9U	60	11	SYS	NO				N
5A ²	TB3-1,2	J1U	55	5	5	YES		15		N
	-	I4U	47	22	2	YES		3		G
6A	TB3-5,6	J2U	40	6	6	YES			X	N
5B	TB3-9,10	J3U	64	36	5	YES		15		N

* System detector only. Remove any assigned vehicle phase.

- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)

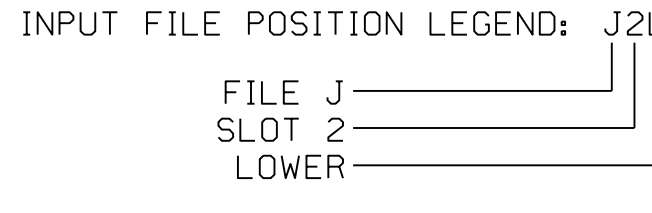
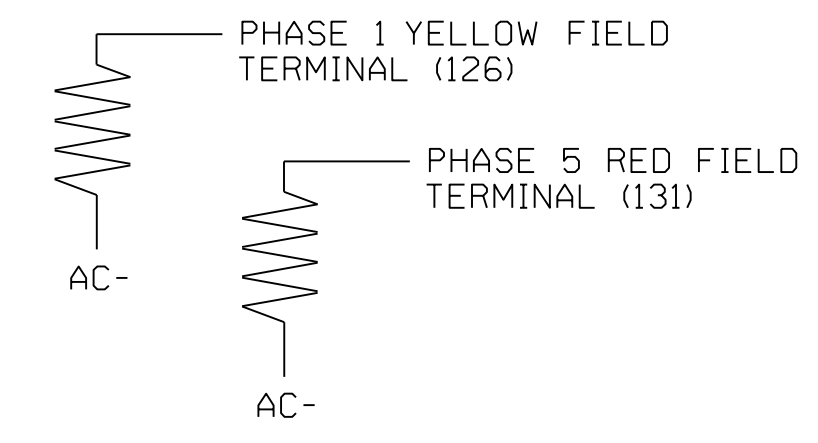


LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0404
 DESIGNED: November 2012
 SEALED: 05/15/20
 REVISED:

ELECTRICAL DETAIL SHEET 1 OF 2

SEPI Engineering & Construction, Inc. 1 Glenwood Avenue, Raleigh, NC 27603, Tel: 919.789.9977, Fax: 919.789.9591, License: C-2197

US 701 Business (Madison Street) at SR 1916 (Lee Street) / SR 1953 (Franklin Street)

Division 06 Columbus County Whiteville

PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe

PREPARED BY: M. Copple REVIEWED BY:

REVISIONS: INIT. DATE

SEAL: 27771

SIG. INVENTORY NO. 06-0404

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

OVERLAP A

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

TMG VEH OVLP... [A] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 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..... 0

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0404
 DESIGNED: November 2012
 SEALED: 05/15/20
 REVISED:

5/15/2020
 ...*060404 sm.e te_20130205.dgn
 USER:MCcoble

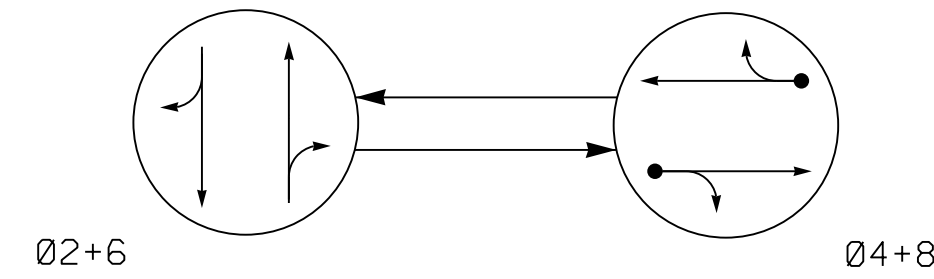


ELECTRICAL DETAIL SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:	US 701 Business (Madison Street) at SR 1916 (Lee Street) / SR 1953 (Franklin Street) Division 06 Columbus County Whiteville												
	SEAL STATE OF NORTH CAROLINA PROFESSIONAL ENGINEER MATTHEW B. COTTLE SEAL 27771												
Prepared for the Offices of: 	PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe PREPARED BY: M. Cottle REVIEWED BY:												
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REVISIONS	INIT.	DATE											

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

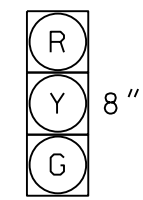
- ◄●► DETECTED MOVEMENT
- ◄◄◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄-◄ UNSIGNALIZED MOVEMENT
- ◄-◄-◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+6	04+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



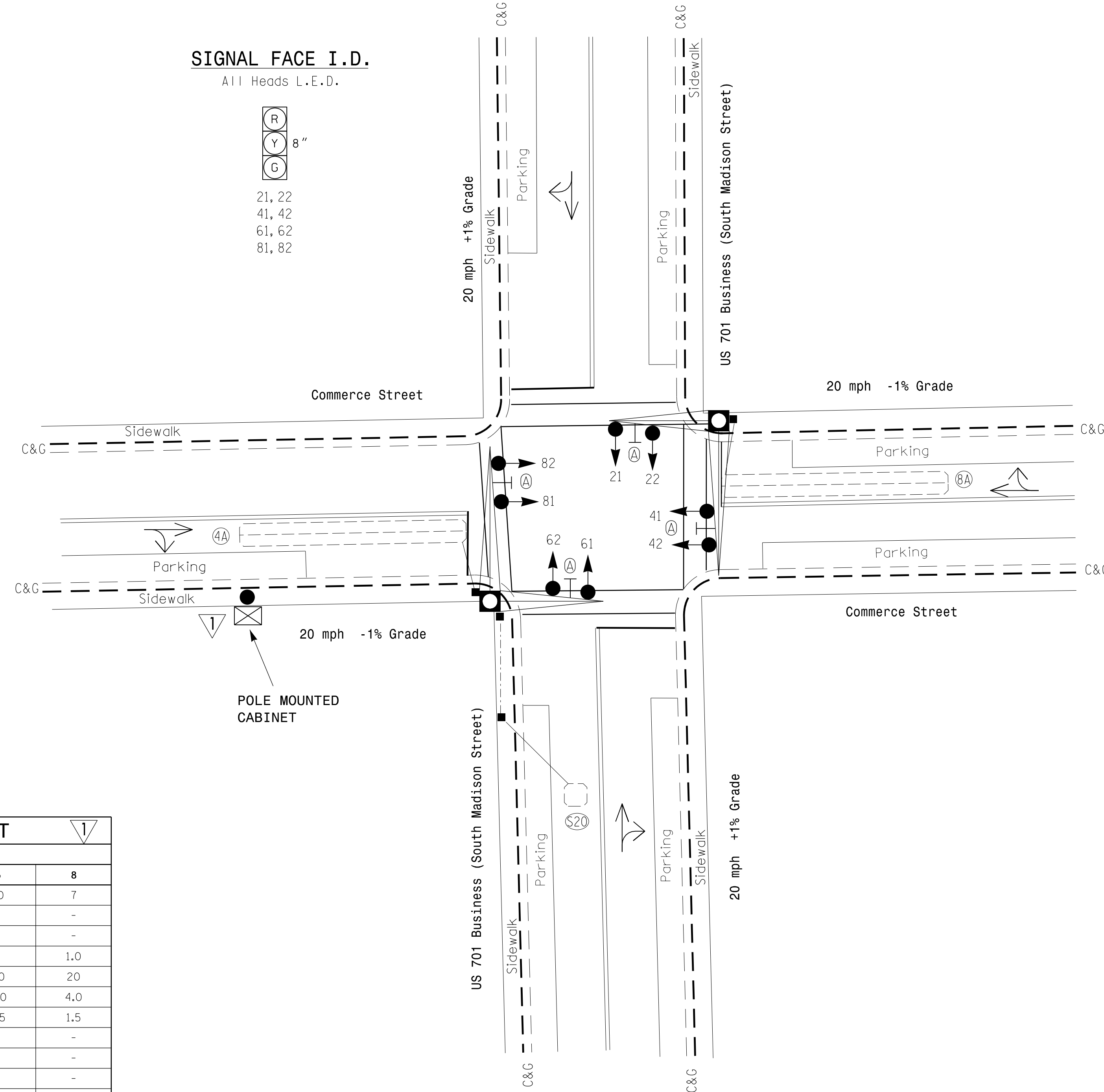
21, 22
41, 42
61, 62
81, 82

ASC/3 DETECTOR INSTALLATION CHART											
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP
4A	6X60	0	2-4-2	-	4	Yes	-	10	-	N	-
8A	6X60	0	2-4-2	-	8	Yes	-	10	-	N	-
S20	6X6	+100	EXIST	-	-	No	-	-	-	N	X

2 Phase Semi-Actuated System #10605

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. Pavement markings are existing.
4. Run new lead-in cable utilizing existing conduit system.
5. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
6. Set all detector units to presence mode.



FEATURE	PHASE			
	2	4	6	8
Min Green *	10	7	10	7
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Veh. Extension *	-	1.0	-	1.0
Max 1 *	30	20	30	20
Yellow	4.0	4.0	4.0	4.0
Red Clear	1.5	1.5	1.5	1.5
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector				
Recall Position	MAX RECALL	-	MAX RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

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

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
| | |
| | N/A |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| N/A | |
| | |
| | |
| | |
| | |

* 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 Revision

Revision Seal

Prepared for: Transportation Mobility and Safety Division, STATE OF NORTH CAROLINA, Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 20, 1"=20'

US 701 Business (South Madison Street) at Commerce Street

Division 6 Columbus County Whiteville

PLAN DATE: July 2003 REVIEWED BY: R.J. Ziemba

PREPARED BY: Hambright/Carter REVIEWED BY:

REVISIONS: Controller changed to ASC/3 with new cabinet. GGM 05/15/20

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

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SIGNATURE DATE

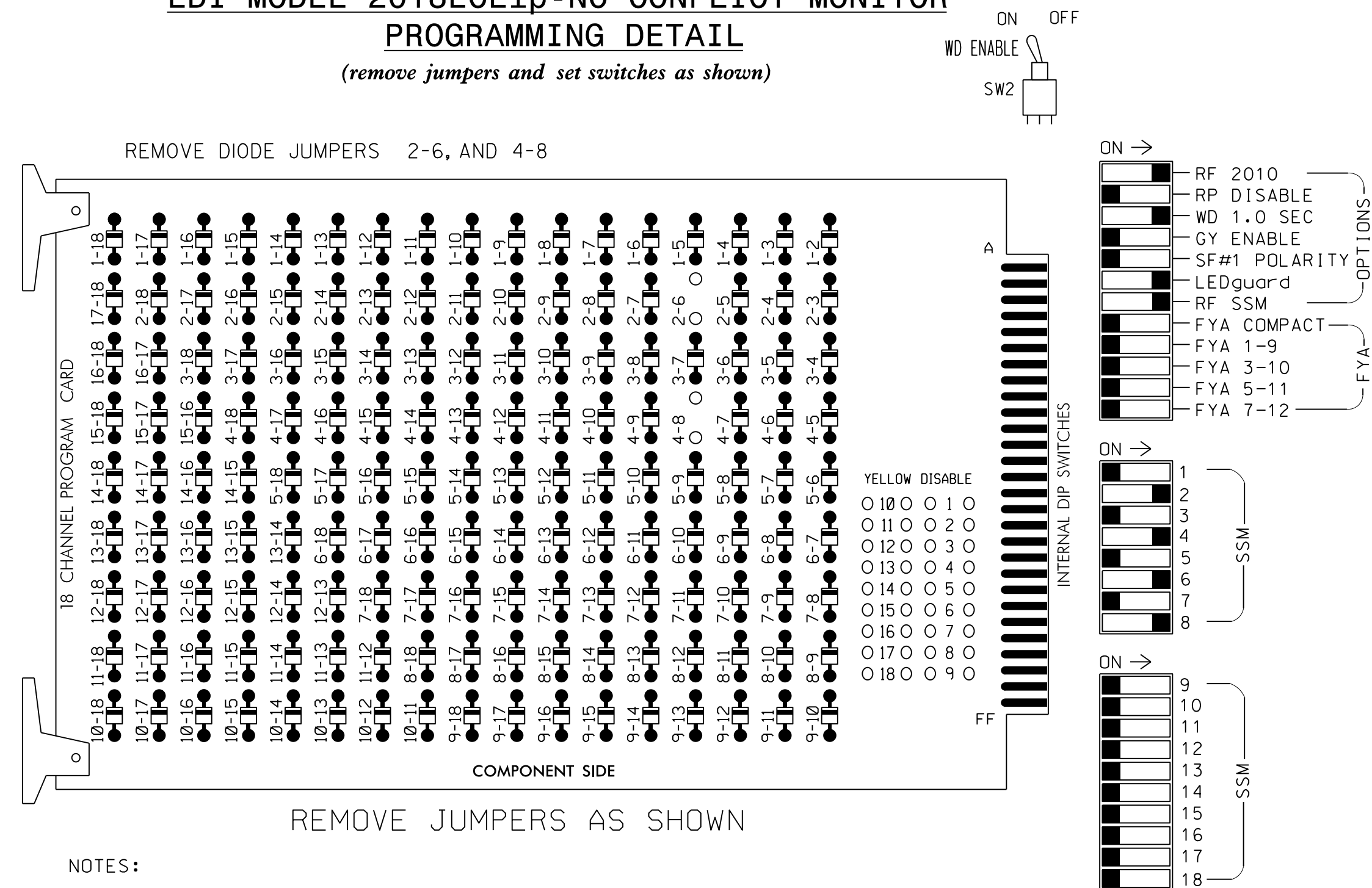
SIG. INVENTORY NO. 06-0478

SEPI Engineering & Construction, Inc.

1 Glenwood Avenue Raleigh, NC 27603 Tel: 919.789.9977 Fax: 919.789.9591 License: C-2197

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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green and 6 Green.
4. The cabinet and controller are part of Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

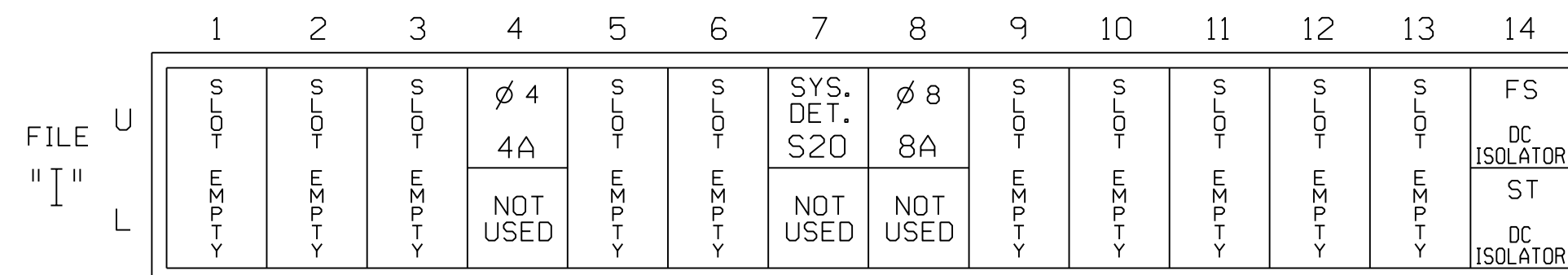
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET336
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

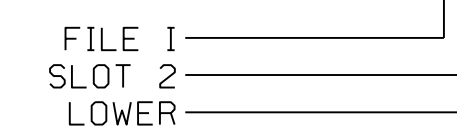
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB21-7,8	14U	41	4	4	YES		10		N
*S20	TB21-13,14	17U	57	7						N
8A	TB22-1,2	18U	42	8	8	YES		10		N

* SYSTEM DETECTOR ONLY. REMOVE ANY ASSIGNED VEHICLE PHASES.

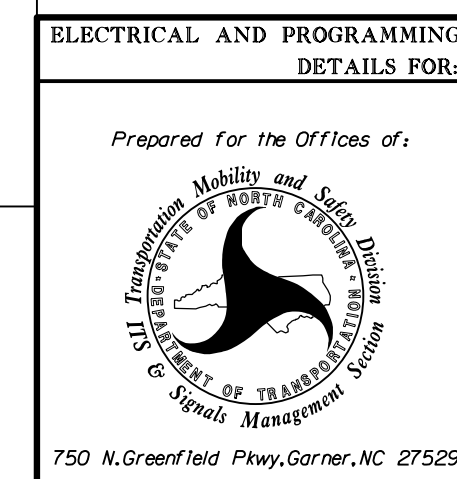
INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0478
 DESIGNED: JULY 2003
 SEALED: 05/15/20
 REVISED:



1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197



ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 701 BUSINESS (SOUTH MADISON STREET) at COMMERCE STREET

Prepared for the Offices of:

DIVISION 06 COLUMBUS COUNTY WHITEVILLE

PLAN DATE: April 2020 REVIEWED BY: J. Rowe

PREPARED BY: M. Copple REVIEWED BY:

REVISIONS	INIT.	DATE

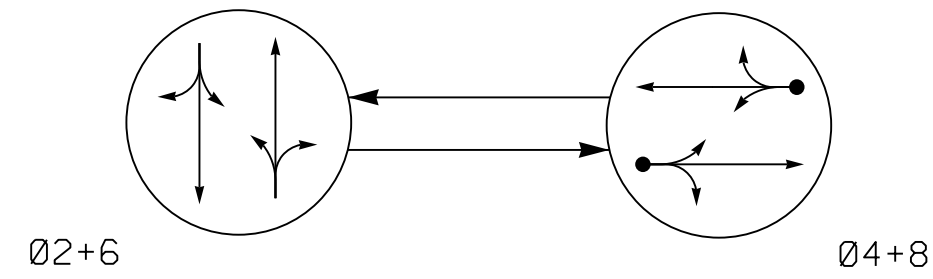
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SIGNATURE DATE

SIG. INVENTORY NO. 06-0478

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

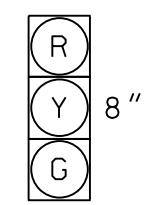
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ← - - - PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+6	04+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42
61, 62
81, 82

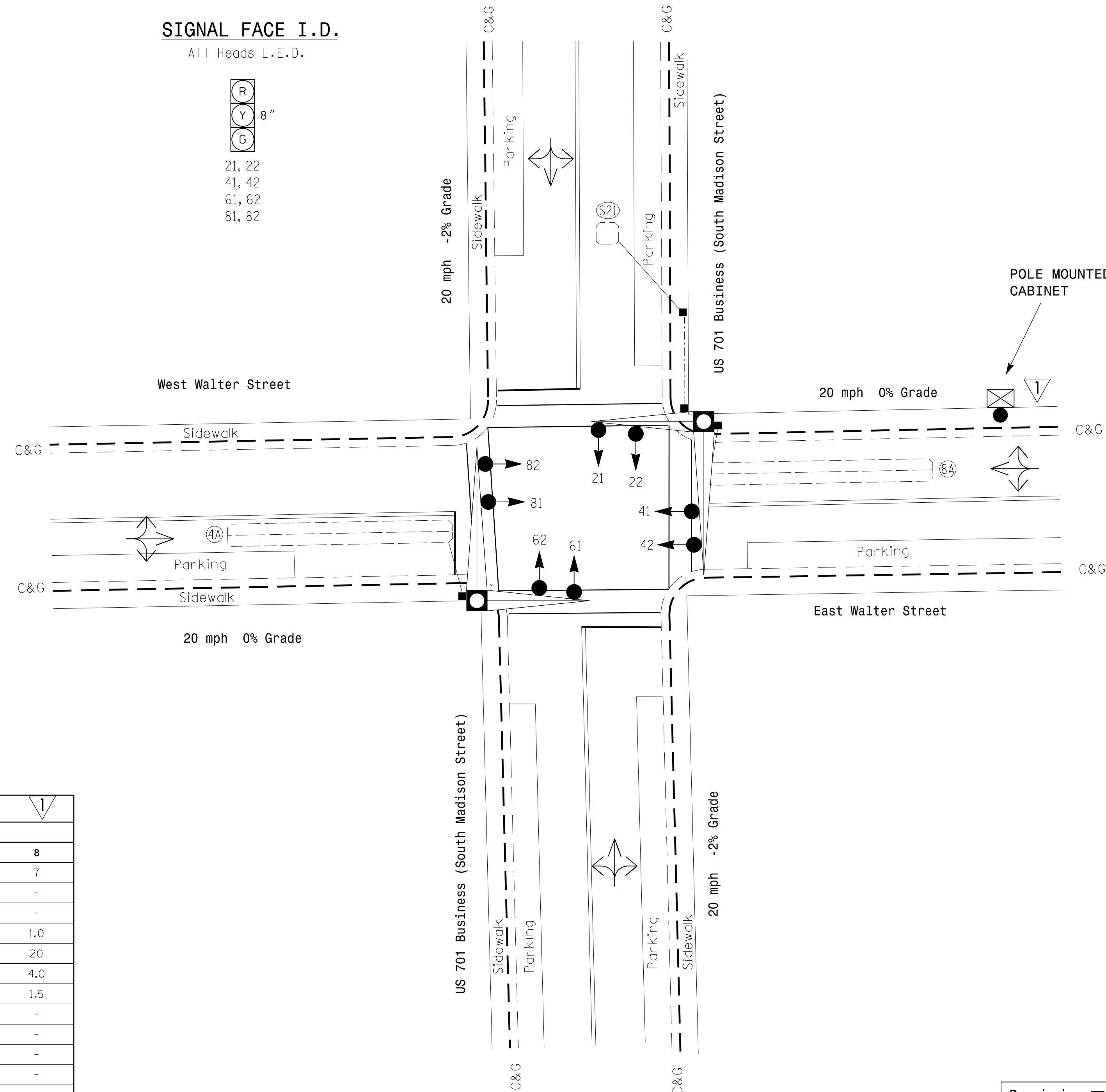
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP
4A	6X60	0	2-4-2	-	4	Yes	-	10	-	N	-
8A	6X60	0	2-4-2	-	8	Yes	-	10	-	N	-
S21	6X6	100	EXIST	-	-	No	-	-	-	N	X

2 Phase Semi-Actuated System #10605

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. Pavement markings are existing.
4. Run new lead-in cable utilizing existing conduit system.
5. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
6. Set all detector units to presence mode.



ASC/3 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green *	10	7	10	7
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Veh. Extension *	-	1.0	-	1.0
Max 1 *	35	20	35	20
Yellow	4.0	4.0	4.0	4.0
Red Clear	1.5	1.5	1.5	1.5
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector				
Recall Position	MAX RECALL	-	MAX RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

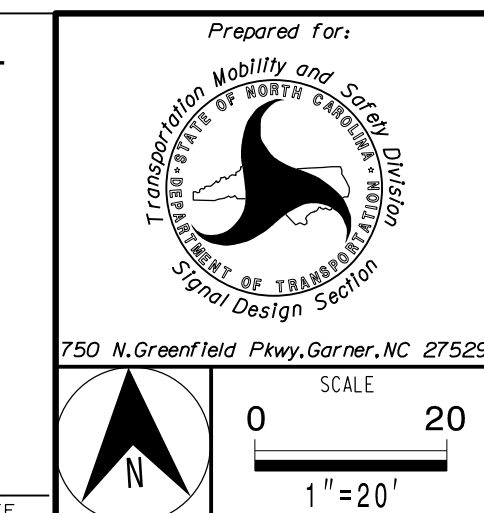
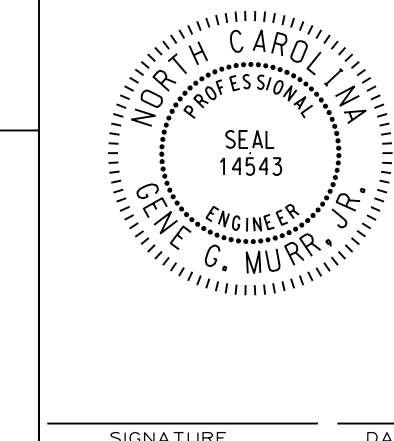
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
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Signal Revision

Revision Seal



US 701 Business (South Madison Street) at Walter Street

Division 6 Columbus County Whiteville

PLAN DATE: July 2003 REVIEWED BY: R.J. Ziemba

PREPARED BY: Hanbright REVIEWED BY:

REVISIONS: Controller changed to ASC/3 with new cabinet. INIT. DATE: GGM 05/15/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

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SIGNATURE DATE

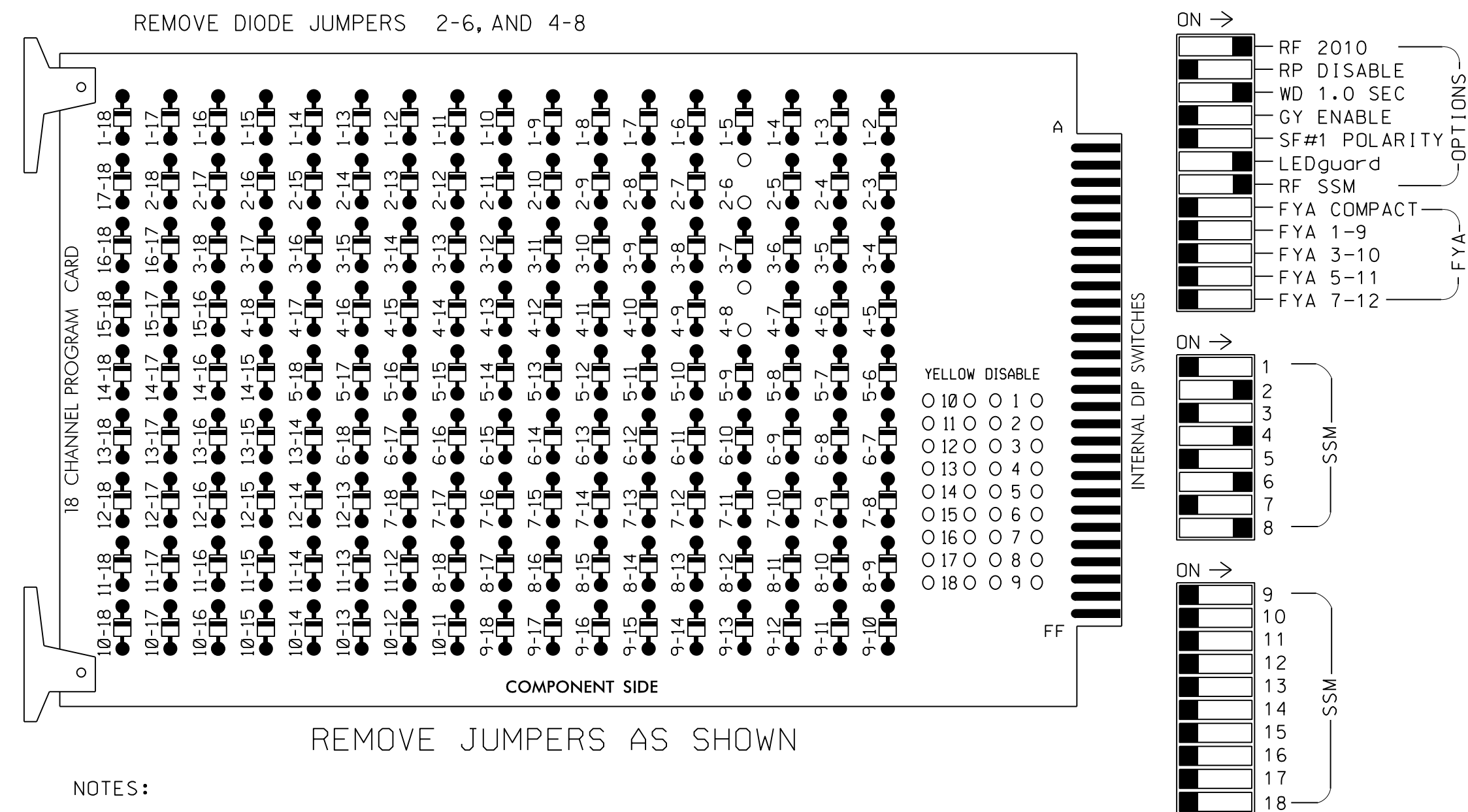
SIG. INVENTORY NO. 06-0479

SEPI
Engineering & Construction, Inc.

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green and 6 Green.
4. The cabinet and controller are part of Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

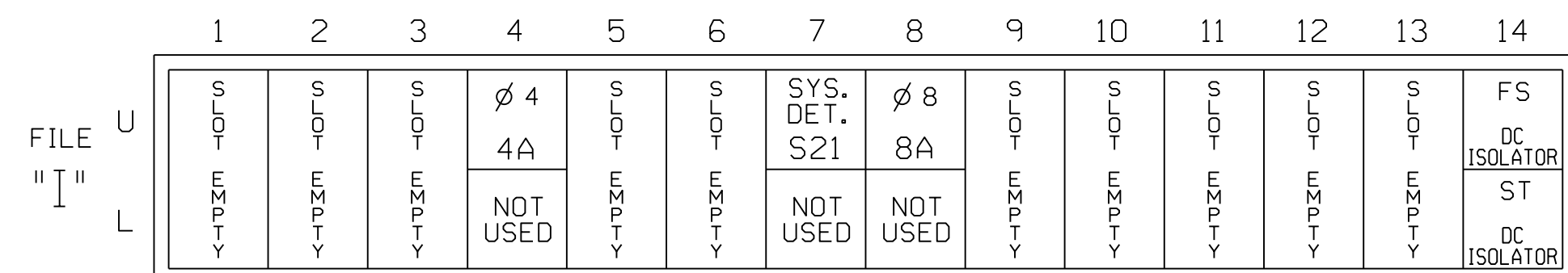
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET336
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

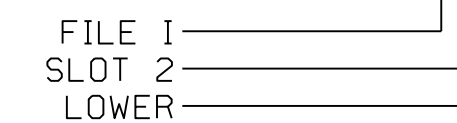
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB21-7,8	14U	41	4	4	YES		10		N
*S21	TB21-13,14	17U	57	7						N
8A	TB22-1,2	18U	42	8	8	YES		10		N

*SYSTEM DETECTOR ONLY. REMOVE ANY ASSIGNED VEHICLE PHASES.

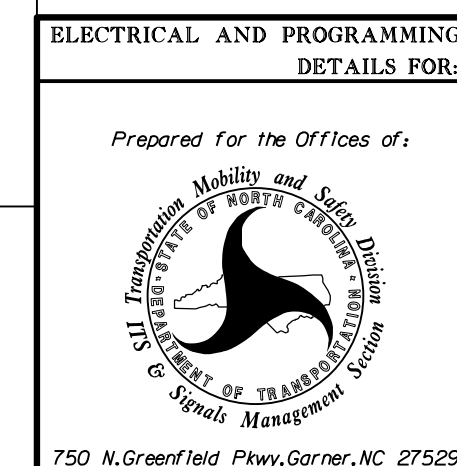
INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0479
 DESIGNED: JULY 2003
 SEALED: 05/15/20
 REVISED:



1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
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 License: C-2197



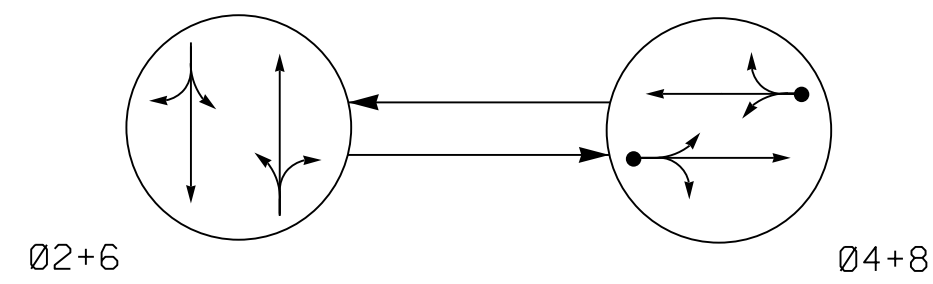
US 701 BUSINESS (SOUTH MADISON STREET)
 at
 WALTER STREET

DIVISION 06		COLUMBUS COUNTY		WHITEVILLE
PLAN DATE: APRIL 2020	REVIEWED BY: J. Rowe			
PREPARED BY: M. Copple	REVIEWED BY:			
REVISIONS	INIT.	DATE		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNATURE	DATE
SIG. INVENTORY NO.	06-0479

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

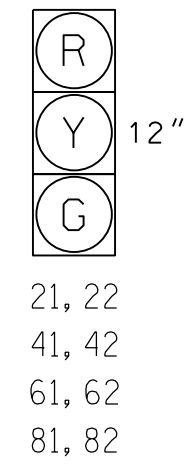
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← - - UNSIGNALIZED MOVEMENT
- ← - - - PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 2+6	Ø 4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

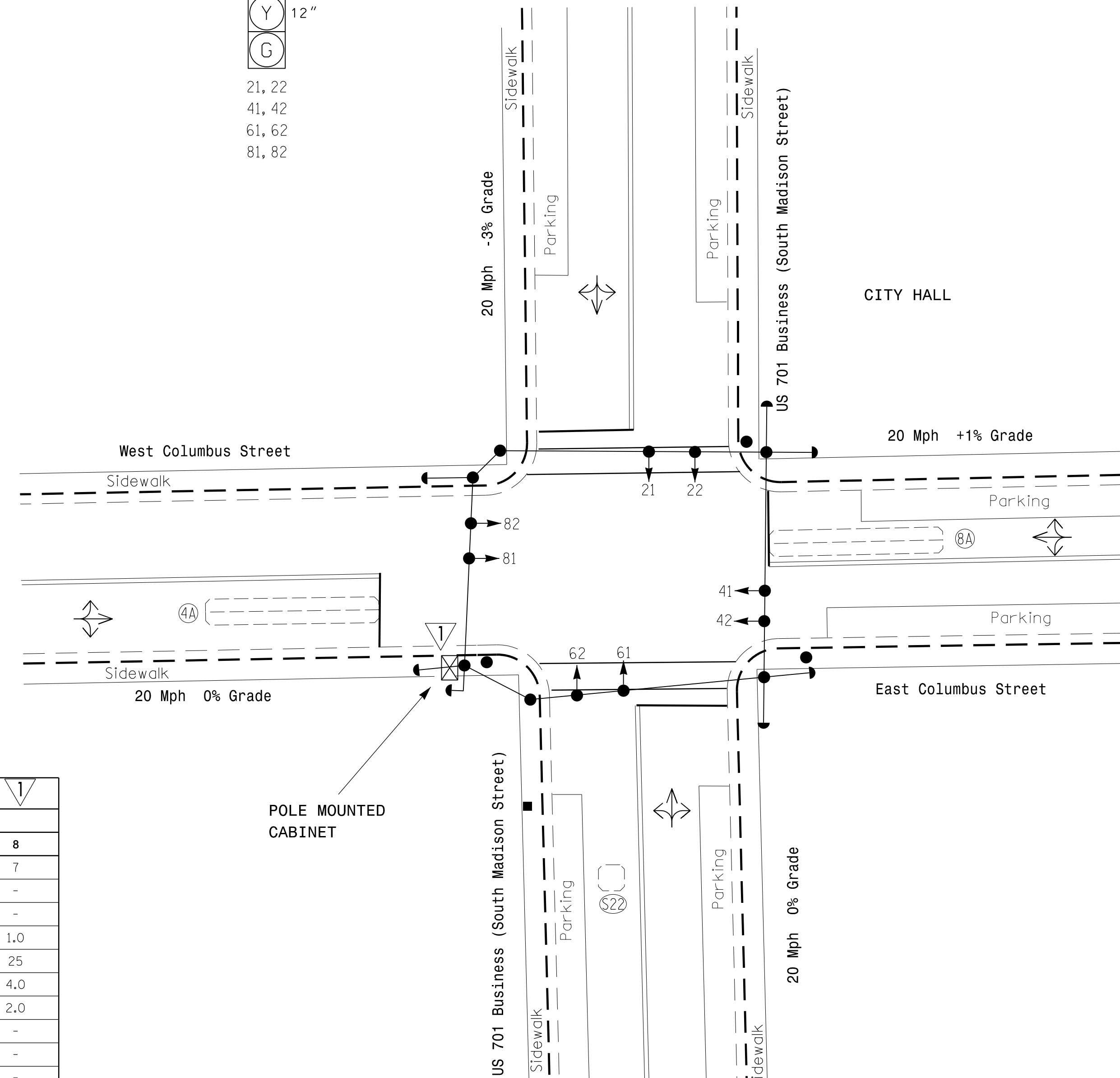


ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
4A	6X60	0	2-4-2	-	4	Yes	-	10	-	N	-	-
8A	6X60	0	2-4-2	-	8	Yes	-	10	-	N	-	-
S22	6X6	+100	EXIST	-	-	No	-	-	-	N	X	-

2 Phase Semi-Actuated System # 10605

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.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values



FEATURE	PHASE			
	2	4	6	8
Min Green *	10	7	10	7
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Veh. Extension *	-	1.0	-	1.0
Max 1 *	45	25	45	25
Yellow	4.0	4.0	4.0	4.0
Red Clear	1.5	2.0	1.5	2.0
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	-	-	-	-
Recall Position	MAX RECALL	-	MAX RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

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

LEGEND	
PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
● → Modified Signal Head	-
□ → Sign	-
□ → Pedestrian Signal Head With Push Button & Sign	-
○ → Signal Pole with Guy	● → Signal Pole with Sidewalk Guy
□ → Inductive Loop Detector	□ → Controller & Cabinet
□ → Junction Box	□ → 2-in Underground Conduit
- - - Right of Way	- - - Directional Arrow
→ Pavement Marking Arrow	→

Signal Revision

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Revision Seal

Prepared in the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE 1"=20'

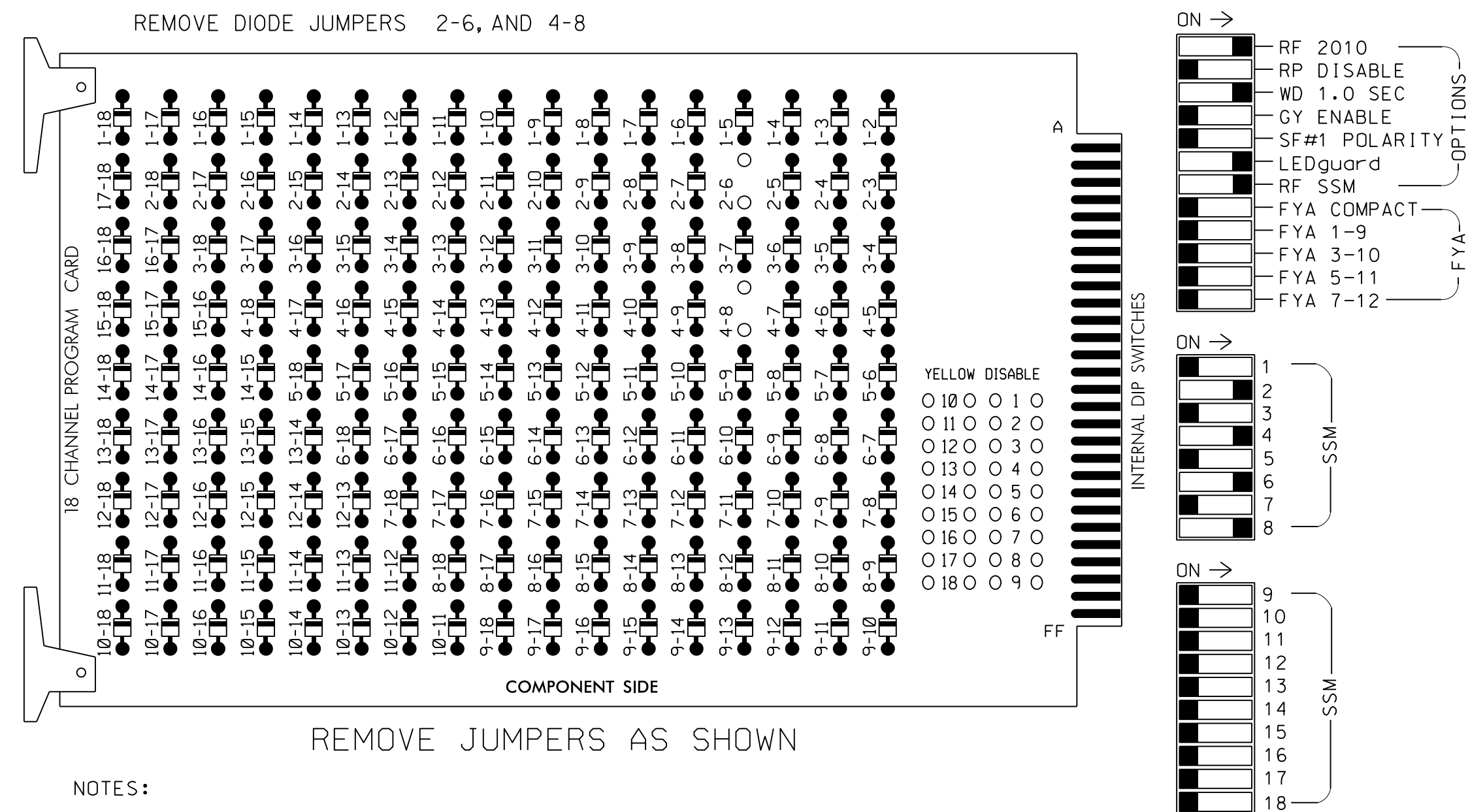
US 701 Business (South Madison Street) at Columbus Street
 Division 6 Columbus County Whiteville
 PLAN DATE: August 2003 REVIEWED BY: R.J. Ziemba
 PREPARED BY: Carter/Hambright REVIEWED BY:
 REVISIONS: Controller changed to ASC/3 with new cabinet. GGM 05/15/20

SEAL
 Not a certified document. This document originally Issued and sealed by Timothy J. Williams, 24393 on 11/4/03. This document shall not be considered a certified document.

SEPI
 Engineering & Construction, Inc.
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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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green and 6 Green.
4. The cabinet and controller are part of Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

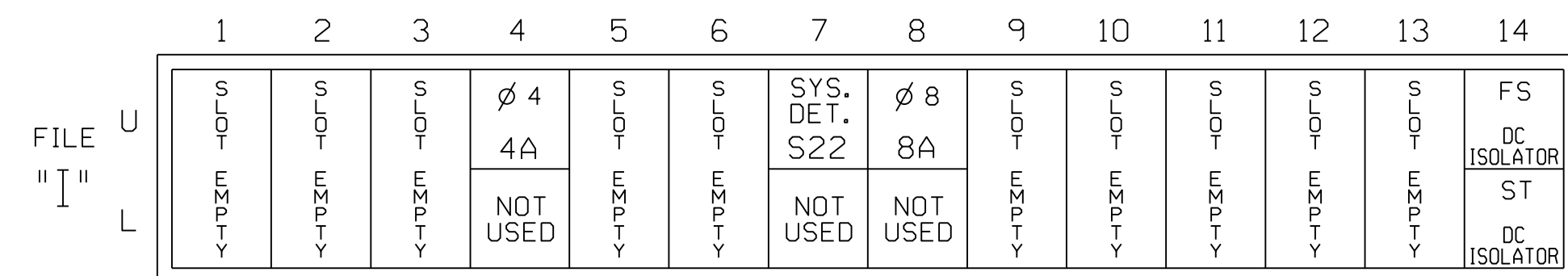
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET336
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

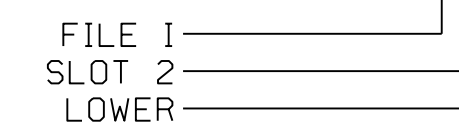
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB21-7,8	14U	41	4	4	YES		10		N
*S22	TB21-13,14	17U	57	7						N
8A	TB22-1,2	18U	42	8	8	YES		10		N

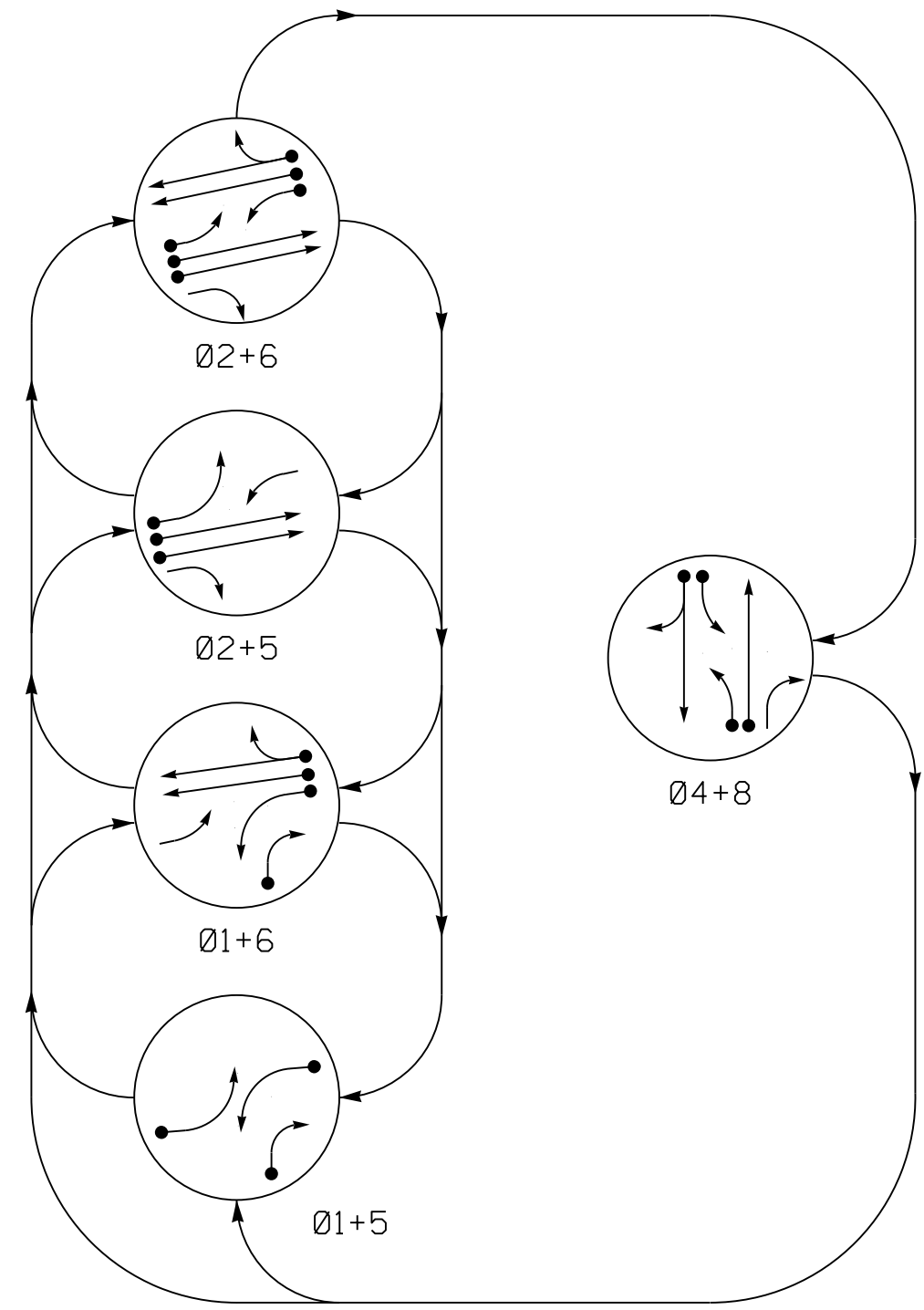
*SYSTEM DETECTOR ONLY. REMOVE ANY ASSIGNED VEHICLE PHASES.

INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0480
 DESIGNED: AUGUST 2003
 SEALED: 05/15/20
 REVISED:

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

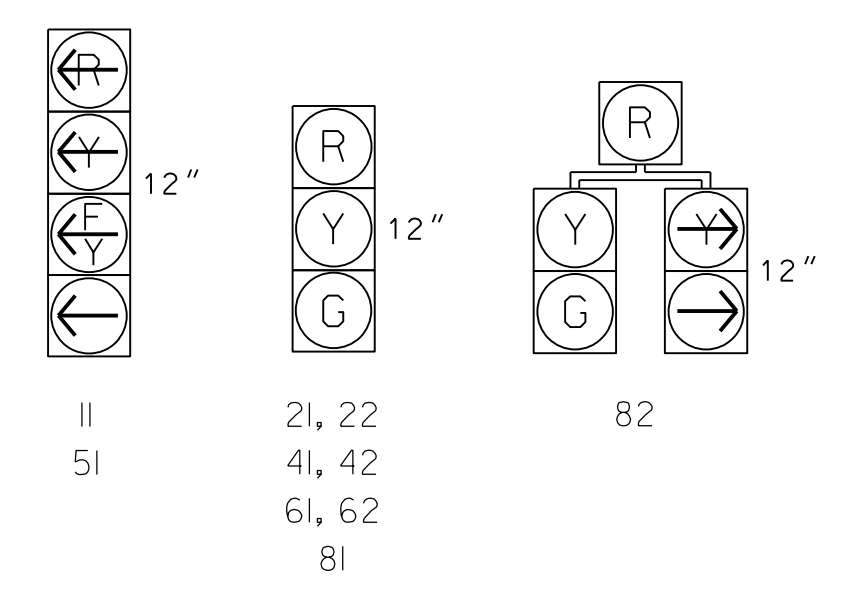
- DETECTED MOVEMENT
- ◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄ UNSIGNALIZED MOVEMENT
- ◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE				
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 4+8
II	←	←	←	←	←
21,22	R	R	G	G	Y
41,42	R	R	R	R	G
51	←	←	←	←	←
61,62	R	G	R	G	R
81	R	R	R	R	G
82	R	R	R	R	G

SIGNAL FACE I.D.

All Heads L.E.D.



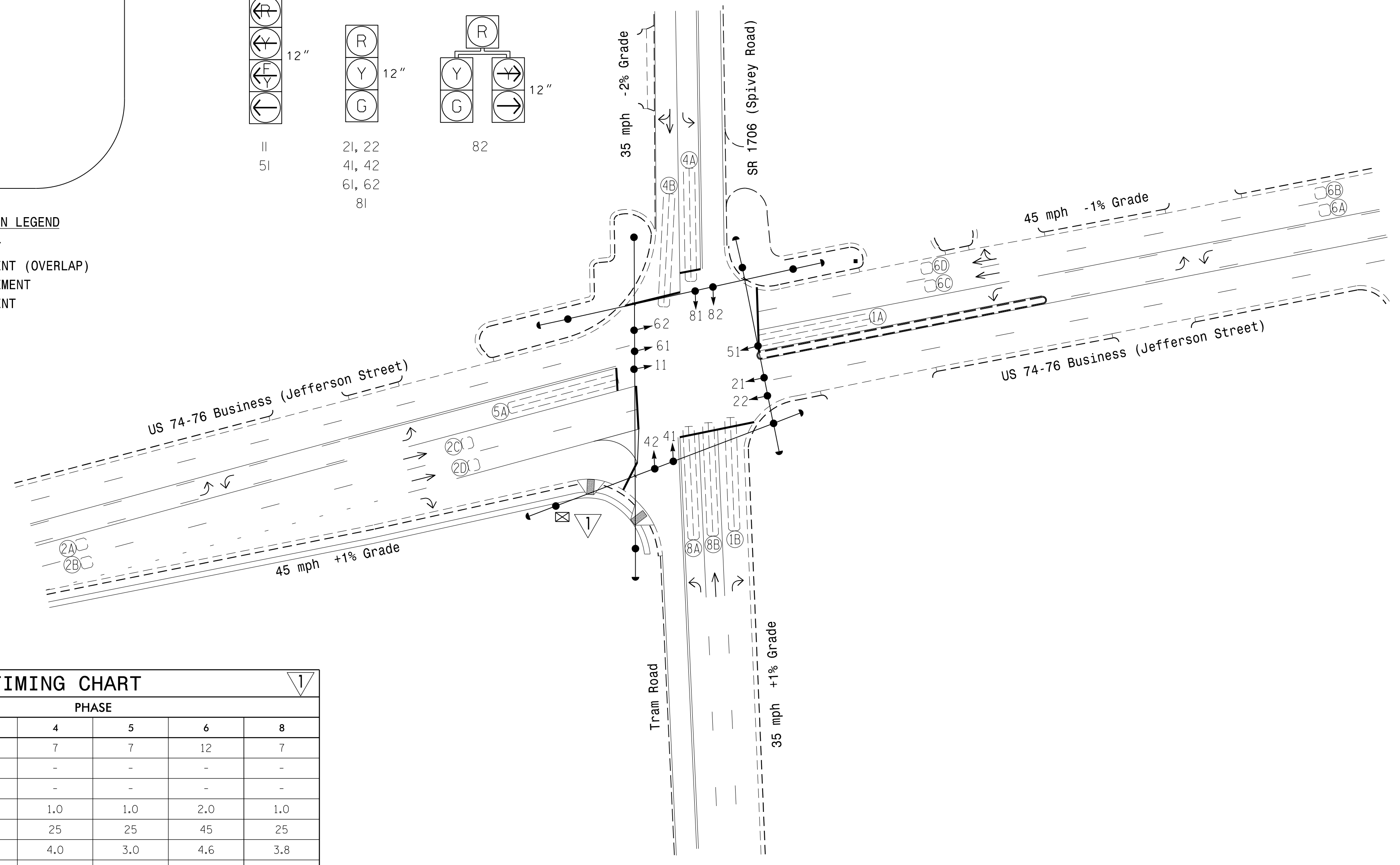
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP
1A	6X60	0	2-4-2	-	1	Yes	-	15	-	N	-
					6	Yes	-	-	-	G	-
1B	6X60	+5	2-4-2	-	1	Yes	-	15	-	N	-
2A,2B	6X6	300	EXIST	-	2	Yes	1.6	-	-	N	-
2C,2D	6X6	90	EXIST	-	2	Yes	-	-	-	N	-
4A	6X60	+5	2-4-2	-	4	Yes	-	3	-	N	-
4B	6X60	+5	2-4-2	-	4	Yes	-	10	-	N	-
5A	6X60	+5	2-4-2	-	5	Yes	-	15	-	N	-
					2	Yes	-	-	-	G	-
6A,6B	6X6	300	EXIST	-	6	Yes	1.6	-	-	N	-
6C,6D	6X6	90	EXIST	-	6	Yes	-	-	-	N	-
8A	6X60	+5	2-4-2	-	8	Yes	-	3	-	N	-
8B	6X60	+5	2-4-2	-	8	Yes	-	-	-	N	-

5 Phase Fully Actuated System # 10605

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 1 and/or phase 5 may be lagged.
4. Reposition existing signal head numbered 62.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

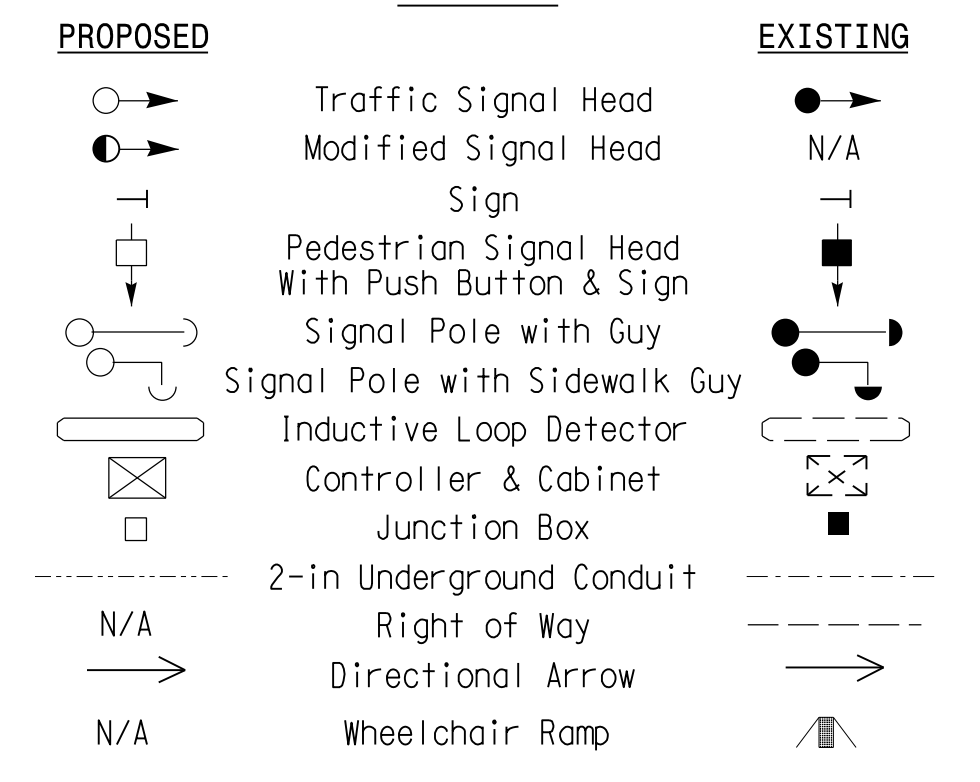


ASC/3 TIMING CHART

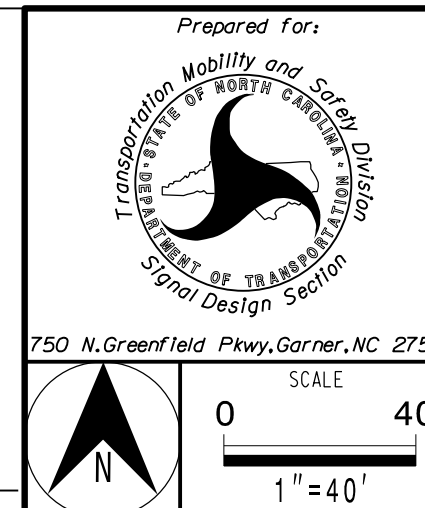
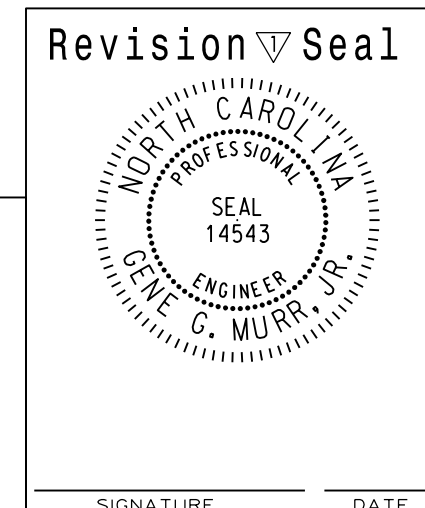
FEATURE	PHASE					
	1	2	4	5	6	8
Min Green *	7	12	7	7	12	7
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	1.0	2.0	1.0	1.0	2.0	1.0
Max 1 *	25	45	25	25	45	25
Yellow	3.0	4.6	4.0	3.0	4.6	3.8
Red Clear	3.1	1.5	1.8	2.4	1.5	1.4
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	-	X	-
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL	-
Dual Entry	-	-	X	-	-	X
Simultaneous Gap	X	X	X	X	X	X

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

LEGEND



Signal Revision



US 74-76 Business (Jefferson Street) at Tram Road/SR 1706 (Spivey Road)

Division 6 Columbus County Whiteville

PLAN DATE: March 2011 REVIEWED BY: JPG

PREPARED BY: EM MINSHAW REVIEWED BY:

REVISIONS	INIT.	DATE
Controller changed to ASC/3 with new cabinet	GGM	05/15/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
Not a certified document. This document originally issued and sealed by Jason P. Galloway, P.E. no. 29904 on (4/26/11). This document shall not be considered a certified document.

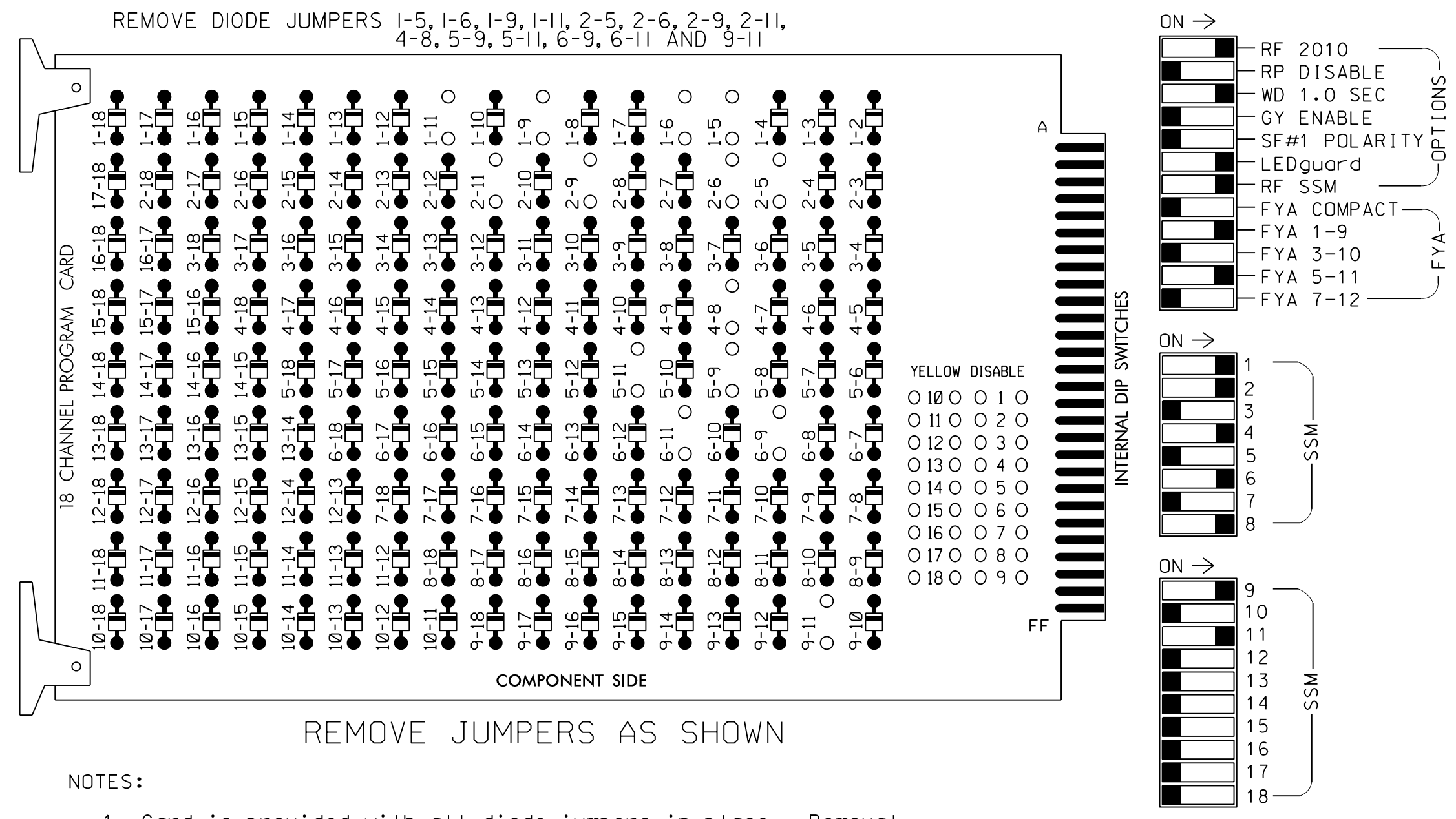
SIGNATURE _____ DATE _____
SIG. INVENTORY NO. 06-0507

SEPI
Engineering & Construction, Inc.

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

EDI MODEL 2018EClip-NC CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



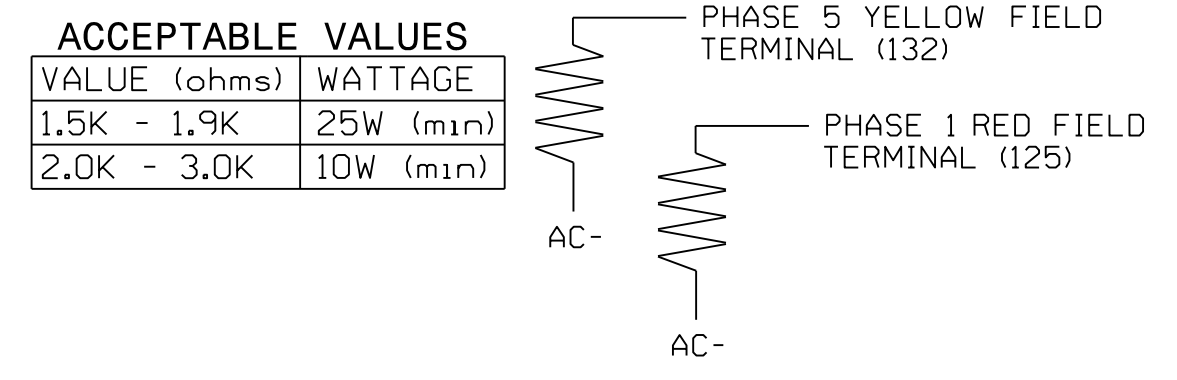
- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Connect serial cable from conflict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

INPUT FILE POSITION LAYOUT
(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	∅ 1 1A	∅ 2 2A,2B	∅ 1 1B	∅ 3 3A,3B	∅ 3 3C,3D	∅ 4 4A	∅ 4 4B	∅ 4 4C	∅ 4 4D	∅ 4 4E	∅ 4 4F	∅ 4 4G	∅ 4 4H	FS DC ISOLATOR
FILE "J"	∅ 5 5A	∅ 6 6A,6B	∅ 6 6C,6D	∅ 7 7A,7B	∅ 7 7C,7D	∅ 8 8A	∅ 8 8B	∅ 8 8C	∅ 8 8D	∅ 8 8E	∅ 8 8F	∅ 8 8G	∅ 8 8H	FS DC ISOLATOR

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

LOAD RESISTOR INSTALLATION DETAIL
(install resistors as shown below)



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. Verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

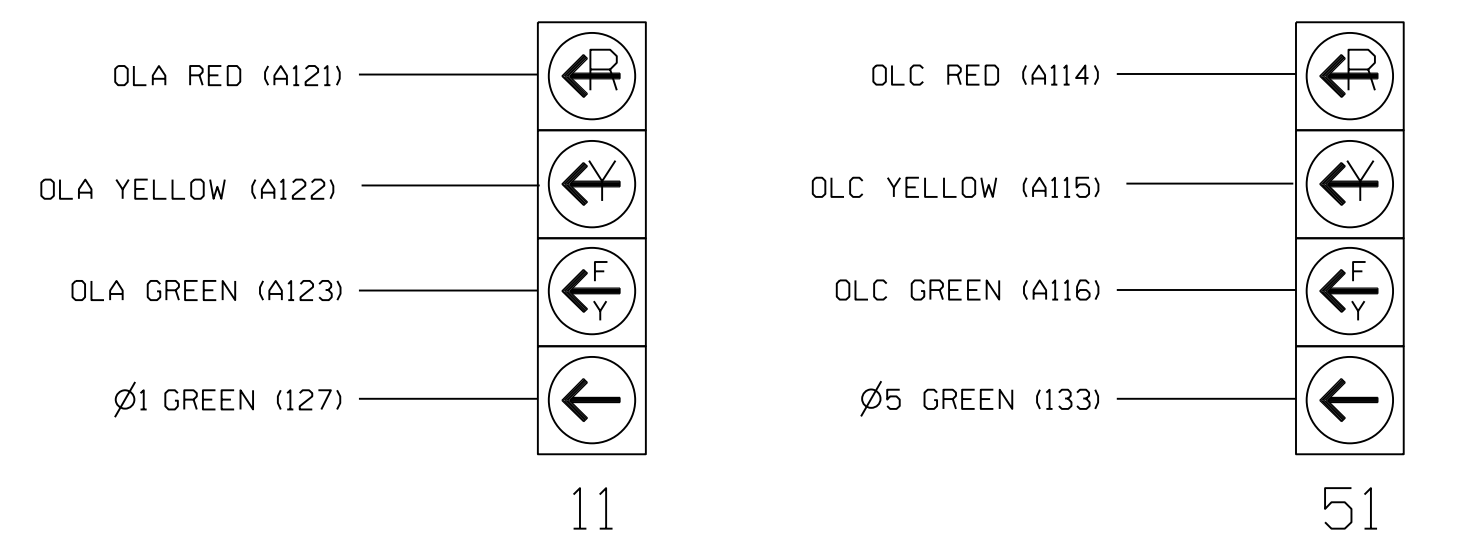
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11*	82	21,22	NU	NU	41,42	NU	51*	61,62	NU	NU	81,82	NU	11*	NU	NU	51*	NU
RED	*	128			101			134			107							
YELLOW		129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121				A114	
YELLOW ARROW		126											A122				A115	
FLASHING YELLOW ARROW													A123				A116	
GREEN ARROW	127	127						133										

NU = Not Used
 * Denotes install load resistor. See Load Resistor Installation Detail this sheet.
 * See pictorial of head wiring in detail below.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 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,S5,S7,S8,S11,AUX S1,
 AUX S4
 PHASES USED.....1,2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

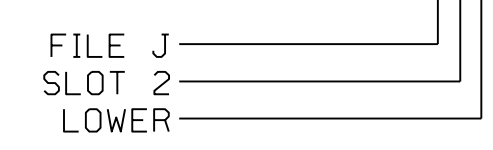
4-SECTION FYA-PPLT SIGNAL WIRING DETAIL
(wire signal heads as shown)



INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		N
		J4U	48	26	6	YES				G
2A,2B	TB2-5,6	I2U	39	2	2	YES	1.6			N
2C,2D	TB2-7,8	I2L	43	12	2	YES				N
1B	TB2-9,10	I3U	63	32	1	YES		15		N
4A	TB4-9,10	I6U	41	4	4	YES		3		N
4B	TB4-11,12	I6L	45	14	4	YES		10		N
5A ²	TB3-1,2	J1U	55	5	5	YES		15		N
		I4U	47	22	2	YES				G
6A,6B	TB3-5,6	J2U	40	6	6	YES	1.6			N
6C,6D	TB3-7,8	J2L	44	16	6	YES				N
8A	TB5-9,10	J6U	42	8	8	YES		3		N
8B	TB5-11,12	J6L	46	18	8	YES				N

¹Add jumper from I1-W to J4-W, on rear of input file.
²Add jumper from J1-W to I4-W, on rear of input file.
 INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0507
 DESIGNED: MARCH 2011
 SEALED: 05/15/20
 REVISED:

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

SEPI Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

US 74-76 Business (Jefferson Street) at Tram Road/SR 1706 (Spivey Road)
 Division 06 Columbus County Whiteville
 PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe
 PREPARED BY: M. Copple REVIEWED BY:
 REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0507

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

OVERLAP A

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

TMG VEH OVLP...[A] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 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..... 0

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0507
 DESIGNED: MARCH 2011
 SEALED: 05/15/20
 REVISED:

Electrical Detail - Sheet 2 of 2

<p style="font-size: small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small; text-align: center;">Prepared for the Offices of: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STATE OF NORTH CAROLINA Signal Management Section 750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p style="text-align: center;">US 74-76 Business (Jefferson Street) at Tram Road/SR 1706 (Spivey Road)</p> <p style="font-size: x-small;">Division 06 Columbus County Whiteville</p> <p style="font-size: x-small;">PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe</p> <p style="font-size: x-small;">PREPARED BY: M. Copple REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISIONS	INIT.	DATE										<p style="font-size: x-small;">SEAL</p> <p style="font-size: x-small;">SIGNATURE DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 06-0507</p>
REVISIONS	INIT.	DATE												

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PHASING DIAGRAM

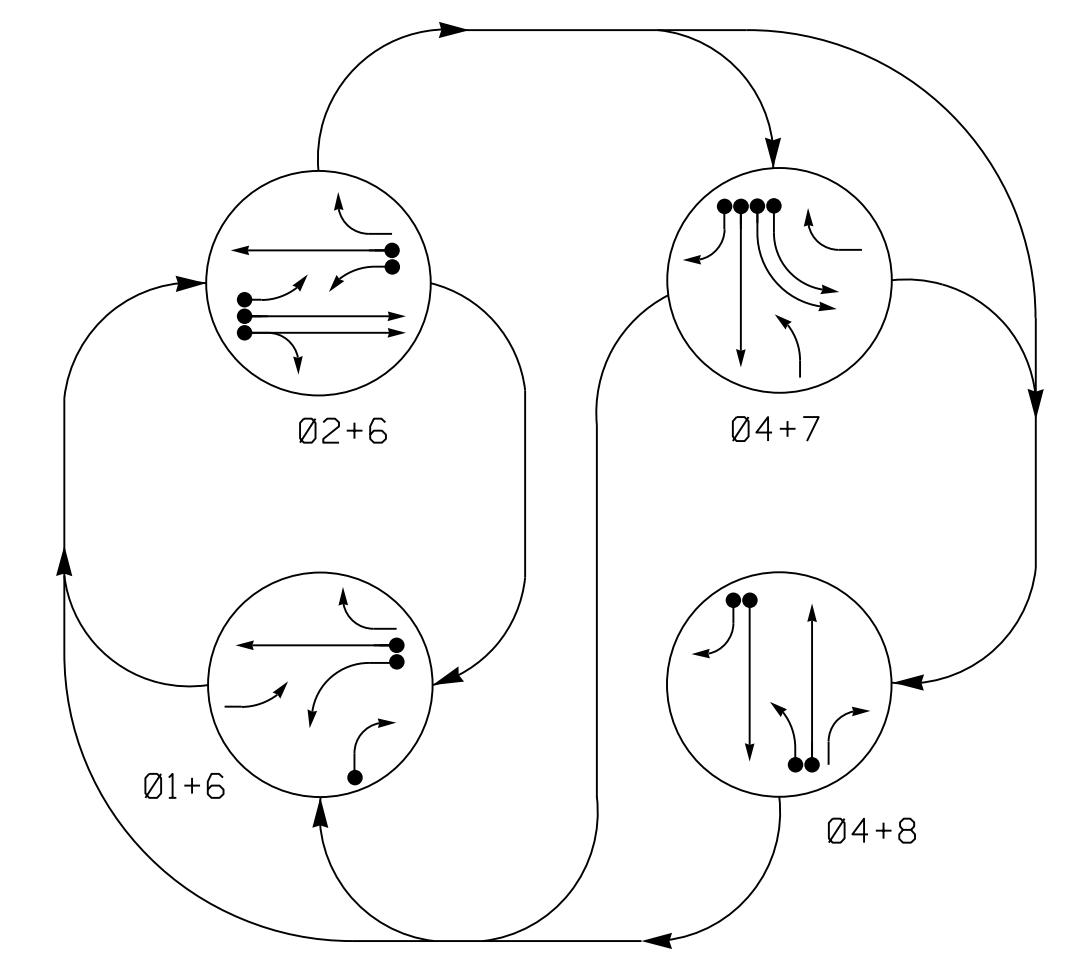
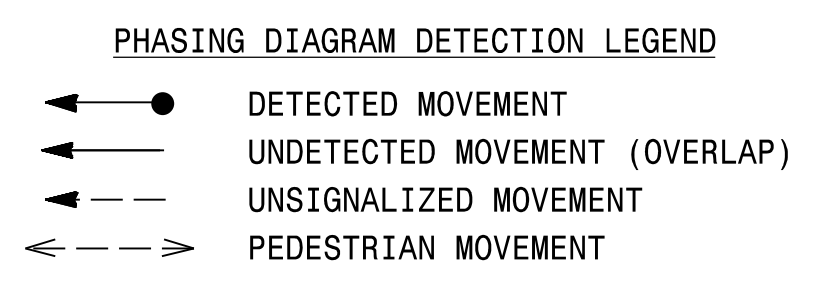
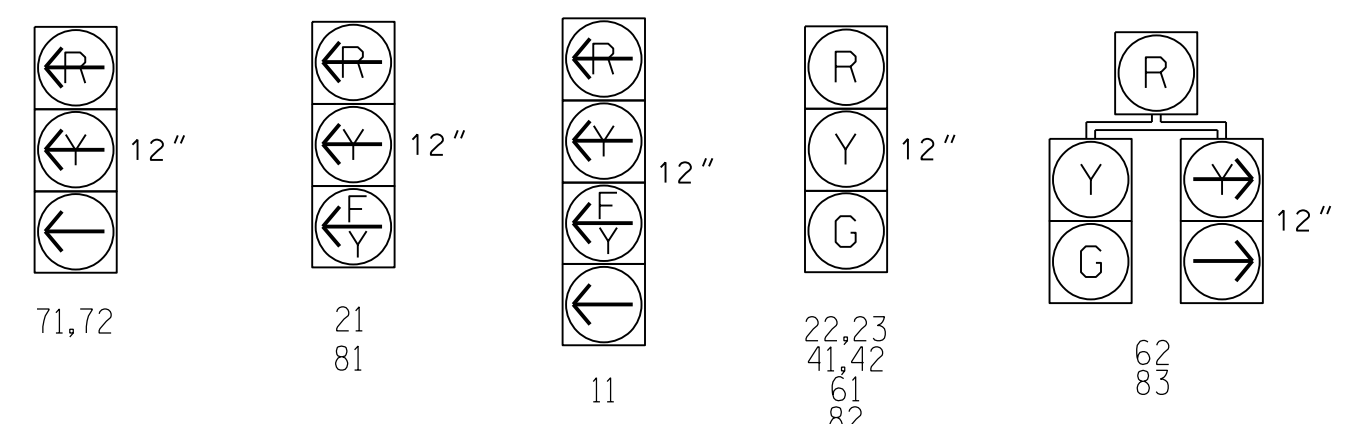


TABLE OF OPERATION

SIGNAL FACE	PHASE								
	Ø 1 + 6	Ø 2 + 6	Ø 4 + 7	Ø 4 + 8	F L S D H	Ø 1 + 6	Ø 2 + 6	Ø 4 + 7	Ø 4 + 8
11	←	←	←	←	←	←	←	←	←
21	←	←	←	←	←	←	←	←	←
22,23	R	G	R	R	Y	R	G	R	R
41,42	R	R	G	G	R	R	R	G	R
61	G	G	R	R	Y	G	G	R	R
62	G	G	R	R	Y	G	G	R	R
71,72	←	←	←	←	←	←	←	←	←
81	←	←	←	←	←	←	←	←	←
82	R	R	R	G	R	R	R	R	G
83	R	R	R	G	R	R	R	R	G

SIGNAL FACE I.D.
All Heads L.E.D.



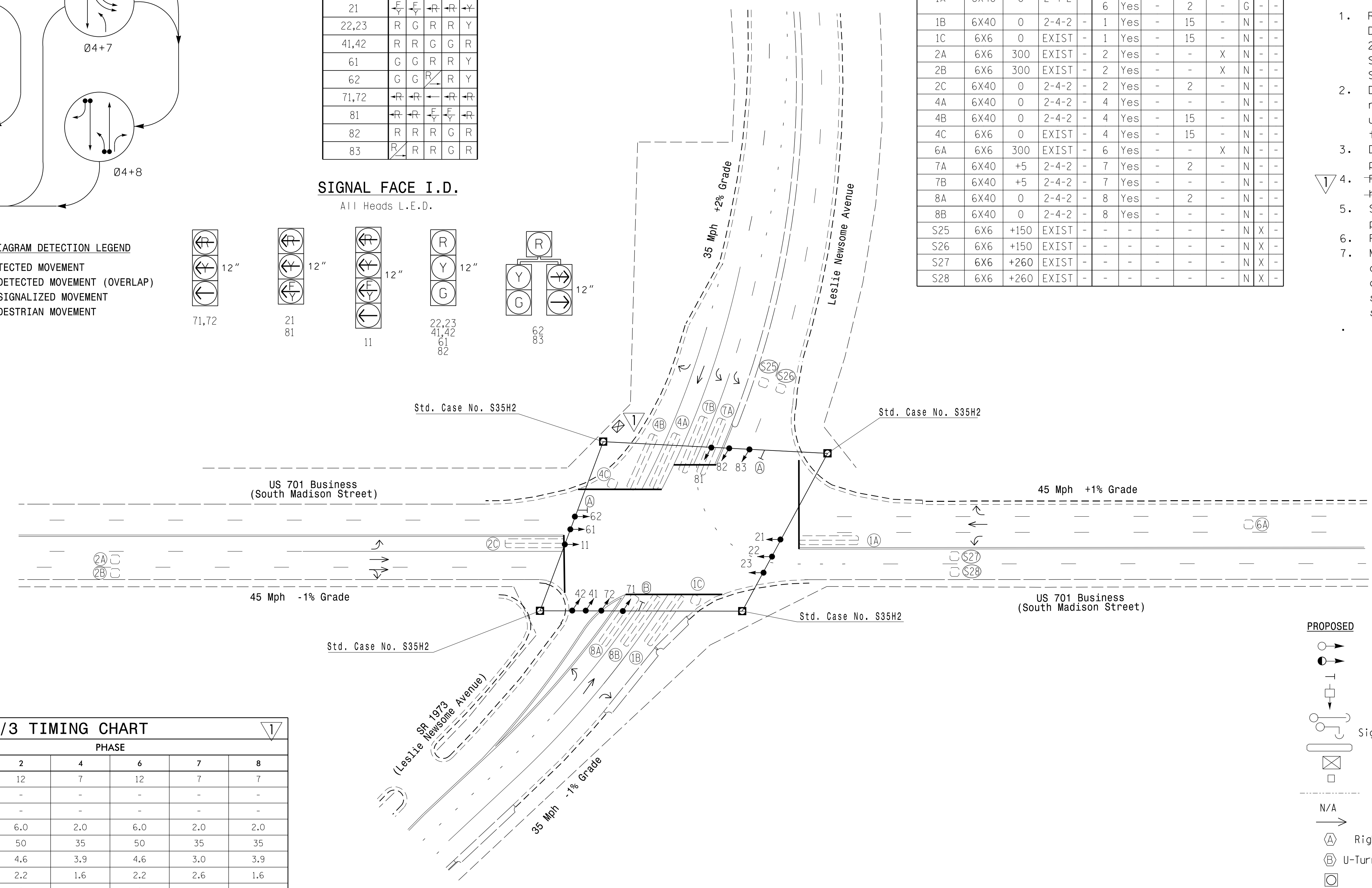
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP
1A	6X40	0	2-4-2	-	1	Yes	-	15	-	N	-
1B	6X40	0	2-4-2	-	6	Yes	-	2	-	G	-
1C	6X6	0	EXIST	-	1	Yes	-	15	-	N	-
2A	6X6	300	EXIST	-	2	Yes	-	-	X	N	-
2B	6X6	300	EXIST	-	2	Yes	-	-	X	N	-
2C	6X40	0	2-4-2	-	2	Yes	-	2	-	N	-
4A	6X40	0	2-4-2	-	4	Yes	-	-	-	N	-
4B	6X40	0	2-4-2	-	4	Yes	-	15	-	N	-
4C	6X6	0	EXIST	-	4	Yes	-	15	-	N	-
6A	6X6	300	EXIST	-	6	Yes	-	-	X	N	-
7A	6X40	+5	2-4-2	-	7	Yes	-	2	-	N	-
7B	6X40	+5	2-4-2	-	7	Yes	-	-	-	N	-
8A	6X40	0	2-4-2	-	8	Yes	-	2	-	N	-
8B	6X40	0	2-4-2	-	8	Yes	-	-	-	N	-
S25	6X6	+150	EXIST	-	-	-	-	-	-	N	X
S26	6X6	+150	EXIST	-	-	-	-	-	-	N	X
S27	6X6	+260	EXIST	-	-	-	-	-	-	N	X
S28	6X6	+260	EXIST	-	-	-	-	-	-	N	X

4 Phase Fully Actuated System #10605

NOTES

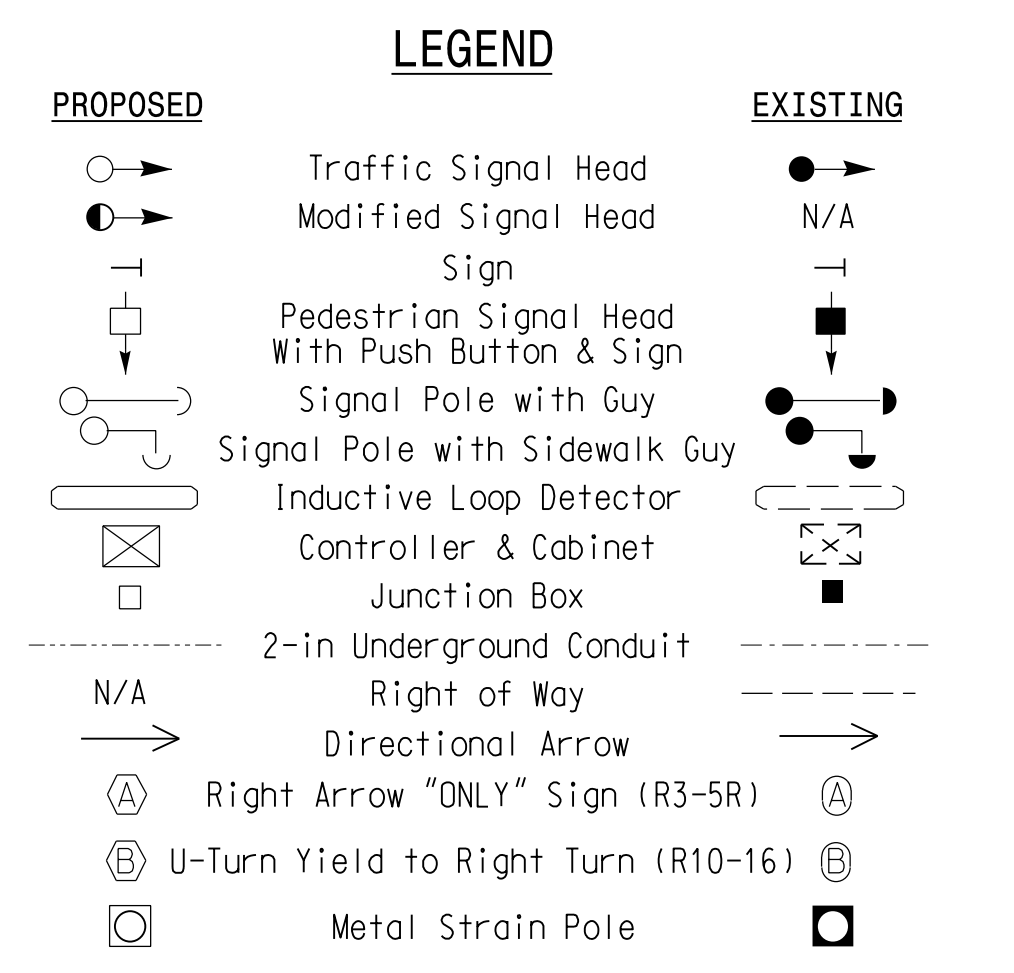
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Disable Backup Protect for phases 6 and 8.
- Reposition existing signal heads numbered 22 and 23.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



ASC/3 TIMING CHART

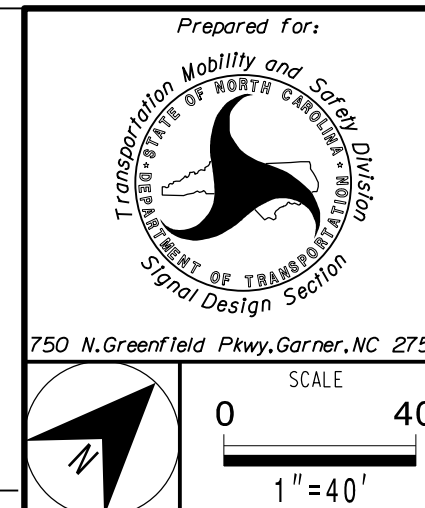
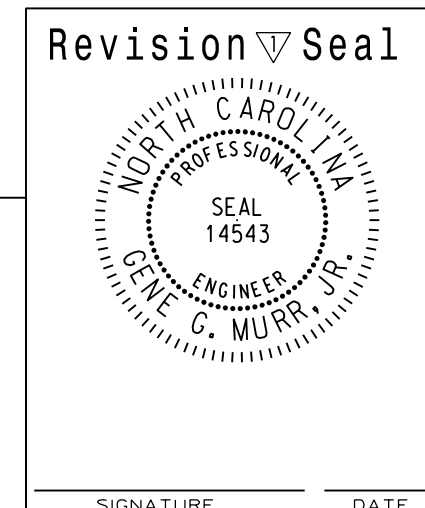
FEATURE	PHASE							
	1	2	4	6	7	8		
Min Green *	7	12	7	12	7	7		
Walk *	-	-	-	-	-	-		
Ped Clear	-	-	-	-	-	-		
Veh. Extension *	2.0	6.0	2.0	6.0	2.0	2.0		
Max I *	35	50	35	50	35	35		
Yellow	3.0	4.6	3.9	4.6	3.0	3.9		
Red Clear	3.6	2.2	1.6	2.2	2.6	1.6		
Actuations B4 Add *	-	0	-	0	-	-		
Seconds /Actuation *	-	1.5	-	1.5	-	-		
Max Initial *	-	34	-	34	-	-		
Time Before Reduction *	-	15	-	15	-	-		
Time To Reduce *	-	30	-	30	-	-		
Minimum Gap	-	3.0	-	3.0	-	-		
Locking Detector	-	X	-	X	-	-		
Recall Position	-	VEH. RECALL	-	VEH. RECALL	-	-		
Dual Entry	-	-	X	-	-	-		
Simultaneous Gap	X	X	X	X	X	X		

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



Signal Revision

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



US 701 Business (South Madison Street) at SR 1973 (Leslie Newsome Avenue)

Division 06 Columbus County Whiteville

PLAN DATE: November 2012 REVIEWED BY: JEFF SPENCE

PREPARED BY: Jeff Spence

REVISIONS: Controller changed to ASC/3 with new cabinet. GCM 05/15/20.

SEAL

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SIGNATURE: _____ DATE: _____

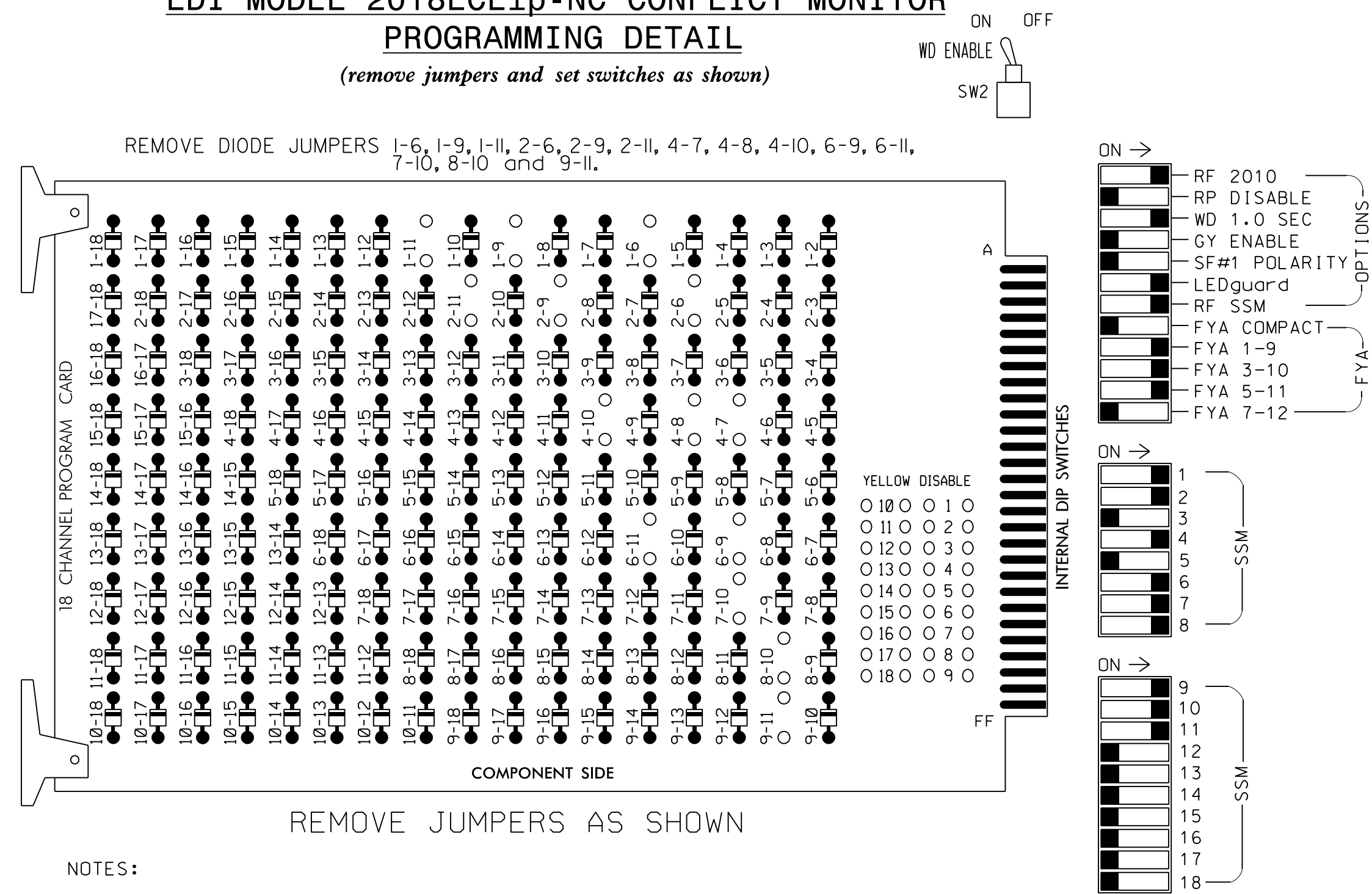
SIG. INVENTORY NO. 06-1272

SEPI Engineering & Construction, Inc.

1 Glenwood Avenue Raleigh, NC 27603 Tel: 919.789.9977 Fax: 919.789.9591 License: C-2197

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phase 4 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of Signal System # 10605.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S8,S10,S11,
 AUX S1,AUX S2,AUX S4
 PHASES USED.....1,2,4,6,7,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 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.	11*	83	22,23	NU	NU	41,42	NU	NU	61,62	NU	62	71,72	82,83	NU	11*	81*	NU	21*	NU
RED	*	128			101			134				107							
YELLOW		129			102			135				108							
GREEN		130			103			136				109							
RED ARROW												122			A121	A124		A114	
YELLOW ARROW	126										123	123			A122	A125		A115	
FLASHING YELLOW ARROW															A123	A126		A116	
GREEN ARROW	127	127								124	124								

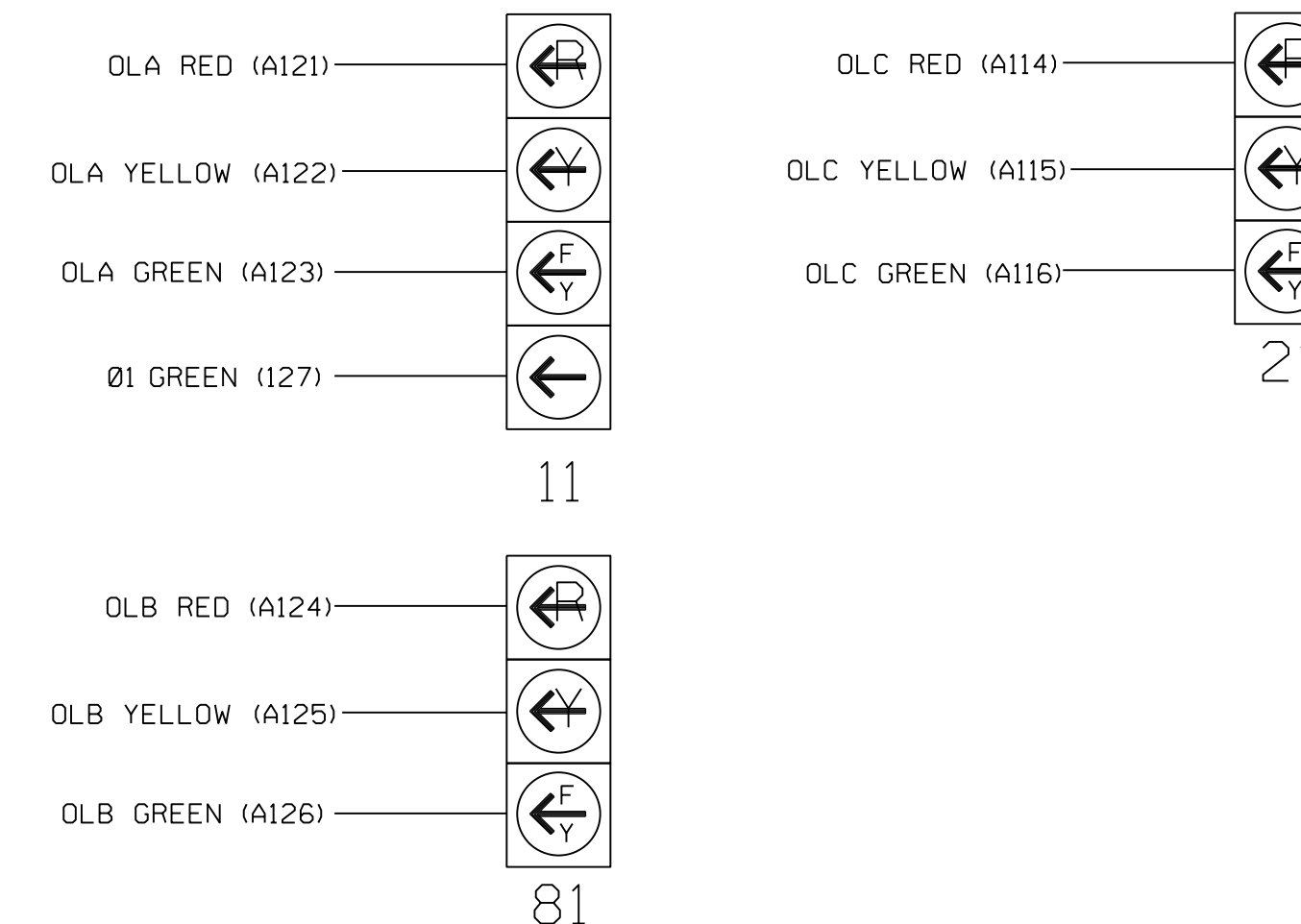
NU = Not Used

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

★ See pictorial of head wiring in detail below.

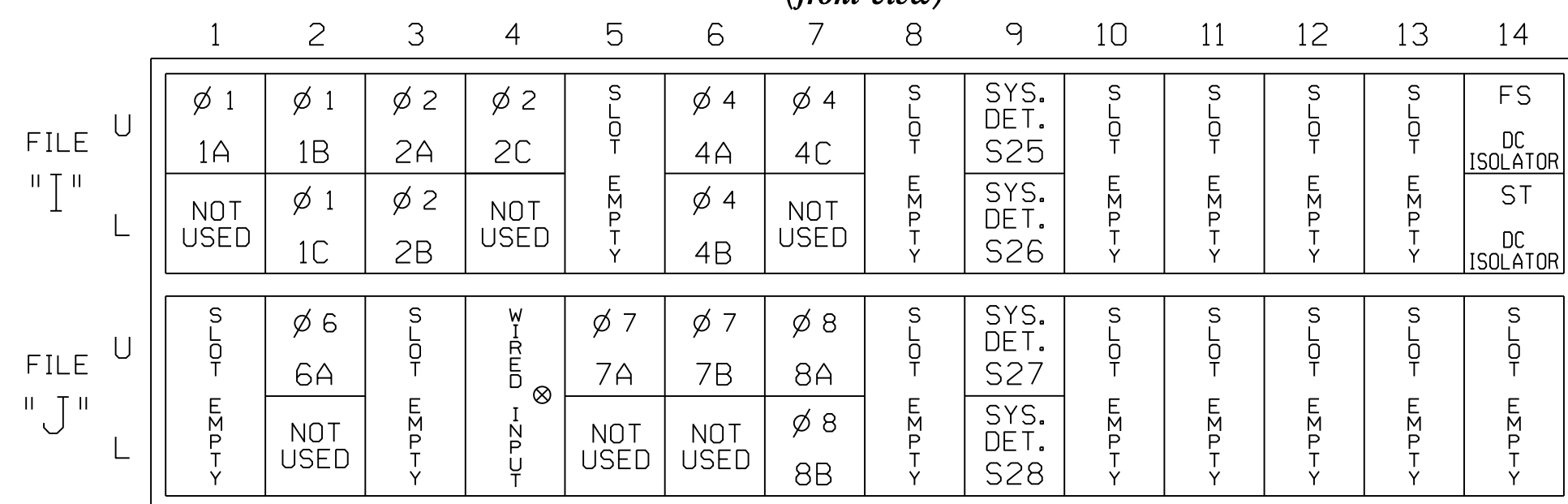
4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

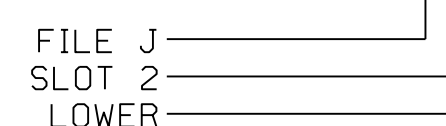
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		N
		J4U	48	26	6	YES		2		G
1B	TB2-5,6	I2U	39	2	1	YES		15		N
1C	TB2-7,8	I2L	43	12	1	YES		15		N
2A	TB2-9,10	I3U	63	32	2	YES			X	N
2B	TB2-11,12	I3L	76	42	2	YES			X	N
2C	TB4-1,2	I4U	47	22	2	YES		2		G
4A	TB4-9,10	I6U	41	4	4	YES				N
4B	TB4-11,12	I6L	45	14	4	YES		15		N
4C	TB6-1,2	I7U	65	34	4	YES		15		N
* S25	TB6-9,10	I9U	60	11	SYS	NO				N
* S26	TB6-11,12	I9L	62	13	SYS	NO				N
6A	TB3-5,6	J2U	40	6	6	YES			X	N
7A	TB5-5,6	J5U	57	7	7	YES		2		N
7B	TB5-9,10	J6U	42	8	7	YES				N
8A	TB7-1,2	J7U	66	38	8	YES		2		N
8B	TB7-3,4	J7L	79	48	8	YES				N
* S27	TB7-9,10	J9U	59	15	SYS	NO				N
* S28	TB7-11,12	J9L	61	17	SYS	NO				N

* System detector only. Remove any assigned vehicle phase.

¹Add jumper from I1-W to J4-W, on rear of input file.

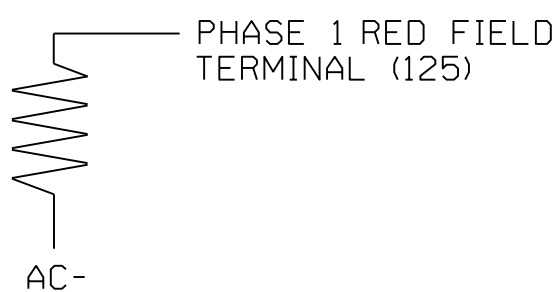
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

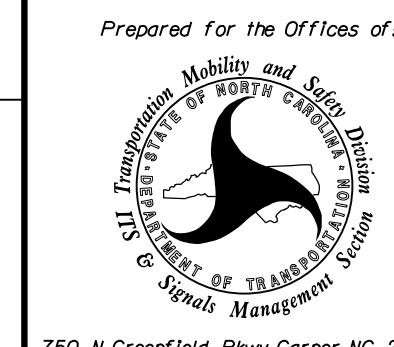
(install resistors as shown below)

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



ELECTRICAL DETAIL SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:



US 701 Business (South Madison Street) at SR 1973 (Leslie Newsome Avenue)
 Division 6 Columbus County Whiteville
 PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe
 PREPARED BY: M. Copple REVIEWED BY:
 REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 MATHIEW B. COPPLE
 SEAL 27771
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-1272

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

OVERLAP A

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

```

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

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

Toggle Once

OVERLAP B

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

```

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

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

Toggle Once

OVERLAP C

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

```

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

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

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

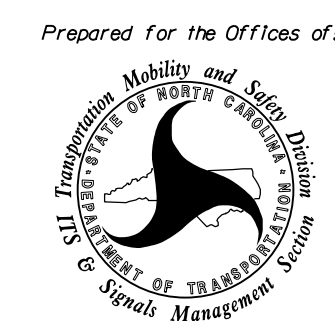
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-1272
DESIGNED: November 2012
SEALED: 05/15/20
REVISED:



1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

ELECTRICAL DETAIL SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

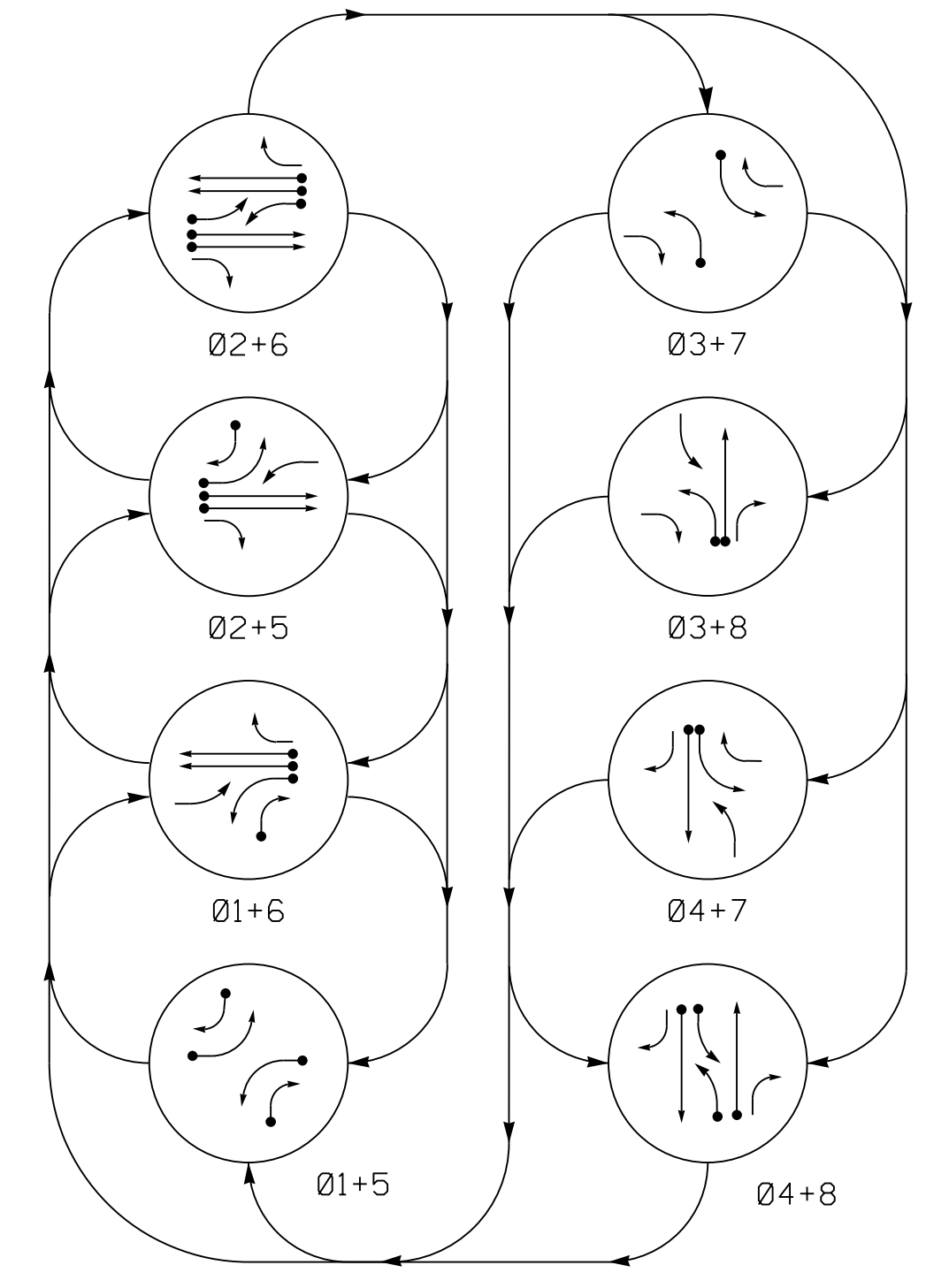


US 701 Business (South Madison Street) at SR 1973 (Leslie Newsome Avenue)	
Division 6	Columbus County
PLAN DATE: APRIL 2020	REVIEWED BY: J. Rowe
PREPARED BY: M. Copple	REVIEWED BY:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL
SIGNATURE
DATE
SIG. INVENTORY NO. 06-1272

PHASING DIAGRAM

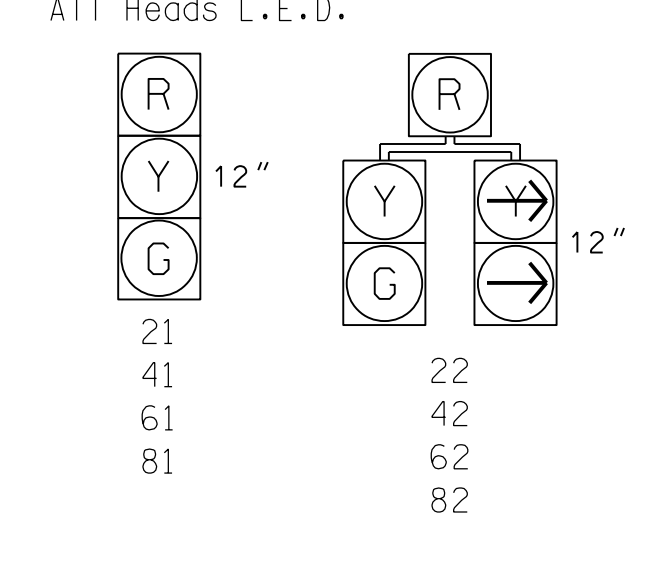


PHASING DIAGRAM DETECTION LEGEND
 ● DETECTED MOVEMENT
 ◄ UNDETECTED MOVEMENT (OVERLAP)
 ◄ UNSIGNALIZED MOVEMENT
 ◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8
11	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
31	←	←	←	←	←	←	←	←
41	R	R	R	R	R	R	G	G
42	R	R	R	R	R	R	G	G
51	←	←	←	←	←	←	←	←
61	R	G	R	G	R	R	R	Y
62	R	G	R	G	R	R	R	Y
71	←	←	←	←	←	←	←	←
81	R	R	R	R	R	G	R	G
82	R	R	R	R	R	G	R	G

SIGNAL FACE I.D.



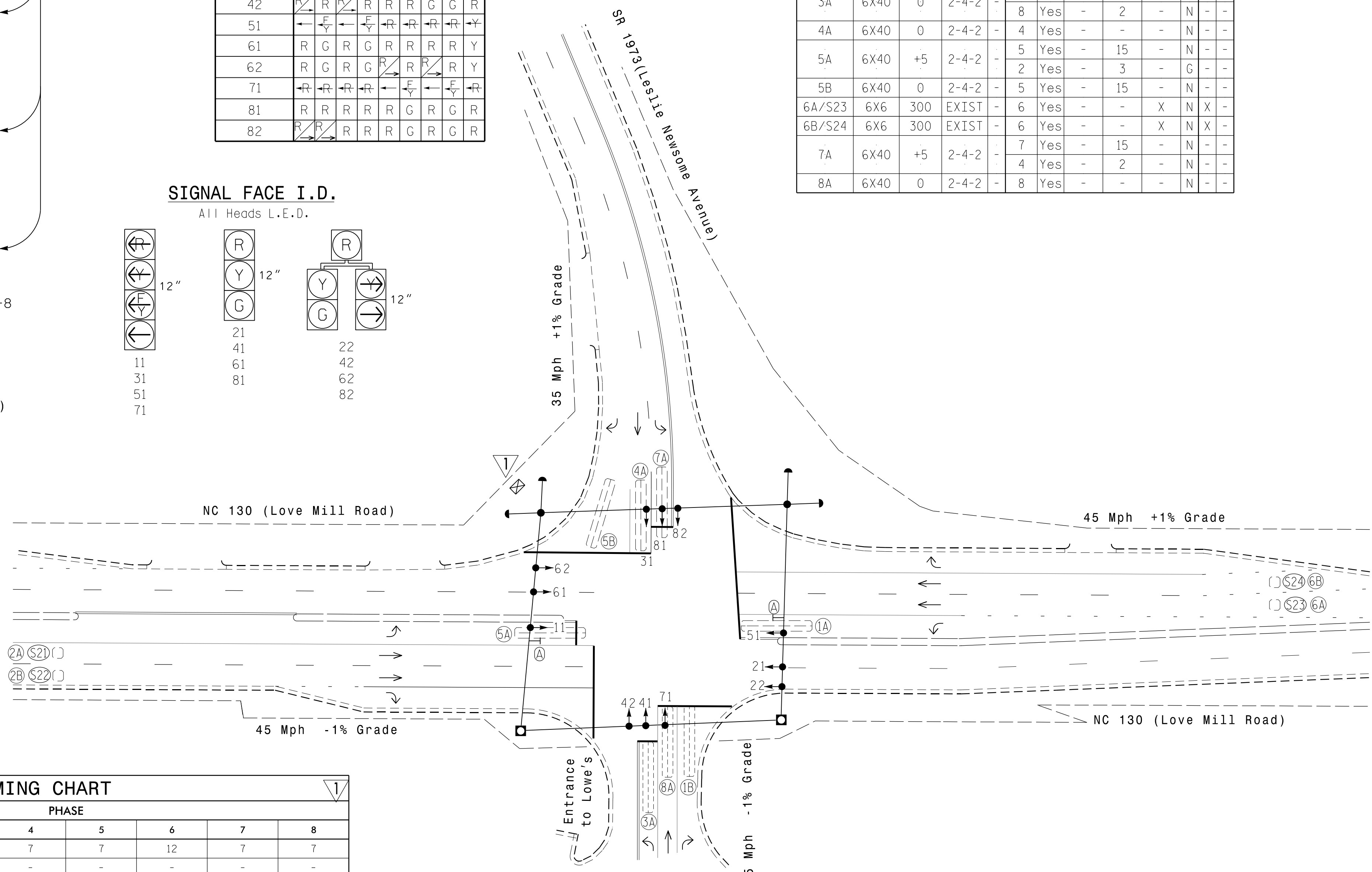
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Yes	-	15	-	N	-	-
1B	6X40	0	2-4-2	-	6	Yes	-	3	-	G	-	-
2A/S21	6X6	300	EXIST	-	2	Yes	-	-	-	X	N	X
2B/S22	6X6	300	EXIST	-	2	Yes	-	-	-	X	N	X
3A	6X40	0	2-4-2	-	3	Yes	-	15	-	N	-	-
4A	6X40	0	2-4-2	-	4	Yes	-	-	-	N	-	-
5A	6X40	+5	2-4-2	-	5	Yes	-	15	-	N	-	-
5B	6X40	0	2-4-2	-	2	Yes	-	3	-	G	-	-
6A/S23	6X6	300	EXIST	-	6	Yes	-	-	-	X	N	X
6B/S24	6X6	300	EXIST	-	6	Yes	-	-	-	X	N	X
7A	6X40	+5	2-4-2	-	7	Yes	-	15	-	N	-	-
8A	6X40	0	2-4-2	-	8	Yes	-	-	-	N	-	-

8 Phase Fully Actuated System #10605

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 phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

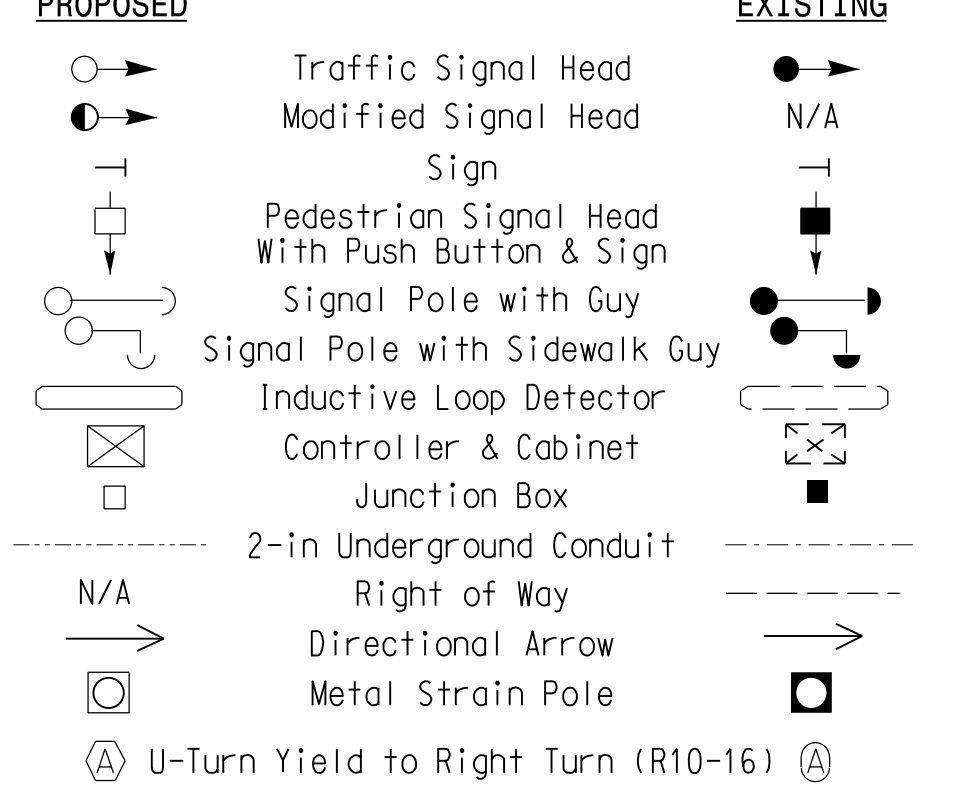


ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Walk *	-	-	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	30	90	30	30	20	90	30	30
Yellow	3.0	4.6	3.0	3.8	3.0	4.6	3.0	3.8
Red Clear	2.8	1.4	2.8	2.6	2.8	1.4	2.8	2.6
Actuations B4 Add *	-	0	-	-	-	0	-	-
Seconds / Actuation *	-	1.5	-	-	-	1.5	-	-
Max Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	X	-	-	-	X
Simultaneous Gap	X	X	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.

LEGEND



Signal Revision

Revision Seal
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 14543
 J. C. MURPHY, JR.
 ENGINEER

Prepared for:
 Transportation Mobility and Safety Division
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 Signal Design Section
 750 N. Greenfield Pkwy, Garner, NC 27529

NC 130 (Love Mill Road) at SR 1973 (Leslie Newsome Ave.) / Entrance to Lowe's
 Division 6 Columbus County Whiteville
 PLAN DATE: January 2014 REVIEWED BY: JPG
 PREPARED BY: Jeff Spence REVIEWED BY:
 REVISIONS: Controller changed to ASC/3 with new cabinet. BGM 05/15/20

SEAL
 Not a certified document. This document originally issued and sealed by Jason P. Galloway, P.E. no. 29904 on (2/03/14). This document shall not be considered a certified document.
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-1273

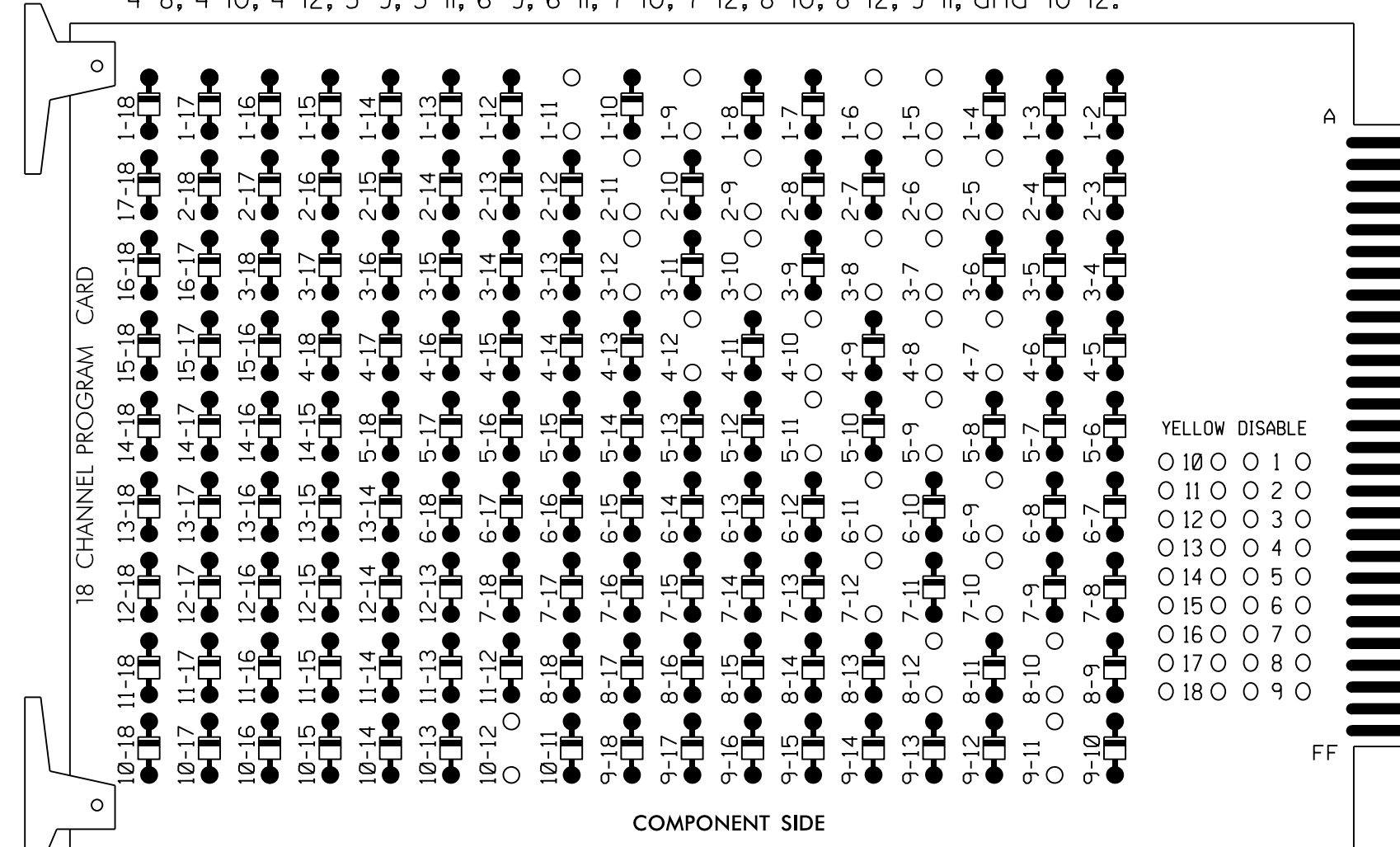
SEPI Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR

PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

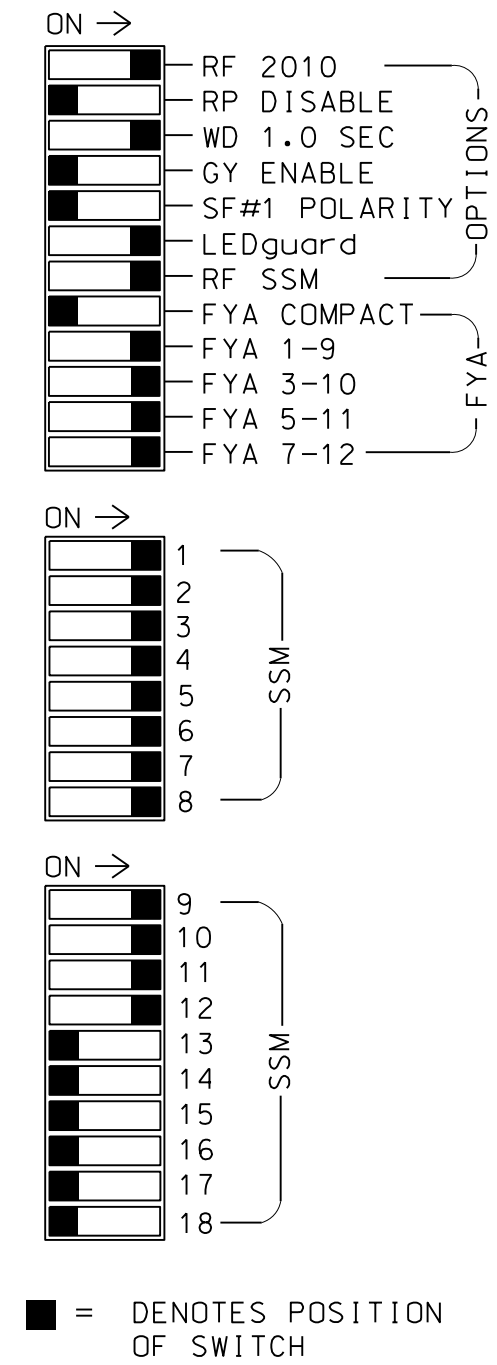
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 7-10, 7-12, 8-10, 8-12, 9-11, and 10-12.



REMOVE JUMPERS AS SHOWN

NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6				
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18				
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE				
SIGNAL HEAD NO.	11★	82	21,22	NU	22	31★	41,42	NU	42	51★	61,62	NU	62	71★	81,82	NU	11★	31★	51★	71★	NU	
RED	*	128		*	101		*	134		*	107											
YELLOW		129			102			135			108											
GREEN		130			103			136			109											
RED ARROW															A121	A124		A114	A101			
YELLOW ARROW	126			117			132			123					A122	A125		A115	A102			
FLASHING YELLOW ARROW															A123	A126		A116	A103			
GREEN ARROW	127	127		118	118		133	133		124	124											

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

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/ AUX
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S10,S11,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,3,4,5,6,7,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
U	∅ 1 1A	NOT USED	∅ 2/SYS 2A/S21	∅ 3 3A	∅ 4 4A	∅ 5 5A	∅ 6/SYS 6A/S23	∅ 7 7A	∅ 8 8A	∅ 9 9A	∅ 10 10A	∅ 11 11A	∅ 12 12A	∅ 13 13A	FS DC ISOLATOR
L	NOT USED	∅ 1 1B	∅ 2/SYS 2B/S22	NOT USED	NOT USED	∅ 5 5B	∅ 6/SYS 6B/S24	NOT USED	NOT USED	∅ 9 9B	∅ 10 10B	∅ 11 11B	∅ 12 12B	∅ 13 13B	ST DC ISOLATOR

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

FS = FLASH SENSE
 ST = STOP TIME

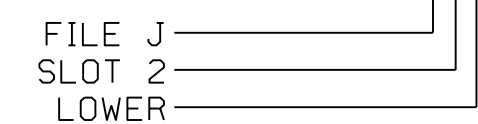
⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		N
	-	J4U	48	26	6	YES		3		G
1B	TB2-7,8	I2L	43	12	1	YES		15		N
2A/S21	TB2-9,10	I3U	63	32	2/SYS	YES			X	N
2B/S22	TB2-11,12	I3L	76	42	2/SYS	YES			X	N
3A ²	TB4-5,6	I5U	58	3	3	YES		15		N
	-	J8U	50	28	8	YES		2		N
4A	TB6-1,2	I7U	65	34	4	YES				N
5A ³	TB3-1,2	J1U	55	5	5	YES		15		N
	-	I4U	47	22	2	YES		3		G
5B	TB3-7,8	J2L	44	16	5	YES		15		N
6A/S23	TB3-9,10	J3U	64	36	6/SYS	YES			X	N
6B/S24	TB3-11,12	J3L	77	46	6/SYS	YES			X	N
7A ⁴	TB5-5,6	J5U	57	7	7	YES		15		N
	-	I8U	49	24	4	YES		2		N
8A	TB7-1,2	J7U	66	38	8	YES				N

- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

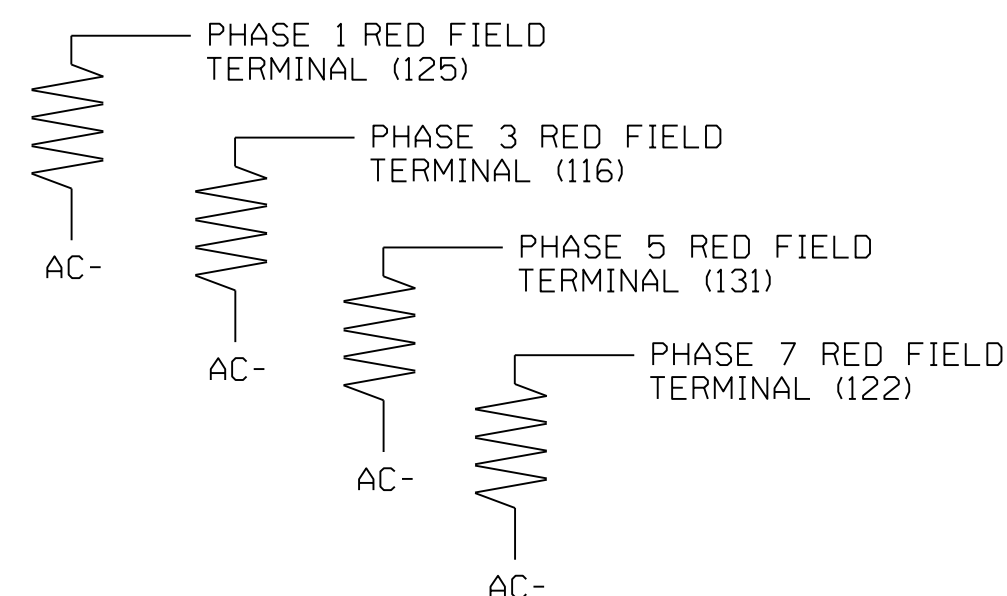
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

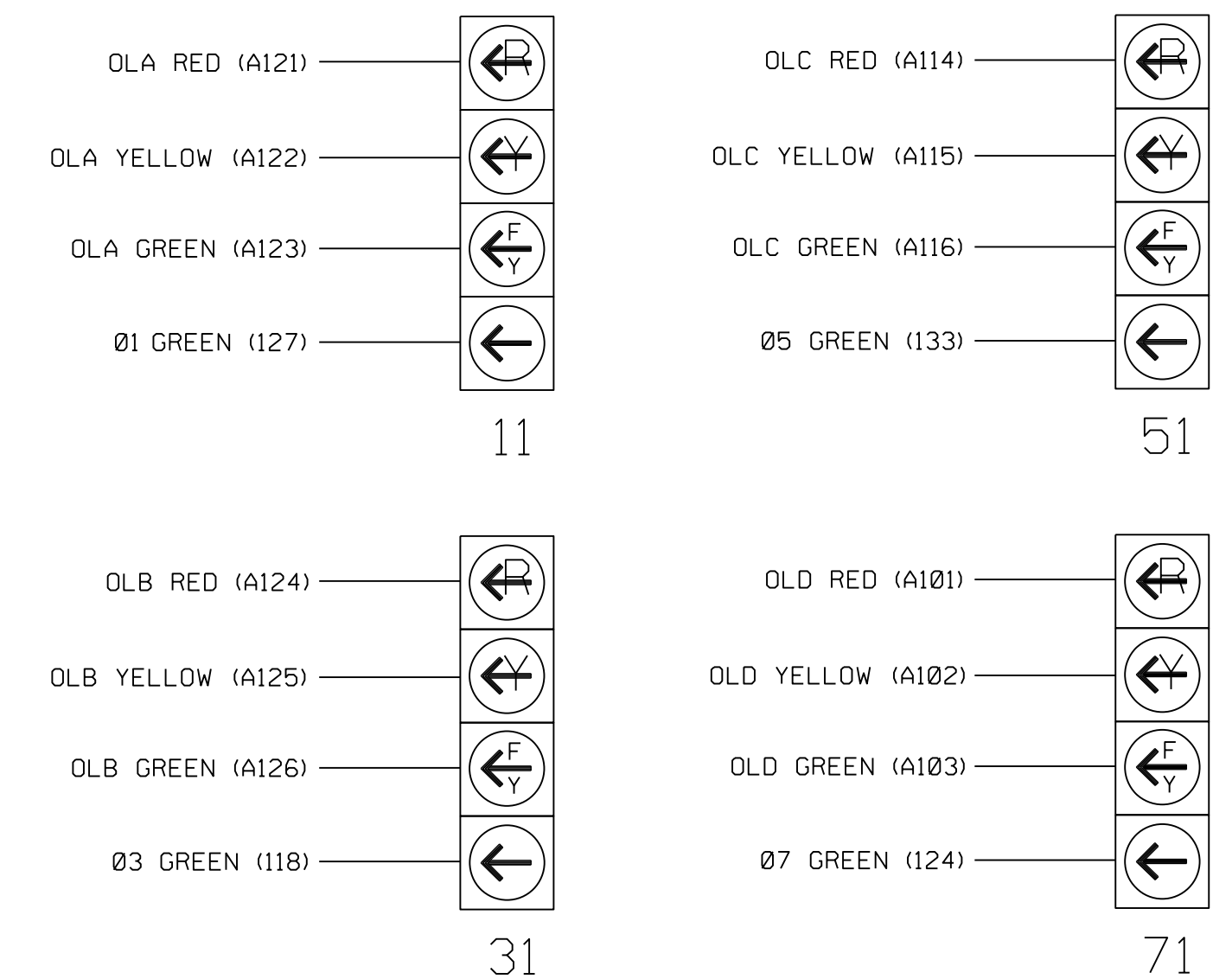
(install resistors as shown below)

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



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1273
 DESIGNED: January 2014
 SEALED: 05/15/20
 REVISED:

ELECTRICAL DETAIL SHEET 1 OF 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

Prepared for the Offices of:
 NORTH CAROLINA PROFESSIONAL ENGINEERS
 MATTHEW B. COPPLE

NC 130 (Love Mill Road) at SR 1973 (Leslie Newsome Ave.) / Entrance to Lowe's

Division 6 Columbus County Whiteville

PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe

PREPARED BY: M. Copple REVIEWED BY:

REVISIONS INIT. DATE

SIGNATURE DATE

SIG. INVENTORY NO. 06-1273

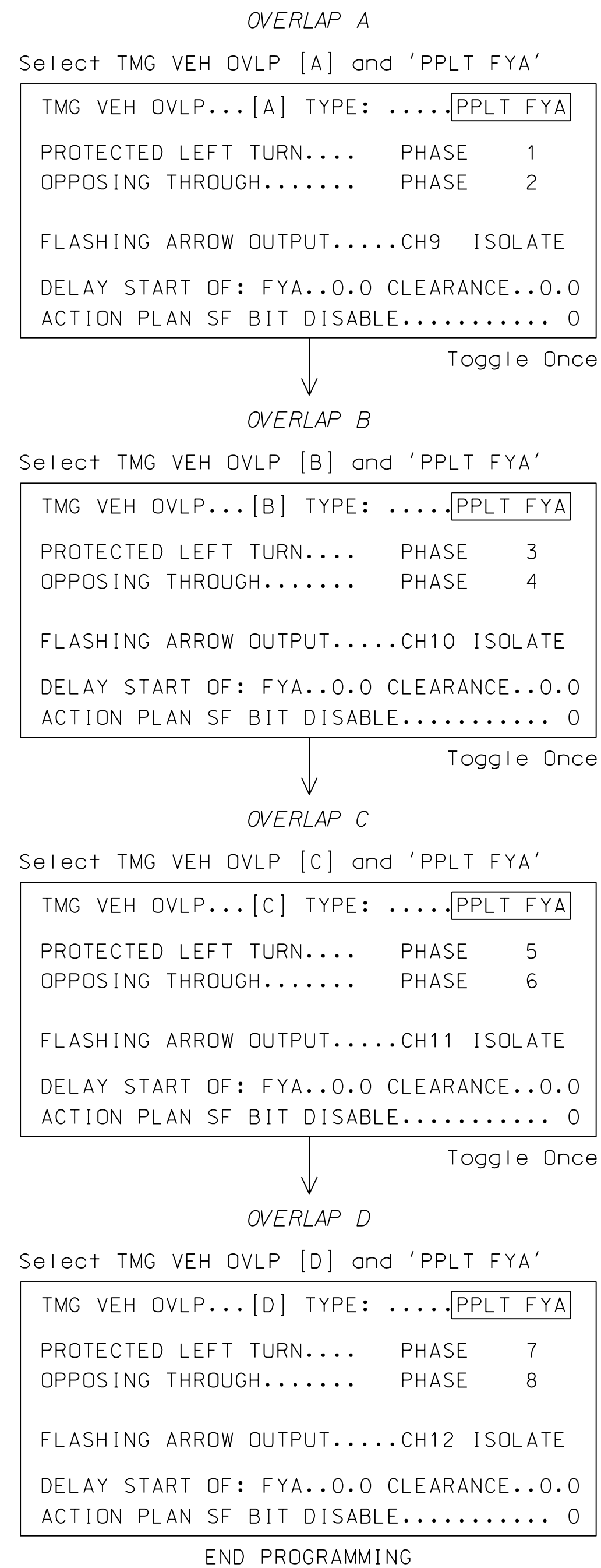
SEPI
 Engineering & Construction, Inc.

1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
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 License: C-2197

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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



FLASHER CIRCUIT MODIFICATION DETAIL

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

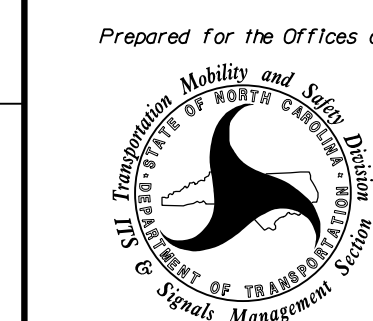
1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-1273
DESIGNED: January 2014
SEALED: 05/15/20
REVISED:

ELECTRICAL DETAIL SHEET 2 OF 2

ELECTRICAL AND PROGRAMMING
DETAILS FOR:



NC 130 (Love Mill Road) at SR 1973 (Leslie Newsome Ave.)/ Entrance to Lowe's	
Division 6 Columbus County Whiteville	
PLAN DATE: APRIL 2020	REVIEWED BY: J. Rowe
PREPARED BY: M. Copple	REVIEWED BY:
REVISIONS	INIT. DATE

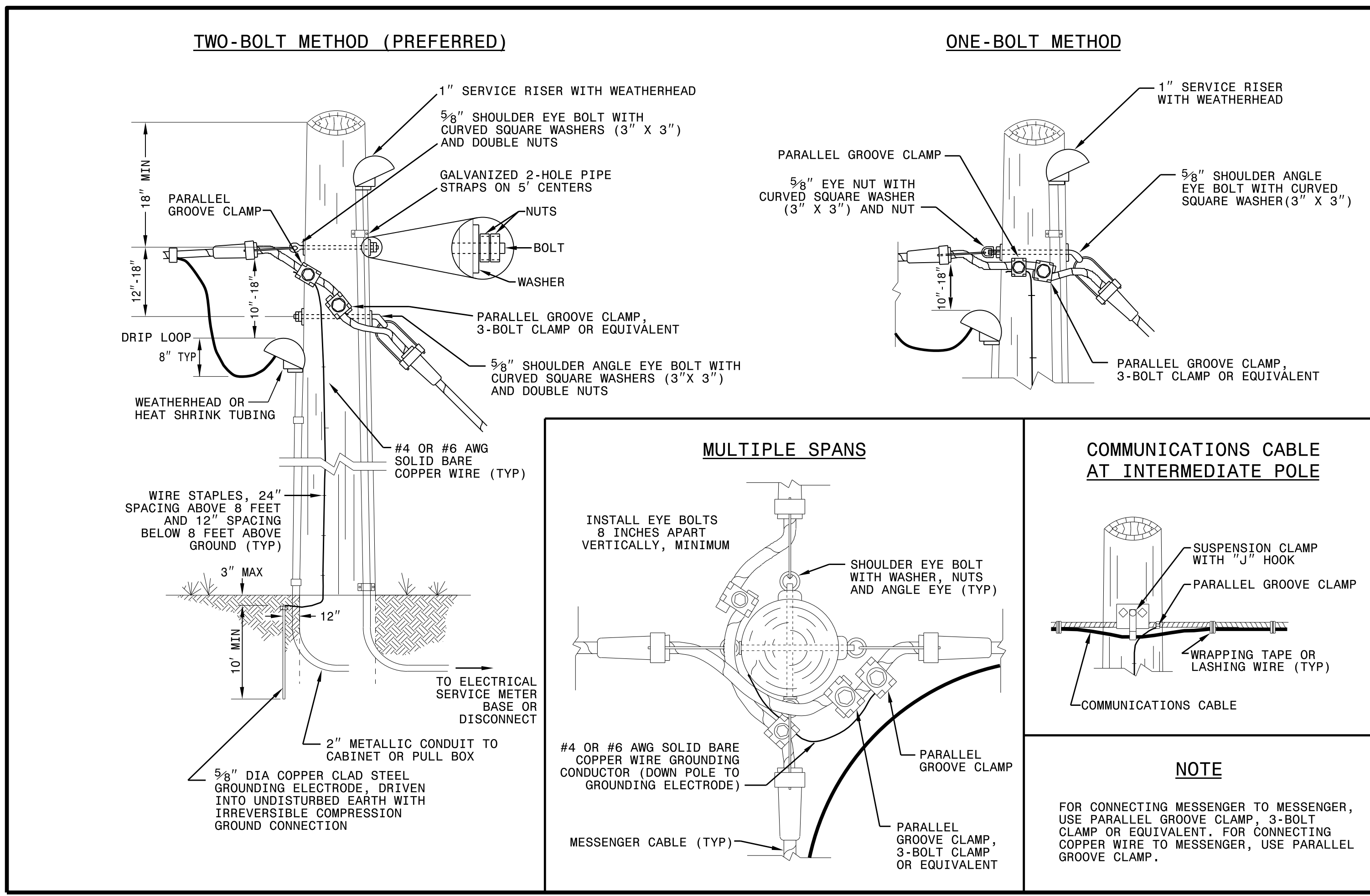
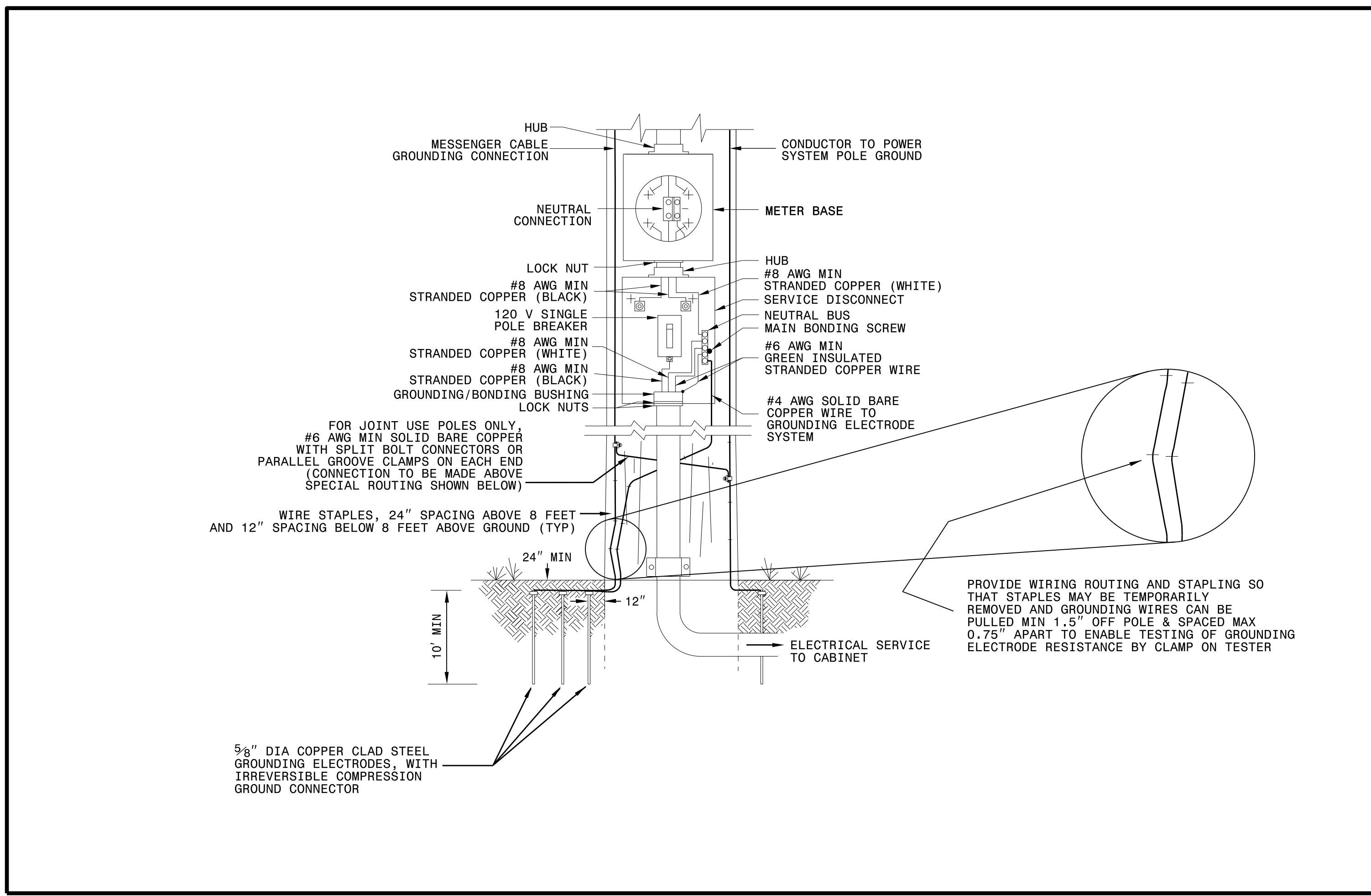
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SIGNATURE DATE
SIG. INVENTORY NO. 06-1273



1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

750 N. Greenfield Pkwy, Garner, NC 27529



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See Plate for Title

Prepared in the Offices of:

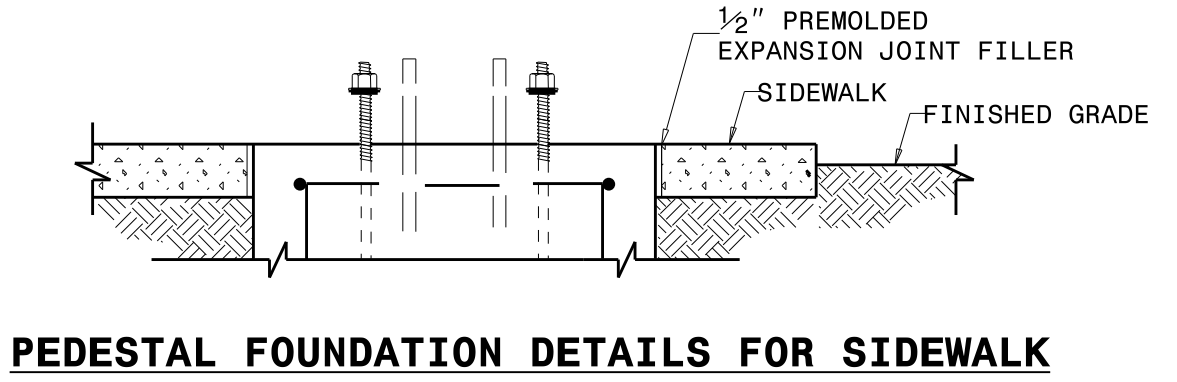
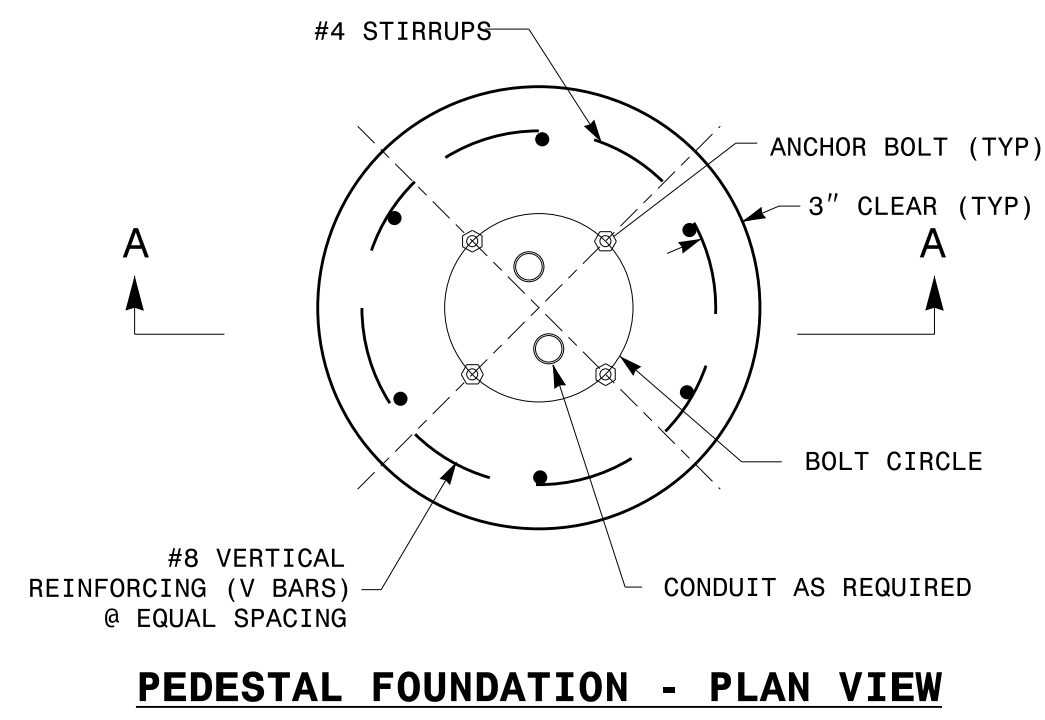
SEAL

DocuSigned by:
Mohd Aslami

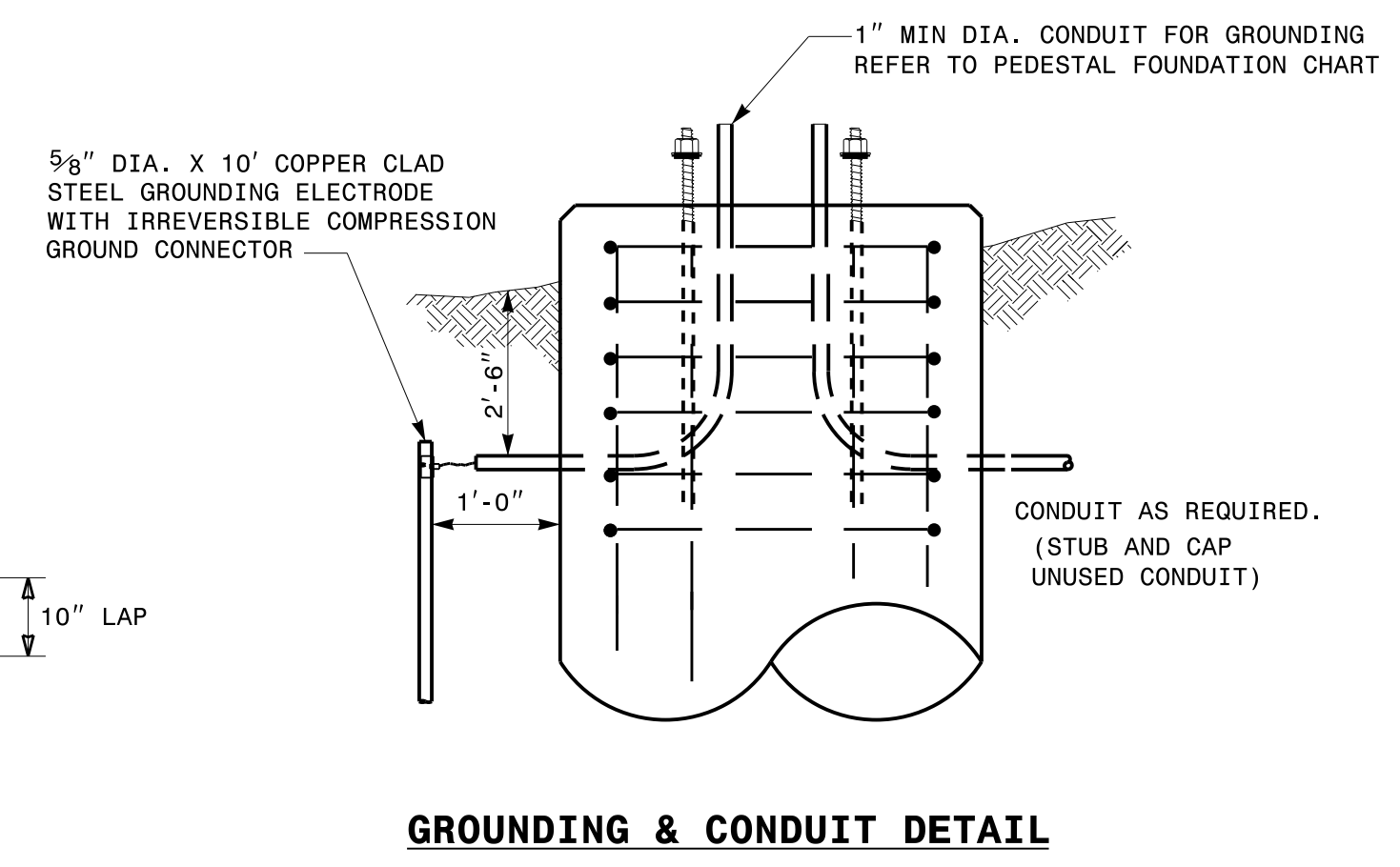
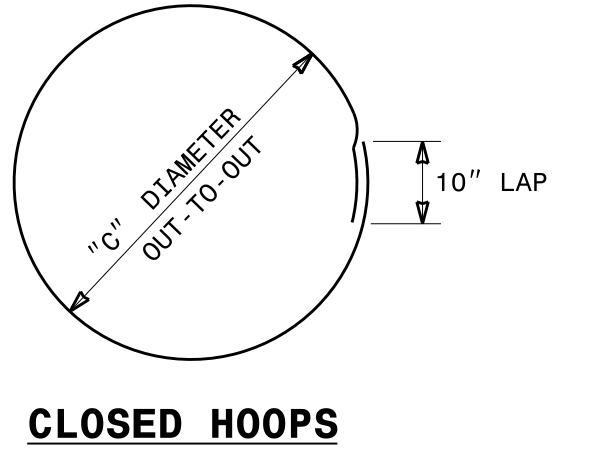
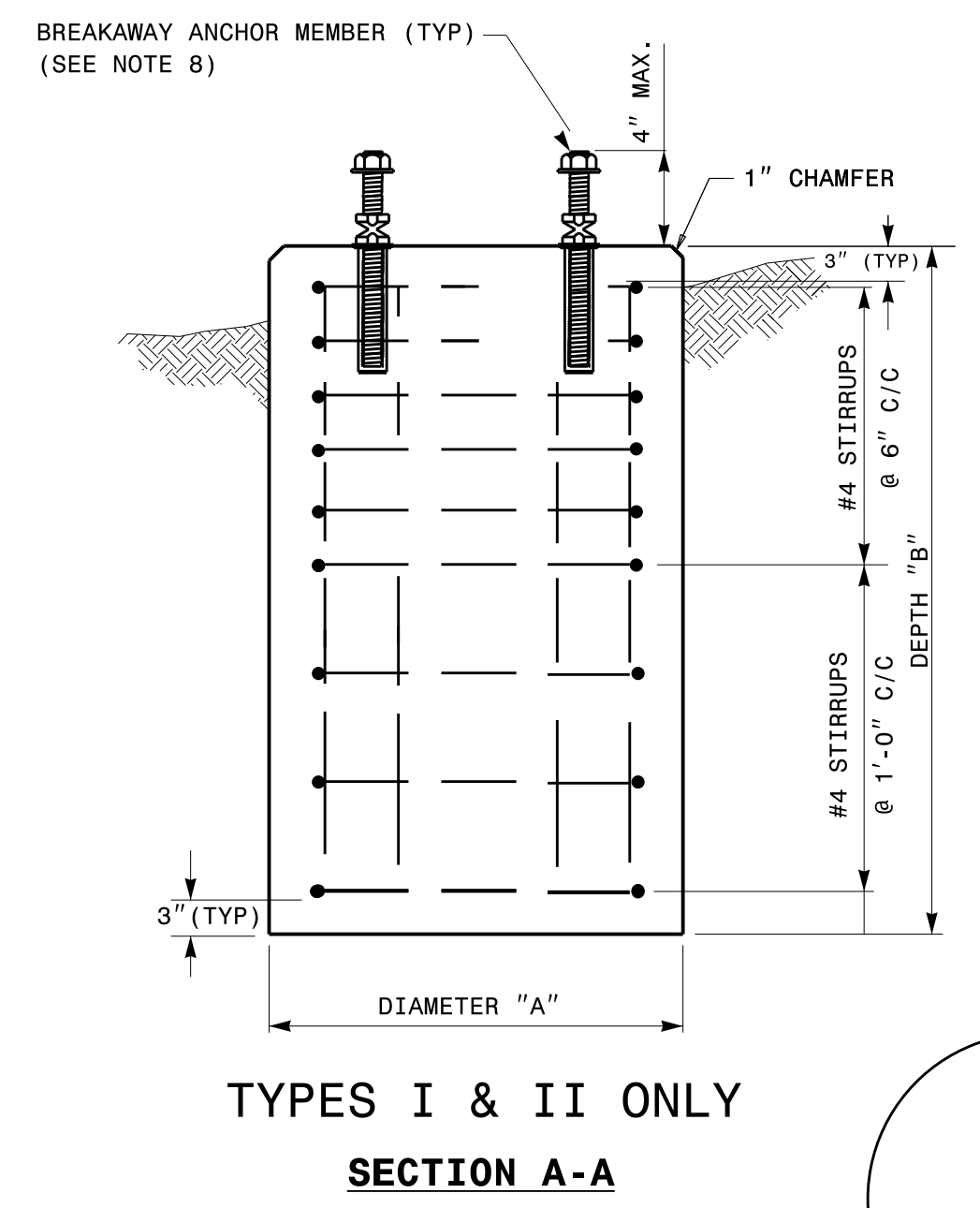
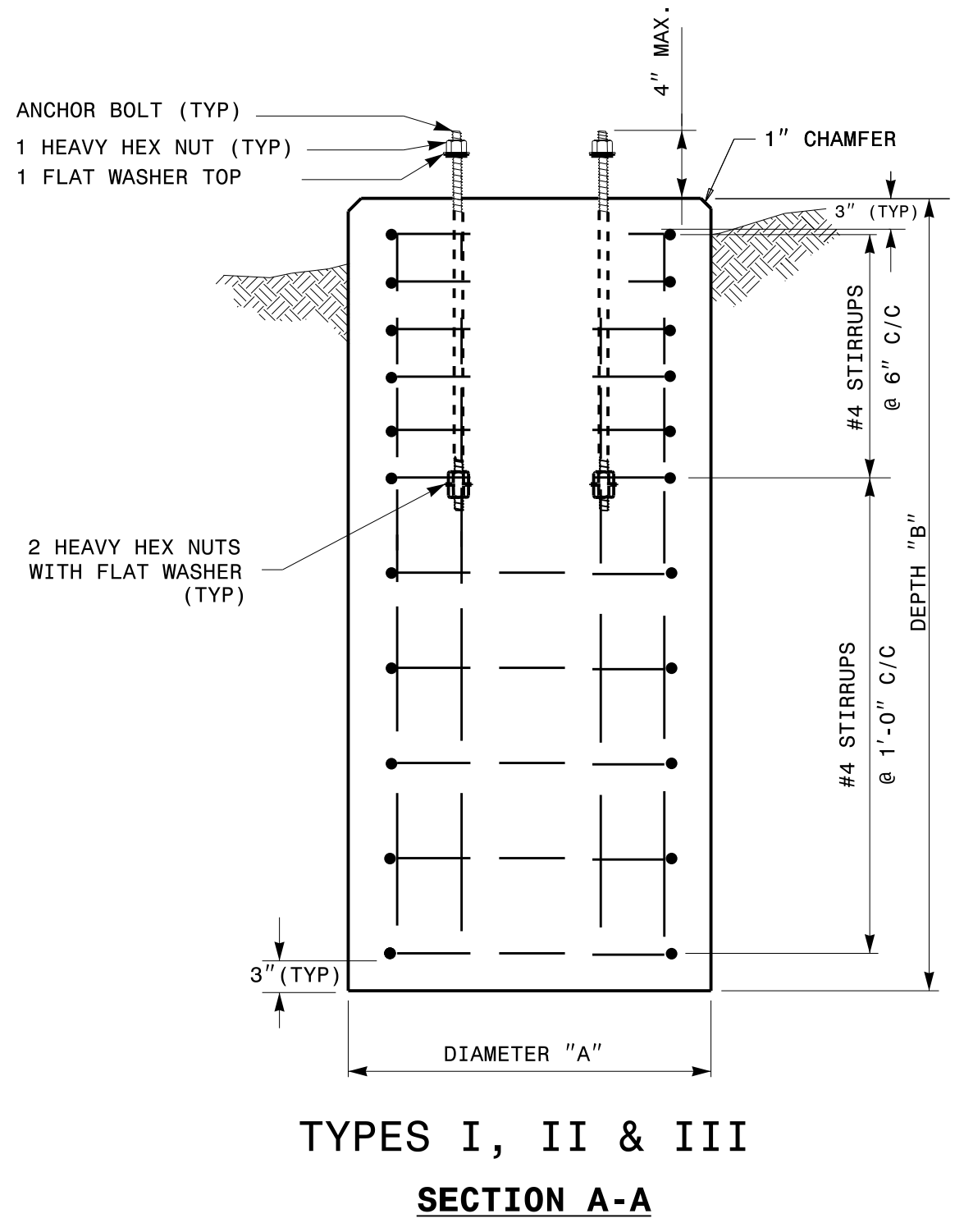
750 N. Greenfield Parkway
Garner, NC 27529

10/11/2017
DATE

11-0CT-2017_08-56
11-2018_S14_DrawingPlate_Sheets2018_Plate_Sheet.dgn
r:\rough



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



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

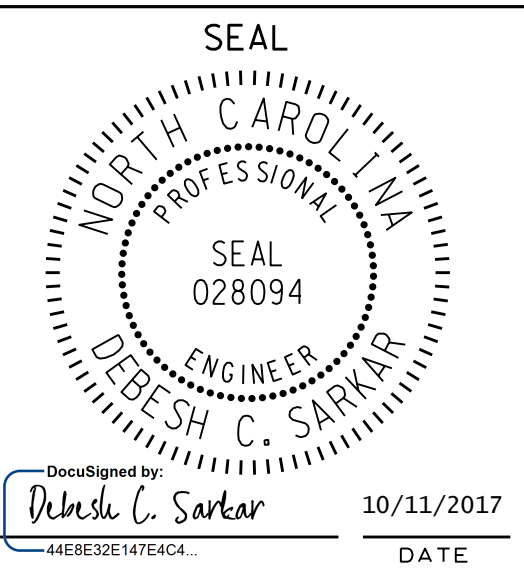
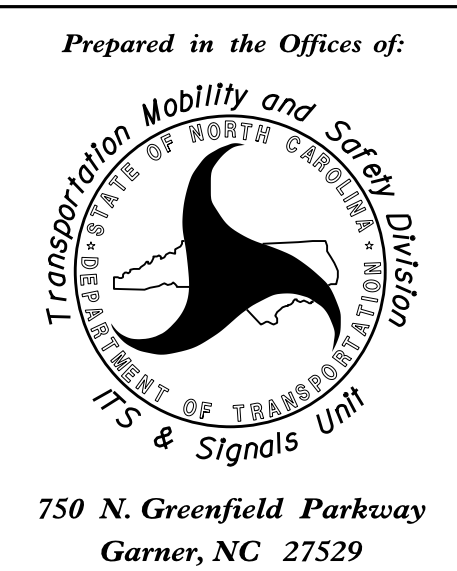
REINFORCING STEEL SCHEDULE												
TYPE	V-BAR				STIRRUP							
	SIZE #	QTY	LENGTH	WEIGHT LBS	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS
					VERTICAL SPACING ON 6" CENTERS	ON 12" CENTERS	TOTAL					
I	8	6	3'-0"	56	4	0	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86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

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

ENGLISH STANDARD DRAWING FOR
PEDESTALS
FOUNDATIONS

SHEET 1 OF 1
1743D01

See Plate for Title



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

750 N. Greenfield Parkway
Garner, NC 27529

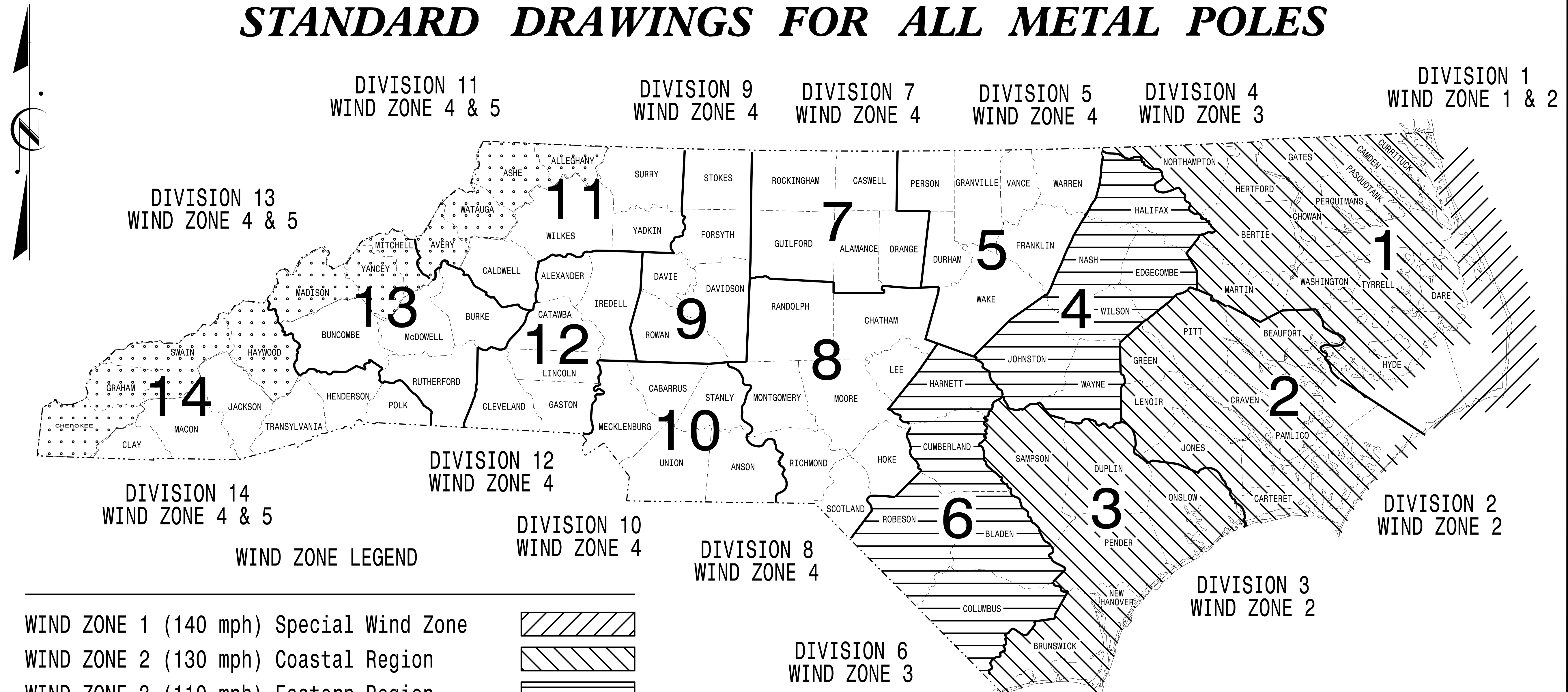
Disc Signed by: *Debesh C. Sarkar*
10/11/2017
DATE

11-10CT-2017_08c03
11-2018_S14 Drawings#Plate_Sheets#2018_Plate_Sheet - .dgn
r:\rough

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

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

STANDARD DRAWINGS FOR ALL METAL POLES



WIND ZONE LEGEND

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

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

Prepared In the Offices of:

750 N. Greenfield Pkwy.
Garner, NC 27529

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

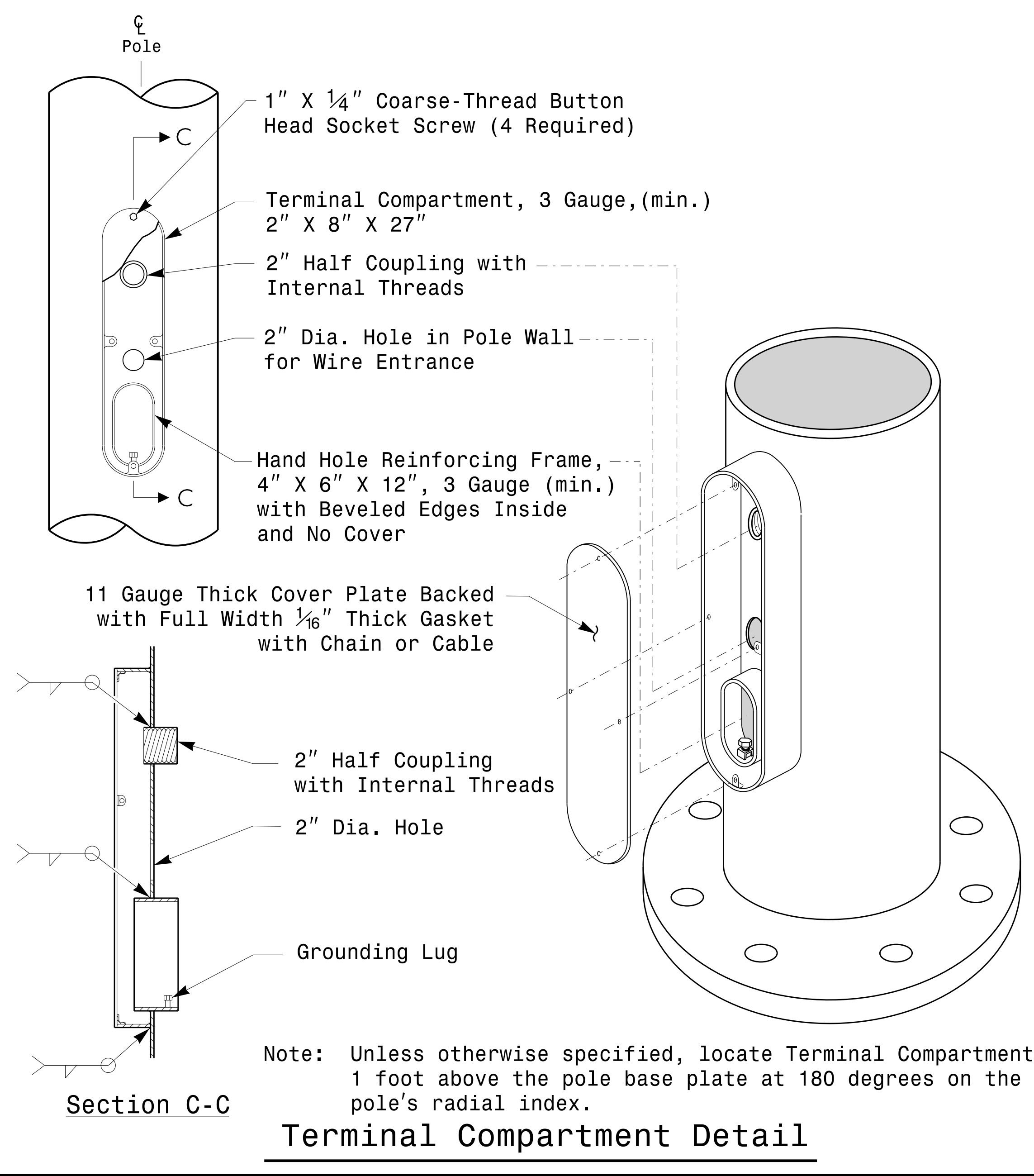
M.M. MCDIARMID, P.E. - STATE ITS AND SIGNALS ENGINEER

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

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

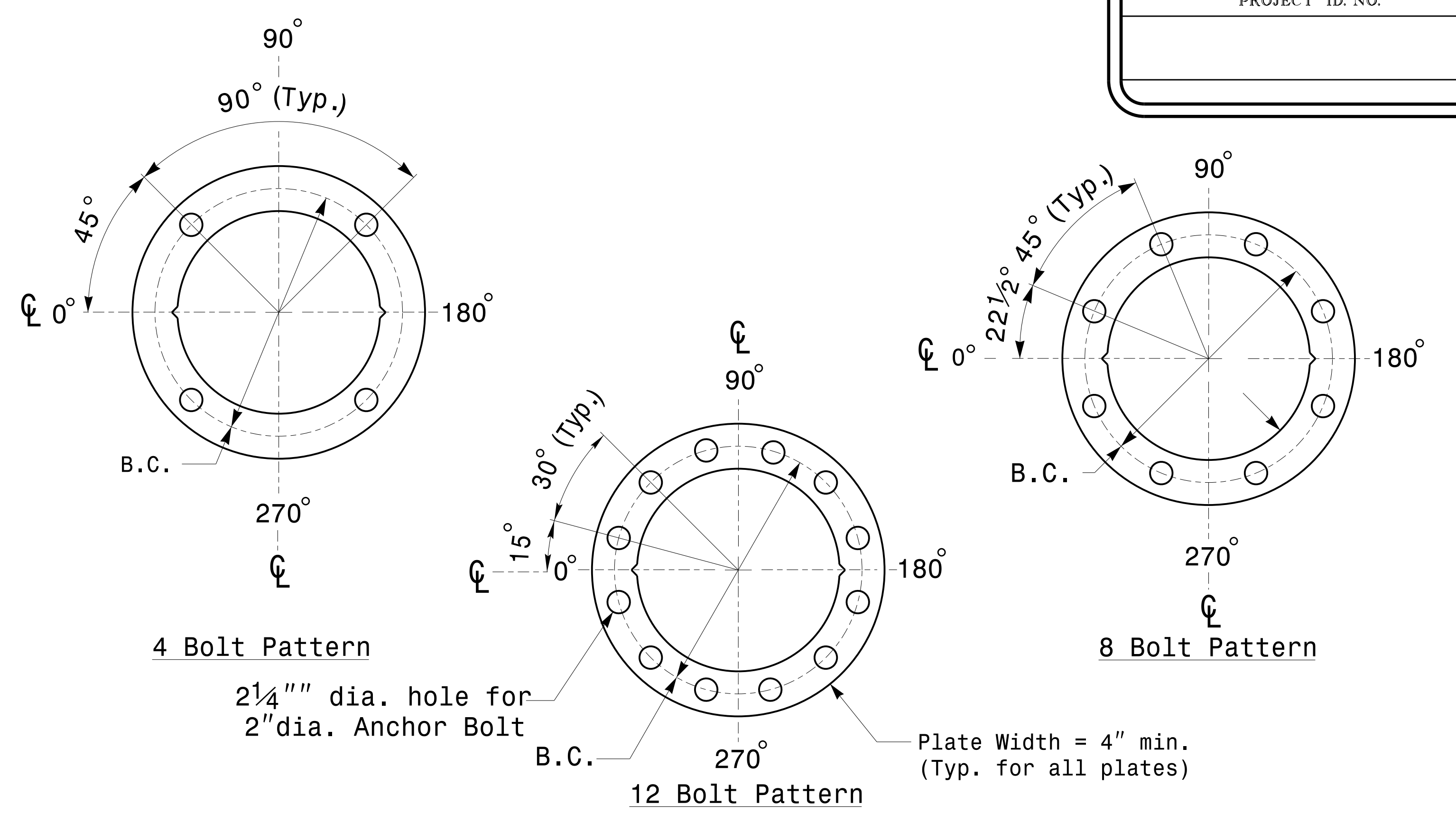
SEAL

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 _____	SECTION D/T/L/Y _____
ARM-A D/T/L/Y _____	NCDOT SIG. INV. NO. _____
ARM-B D/T/L/Y _____	NCDOT POLE NO. _____
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)

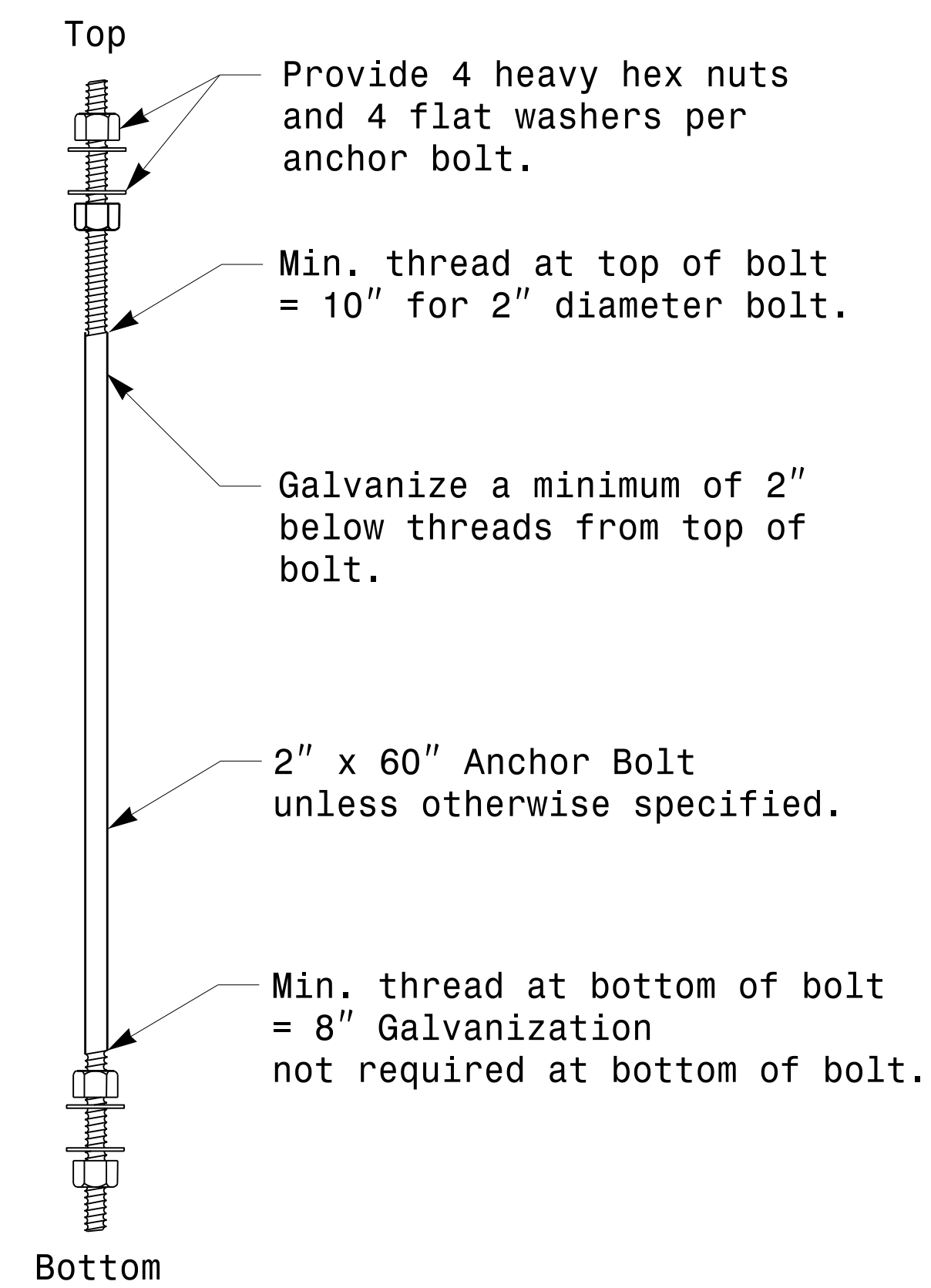
Notes:

- 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.

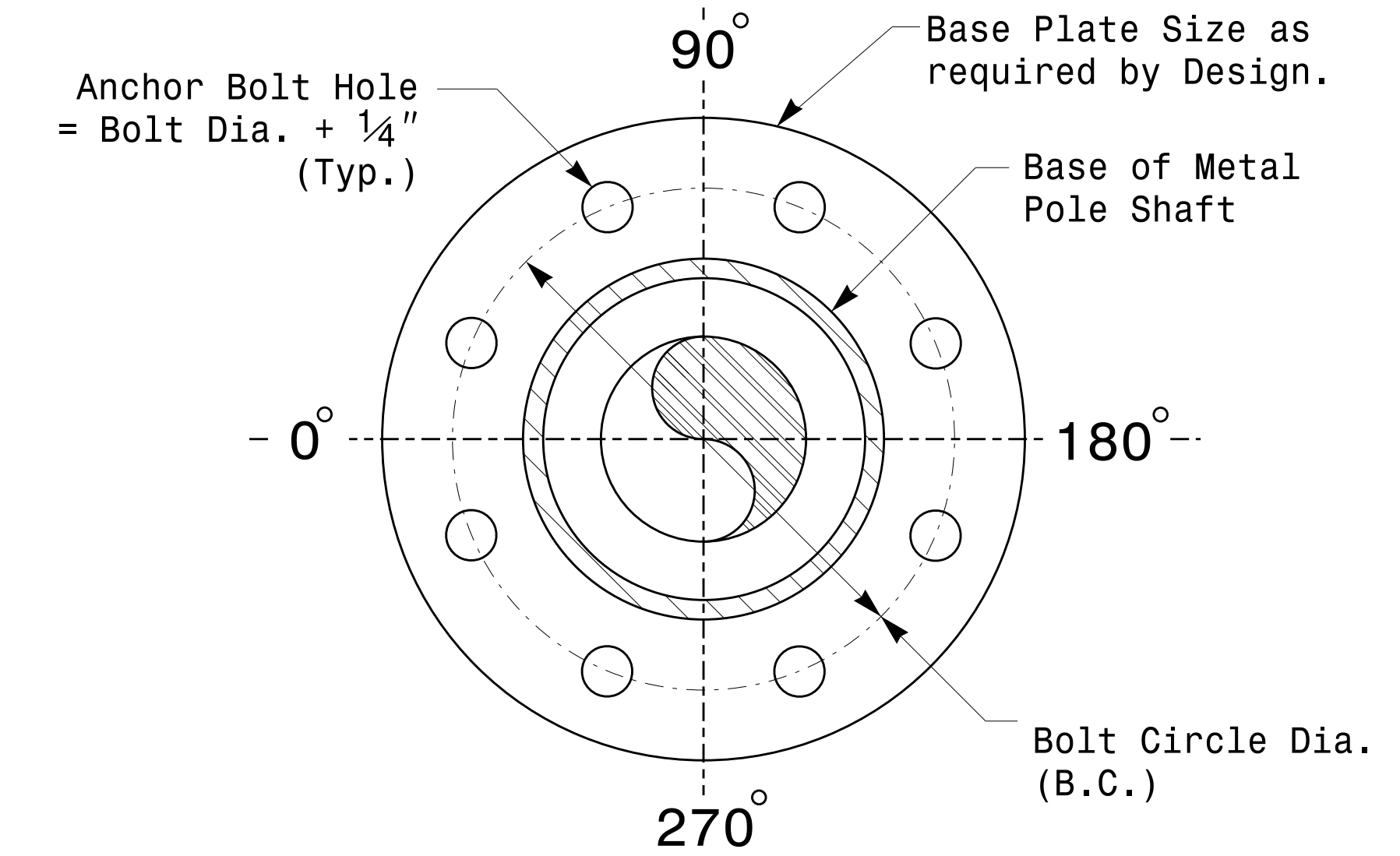
Identification Tag Details

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

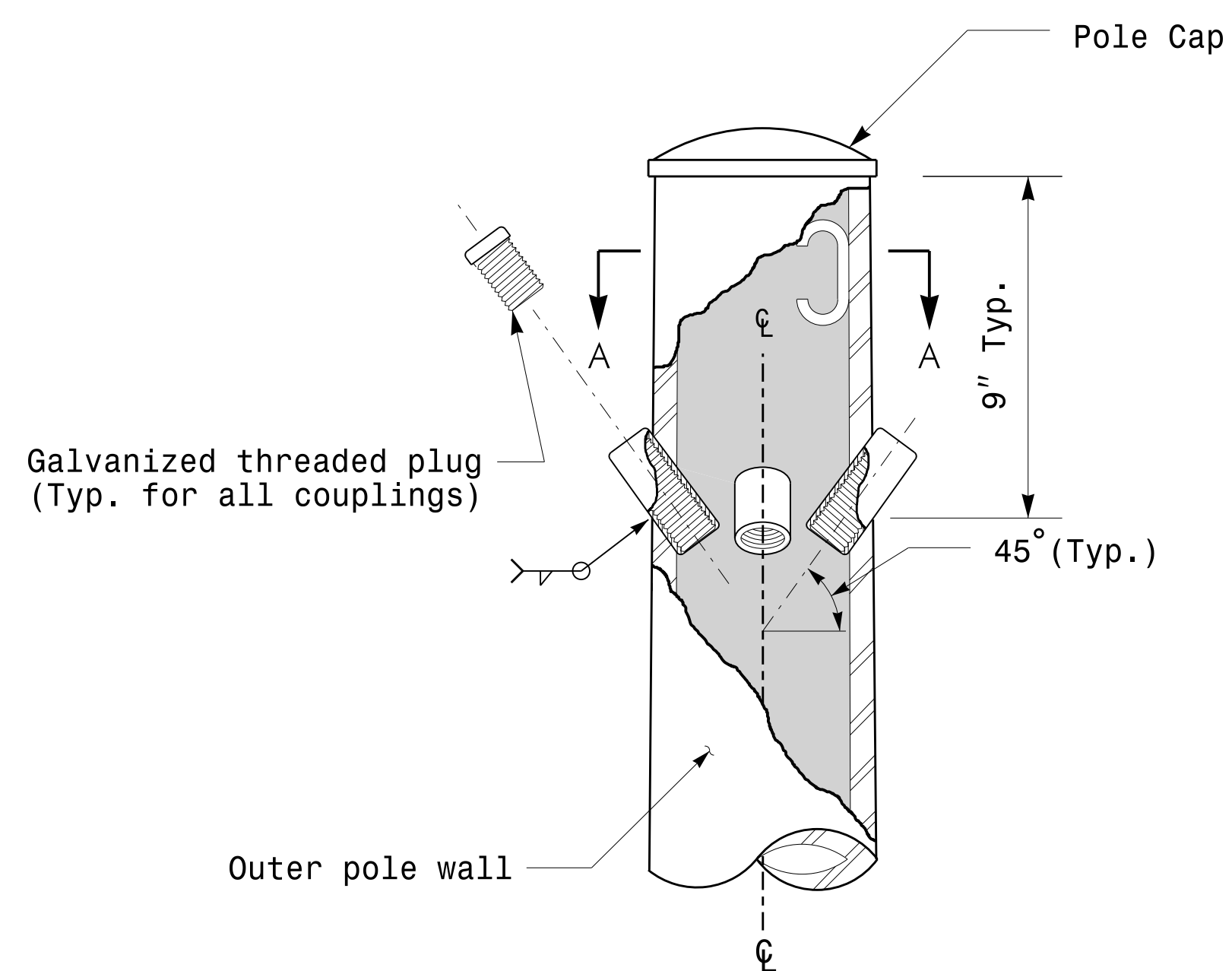
Typical Fabrication Details For All Metal Poles	
PLAN DATE: OCTOBER 2017	DESIGNED BY: C.F. ANDREWS
PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR
REVISIONS	INITIALS DATE

SEAL

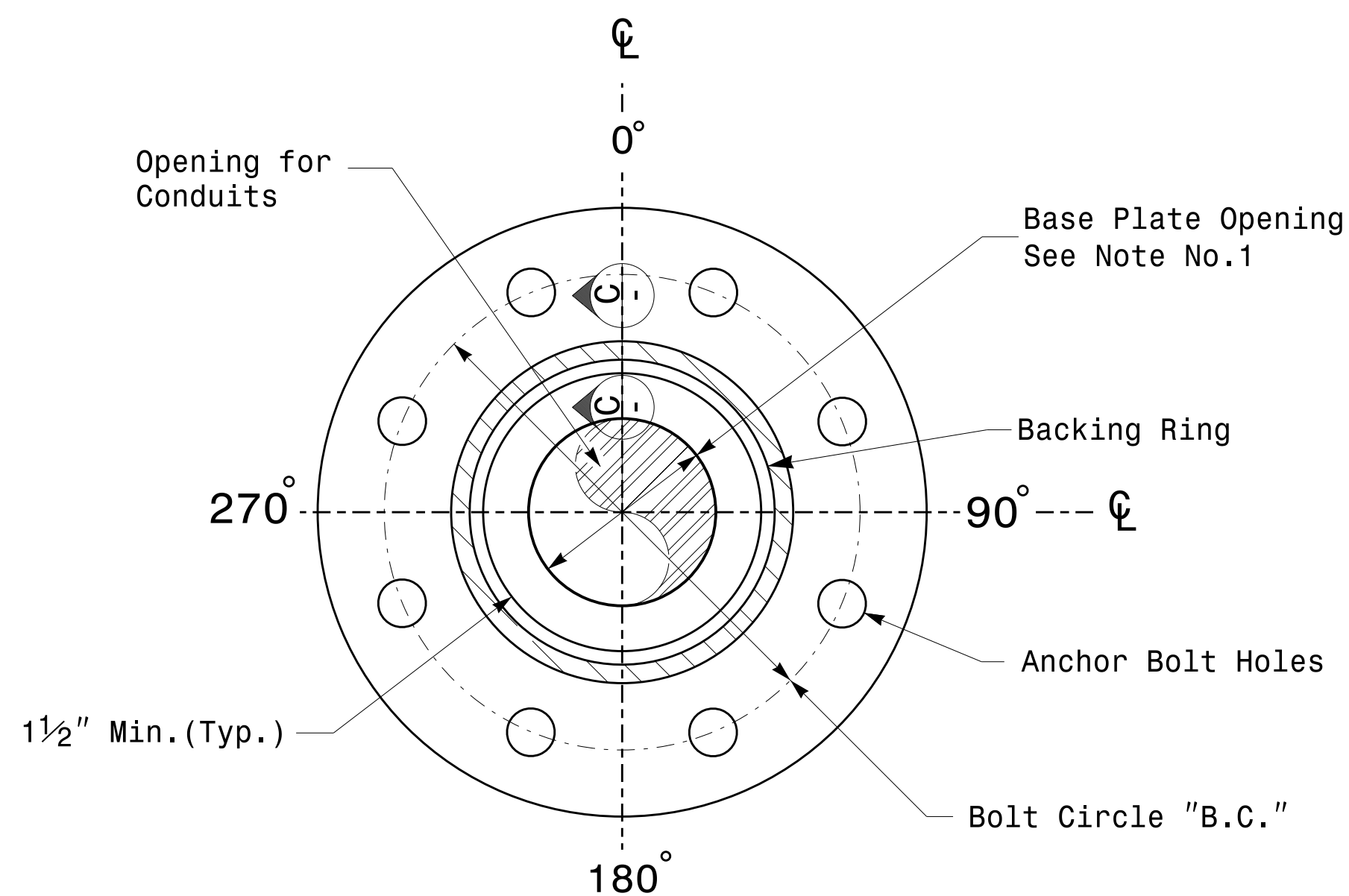
 DocuSign by: *D. Sarkar*
 10/11/2017 DATE

Fabrication Details – All Metal Poles

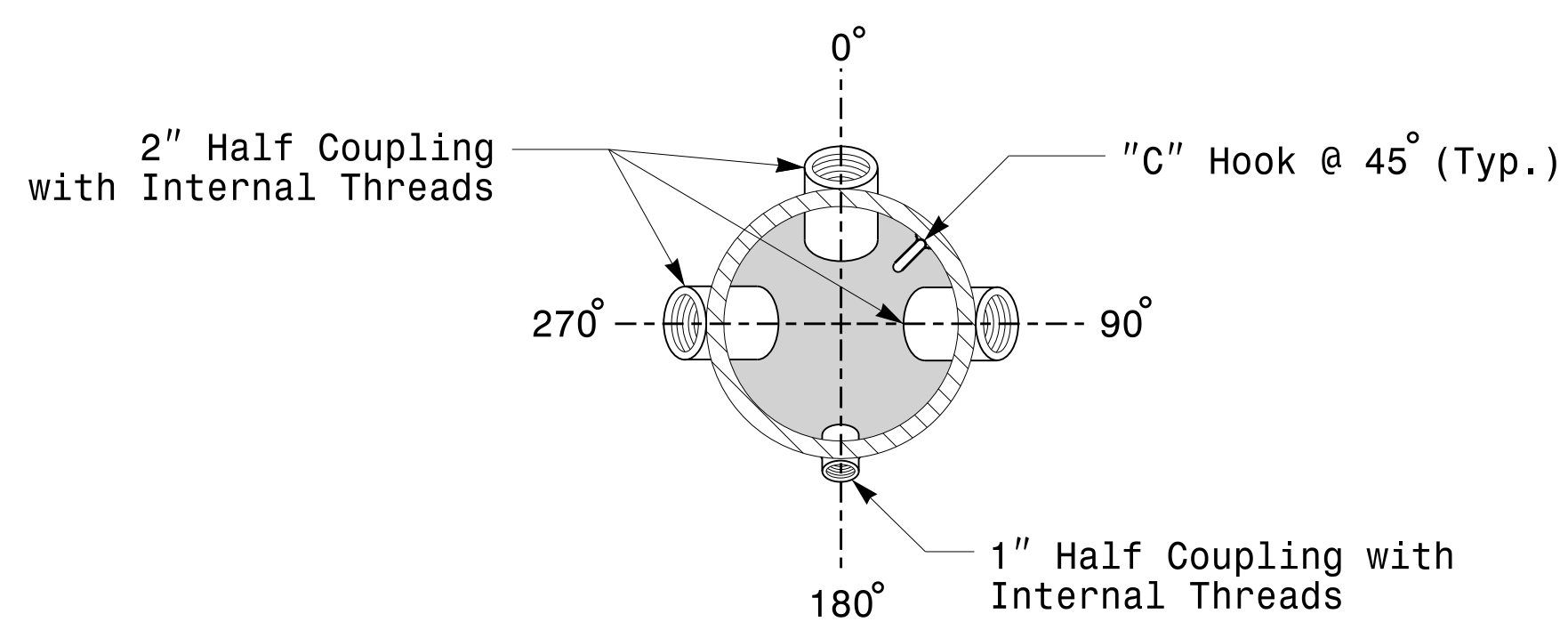
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



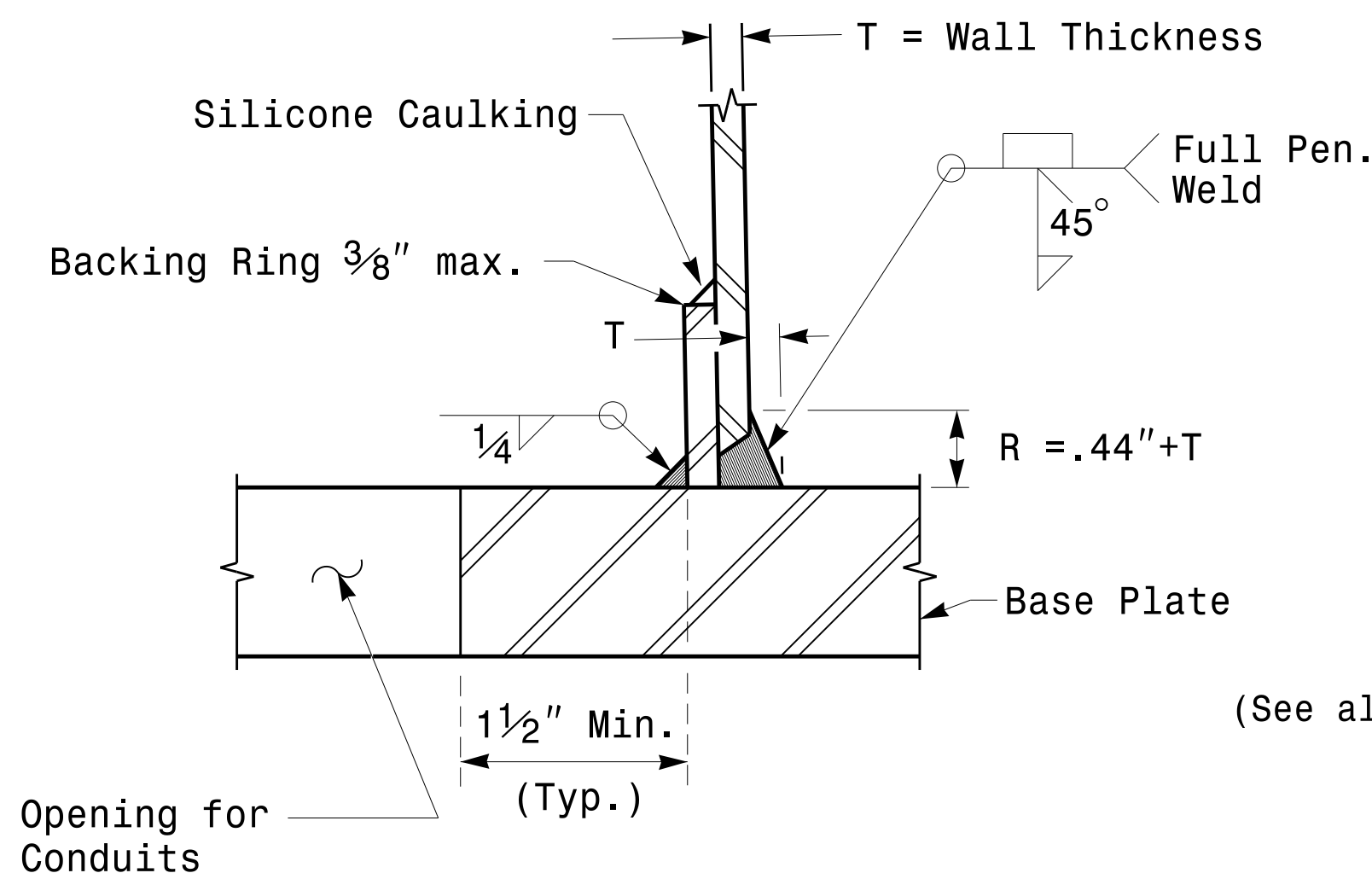
Cable Entrances at Top of Pole



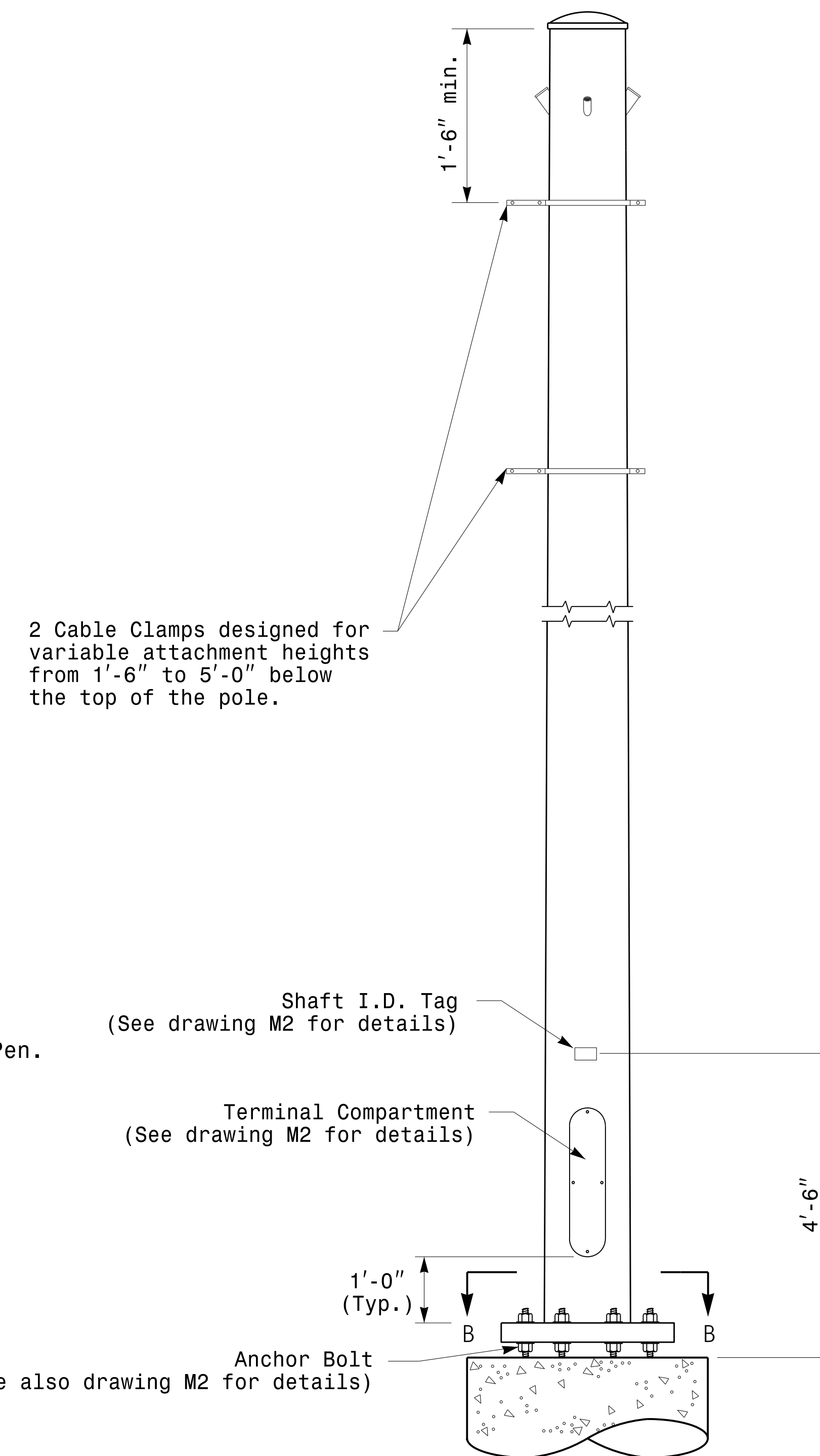
Section B-B
Pole Base Plate Details
(8 and 12 Bolt Pattern)



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. Greenleaf Pkwy, Garner, NC 27529

Typical Fabrication Details For Strain Poles

PLAN DATE: OCTOBER 2017	DESIGNED BY: K.C. DURIGON
PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR
REVISIONS	INIT. DATE

SEAL

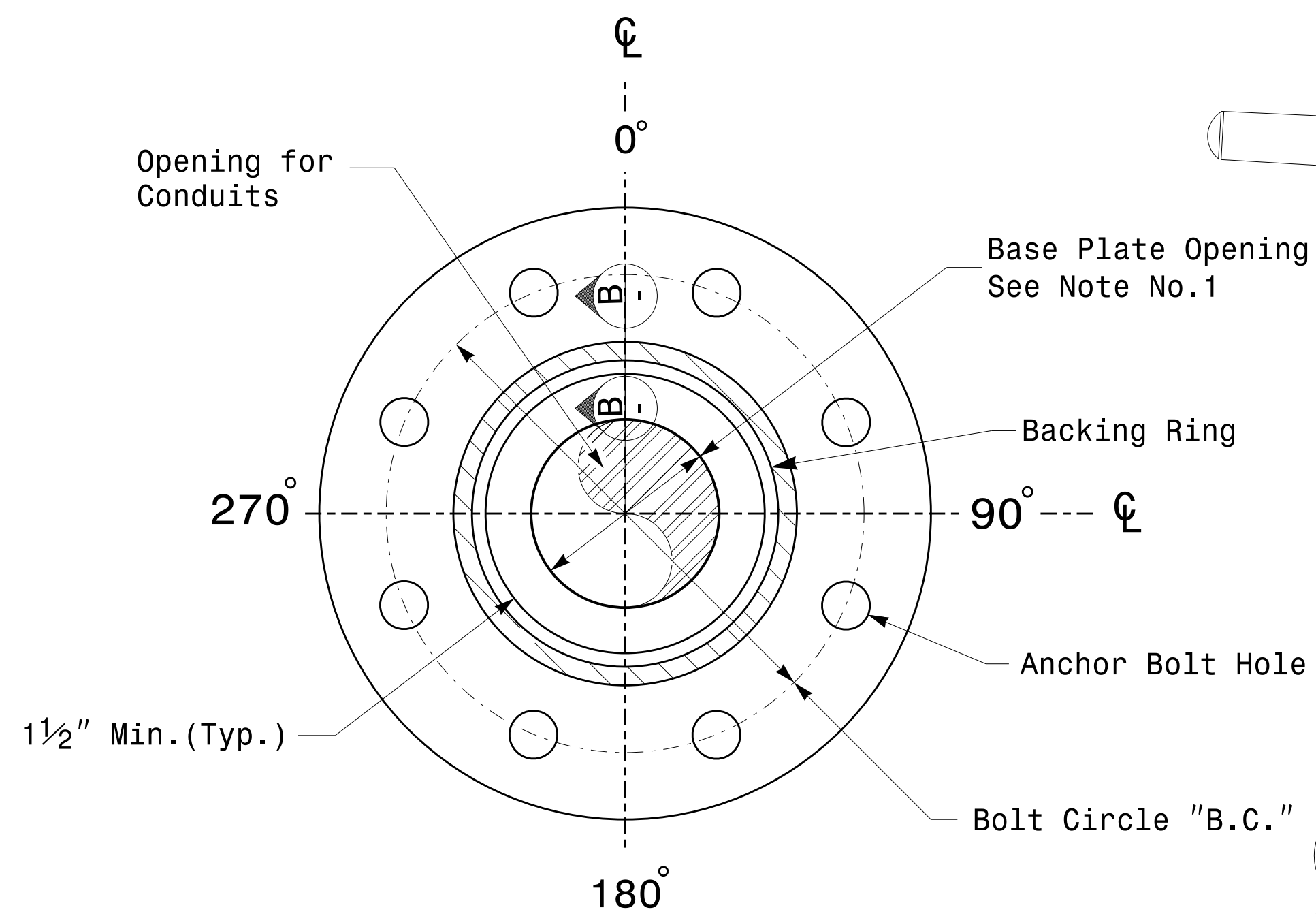
 SEAL 028094
 ENGINEER
 D.C. SARKAR

DocuSigned by:
 Debesh C. Sarkar

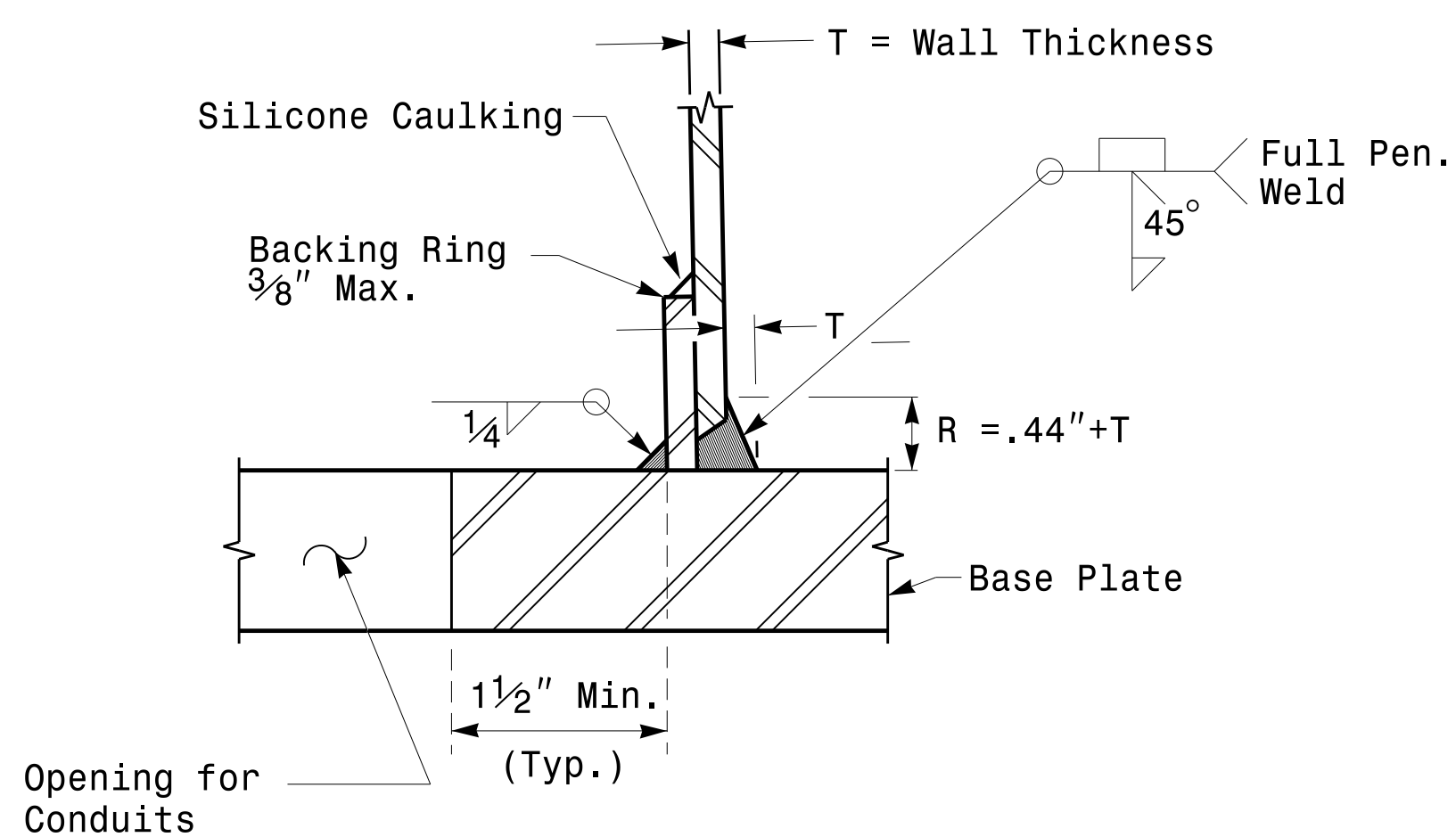
10/11/2017
 DATE

Fabrication Details – Strain Poles

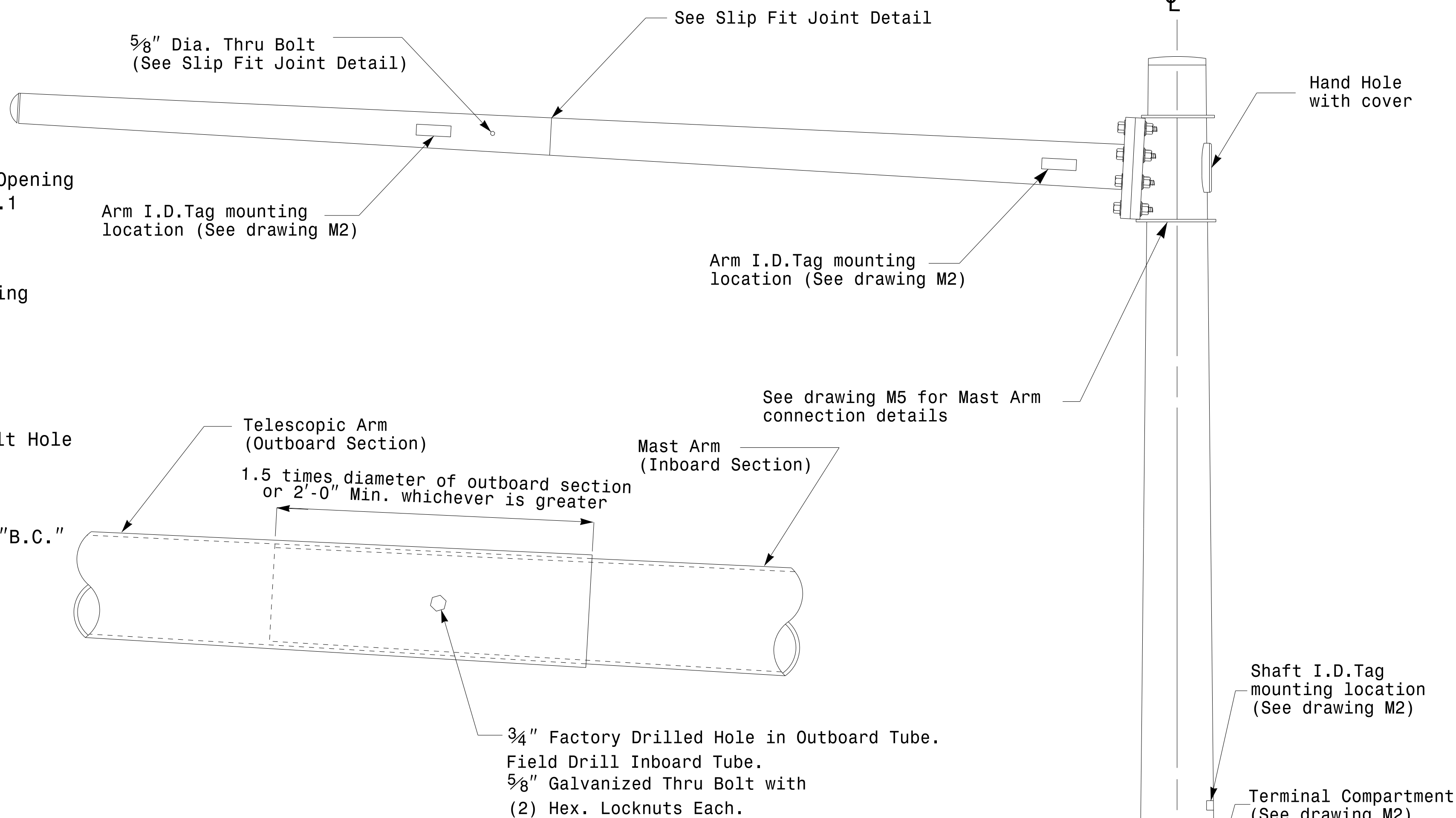
Note:
1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



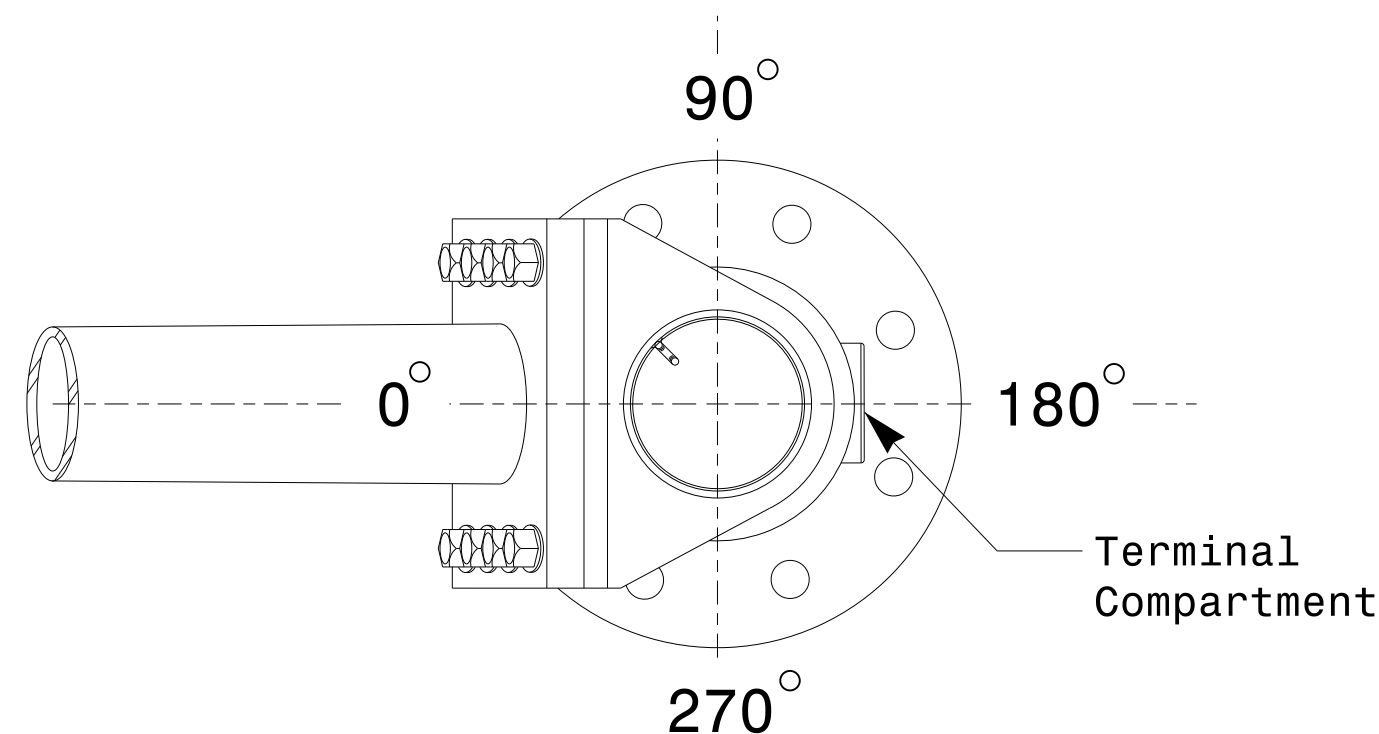
Section A-A
Pole Base Plate Details



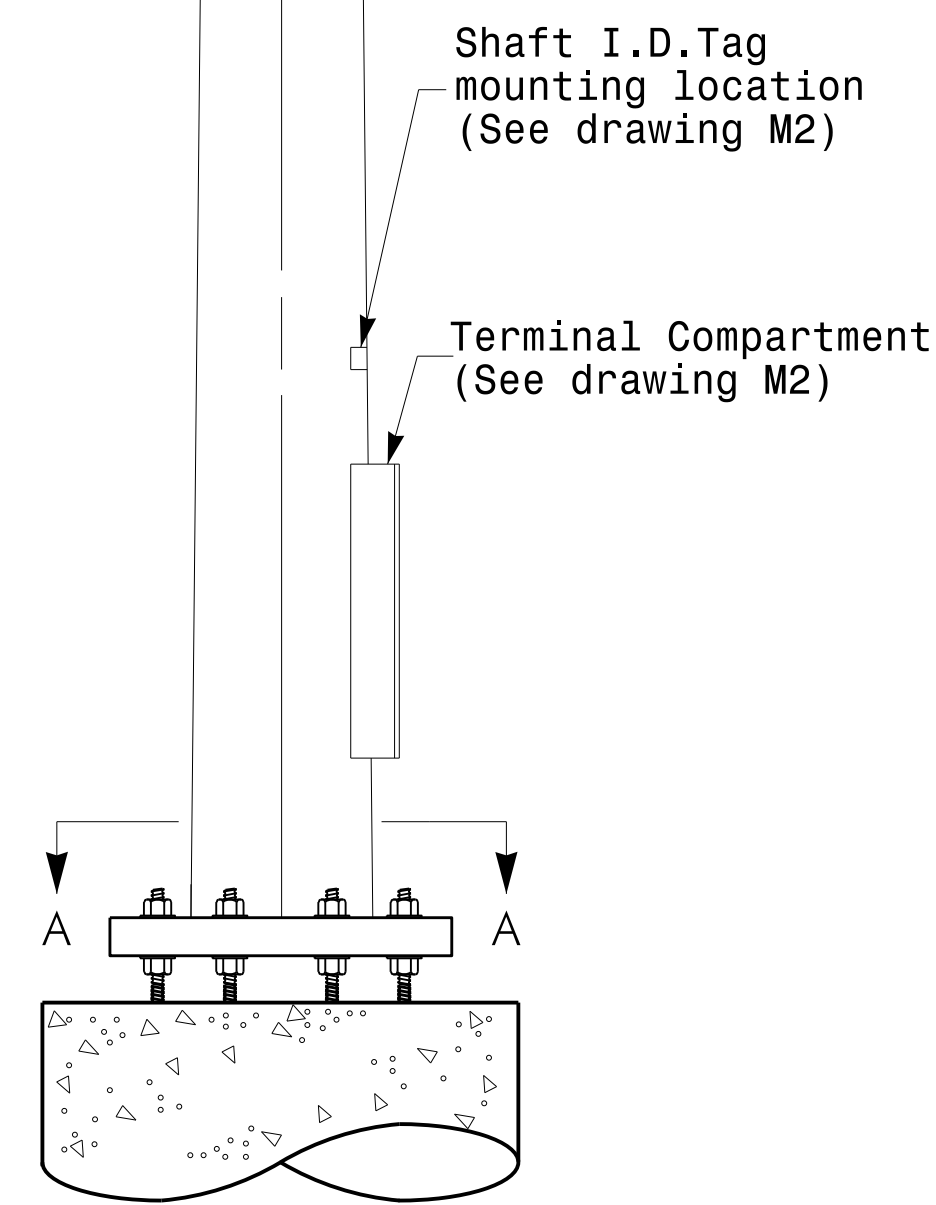
Section B-B
(Pole Attachment to Base Plate)
Full-Penetration Groove Weld Detail



Slip Fit Joint Detail for Mast Arm



Mast Arm Radial Orientation



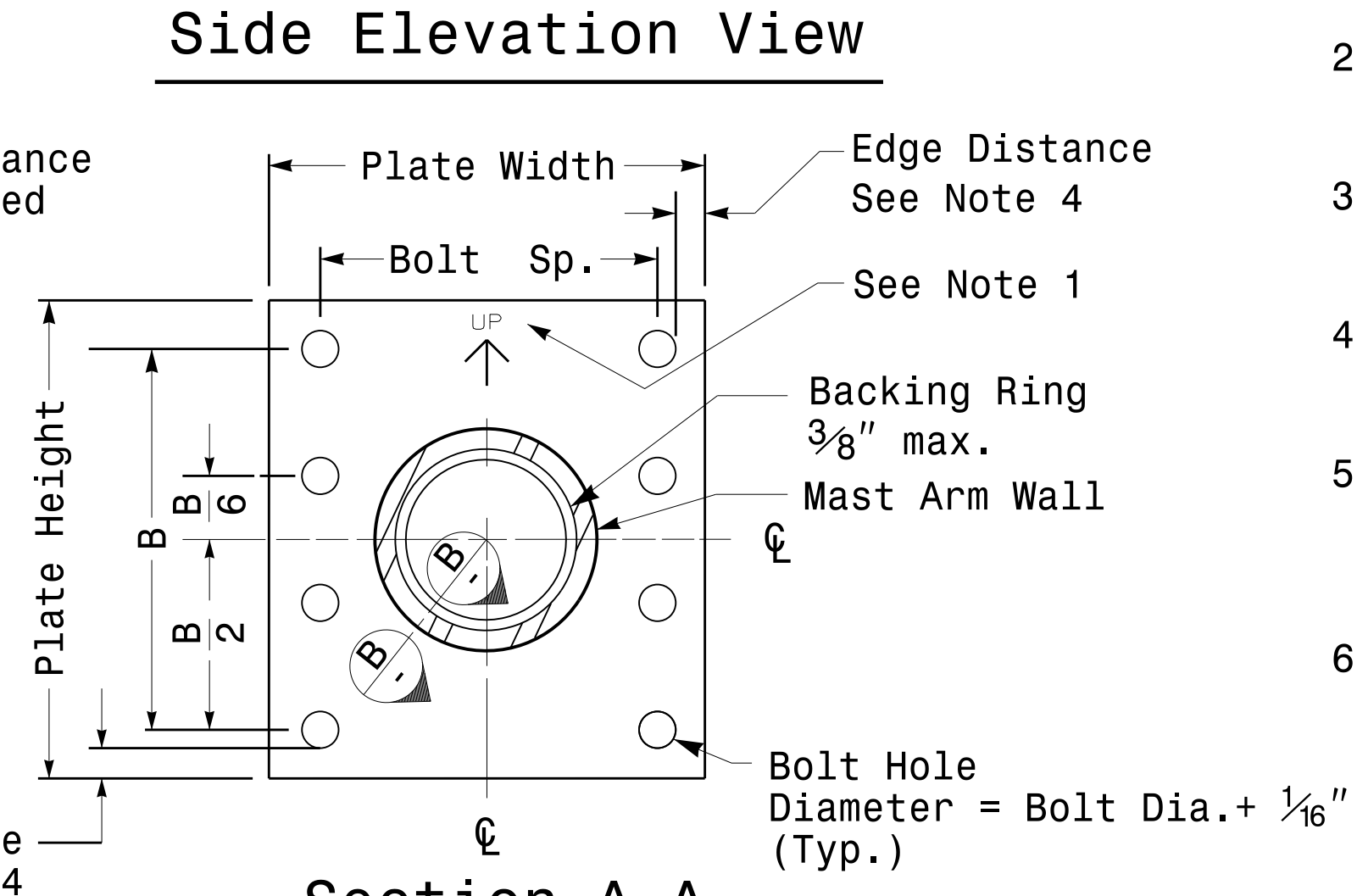
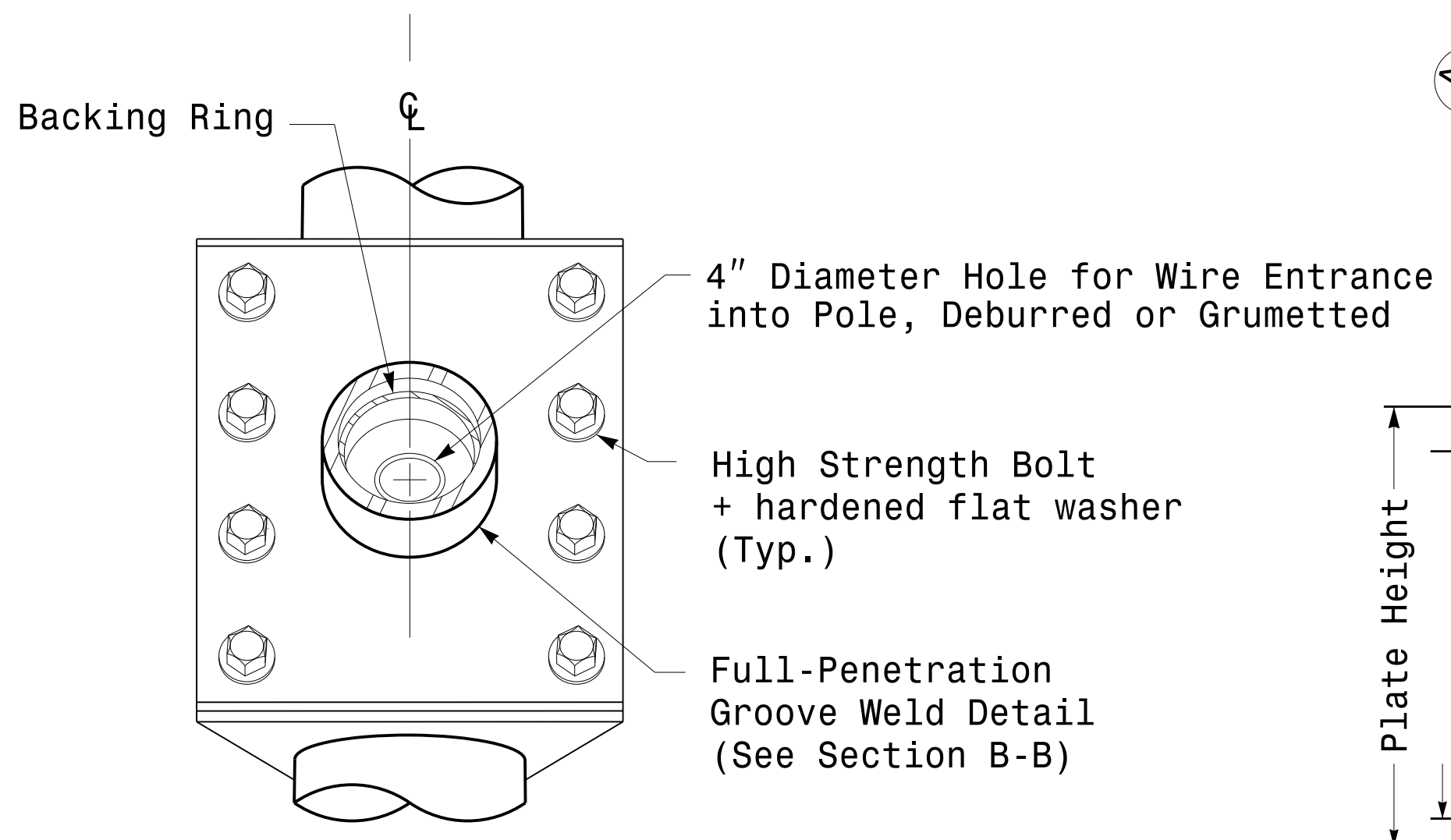
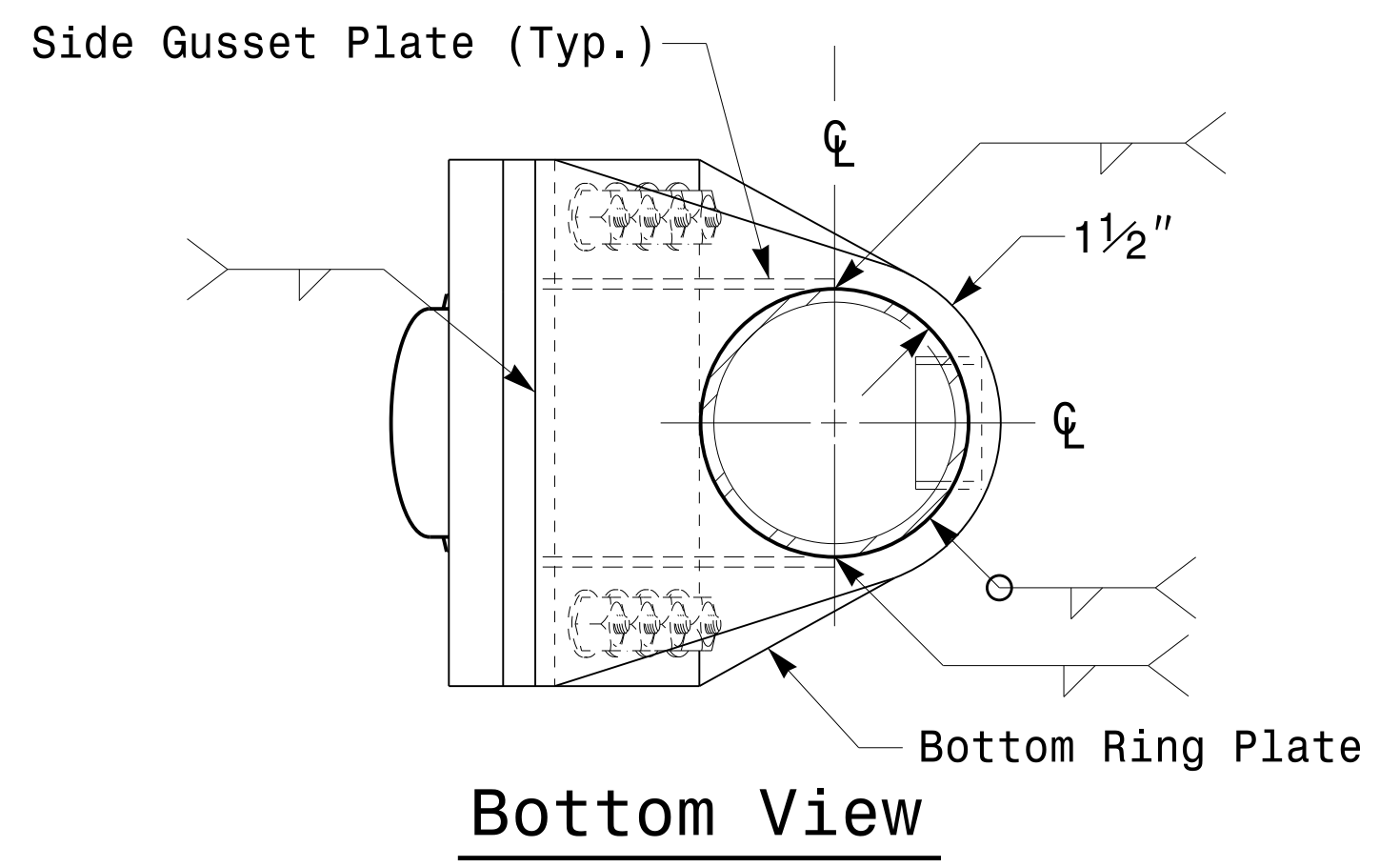
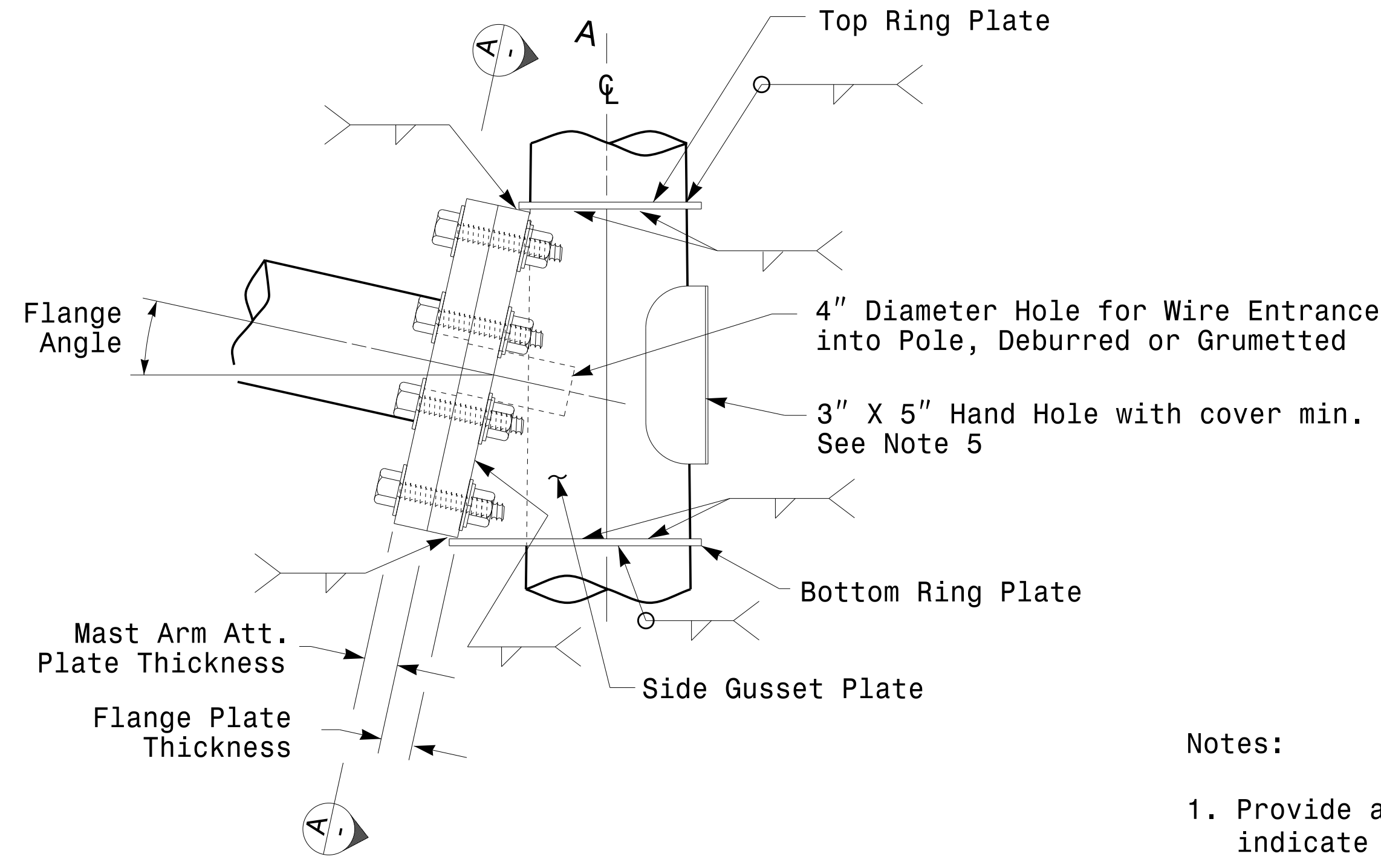
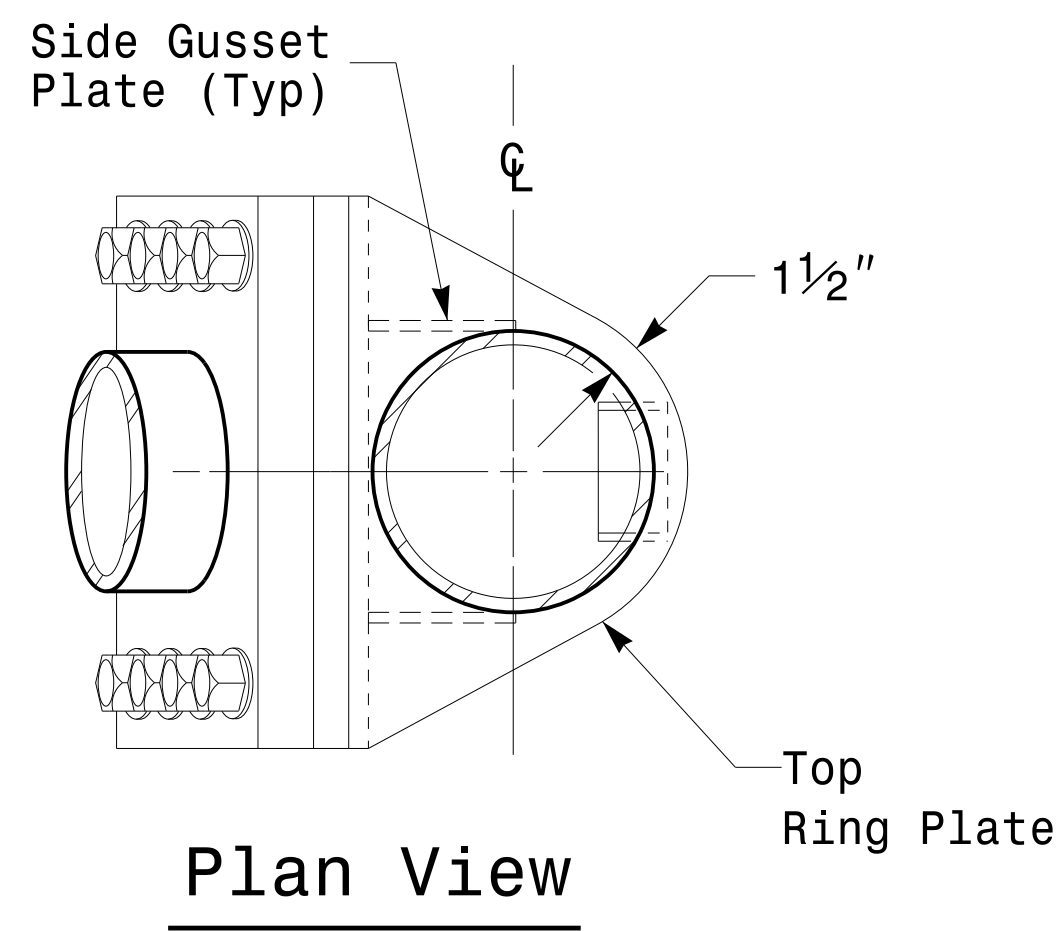
Mast Arm Pole

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

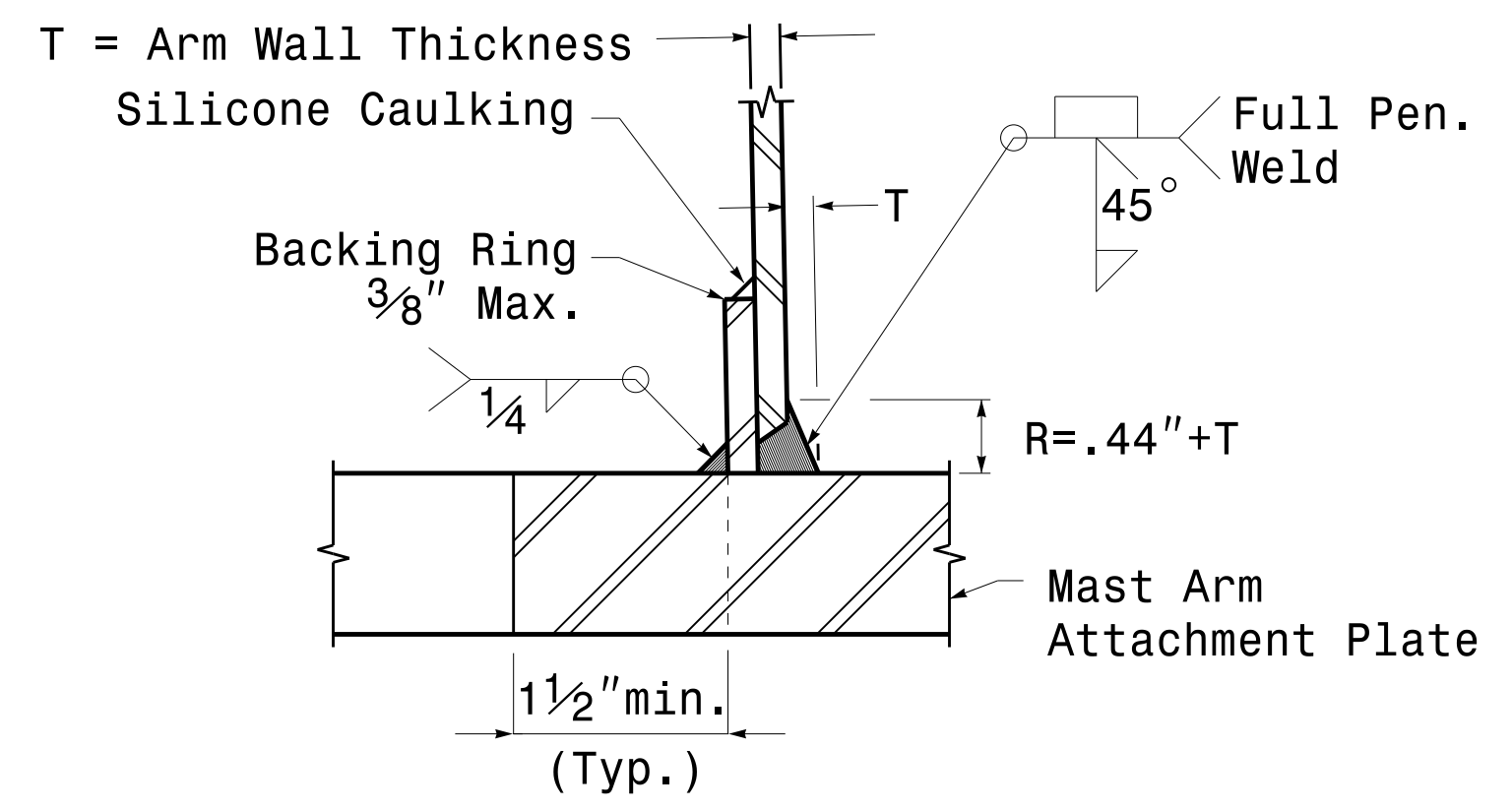
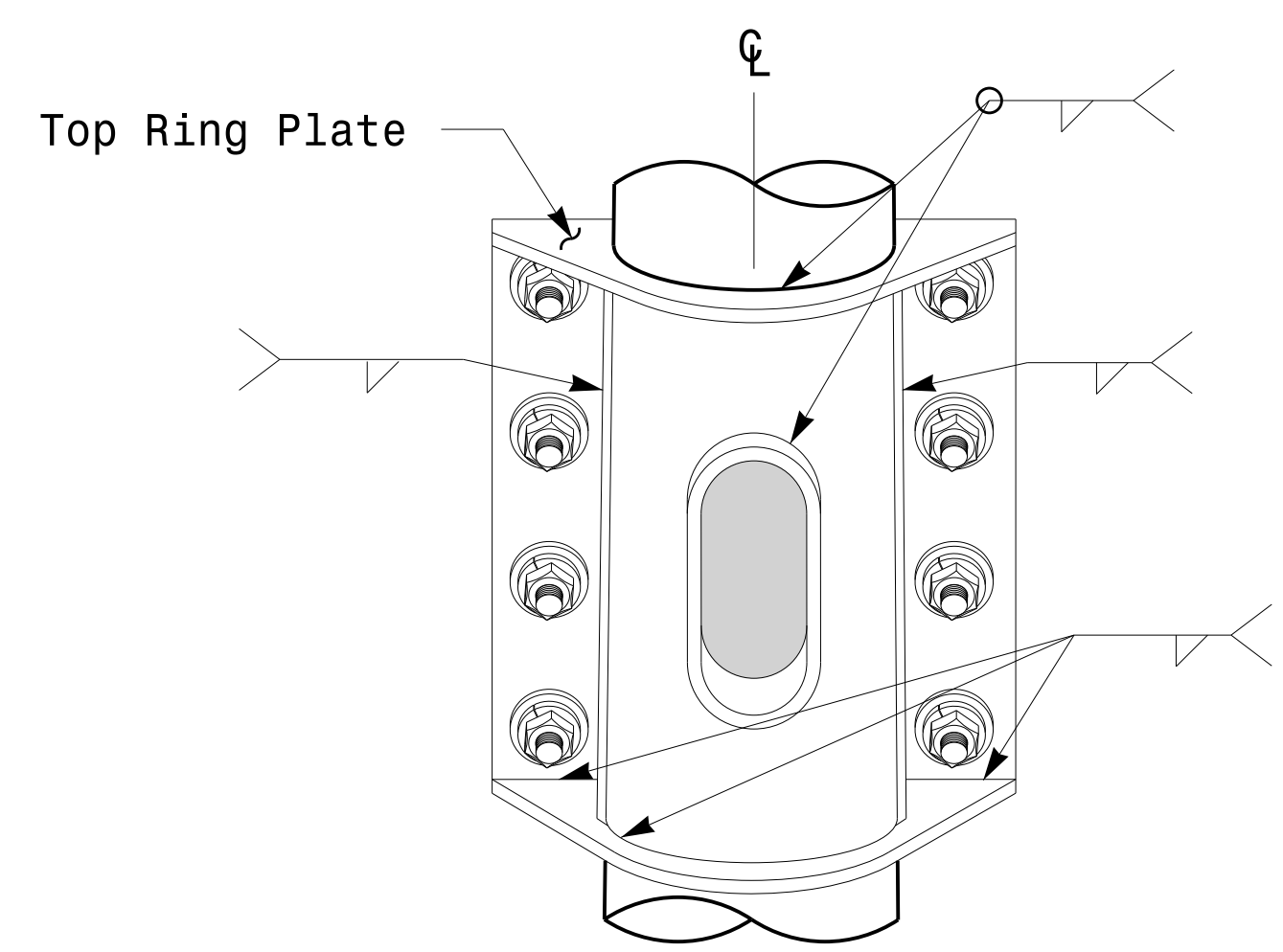
11-OCT-2017 08:33
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 P:\S604115\SIGNALS\Signal Design Section

Fabrication Details - Mast Arm Poles

Welded Ring Stiffened Mast Arm Connection



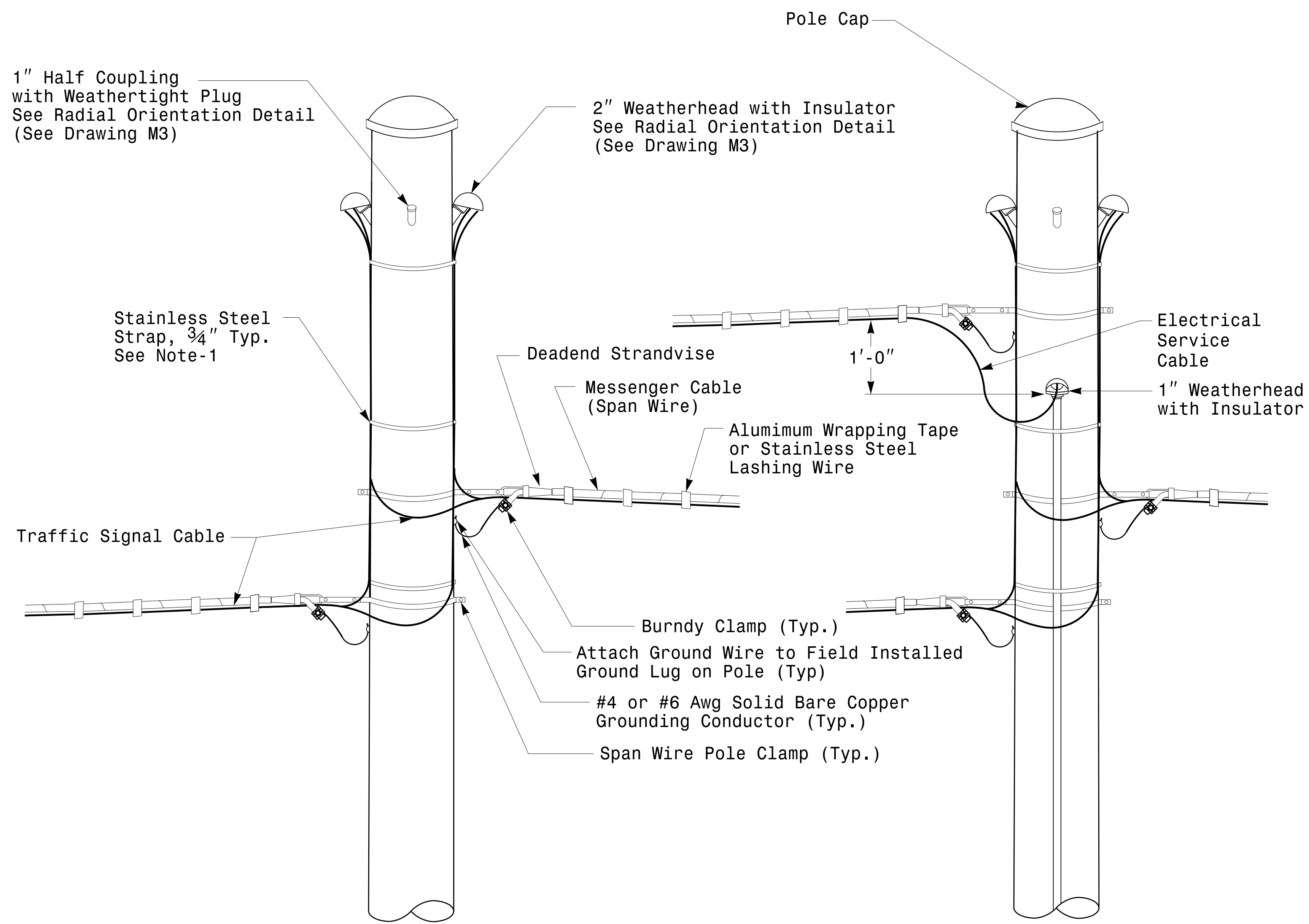
- Notes:**
1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
 2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
 3. Fabricator is responsible 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.



Fabrication Details – Mast Arm Connection

11-OCT-2017 08:35:13 136560115 510m1s461gnol Design Section Eastern Region 44 Sheets 2016 2014 Sig.M5 Std. Connection Fabrication Detail s-Mast Arm Poles.dgn

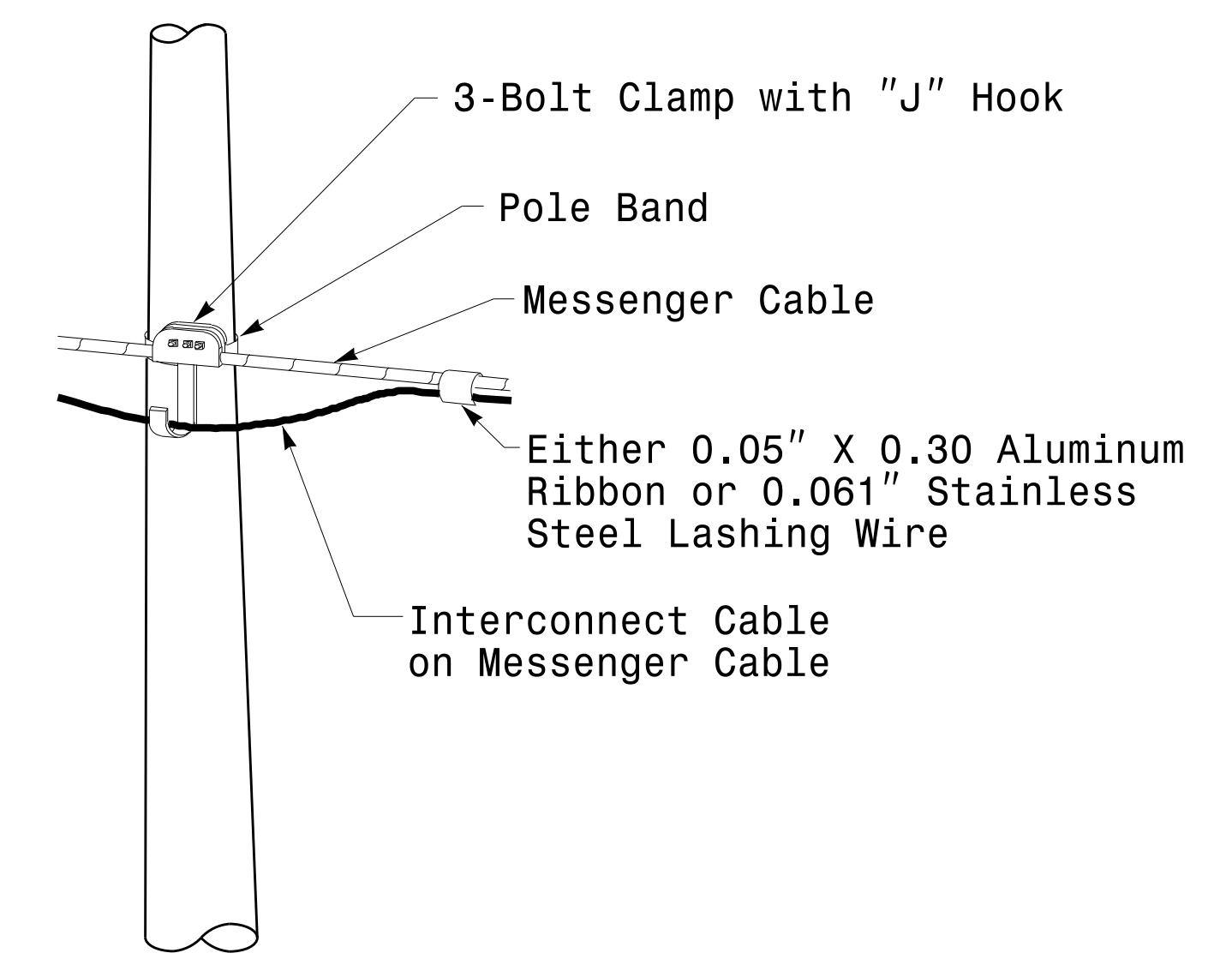
<p style="font-size: small;">Prepared in the Offices of:</p>	<p>Typical Fabrication Details For Mast Arm Connection To Pole</p>		<p style="font-size: small;">SEAL</p> <p style="font-size: x-small;">Discussed by: <i>Dibesh C. Sarkar</i> DATE</p>	
	PLAN DATE: OCTOBER 2017	DESIGNED BY: C.F. ANDREWS		REVIEWED BY: D.C. SARKAR
	PREPARED BY: N. BITTING	REVISIONS		INIT. DATE
<p>SCALE</p> <p>0 NA</p> <p>NONE</p>			<p>10/11/2017</p> <p>DATE</p>	



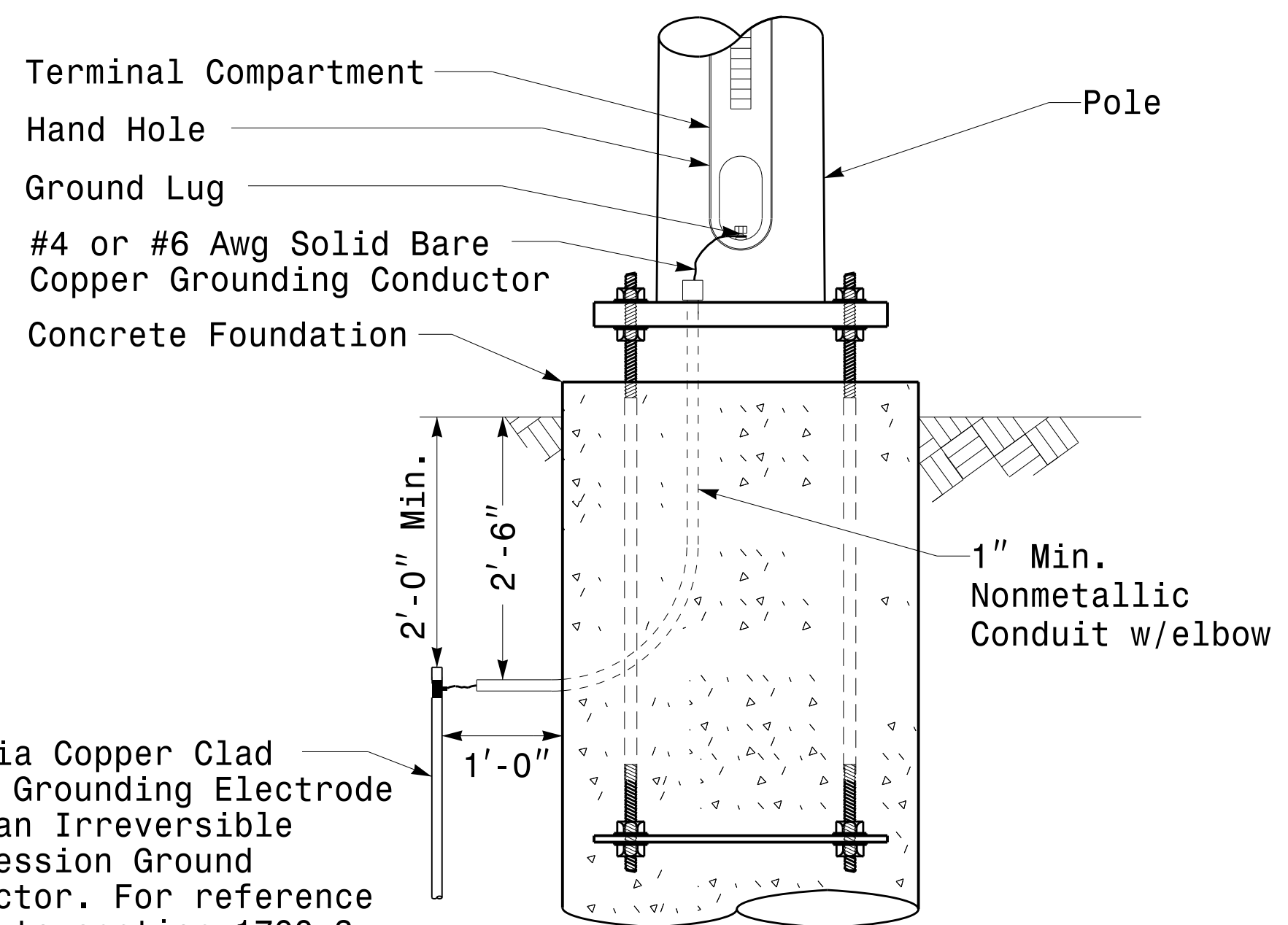
Strain Pole Attachments

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

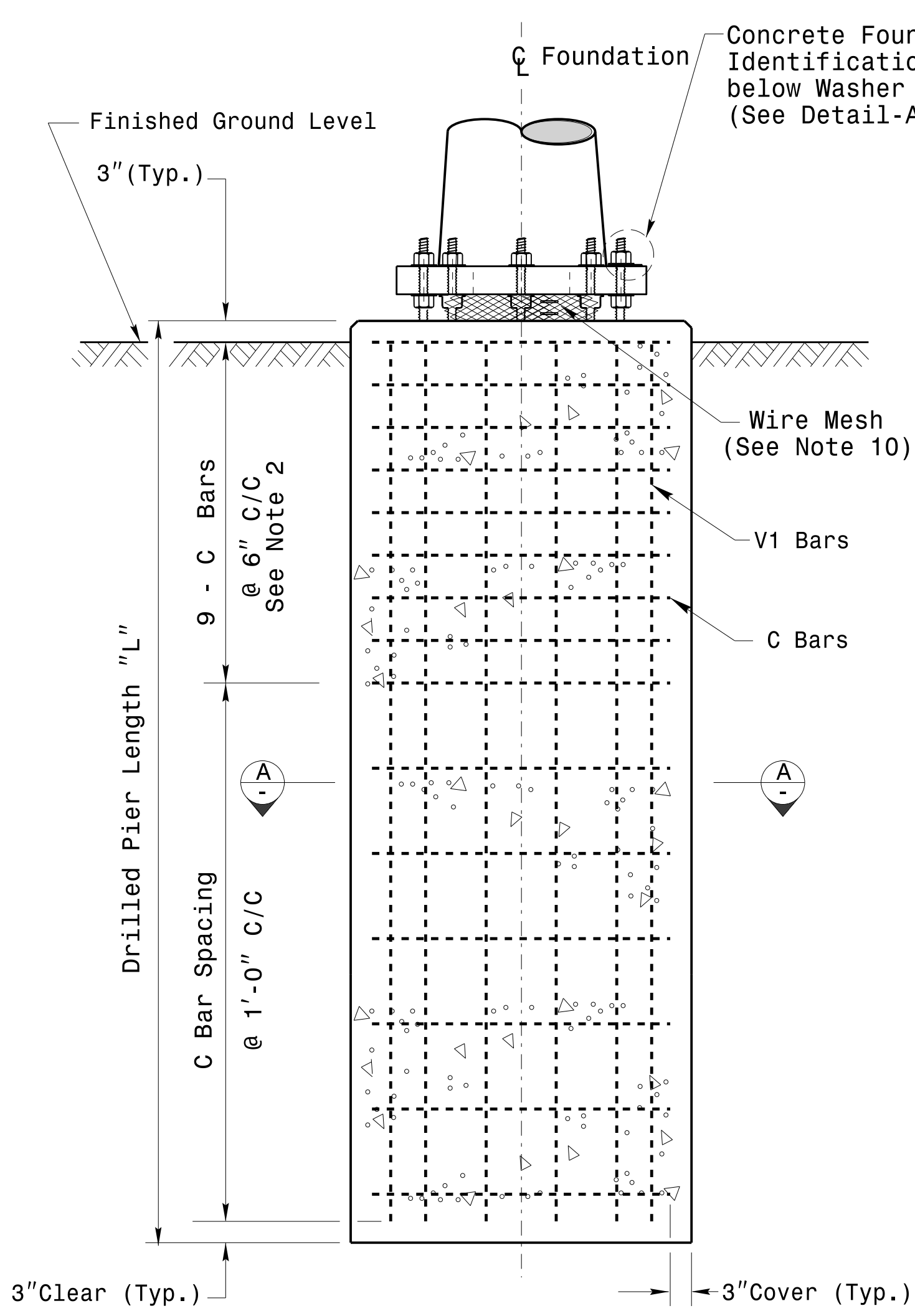


5/8" Dia Copper Clad Steel Grounding Electrode with an Irreversible Compression Ground Connector. For reference refer to section 1700-3 K and L for electrical grounding and bonding requirements, See Note 4.

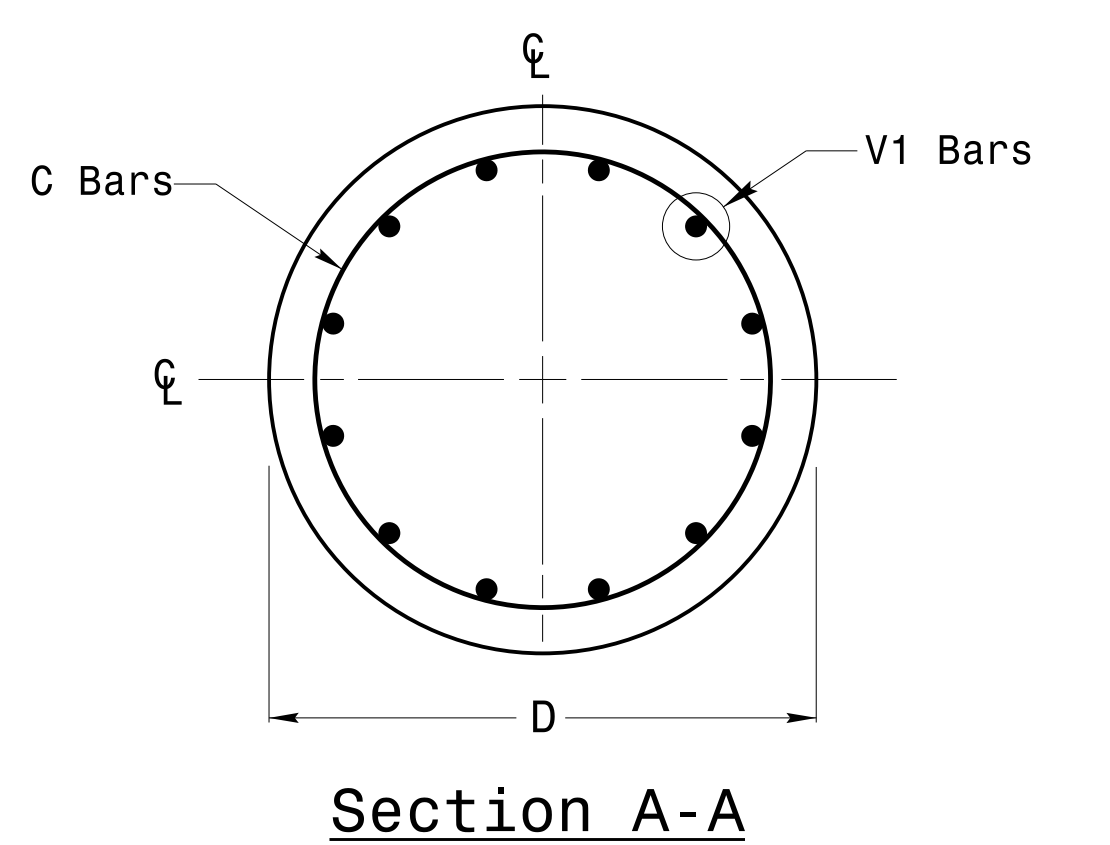
Metal Pole Grounding Detail For Strain Pole and Mast Arm

11-0CT-2017-08:36 136504115 StrainPole.dgn Design Section Eastern Region 0162014 Sig.M6 Std. Fabrication Detail: Strain Poles.dgn

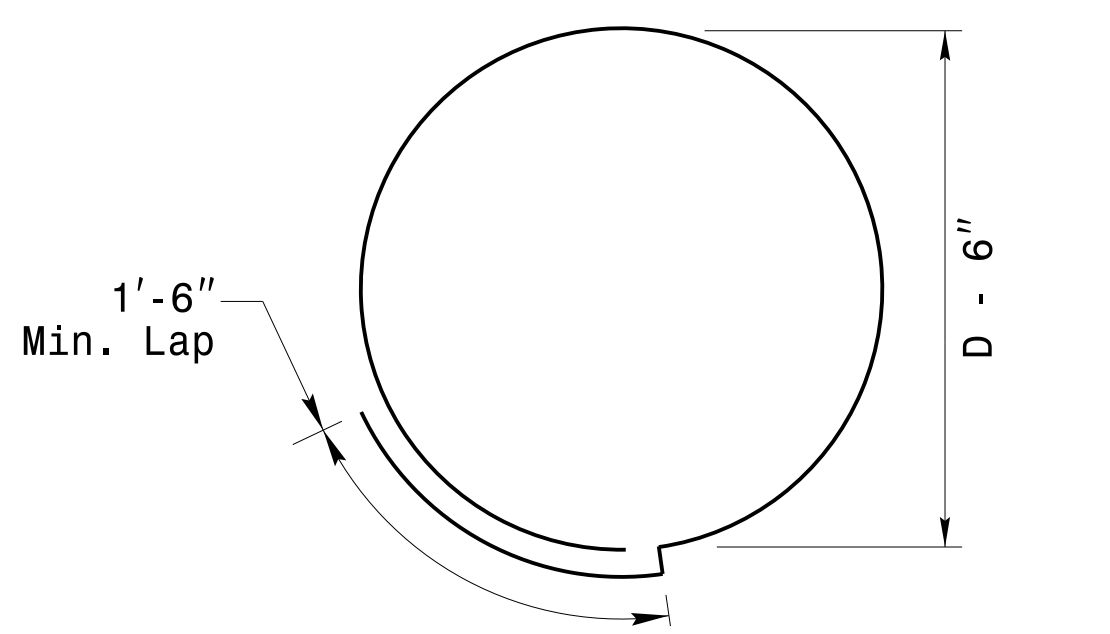
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Typical Fabrication Details For Strain Pole Attachments</p>							
	<p>PLAN DATE: OCTOBER 2017</p> <p>DESIGNED BY: C.F. ANDREWS</p> <p>PREPARED BY: N. BITTING</p> <p>REVIEWED BY: D.C. SARKAR</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		NO.	DATE	DESCRIPTION		
NO.	DATE	DESCRIPTION						
<p>DocuSigned by: <i>Deshu C. Sarkar</i></p>		<p>10/11/2017</p>	<p>DATE</p>					



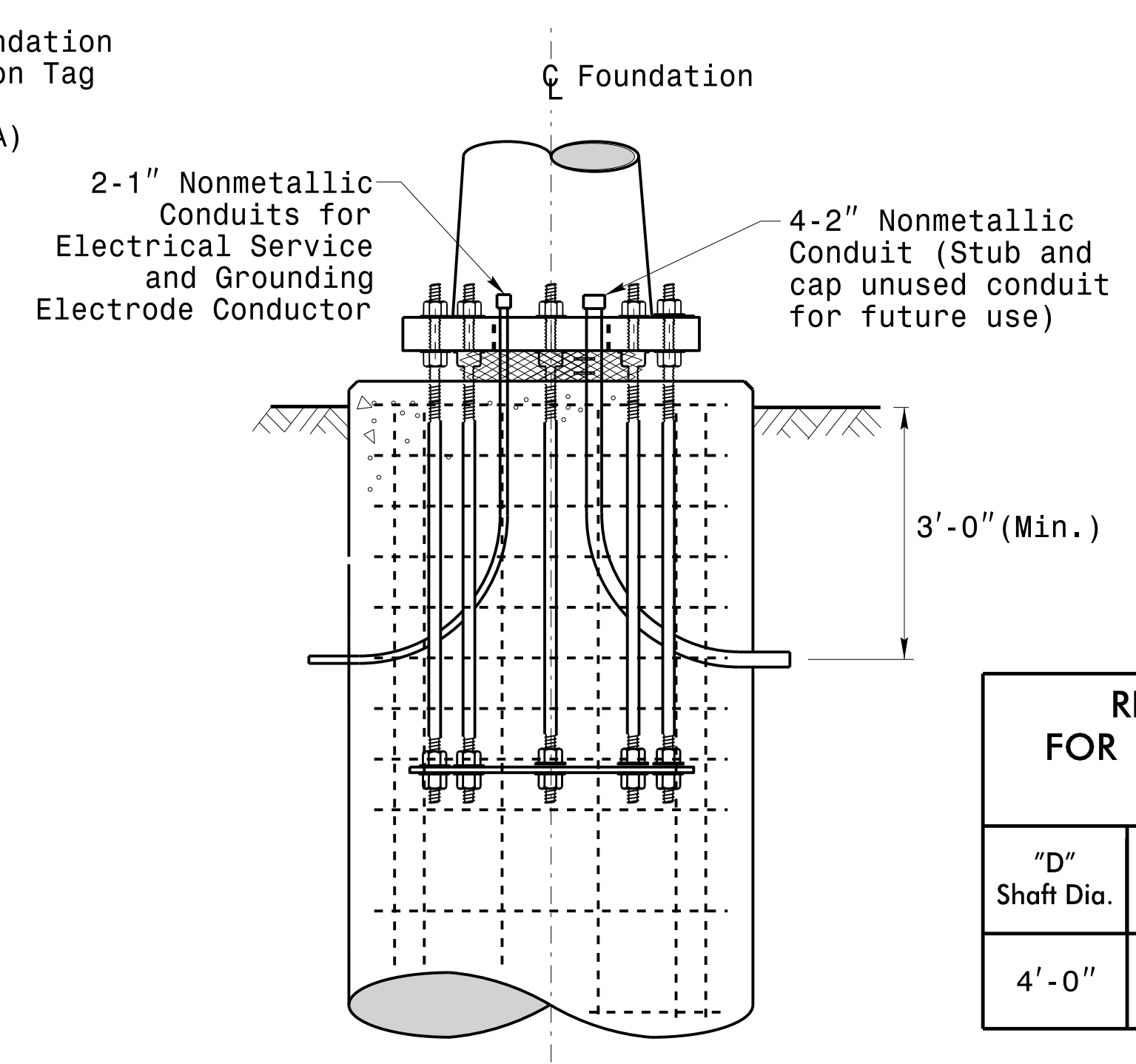
Concrete Shaft Elevation



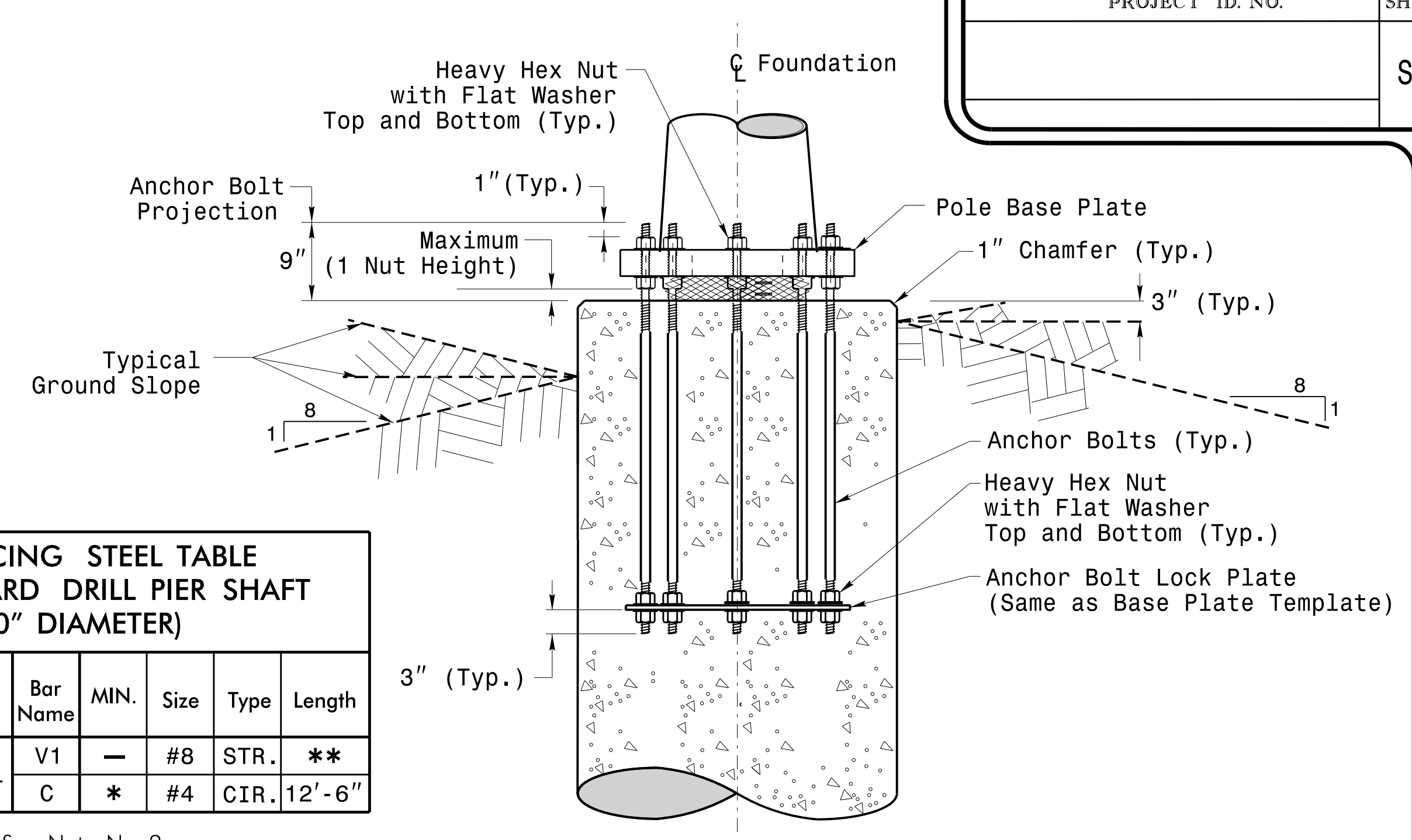
Section A-A



Typical "C" Bar Detail



Typical Foundation Conduit Details



Typical Foundation Anchor Bolt Details

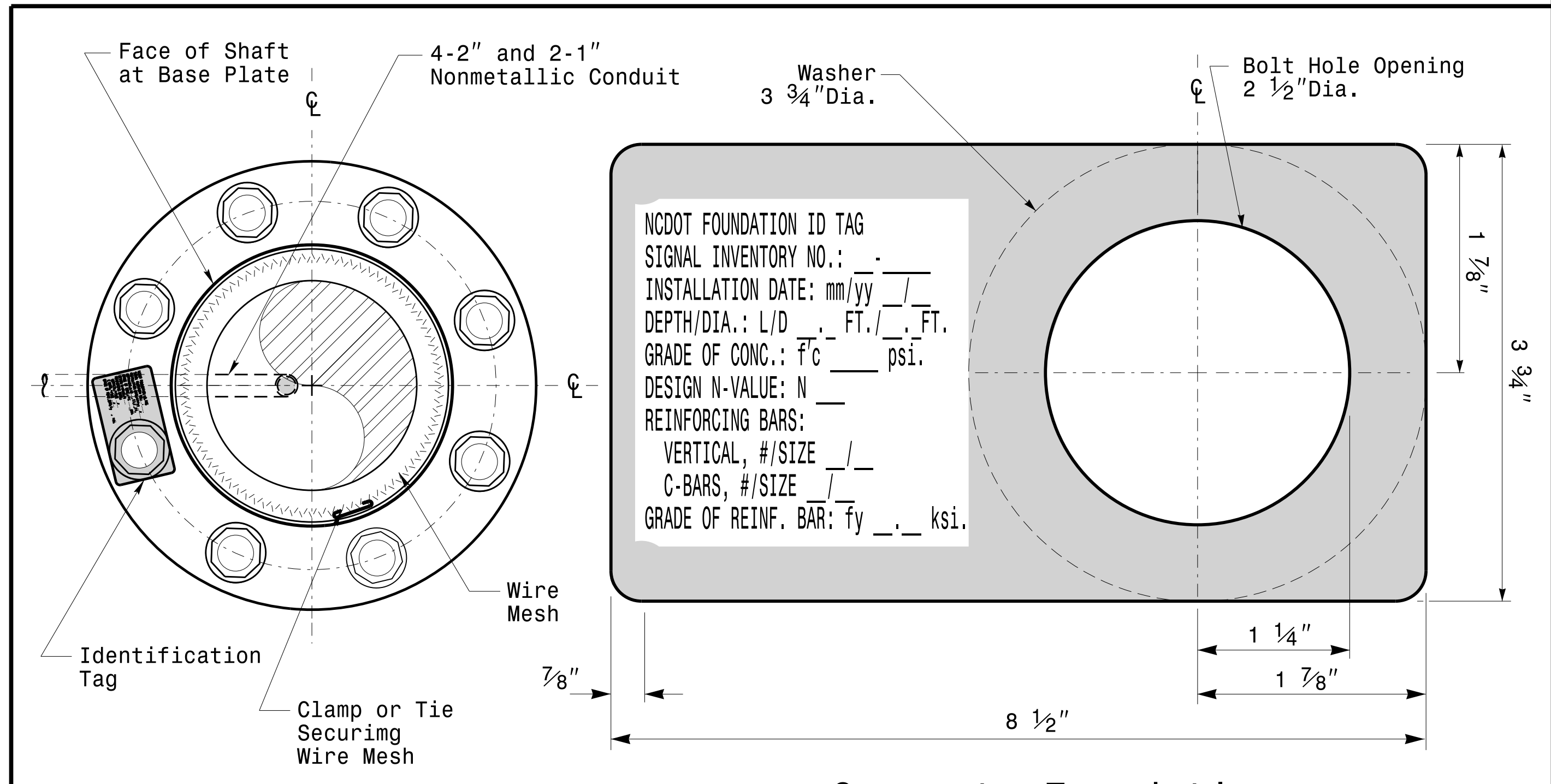
(Reinforcing Cage Not Shown for Clarity)

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

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

General Notes:

- If actual subsurface conditions differ significantly from boring data contact the Engineer before excavating or placing concrete.
- Circular tie reinforcing rings may be vertically adjusted by +/-3" at a depth between 2'-0" and 3'-0" to facilitate the installation of electrical conduit entering in the cage.
- For standard foundations, see sheet Sig. M8 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/-3" to facilitate the installation of electrical conduit entering into the cage.
- Provide 2" to 5" foundation projection above ground level depending on the ground slope.
- Unless otherwise shown, foundation designs are based on non-sloping level ground surfaces with slope ratios of 8:1 (H:V) or flatter. If actual ground line slopes are steeper contact the Engineer before excavating or placing concrete.
- Construct foundations in accordance with NCDOT Standard Provisions SP09 R005- Foundations and Anchor Rod Assemblies for Metal Poles. All applicable 2018 NCDOT Standard Specifications are referenced in this provision. Refer to the NCDOT Resources/Specifications page located on the Connect NCDOT website.
[https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx](https://connect.ncdot.gov/resources/Specifications%20and%20Special%20Provisions.aspx)
- Use air entrained AA concrete mix with a compression strength of f'c=4500 psi.(min.) after 28 days.
- Use ASTM A615 grade 60 deformed bars for all reinforcing steel. Maintain at least 3" cover on all reinforcement.
- Locate the Identification Tag on the top of the base plate, directly above the conduit's entry point.
- Provide two layers of galvanized welded 23 gauge (0.25) 6" wide 4 mesh wire around pipes under the base plate and secure it with ties if necessary.
- Preferred location for the I.D. Tag is as shown in Detail-A; directly above the conduit entering the foundation.



Concrete Foundation Identification Tag Details

Detail-A

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

	<p>Construction Details For Foundations</p>										
	<p>PLAN DATE: OCTOBER 2018</p>	<p>DESIGNED BY: C.B. COGDILL</p>		<p>REVIEWED BY: D.C. SARKAR</p>							
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>REVISIONS:</p> <table border="1"> <tr> <th>REV. NO.</th> <th>COMMENTS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td>1</td> <td>Revised Foundation Tag Details</td> <td>N.B.</td> <td>5/11/2015</td> </tr> </table>	REV. NO.	COMMENTS	INIT.	DATE	1	Revised Foundation Tag Details	N.B.	5/11/2015	<p>SCALE: NONE</p>	<p>DocuSigned by: D. C. SARKAR</p>
REV. NO.	COMMENTS	INIT.	DATE								
1	Revised Foundation Tag Details	N.B.	5/11/2015								

Construction Details – Foundations

11-001-2017_08:37:15:50:115: Signal Design Section Eastern Region\\M. Shears\\2016\\2014_Sig.M7_Shd_Construction_Detail(is-Strain_Poles.dgn) PLOT

SOIL CONDITION

		STANDARD STRAIN POLES					STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) - Feet							Reinforcement				
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
					Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity (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:

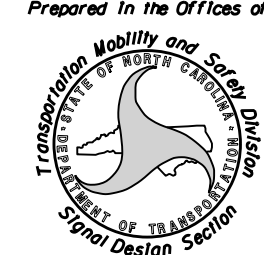

1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain concrete mix.

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

	<p>Standard Strain Pole Foundation for All Soil Conditions</p> <p>PLAN DATE: OCTOBER 2017 DESIGNED BY: C.B. COGDILL PREPARED BY: N. BITTING REVIEWED BY: D.C. SARKAR</p>									
SCALE: 0 NA NONE	REVISIONS: <table border="1" style="font-size: small;"> <tr> <th>NO.</th> <th>DATE</th> <th>INIT.</th> <th>DESCRIPTION</th> </tr> <tr> <td>1</td> <td>7/12/2015</td> <td>N.B.</td> <td>Changed "Foundation Depth" to "Drilled Pier Length" in Conc. Egn.</td> </tr> </table>	NO.	DATE	INIT.	DESCRIPTION	1	7/12/2015	N.B.	Changed "Foundation Depth" to "Drilled Pier Length" in Conc. Egn.	Documented by: <i>D. C. SARKAR</i> DATE: 10/11/2017
NO.	DATE	INIT.	DESCRIPTION							
1	7/12/2015	N.B.	Changed "Foundation Depth" to "Drilled Pier Length" in Conc. Egn.							

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