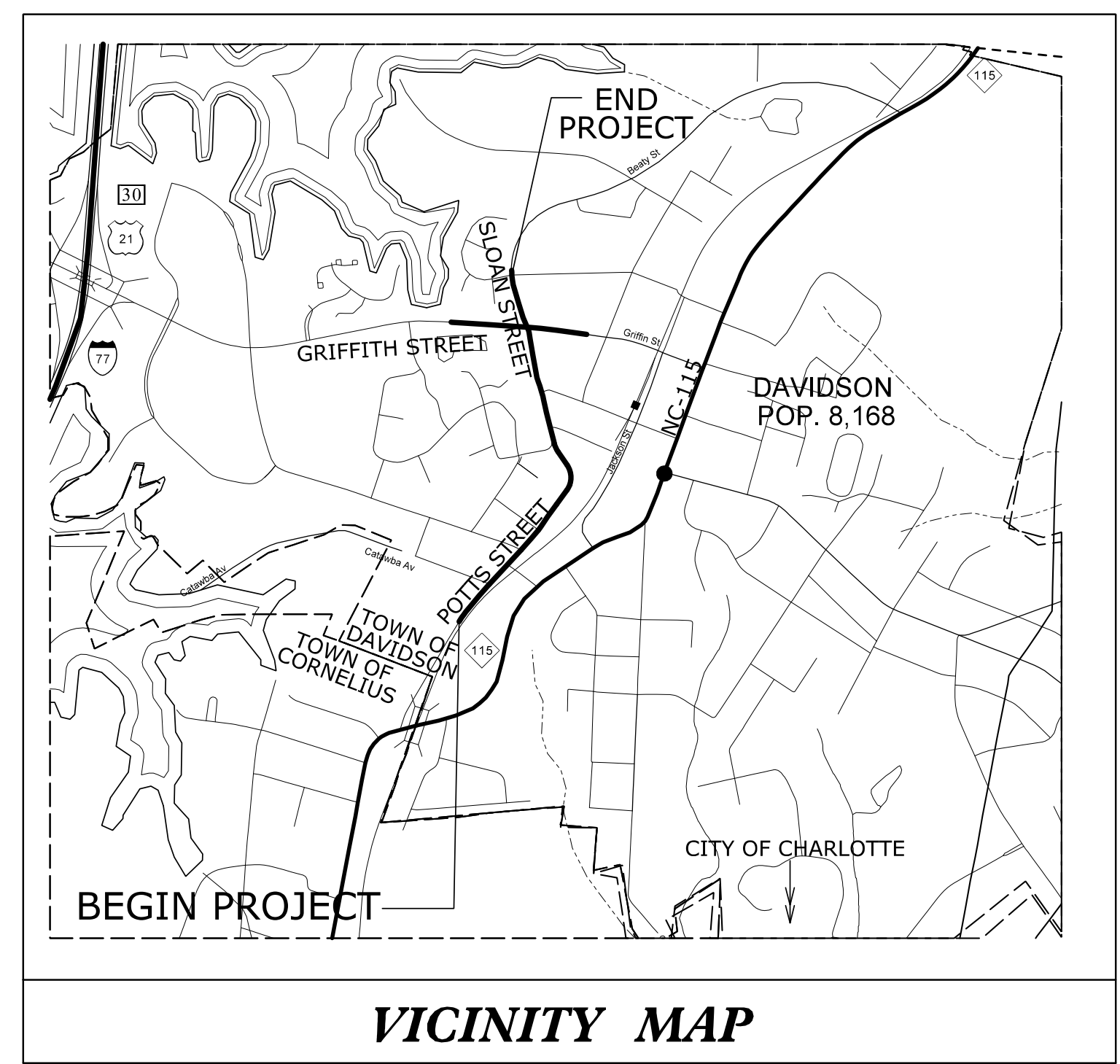


TIP PROJECT: U-5709

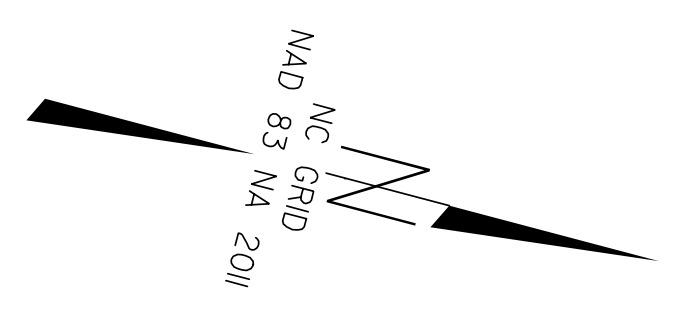
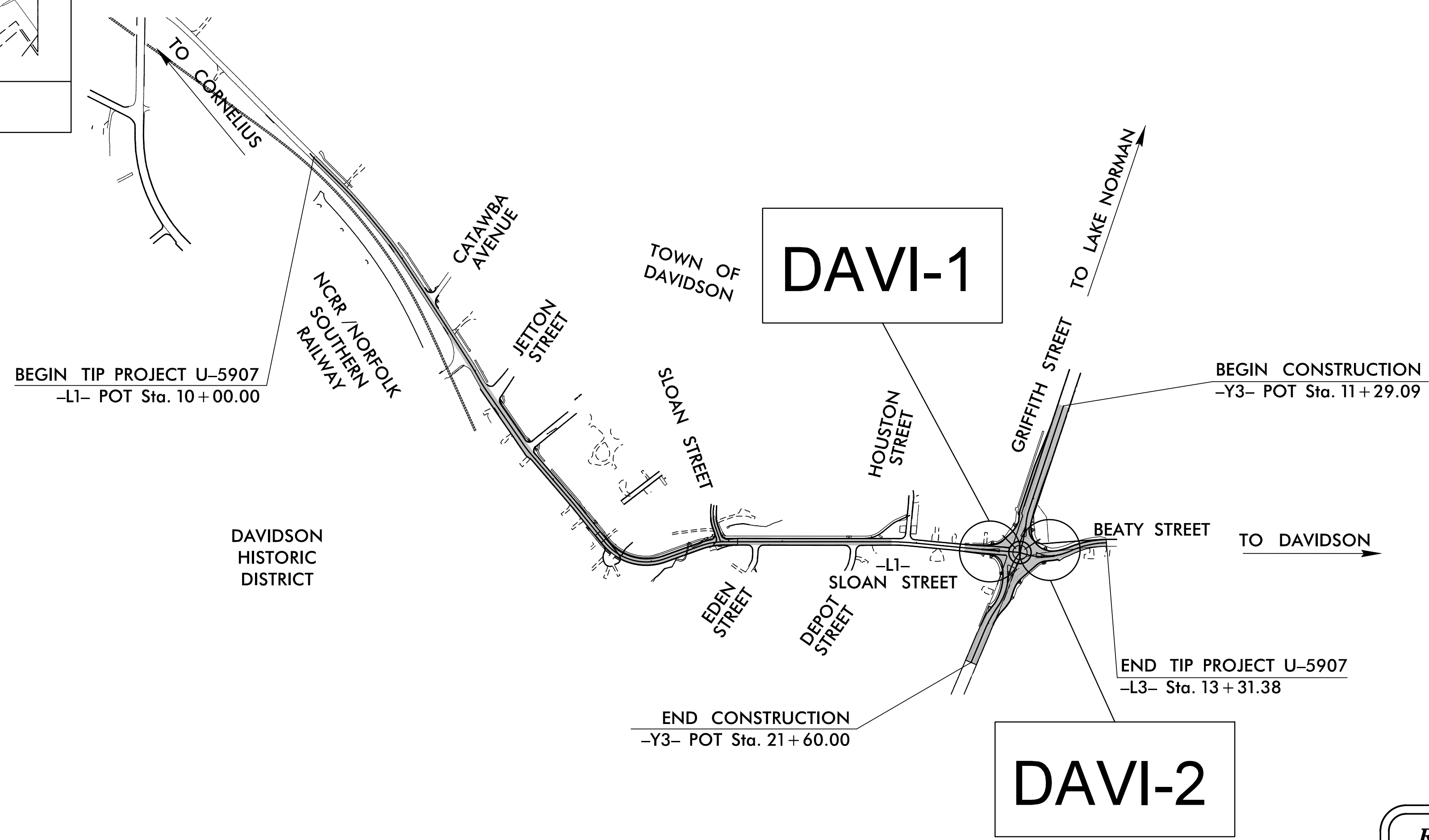


VICINITY MAP
Note: Not to Scale

STATE OF NORTH CAROLINA

MECKLENBURG COUNTY

LOCATION: POTTS-SLOAN-BEATTY CONNECTOR (NC-115)
TYPE OF WORK: TRAFFIC SIGNAL



Refer to *Roadway Standard Drawings NCDOT* dated January 2018 and *Standard Specifications for Roads and Structures* dated January 2018.

Sheet #	Reference #	Location/Description
Sig. 1.0	-----	Title Sheet
Sig. 1.1-1.2	-----	2018 Standard Plate Sheets
Sig. 2.0-2.2	DAVI-1T1	Griffith Street at Sloan Street/Beatty Street
Sig. 3.0-3.2	DAVI-1T2	Griffith Street at Sloan Street/Beatty Street
Sig. 4.0-4.2	DAVI-1	Griffith Street at Sloan Street/Beatty Street
Sig. 5.0-5.3	DAVI-1	Griffith Street Pedestrian Hybrid Beacon West of Sloan Street/Beatty Street
Sig. 6.0-6.3	DAVI-2	Griffith Street Pedestrian Hybrid Beacon East of Sloan Street/Beatty Street
Sig. M1-8	-----	Standard Metal Pole Details

NCDOT SIGNAL CONTACT:

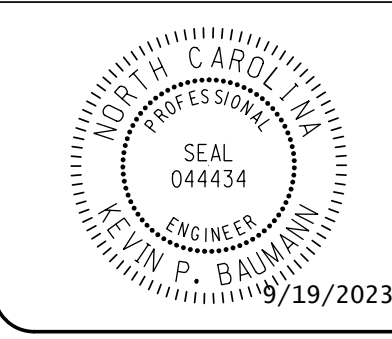
R. Nicholas Zinser, P.E.
WESTERN REGION SIGNALS ENGINEER

Keith M. Mims, P.E.
SIGNAL EQUIPMENT DESIGN ENGINEER

PLANS PREPARED BY:
Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, North Carolina 27601
PE NO. F-0102

Kevin P. Baumann, P.E.
TRAFFIC SIGNAL ENGINEER

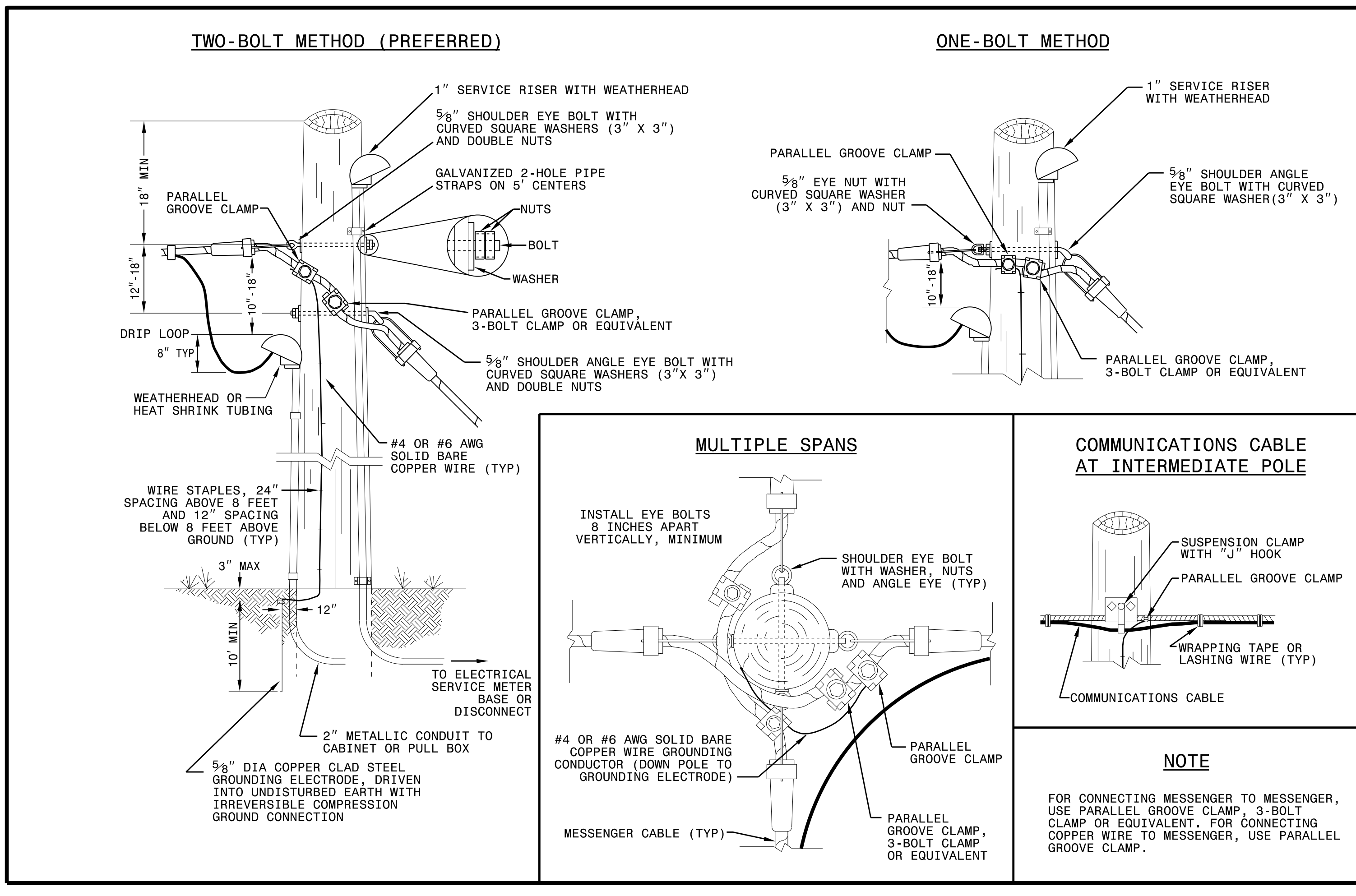
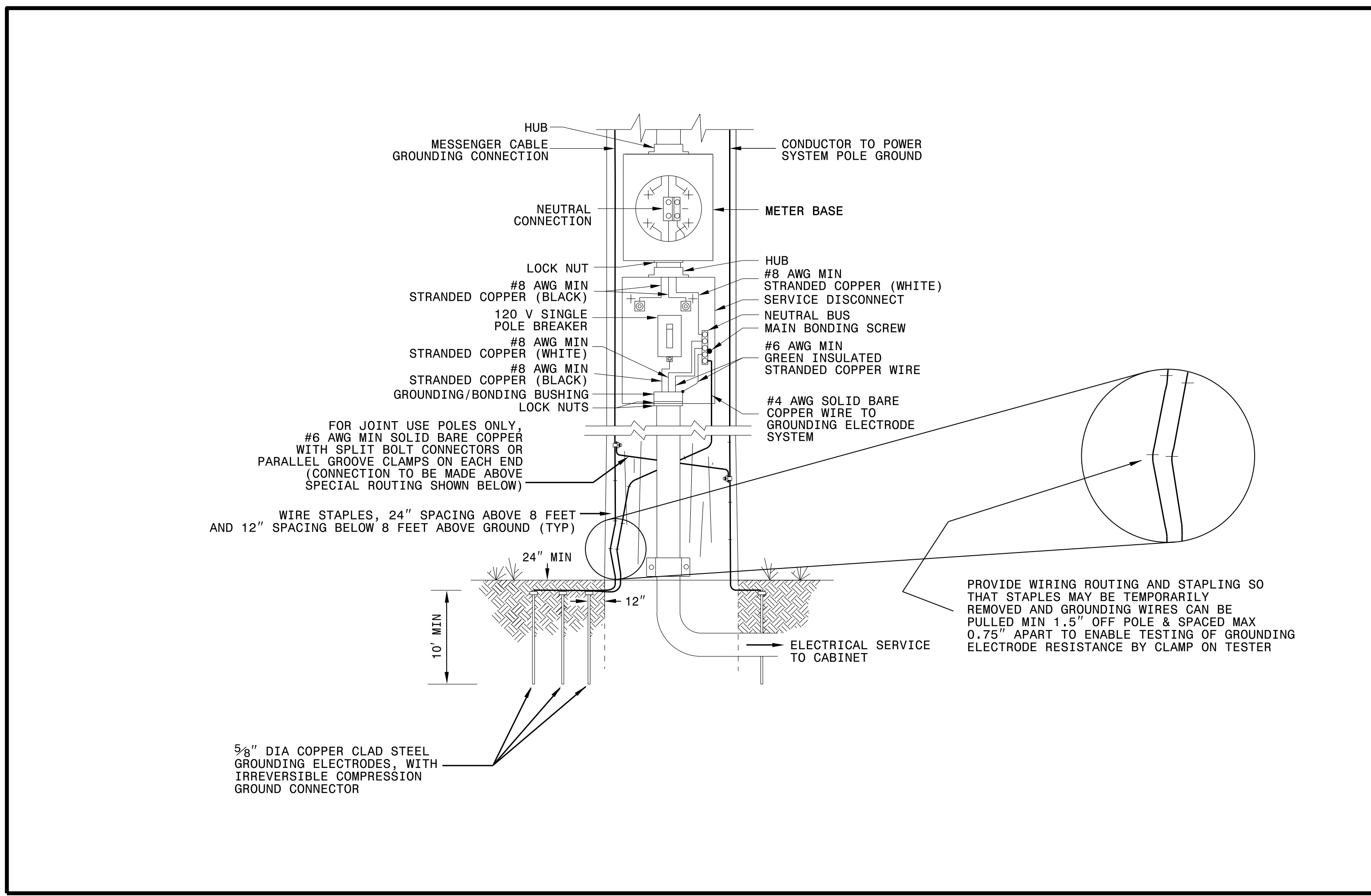


DocuSigned by:
Kevin P. Baumann
9/19/2023
SIGNATURE: P.E.



750 N. Greenfield Pkwy, Garner, NC 27529

9/19/2023 9:16:40 AM suscn.pennington K:\RAL\TIPDM\SIGNAL\S011036360_U-5907_Potts-Sloan-Ext\64 - Signal Design\1.0_U-5907_rsh.dgn



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SIGNATURES COMPLETED

See Plate for Title

Prepared in the Offices of:

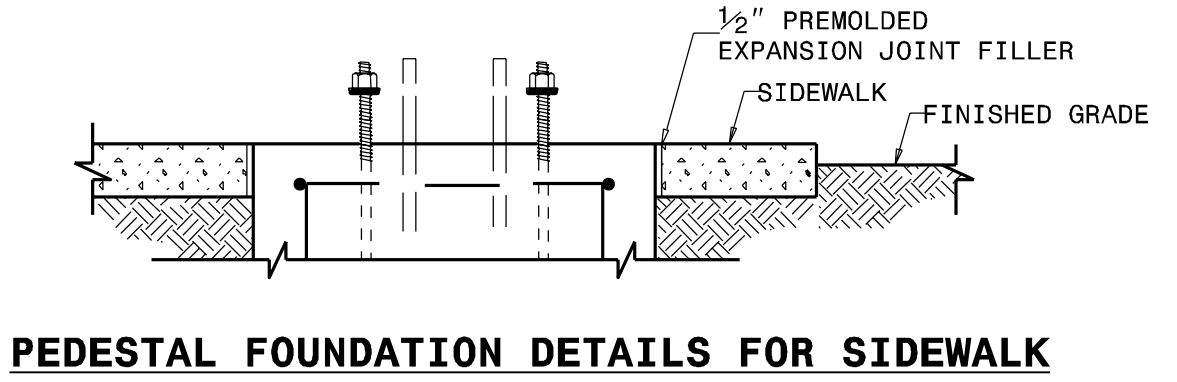
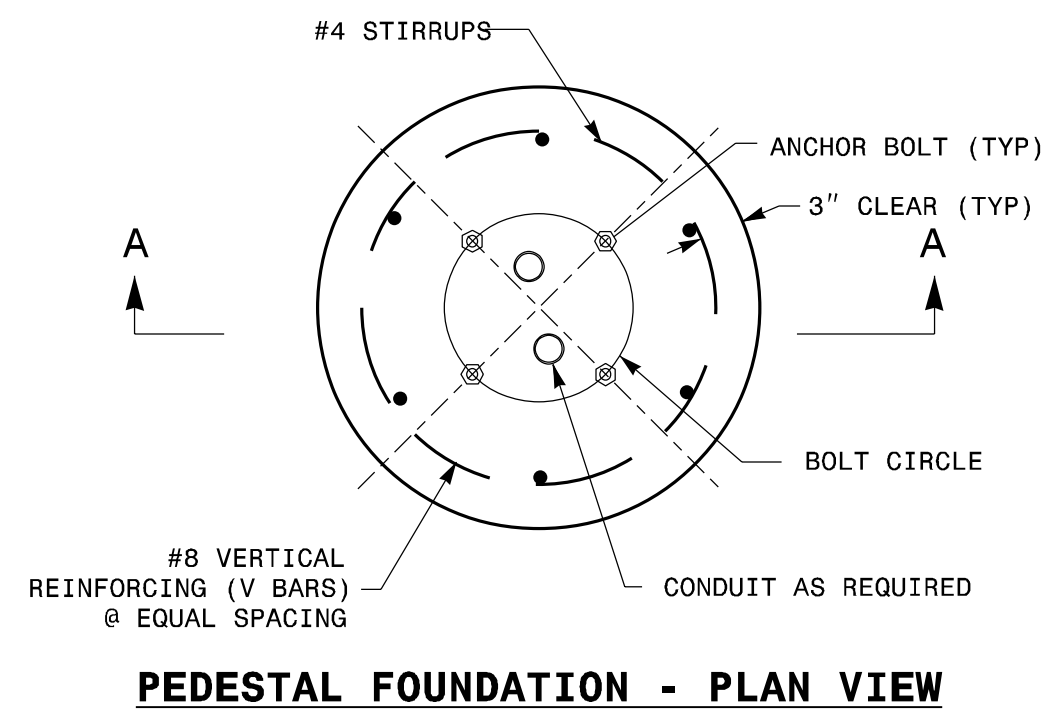
SEAL

DocuSigned by:
Mohd Aslami

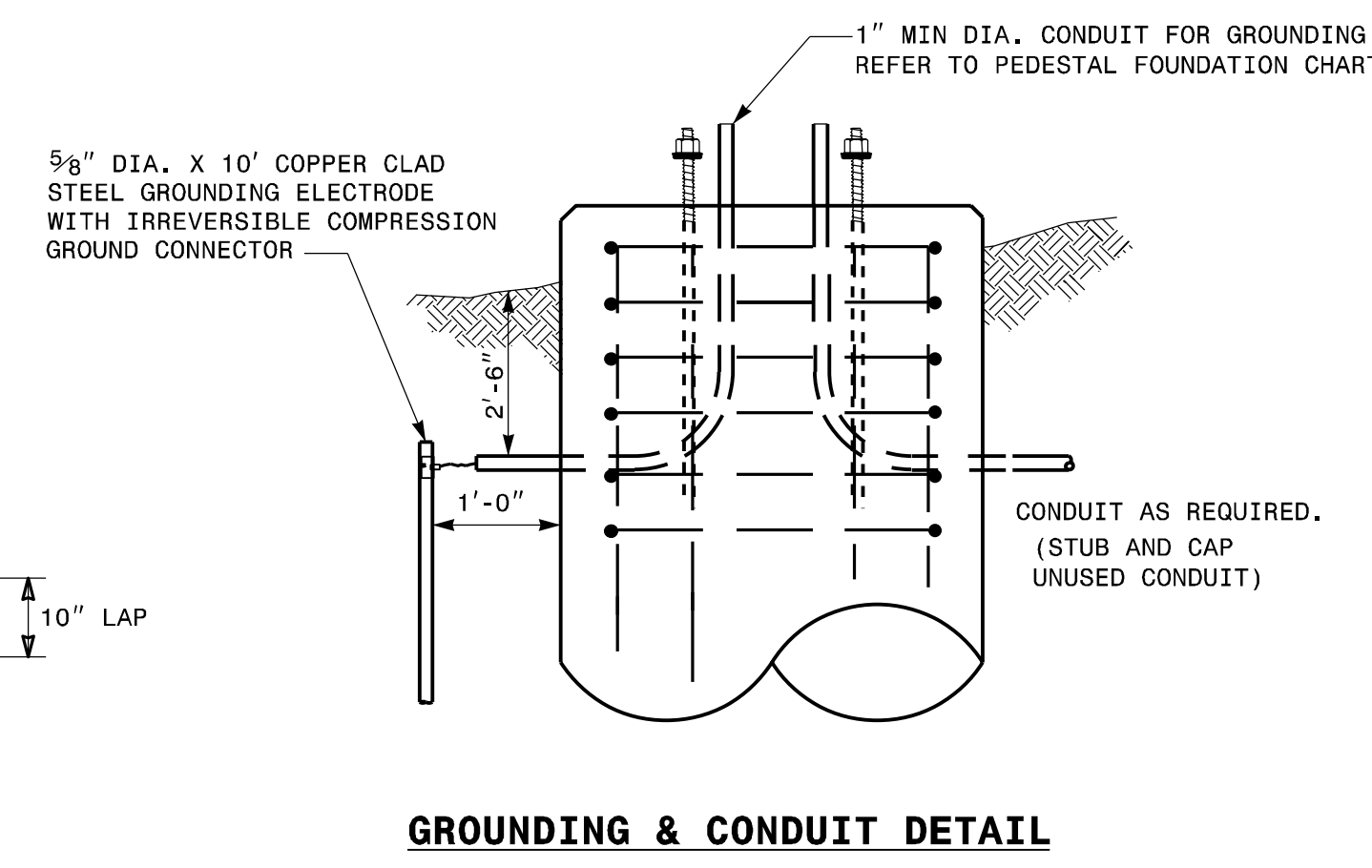
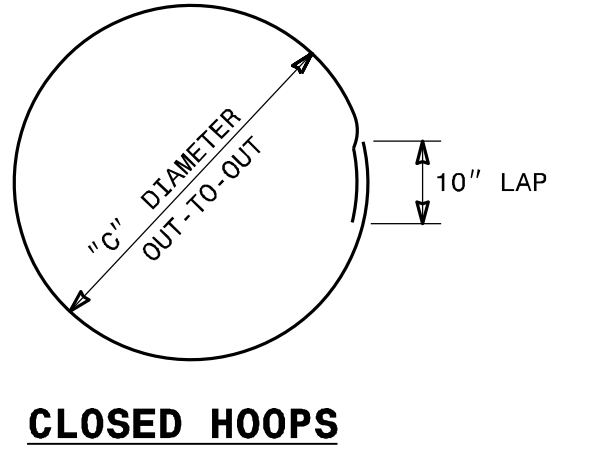
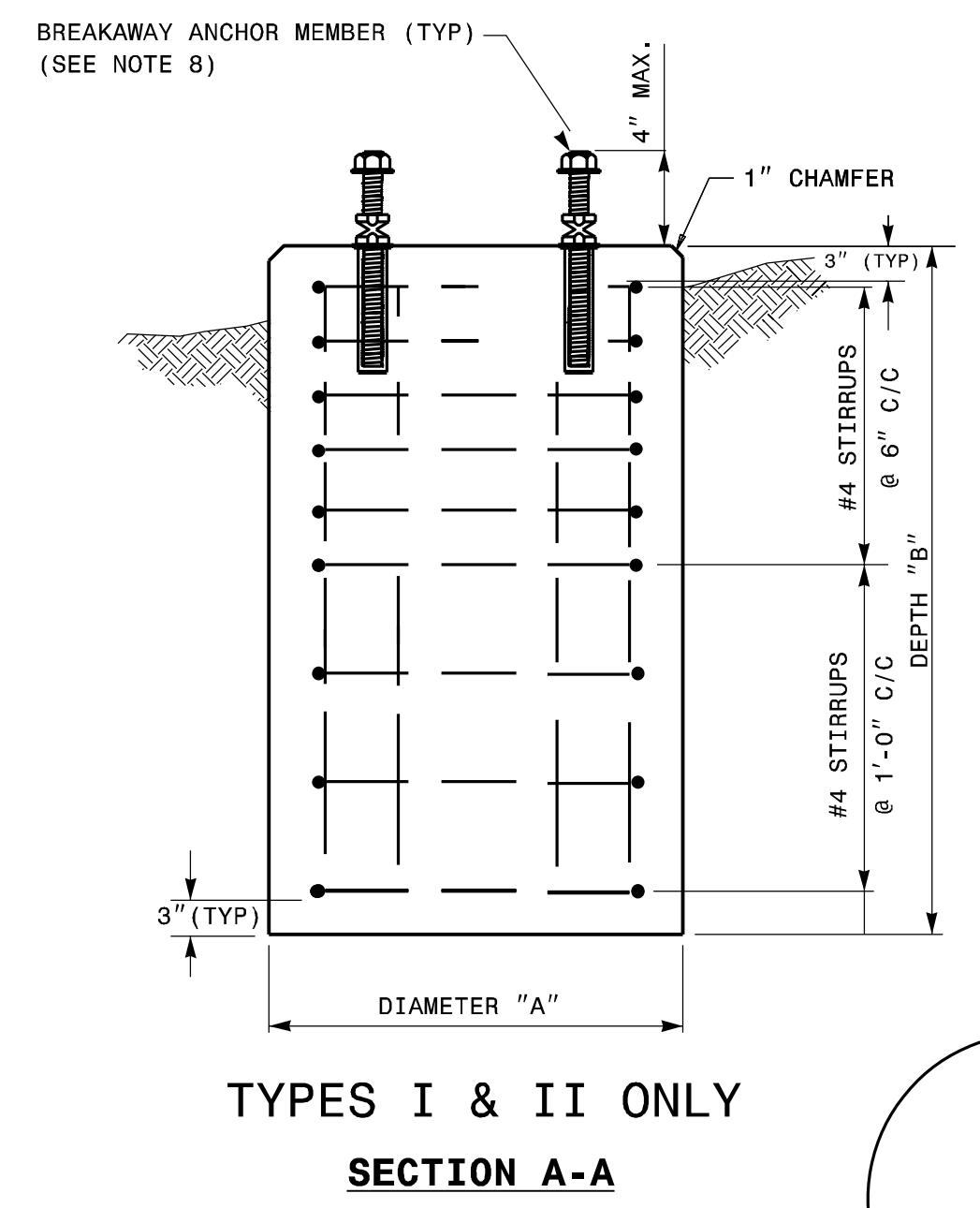
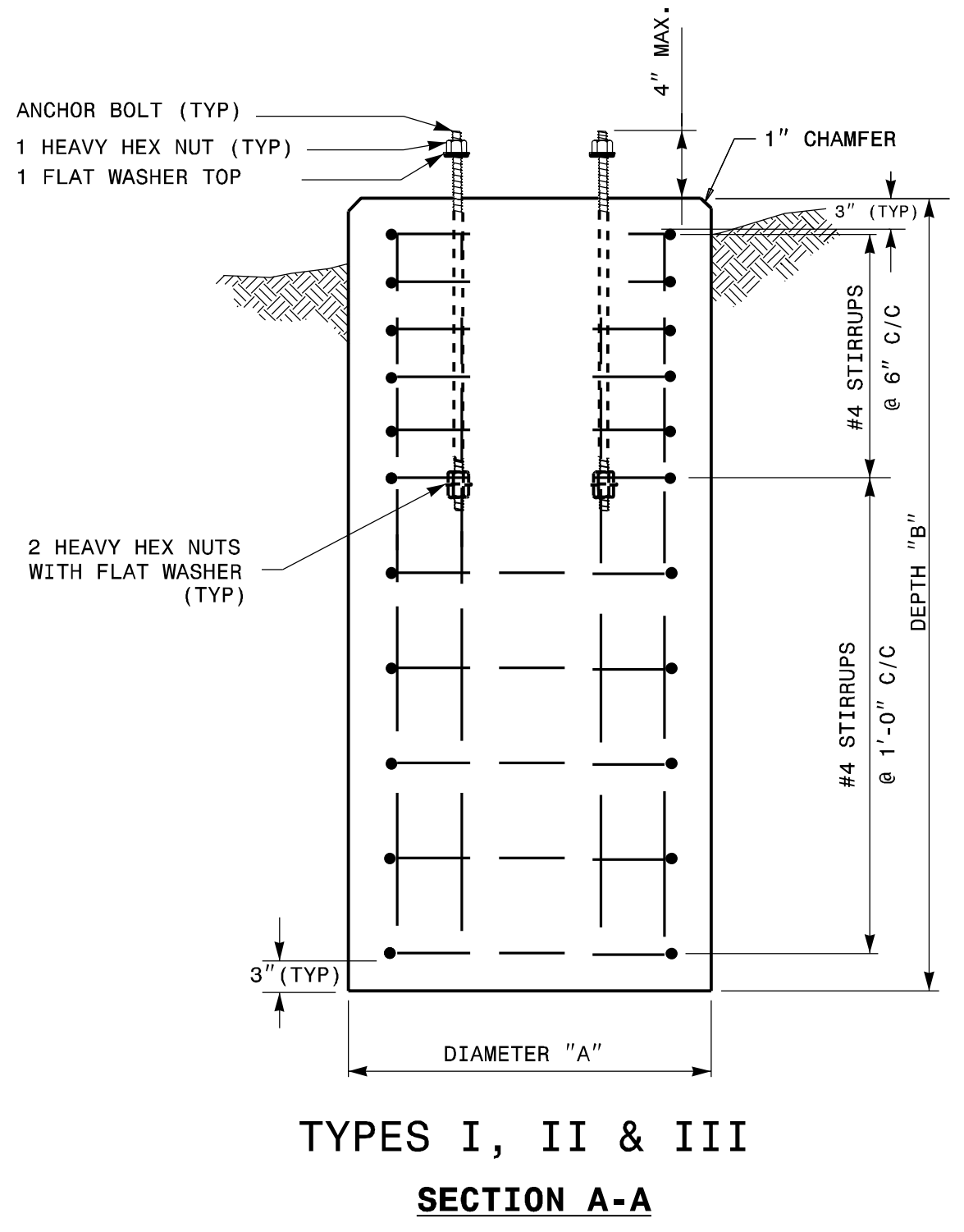
750 N. Greenfield Parkway
Garner, NC 27529

10/11/2017
DATE

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11-2018_S14_DrawingPlate_Sheets2018_Plate_Sheet.dgn
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- NOTES:**
- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
 - COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
 - USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF $F'c=3000$ PSI (MIN.).
 - USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
 - GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
 - SANDY TYPE SOIL
 - NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
 - WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
 - MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
 - ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
 - USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



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

REINFORCING STEEL SCHEDULE													
TYPE	V-BAR				STIRRUP								
	SIZE #	QTY	LENGTH	WEIGHT LBS	SIZE #	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS
						VERTICAL SPACING ON 6" CENTERS	ON 12" CENTERS	TOTAL					
I	8	6	3'-0"	56	4	0	4	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 1-18
 ENGLISH STANDARD DRAWING FOR
PEDESTALS
 FOUNDATIONS
 SHEET 1 OF 1
1743D01

See Plate for Title

Prepared in the Offices of:

SEAL
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 028094
 ENGINEER
 DEBESH C. SARKAR
 10/11/2017
 DATE

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

11-001-2017_08-03
 11-2018_S14_DrawingPlate_Sheets2018_Plate_Sheet - .dgn
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PHASING DIAGRAM

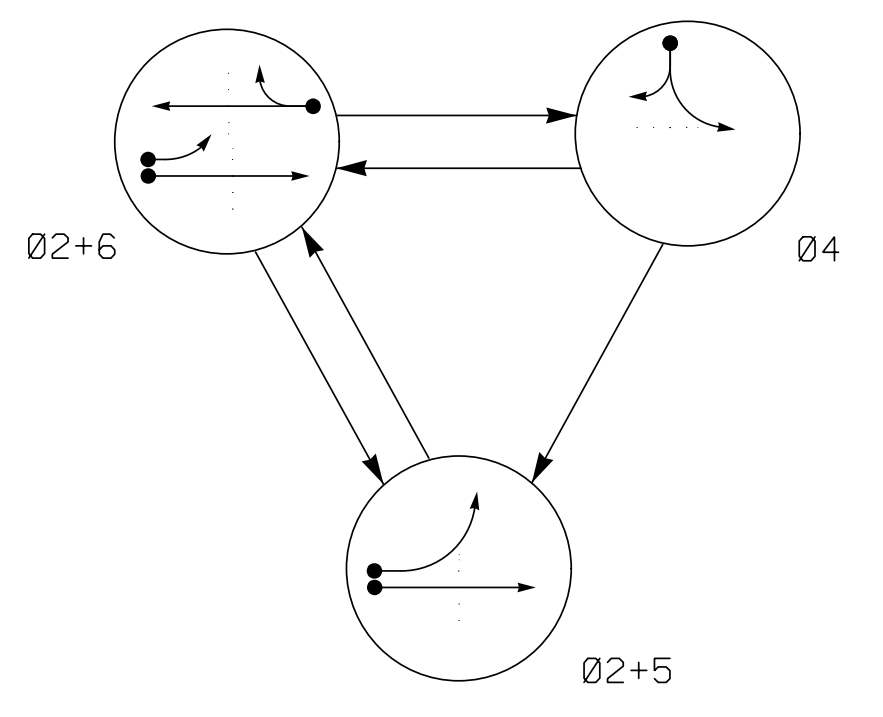


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø2+5	Ø2+6	Ø4	F L S H
21, 22	↑	↑	R	Y
41, 42	R	R	←	R
43	R	R	←	R
51	←	←	←	←
61, 62, 63	R	G	R	Y

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP ZONES				DETECTOR PROGRAMMING								
ZONES	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	URNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	*	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	*	Y	4	Y	Y	-	-	5	-	Y
4B	6X6	0	*	Y	4	Y	Y	-	-	15	-	Y
5A	6X40	0	*	Y	5	Y	Y	-	-	15	-	Y
6A	6X6	70	*	Y	6	Y	Y	-	-	-	-	Y

* Video Detection Zone

3 Phase Fully Actuated (Isolated)

NOTES

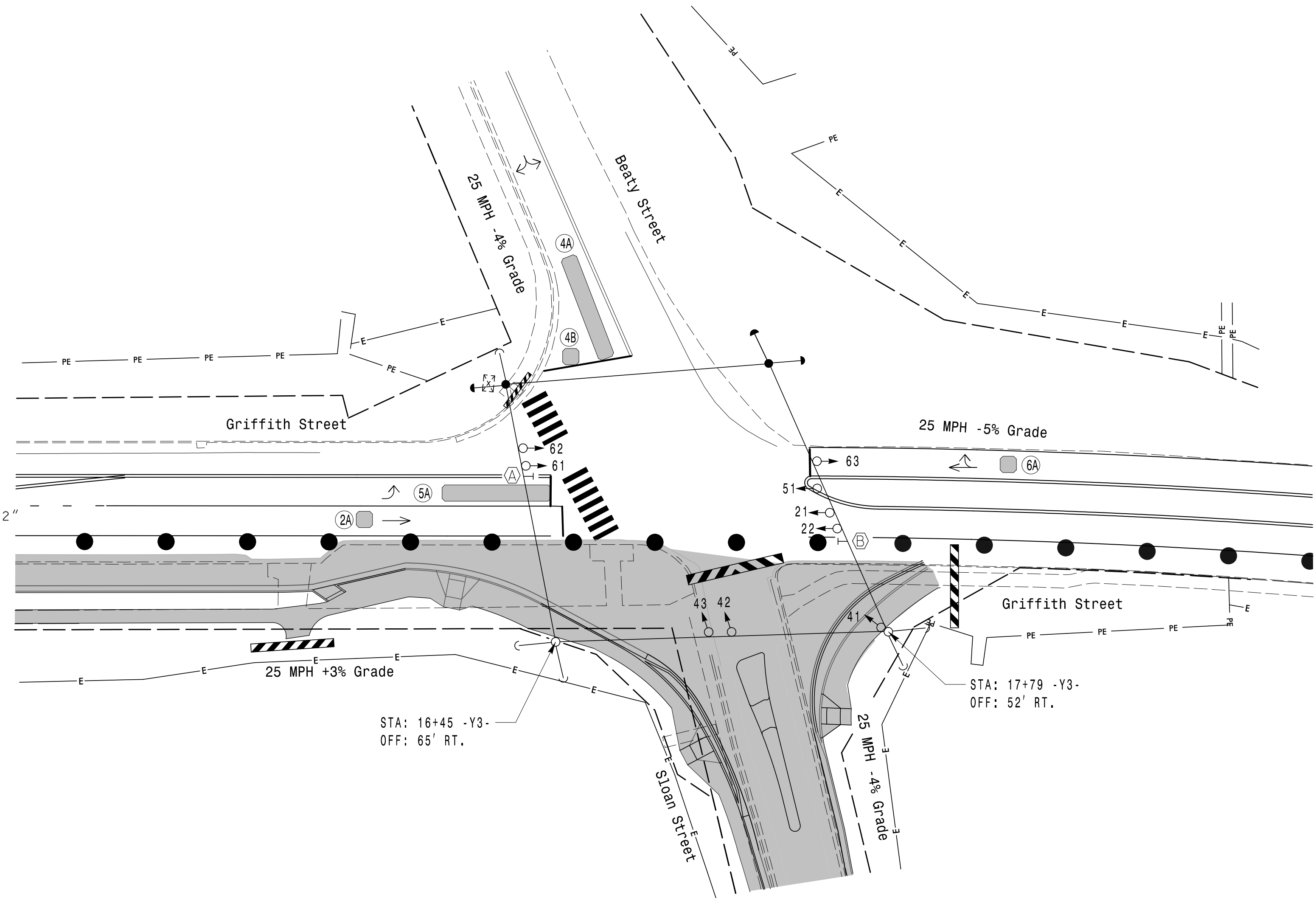
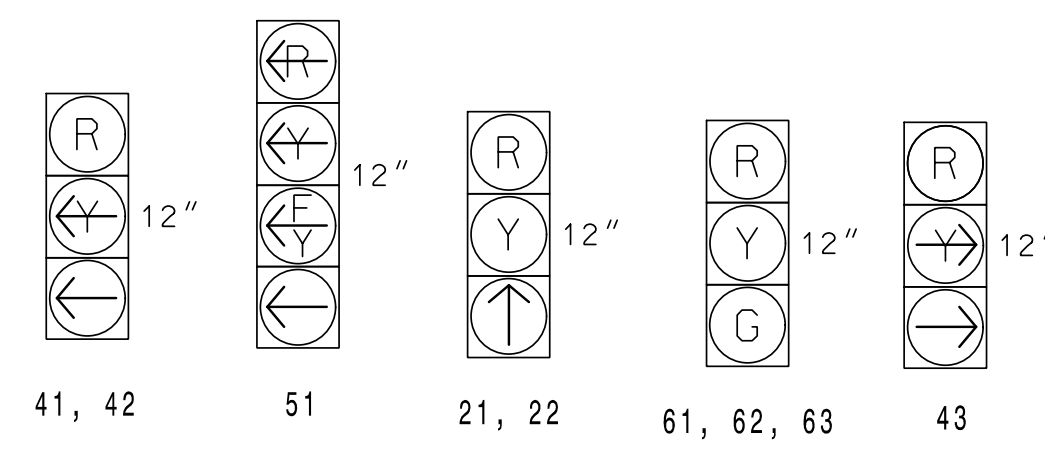
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

- | PROPOSED | EXISTING |
|--|--|
| ○ Traffic Signal Head | ● Traffic Signal Head |
| ○ Modified Signal Head | N/A |
| ○ Sign | ○ Sign |
| ○ Pedestrian Signal Head With Push Button & Sign | ○ Pedestrian Signal Head With Push Button & Sign |
| ○ Signal Pole with Guy | ○ Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ○ Signal Pole with Sidewalk Guy |
| ○ Detector Zones | ○ Detector Zones |
| ○ Controller & Cabinet | ○ Controller & Cabinet |
| ○ Junction Box | ○ Junction Box |
| ○ 2-in Underground Conduit | ○ 2-in Underground Conduit |
| N/A Right of Way | ○ Right of Way |
| N/A Permanent Easement | PE Permanent Easement |
| E Temporary Easement | E Temporary Easement |
| → Directional Arrow | → Directional Arrow |
| N/A Curb Ramp | → Curb Ramp |
| ○ No Left Turn Sign (R3-2) | ○ No Left Turn Sign (R3-2) |
| ○ No Right Turn Sign (R3-1) | ○ No Right Turn Sign (R3-1) |
| ○ Construction Zone Drums | ○ Construction Zone Drums |
| ○ Construction Zone | ○ Construction Zone |
| ○ Construction Barricade | ○ Construction Barricade |

OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	10	7	7	10
Extension 1 *	3.0	2.0	2.0	3.0
Max Green 1 *	45	20	20	45
Yellow Clearance	3.5	3.0	3.0	3.5
Red Clearance	2.4	3.1	1.9	2.4
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

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

Signal Upgrade - Temporary Design 1 (TMP Phase 3A)

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
NC License #0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

Prepared For:
The Town of Davidson
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

Griffith Street at Sloan Street/Beaty Street

Division 10 Mecklenburg Davidson

PLAN DATE: July 2023 REVIEWED BY: KP Baumann

PREPARED BY: SP Pennington REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Seal of Kevin P. Baumann, Professional Engineer, License No. 044434, State of North Carolina.

DocuSigned by:
Kevin P. Baumann
9/19/2023

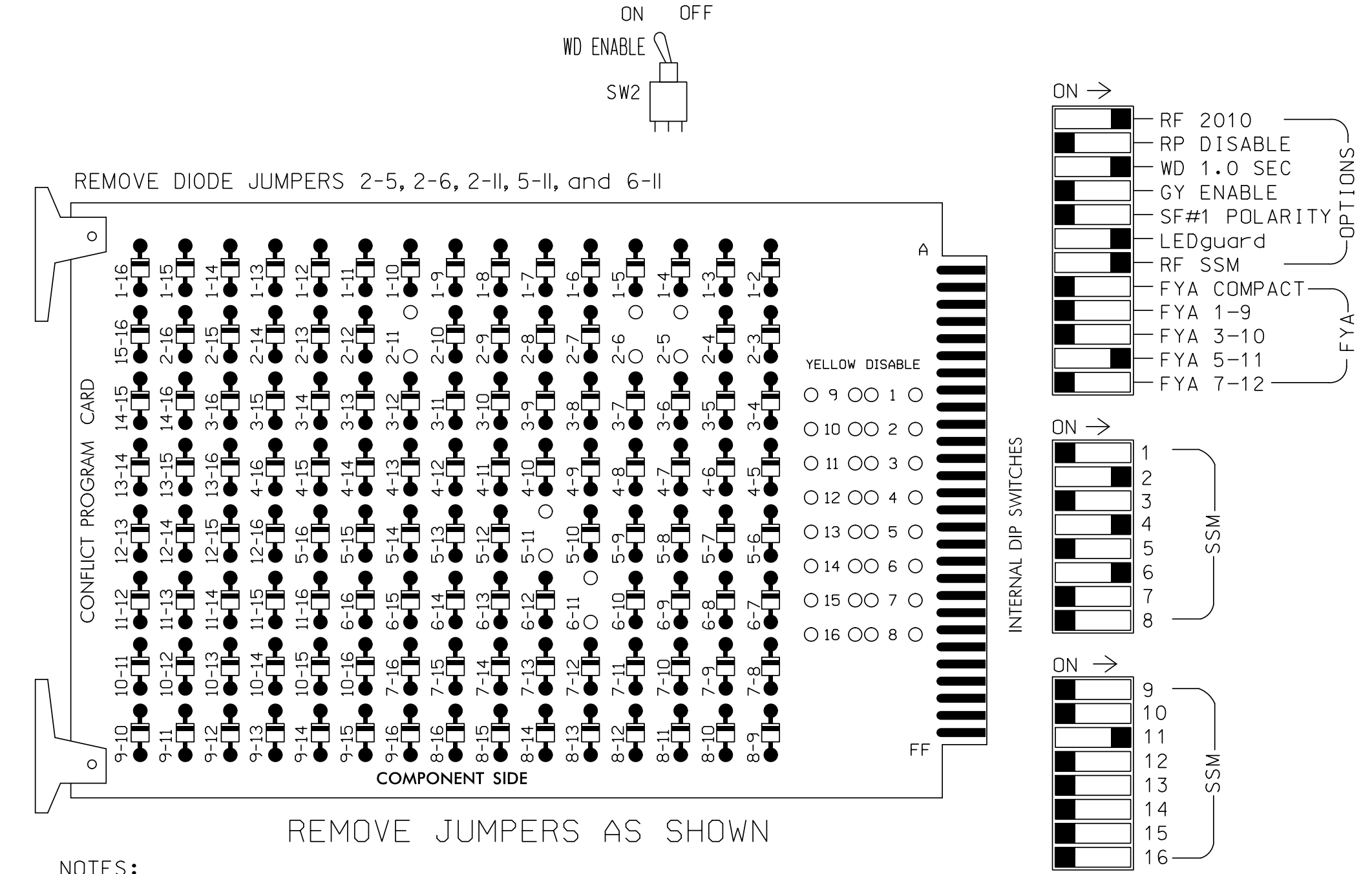
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SIG. INVENTORY NO. DAVI-111

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18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

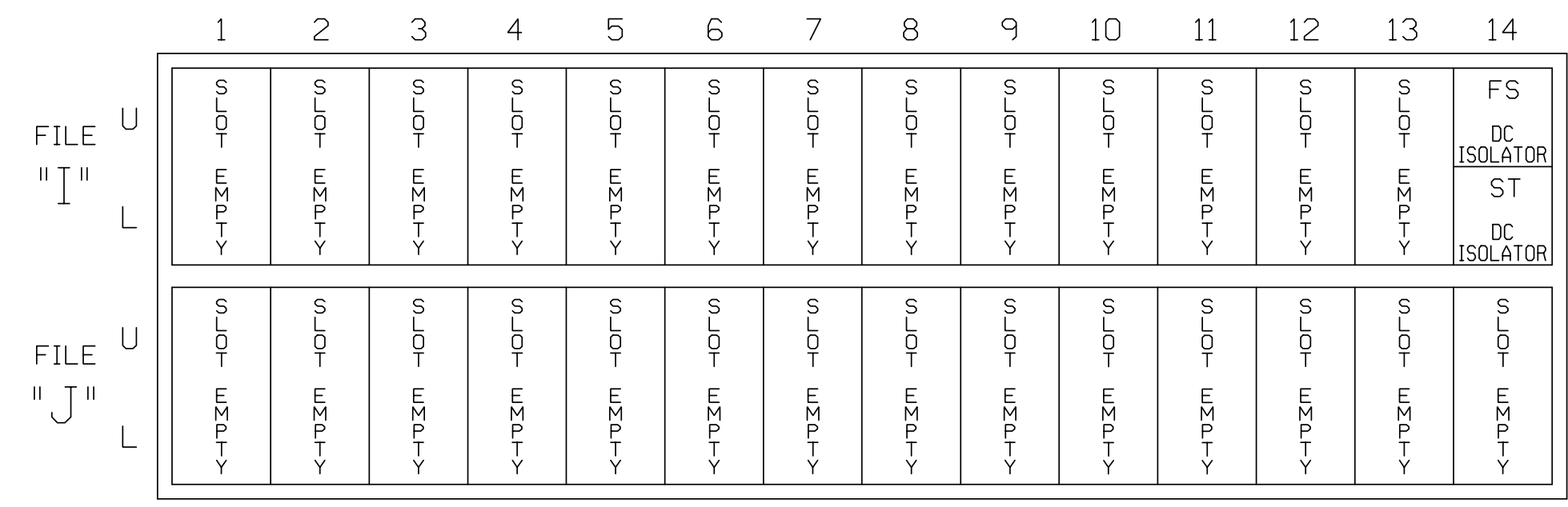


NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

INPUT FILE POSITION LAYOUT

(front view)



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. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7,8, 9,10,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phases 2 and 6 for Startup In Green.
6. Program phases 2 and 6 for Yellow Flash.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42, 43	NU	51★	61,62 63	NU	NU	NU	NU	NU	NU	NU	51★	NU	NU
RED		128			101			134										
YELLOW		129					*	135										
GREEN								136										
RED ARROW																		A114
YELLOW ARROW																		A115
FLASHING YELLOW ARROW					102													A116
GREEN ARROW		130			103		133											

NU = Not Used

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

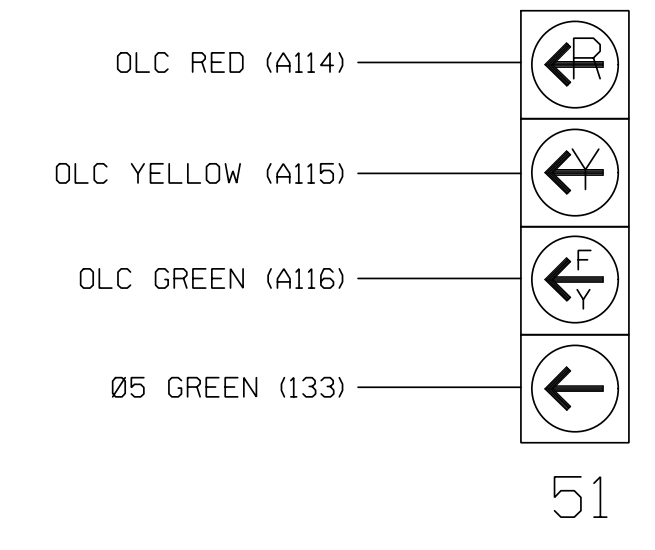
★ See pictorial of head wiring in detail this sheet.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S4,S5,S6,S12
 PHASES USED.....2,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



NOTE

The sequence display for signal head 51 requires special logic programming. See sheet 2 for programming instructions.

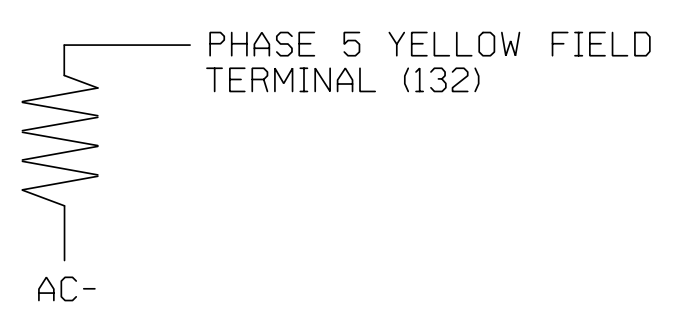
VIDEO DETECTION

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: DAVI-1T1
 DESIGNED: July 2023
 SEALED: 9/19/2023
 REVISED: N/A

Electrical Detail - Temporary Design 1
 Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared For: 	Griffith Street at Sloan Street/Beaty Street		SEAL
	Division 10 Mecklenburg Davidson PLAN DATE: July 2023 PREPARED BY: SP Pennington	REVIEWED BY: KP Baumann REVIEWED BY:	
PLANS PREPARED IN THE OFFICE OF: Kimley»Horn NC License #F-0102 421 Fayetteville Street, Suite 600 Raleigh, NC 27601 (919) 677-2000	DocuSigned by: 9/19/2023 DATE		SIG. INVENTORY NO. DAVI-1T1

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

(program controller as shown below)

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

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

↓
SCROLL DOWN

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

PRESS '+'

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

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

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

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

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

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PRESS '+' THREE TIMES

```

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


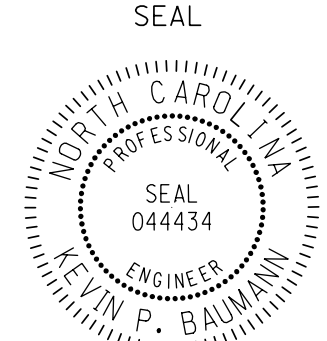
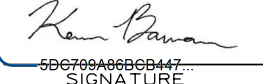
← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: DAVI-1T1
DESIGNED: July 2023
SEALED: 9/19/2023
REVISED: N/A

Electrical Detail - Temporary Design 1
Sheet 2 of 2

DOCUMENT NOT CONSIDERED
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ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared For:  The Town of Davidson College Town. Lake Town. Near Town.	Griffith Street at Sloan Street/Beaty Street		SEAL  KEVIN P. BAUMANN ENGINEER 044434
	Division 10 Mecklenburg Davidson	PLAN DATE: July 2023 REVIEWED BY: KP Baumann		PREPARED BY: SP Pennington REVIEWED BY:
NC License #F-0102 421 Fayetteville Street, Suite 600 Raleigh, NC 27601 (919) 677-2000	REVISIONS _____ INIT. DATE _____ _____	_____ INIT. DATE _____ _____	DocuSigned by:  9/19/2023 _____ _____ _____

9/19/2023 9:16:48 AM susan.pennington K:\RAL\PTD\SIGNALS\011036360_U-5907_Ports\Sloan EX1MS4 - Signal Design\2.1 DAVI-1_2023e-T1.dgn

PHASING DIAGRAM

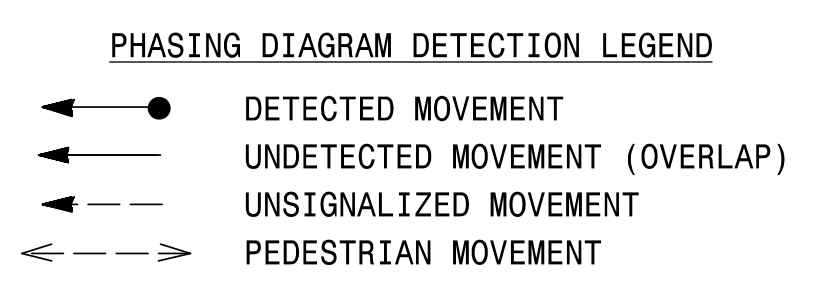
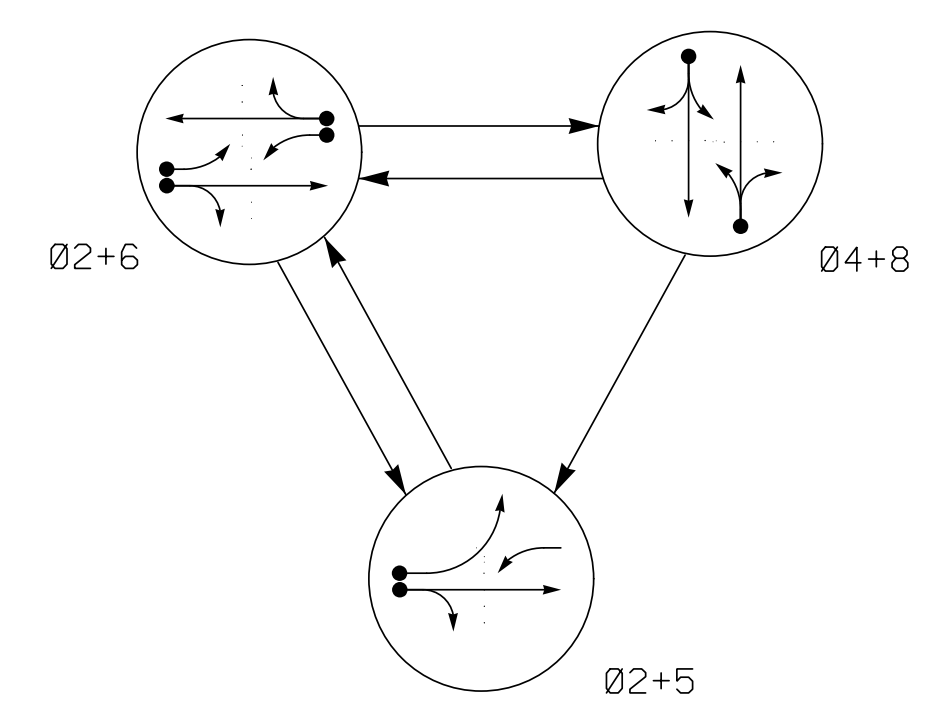
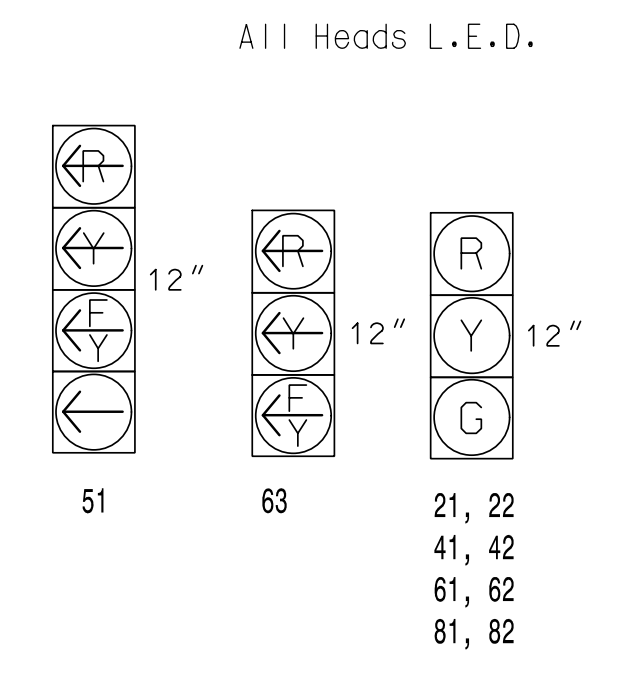


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 2+5	Ø 4+8	FL HOOD
21, 22	G	G	Y
41, 42	R	R	G
51	-	-	-
61, 62	R	G	Y
63	-	-	-
81, 82	R	R	G

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

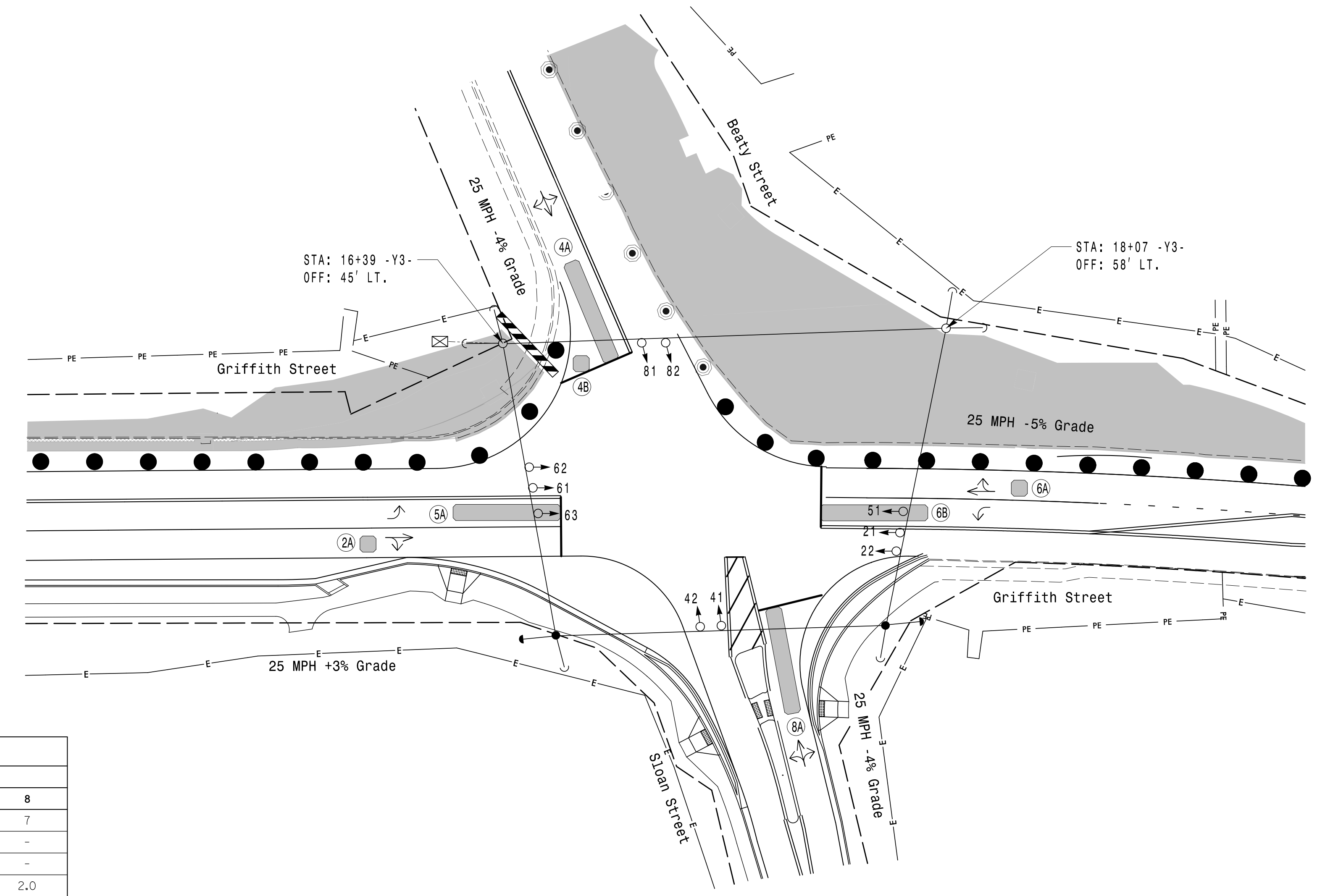
DETECTOR				PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	70	*	X	2	Yes	-	-	-	N	-	X
4A	6X40	0	*	X	4	Yes	-	5	-	N	-	X
4B	6X6	0	*	X	4	Yes	-	15	-	N	-	X
5A	6X40	0	*	X	5	Yes	-	15	-	N	-	X
					2	Yes	-	-	-	N	-	X
6A	6X6	70	*	X	6	Yes	-	-	-	N	-	X
6B	6X40	0	*	X	6	Yes	-	-	-	N	-	X
8A	6X40	0	*	X	8	Yes	-	5	-	N	-	X

* Video Detection Zone

3 Phase Fully Actuated (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- See Roadway Traffic Control Plans for proposed stopline and crosswalk locations.

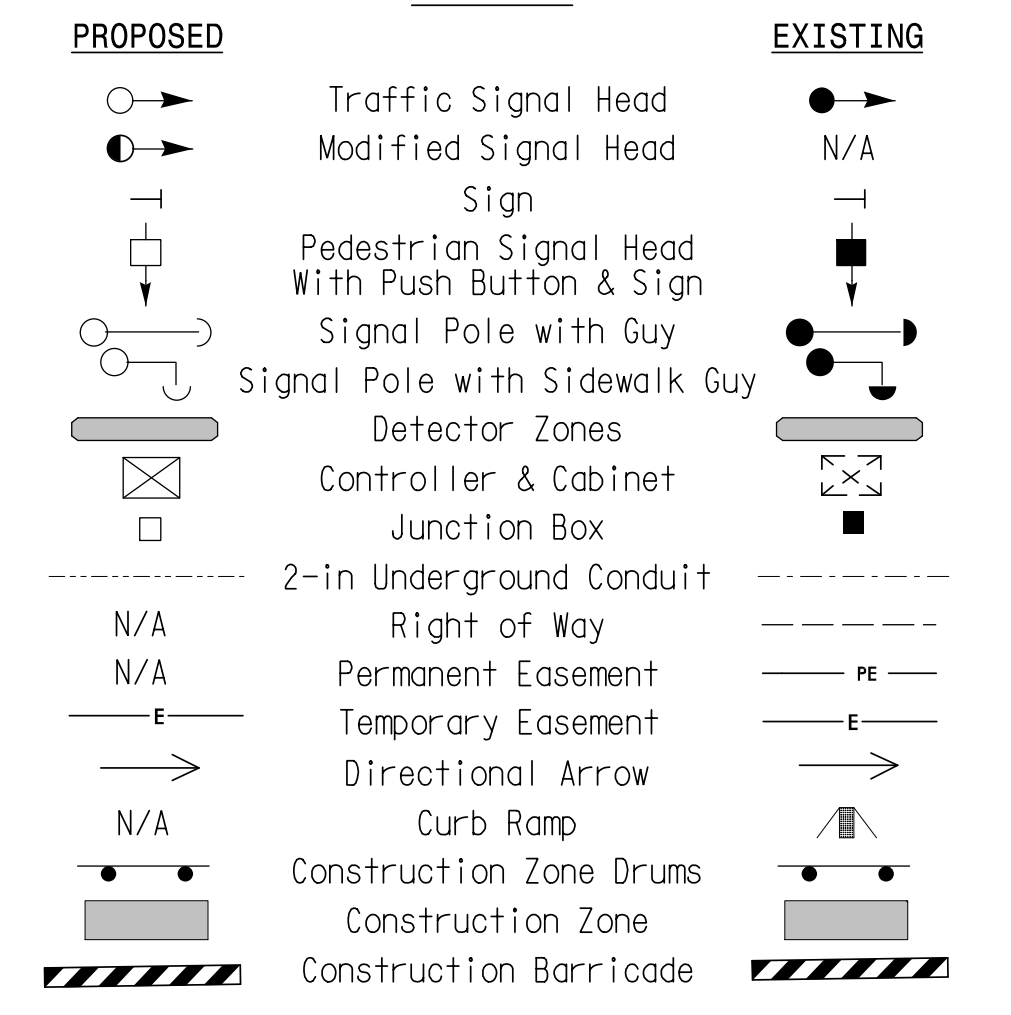


ASC/3 TIMING CHART

FEATURE	PHASE				
	2	4	5	6	8
Min Green *	10	7	7	10	7
Walk *	-	-	-	-	-
Ped Clear	-	-	-	-	-
Veh. Extension *	3.0	2.0	2.0	3.0	2.0
Max 1 *	45	20	20	45	20
Yellow	3.5	3.4	3.0	3.5	3.4
Red Clear	2.4	2.8	1.9	2.4	2.2
Red Revert	2.0	2.0	2.0	2.0	2.0
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

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

LEGEND



Signal Upgrade - Temporary Design 2 (TMP Phase 3B)

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

Prepared For:

 The Town of Davidson
 College Street, Lake Street, Bear Lane

Griffith Street at Sloan Street/Beaty Street

Division 10 Mecklenburg Davidson

PLAN DATE: July 2023 REVIEWED BY: KP Baumann

PREPARED BY: SP Pennington REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE: 0 30
1" = 30'

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Seal of Kevin P. Baumann, Professional Engineer, License No. 044434, State of North Carolina.

DocuSigned by:

 Kevin P. Baumann
 DATE: 9/19/2023

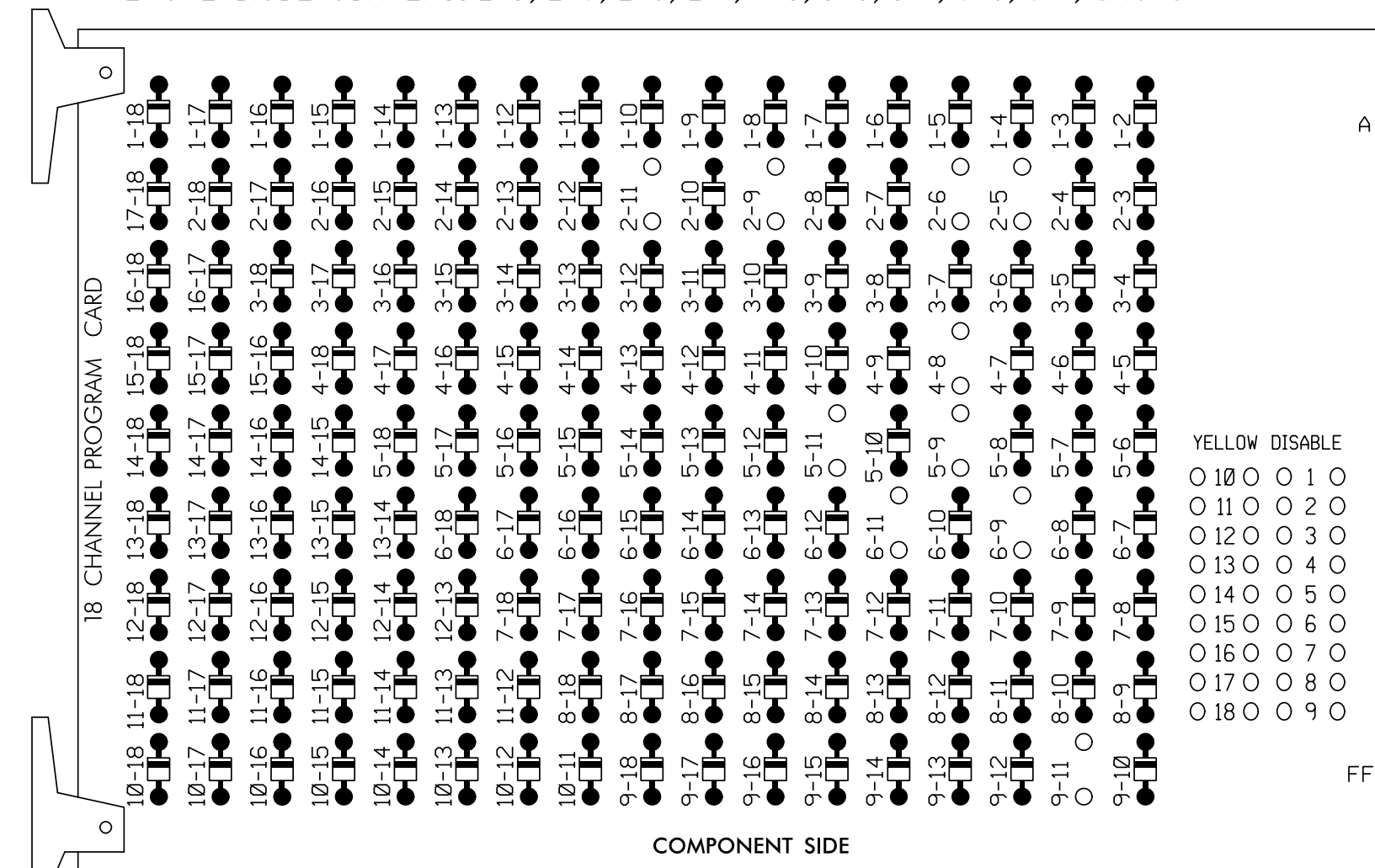
SIG. INVENTORY NO. DAVI-1T2

9/19/2023 9:16:51 AM susan.pennington K:\RAL_T\TDK-SIGNALS\1036360_U-5907_Port+Sloan_EXRMS4 - Signal Design\3.0 DAVI-1-2023g-T2.dgn

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

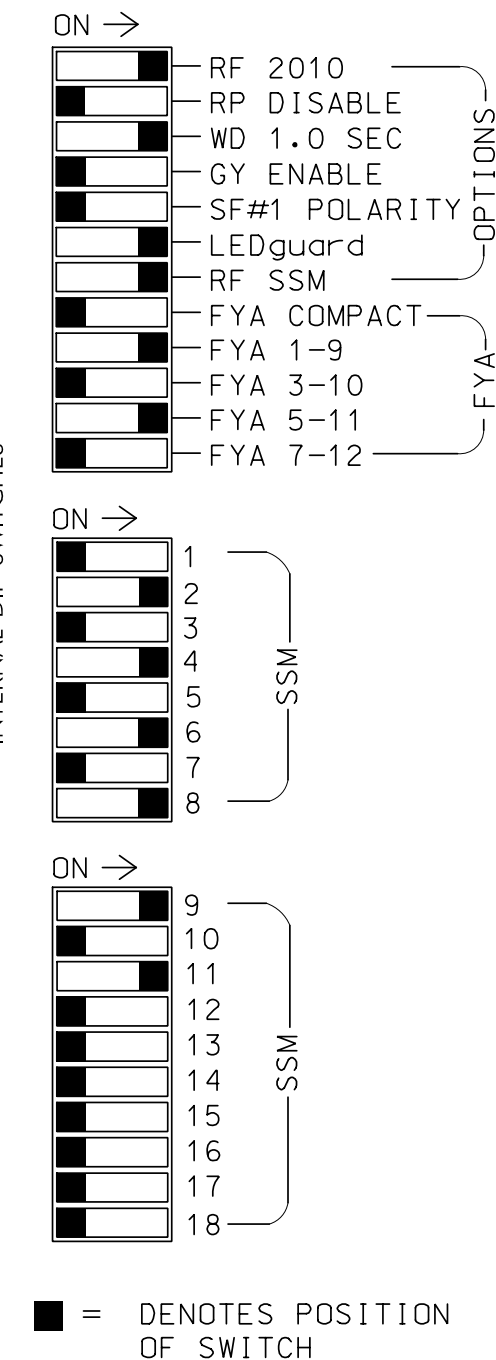
REMOVE DIODE JUMPERS: 2-5, 2-6, 2-9, 2-11, 4-8, 5-9, 5-11, 6-9, 6-11, and 9-11



REMOVE JUMPERS AS SHOWN

NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

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.....S2,S5,S7,S8,S11,AUX S1,AUX S4
 PHASES USED.....2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	51*	61,62	NU	NU	81,82	NU	63*	NU	NU	51*	NU	NU
RED		128			101			134			107							
YELLOW		129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW														A121				A114
YELLOW ARROW														A122				A115
FLASHING YELLOW ARROW														A123				A116
GREEN ARROW								133										

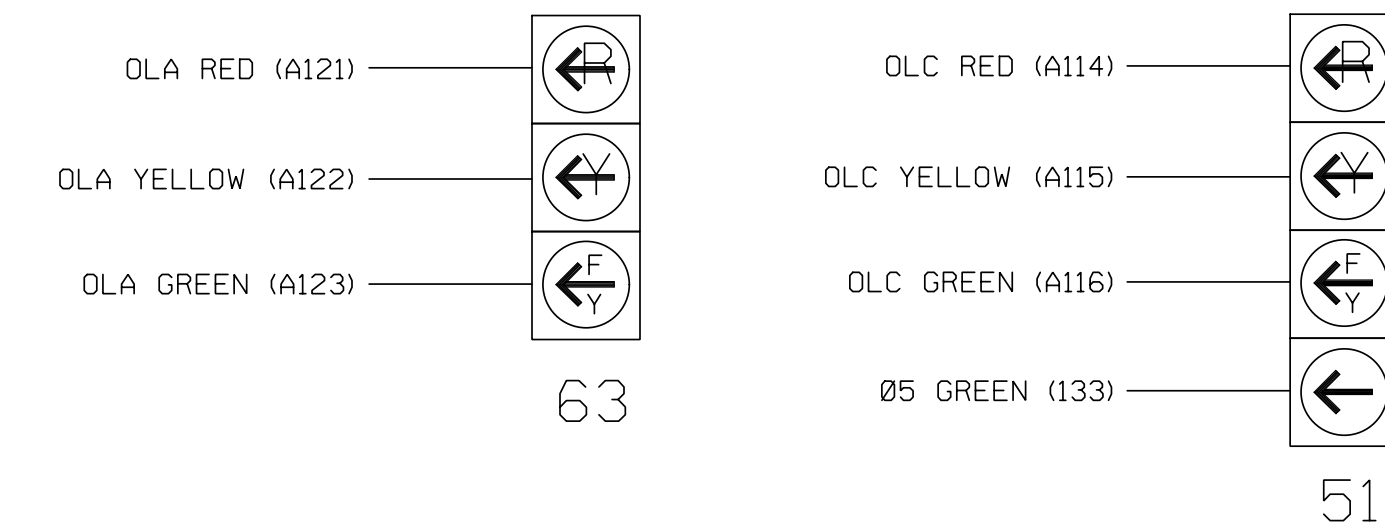
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

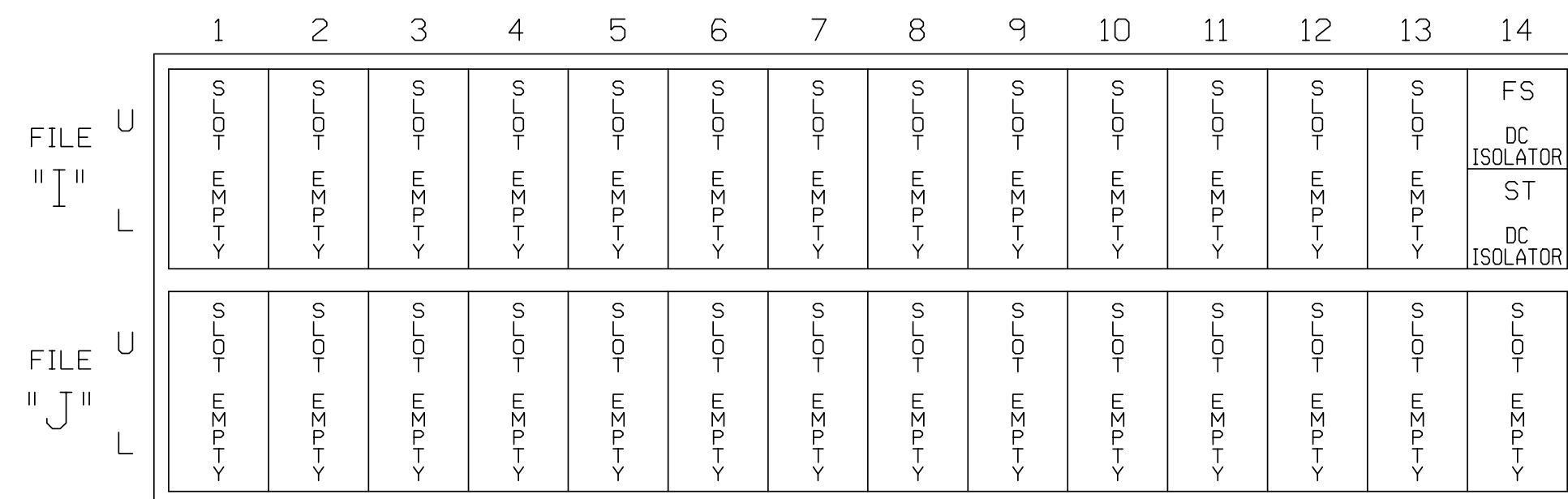
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

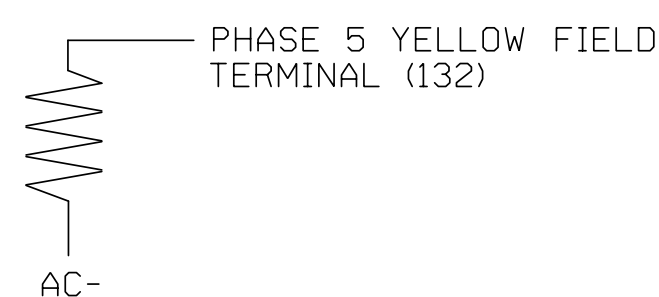
VIDEO DETECTION

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: DAVI-1T2
 DESIGNED: July 2023
 SEALED: 9/19/2023
 REVISED: N/A

Electrical Detail - Temporary Design 2
 Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:



Griffith Street at Sloan Street/Beaty Street

Division 10 Mecklenburg Davidson

PLAN DATE: July 2023 REVIEWED BY: KP Baumann

PREPARED BY: SP Pennington REVIEWED BY:

REVISIONS	INIT.	DATE

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SEAL

DocuSigned by: *Kevin P. Baumann*
 9/19/2023
 SIGNATURE DATE

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 617-2000

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

OVERLAP A

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

```

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

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

Toggle 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: DAVI-1T2
 DESIGNED: July 2023
 SEALED: 9/19/2023
 REVISED: N/A

Electrical Detail - Temporary Design 2
 Sheet 2 of 2

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 SIGNATURES COMPLETED

<p style="font-size: x-small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared For:</p> <p style="font-size: x-small;">College Town. Lake Town. Bear Town.</p>	<h3 style="margin: 0;">Griffith Street at Sloan Street/Beaty Street</h3> <p style="font-size: x-small;">Division 10 Mecklenburg Davidson</p> <p style="font-size: x-small;">PLAN DATE: July 2023 REVIEWED BY: KP Baumann</p> <p style="font-size: x-small;">PREPARED BY: SP Pennington 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="text-align: center; font-size: x-small;">SEAL</p> <p style="font-size: x-small;">DocuSign SIGNATURE DATE</p> <p style="font-size: x-small;">9/19/2023</p> <p style="font-size: x-small;">SIG. INVENTORY NO. DAVI-1T2</p>
REVISIONS	INIT.	DATE												

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Kimley»Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

9/19/2023 9:16:55 AM susan.pennington K:\RAL\PTD\SIGNALS\011036360_U-5907_Ports-Sloan_EXTM54 - Signal_Design\5.1 DAVI-1_2023a-T2.dgn

PHASING DIAGRAM

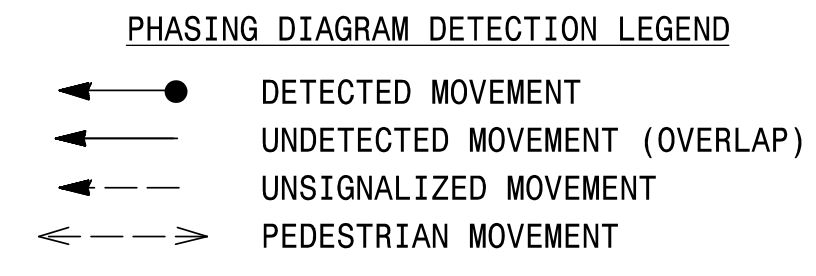
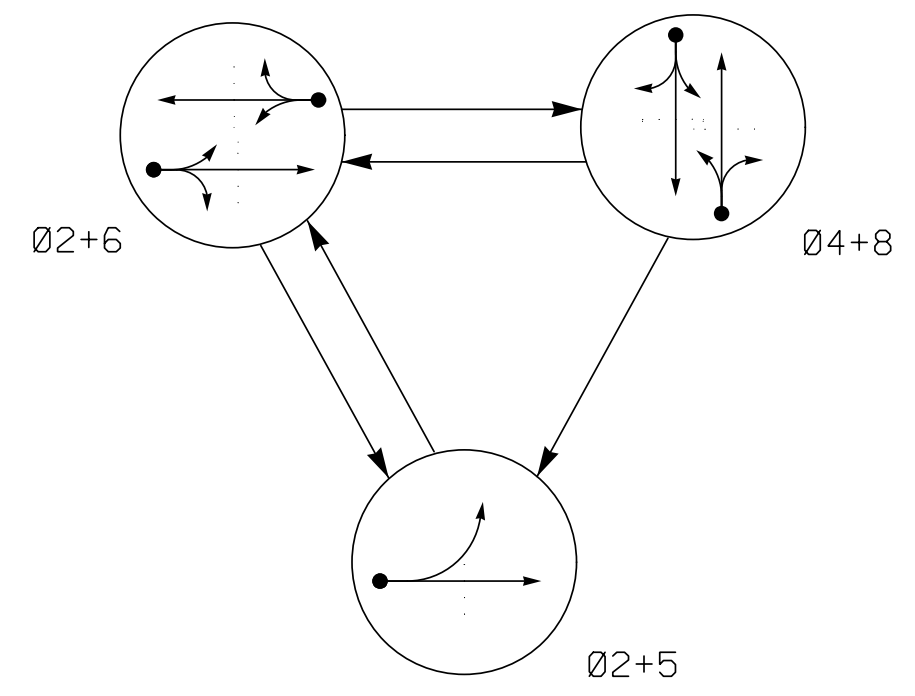
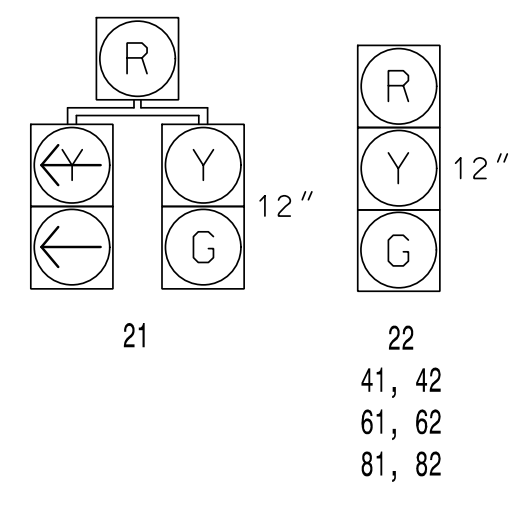


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	02+5	02+6	04+8	FLASH
21	G	G	R	Y
22	G	G	R	Y
41, 42	R	R	G	R
61, 62	R	G	R	Y
81, 82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 DETECTOR INSTALLATION CHART

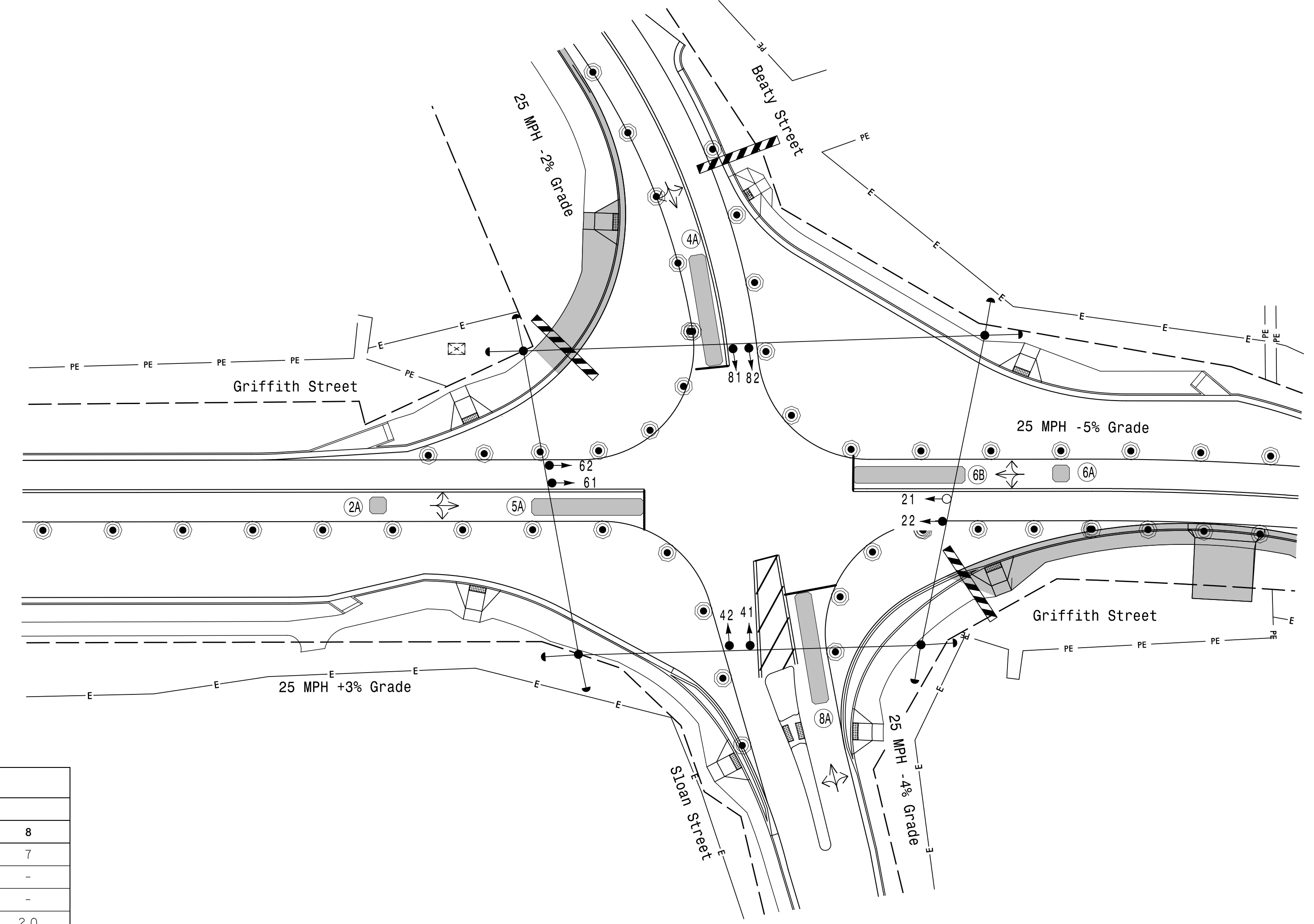
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	70	*	X	2	Yes	-	-	-	N	-
4A	6X40	0	*	X	4	Yes	-	10	-	N	-
5A	6X40	0	*	X	5	Yes	-	10	-	N	-
6A	6X6	70	*	X	6	Yes	-	-	-	N	-
6B	6X40	0	*	X	6	Yes	2	5	-	G	-
8A	6X40	0	*	X	8	Yes	-	-	-	N	-

* Video Detection Zone

3 Phase Fully Actuated (Isolated)

NOTES

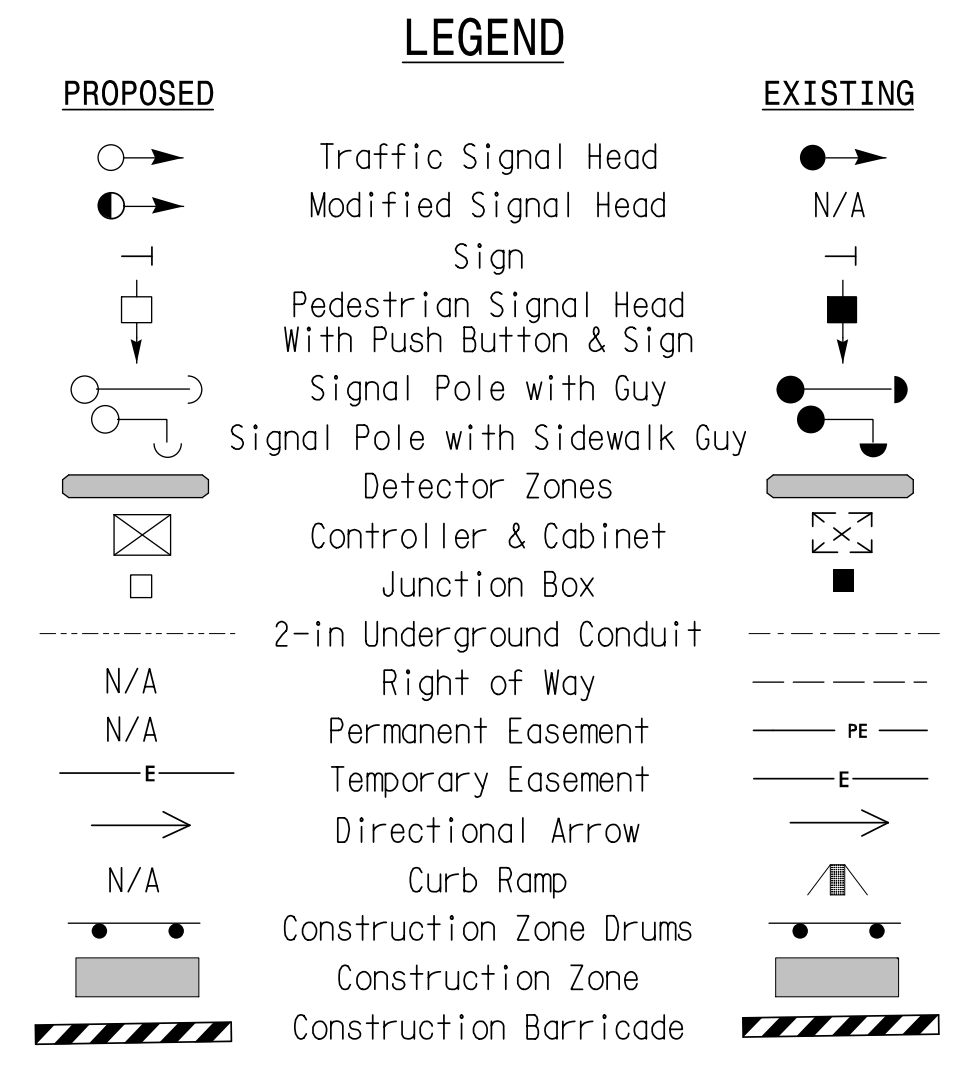
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Omit phase 5 during phase 6 on.
- Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
- Reposition existing signal heads 81 and 82.
- Set all detector units to presence mode.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- See Roadway Traffic Control Plans for proposed stopline and crosswalk locations.



ASC/3 TIMING CHART

FEATURE	PHASE				
	2	4	5	6	8
Min Green *	10	7	7	10	7
Walk *	-	-	-	-	-
Ped Clear	-	-	-	-	-
Veh. Extension *	3.0	2.0	2.0	3.0	2.0
Max 1 *	45	20	20	45	20
Yellow	3.1	3.3	3.0	3.5	3.4
Red Clear	1.5	1.6	1.4	1.5	1.5
Red Revert	5.0	2.0	2.0	2.0	2.0
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

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



Signal Upgrade - Temporary Design 3 (TMP Phase 3C)

Prepared For: The Town of Davidson College Street, Lake Street, Bear Lane.	Griffith Street at Sloan Street/Beaty Street		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED Kevin P. Baumann, Engineer
	Division 10 Mecklenburg Davidson	PLAN DATE: July 2023		REVIEWED BY: KP Baumann
PLANS PREPARED IN THE OFFICE OF: Kimley-Horn NC License #F-0102 421 Fayetteville Street, Suite 600 Raleigh, NC 27601 (919) 677-2000	PREPARED BY: SP Pennington	REVIEWED BY:	DocuSigned by: DATE: 9/19/2023 SIGNATURE DATE SIG. INVENTORY NO. DAVI-1T3

9/19/2023 9:16:58 AM susan.pennington K:\RAL_TPTD\SIGNALS\1036360_U-5907_Port+Sloan_Ext\MS4 - Signal Design\4.0 DAVI-1-2023g-T3.dgn

ECONOLITE ASC/3-2070 BACKUP PROTECTION ENABLE PROGRAMMING
(program controller as shown)

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **1. CONTROLLER SEQ**
- From CONTROLLER SEQUENCE Submenu select **3. BACKUP PREVENT PHASES**

Follow programming as shown below. On the 'ENABLE BACKUP PREVENT' screen move cursor to the appropriate field and press 'YES/NO' on the controller keypad to toggle field value between 'X', 'B', 'C' and 'OFF'.

ENABLE BACKUP PREVENT																
TMG/BKUP	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
1
2
3
4
5
6	.	.	.	B	.	.	.	.	.	.	.	.	.	.	.	.
7
8
9
10
11
12
13
14
15
16

END PROGRAMMING

NOTE

- 'B' without a 'C' programmed for the 'TIMING' (row) phase inhibits the controller from servicing the 'BACKUP' (column) phase when the 'TIMING' (row) phase is active, or next, until the controller goes through Red Revert and Red Clear. Make sure the proper Red Revert and Red Clear times shown on the Signal Design plan are programmed in the controller phase timing.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: DAVI-1T3
DESIGNED: July 2023
SEALED: 9/19/2023
REVISED: N/A


Electrical Detail - Temporary Design 3
Sheet 2 of 2

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PLANS PREPARED IN THE OFFICE OF:
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NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

ELECTRICAL AND PROGRAMMING DETAILS FOR:

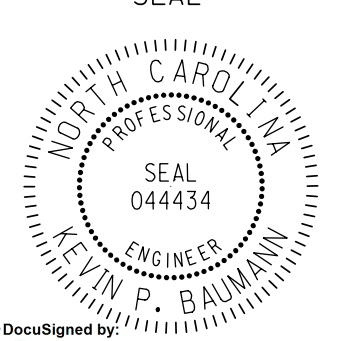
Prepared For:



The Town of Davidson
College Town. Lake Town. Bear Town.

Griffith Street at Sloan Street/Beaty Street	
Division 10	Mecklenburg Davidson
PLAN DATE: July 2023	REVIEWED BY: KP Baumann
PREPARED BY: SP Pennington	REVIEWED BY:
REVISIONS	INIT. DATE

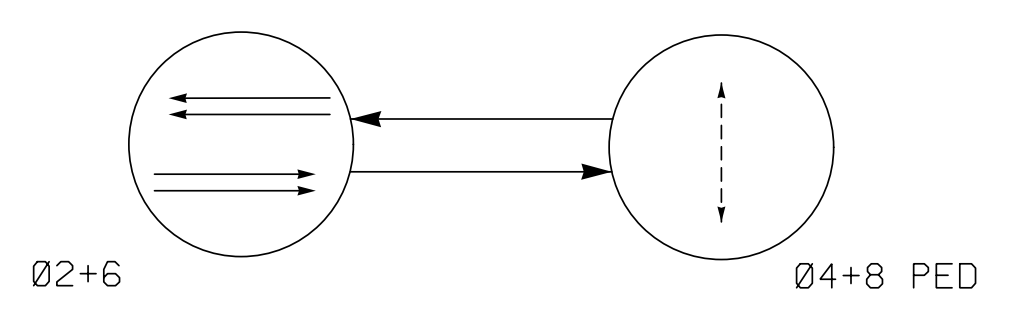
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DATE
9/19/2023
SIG. INVENTORY NO. DAVI-1T3

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PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	02+6 DRK	02+6 FY	02+6 Y	02+6 R	04+8 DW	04+8 W	04+8 FR*	04+8 Y
21, 22	DRK	FY	Y	R	R	FR*	Y	
61, 62	DRK	FY	Y	R	R	FR*	Y	
P41, P42	DRK	DW	DW	W	W	DW	DRK	
P81, P82	DRK	DW	DW	W	W	DW	DRK	

Y - Steady Yellow
 FY - Flashing Yellow
 R - Steady Red
 FR - Flashing Red
 W - Walk
 DW - Don't Walk
 DRK - Dark

* Alternating Flash

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P41		X	Walk	(Percussive Tone)
	X		Flashing Don't Walk / Don't Walk	Wait, Wait to cross Griffith
P42	X		Walk	Griffith. Walk sign is on to cross Griffith.
	X		Flashing Don't Walk / Don't Walk	Wait, Wait to cross Griffith
P81		X	Walk	(Percussive Tone)
	X		Flashing Don't Walk / Don't Walk	Wait, Wait to cross Griffith
P82	X		Walk	Griffith. Walk sign is on to cross Griffith.
	X		Flashing Don't Walk / Don't Walk	Wait, Wait to cross Griffith

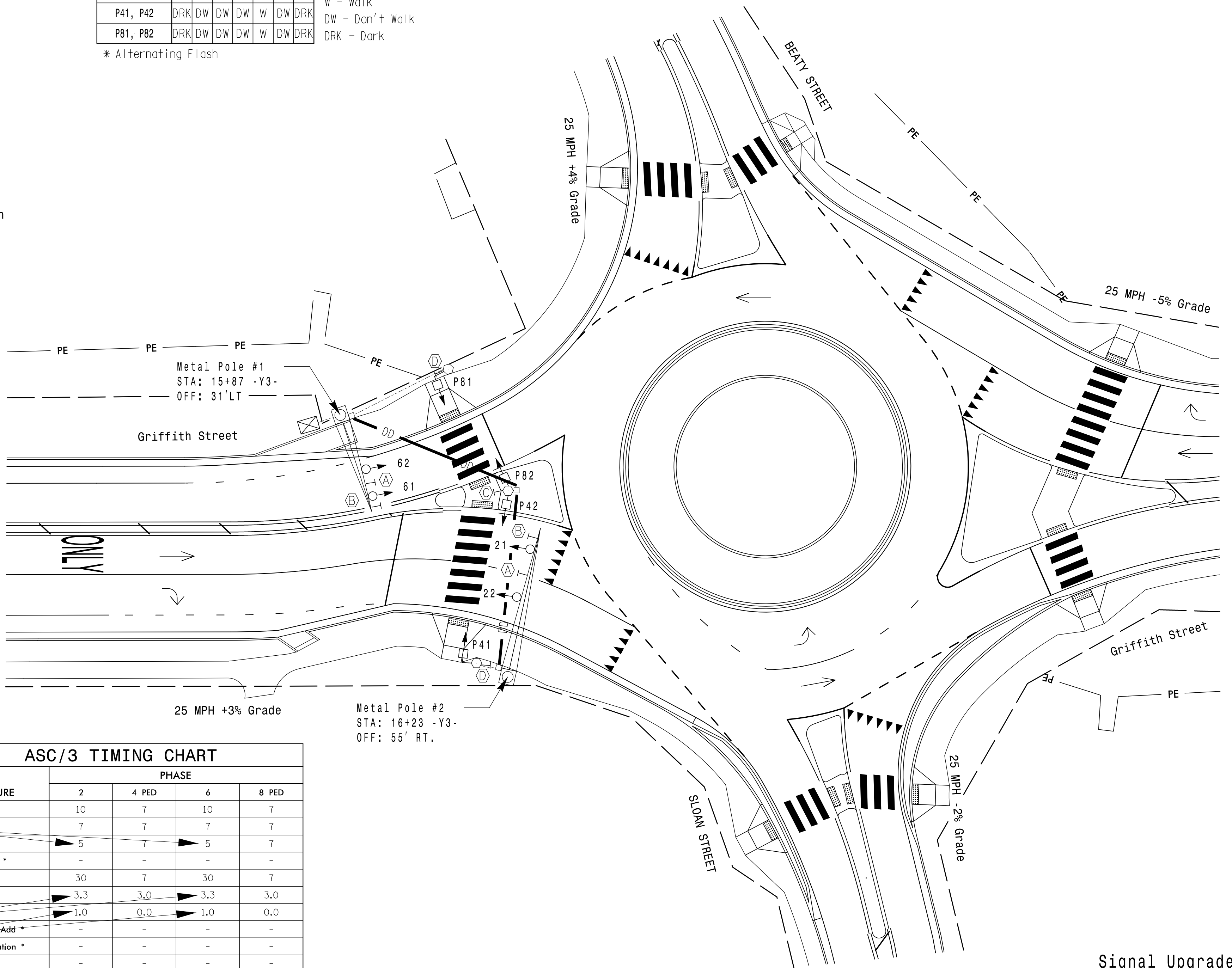
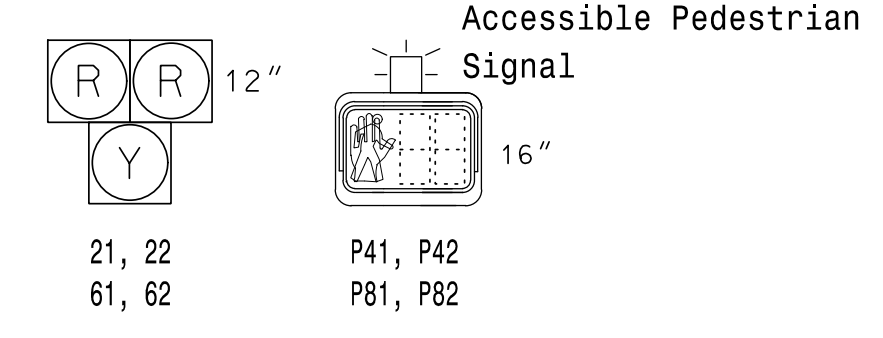
2 Phase Semi-Actuated Pedestrian Hybrid Beacon (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions.
- Locate new cabinet so as not to obstruct vehicle sight distance.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Enable Ped Yellow Clear for phase 4 + 8.
- This intersection features accessible pedestrian signals utilizing percussive tone walk indications and/or speech messages.
- Metal poles and Mastarms and pedestals will have black powder coating. All signal and pedestrian heads will be black with black visors.
- See Roadway Plans for proposed stopline and crosswalk locations.
- Phase 4 and 8 pedestrian timings are designed as a 2 stage crossing. The ped clear time shown is only intended to get a pedestrian to/from the median during a single crossing. Install R10-3d signs as appropriate.

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
| | |
| | N/A |
| | |
| | |
| | |
| | |
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| | N/A |
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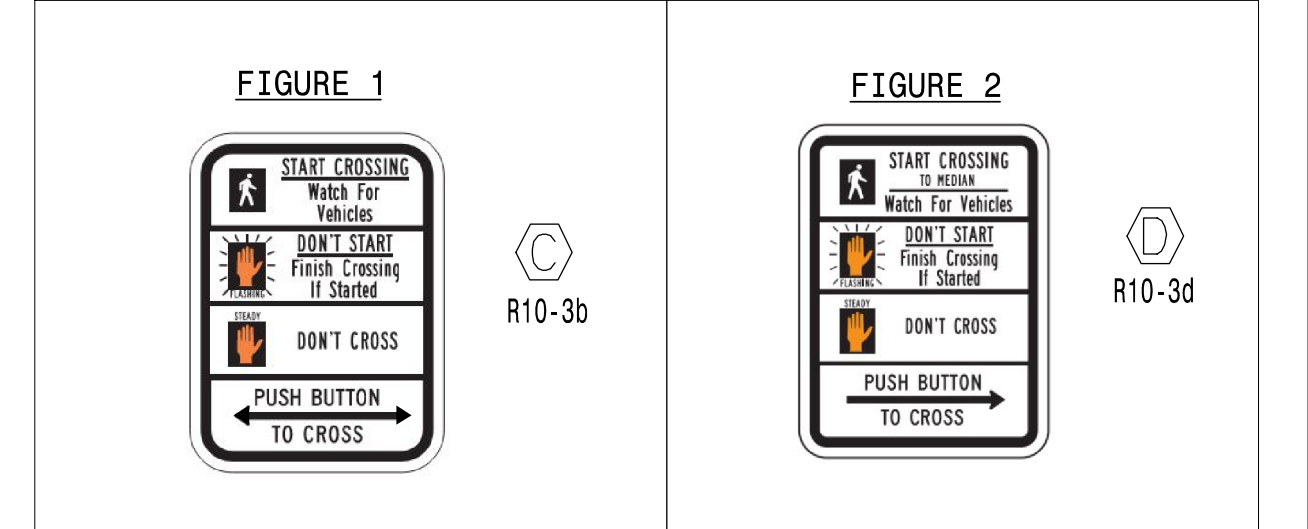
ASC/3 TIMING CHART

FEATURE	PHASE			
	2	4 PED	6	8 PED
Min Green *	10	7	10	7
Walk *	7	7	7	7
Ped Clear	5	7	5	7
Veh. Extension *	-	-	-	-
Max 1 *	30	7	30	7
Yellow	3.3	3.0	3.3	3.0
Red-Clear	1.0	0.0	1.0	0.0
Actuations-B4-Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	-	-	-	-
Recall Position	PED RECALL	-	PED RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

Serves as Flashing Yellow Time

Serves as Steady Yellow Clearance Time
 Serves as All Red Clearance Time

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



Signal Upgrade - Final Design

Prepared For:

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
 NC License #0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

**Griffith Street
 Pedestrian Hybrid Beacon
 West of Sloan Street/
 Beaty Street**

Division 10 Mecklenburg Davidson

PLAN DATE: July 2023 REVIEWED BY: KP Baumann

PREPARED BY: SP Pennington REVIEWED BY:

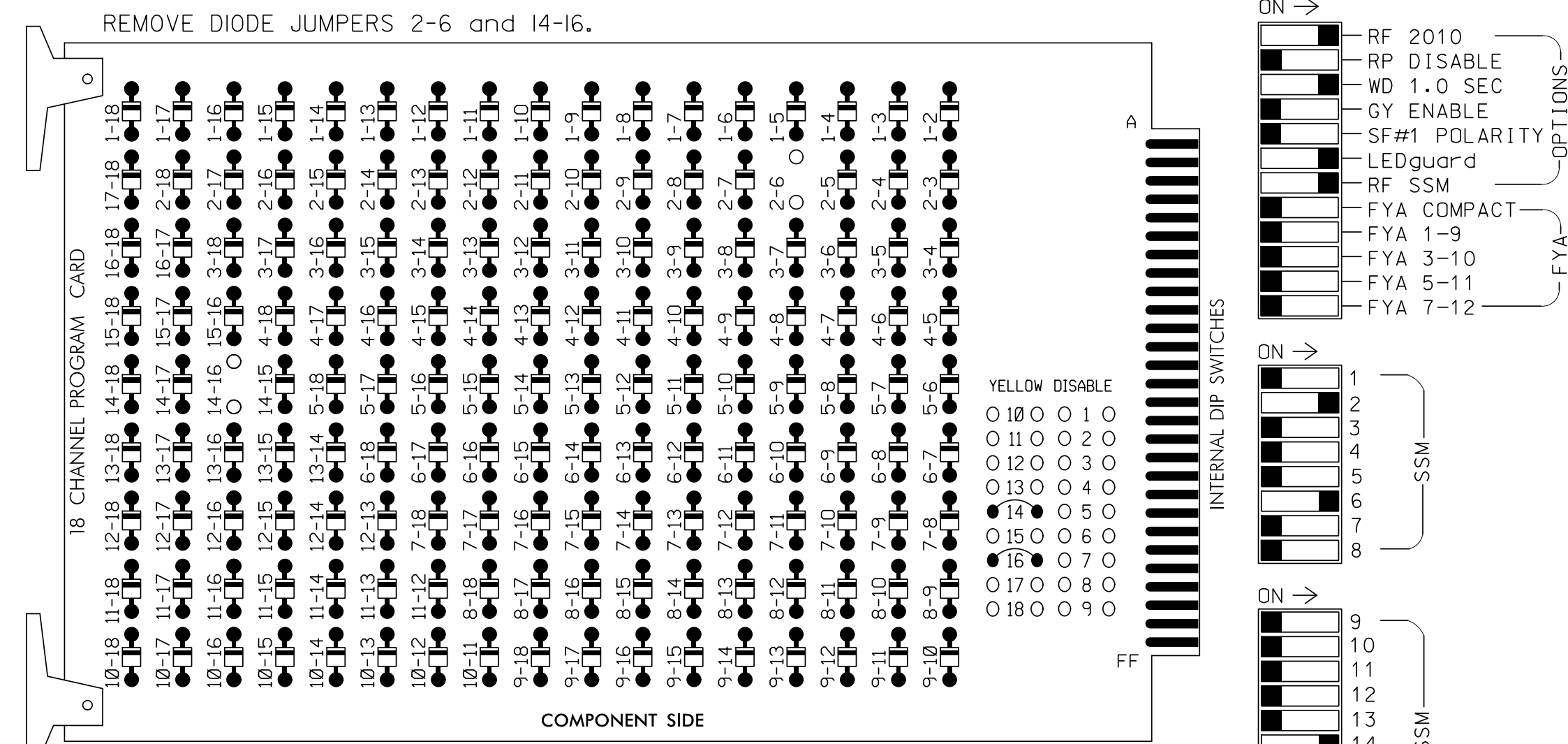
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 Kevin P. Baumann
 9/19/2023

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18 CHANNEL 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.

INPUT FILE POSITION LAYOUT

(front view)

Table showing input file positions for 14 channels, including file names like 'I' and 'J' and their corresponding configurations.

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

FS = FLASH SENSE
ST = STOP TIME

NOTES

- 1. To prevent "flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans. Insert yellow flash program blocks for load switches S2 and S8.
2. Enable simultaneous gap-out for all phases.
3. Program Phase 2 and 6 for Rest In Walk.
4. Program phases 2 and 6 for Ped Recall.
5. Program phases 4 and 8 for PED > CLR RED.

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.....S2,S6,S8,S12
PHASES USED.....2,2PED*,4*,4PED,6,6PED*,8*,8PED
OVERLAPSNONE
* For timing purposes only

OPERATIONAL NOTES

- 1. In order for the controller to perform the Pedestrian Hybrid Beacon (HAWK signal) sequence, special logic programming is necessary. Refer to sheet 2 for the Econolite ASC/3-2070 Logic Processor Programming Detail.
2. For operational purposes, Phase 2 and Phase 6 both run dummy pedestrian phases that are required to produce the correct HAWK signal sequence. There are no Phase 2 or Phase 6 pedestrian heads.
3. The only Phase 6 load switch output that is being used drives one of the red signal faces of each signal head.
4. The Logic Processor flashes Phase 2 Yellow during the Phase 2 pedestrian clearance phase, and Phase 2 Yellow drives the solid Yellow signal faces during Phase 2 vehicle Yellow clear.
5. The Phase 2 and Phase 6 Red outputs drive the solid Red displays during Phase 2 and 6 Red. The Logic Processor flashes the Phase 2 and Phase 6 Red outputs in a wig-wag pattern during Phase 4+8 Ped Clear and thru Phase 4+8 vehicle Yellow and Red clear.
6. The controller must be programmed for Ped Clear Thru Red for Pedestrian Phases 4 and 8 so that the Red displays continue to flash during Phases 4 and 8 Yellow Clear and Red clear.
7. Make sure that all Phase 2 and Phase 6 timings match each other, and that all Phase 4 and Phase 8 timings match each other.
8. The Ped 4 push button is programmed to call Ped 4 and Ped 8, and the Ped 8 push button is programmed to call Ped 8 and Ped 4.

SIGNAL HEAD HOOK-UP CHART

Signal Head Hook-up Chart table with columns for Load Switch No., CMU Channel No., Phase, Signal Head No., and various signal outputs (RED, YELLOW, GREEN, etc.).

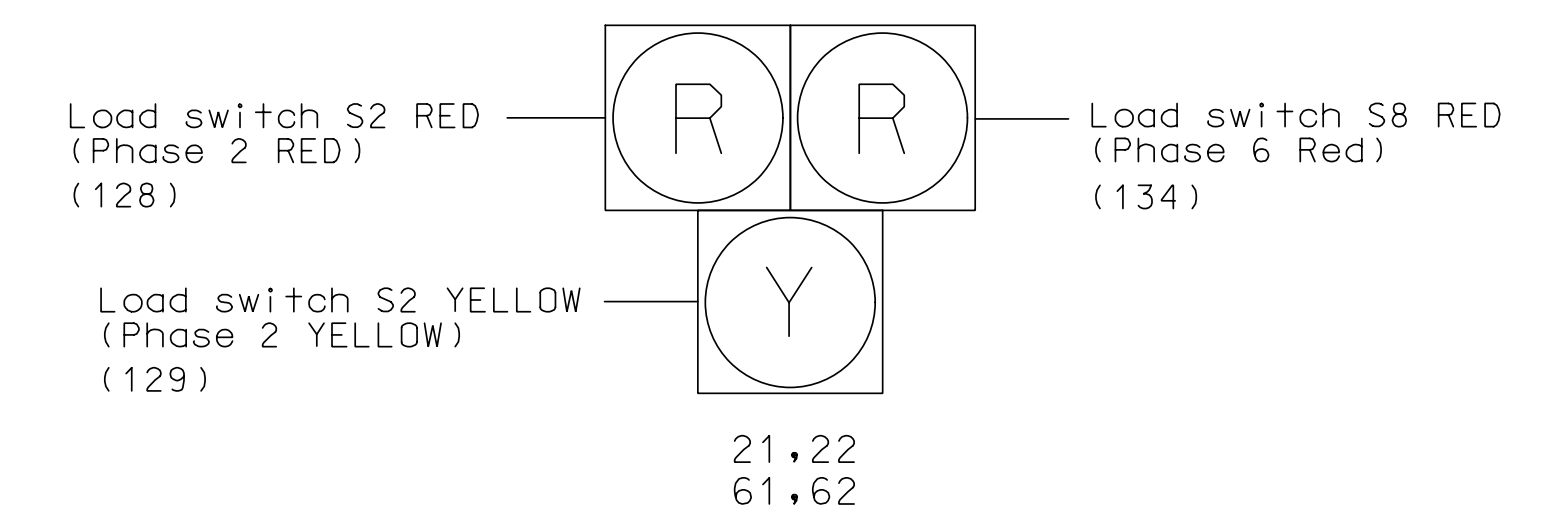
NU = Not Used

NC = Not Connected

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

SIGNAL HEAD WIRING DETAIL

(wire signal heads as shown)

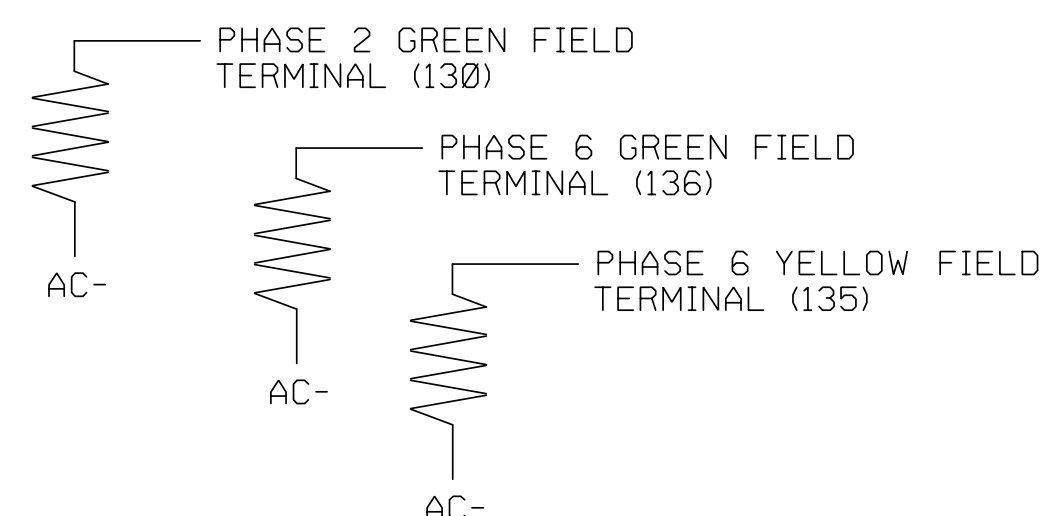


LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES

Table with columns for VALUE (ohms) and WATTAGE, showing ranges like 1.5K - 1.9K and 25W (min).

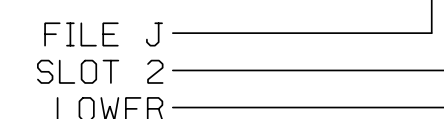


INPUT FILE CONNECTION & PROGRAMMING CHART

Table with columns for LOOP NO., LOOP TERMINAL, INPUT FILE POS., PIN NO., DETECTOR NO., NEMA PHASE, CALL, EXTEND TIME, DELAY TIME, ADDED INITIAL, and DETECTOR TYPE.

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

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: DAVI-1
DESIGNED: July 2023
SEALED: 9/19/2023
REVISED: N/A

Electrical Detail - Final Design
Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:



Griffith Street
Pedestrian Hybrid Beacon
West of Sloan Street/
Beaty Street
Mecklenburg Davidson

Division 10
PLAN DATE: July 2023
REVIEWED BY: KP Baumann
PREPARED BY: SP Pennington
REVIEWED BY:

Table with columns for REVISIONS, INIT., and DATE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Professional Engineer seal for Kevin P. Baumann, North Carolina, License No. 044434, dated 9/19/2023.

PLANS PREPARED IN THE OFFICE OF:
Kimley Horn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000

ECONOLITE ASC/3-2070 PEDESTRIAN DETECTOR PHASE ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **3. PED DETECTOR INPUT ASSIGNMENT**
- Press the TOGGLE key to select **ECONOLITE MODE** and press ENTER.

PED DET PHASE ASSIGNMENT MODE: ECONOLITE V	PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
D	1	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
E	2	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
T	3	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.
E	4	.	.	.	X	.	.	X	.	.	.	.	.	.	.	.	.
C	5	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.
T	6	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.
O	7	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.
R	8	.	.	X	.	.	.	X	.	.	.	.	.	.	.	.	.
	9	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.
	10	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.
	11	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.
	12	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.
	13	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.
	14	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.
	15	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.
	16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.

“.” = No assignment, disabled
 X = Assigns Pedestrian Push Button (PPB) to call the phase or phases
 2 = Call for Ped timing 2
 B = Allows for the PPB to call for Min Green 2 (BIKE GREEN)

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

TIMING INTERVAL

- PHASE 2+6 WALK = Dark Display
- PHASE 2+6 PED CLEAR = Flashing Yellow Display
- PHASE 2+6 VEH YEL CLR = Steady Yellow Display
- PHASE 2+6 RED CLEAR = Steady Red Display
- PHASE 4+8 WALK = Steady Red Display
- PHASE 4+8 PED CLEAR = Alternating Flashing Red Display
- PHASE 4+8 VEH YEL CLR = Alternating Flashing Red Display
- PHASE 4+8 VEH RED CLR = Alternating Flashing Red Display

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

ENTER A "1" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

LP#:	1	COPY FROM:	1	ACTIVE:	M	(T/F)
IF	PED ON PH PED CLR			2	IS	ON
AND	LP COB CODE ON					546
THEN	SIG SET PH YELLOW			2		ON
ELSE						

LOGIC TO FLASH YELLOW SIGNAL FACES AFTER A PED CALL IS PLACED.

ENTER A "2" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

LP#:	2	COPY FROM:	2	ACTIVE:	M	(T/F)
IF	PED ON PH PED CLR			4	IS	ON
AND	LP COB CODE ON					546
THEN	SIG SET PHASE RED			2		OFF
ELSE						

LOGIC FOR ALTERNATING FLASHING RED INDICATIONS ON HEADS 21, 22, 61, 62 DURING PED 4+8 CLEAR (FORCES PHASE 2 RED OFF).

ENTER A "3" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

LP#:	3	COPY FROM:	3	ACTIVE:	M	(T/F)
IF	PED ON PH PED CLR			4	IS	ON
AND	LP COB CODE OFF					546
THEN	SIG SET PH RED			6		OFF
ELSE						

LOGIC FOR ALTERNATING FLASHING RED INDICATIONS ON HEADS 21, 22, 61, 62 DURING PED 4+8 CLEAR (FORCES PHASE 6 RED OFF).

ENTER A "4" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

LP#:	4	COPY FROM:	4	ACTIVE:	M	(T/F)
IF	PED ON PH PED CLR			2	IS	ON
THEN	SIG SET PH GREEN			2		OFF
ELSE						

TURNS LOAD SWITCH 2 GREEN OFF DURING PHASE 2 PED CLEAR TO AVOID A G-Y DUAL INDICATION.

NOTE: COB CODE 546 is a 1Hz 50% Duty Cycle internal logic processor reference.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From the LOGIC PROCESSOR Submenu select **1. LOGIC STATEMENT CONTROL**

ENABLE LOGIC PROCESSOR STATEMENTS 1 - 4 BY POSITIONING THE CURSOR OVER THE FIELDS SHOWN BELOW AND USING THE TOGGLE KEY TO ENABLE THEM.

LOGIC STATEMENT CONTROL	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
LP 1-15	E	E	E	E	.	.	.	.	.	.	.	.	.	.	.
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90


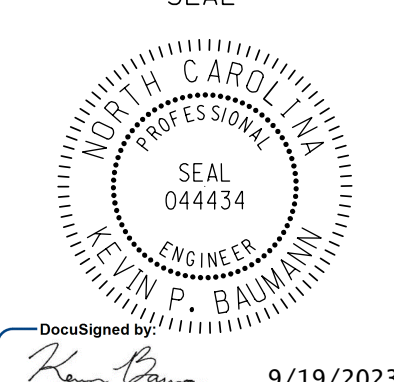
END PROGRAMMING

ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

- Install push buttons and APS equipment per manufacturer's instructions.
- Provide a dedicated cable to each push button per manufacturer's instructions.
- If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
- Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
- Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: DAVI-1
 DESIGNED: July 2023
 SEALED: 9/19/2023
 REVISED: N/A

Electrical Detail - Final Design
 Sheet 2 of 2

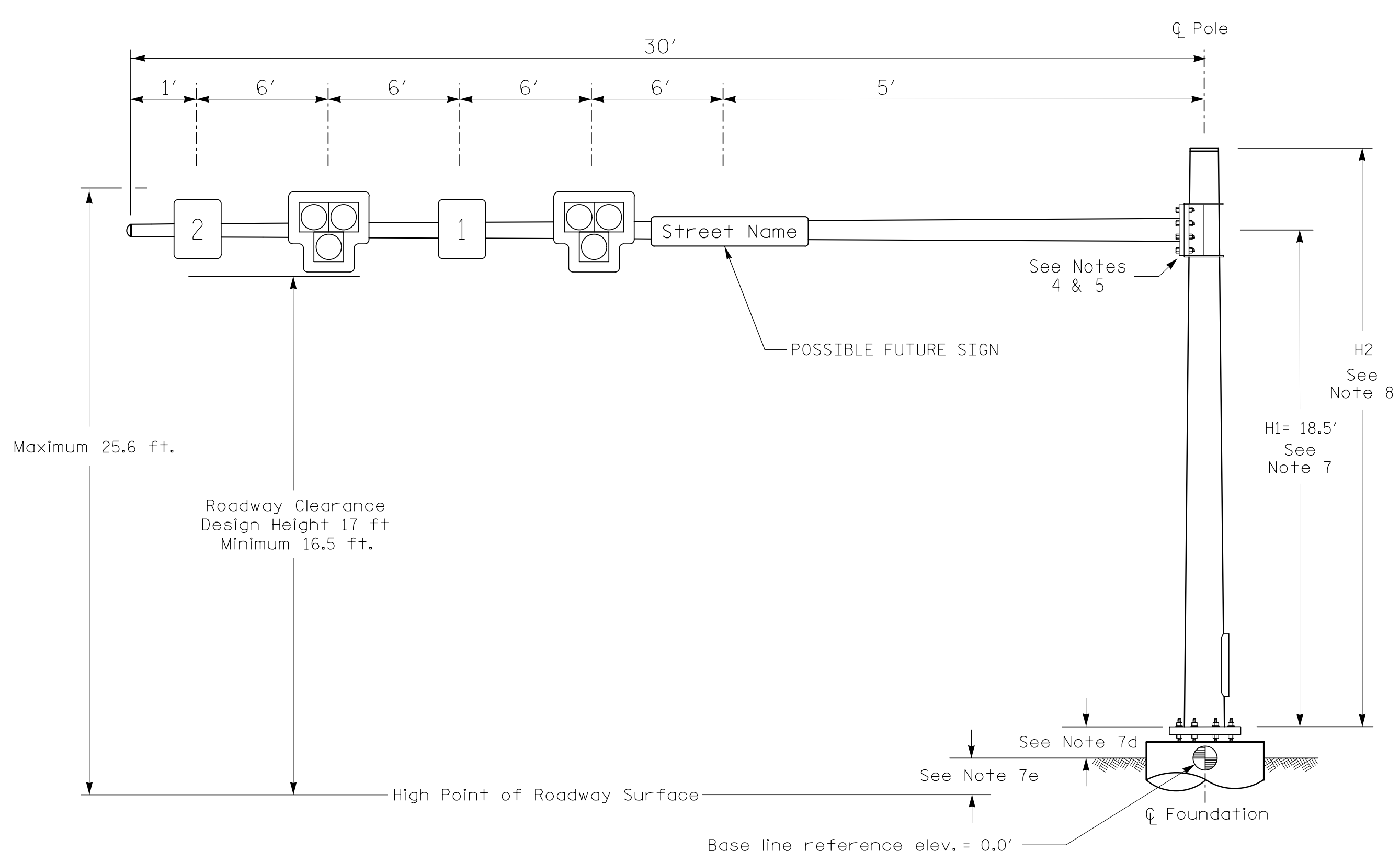
 Prepared For:	Griffith Street Pedestrian Hybrid Beacon West of Sloan Street/ Beaty Street		 SEAL 044434 KEVIN P. BAUMANN ENGINEER
	Division 10 PLAN DATE: July 2023 PREPARED BY: SP Pennington	Mecklenburg REVIEWED BY: KP Baumann REVIEWED BY:		Davidson DATE: 9/19/2023 SIGNATURE:

PLANS PREPARED IN THE OFFICE OF:
Kimley»Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

9/19/2023 9:17:10 AM susan.pennington K:\RAL\PTD\SIGNALS\011036360_U-5907_Ports\Sloan EXH54 - Signal Design\5.1 DAVI-1_2023.dgn

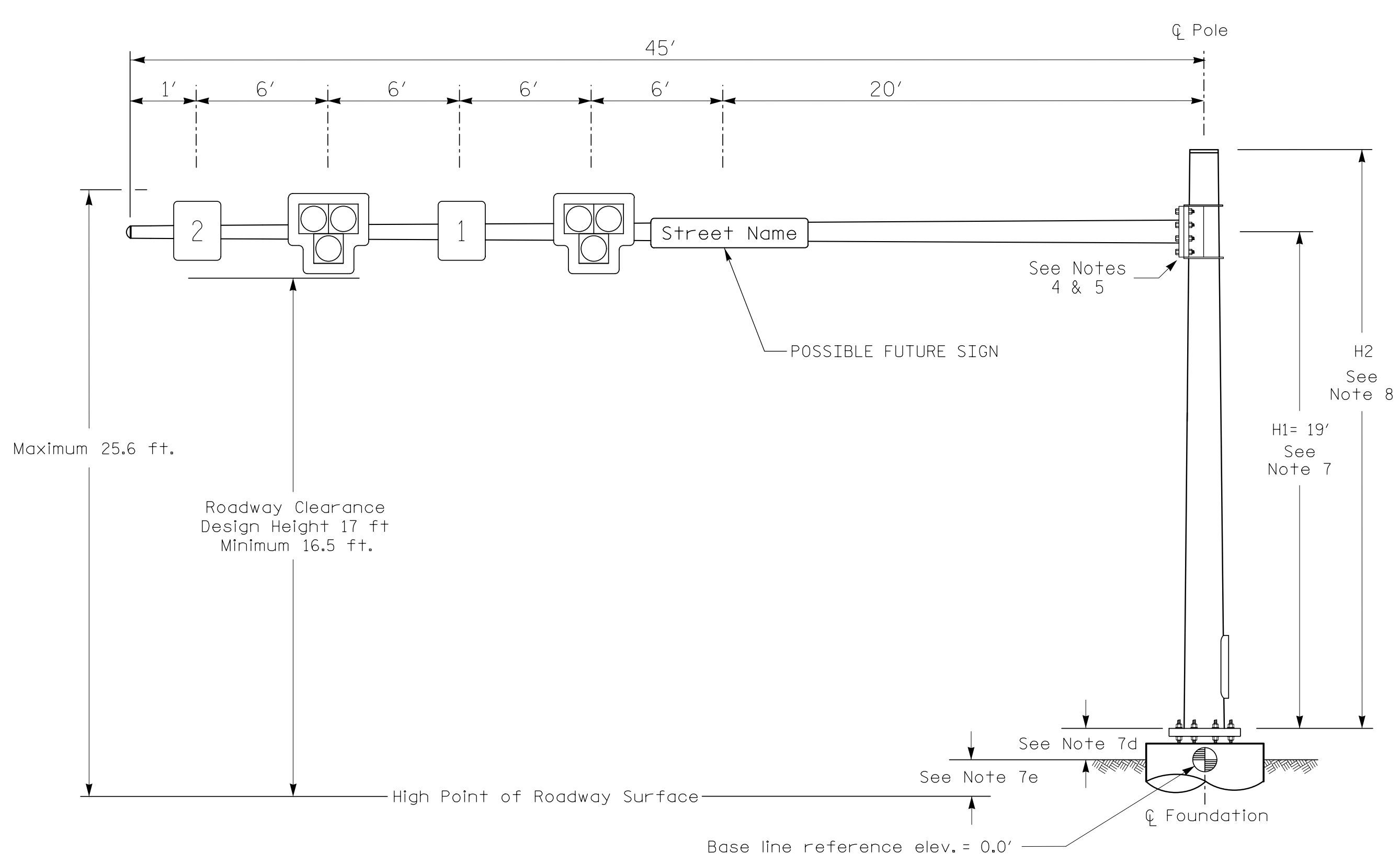
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Design Loading for METAL POLE NO. 1



Elevation View

Design Loading for METAL POLE NO. 2

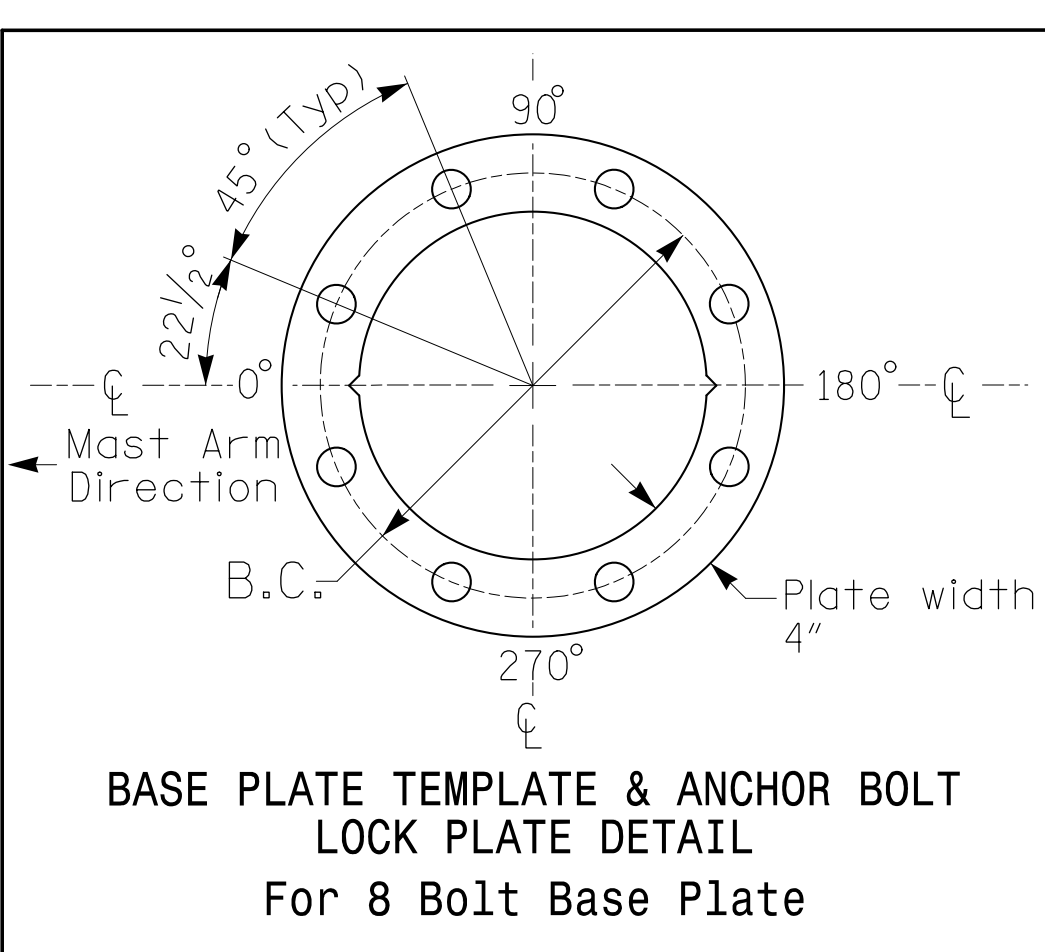
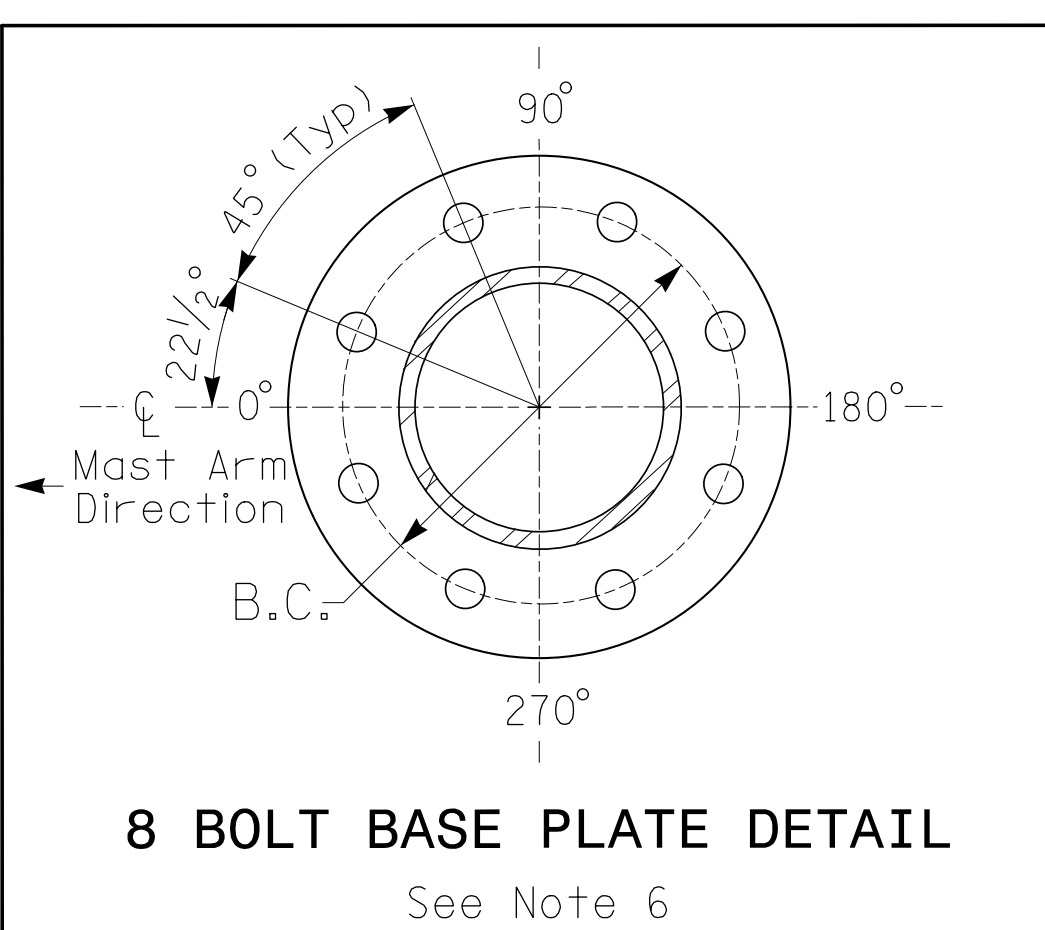
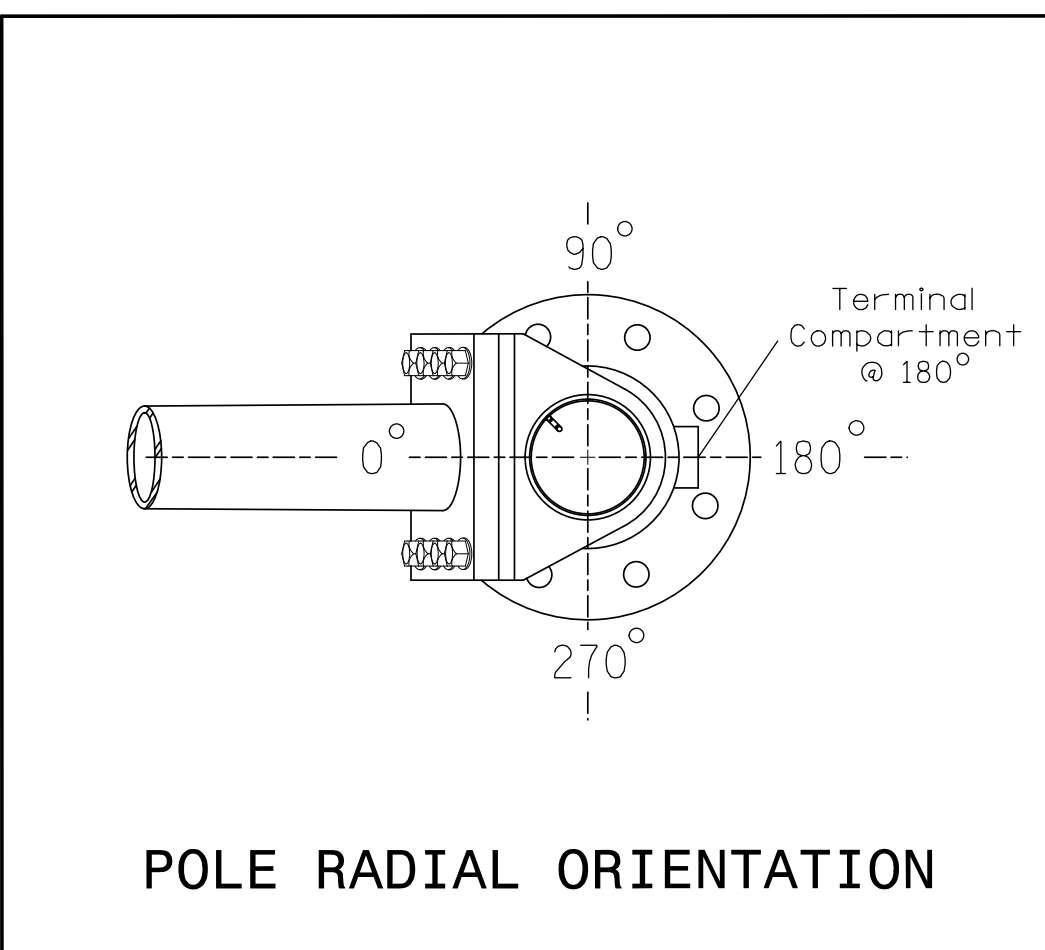


Elevation View

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

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 1	Pole 2
Baseline reference point at ϕ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+0.0 ft.	+0.1 ft.
Elevation difference at Edge of travelway or face of curb	+0.0 ft.	+0.1 ft.



MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9 S.F.	36.0" W X 36.0" L	75 LBS
1	SIGN RIGID MOUNTED	5.0 S.F.	24.0" W X 30.0" L	11 LBS
2	SIGN RIGID MOUNTED	4.5 S.F.	36.0" W X 18.0" L	10 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2018 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

All metal poles and arms should be black in color as specified in the project special provisions.

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

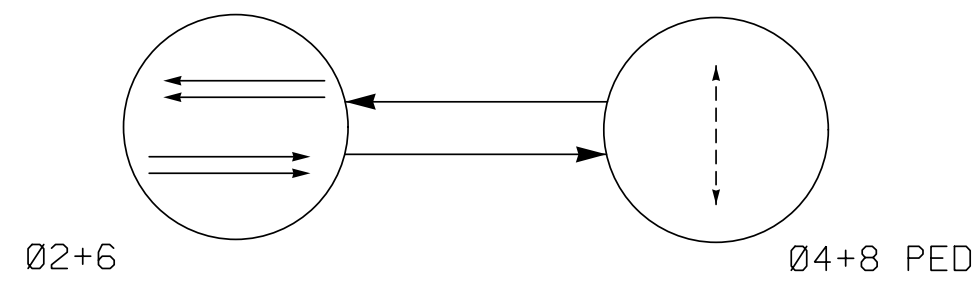
NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	Prepared For: Griffith Street Pedestrian Hybrid Beacon West of Sloan Street/ Beatty Street		SEAL Kevin P. Baumann ENGINEER SEAL 044434 9/19/2023
	Division 10 Mecklenburg Davidson	PLAN DATE: July 2023		REVIEWED BY: KP Baumann
SCALE: 0 N/A N/A	PREPARED BY: SP Pennington	REVIEWED BY:	REVISIONS:
750 N. Greenfield Pkwy, Garner, NC 27529	SIGNATURE:	DATE:	DATE:

9/19/2023 9:17:12 AM ausan-jamington K:\RAL\PTDM-STG\ALSW11083630_U-5907_Ports-Sign-Ex-M&S-Signal-Design\6.3_DAVI-2_2023mp.dgn

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

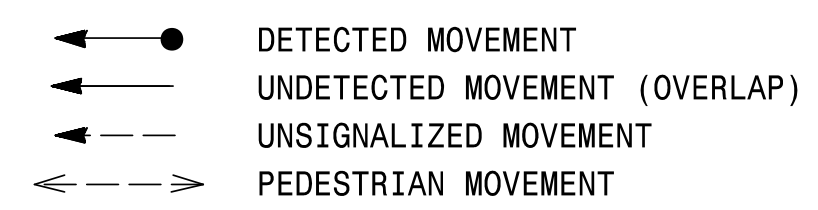


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø2+6 DARK	ACTIVATION	Ø4+8 WALK	Ø4+8 WALK	Ø4+8 WALK	Ø4+8 WALK	Ø4+8 WALK	Ø4+8 WALK
21, 22	DRK	FY	Y	R	R	FR*	Y	
61, 62	DRK	FY	Y	R	R	FR*	Y	
P41, P42	DRK	DW	DW	DW	W	DW	DRK	
P81, P82	DRK	DW	DW	W	DW	DRK		

Y - Steady Yellow
 FY - Flashing Yellow
 R - Steady Red
 FR - Flashing Red
 W - Walk
 DW - Don't Walk
 DRK - Dark
 * Alternating Flash

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE TONES	INTERVAL	SPEECH MESSAGE
P41	X	Walk	(Percussive Tone)
	X	Flashing Don't Walk / Don't Walk	Wait, Wait to cross Griffith
P42	X	Walk	Griffith. Walk sign is on to cross Griffith.
	X	Flashing Don't Walk / Don't Walk	Wait, Wait to cross Griffith
P81	X	Walk	(Percussive Tone)
	X	Flashing Don't Walk / Don't Walk	Wait, Wait to cross Griffith
P82	X	Walk	Griffith. Walk sign is on to cross Griffith.
	X	Flashing Don't Walk / Don't Walk	Wait, Wait to cross Griffith

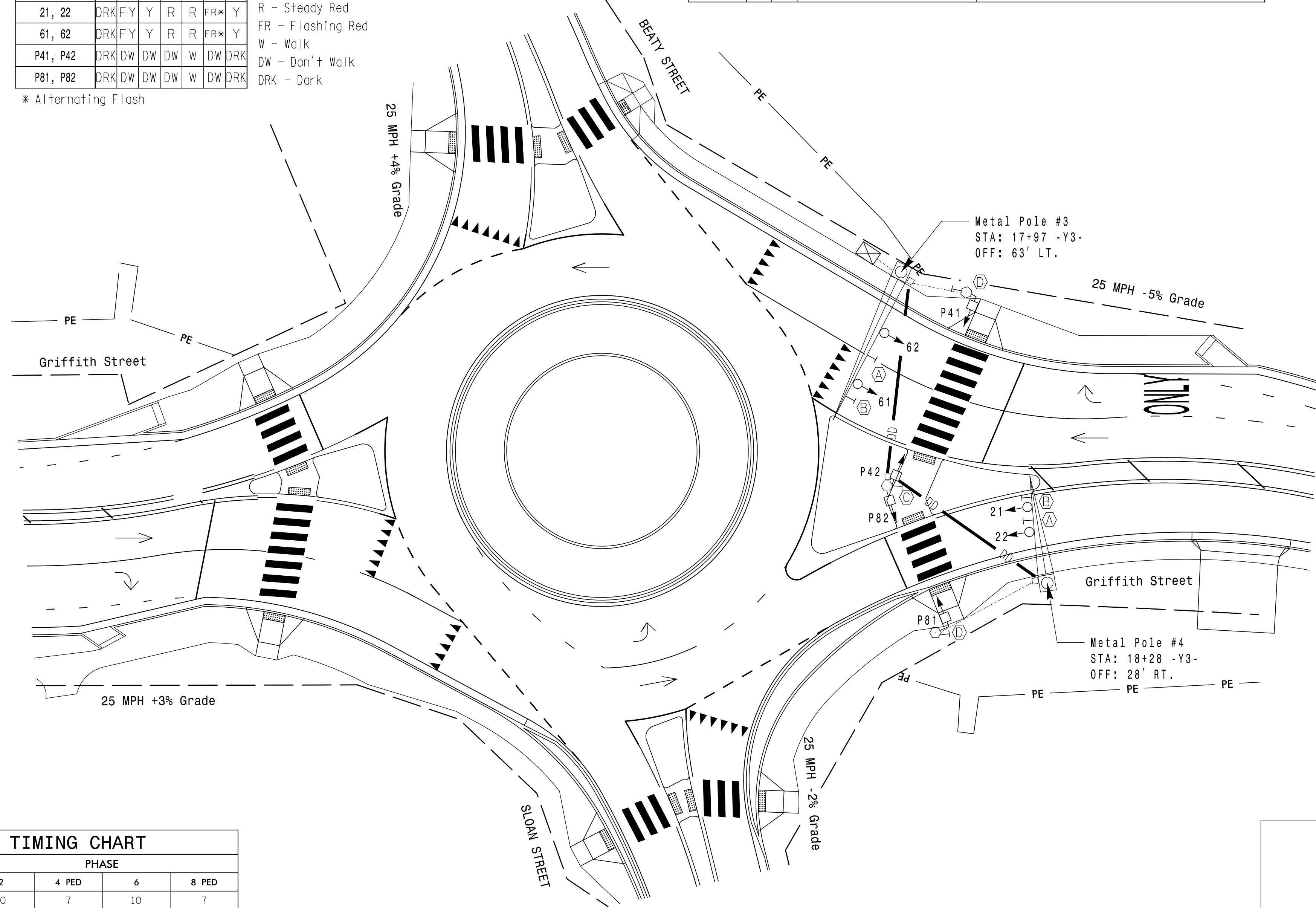
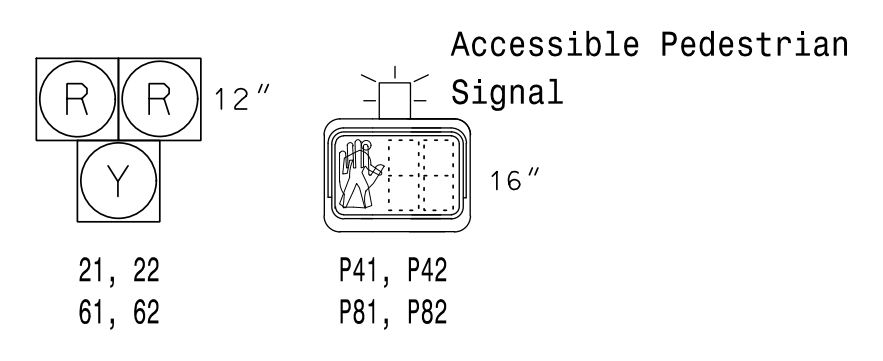
2 Phase Semi-Actuated Pedestrian Hybrid Beacon (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions.
- Locate new cabinet so as not to obstruct vehicle sight distance.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Enable Ped Yellow Clear for phase 4 + 8.
- This intersection features accessible pedestrian signals utilizing percussive tone walk indications and/or speech messages.
- Metal poles and pedestals will have black powder coating. All signal and pedestrian heads will be black with black visors.
- See Roadway Plans for proposed stopline and crosswalk locations.
- Phase 4 and 8 pedestrian timings are designed as a 2 stage crossing. The ped clear time shown is only intended to get a pedestrian to/from the median during a single crossing. Install R10-3d signs as appropriate.

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

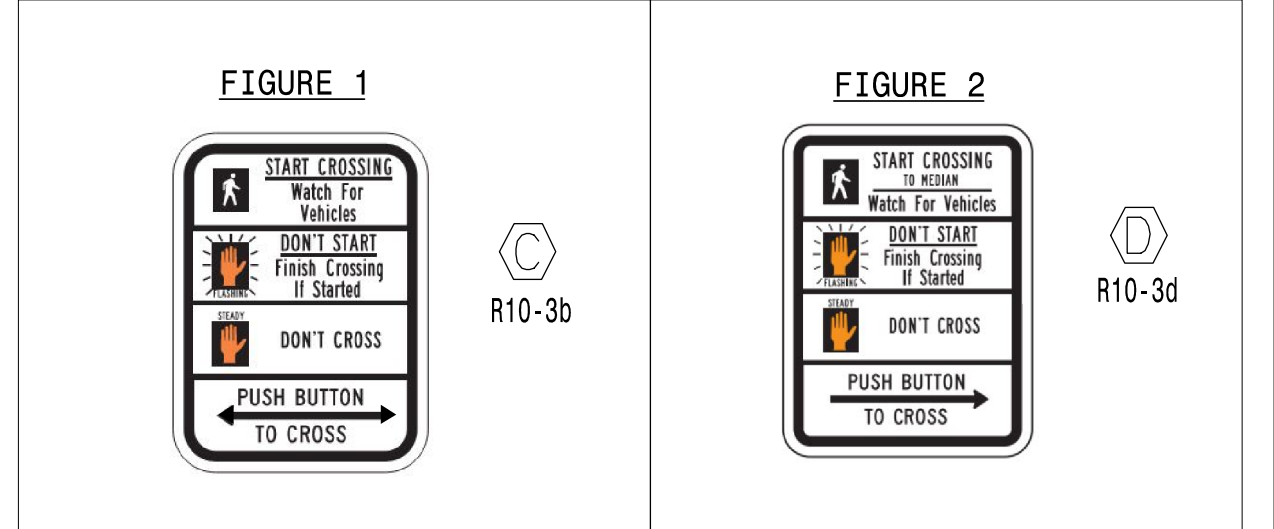
PROPOSED	EXISTING

ASC/3 TIMING CHART

FEATURE	PHASE			
	2	4 PED	6	8 PED
Min Green *	10	7	10	7
Walk *	7	7	7	7
Ped Clear	5	7	5	7
Veh. Extension *	-	-	-	-
Max I *	30	7	30	7
Yellow	3.5	3.0	3.5	3.0
Red-Clear	1.0	0.0	1.0	0.0
Activations-B4-Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	-	-	-	-
Recall Position	PED RECALL	-	PED RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

Serves as Flashing Yellow Time
 Serves as Steady Yellow Clearance Time
 Serves as All Red Clearance Time

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



New Installation

Prepared For: **Griffith Street Pedestrian Hybrid Beacon East of Sloan Street/ Beaty Street**

Division 10 Mecklenburg Davidson

PLAN DATE: July 2023 REVIEWED BY: KP Baumann

PREPARED BY: SP Pennington REVIEWED BY:

REVISIONS: _____ INIT: _____ DATE: _____

Kimley-Horn & Associates, Inc. (919) 677-2000

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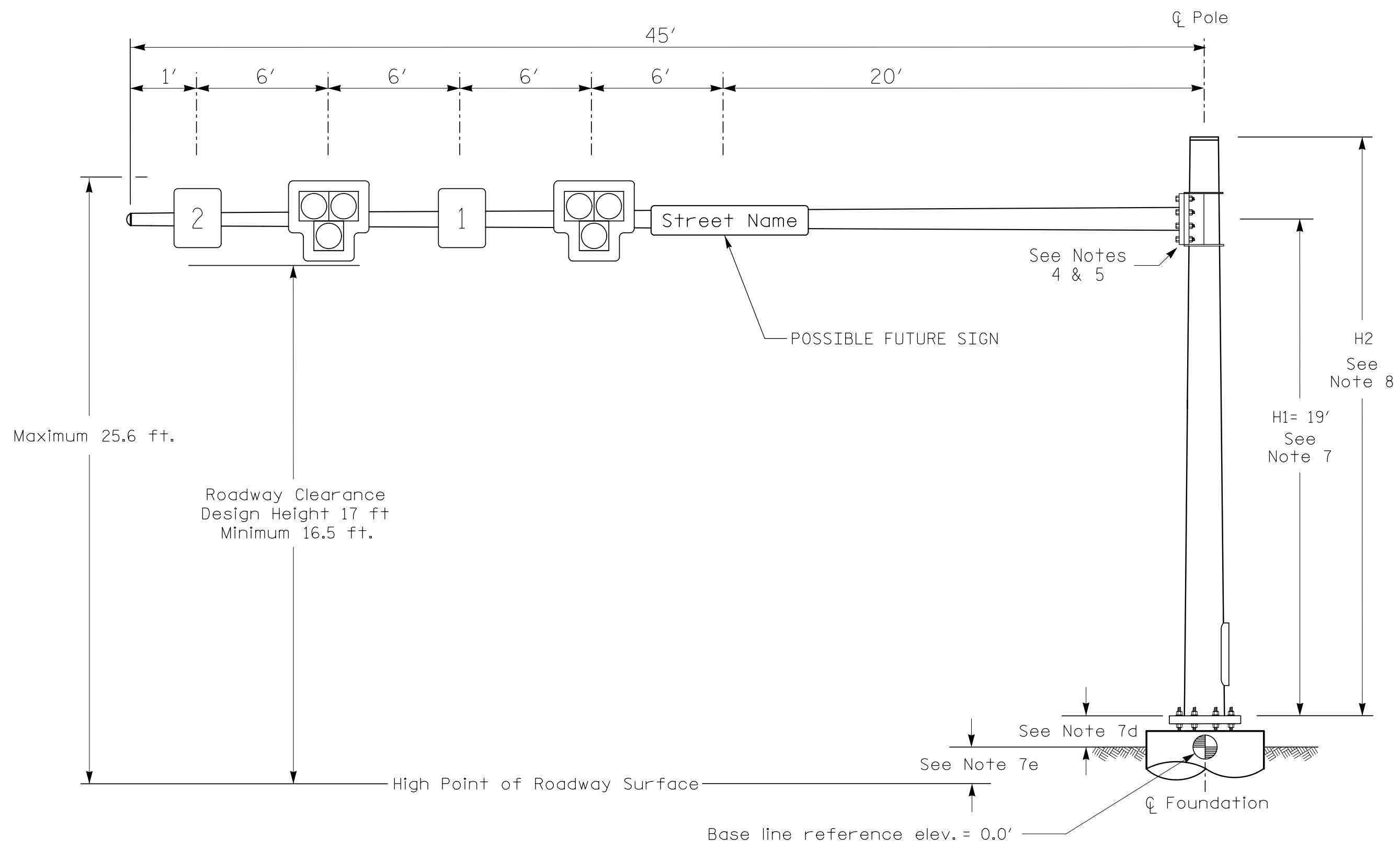
Seal: KEVIN P. BAUMANN, ENGINEER, SEAL 044434

DocuSigned by: *Kevin P. Baumann* 9/19/2023

SIG. INVENTORY NO. DAVI-2

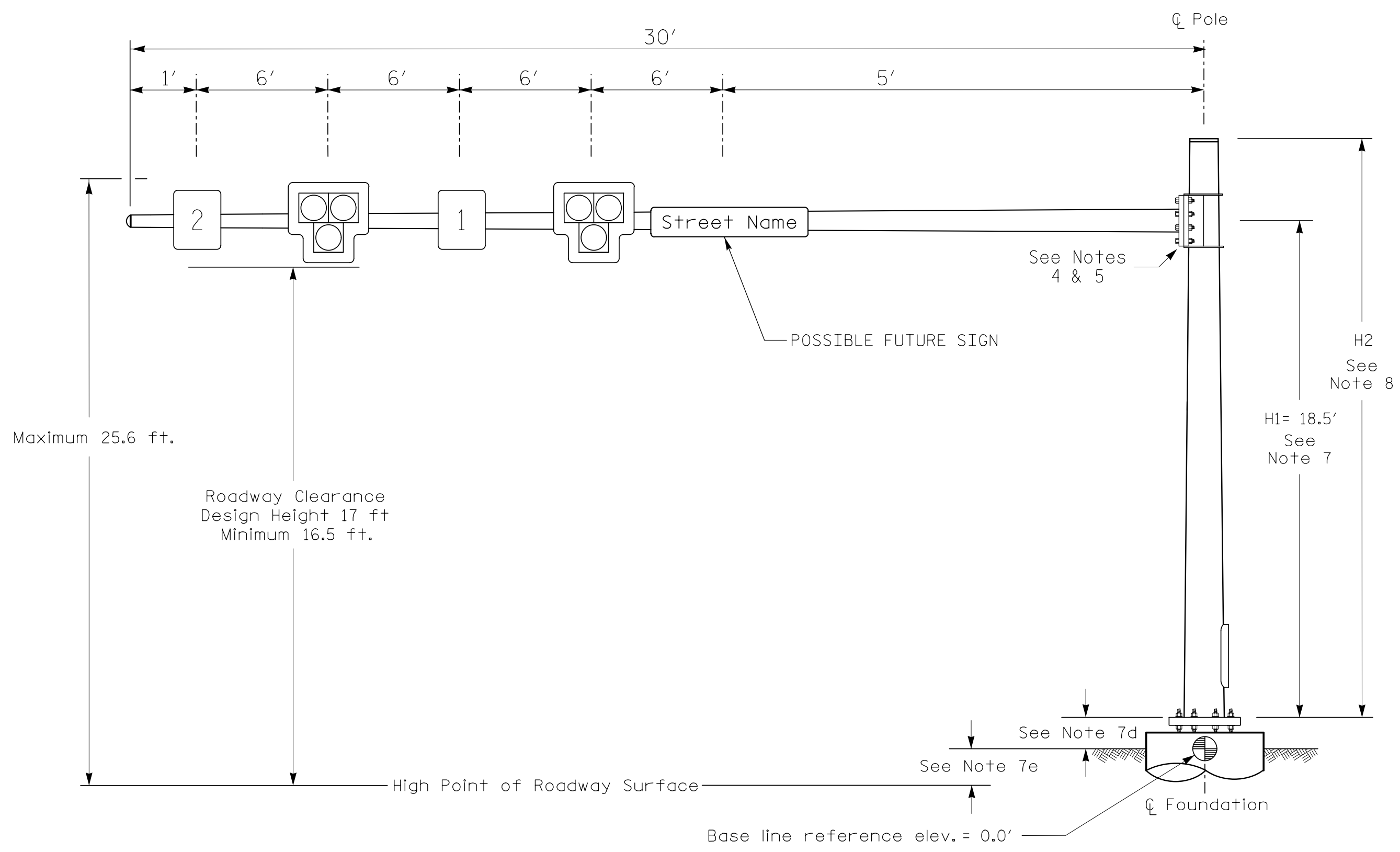
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Design Loading for METAL POLE NO. 3



Elevation View

Design Loading for METAL POLE NO. 4



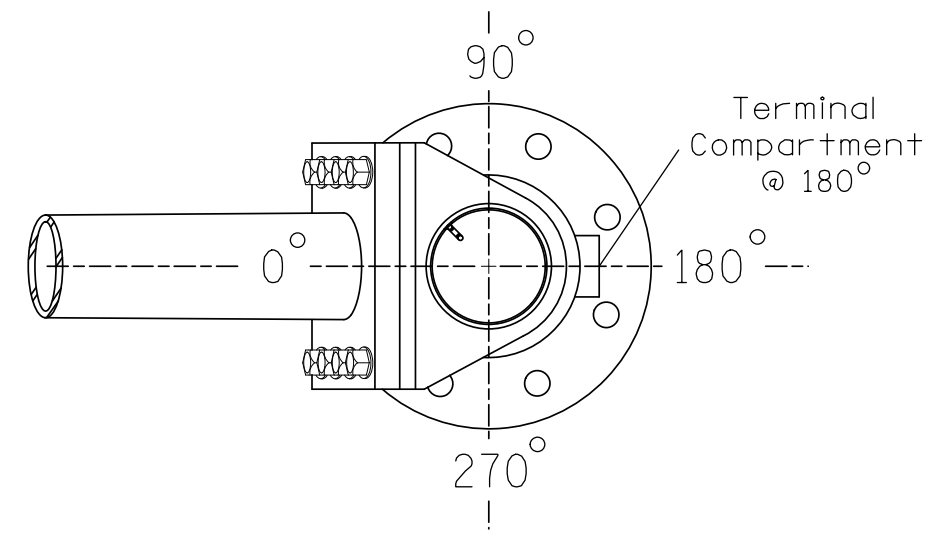
Elevation View

SPECIAL NOTE

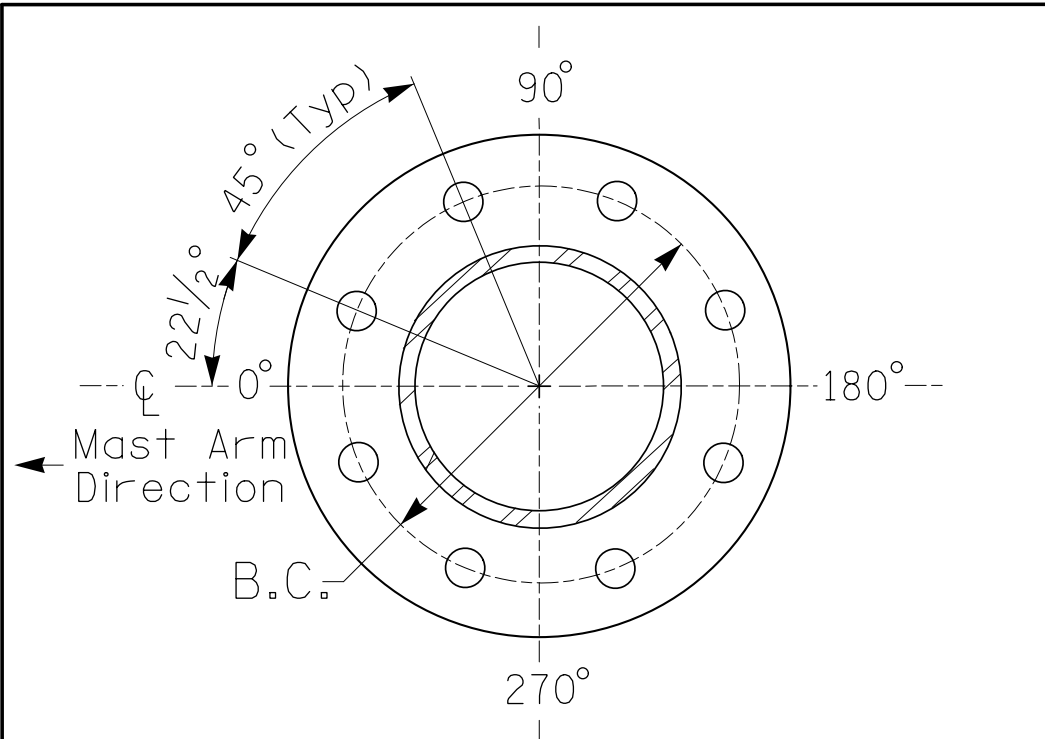
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

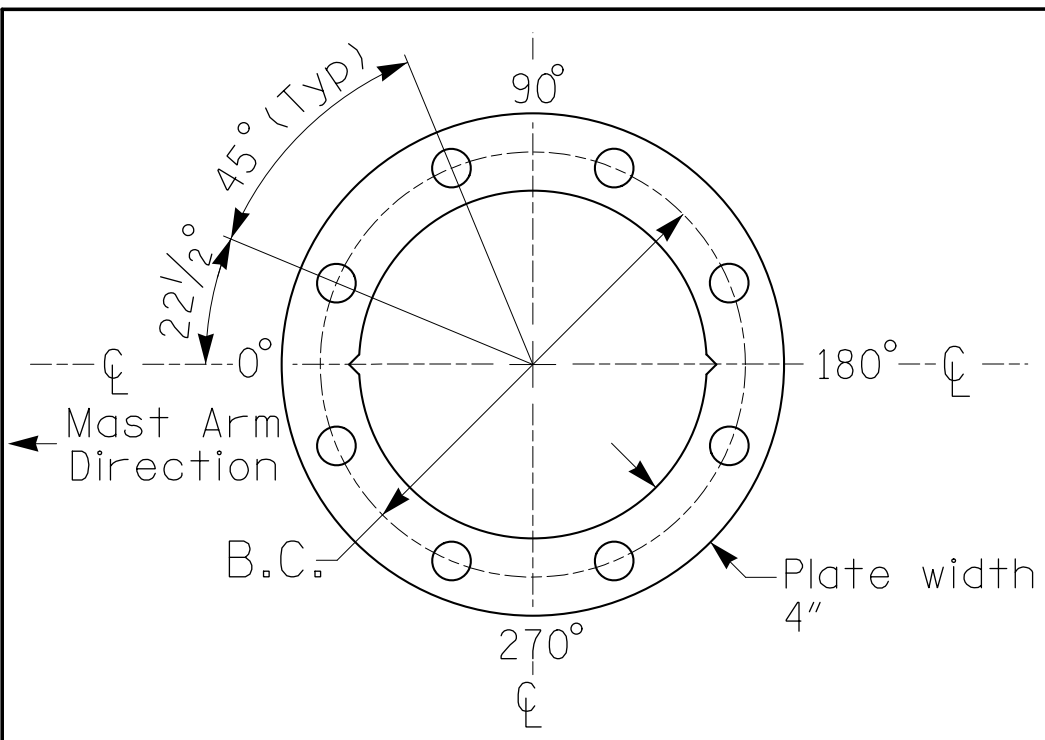
Elevation Differences for:	Pole 3	Pole 4
Baseline reference point at ϕ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+0.1 ft.	+0.0 ft.
Elevation difference at Edge of travelway or face of curb	+0.1 ft.	+0.0 ft.



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL



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

METAL POLES No. 3 and 4

PROJECT REFERENCE NO.	SHEET NO.
U-5907	SIG. 6.3

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9 S.F.	36.0" W X 36.0" L	75 LBS
1	SIGN RIGID MOUNTED	5.0 S.F.	24.0" W X 30.0" L	11 LBS
2	SIGN RIGID MOUNTED	4.5 S.F.	36.0" W X 18.0" L	10 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
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 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

All metal poles and arms should be black in color as specified in the project special provisions.

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

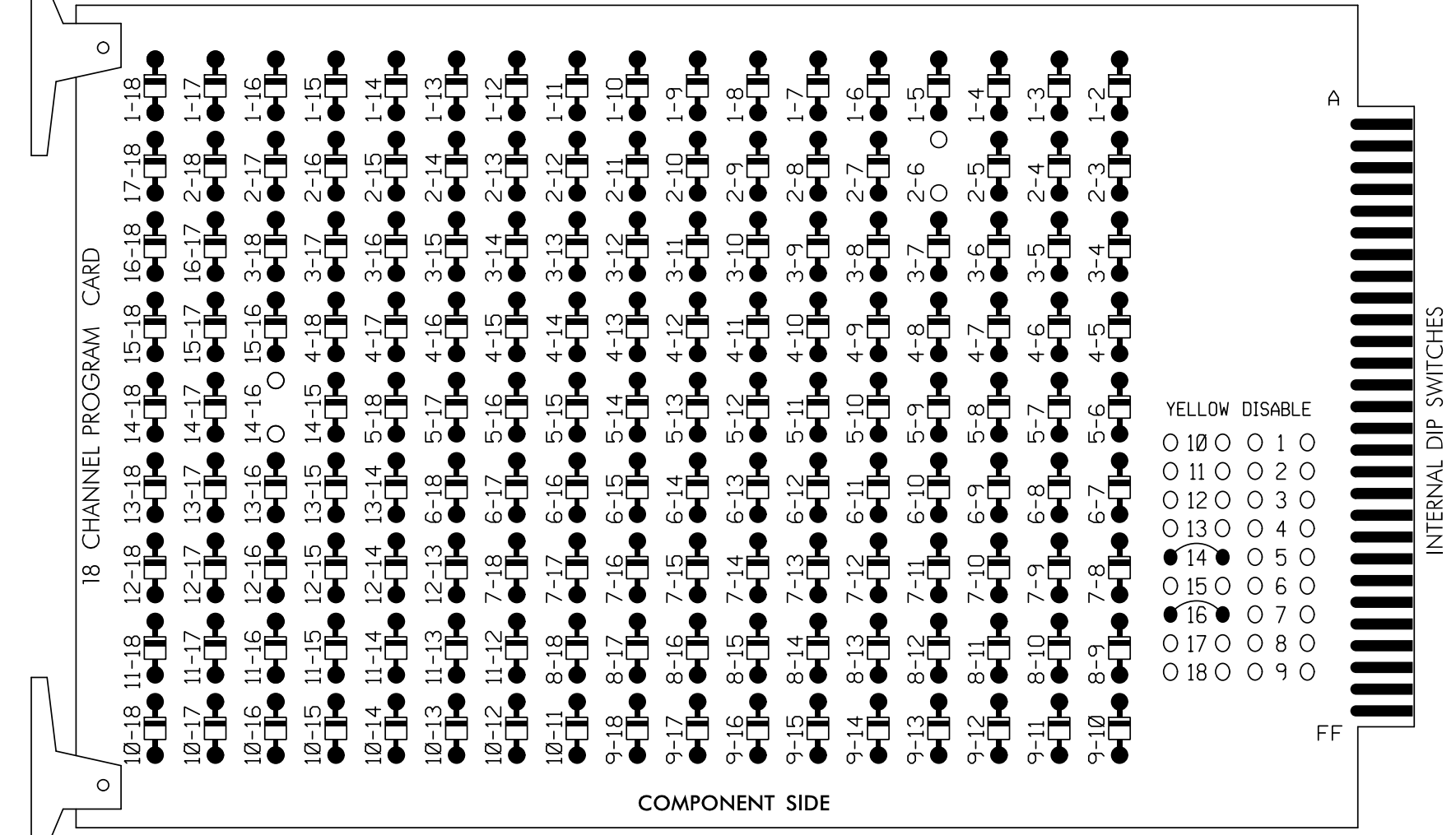
	Prepared For: Griffith Street Pedestrian Hybrid Beacon East of Sloan Street/ Beaty Street		SEAL KEVIN P. BAUMANN ENGINEER SEAL 044434 9/19/2023
	Division 10 PLAN DATE: July 2023 PREPARED BY: SP Pennington	Mecklenburg REVIEWED BY: KP Baumann REVIEWED BY:		Davidson DATE
SCALE 0 N/A N/A	REVISIONS INIT. DATE	DATE	SIGNATURE DATE

9/19/2023 9:17:24 AM ausan-jamington K:\MAL\PTDM-STG\ALS\01083630_U-5907_Ports-Sign_Ext\KES - Signal Design\3 DAVI-2.2023mp.dgn

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

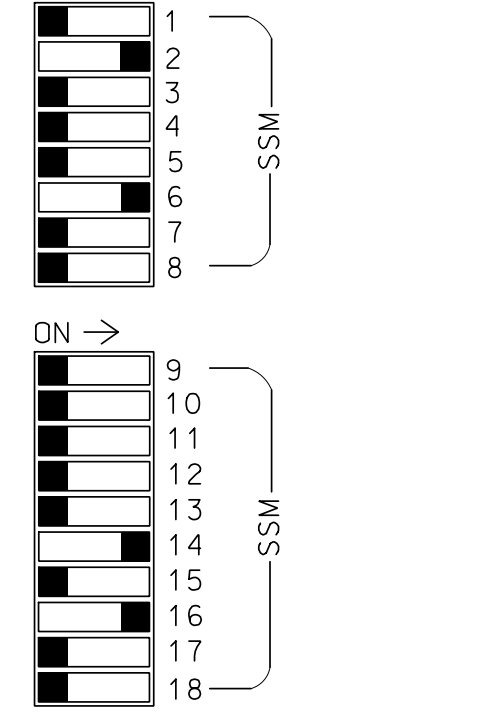
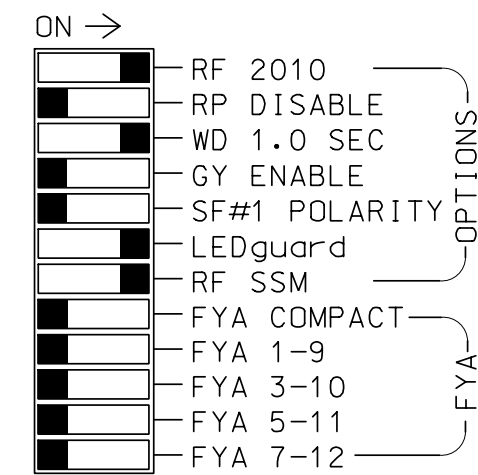
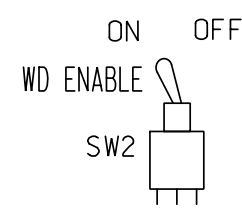
REMOVE DIODE JUMPERS 2-6 and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans. Insert yellow flash program blocks for load switches S2 and S8.
- Enable simultaneous gap-out for all phases.
- Program Phase 2 and 6 for Rest In Walk.
- Program phases 2 and 6 for Ped Recall.
- Program phases 4 and 8 for PED > CLR RED.

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.....S2,S6,S8,S12
 PHASES USED.....2,2PED*,4*,4PED,6,6PED*,8*,8PED
 OVERLAPSNONE
 * For timing purposes only

OPERATIONAL NOTES

- In order for the controller to perform the Pedestrian Hybrid Beacon (HAWK signal) sequence, special logic programming is necessary. Refer to sheet 2 for the Econolite ASC/3-2070 Logic Processor Programming Detail.
- For operational purposes, Phase 2 and Phase 6 both run dummy pedestrian phases that are required to produce the correct HAWK signal sequence. There are no Phase 2 or Phase 6 pedestrian heads.
- The only Phase 6 load switch output that is being used drives one of the red signal faces of each signal head.
- The Logic Processor flashes Phase 2 Yellow during the Phase 2 pedestrian clearance phase, and Phase 2 Yellow drives the solid Yellow signal faces during Phase 2 vehicle Yellow clear.
- The Phase 2 and Phase 6 Red outputs drive the solid Red displays during Phase 2 and 6 Red. The Logic Processor flashes the Phase 2 and Phase 6 Red outputs in a wig-wag pattern during Phase 4+8 Ped Clear and thru Phase 4+8 vehicle Yellow and Red clear.
- The controller must be programmed for Ped Clear Thru Red for Pedestrian Phases 4 and 8 so that the Red displays continue to flash during Phases 4 and 8 Yellow Clear and Red clear.
- Make sure that all Phase 2 and Phase 6 timings match each other, and that all Phase 4 and Phase 8 timings match each other.
- The Ped 4 push button is programmed to call Ped 4 and Ped 8, and the Ped 8 push button is programmed to call Ped 8 and Ped 4.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22 61,62	NC	NU	NC	P41, P42	NU	21,22 61,62	NC	NU	NC	P81, P82	NU	NU	NU	NU	NU	NU
RED		128						134										
YELLOW		129						*										
GREEN		*						*										
RED ARROW																		
YELLOW ARROW																		
FLASHING YELLOW ARROW																		
GREEN ARROW																		
Hand icon							104					110						
Walking person icon							106					112						

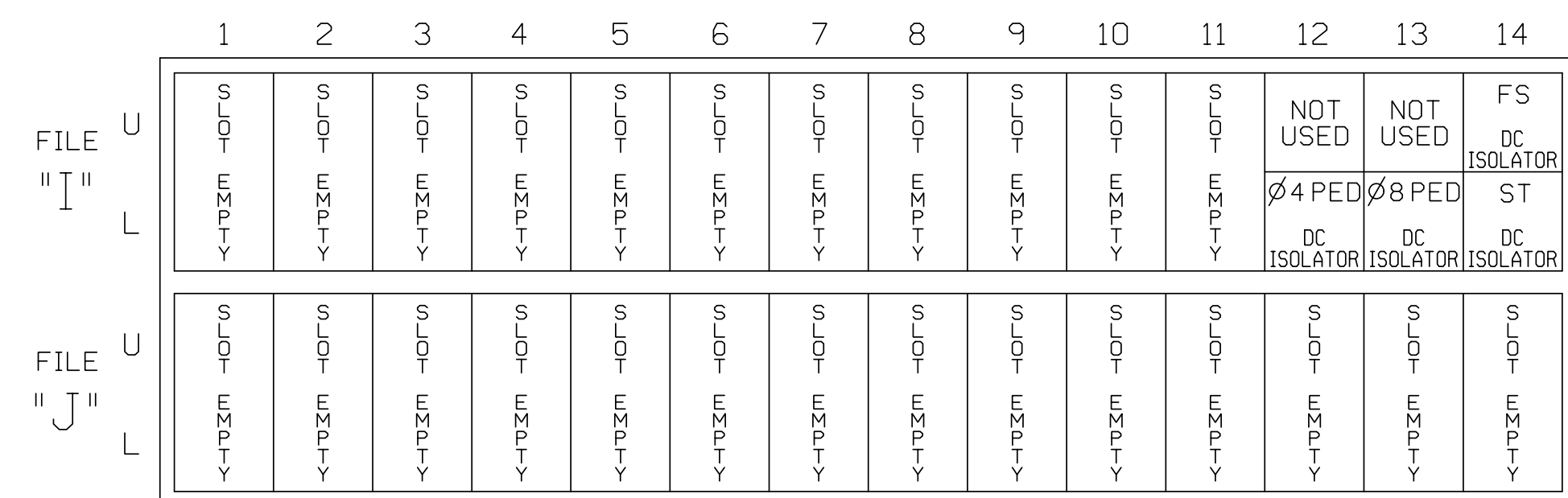
NU = Not Used

NC = Not Connected

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

INPUT FILE POSITION LAYOUT

(front view)



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

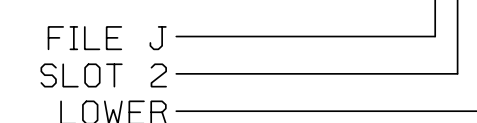
FS = FLASH SENSE
 ST = STOP TIME

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
PED PUSH BUTTONS										
P41,P42	TB8-5,6	I12L	69	PED 4	4/8 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	4/8 PED					

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

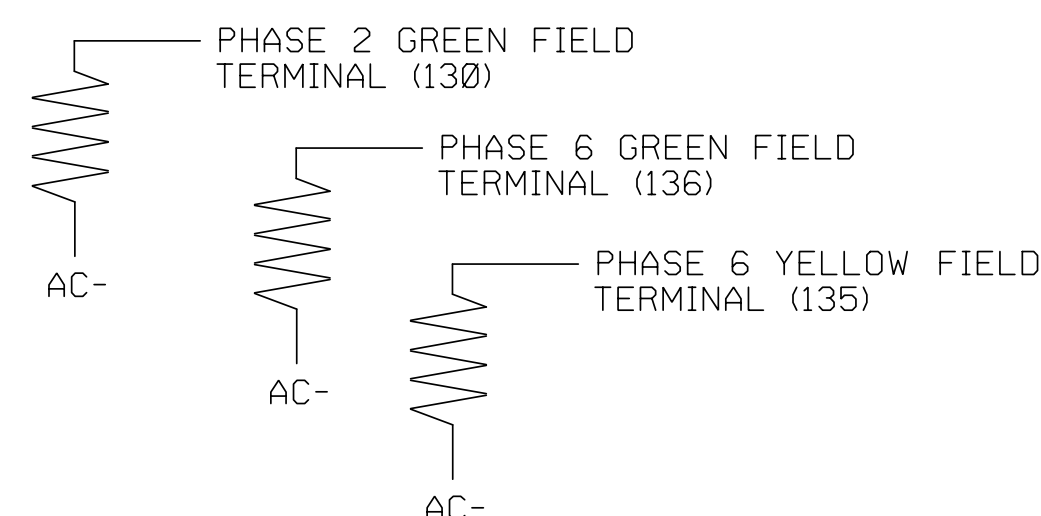
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: DAVI-2
 DESIGNED: July 2023
 SEALED: 9/19/2023
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared For: 	Griffith Street Pedestrian Hybrid Beacon East of Sloan Street/ Beaty Street		SEAL
	Division 10 PLAN DATE: July 2023 PREPARED BY: SP Pennington	Mecklenburg Davidson REVIEWED BY: KP Baumann REVIEWED BY:		DATE: 9/19/2023 DATE: DATE:

PLANS PREPARED IN THE OFFICE OF:
Kimley Horn
 NC License #F-0102
 421 Fayetteville Street, Suite 600
 Raleigh, NC 27601
 (919) 677-2000

ECONOLITE ASC/3-2070 PEDESTRIAN DETECTOR PHASE ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **3. PED DETECTOR INPUT ASSIGNMENT**
- Press the TOGGLE key to select **ECONOLITE MODE** and press ENTER.

PED DET PHASE ASSIGNMENT MODE: ECONOLITE V	PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
D	1	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
E	2	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.
T	3	.	.	X	.	.	.	.	.	.	.	.	.	.	.	.	.
E	4	.	.	.	X	.	.	X	.	.	.	.	.	.	.	.	.
C	5	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	.
T	6	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.
O	7	.	.	.	.	.	.	X	.	.	.	.	.	.	.	.	.
R	8	.	.	X	.	.	.	.	X	.	.	.	.	.	.	.	.
	9	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.	.
	10	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.	.
	11	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.	.
	12	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.	.
	13	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.	.
	14	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.	.
	15	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X	.
	16	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	X

“.” = No assignment, disabled
 X = Assigns Pedestrian Push Button (PPB) to call the phase or phases
 2 = Call for Ped timing 2
 B = Allows for the PPB to call for Min Green 2 (BIKE GREEN)

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

TIMING INTERVAL

- PHASE 2+6 WALK = Dark Display
- PHASE 2+6 PED CLEAR = Flashing Yellow Display
- PHASE 2+6 VEH YEL CLR = Steady Yellow Display
- PHASE 2+6 RED CLEAR = Steady Red Display
- PHASE 4+8 WALK = Steady Red Display
- PHASE 4+8 PED CLEAR = Alternating Flashing Red Display
- PHASE 4+8 VEH YEL CLR = Alternating Flashing Red Display
- PHASE 4+8 VEH RED CLR = Alternating Flashing Red Display

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

ENTER A "1" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 1 COPY FROM: 1 ACTIVE: M (T/F)
IF PED ON PH PED CLR 2 IS ON
AND LP COB CODE ON 546
THEN SIG SET PH YELLOW 2 ON
ELSE

```

LOGIC TO FLASH YELLOW SIGNAL FACES AFTER A PED CALL IS PLACED.

ENTER A "2" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 2 COPY FROM: 2 ACTIVE: M (T/F)
IF PED ON PH PED CLR 4 IS ON
AND LP COB CODE ON 546
THEN SIG SET PHASE RED 2 OFF
ELSE

```

LOGIC FOR ALTERNATING FLASHING RED INDICATIONS ON HEADS 21, 22, 61, 62 DURING PED 4+8 CLEAR (FORCES PHASE 2 RED OFF).

ENTER A "3" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 3 COPY FROM: 3 ACTIVE: M (T/F)
IF PED ON PH PED CLR 4 IS ON
AND LP COB CODE OFF 546
THEN SIG SET PH RED 6 OFF
ELSE

```

LOGIC FOR ALTERNATING FLASHING RED INDICATIONS ON HEADS 21, 22, 61, 62 DURING PED 4+8 CLEAR (FORCES PHASE 6 RED OFF).

ENTER A "4" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 4 COPY FROM: 4 ACTIVE: M (T/F)
IF PED ON PH PED CLR 2 IS ON
THEN SIG SET PH GREEN 2 OFF

```

TURNS LOAD SWITCH 2 GREEN OFF DURING PHASE 2 PED CLEAR TO AVOID A G-Y DUAL INDICATION.

NOTE: COB CODE 546 is a 1Hz 50% Duty Cycle internal logic processor reference.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From the LOGIC PROCESSOR Submenu select **1. LOGIC STATEMENT CONTROL**

ENABLE LOGIC PROCESSOR STATEMENTS 1 - 4 BY POSITIONING THE CURSOR OVER THE FIELDS SHOWN BELOW AND USING THE TOGGLE KEY TO ENABLE THEM.

LOGIC STATEMENT CONTROL	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5
LP 1-15	E	E	E	E	.	.	.	.	.	.	.	.	.	.	.
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90

END PROGRAMMING



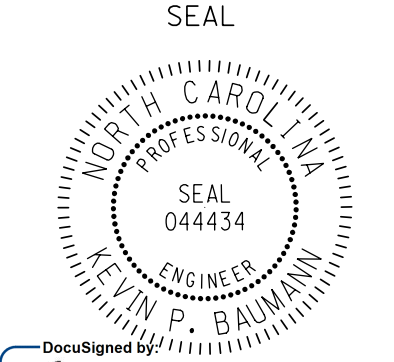
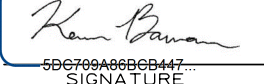
ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

- Install push buttons and APS equipment per manufacturer's instructions.
- Provide a dedicated cable to each push button per manufacturer's instructions.
- If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
- Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
- Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: DAVI-2
 DESIGNED: July 2023
 SEALED: 9/19/2023
 REVISED: N/A

K:\RAL\PTD\SIGNALS\011036360_U-5907_Ports-Sloan_EXH54 - Signal Design\6.1 DAVI-2_2023.dgn 9/19/2023 9:17:21 AM susan.pennington

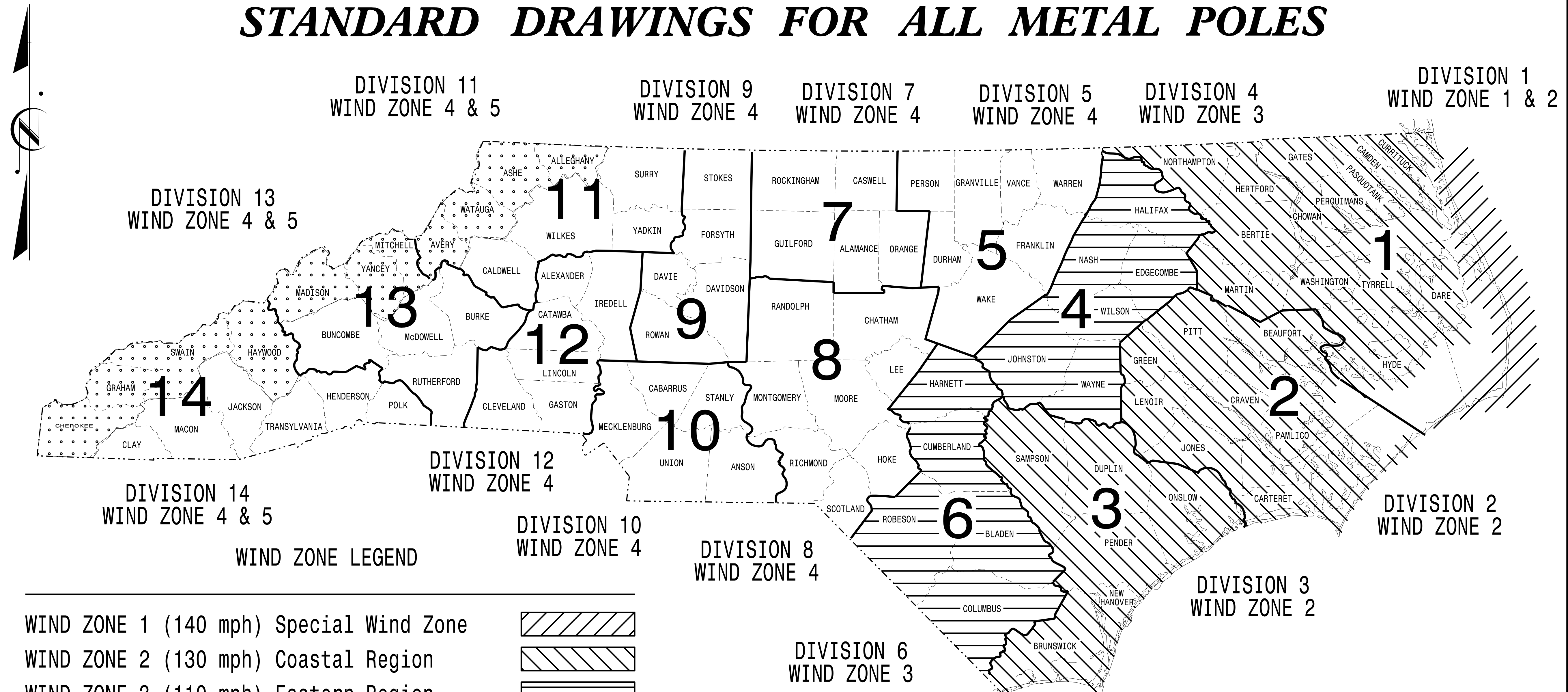
Electrical Detail - Sheet 2 of 2

 <p>PLANS PREPARED IN THE OFFICE OF: Kimley-Horn NC License #F-0102 421 Fayetteville Street, Suite 600 Raleigh, NC 27601 (919) 677-2000</p>	<p>Prepared For:</p>  <p>College Town Lake Town, New York.</p>	<p>Division 10 Mecklenburg Davidson</p> <p>PLAN DATE: July 2023 REVIEWED BY: KP Baumann</p> <p>PREPARED BY: SP Pennington REVIEWED BY:</p>	<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>SEAL</p>  <p>SEAL 044434 ENGINEER KEVIN P. BAUMANN</p> <p>DocuSigned by:  9/19/2023</p> <p>SIG. INVENTORY NO. DAVI-2</p>																		
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REVISIONS	INIT.	DATE																			
SIGNATURE	DATE																				

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. MC DIARMID, P.E. - STATE ITS AND SIGNALS ENGINEER

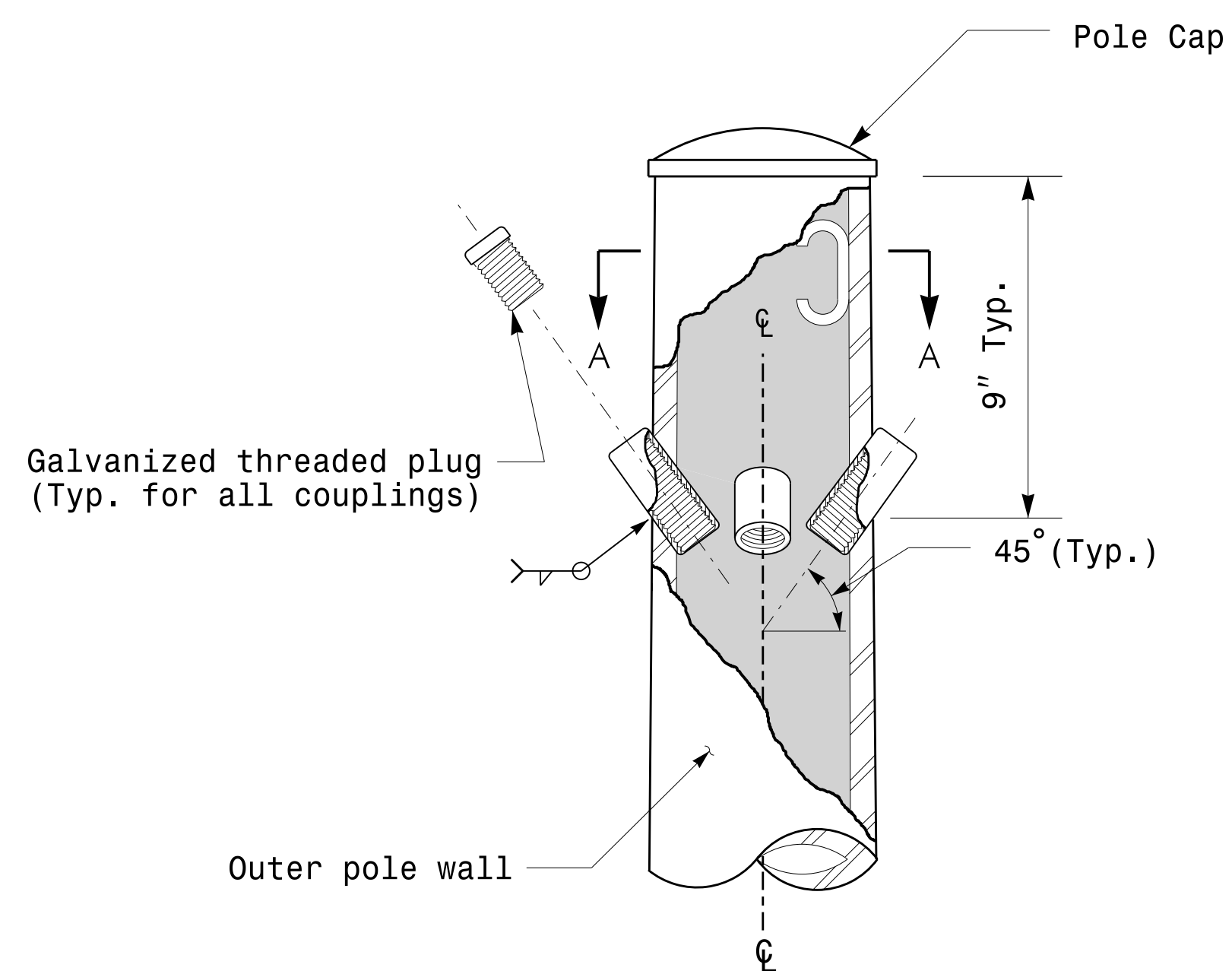
J.P. GALLOWAY, P.E. - STATE SIGNALS ENGINEER

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

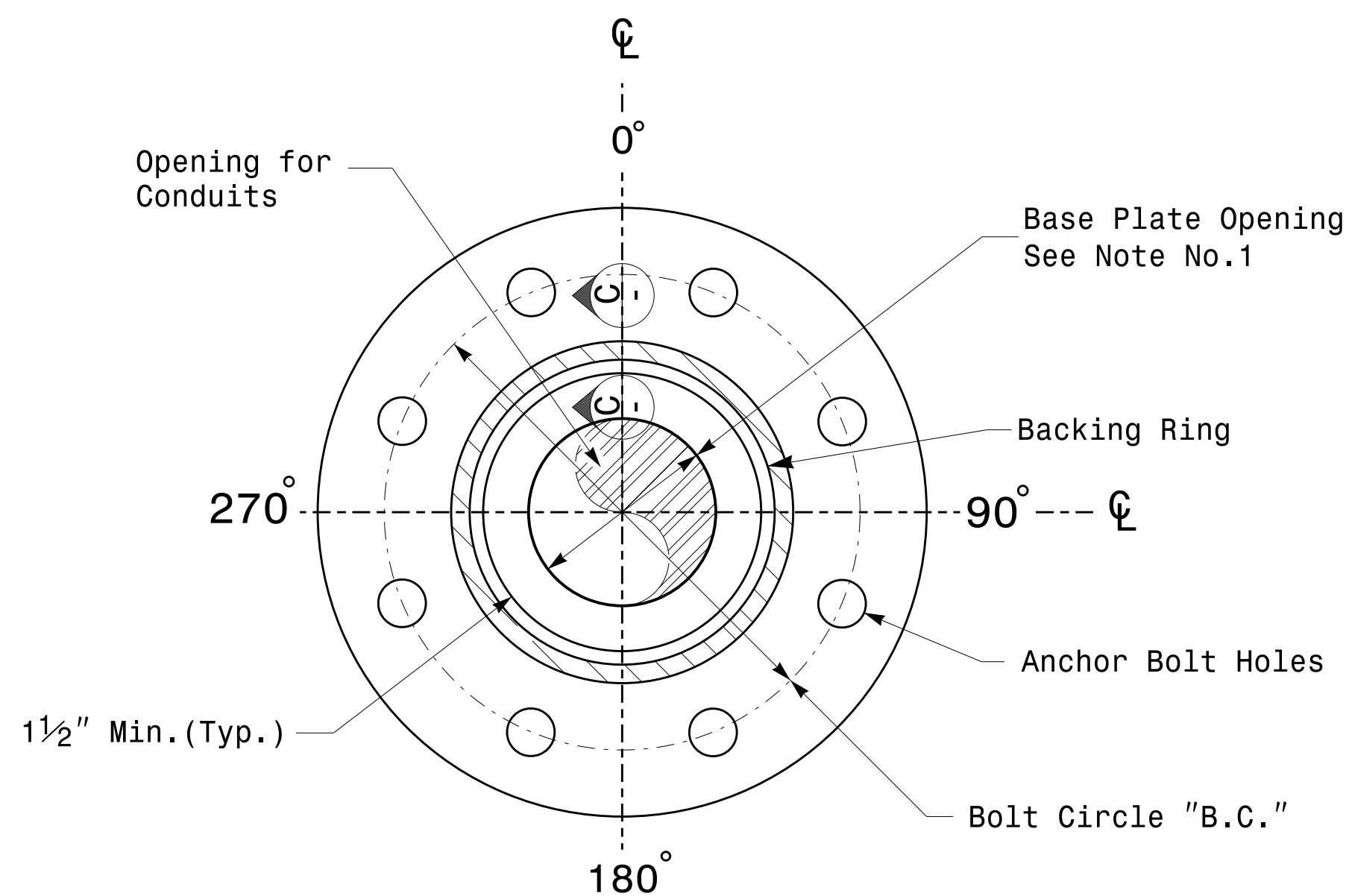
SEAL

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

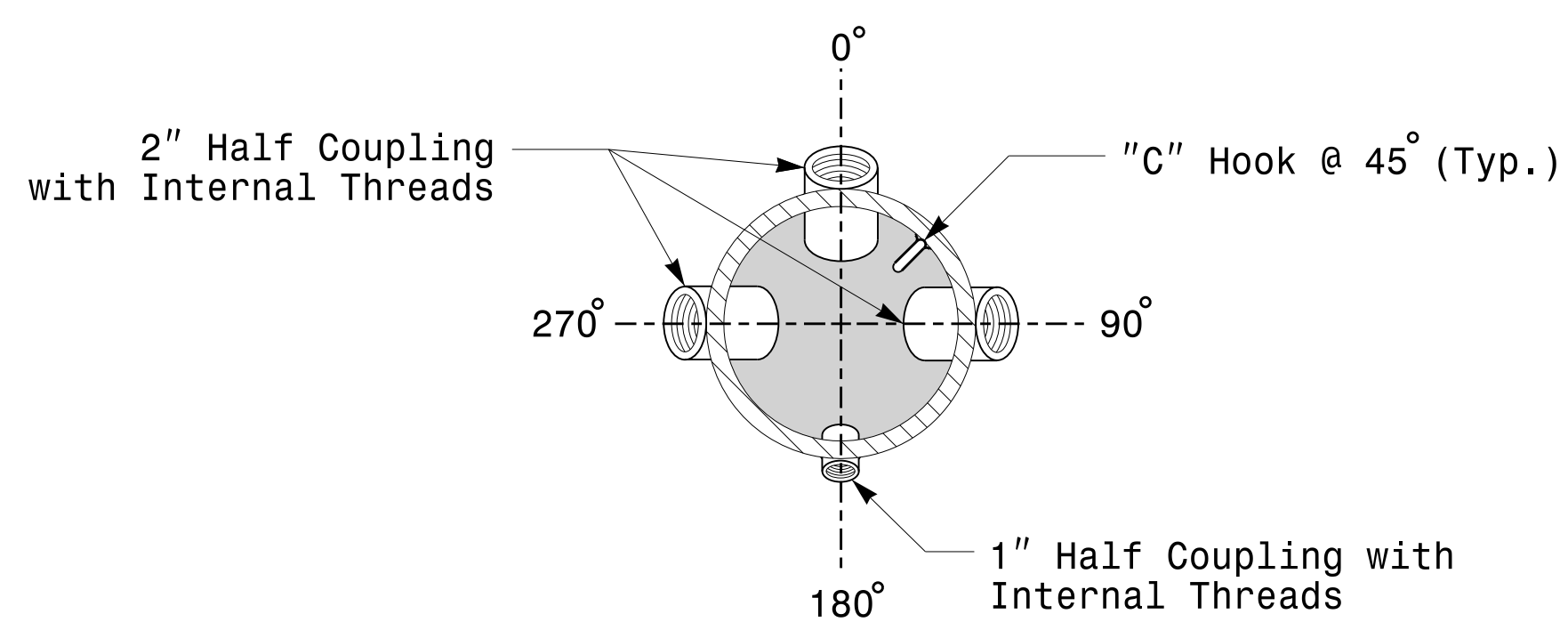
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



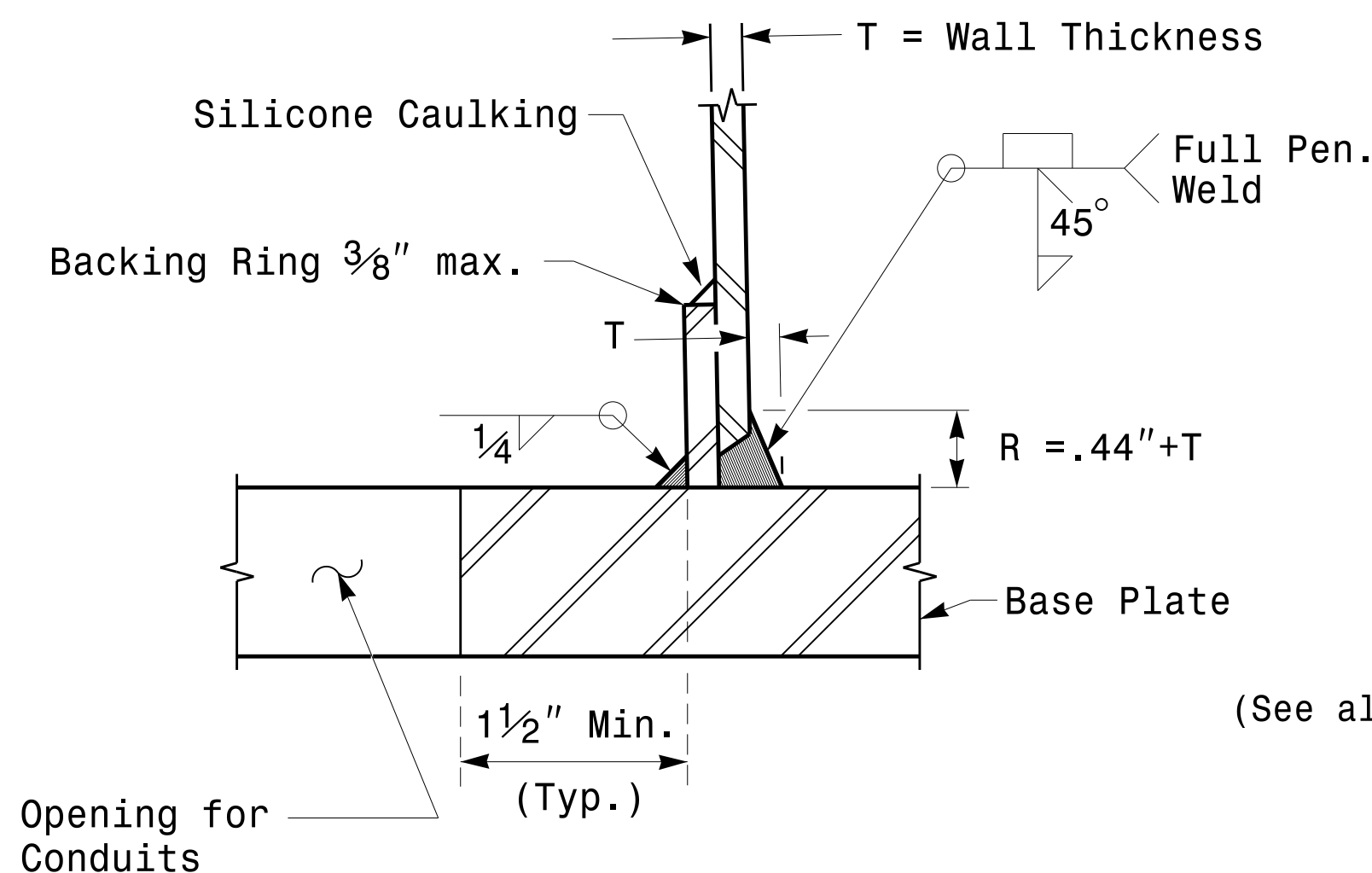
Cable Entrances at Top of Pole



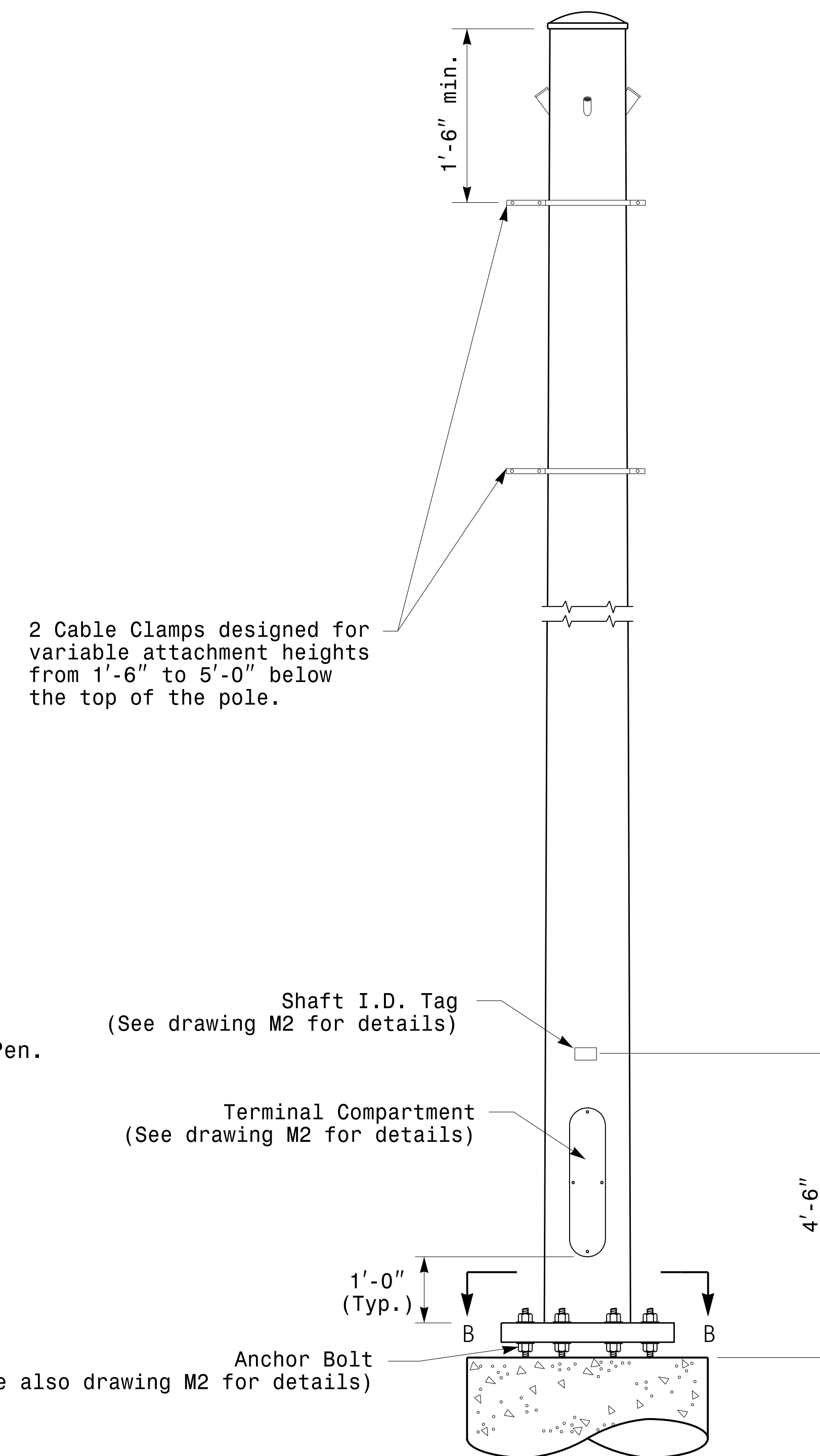
Section B-B
Pole Base Plate Details
(8 and 12 Bolt Pattern)



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

SCALE: 0 NONE

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

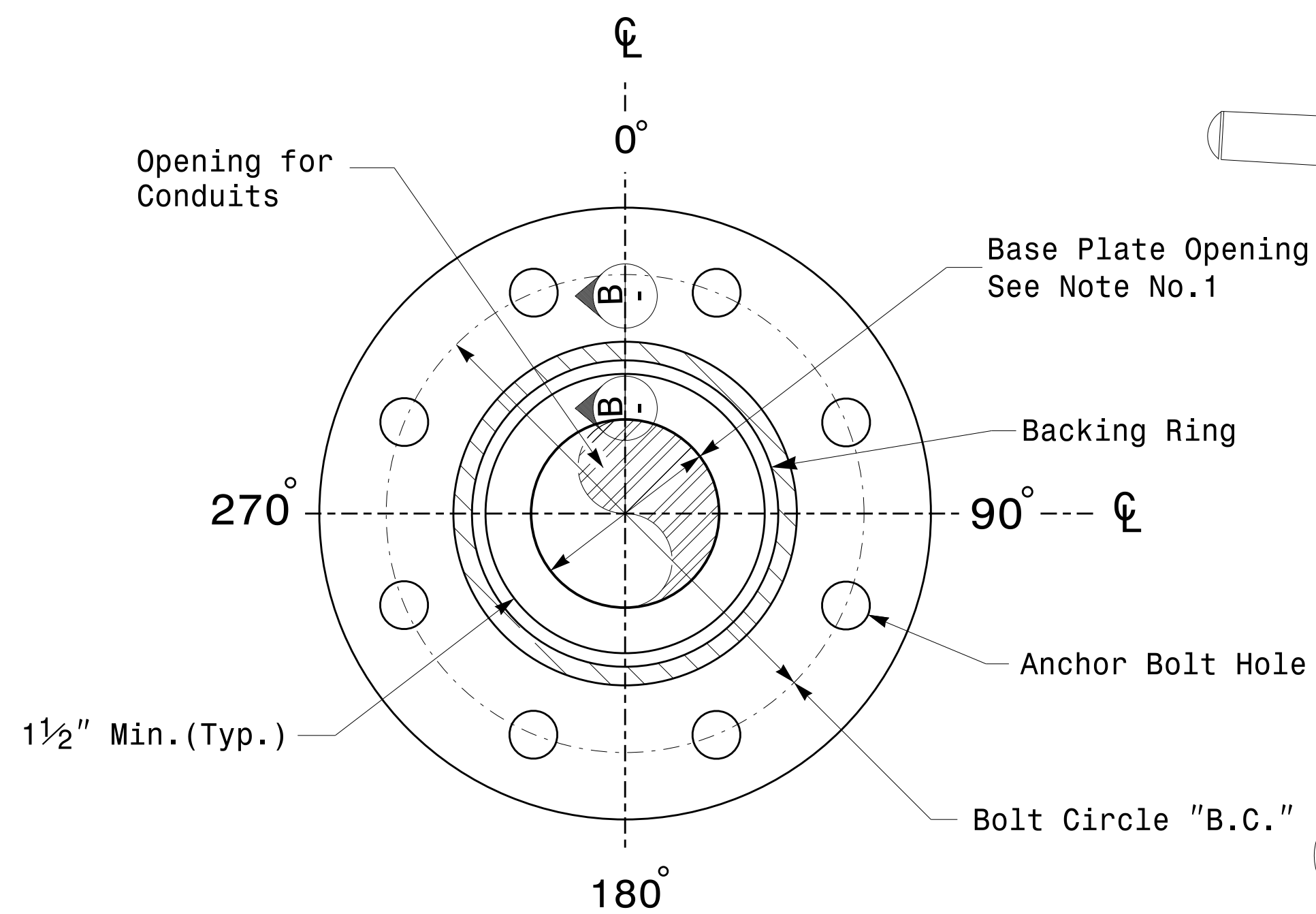
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 Debesh C. Sarkar
 44EB87816FA4F49E

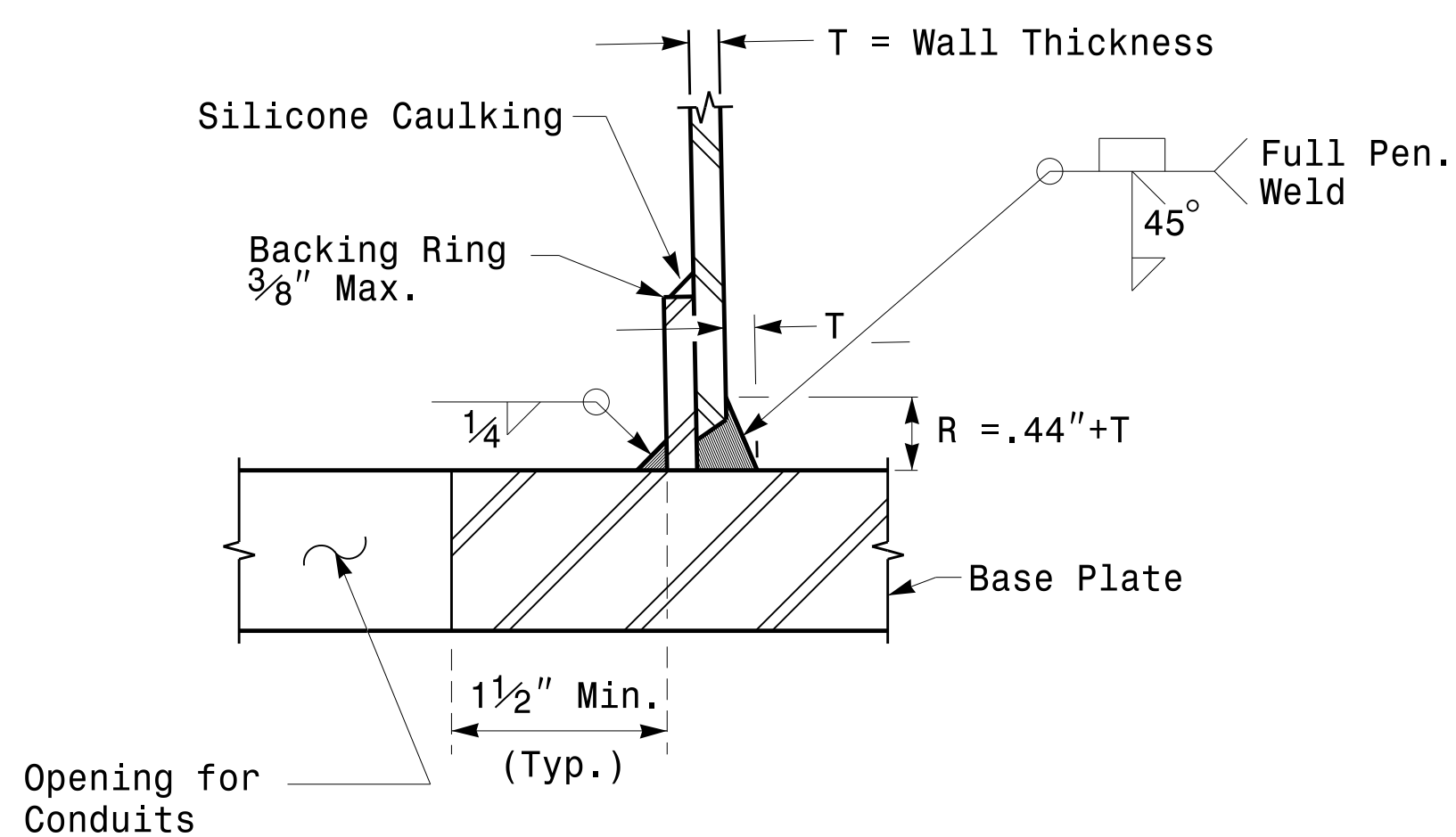
10/11/2017
 DATE

Fabrication Details – Strain Poles

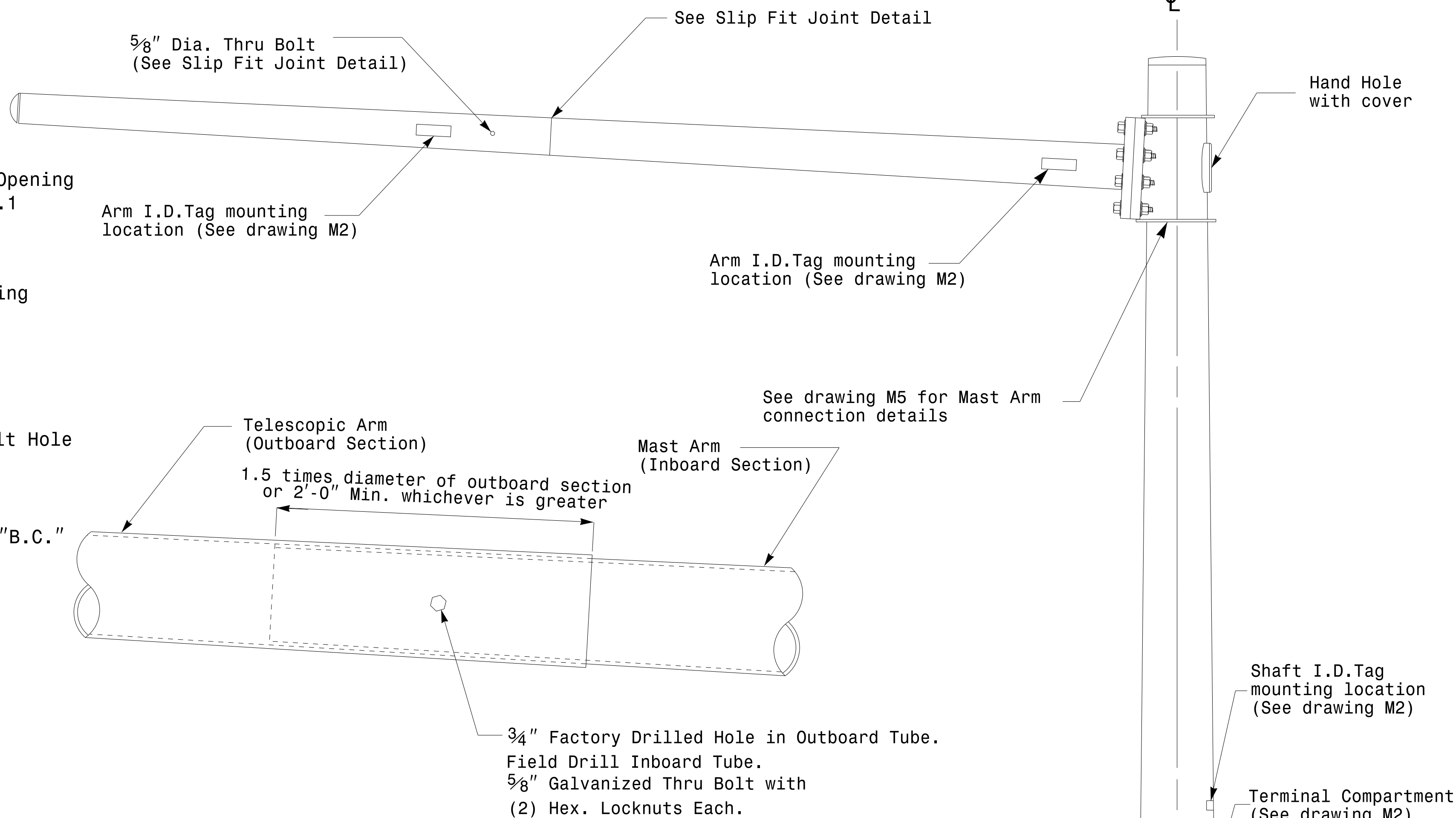
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



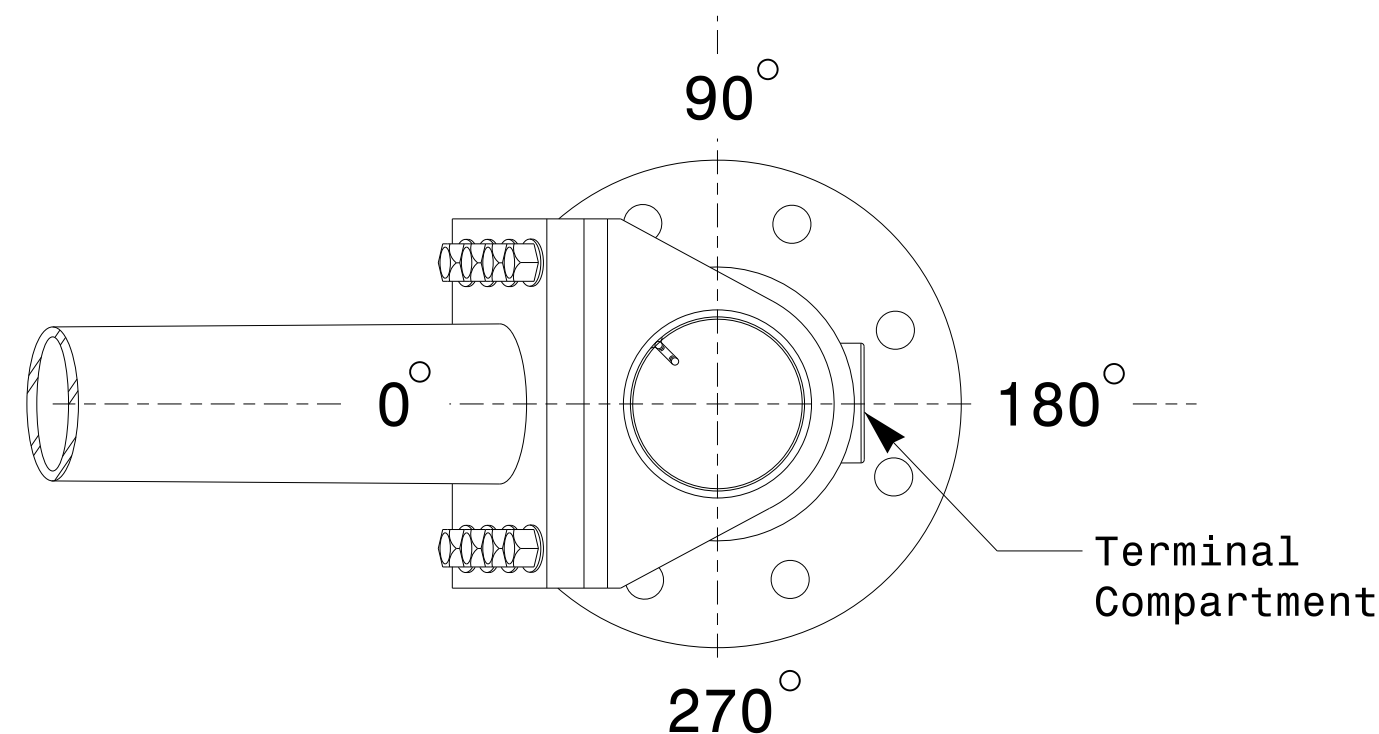
Section A-A
 Pole Base Plate Details



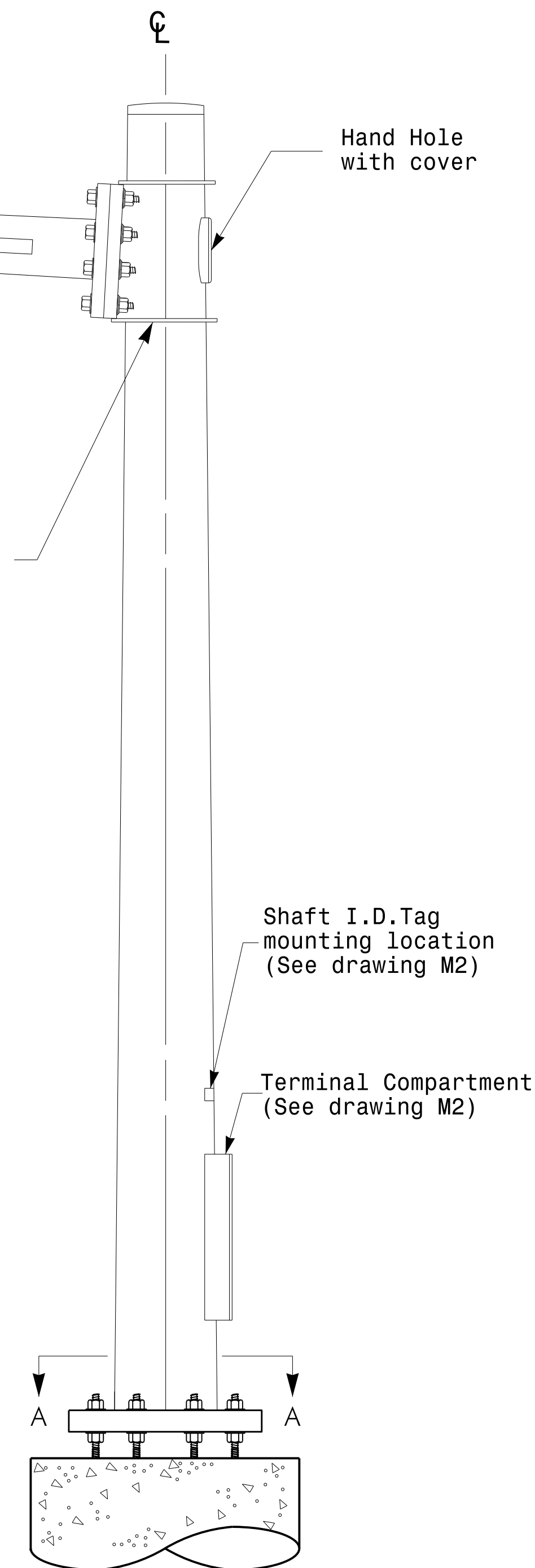
Section B-B
 (Pole Attachment to Base Plate)
 Full-Penetration Groove Weld Detail



Slip Fit Joint Detail for Mast Arm



Mast Arm Radial Orientation



Mast Arm Pole

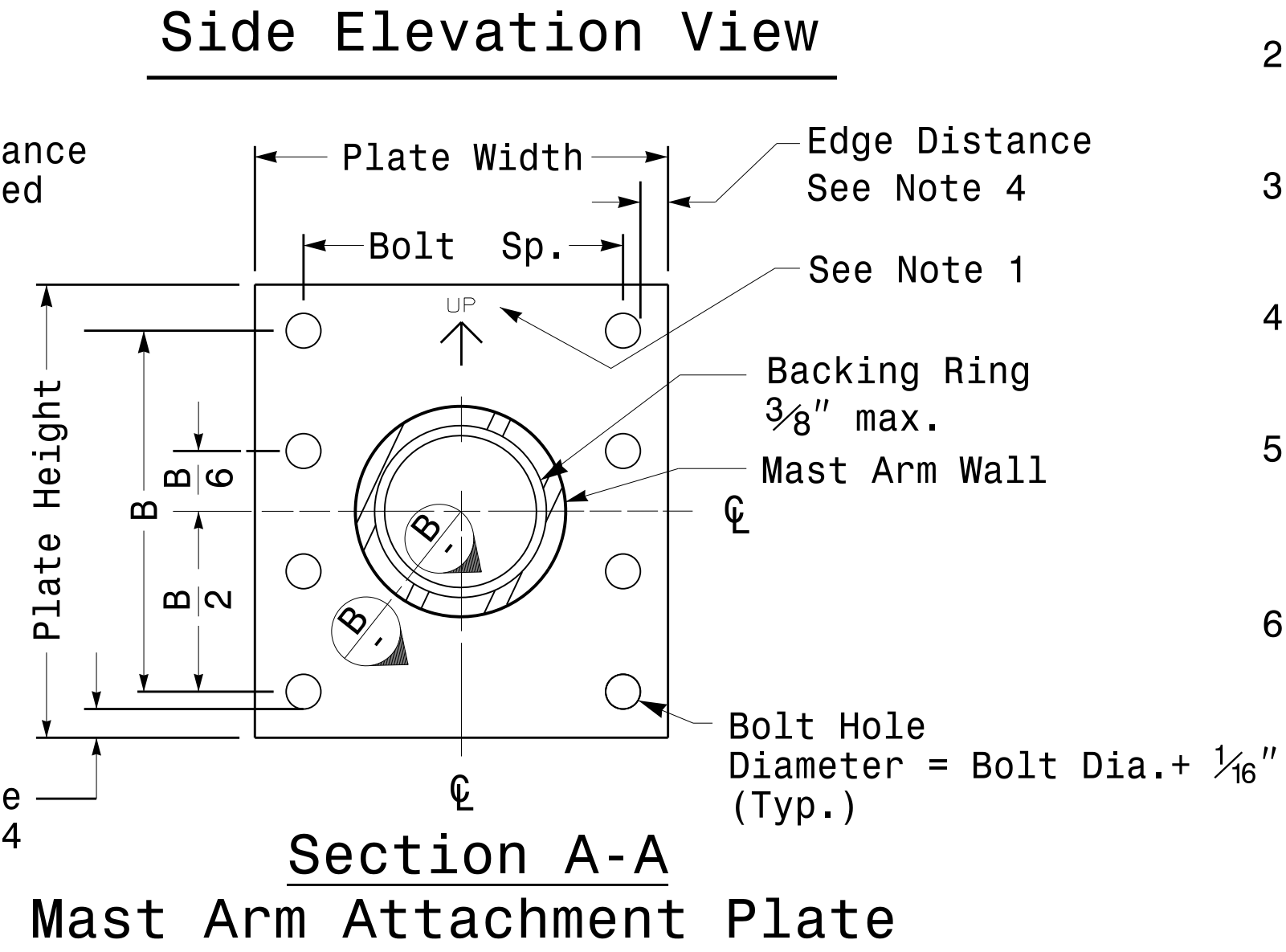
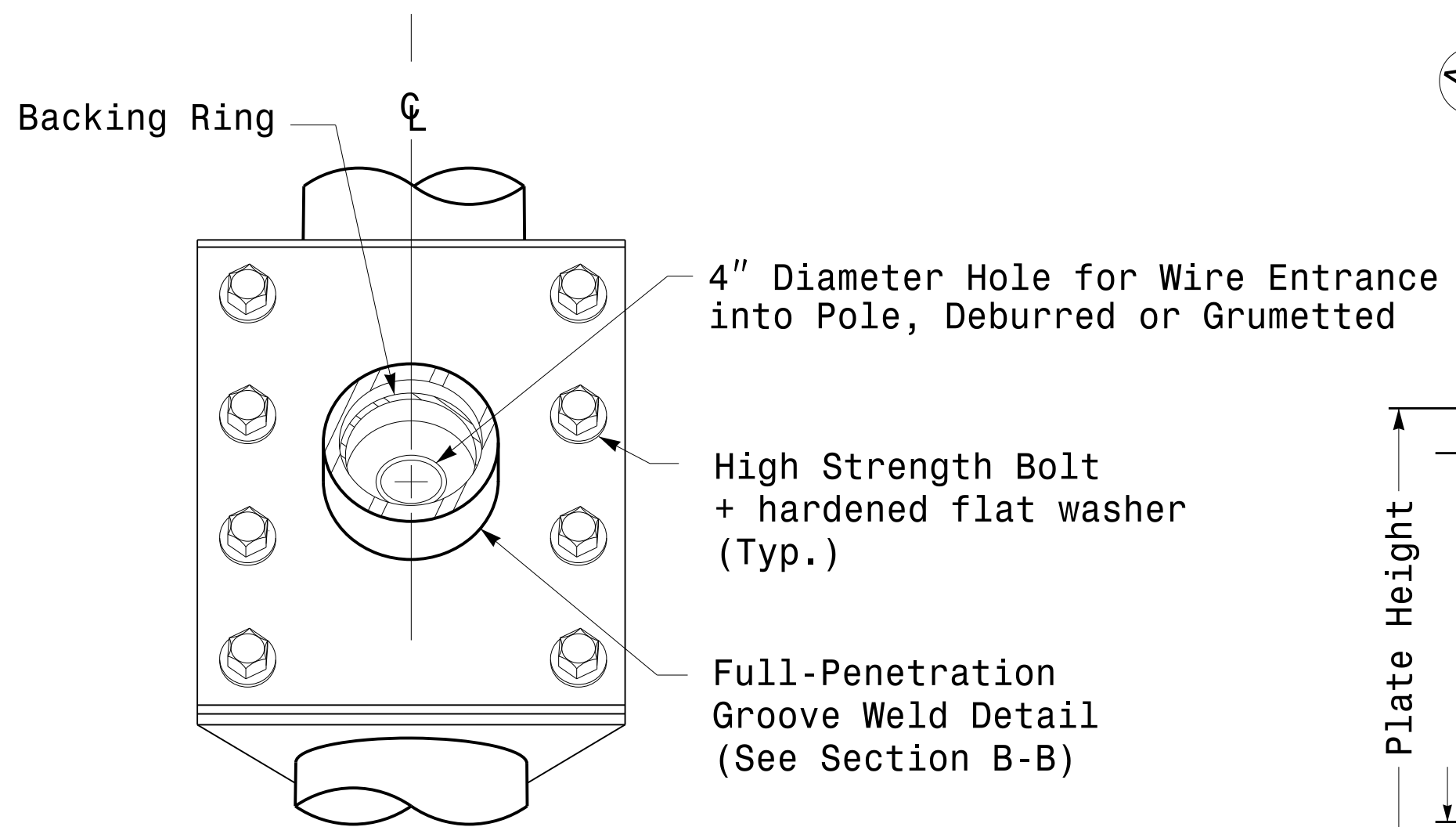
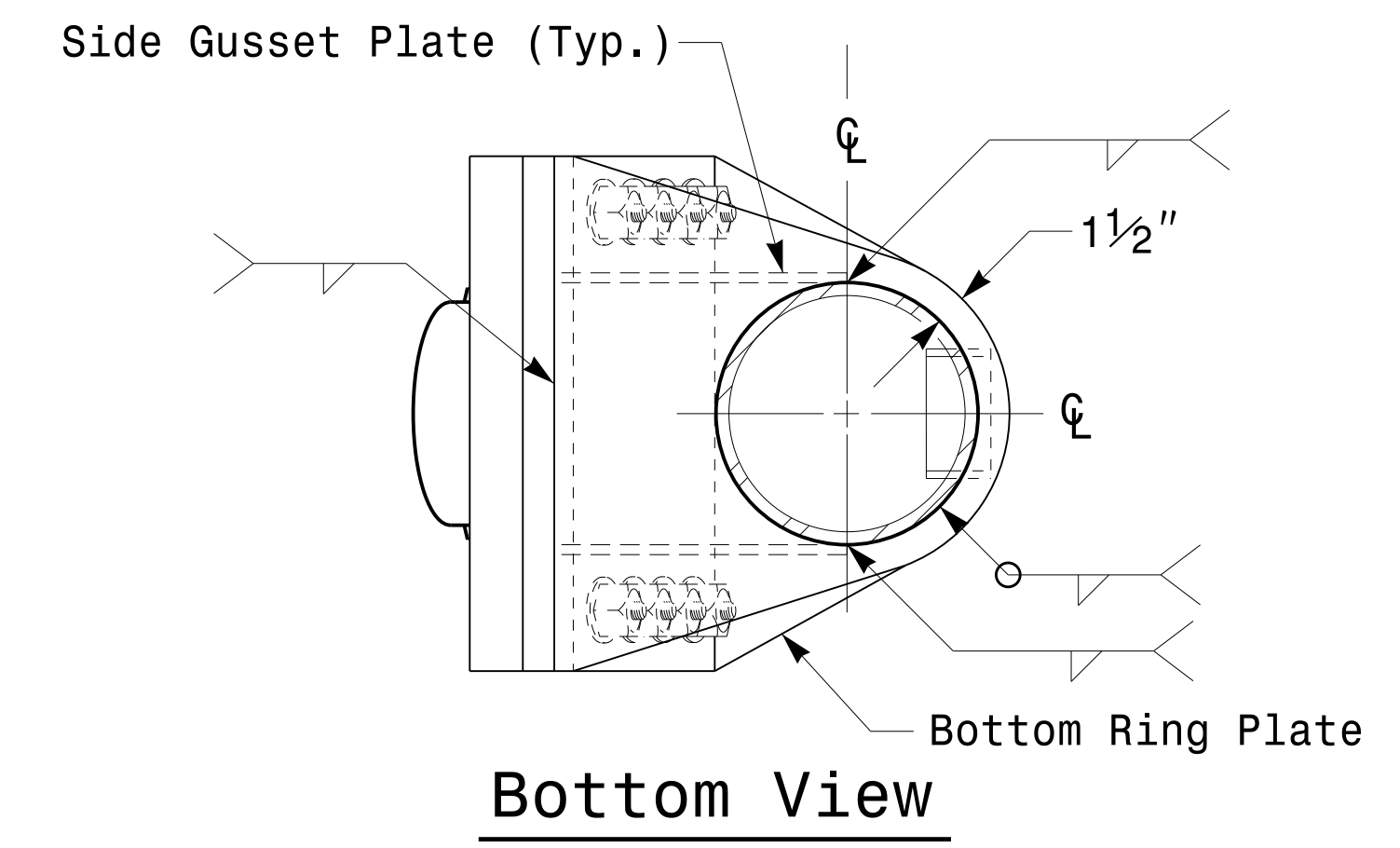
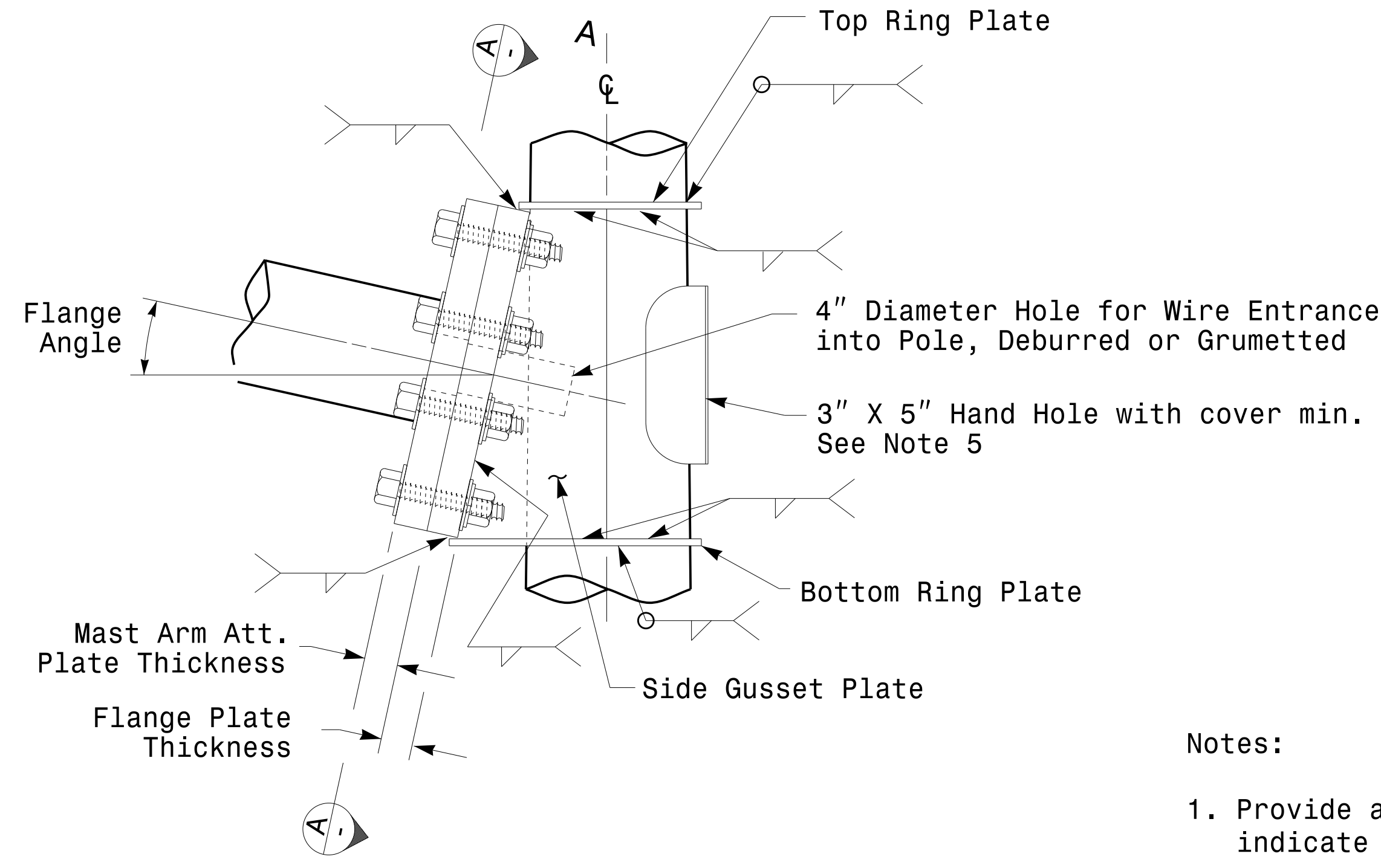
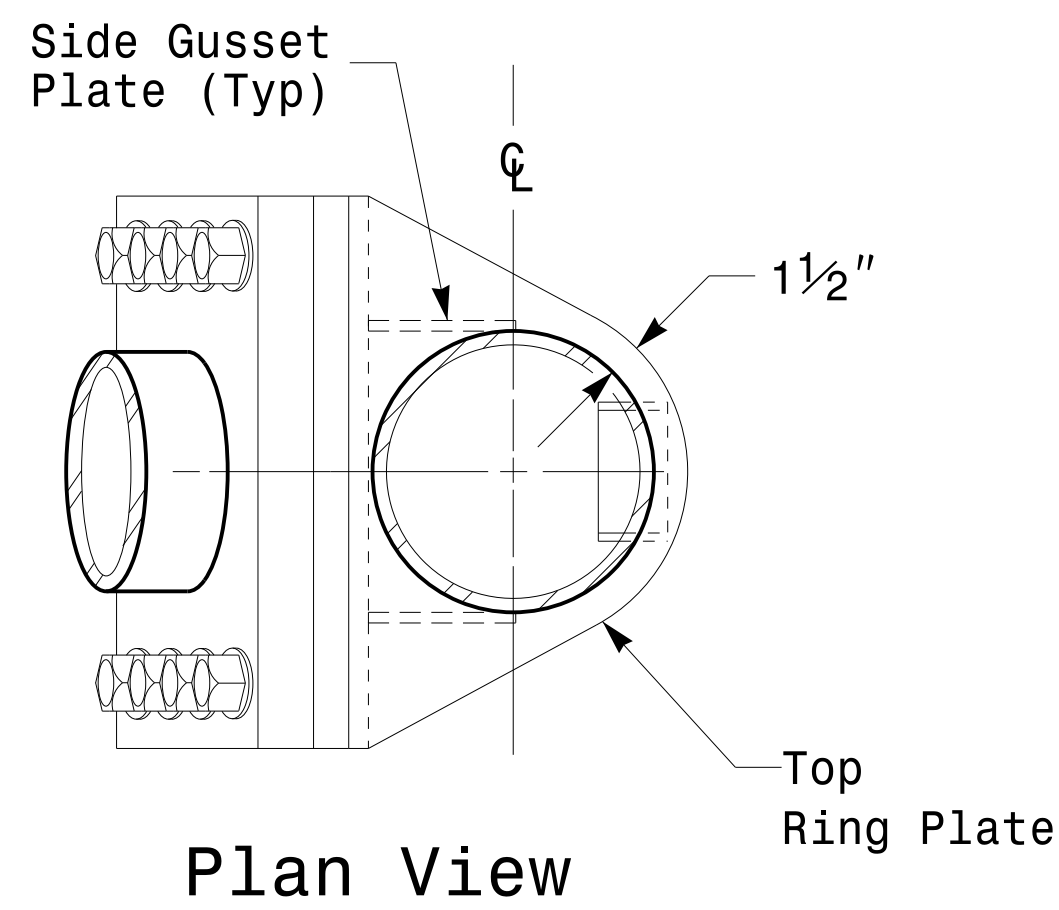
	Typical Fabrication Details For Mast Arm Poles		SEAL
	PLAN DATE: OCTOBER 2017 PREPARED BY: N. BITTING	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR		REVISIONS INIT. DATE
SCALE: 0 NA NONE	DocuSigned by: Dinesh C. Sarkar		10/11/2017 DATE

11-OCT-2017 08:33
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Fabrication Details - Mast Arm Poles

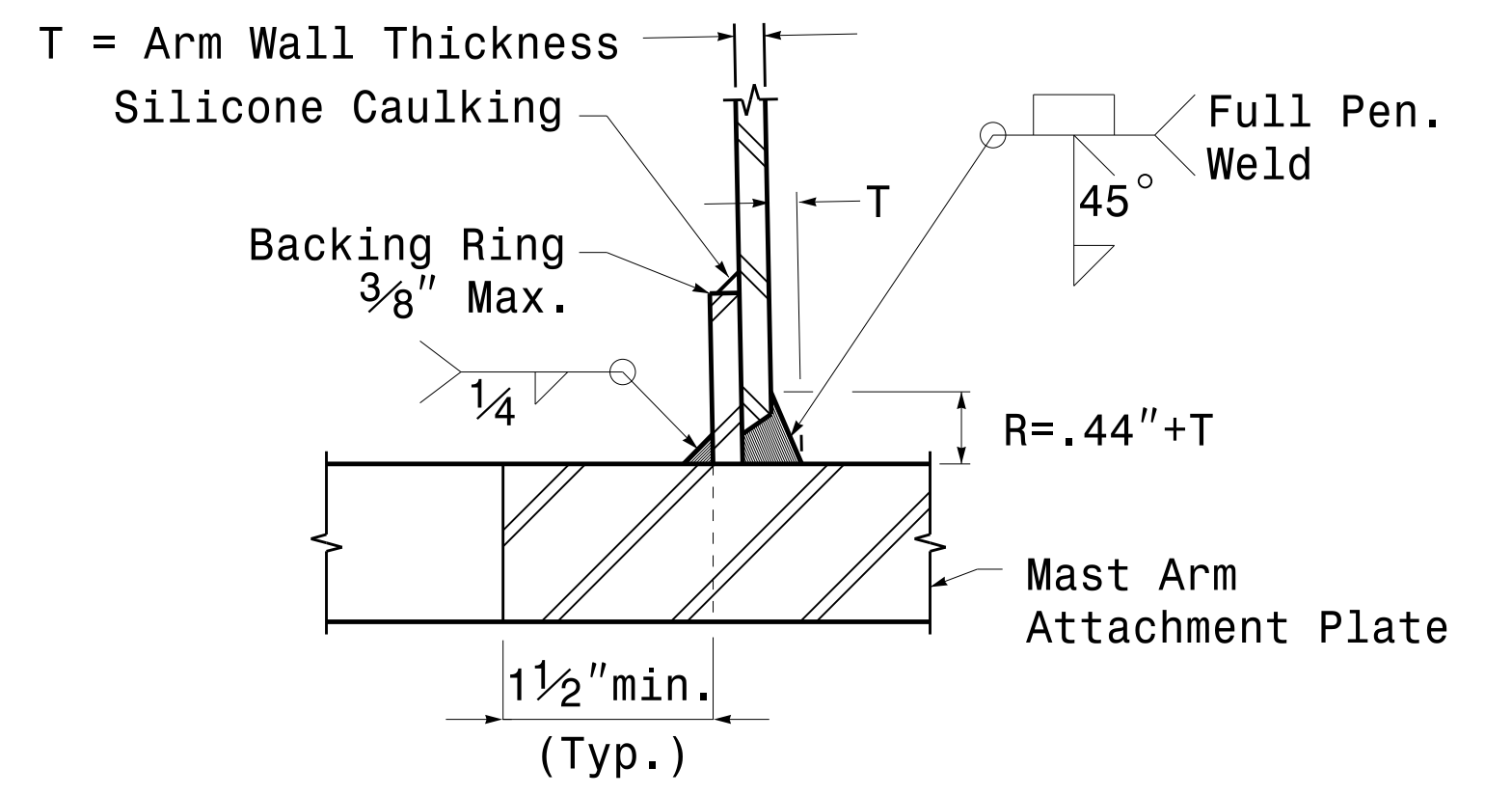
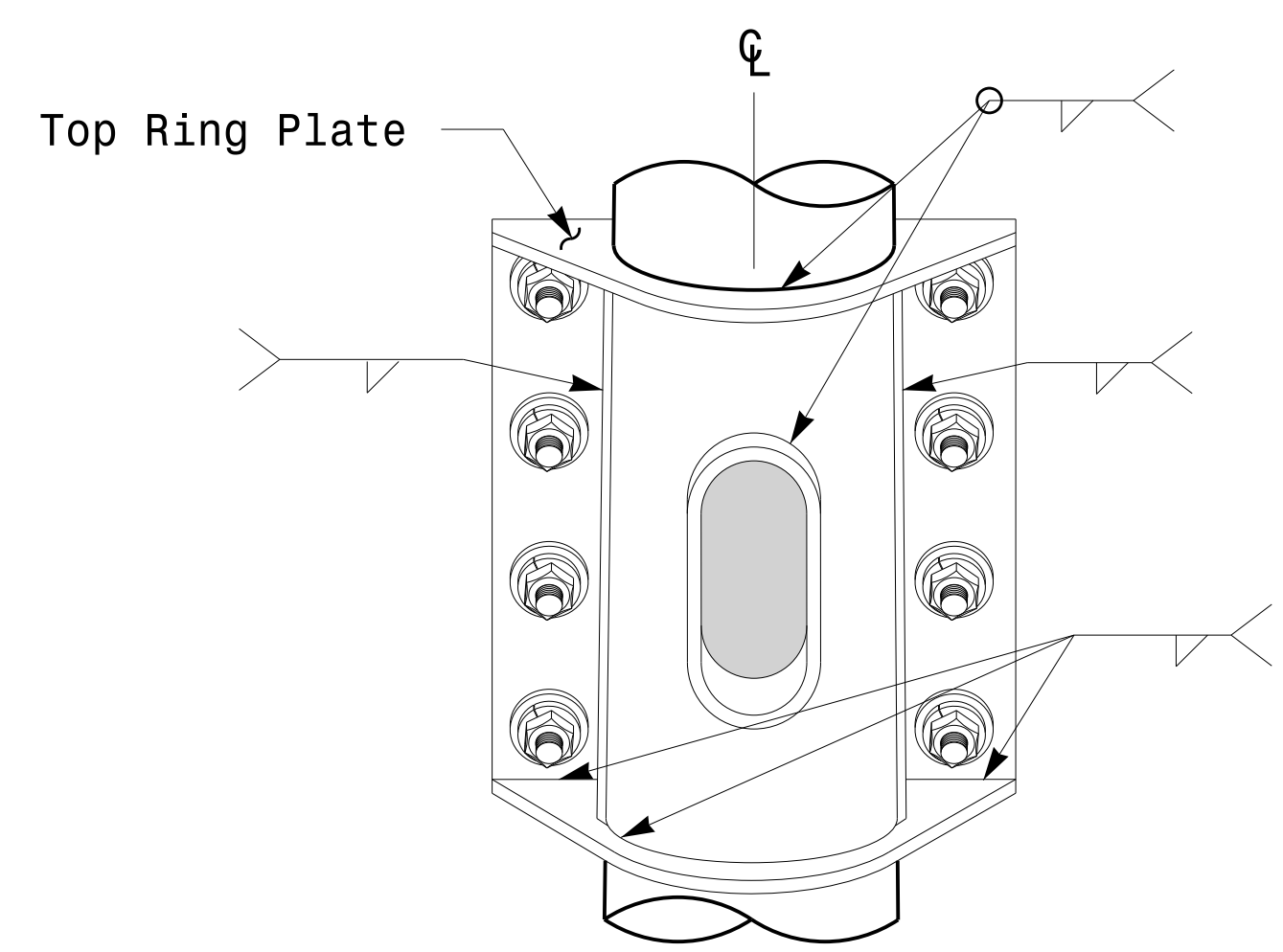
Welded Ring Stiffened Mast Arm Connection

PROJECT ID. NO.	SHEET NO.
	Sig.M5



Notes:

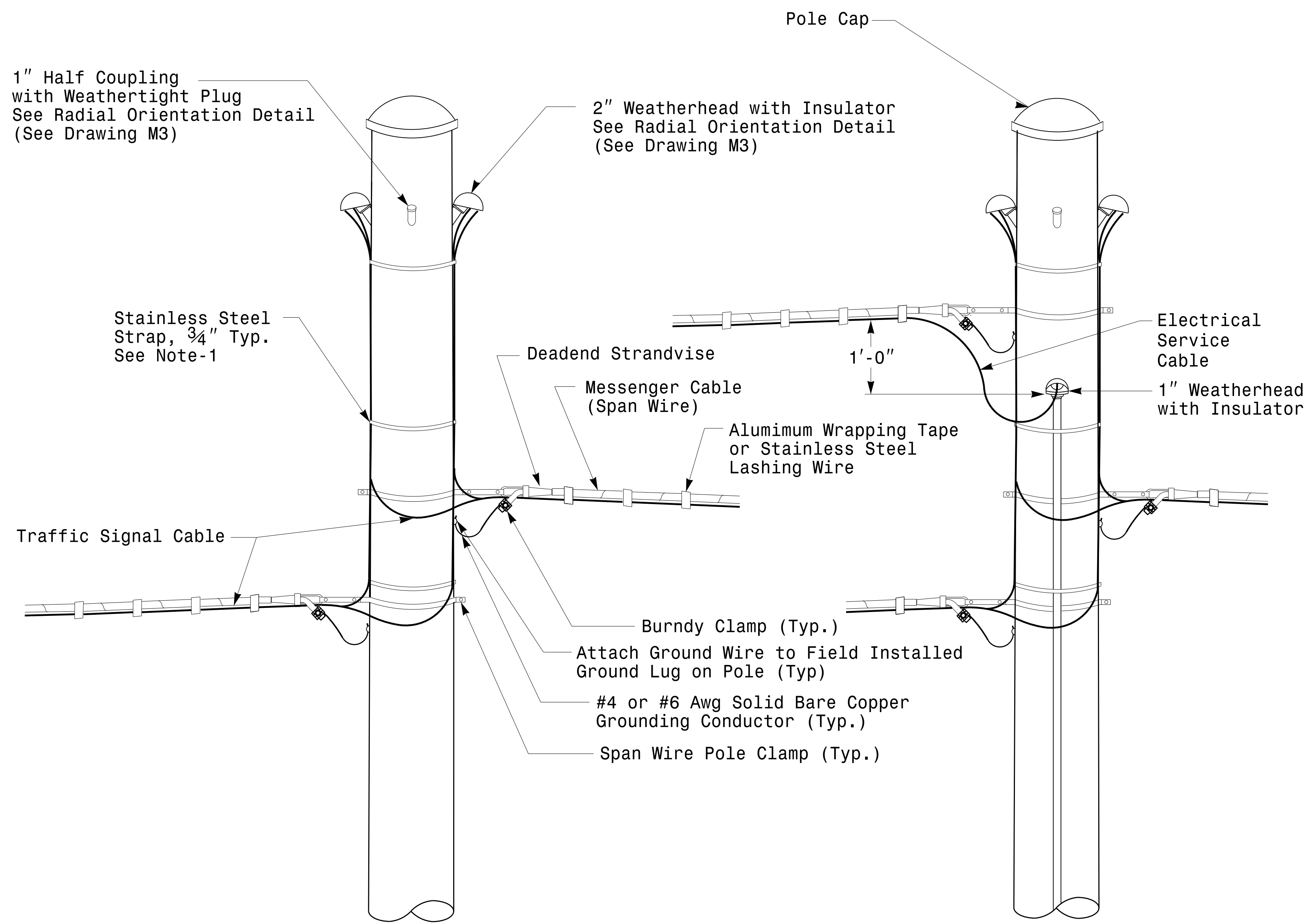
1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Fabricator is responsible for providing appropriate holes at drainage points to drain galvanizing materials.
4. For minimum edge distance follow AISC Table J3.4 and J3.5. For nominal bolt hole size use Table J3.3.
5. Provide upper handhole as necessary when shaft extensions are required for luminaire arms or camera. For poles without luminaires/camera, wiring can be done through the top of pole.
6. Allowable range of flange tilt angle will vary from 0° to as required.



<p>Prepared in the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Typical Fabrication Details For Mast Arm Connection To Pole</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;">PLAN DATE:</td> <td style="font-size: small;">OCTOBER 2017</td> <td style="font-size: small;">DESIGNED BY:</td> <td style="font-size: small;">C.F. ANDREWS</td> </tr> <tr> <td style="font-size: small;">PREPARED BY:</td> <td style="font-size: small;">N. BITTING</td> <td style="font-size: small;">REVIEWED BY:</td> <td style="font-size: small;">D.C. SARKAR</td> </tr> <tr> <td style="font-size: small;">REVISIONS</td> <td style="font-size: small;">INIT.</td> <td style="font-size: small;">DATE</td> <td></td> </tr> </table>	PLAN DATE:	OCTOBER 2017	DESIGNED BY:	C.F. ANDREWS	PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR	REVISIONS	INIT.	DATE		<p style="font-size: x-small;">Seal NORTH CAROLINA PROFESSIONAL ENGINEER 028094 DEBESH C. SARKAR</p>
PLAN DATE:	OCTOBER 2017	DESIGNED BY:	C.F. ANDREWS											
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR											
REVISIONS	INIT.	DATE												
<p>SCALE</p> <p>0 NA</p> <p style="border-top: 1px solid black; width: 50px; margin: 0 auto;"></p> <p>NONE</p>	<p style="font-size: x-small;">Discussed by:</p> <p style="font-size: x-small;">Debesu C. Sarkar</p> <p style="font-size: x-small;">DATE</p> <p style="font-size: x-small;">10/11/2017</p>													

11-OCT-2017 08:35:13 135604115 5101a1s461gnol Design Section Eastern Region 44 Sheets 2016 2014 Sig.M5 Std. Connection Fabrication Detail 1 s-Mast Arm Poles.dgn

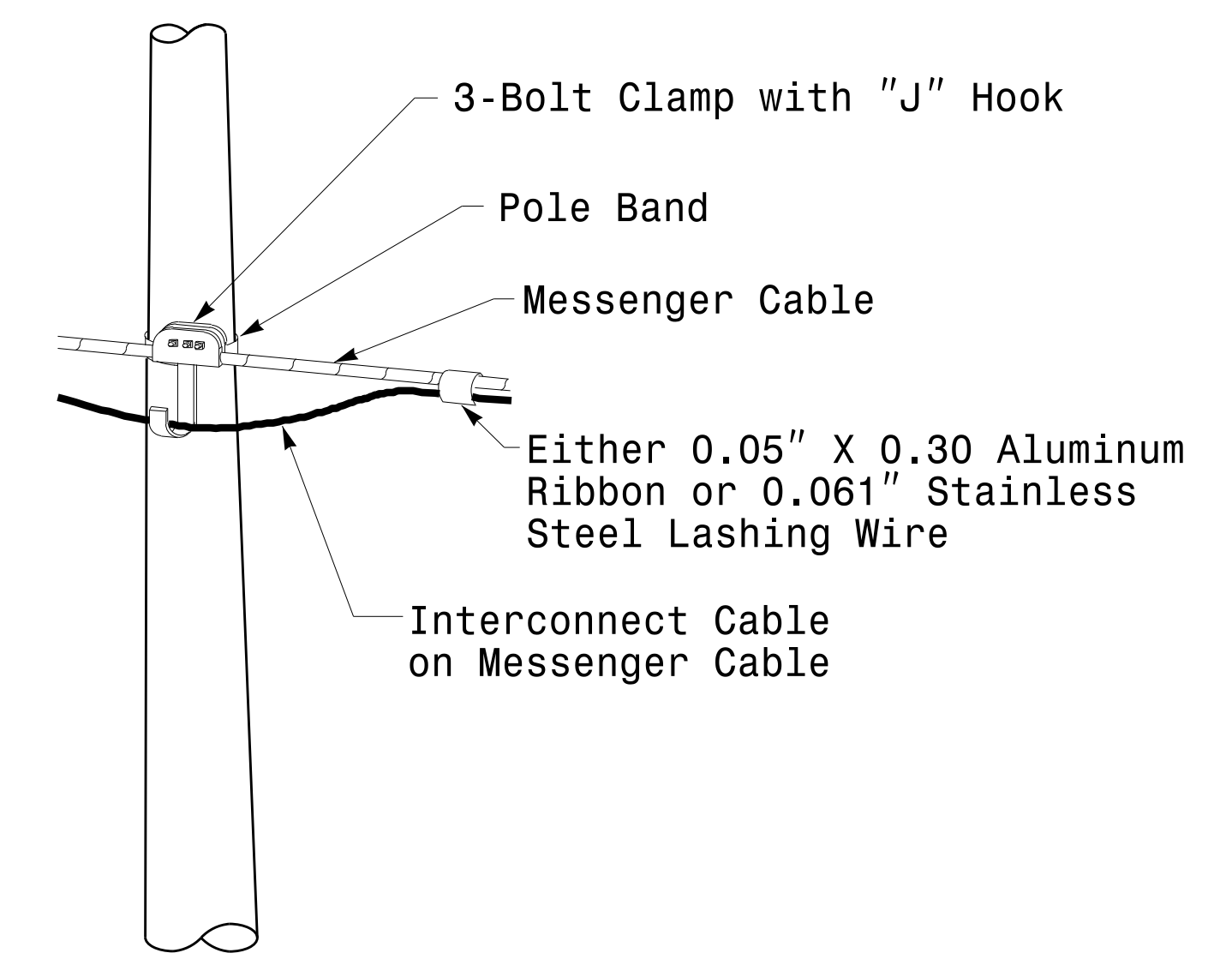
Fabrication Details – Mast Arm Connection



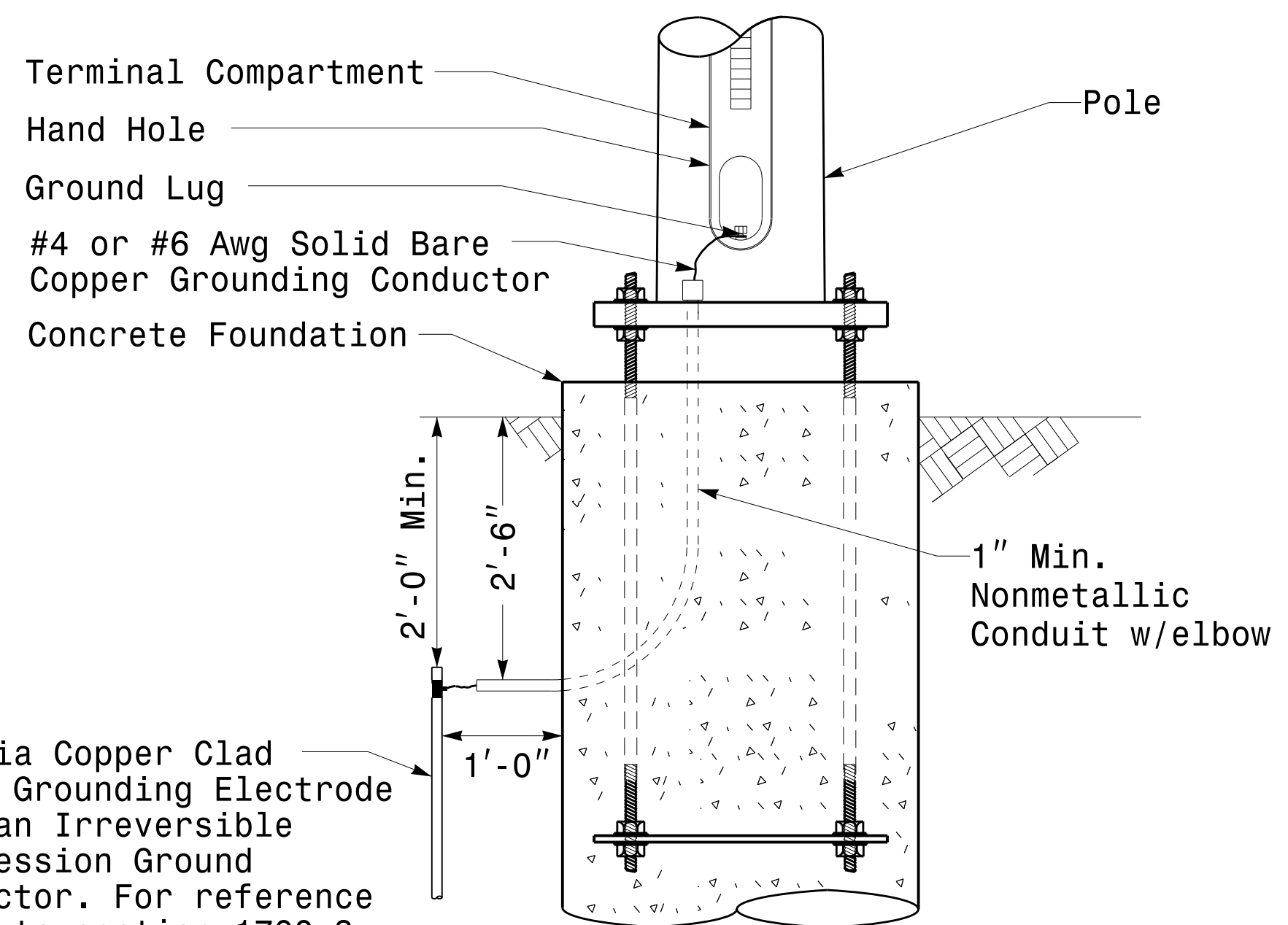
Strain Pole Attachments

NOTE:

1. Strap all signal cables to the side of the pole with 3/4" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 3'-0".
2. Provide minimum two spanwire pole clamps per pole.
3. It is prohibited to attach two span wires at one pole clamp.
4. For general requirements refer to NCDOT Standard Specifications for Roadway and Structures, January 2018.



Attachment of Cable to Intermediate Metal Pole

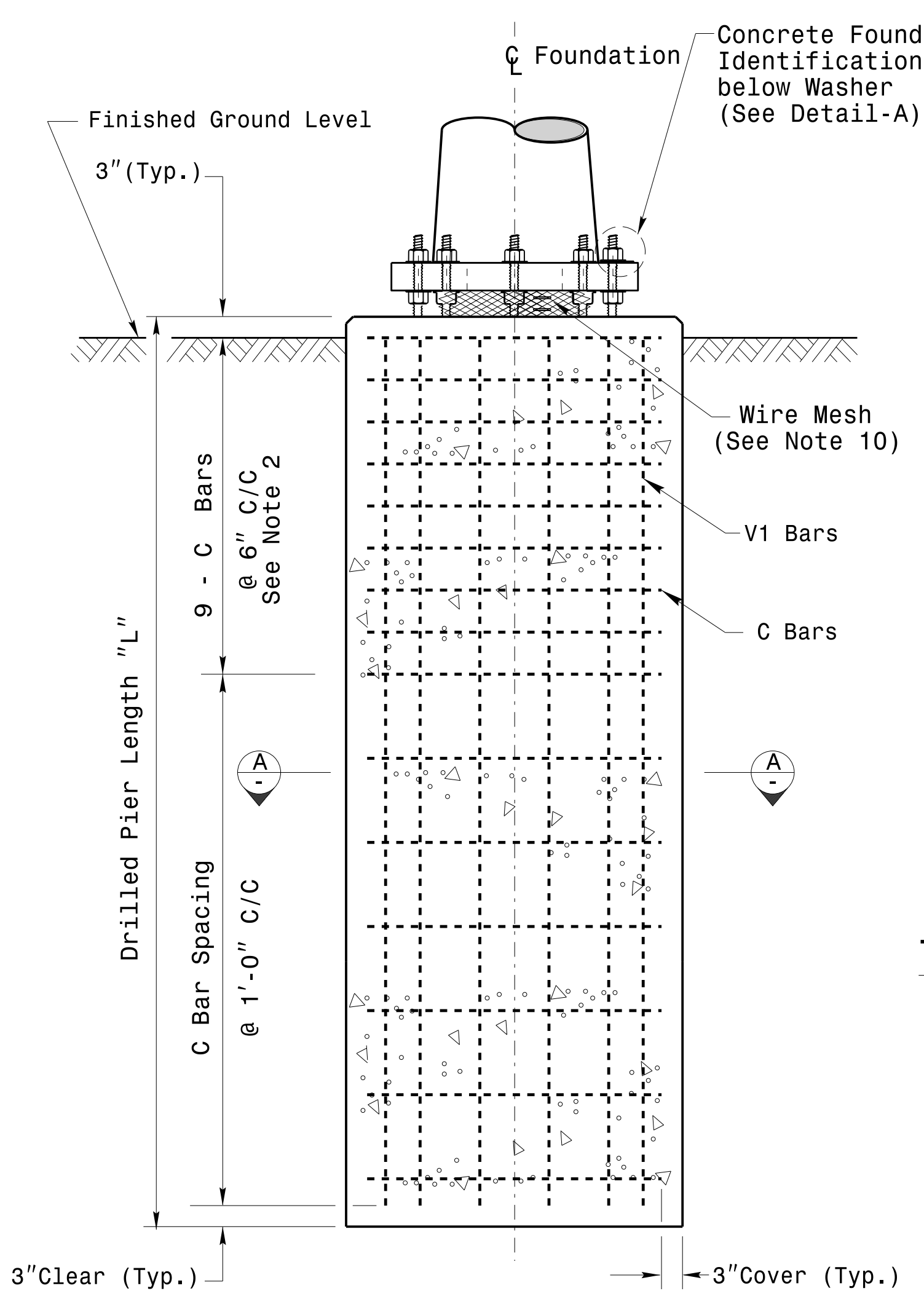


5/8" Dia Copper Clad Steel Grounding Electrode with an Irreversible Compression Ground Connector. For reference refer to section 1700-3 K and L for electrical grounding and bonding requirements, See Note 4.

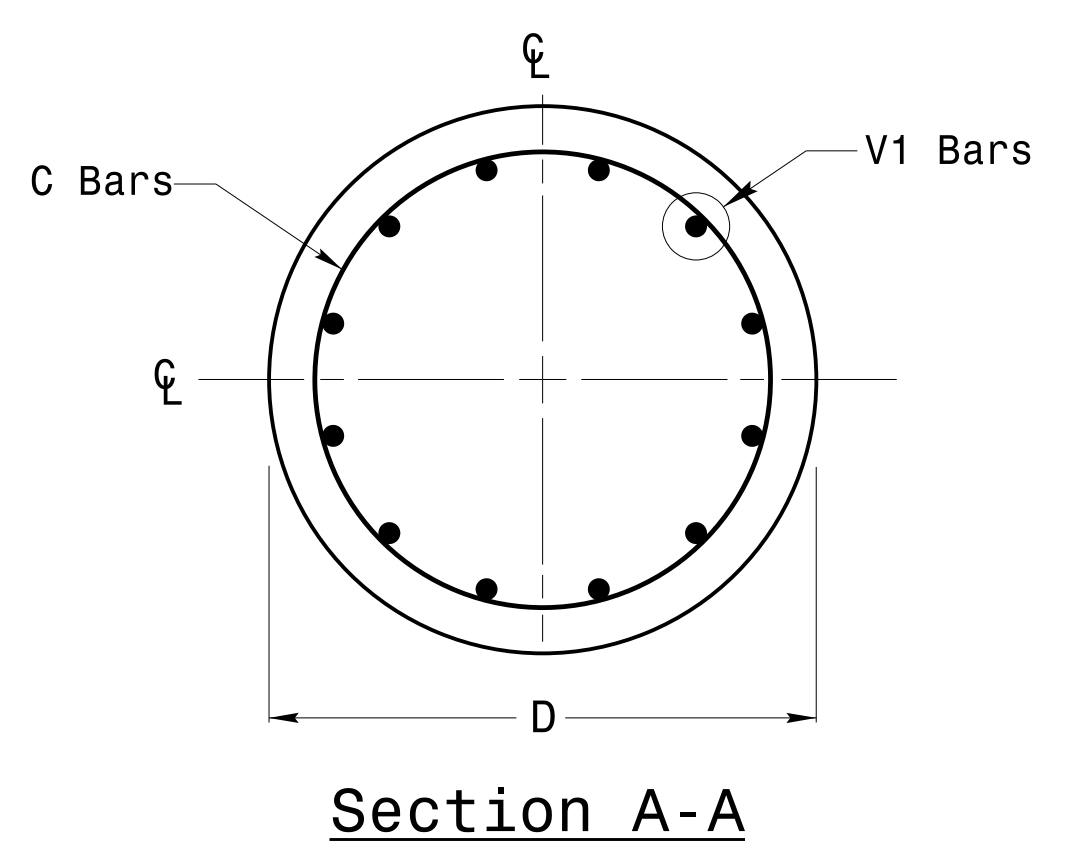
Metal Pole Grounding Detail For Strain Pole and Mast Arm

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

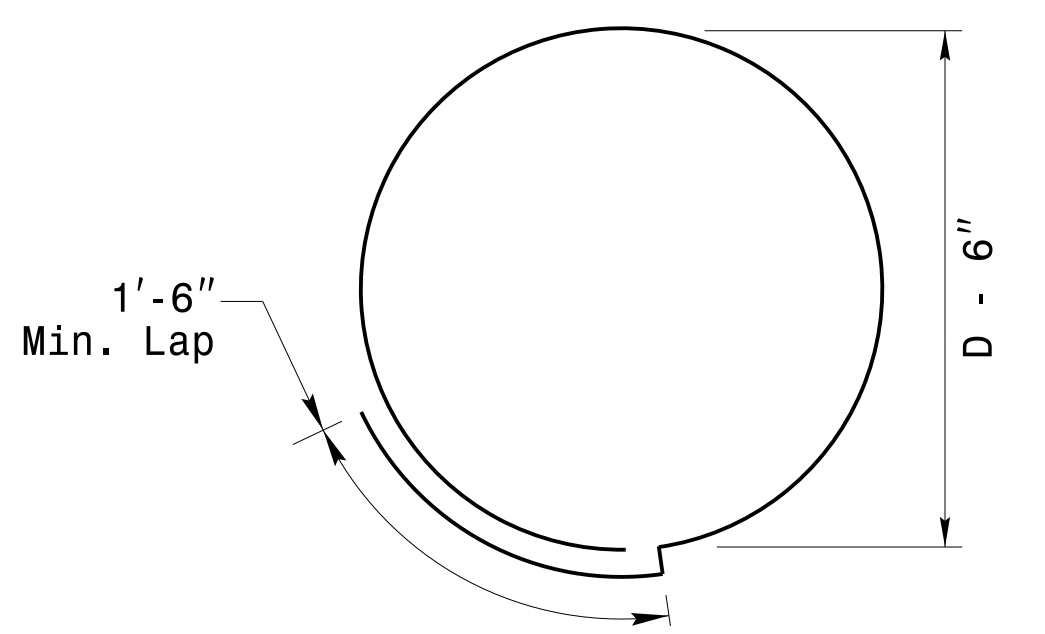
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Typical Fabrication Details For Strain Pole Attachments</p>		
	<p>PLAN DATE: OCTOBER 2017</p>	<p>DESIGNED BY: C.F. ANDREWS</p>	
<p>SCALE: 0 NA NONE</p>	<p>PREPARED BY: N. BITTING</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>
			<p>DocuSigned by: D. Sarkar 10/11/2017</p>



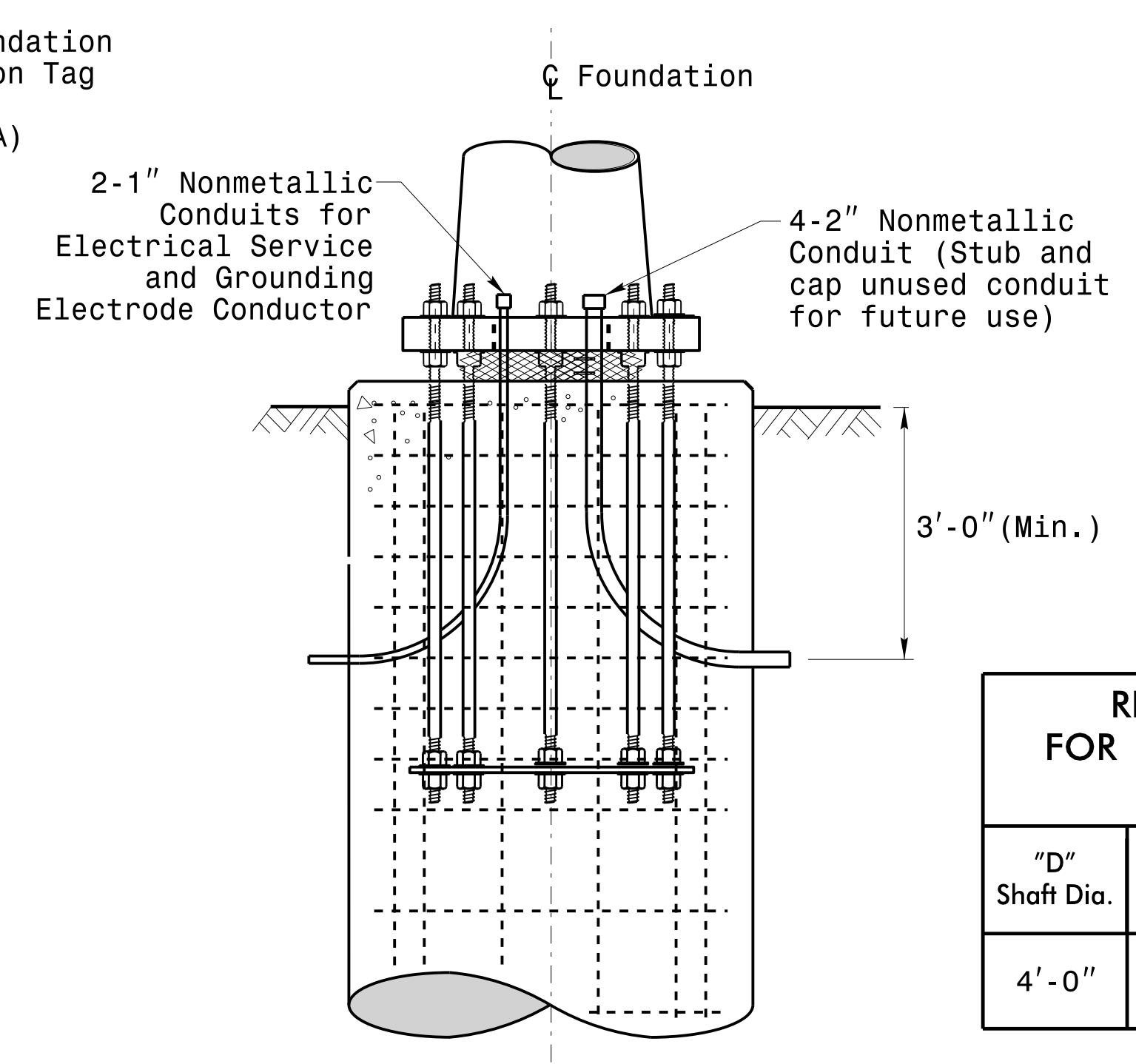
Concrete Shaft Elevation



Section A-A



Typical "C" Bar Detail

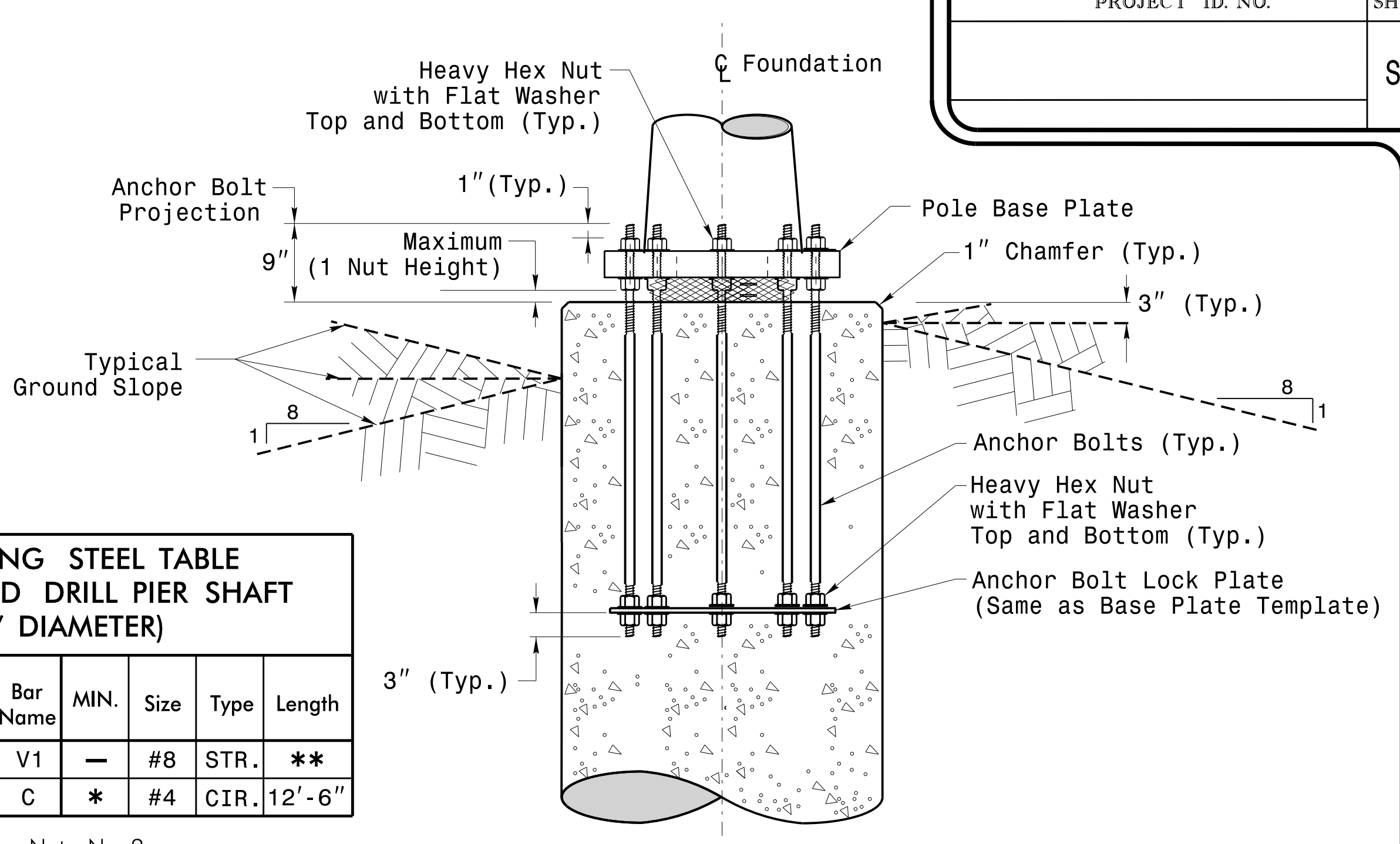


Typical Foundation Conduit Details

REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'-0" DIAMETER)

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

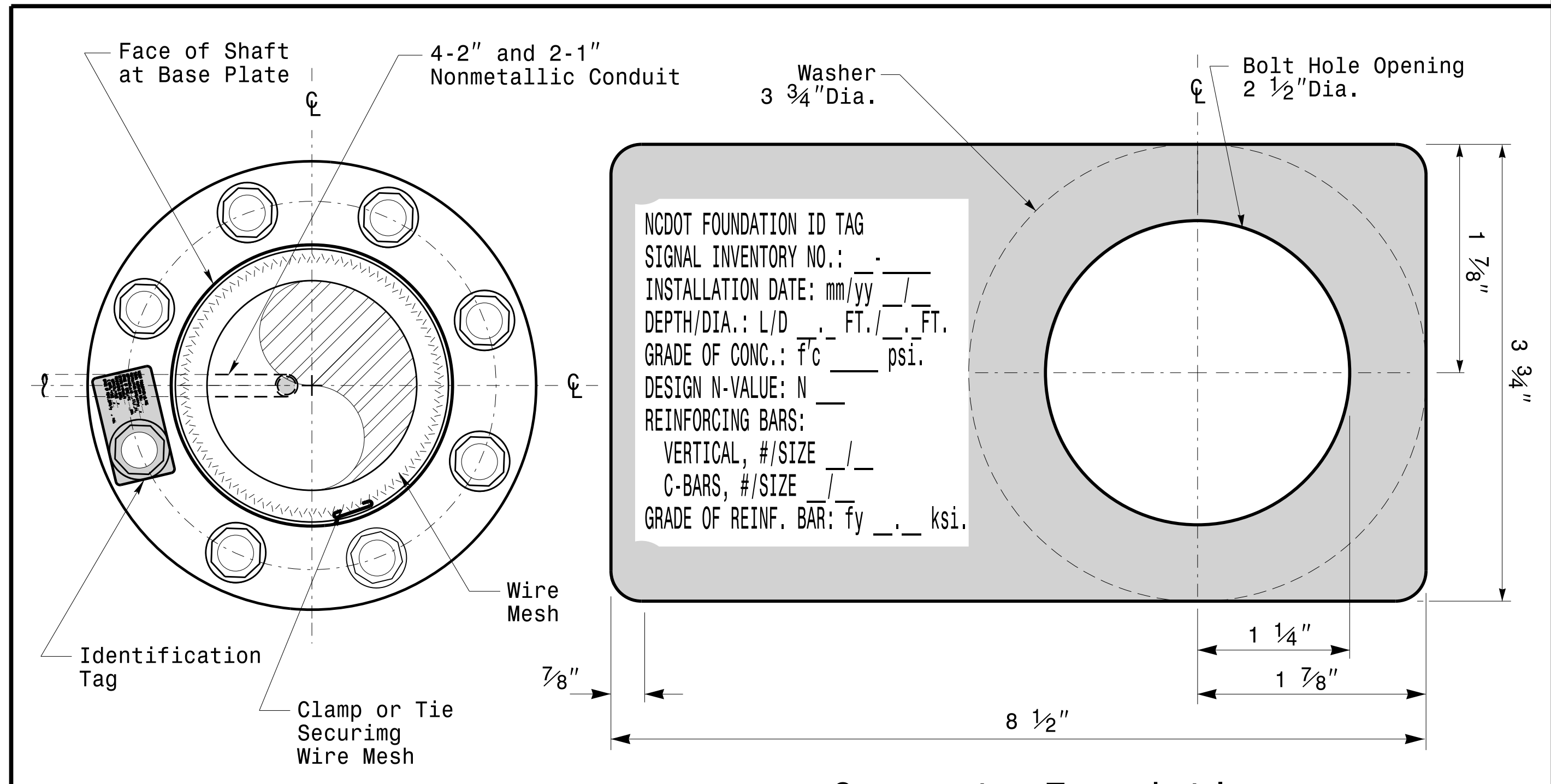
* See Note No. 2
** See Note No. 3



Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)

- General Notes:**
- 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>
 - 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

	Construction Details For Foundations		
	PLAN DATE: OCTOBER 2018	DESIGNED BY: C.B. COGDILL	
	PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR	
SCALE: NONE	REV. NO.	COMMENTS	INIT. DATE
	1	Revised Foundation Tag Details	N.B. 5/11/2015
Digitally Signed by: <i>Devesh C. Sarkar</i> AUTHENTICATED SIGNATURE			10/11/2017 DATE

Construction Details – Foundations

11-061-2017-08:37 136604115-Stipalis:gnal Design Section:Eastern Region:Sheet:2016-2014 Sig.M7 Std. Construction Detail:ls-Stipalis Poles.dgn

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:

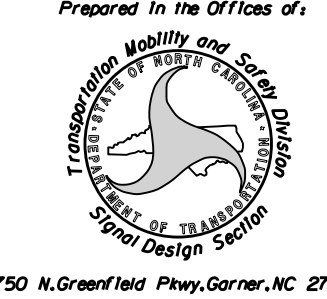
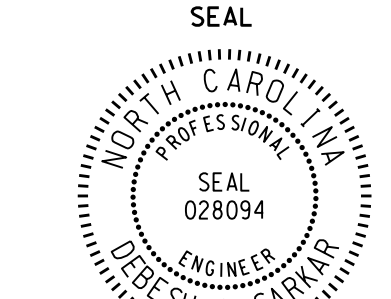
1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain concrete mix.

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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