

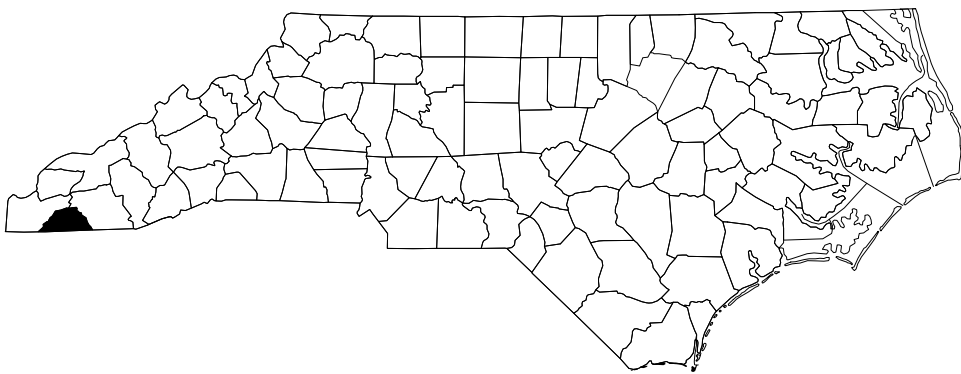
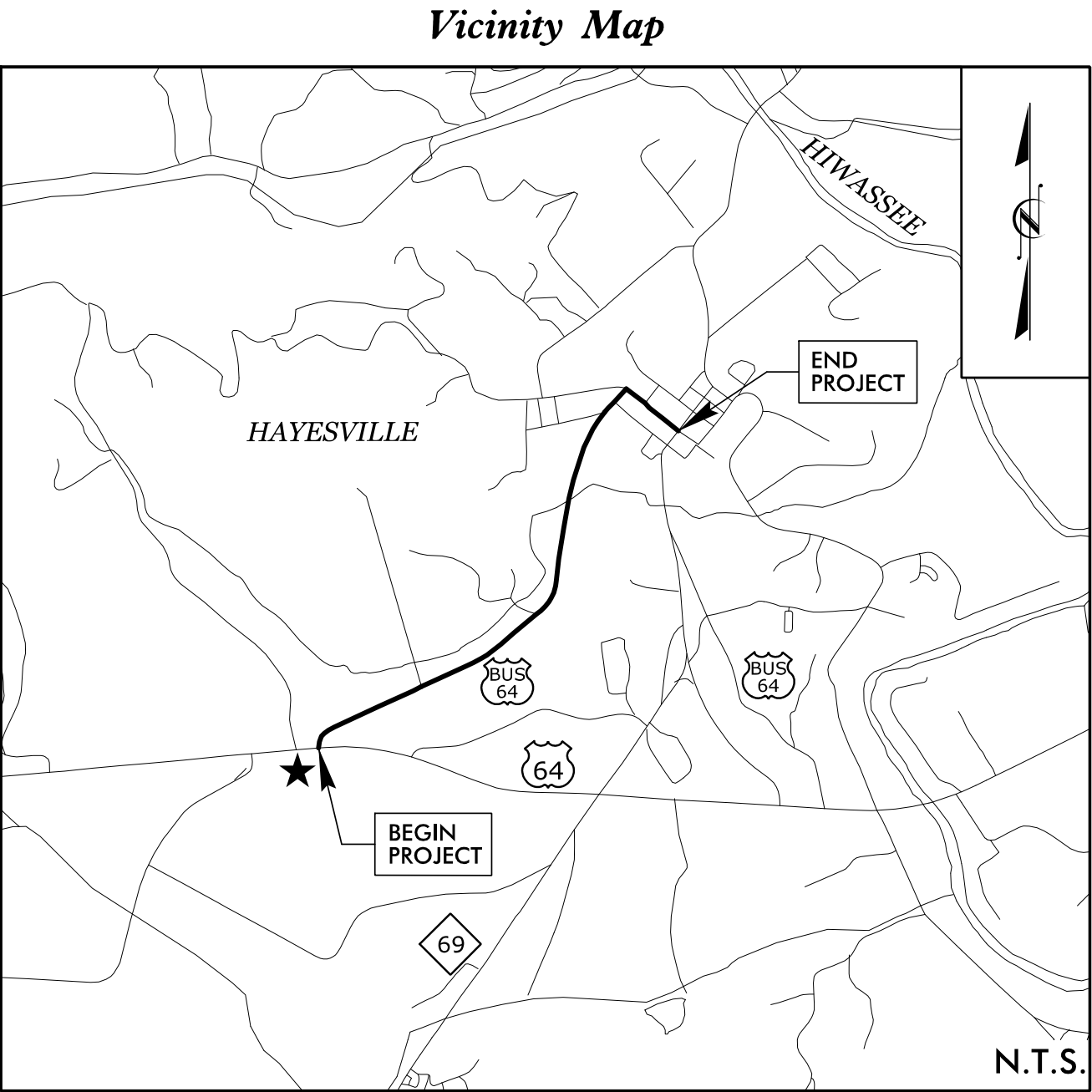
PROJECT: R-5863

CONTRACT:

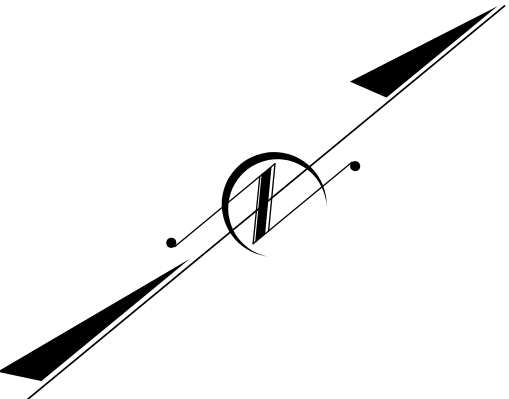
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLAY COUNTY

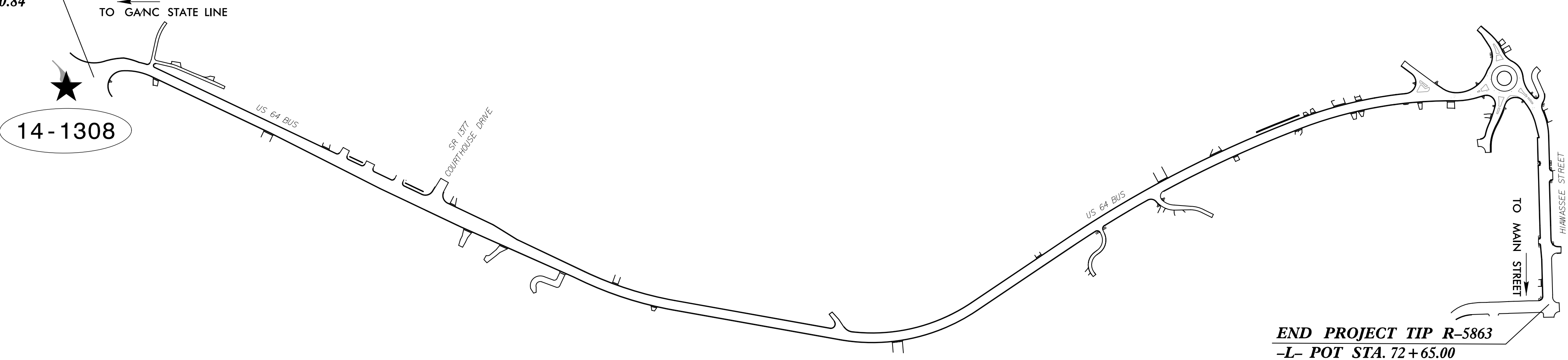
LOCATION: US 64 BUSINESS FROM US 64
BYPASS TO MAIN STREET
TYPE OF WORK: TRAFFIC SIGNAL



★ PROPOSED SIGNAL
XX-XXXX SIGNAL ID NUMBER



BEGIN PROJECT TIP R-5863
-L- POT STA. 10+30.84



END PROJECT TIP R-5863
-L- POT STA. 72+65.00

stv

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991

Refer to "Roadway Standard Drawings
NCDOT" dated January 2024 and
"Standard Specifications for Roads
and Structures" dated January 2024.

Sheet #	Reference #	Index of Plans	Location/Description
Sig. 1.0	---	Project Titlesheet	
Sig. 2.0-4.2	14-1308	US 64 at US 64 Business / Hot Spot Convenience Store	
Sig. M1A-M9	N/A	2024 Standard Metal Pole Sheets	

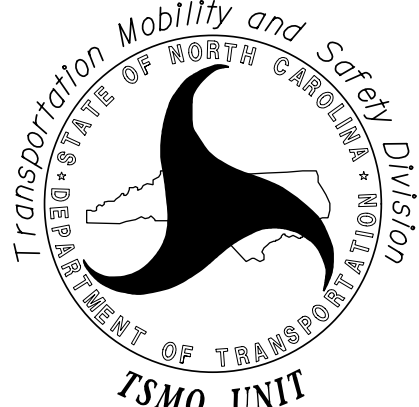
NCDOT TRANSPORTATION SYSTEMS
MANAGEMENT & OPERATIONS UNIT
Contacts:

R. Nicholas Zinser, P.E. – Western Region Signals Engineer
Keith M. Mims, P.E. – Signal Equipment Design Engineer

STV Engineers, Inc.
Contacts:

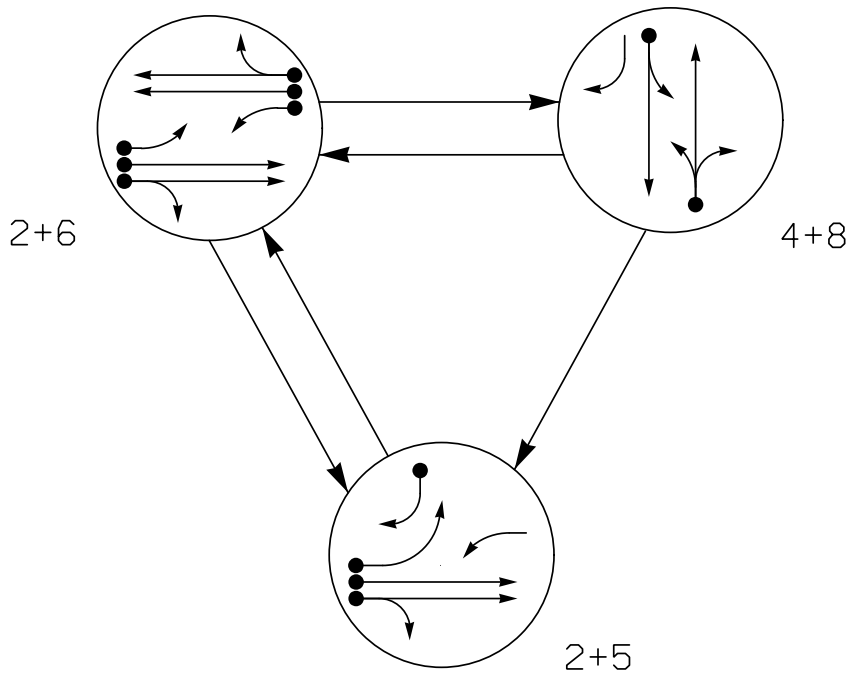
Trent M. Moody, P.E. – Senior Associate – Transportation Director
Hemang M. Surti, P.E. – Senior Project Manager

DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY
DIVISION



750 N. Greenfield Parkway, Garner, NC 27529

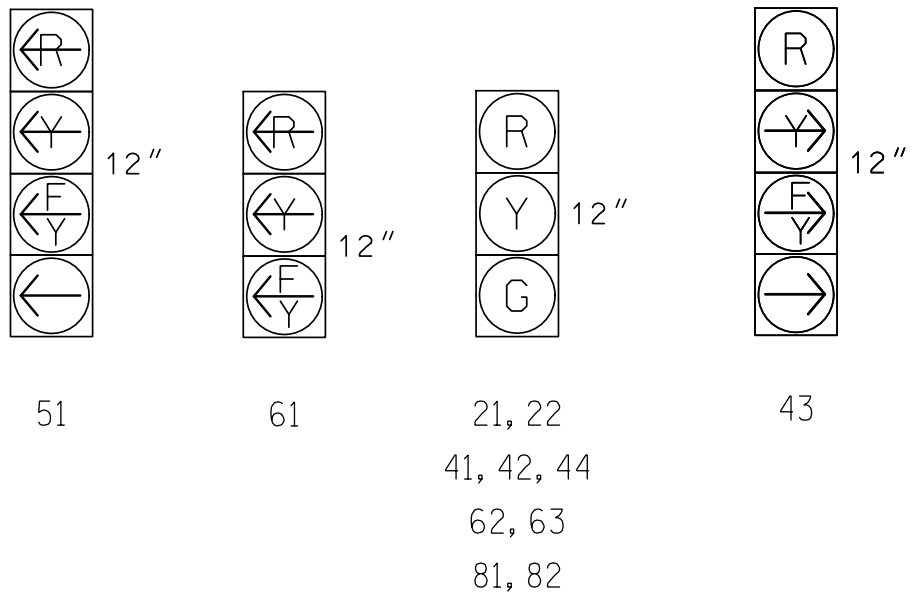
PHASING DIAGRAM



SIGNAL FACE	PHASE			
	2+5	2+6	4+8	F
21, 22	G	G	R	R
41, 42, 44	R	R	G	R
43		R	F	R
51		F	R	R
61	F	F	R	R
62, 63	R	G	R	R
81, 82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURN	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
4A	*	0	*	*	4	3.0	-	X	-	X	*
5A	*	0	*	*	5	15.0	-	X	-	X	*
5B	*	0	*	*	5	15.0	-	X	-	X	*
6B	*	0	*	*	6	3.0	-	X	-	X	*
8A	*	0	*	*	8	3.0	-	X	-	X	*
8B	*	0	*	*	8	15.0	-	X	-	X	*

* Multi-zone Microwave Detection Zone

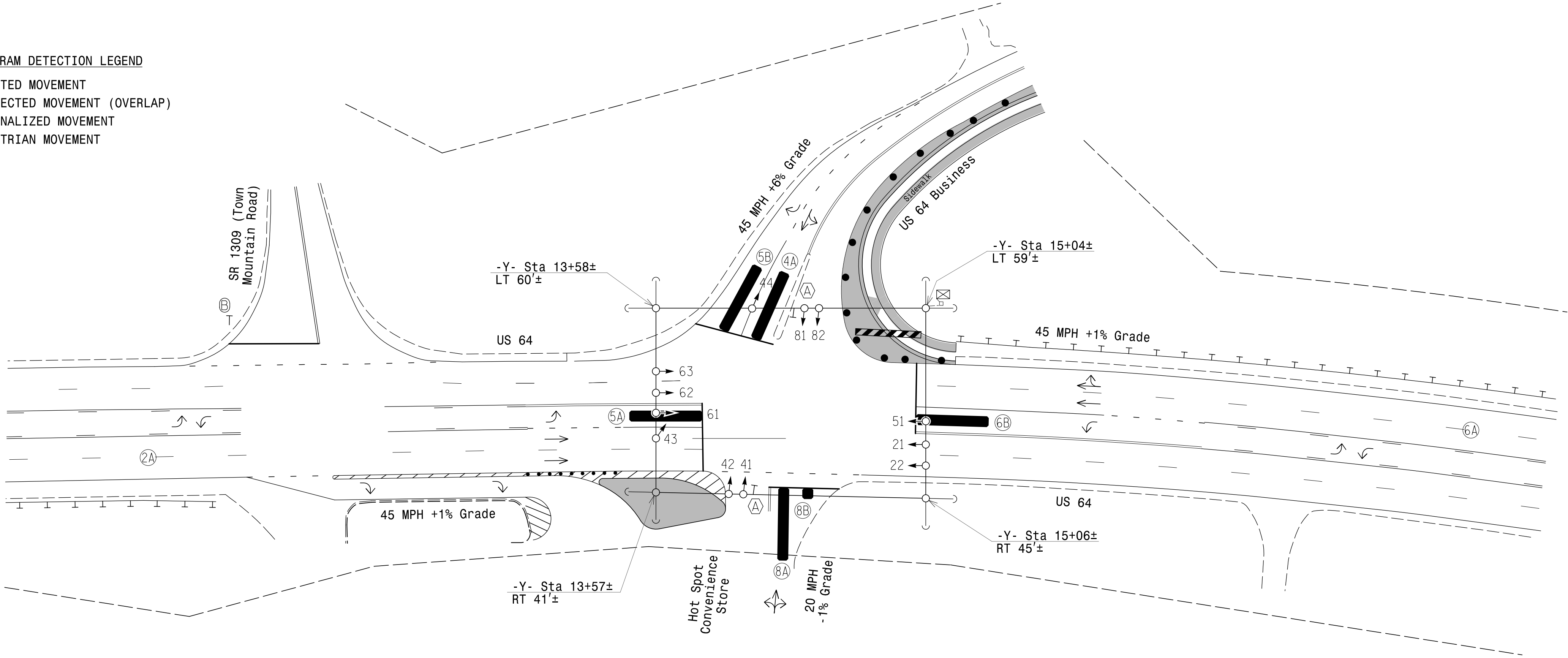
3 Phase Fully Actuated (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- 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 multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Contractor to coordinate with Utility Company for proper overhead power line clearance conformance.
- See Roadway Pavement Marking Plans for proposed pavement marking locations.

PHASING DIAGRAM DETECTION LEGEND

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



LEGEND

- | PROPOSED | EXISTING |
|--|-------------------------------|
| Traffic Signal Head | Modified Signal Head |
| Signal Pole with Guy | Signal Pole with Sidewalk Guy |
| Inductive Loop Detector | Controller & Cabinet |
| Junction Box | 2" Underground Conduit |
| Directional Drill | Right of Way |
| Directional Arrow | Guardrail |
| Non-Intrusive Detection Zone | Construction Zone |
| Construction Zone Drums | Barricade |
| "LEFT TURN YIELD ON GREEN" Sign (R10-12) | "STOP" Sign (R1-1) |

MAXTIME TIMING CHART					
FEATURE	PHASE				
	2	4	5	6	8
Walk *	-	-	-	-	-
Ped Clear	-	-	-	-	-
Min Green *	12	7	7	12	7
Passage *	2.0	2.0	2.0	2.0	2.0
Max 1 *	90	30	20	90	30
Yellow Change	4.4	4.1	3.0	4.4	4.1
Red Clear	1.8	3.1	2.1	1.8	3.1
Added Initial *	-	-	-	-	-
Maximum Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Advance Walk	-	-	-	-	-
Non Lock Detector	-	X	X	-	X
Vehicle Recall	MIN RECALL	-	-	MIN RECALL	-
Dual Entry	-	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.

MICROWAVE DETECTION				
FUNCTION	SENSOR 1 - (2A)		SENSOR 2 - (6A)	
Channel	1		1	
Phase	2		6	
Direction of Travel	EB		WB	
Type	Priority		Priority	
Level	2	QUEUE	2	QUEUE
Detection Zone (ft)	< 750		< 750	
Range	600 - 100	150 - 100	600 - 100	150 - 100
Enable Speed	Y		Y	
Speed Range (mph)	35 - 100	1 - 35	35 - 100	1 - 35
Enable Estimated Time of Arrival	Y		Y	
Estimated Time of Arrival (sec)	2.5 - 6.5	-	2.5 - 6.5	-

This plan supersedes the plan signed and sealed on 8/2/2024.

New Installation- Temp Design 1 (TMP Phase II)

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy, Garner, NC 27529
SCALE: 0 40 1' = 40'

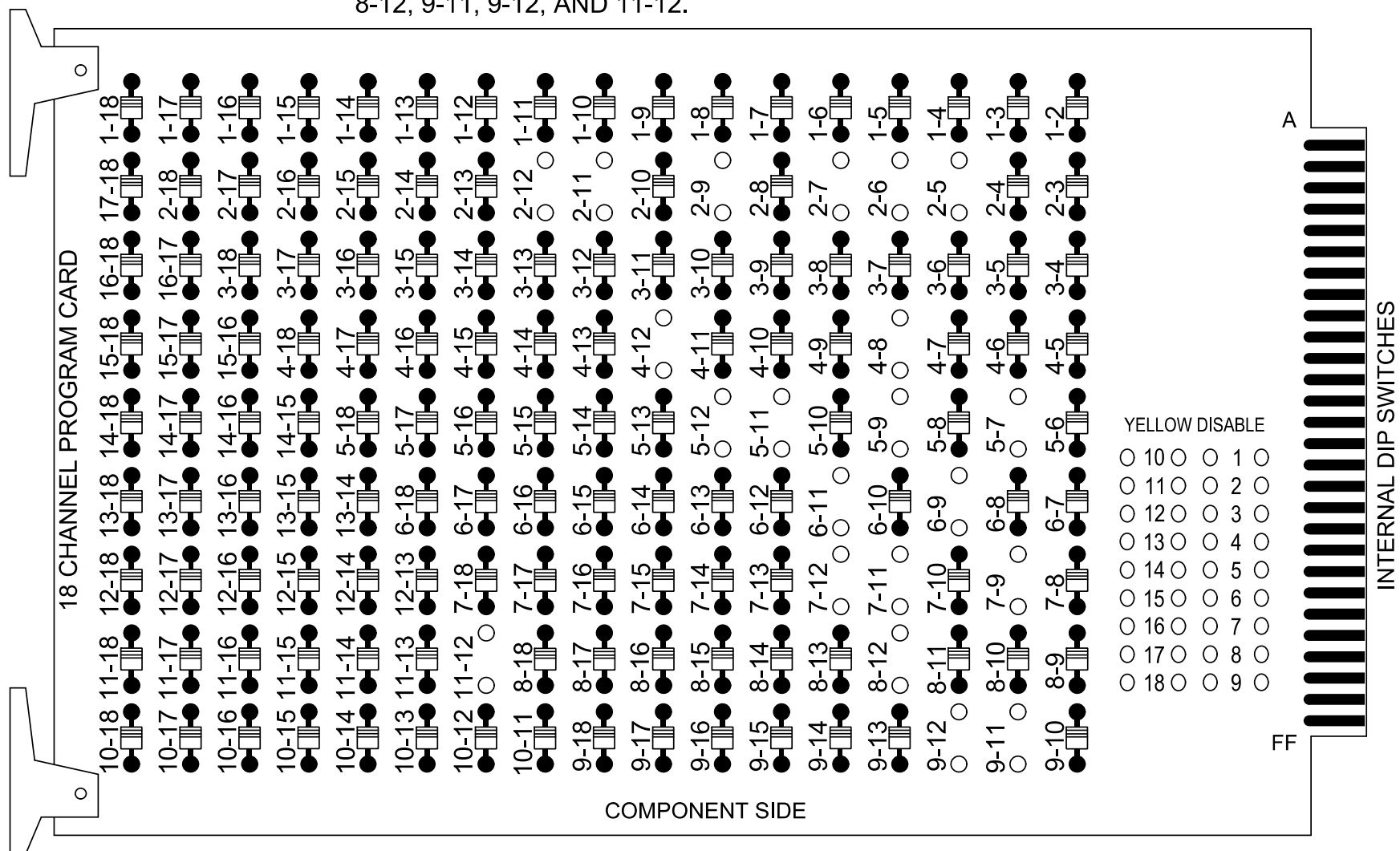
US 64 at US 64 Business/Hot Spot Convenience Store
Division 14 Clay County Hayesville
PLAN DATE: April 2025 REVIEWED BY: H.M. Surti
PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Woody
REVISIONS: INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 040329
T.M. WOODY
DATE: 5/21/2025
SIC. INVENTORY NO. 14-130811

18 CHANNEL CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS: 2-5, 2-6, 2-7, 2-9, 2-11, 2-12, 4-8, 4-12, 5-7, 5-9, 5-11, 5-12, 6-9, 6-11, 7-9, 7-11, 7-12, 8-12, 9-11, 9-12, AND 11-12.



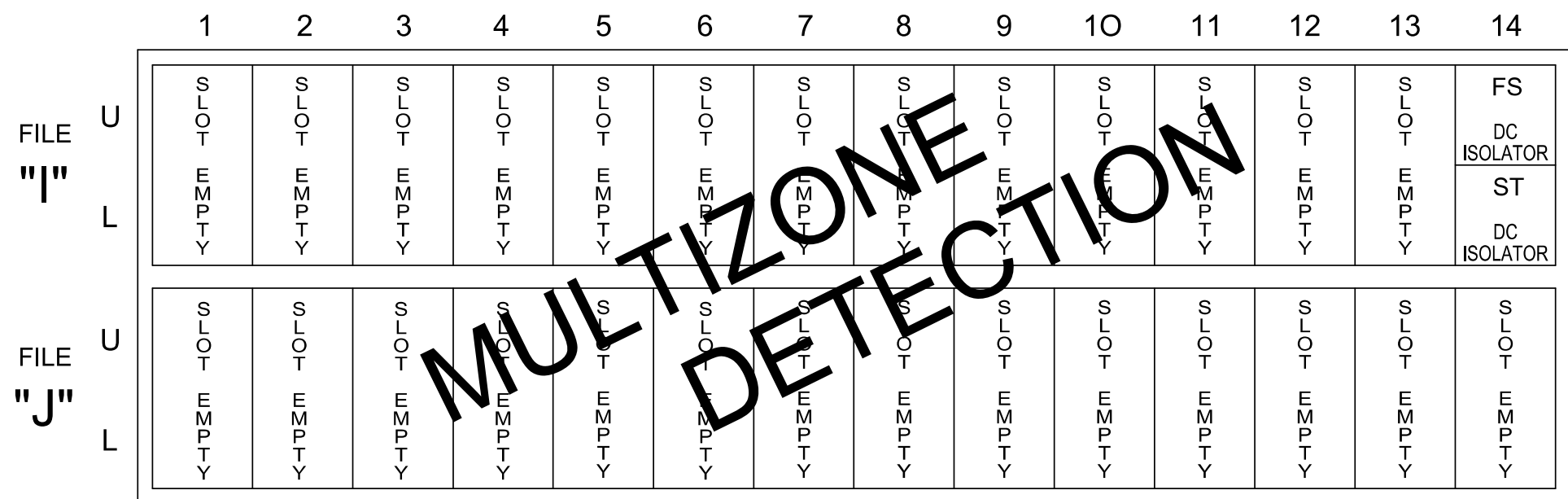
REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

SPECIAL DETECTOR NOTE

Install a multizone microwave 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.

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 plan.
- Program phase 4 and phase 8 for Dual Entry.
- Program controller to start up in phase 2 Green No Walk and phase 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

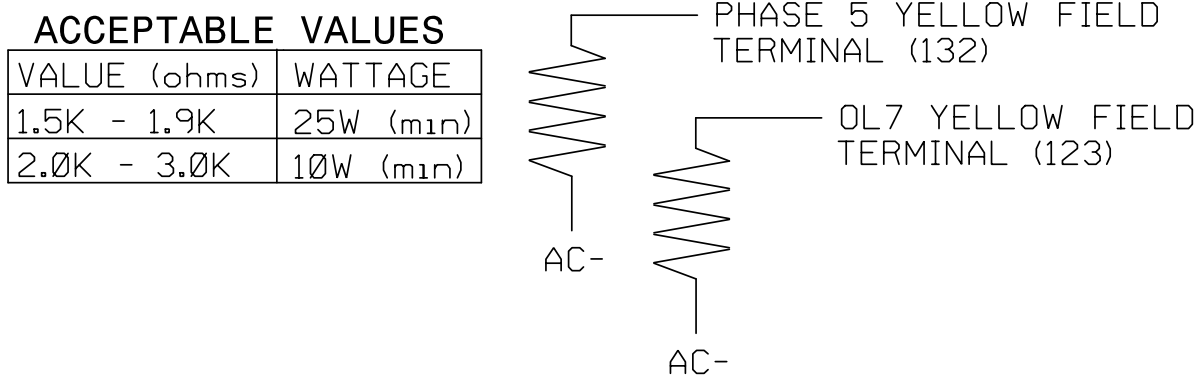
EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S2, S5, S7, S8, S10, S11,
AUX S1, AUX S4, AUX S5
Phases Used.....2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*
Overlap "7".....*

*See overlap programming detail on sheet 2

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



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	OL7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42 44	NU	51	62,63	NU	43	81,82	NU	61	NU	NU	51	43	NU
RED		128			101			134			107						A101	
YELLOW		129			102		*	135		*	108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115	A102	
FLASHING YELLOW ARROW													A123			A116	A103	
GREEN ARROW							133			124								

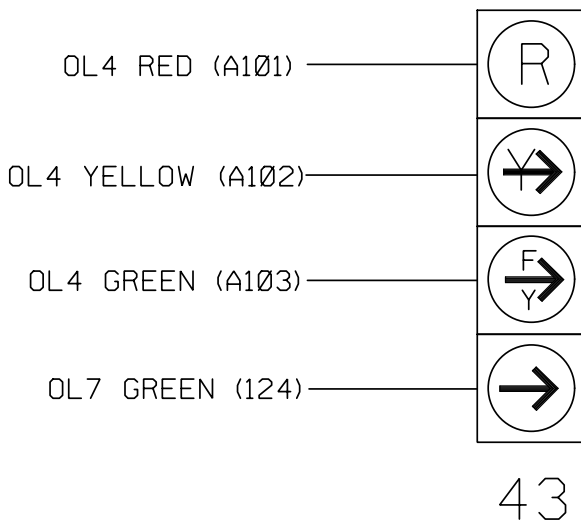
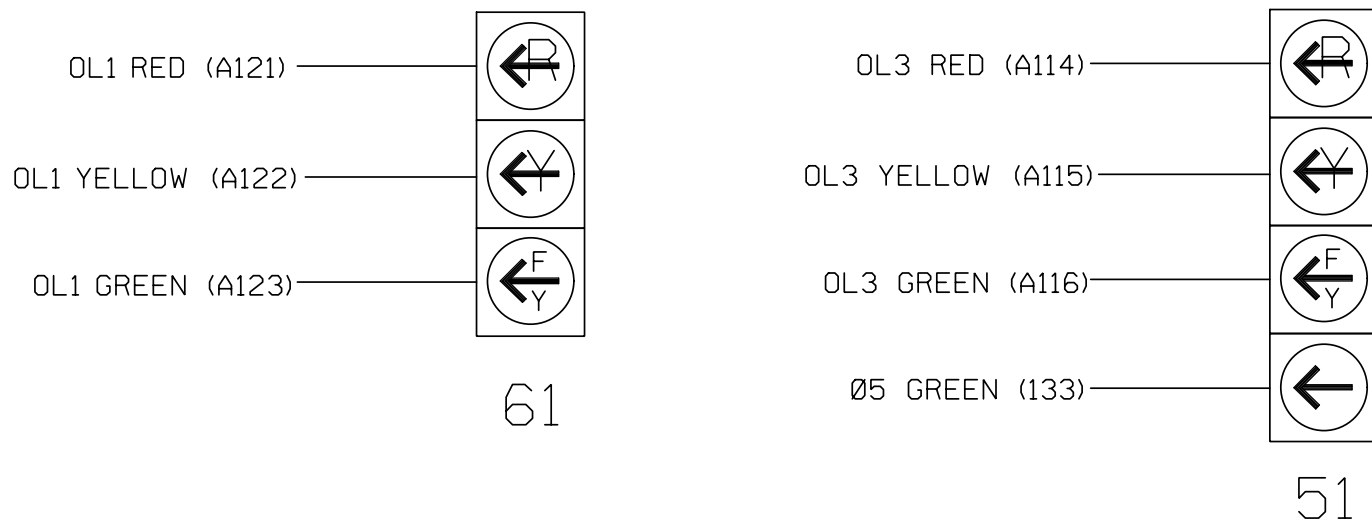
NU = Not Used

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

* See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

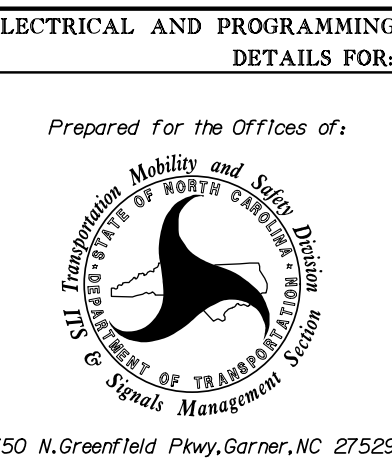
(wire signal heads as shown)



This plan supersedes the plan signed and sealed on 8/2/2024.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-1308T1
DESIGNED: April 2025
SEALED: 5/21/2025
REVISED:

Temporary Design 1 - (TMP Phase II)
ELECTRICAL DETAIL SHEET 1 OF 2



US 64 at US 64 Business/Hot Spot Convenience Store			
Division 14	Clay County	Hayesville	
PLAN DATE: April 2025	REVIEWED BY: H.M. Surti		
PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Woody		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channels Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1	-	X	X	1
2	Phase Vehicle	2	-	X	-	2
3	Phase Vehicle	3	-	X	X	3
4	Phase Vehicle	4	-	X	-	4
5	Phase Vehicle	5	-	X	-	5
6	Phase Vehicle	6	-	X	X	6
7	Overlap	7	-	X	-	7
8	Phase Vehicle	8	-	X	X	8
9	Overlap	1	-	X	X	9
10	Overlap	2	-	X	X	10
11	Overlap	3	-	X	-	11
12	Overlap	4	-	X	-	12
13	Phase Ped	2	-	-	-	13
14	Phase Ped	4	-	-	-	14
15	Phase Ped	6	-	-	-	15
16	Phase Ped	8	-	-	-	16
17	Overlap	5	-	X	X	17
18	Overlap	6	-	X	-	18

NOTE OL7 ASSIGNED
TO CHANNEL 7

↑ ↑
NOTE: ALL RED FLASH

MAXTIME OVERLAP PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	3	4	7
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	Normal
Included Phases	2	6	4	5
Modifier Phases	-	5	5	-
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

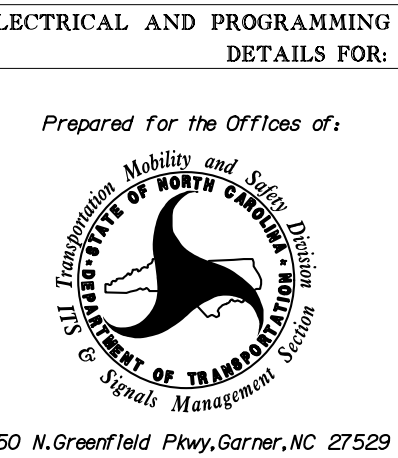
Unit Flash Parameters

All Red Flash Exit Time
6

This plan supersedes the plan signed and sealed on 8/2/2024.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-1308T1
DESIGNED: April 2025
SEALED: 5/21/2025
REVISED:

Temporary Design 1 - (TMP Phase II)
ELECTRICAL DETAIL SHEET 2 OF 2



US 64 at US 64 Business/Hot Spot Convenience Store			
Division 14	Clay County	Hayesville	
PLAN DATE: April 2025	REVIEWED BY: H.M. Surti		
PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Woody		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

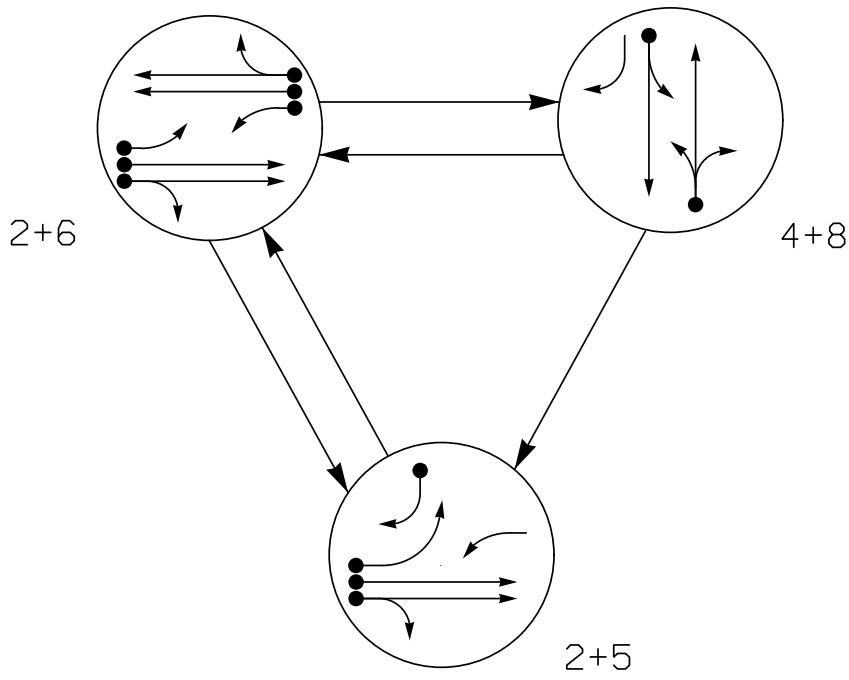
SEAL

DocuSigned by: 5/21/2025

45EAT64828242628E

SIG. INVENTORY NO. 14-1308T1

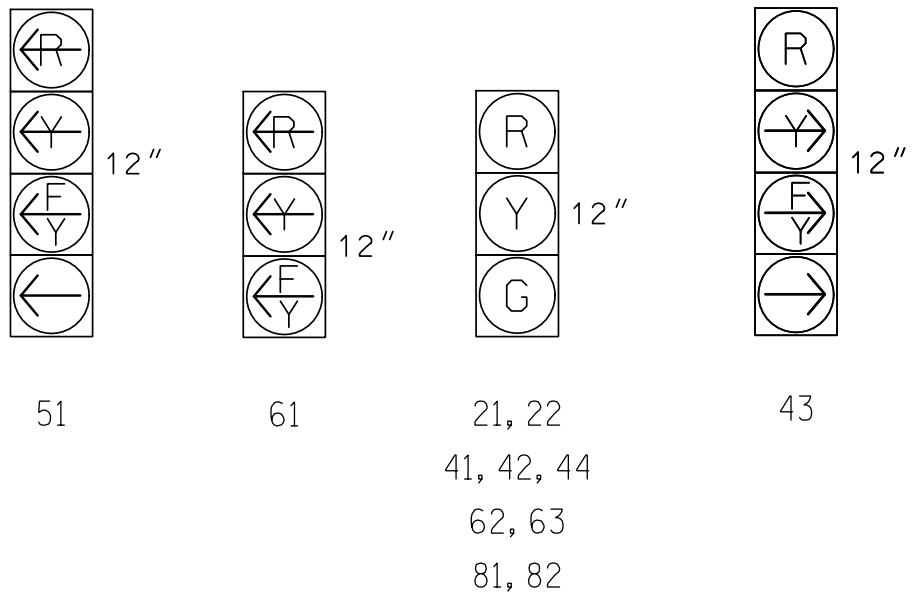
PHASING DIAGRAM



SIGNAL FACE	PHASE			
	2+5	2+6	4+8	F
21, 22	G	G	R	R
41, 42, 44	R	R	G	R
43		R	F	R
51		F	R	R
61	F	F	R	R
62, 63	R	G	R	R
81, 82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
4A	*	0	*	*	4	3.0	-	X	-	X	*
5A	*	0	*	*	5	15.0	-	X	-	X	*
5B	*	0	*	*	5	15.0	-	X	-	X	*
6B	*	0	*	*	6	3.0	-	X	-	X	*
8A	*	0	*	*	8	3.0	-	X	-	X	*
8B	*	0	*	*	8	15.0	-	X	-	X	*

* Multi-zone Microwave Detection Zone

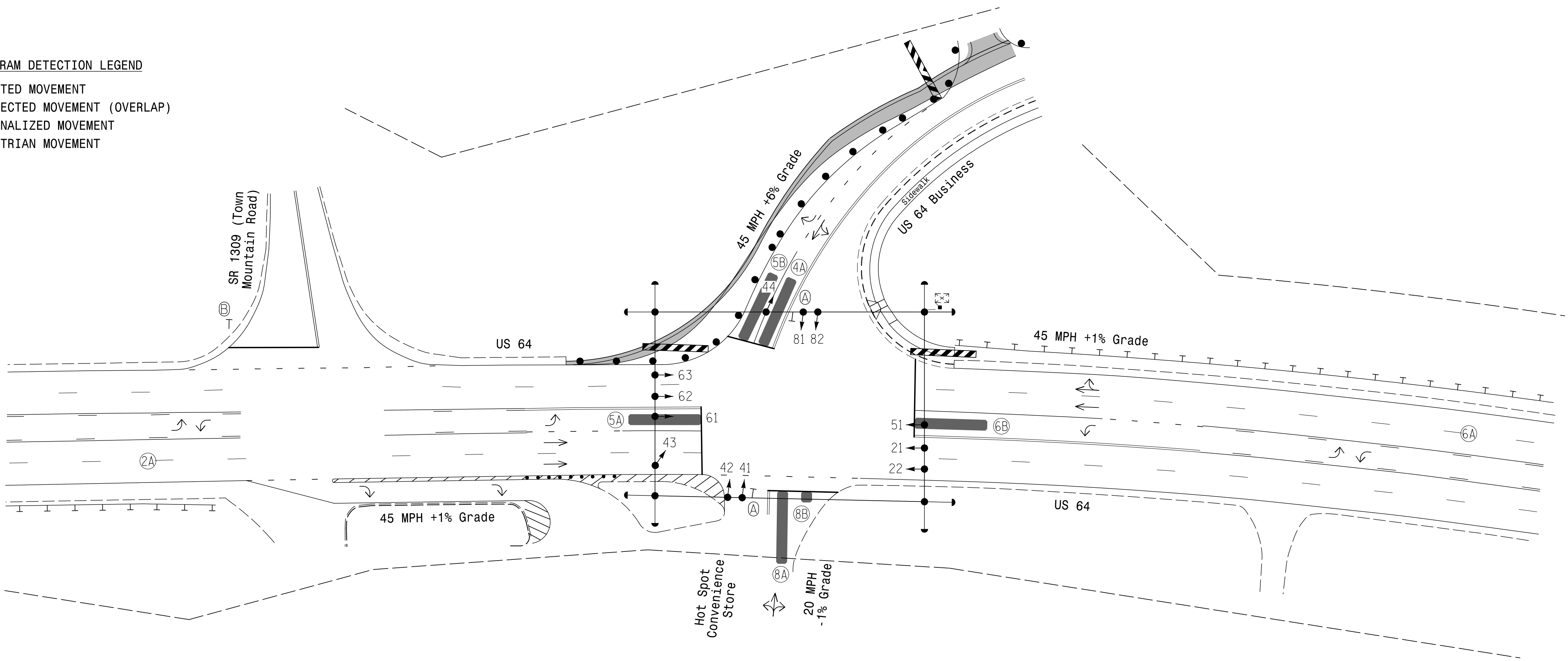
3 Phase Fully Actuated (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Reposition existing signal heads numbered #43 and #44.
- Set all detector units to presence mode.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- See Roadway Pavement Marking Plans for proposed pavement marking locations.

PHASING DIAGRAM DETECTION LEGEND

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



LEGEND

- | PROPOSED | EXISTING |
|--|-------------------------------|
| Traffic Signal Head | Modified Signal Head |
| Signal Pole with Guy | Signal Pole with Sidewalk Guy |
| Inductive Loop Detector | Controller & Cabinet |
| Junction Box | 2" Underground Conduit |
| Directional Drill | Right of Way |
| Directional Arrow | Guardrail |
| Non-Intrusive Detection Zone | Construction Zone |
| Construction Zone Drums | Barricade |
| "LEFT TURN YIELD ON GREEN" Sign (R10-12) | "STOP" Sign (R1-1) |

MAXTIME TIMING CHART

FEATURE	PHASE				
	2	4	5	6	8
Walk *	-	-	-	-	-
Ped Clear	-	-	-	-	-
Min Green *	12	7	7	12	7
Passage *	2.0	2.0	2.0	2.0	2.0
Max 1 *	90	30	20	90	30
Yellow Change	4.4	4.1	3.0	4.4	4.1
Red Clear	1.8	3.1	2.1	1.8	3.1
Added Initial *	-	-	-	-	-
Maximum Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Advance Walk	-	-	-	-	-
Non Lock Detector	-	X	X	-	X
Vehicle Recall	MIN RECALL	-	-	MIN RECALL	-
Dual Entry	-	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.

MICROWAVE DETECTION

FUNCTION	SENSOR 1 - (2A)		SENSOR 2 - (6A)	
Channel	1		1	
Phase	2		6	
Direction of Travel	EB		WB	
Type	Priority		Priority	
Level	2	QUEUE	2	QUEUE
Detection Zone (ft)	< 750	N/A	< 750	N/A
Range	600 - 100	150 - 100	600 - 100	150 - 100
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35 - 100	1 - 35	35 - 100	1 - 35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5 - 6.5	-	2.5 - 6.5	-

This plan supersedes the plan signed and sealed on 8/2/2024.

Signal Upgrade - Temp Design 2 (TMP Phase III)

stv
STV Engineers, Inc.
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Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991

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

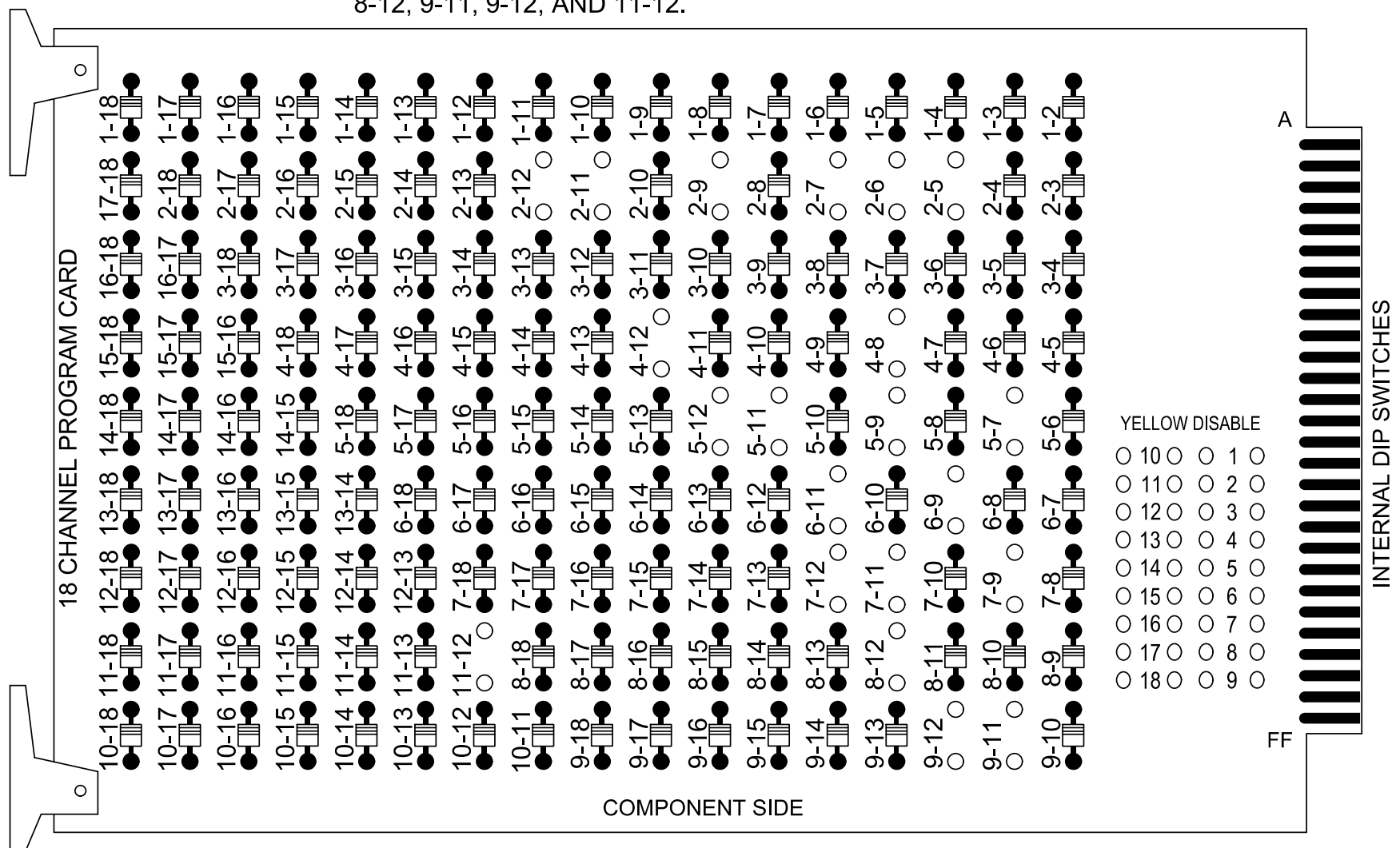
US 64
at
US 64 Business/Hot Spot Convenience Store
Division 14 Clay County Hayesville
PLAN DATE: April 2025 REVIEWED BY: H.M. Surti
PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Woody
REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
NORTH CAROLINA PROFESSIONAL SEAL
040329
T.M. WOODY
DocuSigned by: Trent M. Woody
5/21/2025
DATE
SIC. INVENTORY NO. 14-130872

18 CHANNEL CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS: 2-5, 2-6, 2-7, 2-9, 2-11, 2-12, 4-8, 4-12, 5-7, 5-9, 5-11, 5-12, 6-9, 6-11, 7-9, 7-11, 7-12, 8-12, 9-11, 9-12, AND 11-12.



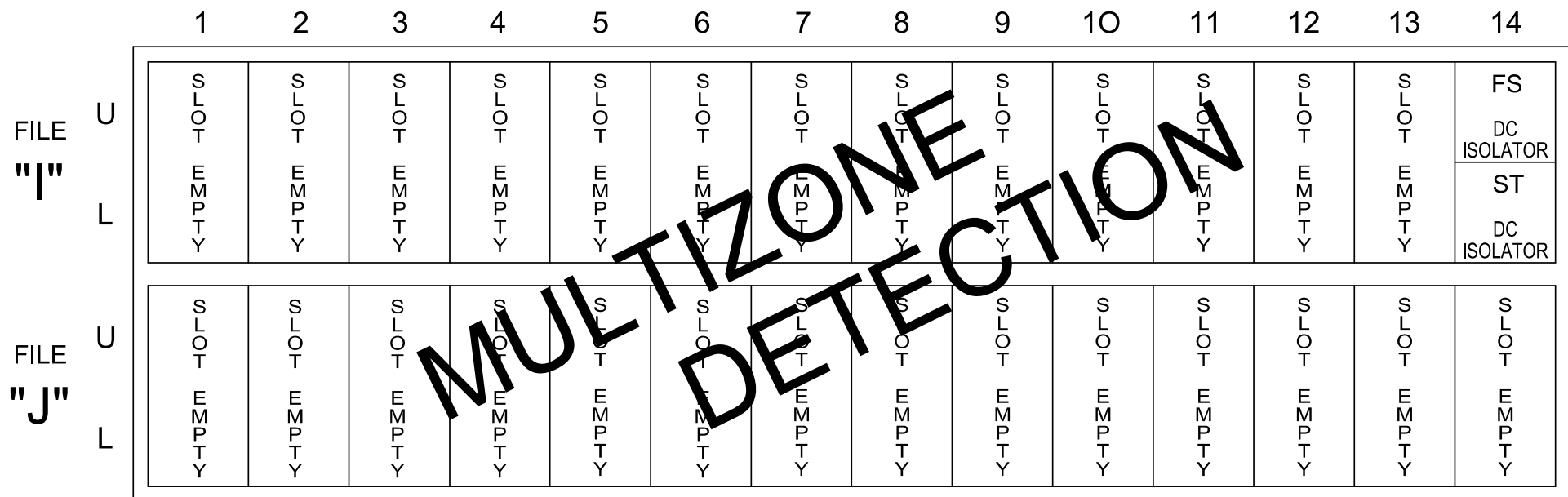
REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

SPECIAL DETECTOR NOTE

Install a multizone microwave 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.

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 plan.
- Program phase 4 and phase 8 for Dual Entry.
- Program controller to start up in phase 2 Green No Walk and phase 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

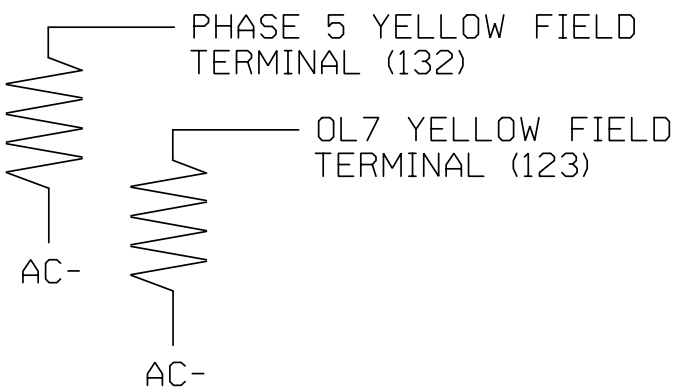
Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S2, S5, S7, S8, S10, S11,
AUX S1, AUX S4, AUX S5
Phases Used.....2, 4, 5, 6, 8
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....*
Overlap "7".....*

*See overlap programming detail on sheet 2

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



SIGNAL HEAD HOOK-UP CHART

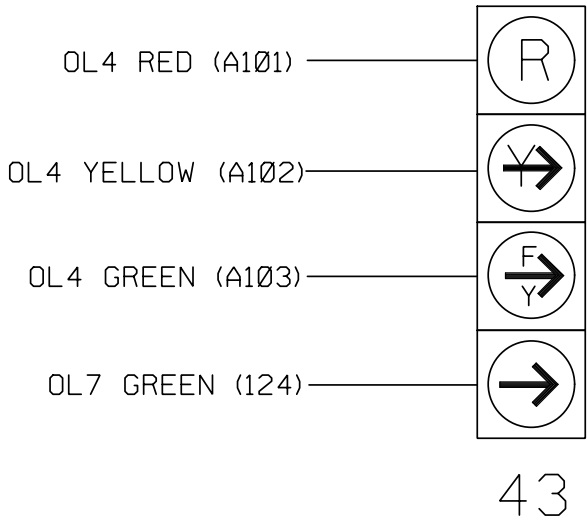
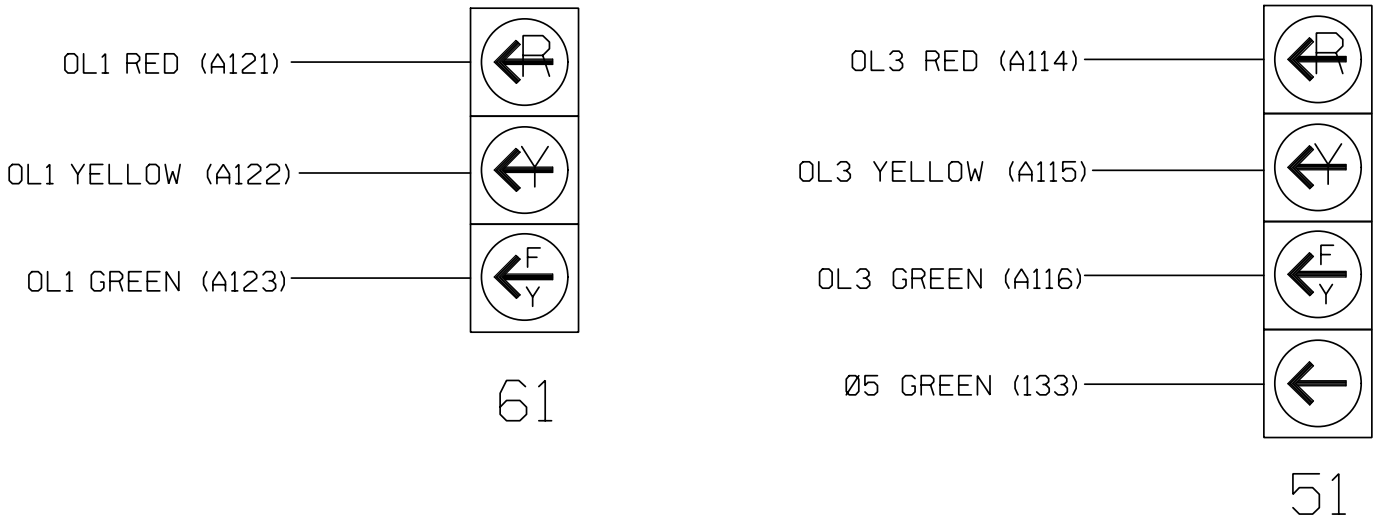
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	OL7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42 44	NU	51	62,63	NU	43	81,82	NU	61	NU	NU	51	43	NU
RED		128			101			134			107						A101	
YELLOW		129			102		*	135		*	108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115	A102	
FLASHING YELLOW ARROW													A123			A116	A103	
GREEN ARROW							133			124								

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

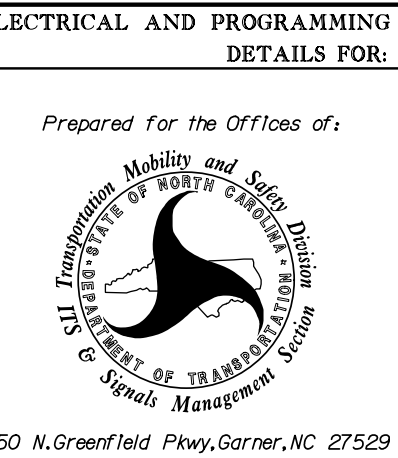
(wire signal heads as shown)



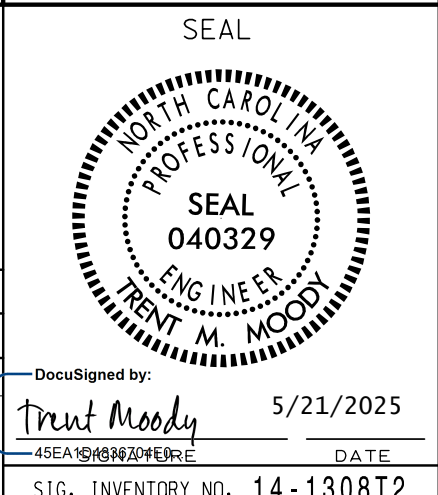
This plan supersedes the plan signed and sealed on 8/2/2024.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-1308T2
DESIGNED: April 2025
SEALED: 5/21/2025
REVISED:

Temporary Design 2 (TMP Phase III)
ELECTRICAL DETAIL SHEET 1 OF 2



US 64 at US 64 Business/Hot Spot Convenience Store			
Division 14	Clay County	Hayesville	
PLAN DATE: April 2025	REVIEWED BY: H.M. Surti		
PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Woody		
REVISIONS	INIT.	DATE	



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: T.M. Woody 5/21/2025
SIC. INVENTORY NO. 14-1308T2

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channels Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1	-	X	X	1
2	Phase Vehicle	2	-	X	-	2
3	Phase Vehicle	3	-	X	X	3
4	Phase Vehicle	4	-	X	-	4
5	Phase Vehicle	5	-	X	-	5
6	Phase Vehicle	6	-	X	X	6
7	Overlap	7	-	X	-	7
8	Phase Vehicle	8	-	X	X	8
9	Overlap	1	-	X	X	9
10	Overlap	2	-	X	X	10
11	Overlap	3	-	X	-	11
12	Overlap	4	-	X	-	12
13	Phase Ped	2	-	-	-	13
14	Phase Ped	4	-	-	-	14
15	Phase Ped	6	-	-	-	15
16	Phase Ped	8	-	-	-	16
17	Overlap	5	-	X	X	17
18	Overlap	6	-	X	-	18

NOTE OL7 ASSIGNED
TO CHANNEL 7

↑ ↑
NOTE: ALL RED FLASH

MAXTIME OVERLAP PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	3	4	7
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	Normal
Included Phases	2	6	4	5
Modifier Phases	-	5	5	-
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

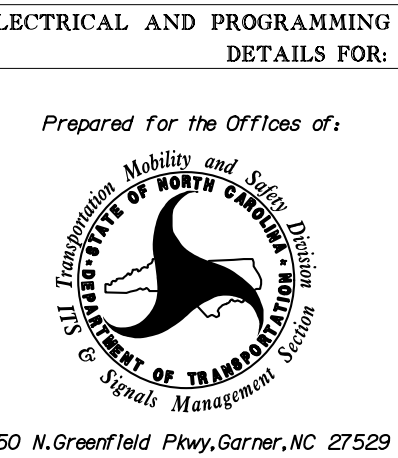
Unit Flash Parameters

All Red Flash Exit Time
6

This plan supersedes the plan signed and sealed on 8/2/2024.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-1308T2
DESIGNED: April 2025
SEALED: 5/21/2025
REVISED:

Temporary Design 2 (TMP Phase III)
ELECTRICAL DETAIL SHEET 2 OF 2



US 64 at US 64 Business/Hot Spot Convenience Store			
Division 14	Clay County	Hayesville	
PLAN DATE: April 2025	REVIEWED BY: H.M. Surti		
PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Woody		
REVISIONS	INIT.	DATE	

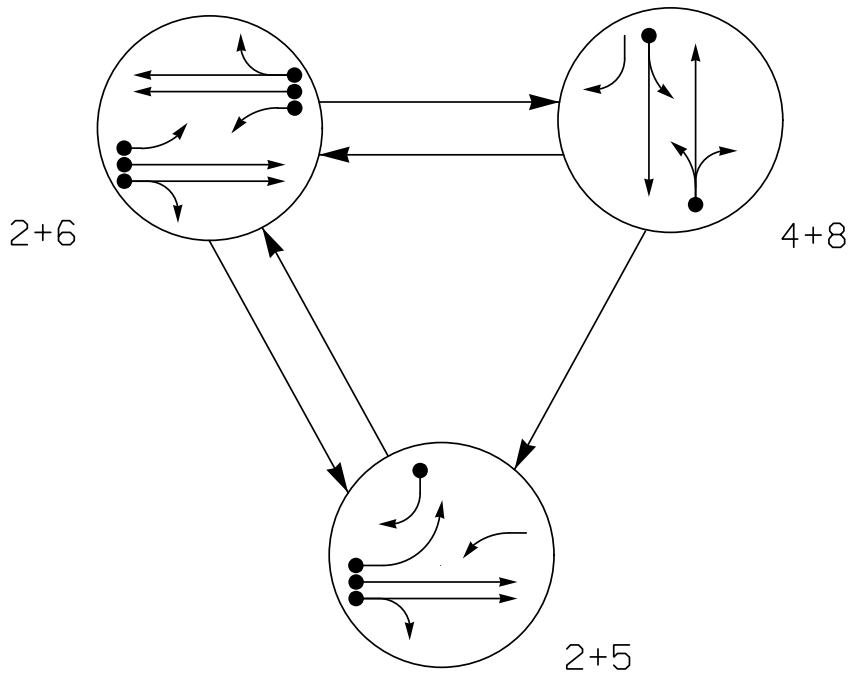
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

DocuSigned by: 5/21/2025

SIG. INVENTORY NO. 14-1308T2

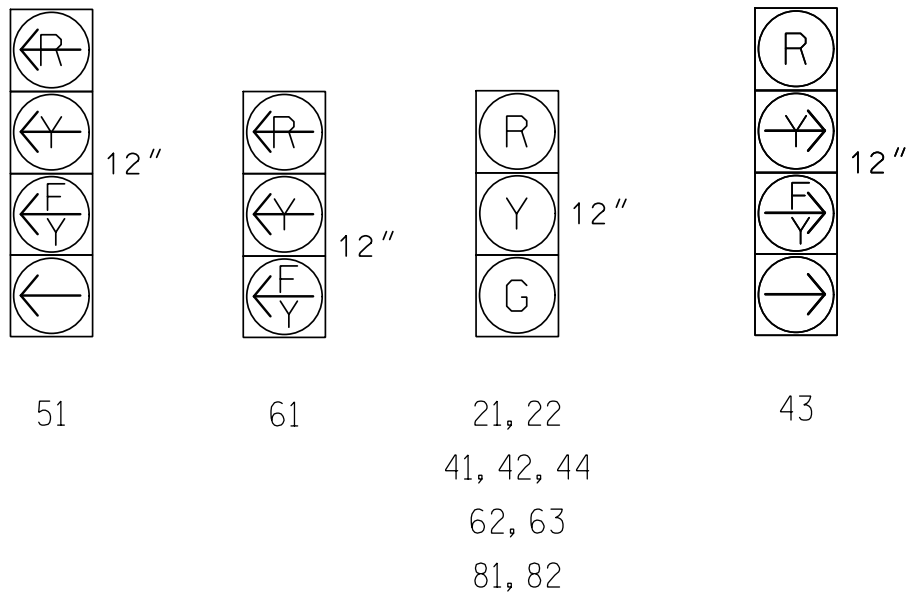
PHASING DIAGRAM



SIGNAL FACE	PHASE			
	2+5	2+6	4+8	F
21, 22	G	G	R	R
41, 42, 44	R	R	G	R
43	→	R	F	R
51	←	F	R	R
61	F	F	R	R
62, 63	R	G	R	R
81, 82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DELAY DURING GREEN	NEW CARD
4A	*	0	*	*	4	3.0	-	X	-	X	*
5A	*	0	*	*	5	15.0	-	X	-	X	*
5B	*	0	*	*	5	15.0	-	X	-	X	*
6B	*	0	*	*	6	3.0	-	X	-	X	*
8A	*	0	*	*	8	3.0	-	X	-	X	*
8B	*	0	*	*	8	15.0	-	X	-	X	*

* Multi-zone Microwave Detection Zone

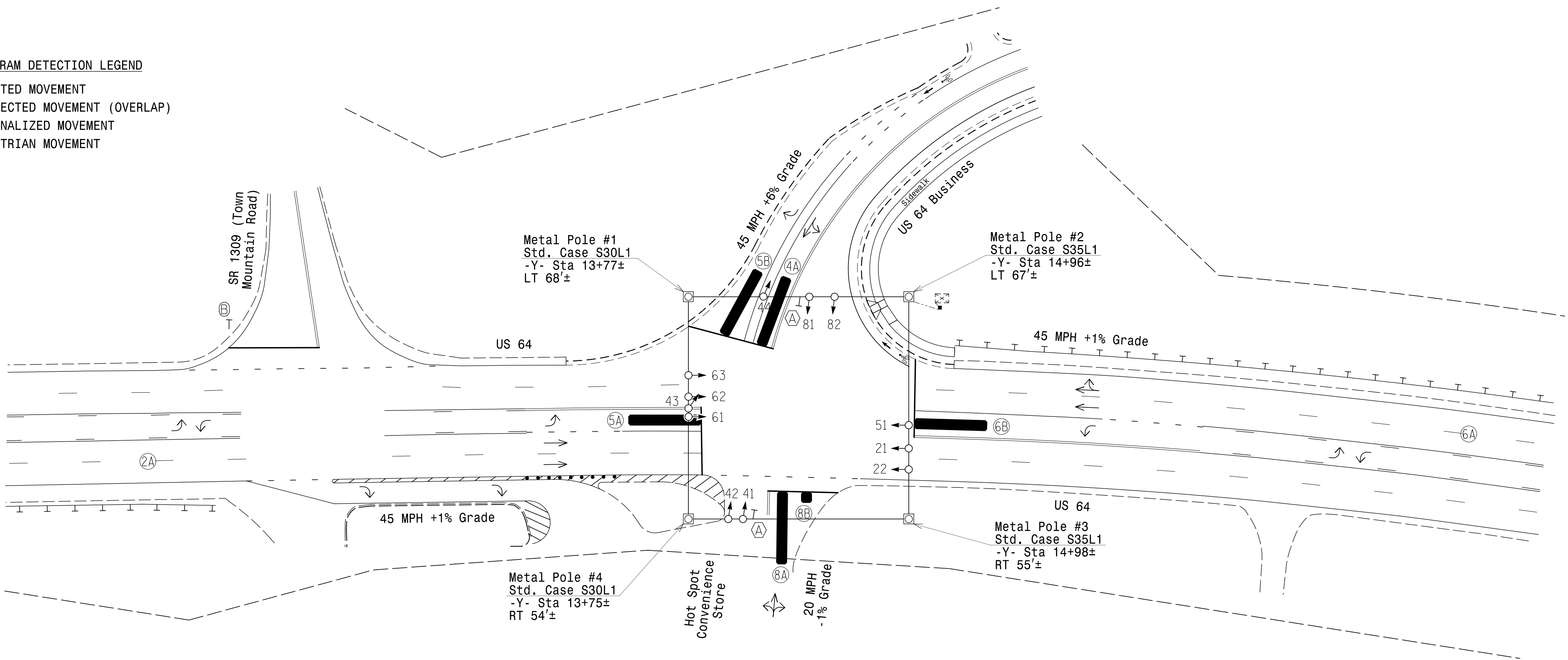
3 Phase Fully Actuated (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Contractor to coordinate with Utility Company for proper overhead power line clearance conformance.
- See Roadway Pavement Marking Plans for proposed pavement marking locations.

PHASING DIAGRAM DETECTION LEGEND

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



LEGEND

- | PROPOSED | EXISTING |
|--|-------------------------------|
| Traffic Signal Head | Modified Signal Head |
| Signal Pole with Guy | Signal Pole with Sidewalk Guy |
| Inductive Loop Detector | Controller & Cabinet |
| Junction Box | 2" Underground Conduit |
| Directional Drill | Right of Way |
| Directional Arrow | Guardrail |
| Non-Intrusive Detection Zone | Metal Strain Pole |
| "LEFT TURN YIELD ON GREEN" Sign (R10-12) | "STOP" Sign (R1-1) |

MAXTIME TIMING CHART

FEATURE	PHASE				
	2	4	5	6	8
Walk *	-	-	-	-	-
Ped Clear	-	-	-	-	-
Min Green *	12	7	7	12	7
Passage *	2.0	2.0	2.0	2.0	2.0
Max 1 *	90	30	20	90	30
Yellow Change	4.4	4.1	3.0	4.4	4.1
Red Clear	1.8	3.1	2.1	1.8	3.1
Added Initial *	-	-	-	-	-
Maximum Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Advance Walk	-	-	-	-	-
Non Lock Detector	-	X	X	-	X
Vehicle Recall	MIN RECALL	-	-	MIN RECALL	-
Dual Entry	-	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.

MICROWAVE DETECTION

FUNCTION	SENSOR 1 - (2A)		SENSOR 2 - (6A)	
Channel	1		1	
Phase	2		6	
Direction of Travel	EB		WB	
Type	Priority		Priority	
Level	2	QUEUE	2	QUEUE
Detection Zone (ft)	< 750	N/A	< 750	N/A
Range	600 - 100	150 - 100	600 - 100	150 - 100
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35 - 100	1 - 35	35 - 100	1 - 35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5 - 6.5	-	2.5 - 6.5	-

This plan supersedes the plan signed and sealed on 8/2/2024.

Signal Upgrade - Final Design

stv
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529
SCALE
0 40
1"=40'

US 64
at
US 64 Business/Hot Spot
Convenience Store
Division 14 Clay County Hayesville
PLAN DATE: April 2025 REVIEWED BY: H.M. Surti
PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Woody
REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329
ENGINEER TRIST M. MOODY
DocuSigned by: Trist Moody 5/21/2025
SIC. INVENTORY NO. 14-1308

OUTPUT CHANNEL CONFIGURATION

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channels Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1	-	X	X	1
2	Phase Vehicle	2	-	X	-	2
3	Phase Vehicle	3	-	X	X	3
4	Phase Vehicle	4	-	X	-	4
5	Phase Vehicle	5	-	X	-	5
6	Phase Vehicle	6	-	X	X	6
7	Overlap	7	-	X	-	7
8	Phase Vehicle	8	-	X	X	8
9	Overlap	1	-	X	X	9
10	Overlap	2	-	X	X	10
11	Overlap	3	-	X	-	11
12	Overlap	4	-	X	-	12
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14	Phase Ped	4	-	-	-	14
15	Phase Ped	6	-	-	-	15
16	Phase Ped	8	-	-	-	16
17	Overlap	5	-	X	X	17
18	Overlap	6	-	X	-	18

NOTE OL7 ASSIGNED
TO CHANNEL 7 →

↑ ↑
NOTE: ALL RED FLASH

MAXTIME OVERLAP PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	3	4	7
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	Normal
Included Phases	2	6	4	5
Modifier Phases	-	5	5	-
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

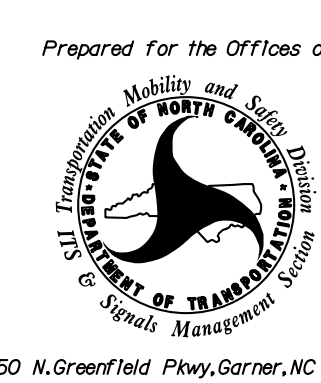
Unit Flash Parameters

All Red Flash Exit Time
6

This plan supersedes the plan signed and sealed on 8/2/2024.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-1308
DESIGNED: April 2025
SEALED: 5/21/2025
REVISED:

Final Design
ELECTRICAL DETAIL SHEET 2 OF 2



US 64 at US 64 Business/Hot Spot Convenience Store			
Division 14	Clay County	Hayesville	
PLAN DATE: April 2025	REVIEWED BY: H.M. Surti		
PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Woody		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

DocuSigned by

5/21/2025

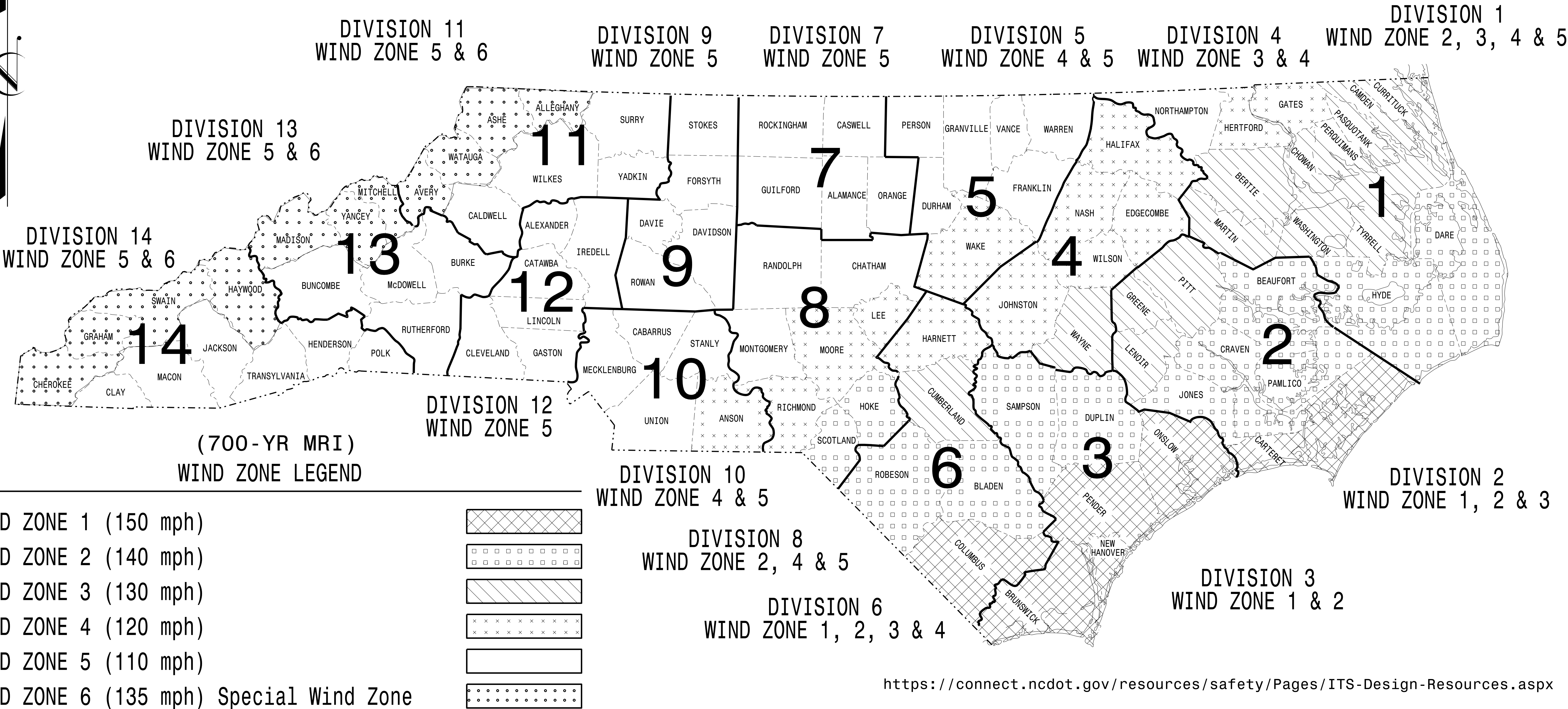
SIG. INVENTORY NO. 14-1308

PROJECT I.D.NO.	SHEET NO.
R-5863	Sig.M1A

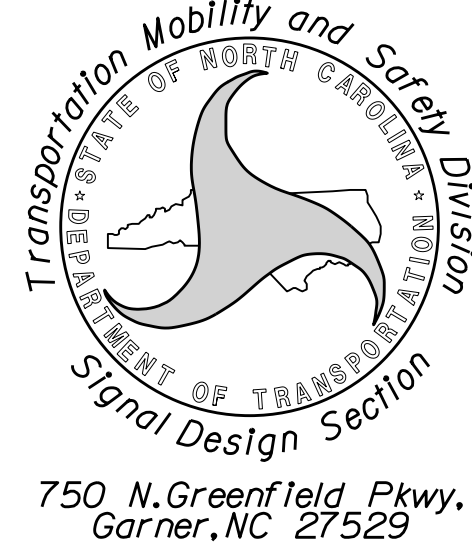
NCDOT METAL POLE STANDARDS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



Prepared in the Offices of:



Designed in conformance
with the latest
2020 Interim to the
1st Edition 2015

AASHTO
LRFD

Standard Specifications for
Highway Signs, Luminaires,
and Traffic Signals

DRAWING
NUMBER

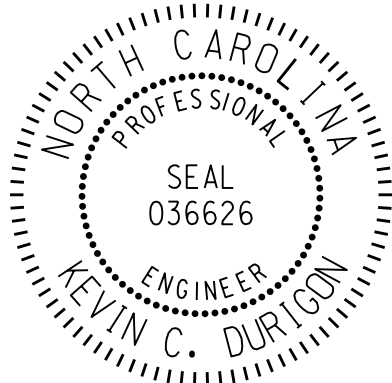
DRAWING NUMBER	DESCRIPTION
Sig. M 1A	Statewide Wind Zone Map (700-yr MRI)
Sig. M 1B	Statewide Wind Zone Map (10-yr MRI)
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication 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
Sig. M 9	Typical Fabrication Details-CCTV Camera Poles

INDEX OF PLANS
DESCRIPTION

MOBILITY AND SAFETY DIVISION -
TRANSPORTATION SYSTEMS MANAGEMENT
AND OPERATIONS UNIT

D.Y. ISHAK - STATE SIGNALS ENGINEER
K. DURIGON, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER
B. WALKER, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER

SEAL



DocuSigned by:

Kevin Durigon
SIGNATURE
4B23DC79B3764DA

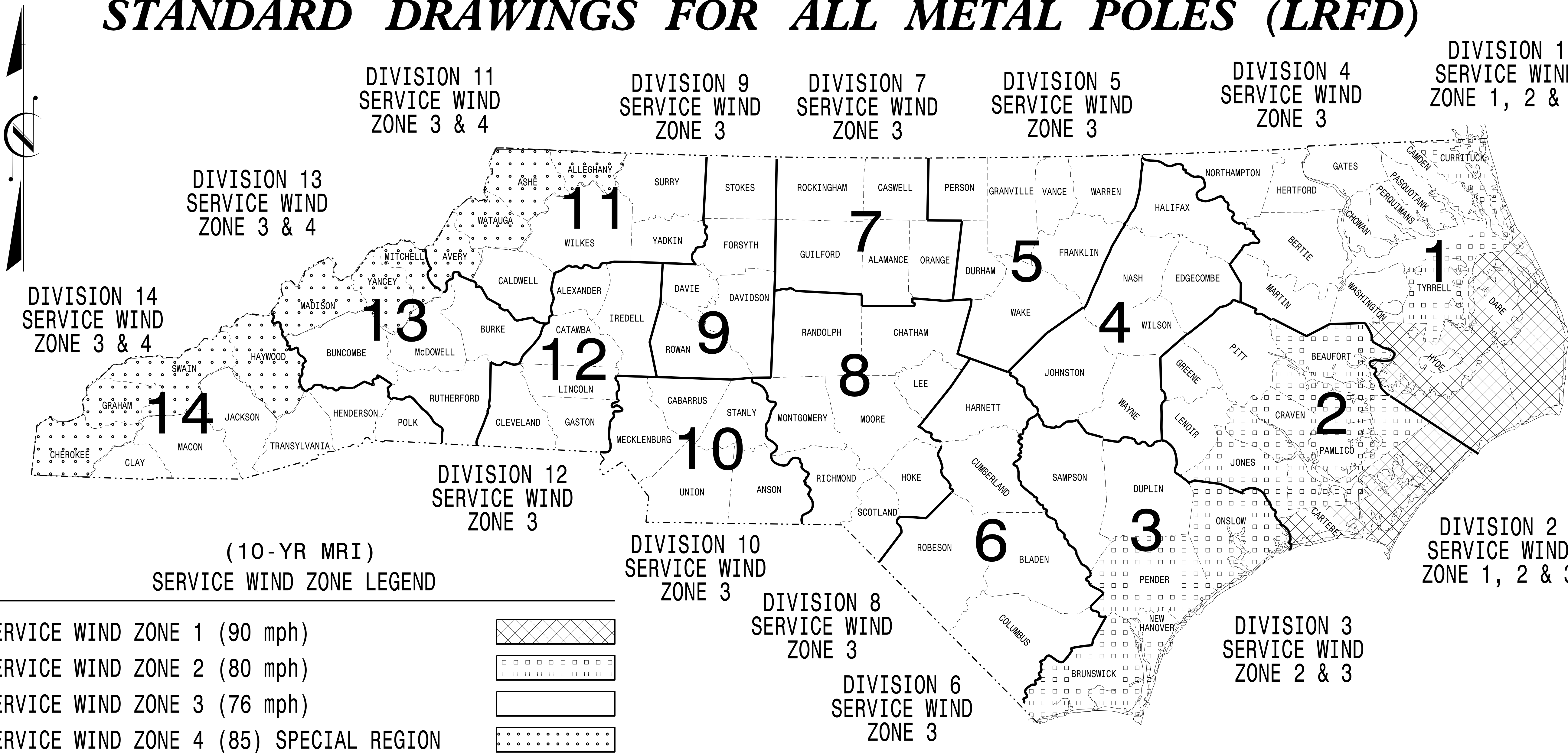
09/21/2023
DATE

PROJECT I.D.NO.	SHEET NO.
R-5863	Sig.M1B

NCDOT METAL POLE STANDARDS

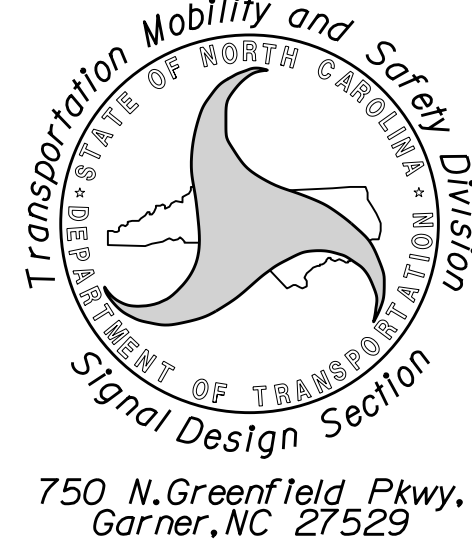
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



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

Prepared In the Offices of:



Designed in conformance
with the latest
2020 Interim to the
1st Edition 2015

AASHTO
LRFD

Standard Specifications for
Highway Signs, Luminaires,
and Traffic Signals

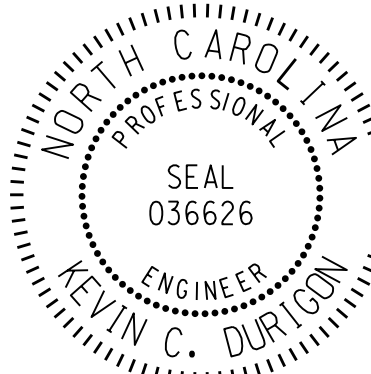
DRAWING
NUMBER

DRAWING NUMBER	DESCRIPTION
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NCDOT CONTACTS:
MOBILITY AND SAFETY DIVISION -
TRANSPORTATION SYSTEMS MANAGEMENT
AND OPERATIONS UNIT

D.Y. ISHAK - STATE SIGNALS ENGINEER
K. DURIGON, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER
B. WALKER, P.E. - ITS AND SIGNALS STRUCTURAL ENGINEER

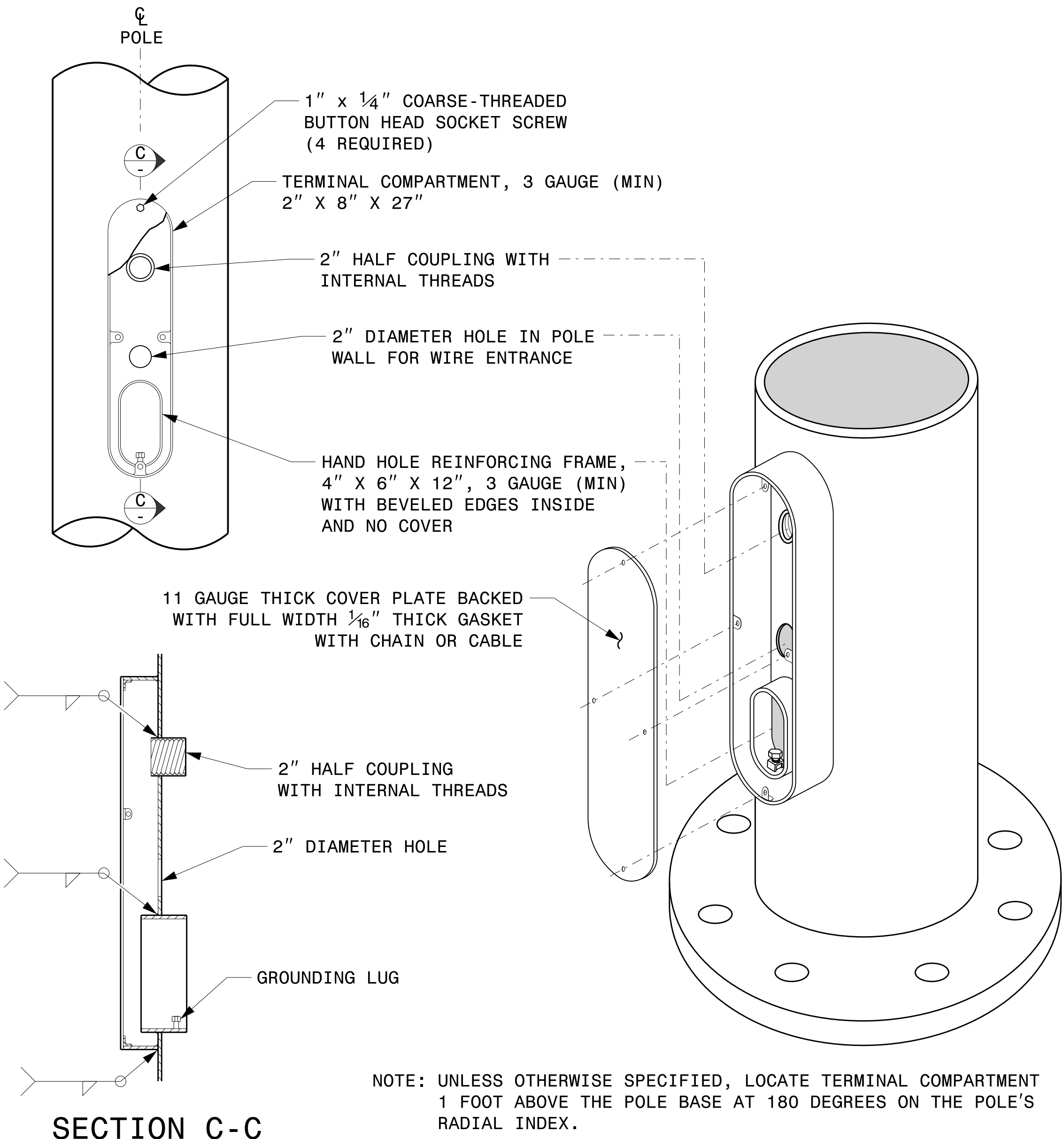
SEAL



DocuSigned by:
Kevin Durigon
SIGNATURE
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09/21/2023
DATE

03-SEP-2023 10:24
S:\TSS\UNIT 15 Signal\Signal Design Section\Structures\Drawings\2024 Metal Pole Std Drawings for LRF&M2024 Sig.M2 Std. Fabrication Detail\15-A11 Poles-.dgn
Kedar Figon



TERMINAL COMPARTMENT DETAIL

○	MFG _____ MFG. DATE: MM/YY	○
	SHAFT D/T/L/Y _____	
	ARM-A D/T/L/Y _____	

	ARM-B D/T/L/Y _____	

	A.B. DIA./B.C./L/Y _____	
	NCDOT SIG. INV. NO. _____	
	NCDOT POLE NO. _____	
○		○

SHAFT I.D. TAG
(PROVIDE ON SHAFT OF STRAIN POLES
AND MAST ARM POLE SHAFT)

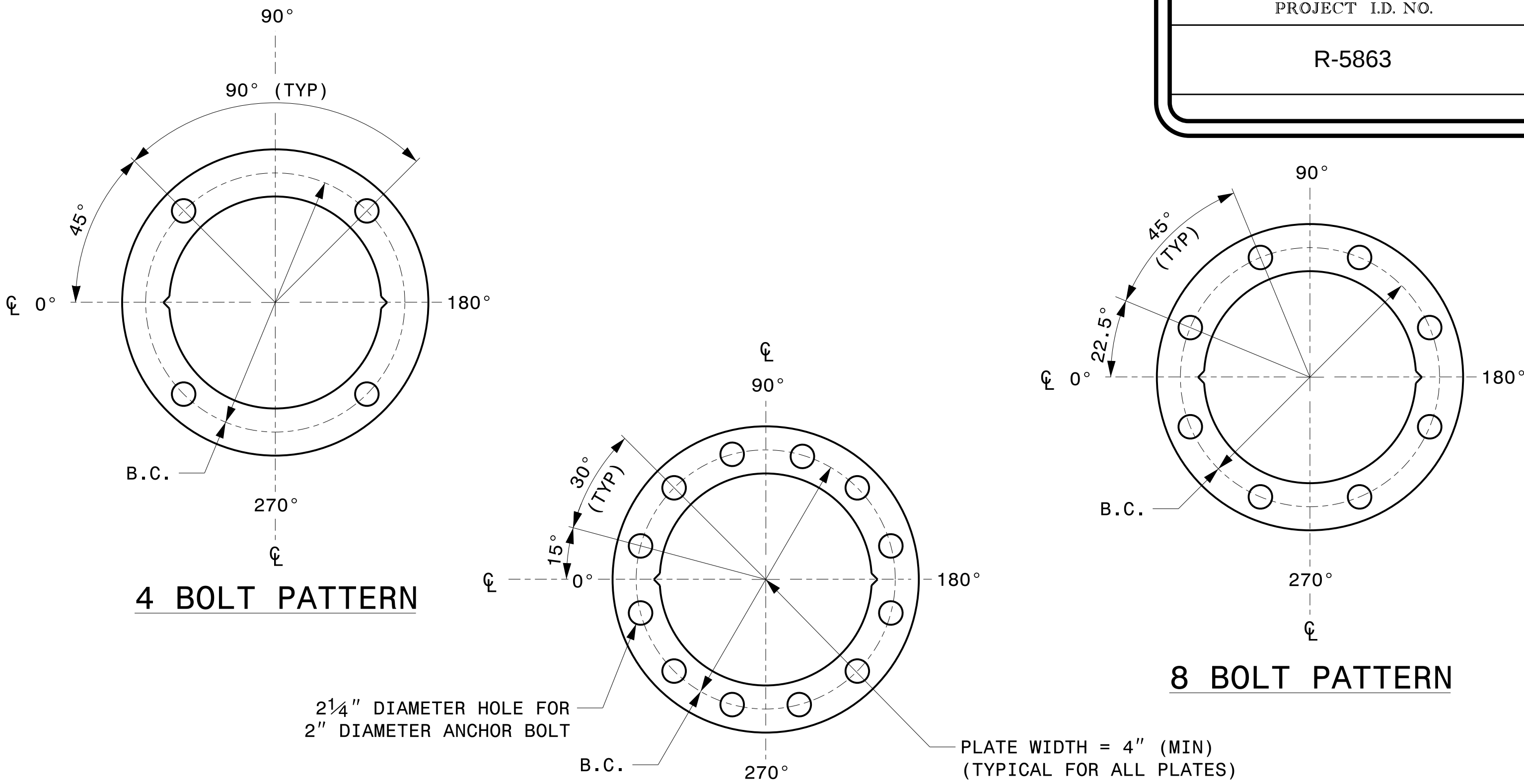
○	MFG _____ MFG. DATE: MM/YY	○
	SECTION D/T/L/Y _____	
	NCDOT SIG. INV. NO. _____	
	NCDOT POLE NO. _____	
○		○

ARM I.D. TAG
(PROVIDE ON EACH SECTION OF
A MULTI-SECTION MAST ARM)

NOTES:

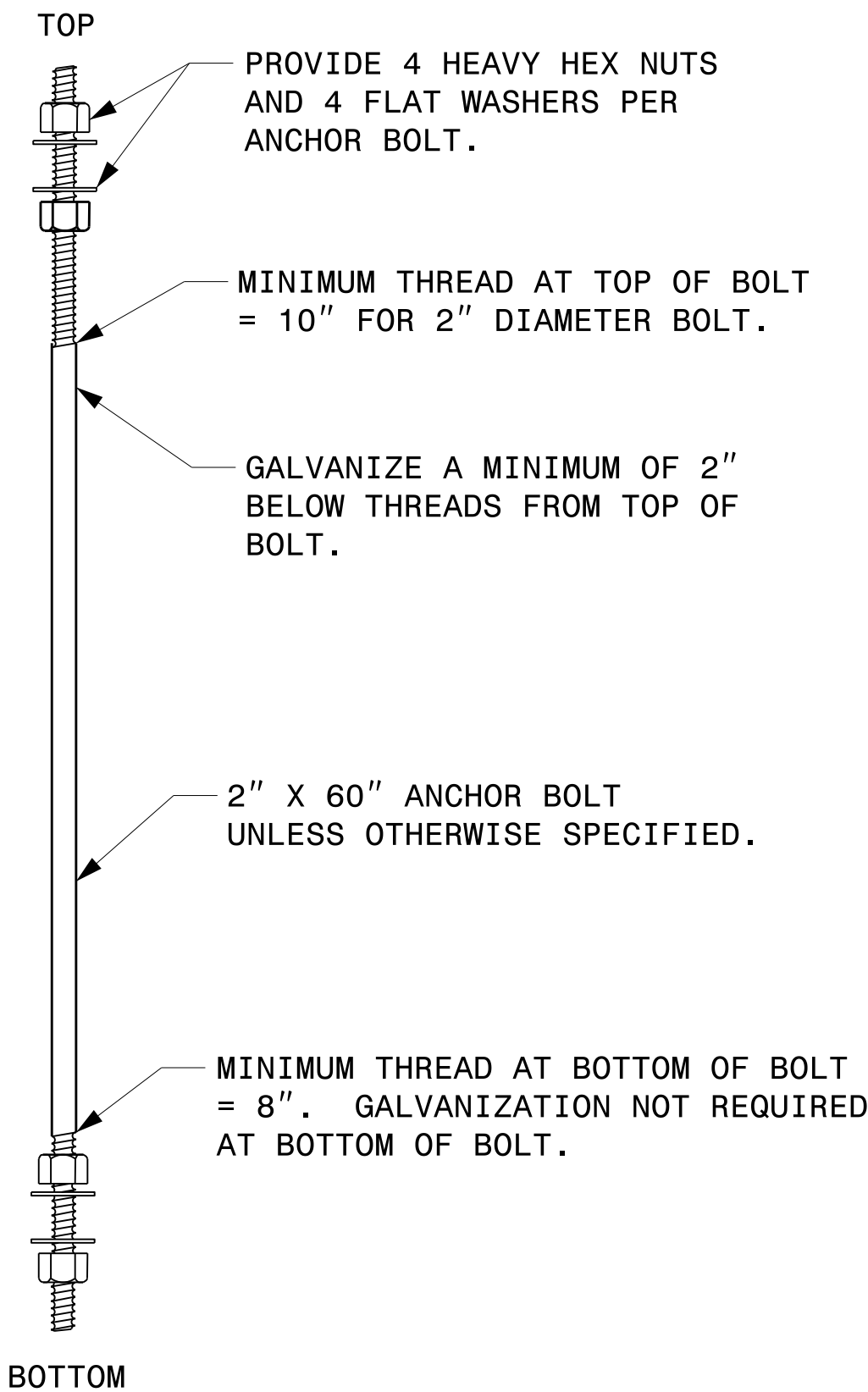
1. D = DIAMETER, T = THICKNESS, L = LENGTH, Y = YIELD STRENGTH
2. A.B. = ANCHOR BOLT
3. B.C. = BOLT CIRCLE OF ANCHOR BOLTS
4. IF STANDARD DESIGN, INCLUDE CASE NUMBER IN ADDITION TO POLE NUMBER ON "NCDOT POLE NO." LINE.
5. SIGNAL INV. NUMBER AND POLE I.D. NUMBER.
SEE DRAWING M3 AND M4 FOR MOUNTING POSITIONS OF I.D. TAGS.

IDENTIFICATION TAG DETAILS

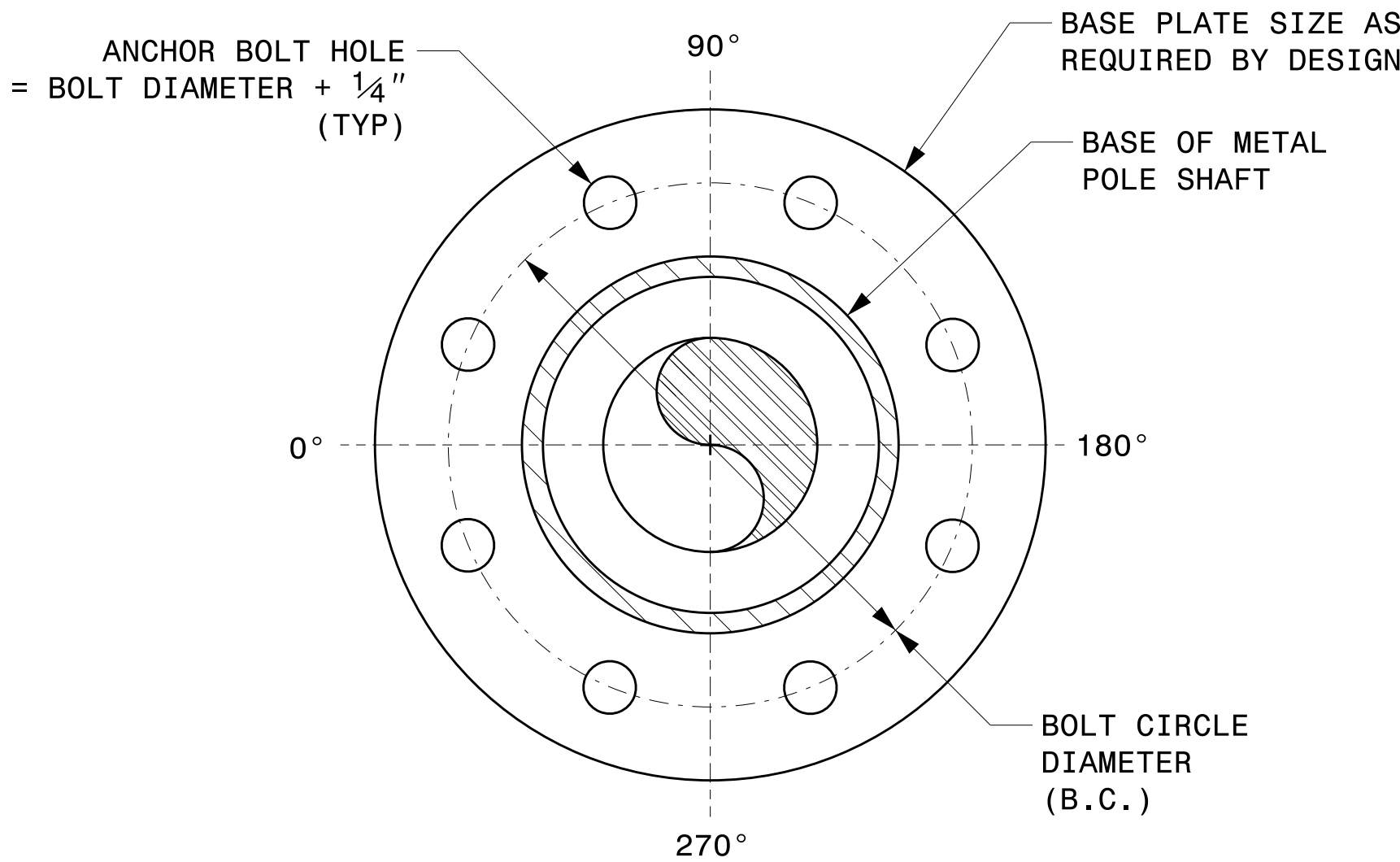


CONSTRUCT TEMPLATES AND PLATES FROM 1/4" (MIN) THICK STEEL. GALVANIZING IS NOT REQUIRED.

BASE PLATE TEMPLATE AND ANCHOR BOLT LOCK PLATE DETAILS



ANCHOR BOLT DETAIL



NOTE: BASE PLATE MAY BE CIRCULAR, OCTAGONAL, SQUARE
OR RECTANGULAR IN SHAPE.

TYPICAL BASE PLATE DETAIL

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 NA NONE

Typical Fabrication Details For All Metal Poles			
PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	D.C. SARKAR
REVISIONS		INIT.	DATE

DocuSigned by:

4B23DC79B3784DA

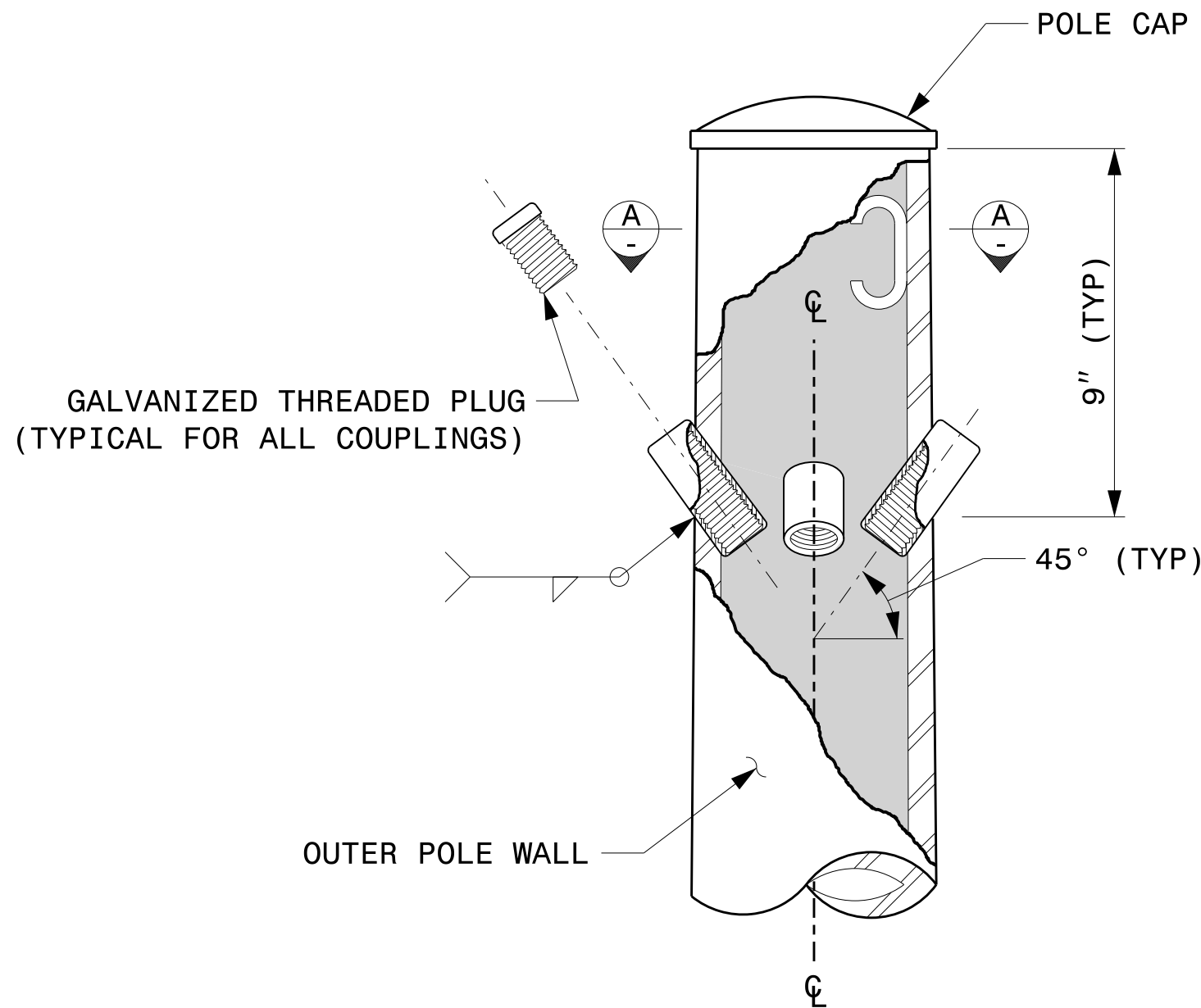
SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
036626
KEYVIN C. DURIGON

09/21/2023
DATE

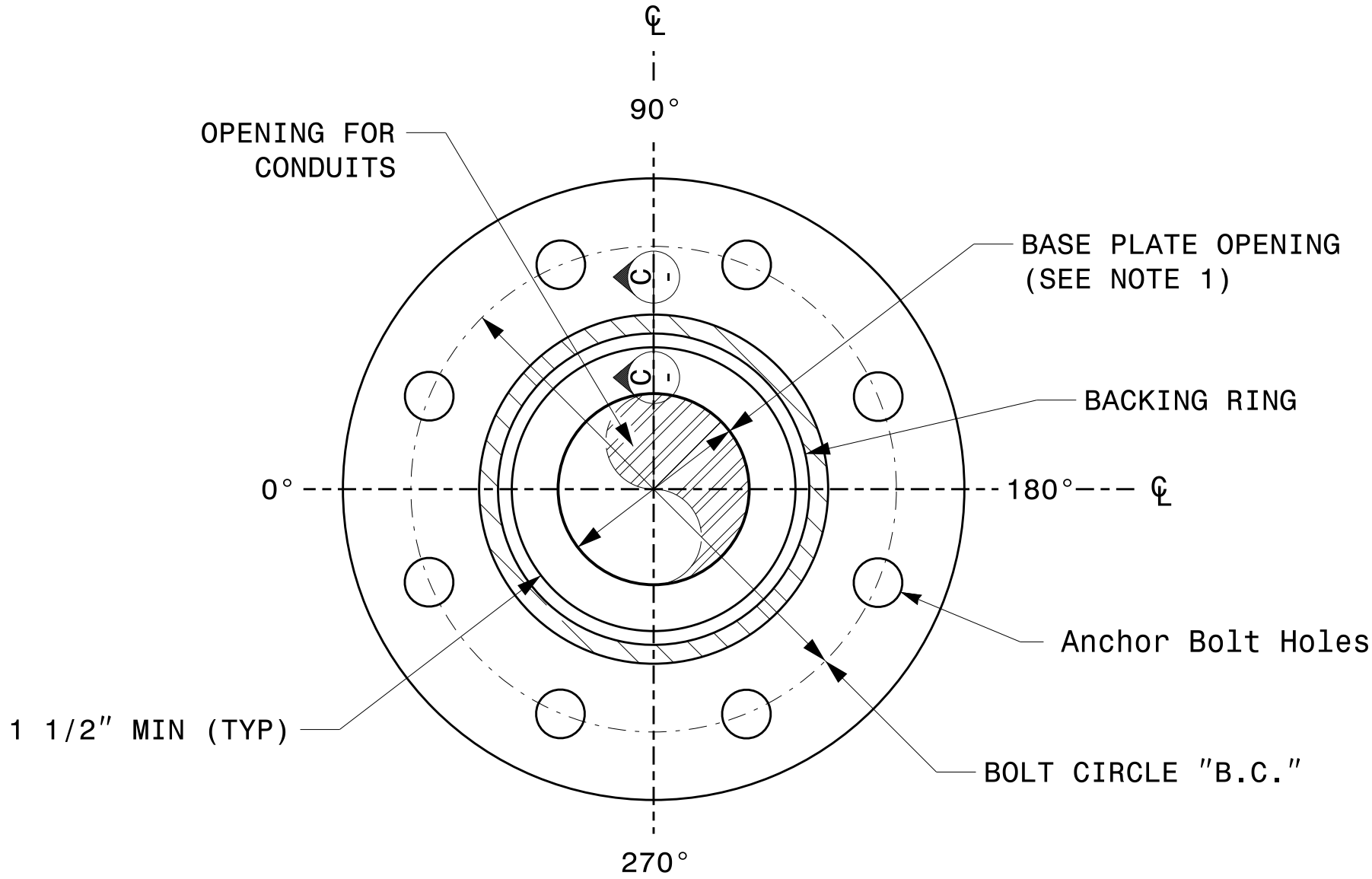
PROJECT I.D. NO.	SHEET NO.
R-5863	Sig.M3

NOTE:

1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS $3\frac{1}{2}$ " BUT SHALL NOT BE LESS THAN $8\frac{1}{2}$ ".

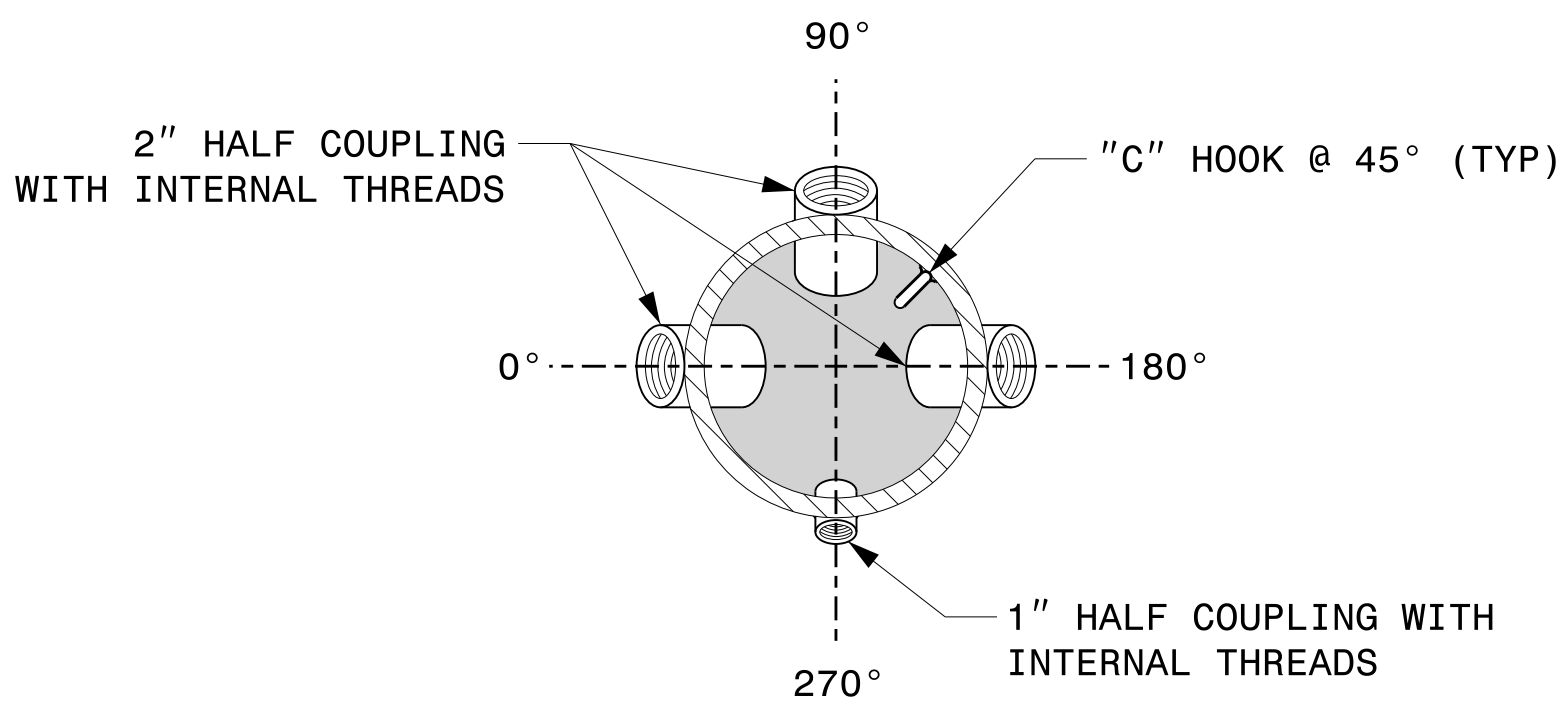


CABLE ENTRANCES AT TOP OF POLE



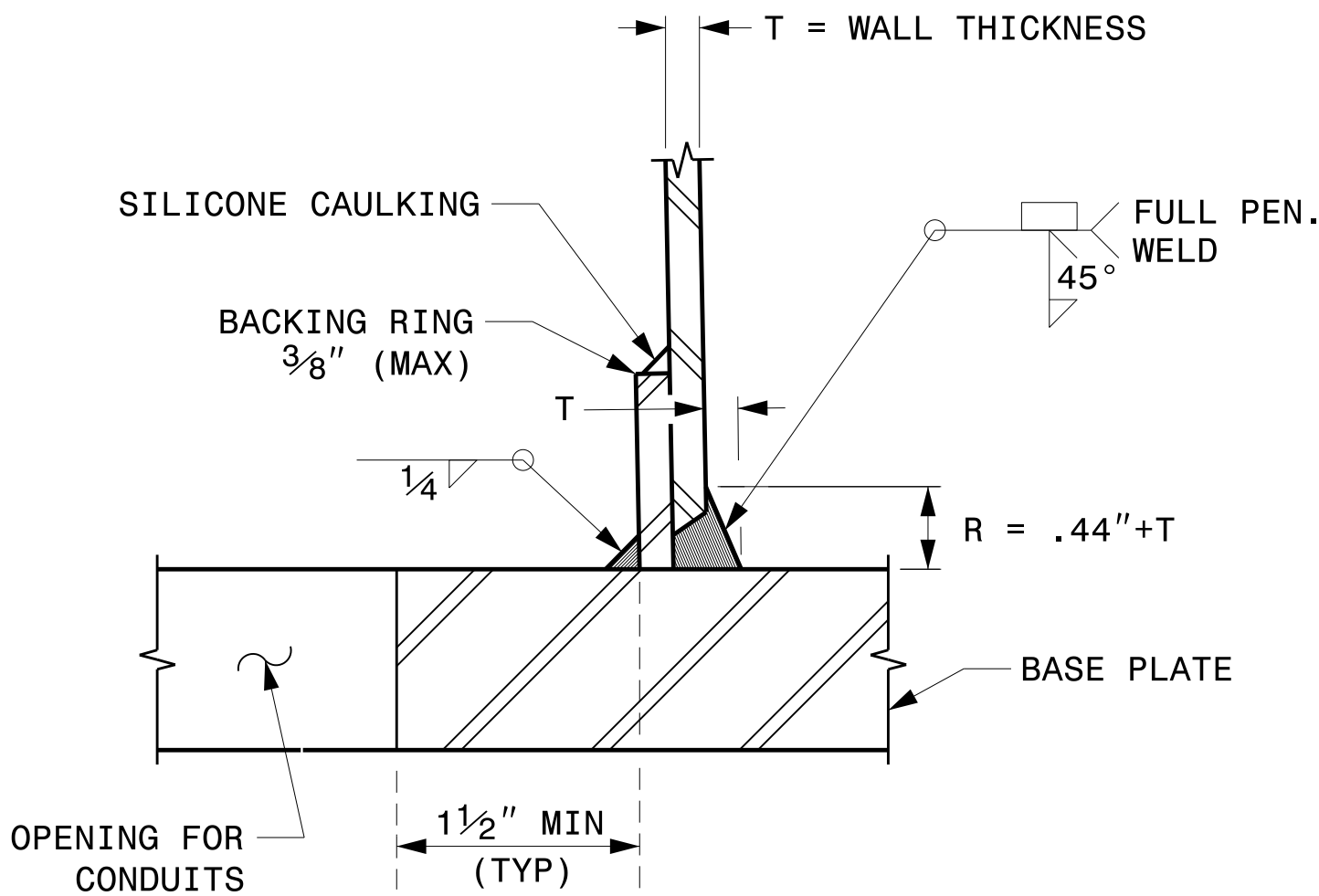
SECTION B-B

POLE BASE PLATE DETAILS
(8 AND 12 BOLT PATTERN)



SECTION A-A

RADIAL ORIENTATION OF FACTORY INSTALLED
ACCESSORIES AT TOP OF POLE



SECTION C-C

(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION
GROOVE WELD DETAIL

2 CABLE CLAMPS DESIGNED FOR
VARIABLE ATTACHMENT HEIGHTS
FROM 1'-6" TO 6'-6" BELOW
THE TOP OF THE POLE

SHAFT I.D. TAG
(SEE DRAWING M2)
TERMINAL COMPARTMENT
(SEE DRAWING M2)

ANCHOR BOLT
(SEE DRAWING M2)

MONOTUBE STRAIN POLE

Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	Typical Fabrication Details For Strain Poles		SEAL 	
	PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR	INITIALS DATE	DATE 09/23/2023

DocuSigned by:

Kevin Durigon

4B23DC79B378ADA

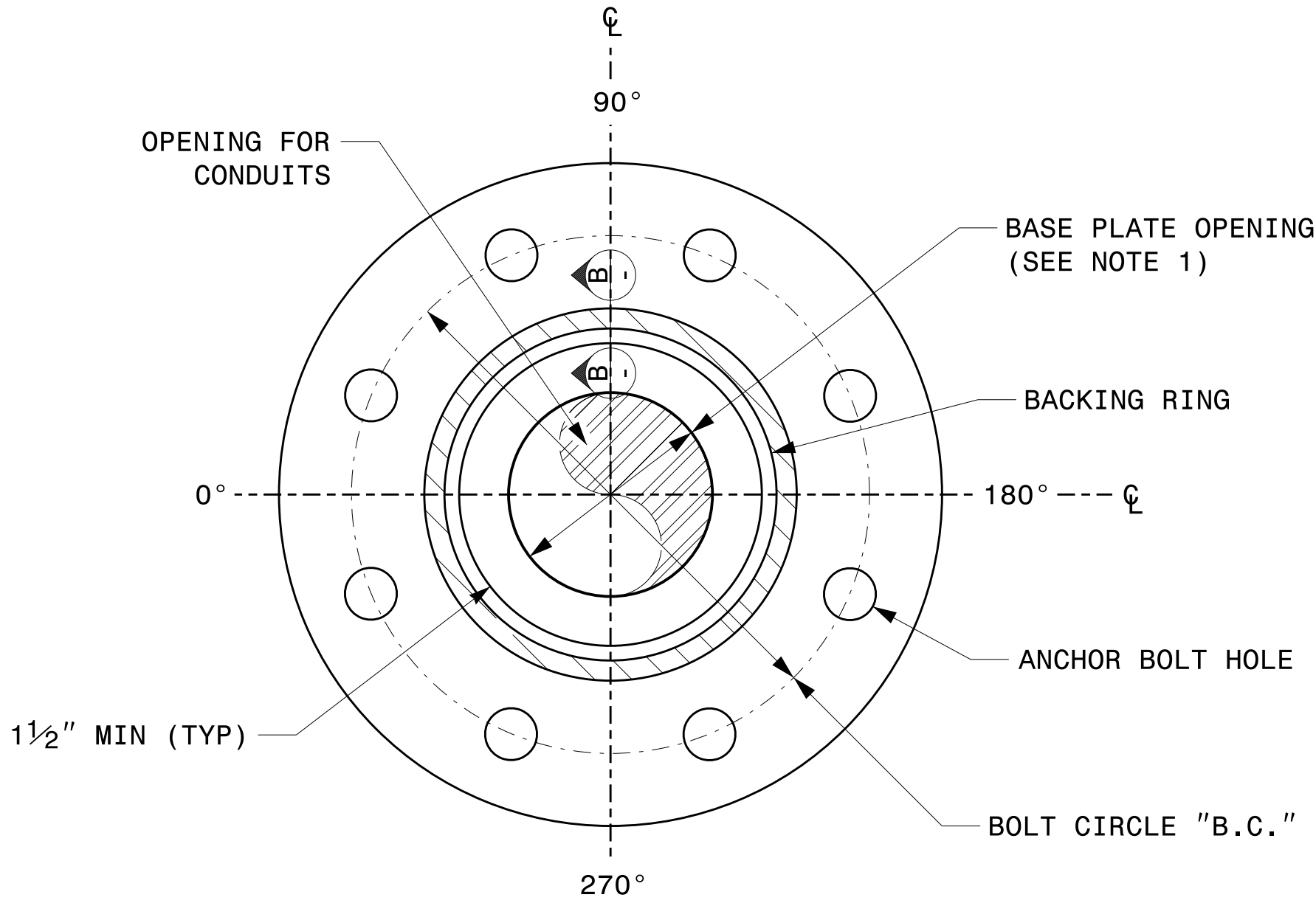
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Fabrication Details – Strain Poles

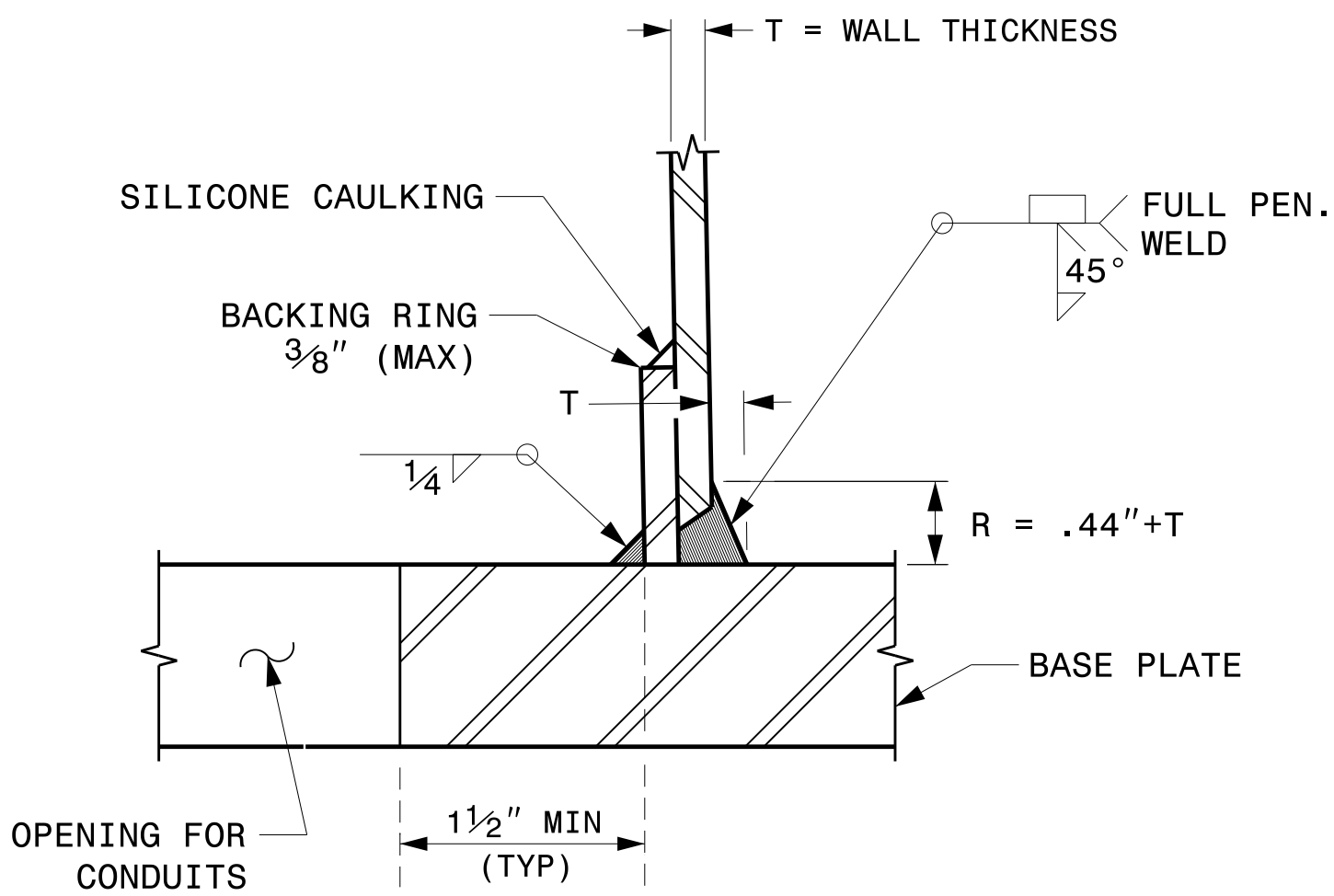
PROJECT I.D. NO.	SHEET NO.
R-5863	Sig.M4

NOTE:

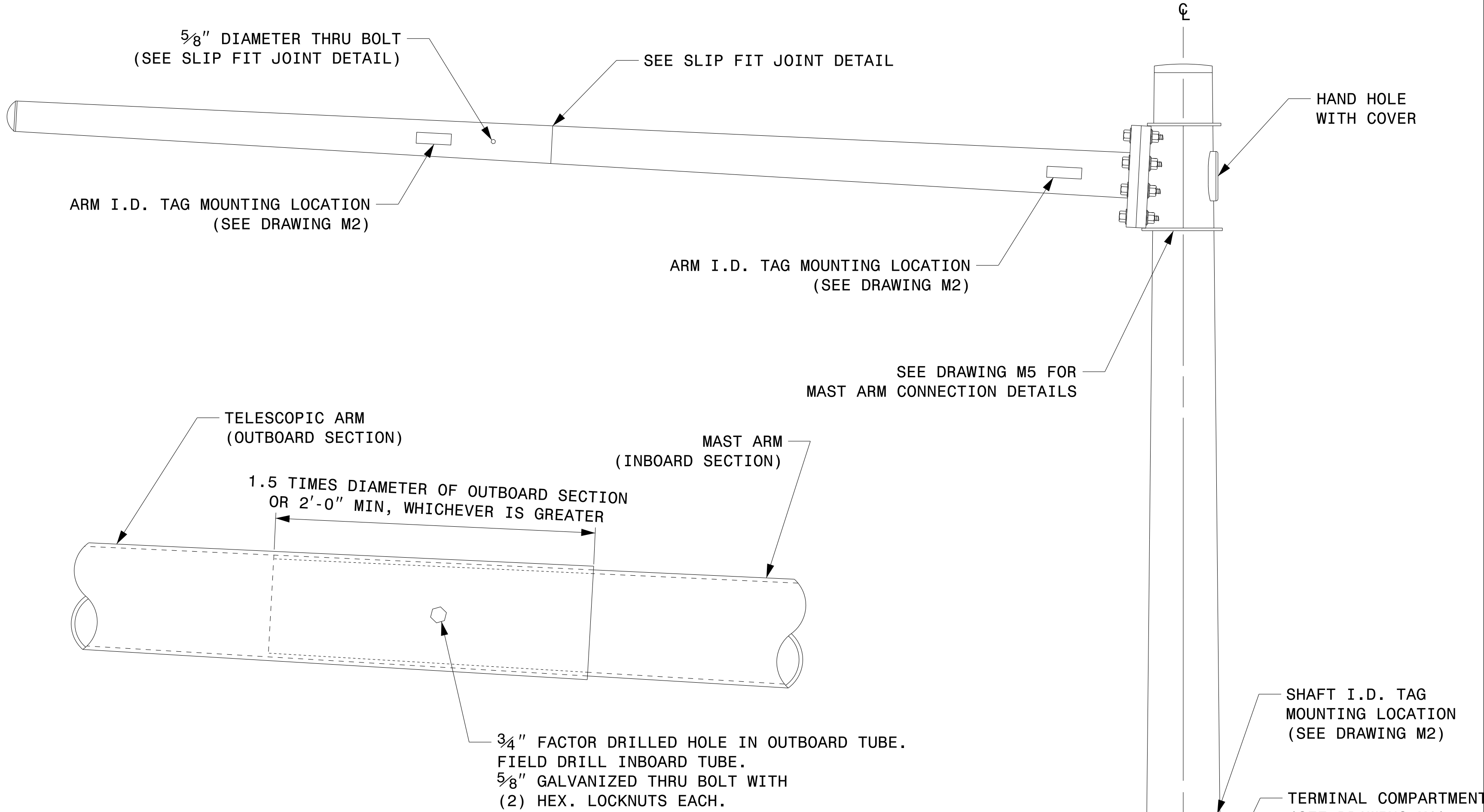
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS $3\frac{1}{2}$ " BUT SHALL NOT BE LESS THAN $8\frac{1}{2}$ ".



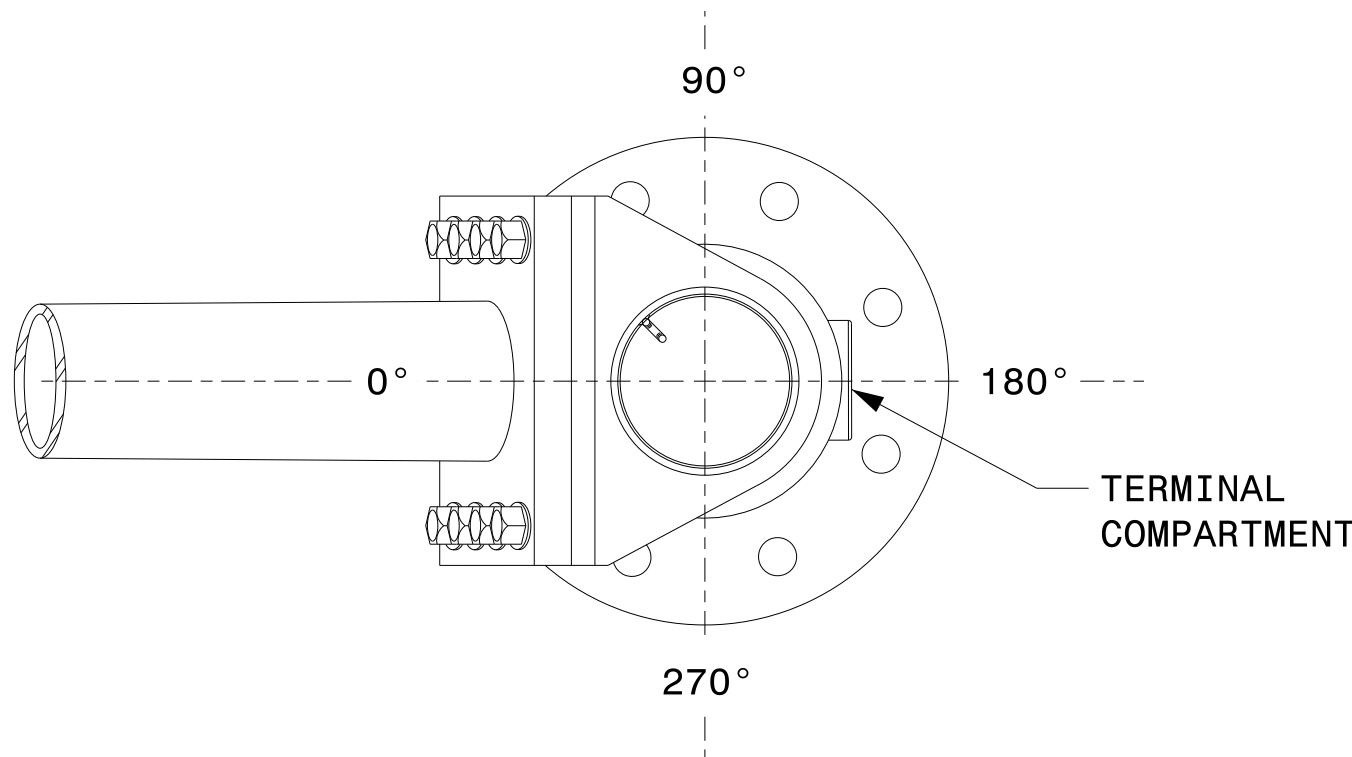
SECTION A-A
POLE BASE PLATE DETAILS



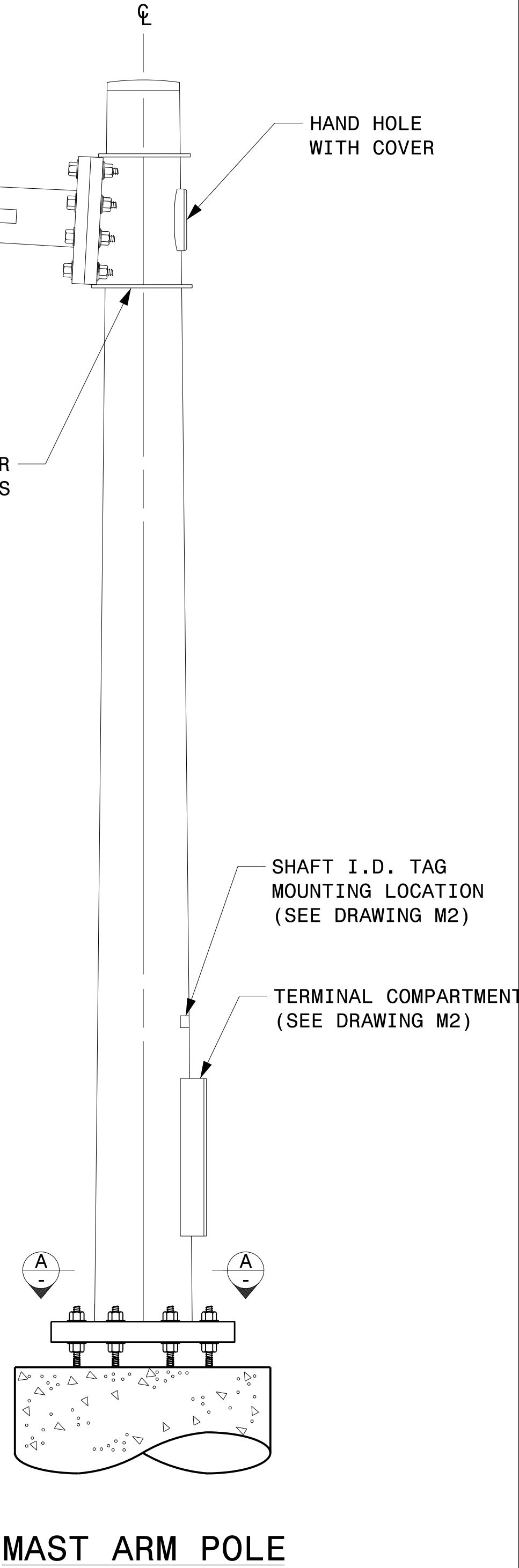
SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)
FULL-PENETRATION
GROOVE WELD DETAIL



SLIP FIT JOINT DETAIL FOR MAST ARM



MAST ARM RADIAL ORIENTATION

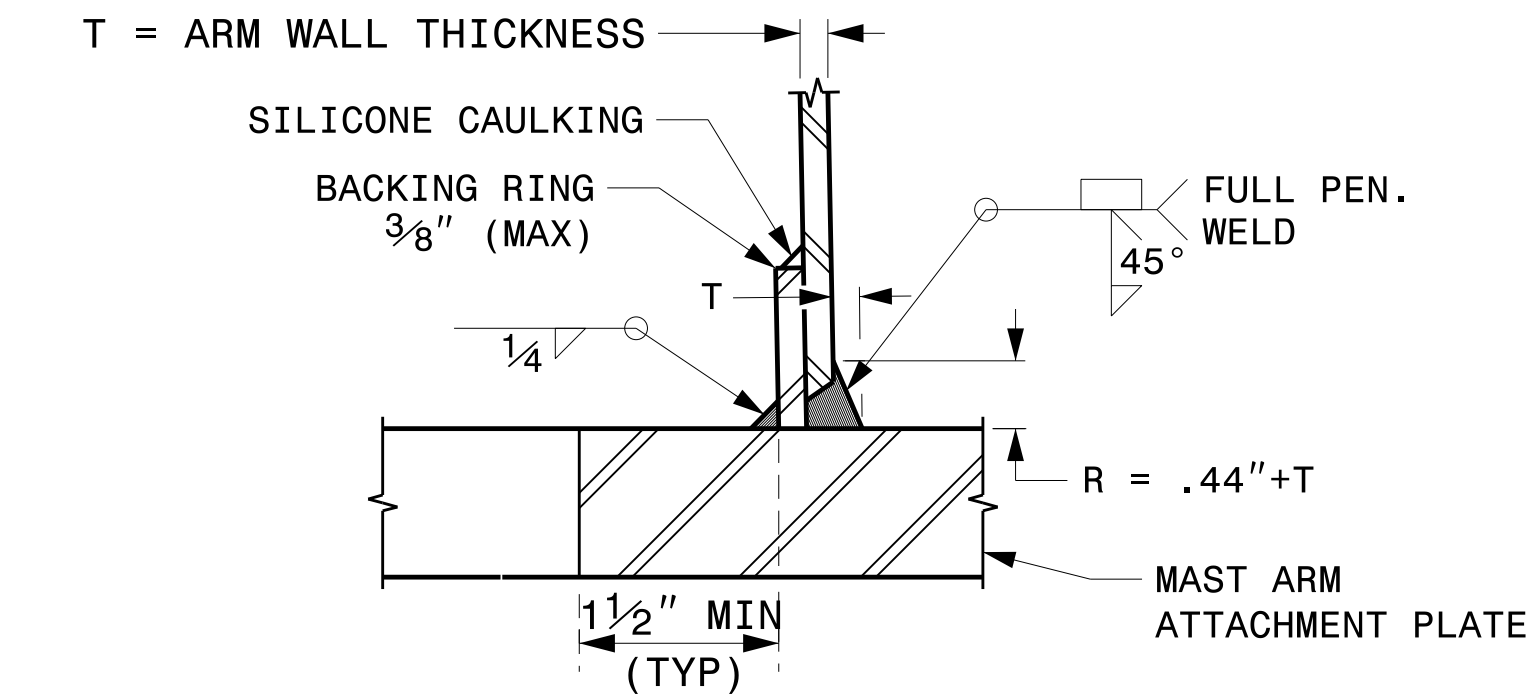


MAST ARM POLE

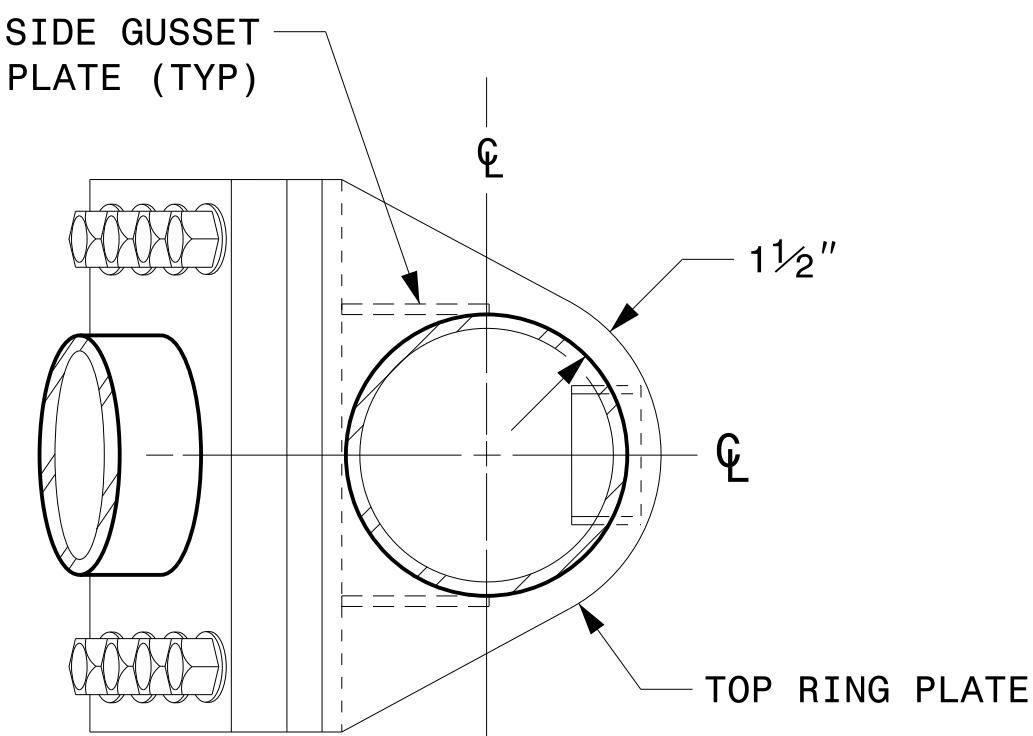
Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529 SCALE: 0 NA NONE	Typical Fabrication Details For Mast Arm Poles PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR REVISIONS: INIT. DATE	SEAL DocuSigned by: DATE: 09/21/2023
	SEAL	
	SEAL	

PROJECT I.D. NO.	SHEET NO.
R-5863	Sig.M5

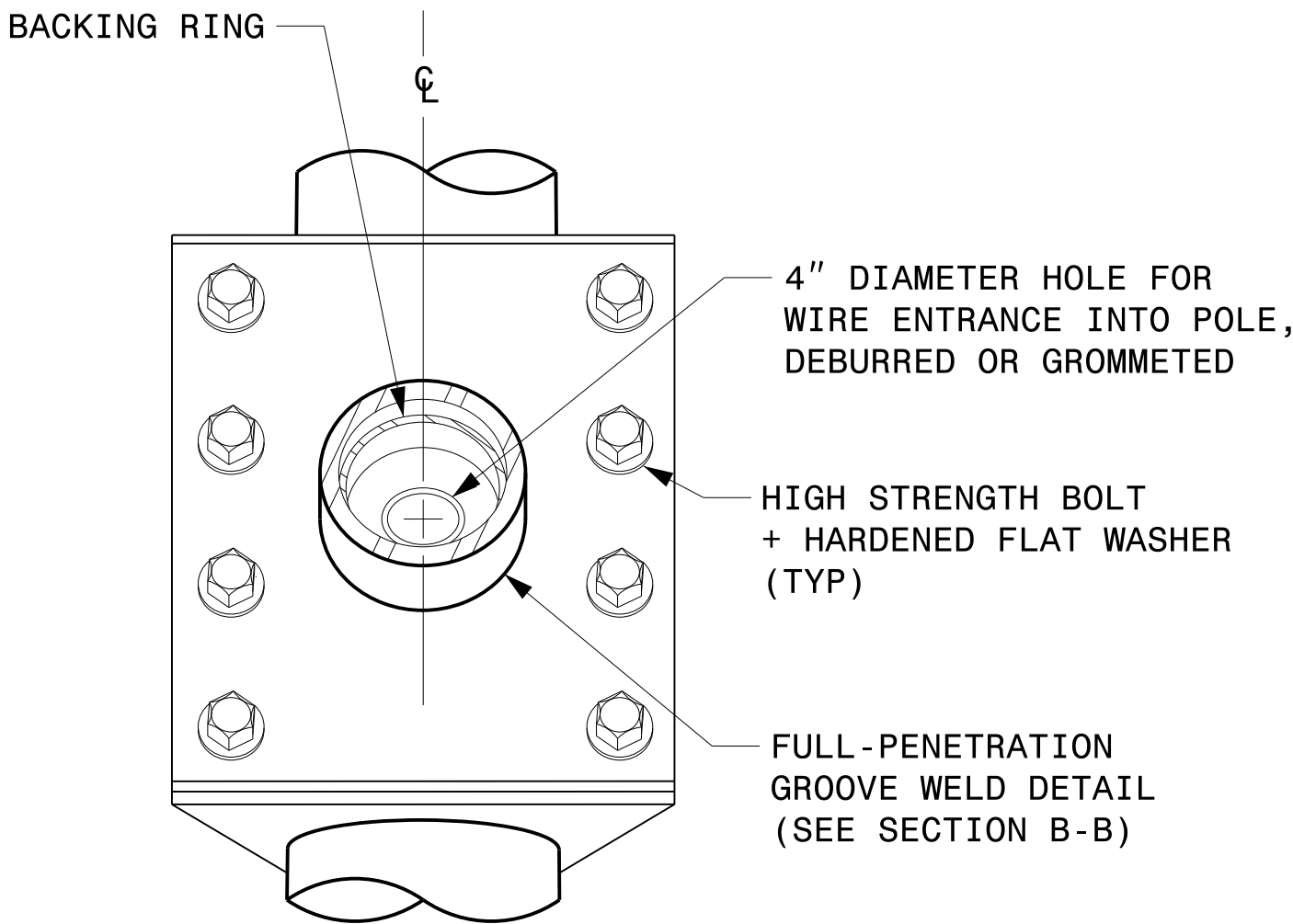
WELDED RING STIFFENED MAST ARM CONNECTION



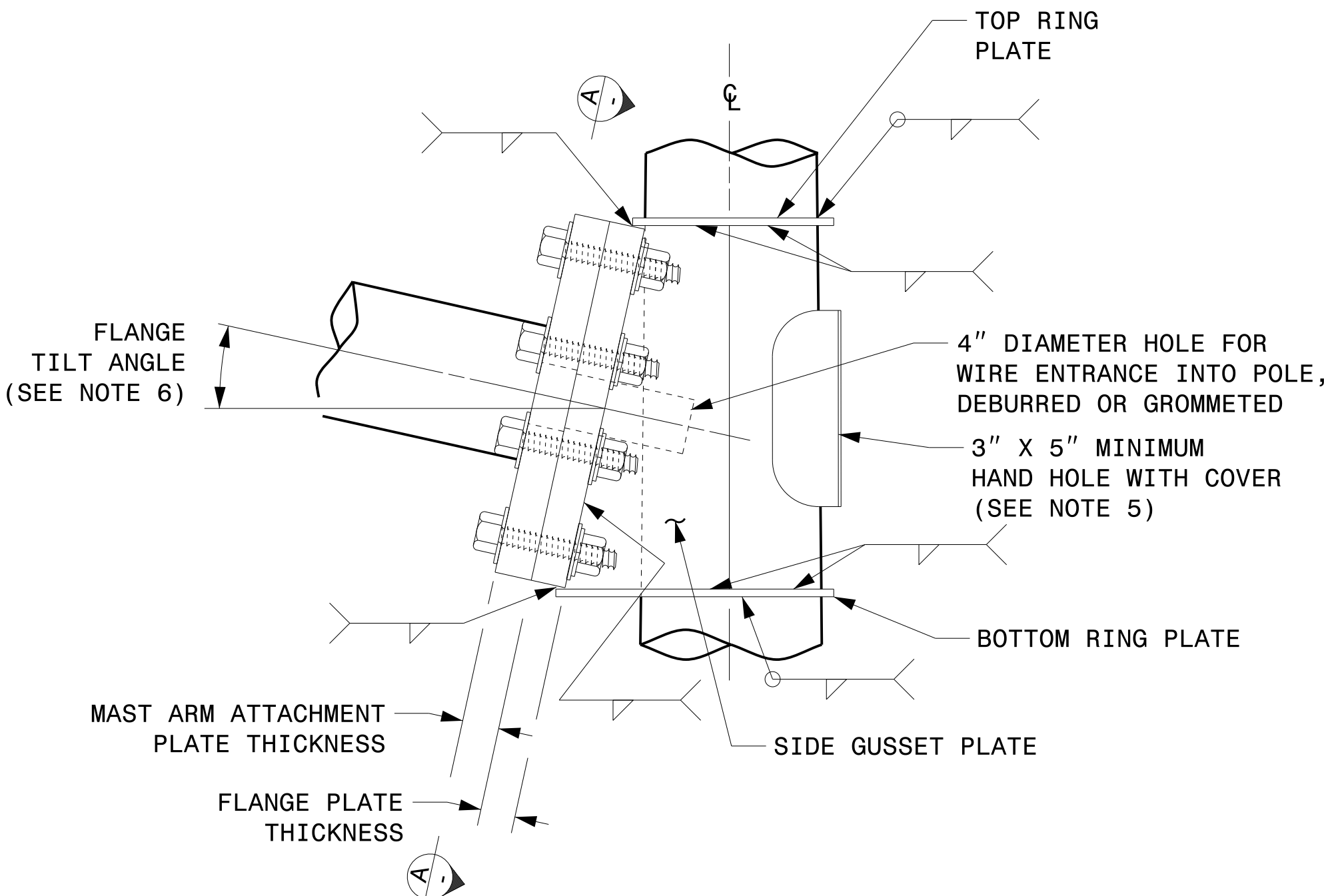
SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL



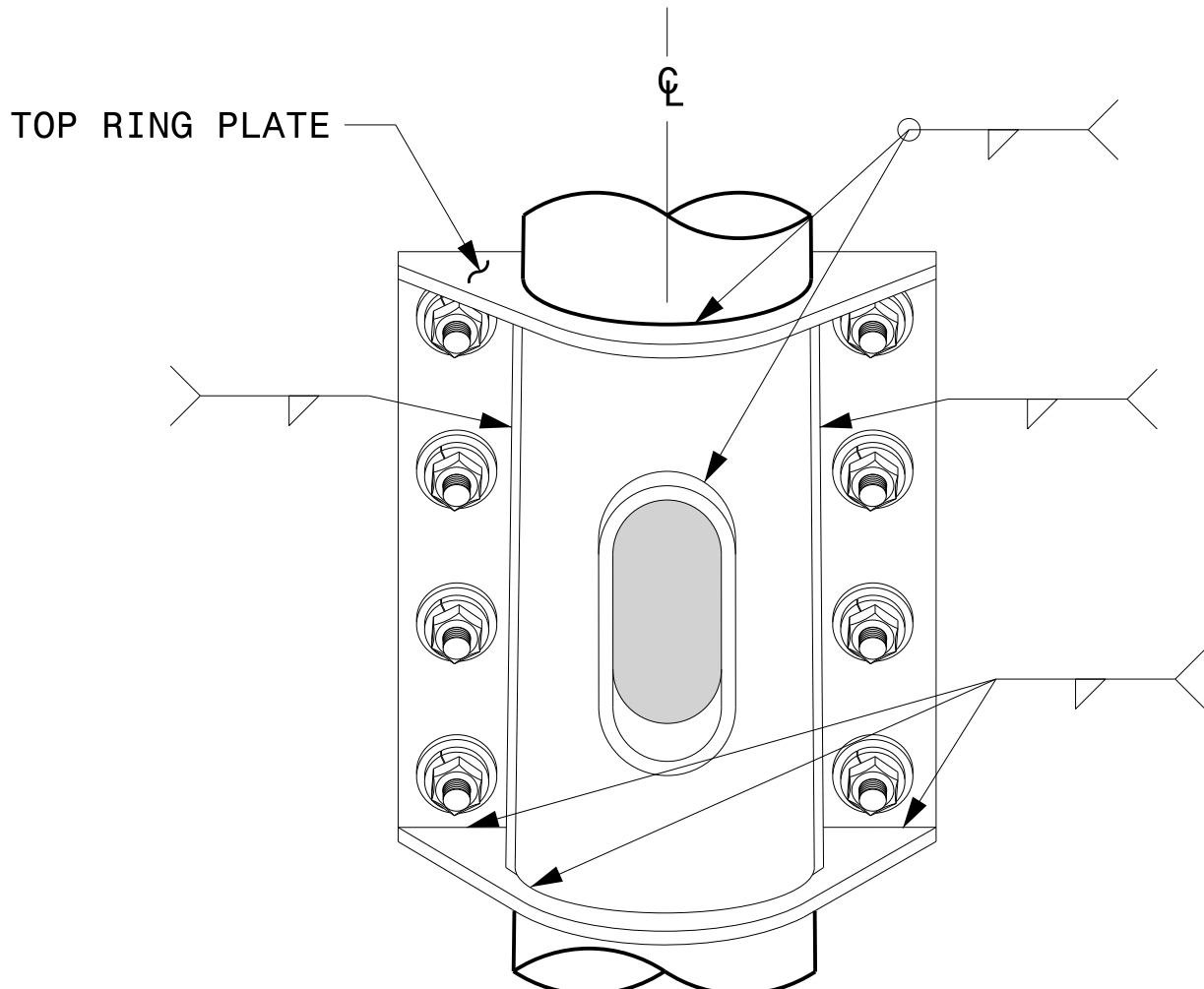
PLAN VIEW



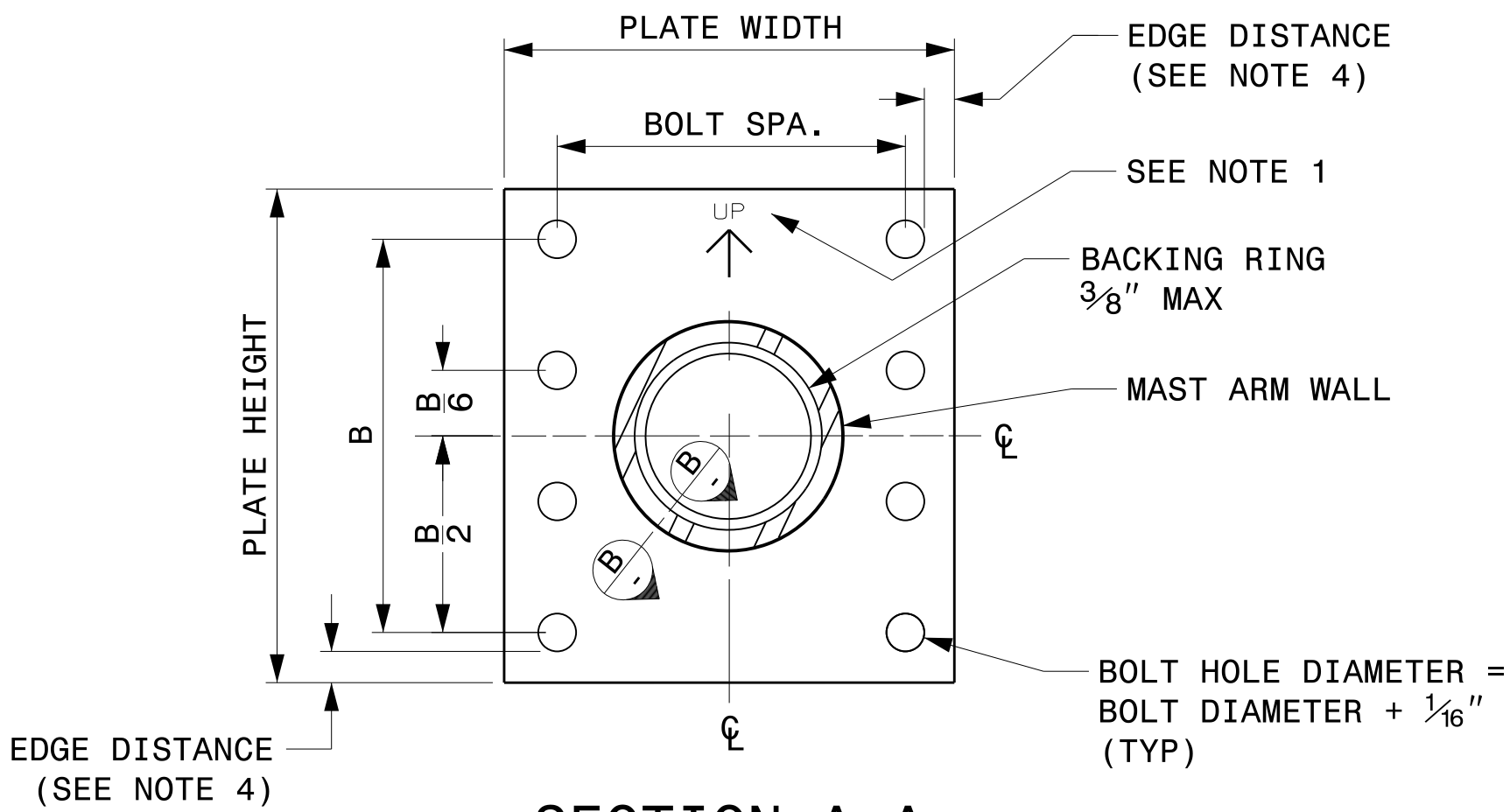
FRONT ELEVATION VIEW



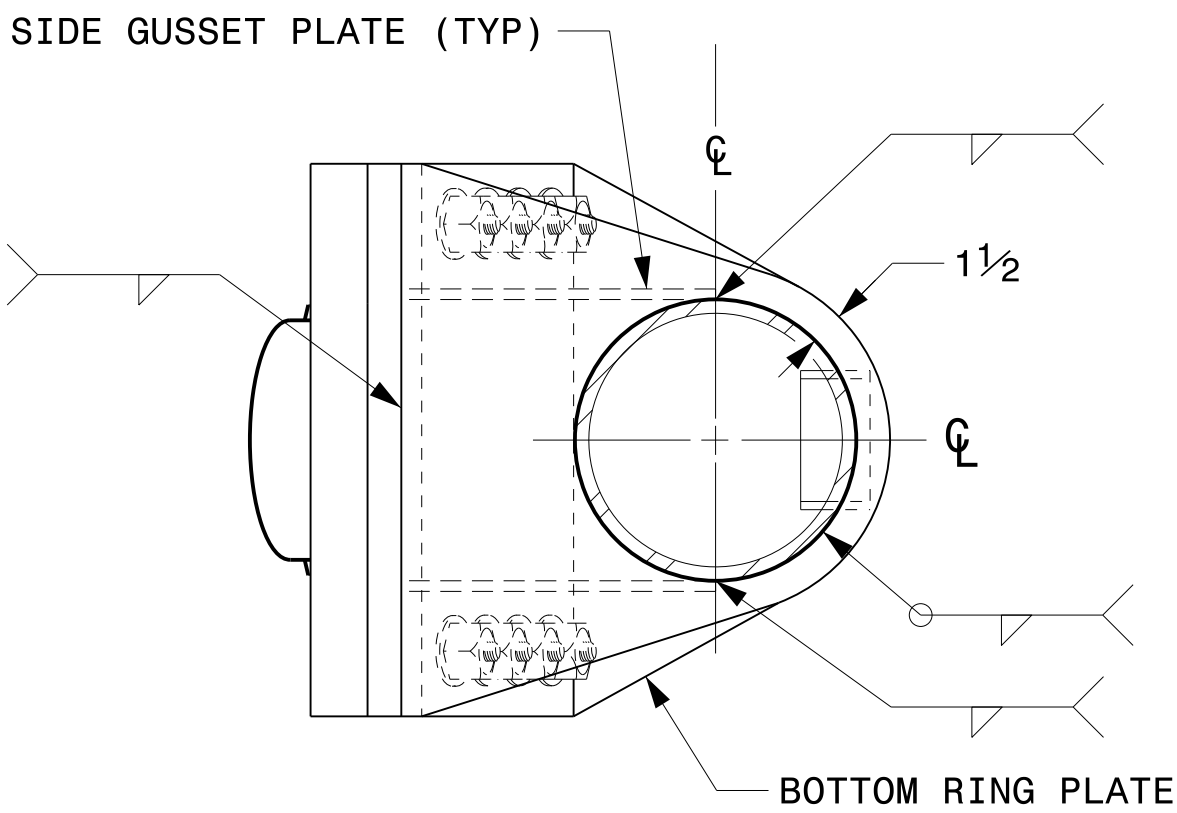
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A
MAST ARM ATTACHMENT PLATE



BOTTOM VIEW

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 AND NOMINAL BOLT HOLE SIZE, FOLLOW THE LATEST AISC STEEL CONSTRUCTION MANUAL.
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.

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Fabrication Details
For
Mast Arm Connection To Pole

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F. ANDREWS
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

REVISIONS
INIT. DATE

SCALE
0 NA
NONE

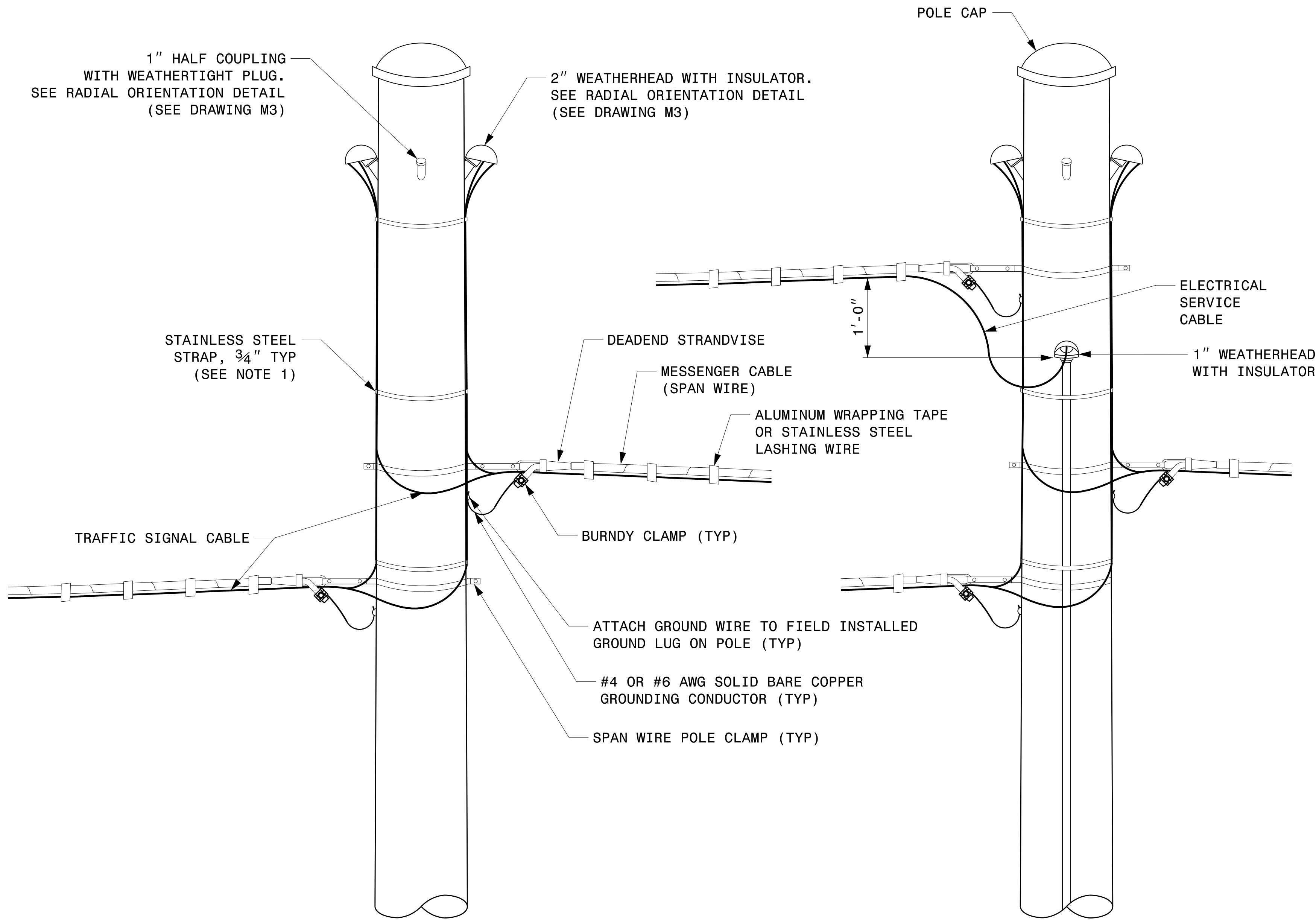
SEAL

DocuSigned by:

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09/21/2023
DATE

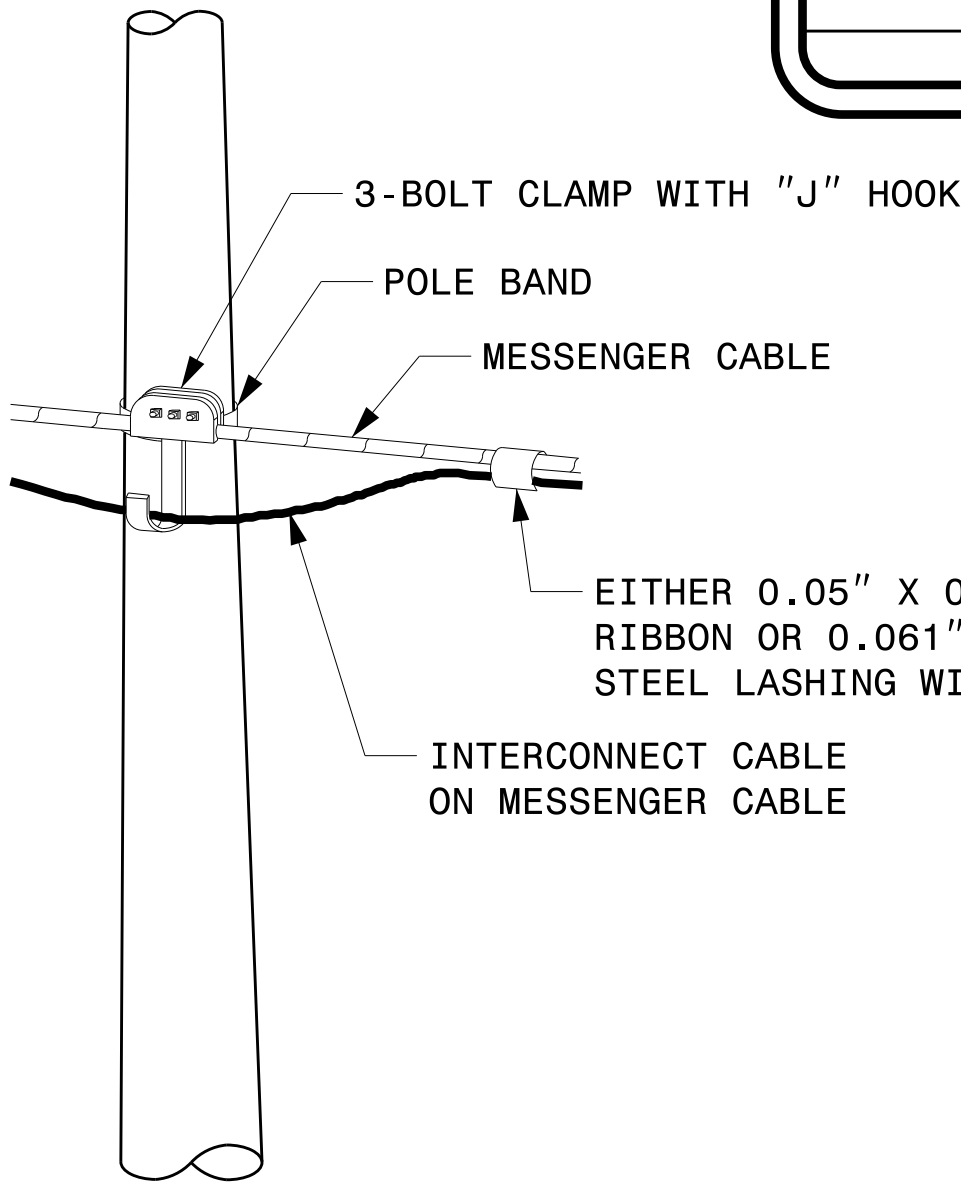
PROJECT I.D. NO.	SHEET NO.
R-5863	Sig.M6



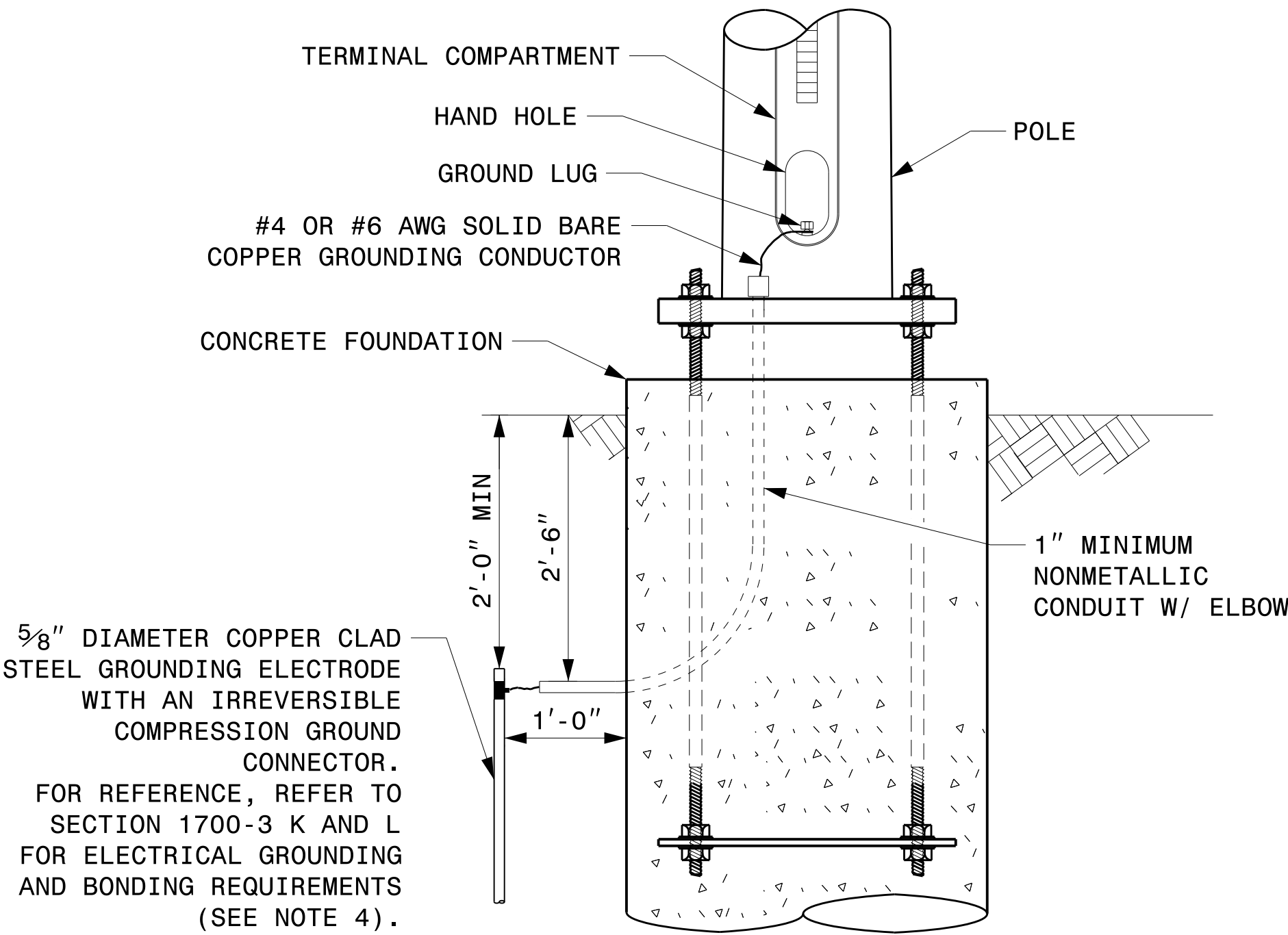
STRAIN POLE ATTACHMENTS

NOTES:

1. STRAP ALL SIGNAL CABLES TO THE SIDE OF THE POLE WITH $\frac{3}{4}$ " STAINLESS STEEL STRAPS WHEN THE DISTANCE BETWEEN SPAN WIRE ATTACHMENT CLAMP AND WEATHERHEADS EXCEEDS 3'-0".
2. PROVIDE MINIMUM TWO SPAN WIRE 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 2024.



ATTACHMENT OF CABLE TO INTERMEDIATE METAL POLE



METAL POLE GROUNDING DETAIL FOR STRAIN POLE AND MAST ARM

Prepared In the Offices of:

750 N.Greenfield Pkwy,Garner,NC 27529

SCALE: 0 NA NONE

Typical Fabrication Details For Strain Pole Attachments			
PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	D.C. SARKAR
REVISIONS		INIT.	DATE

DocuSigned by:

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SEAL

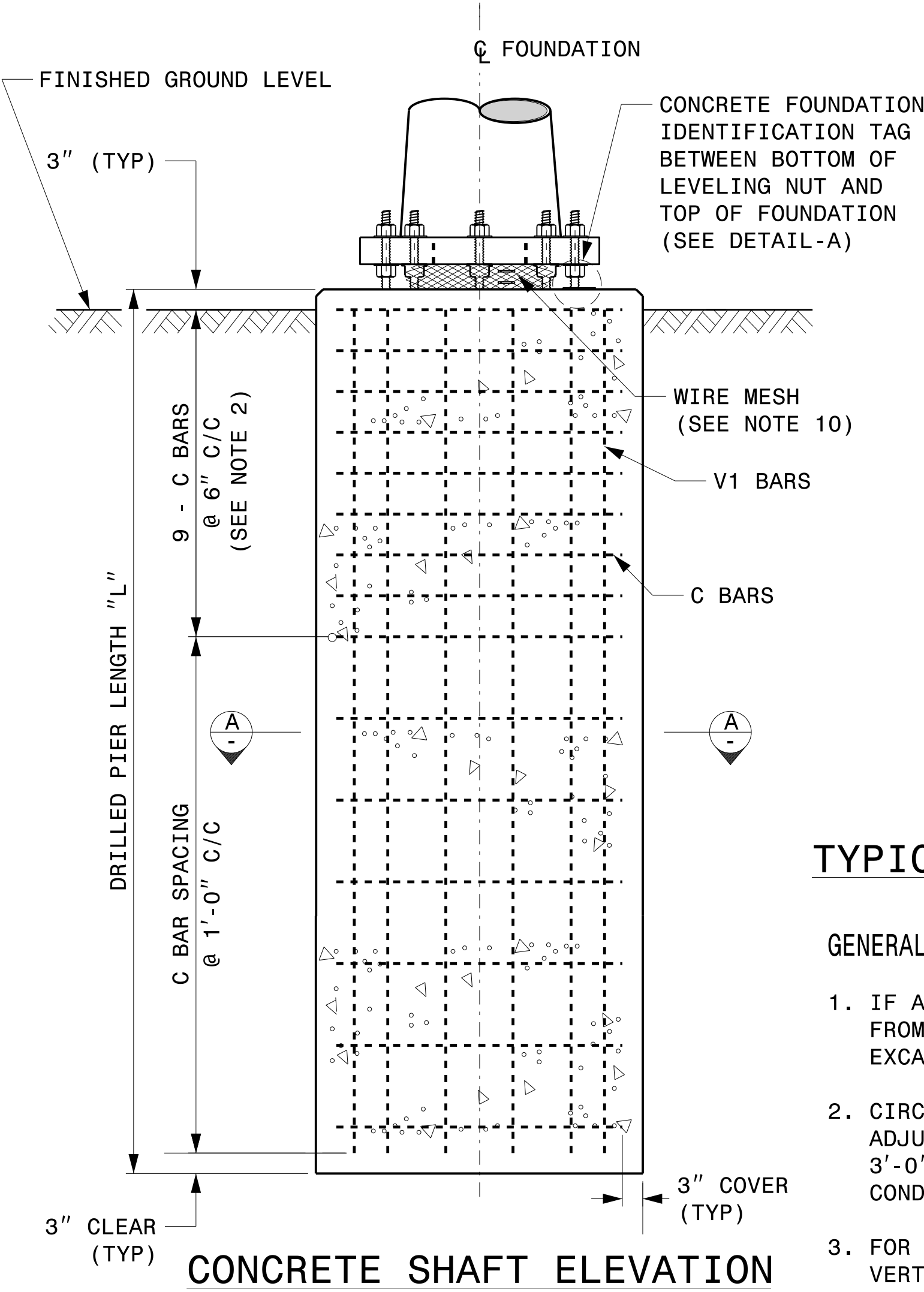
ENGINEER
KEVIN C. DURIGON

09/21/2023

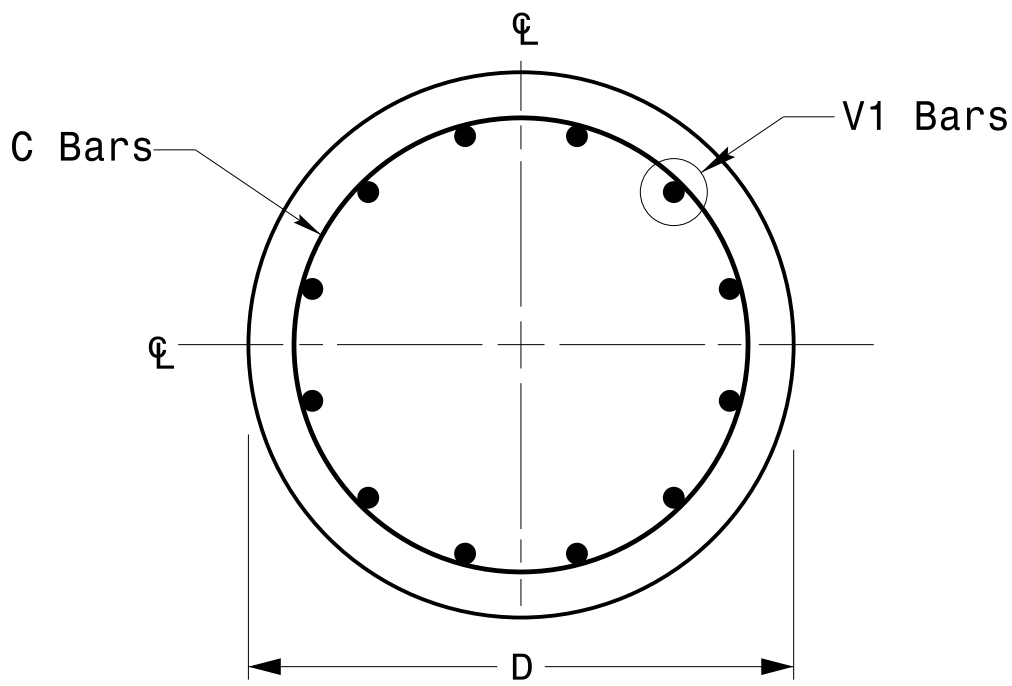
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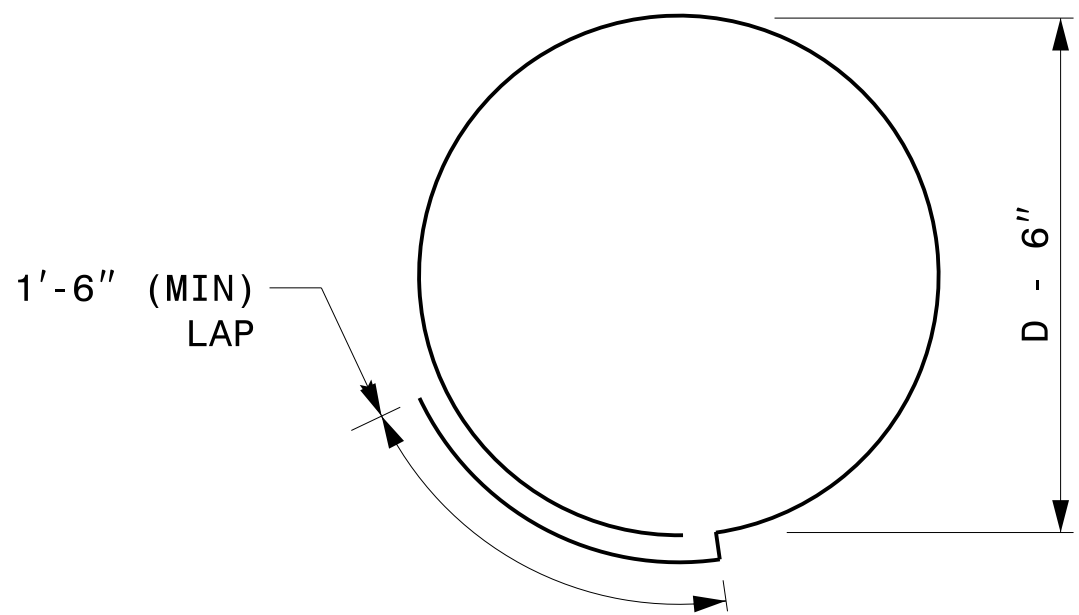
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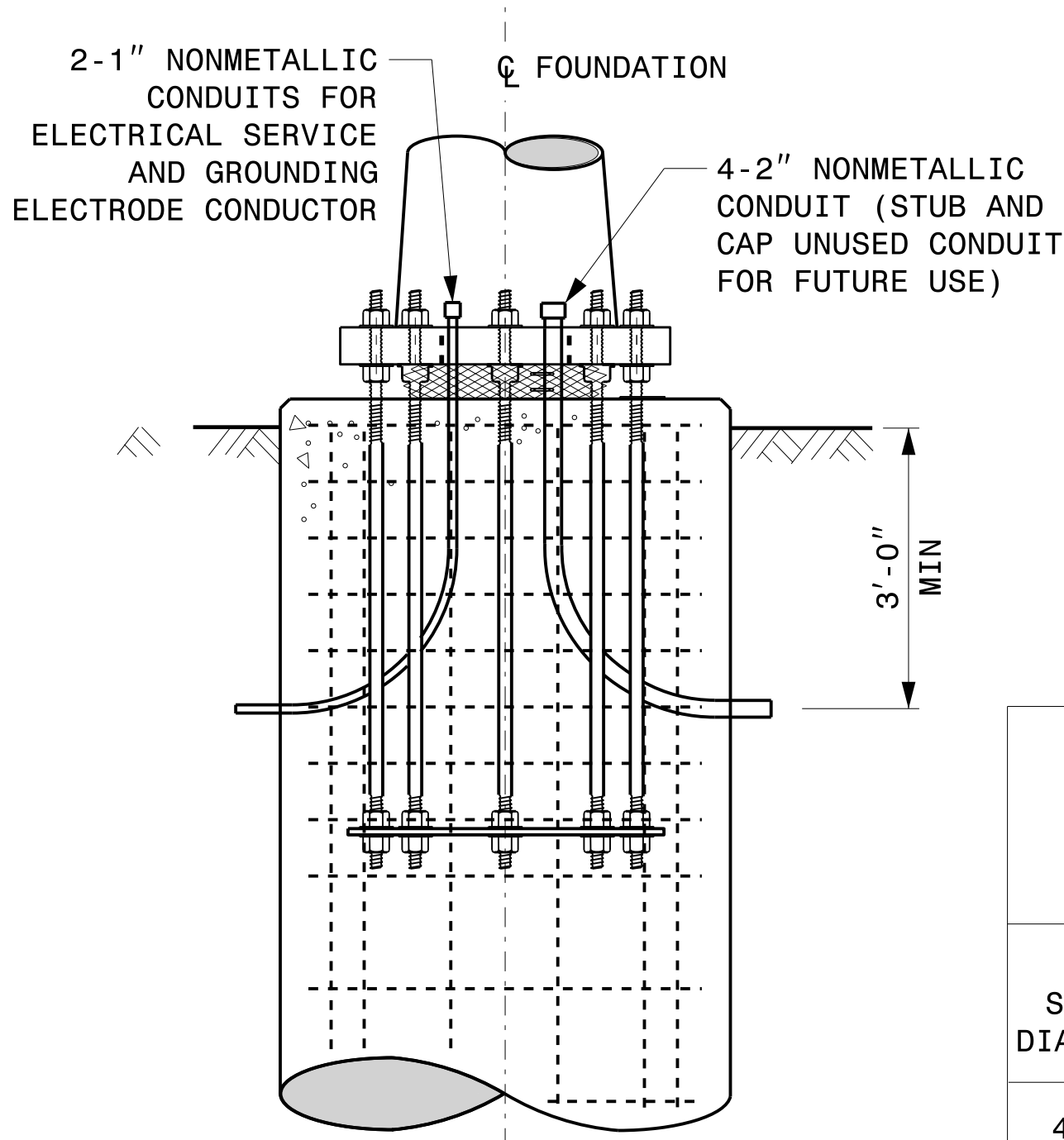
CONCRETE SHAFT ELEVATION



SECTION A-A



TYPICAL "C" BAR DETAIL



TYPICAL FOUNDATION CONDUIT DETAILS

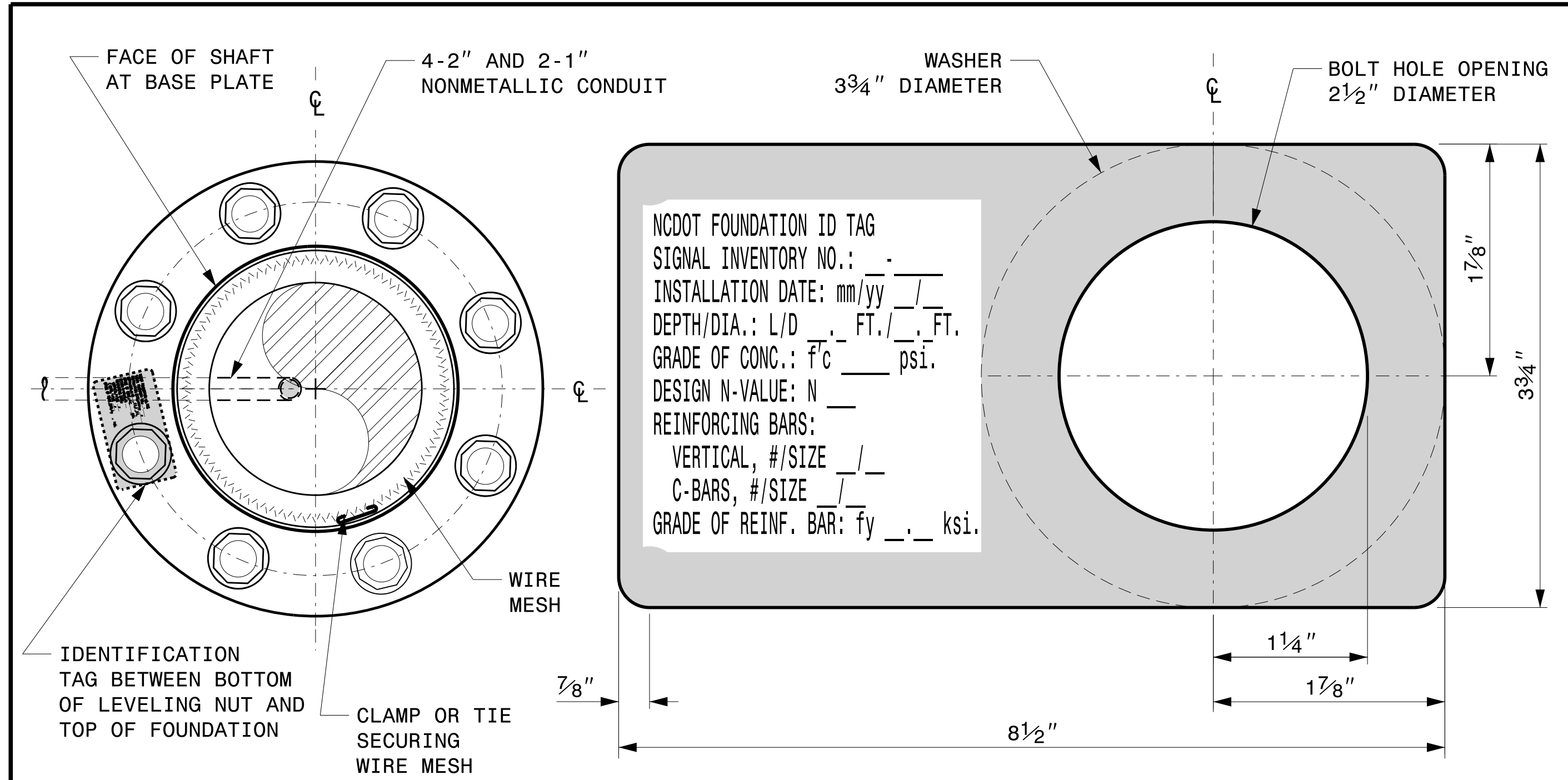
GENERAL NOTES:

- 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 2024 NCDOT STANDARD SPECIFICATIONS ARE REFERENCED IN THIS PROVISION. REFER TO THE NCDOT RESOURCES/SPECIFICATIONS PAGE LOCATED ON THE CONNECT NCDOT WEBSITE.

[https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx](https://connect.ncdot.gov/resources/Specifications%20and%20Special%20Provisions.aspx)
- USE AIR ENTRAINED AA CONCRETE MIX WITH A COMPRESSION STRENGTH OF f'c=4500 psi (MIN) AFTER 28 DAYS.
- USE ASTM A615 GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
- LOCATE IDENTIFICATION TAG ON TOP OF THE FOUNDATION, DIRECTLY ABOVE THE CONDUIT'S ENTRY POINT.
- PROVIDE TWO LAYERS OF 4 MESH GALVANIZED WELDED 23 GAUGE (0.025) 6" WIDE 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.

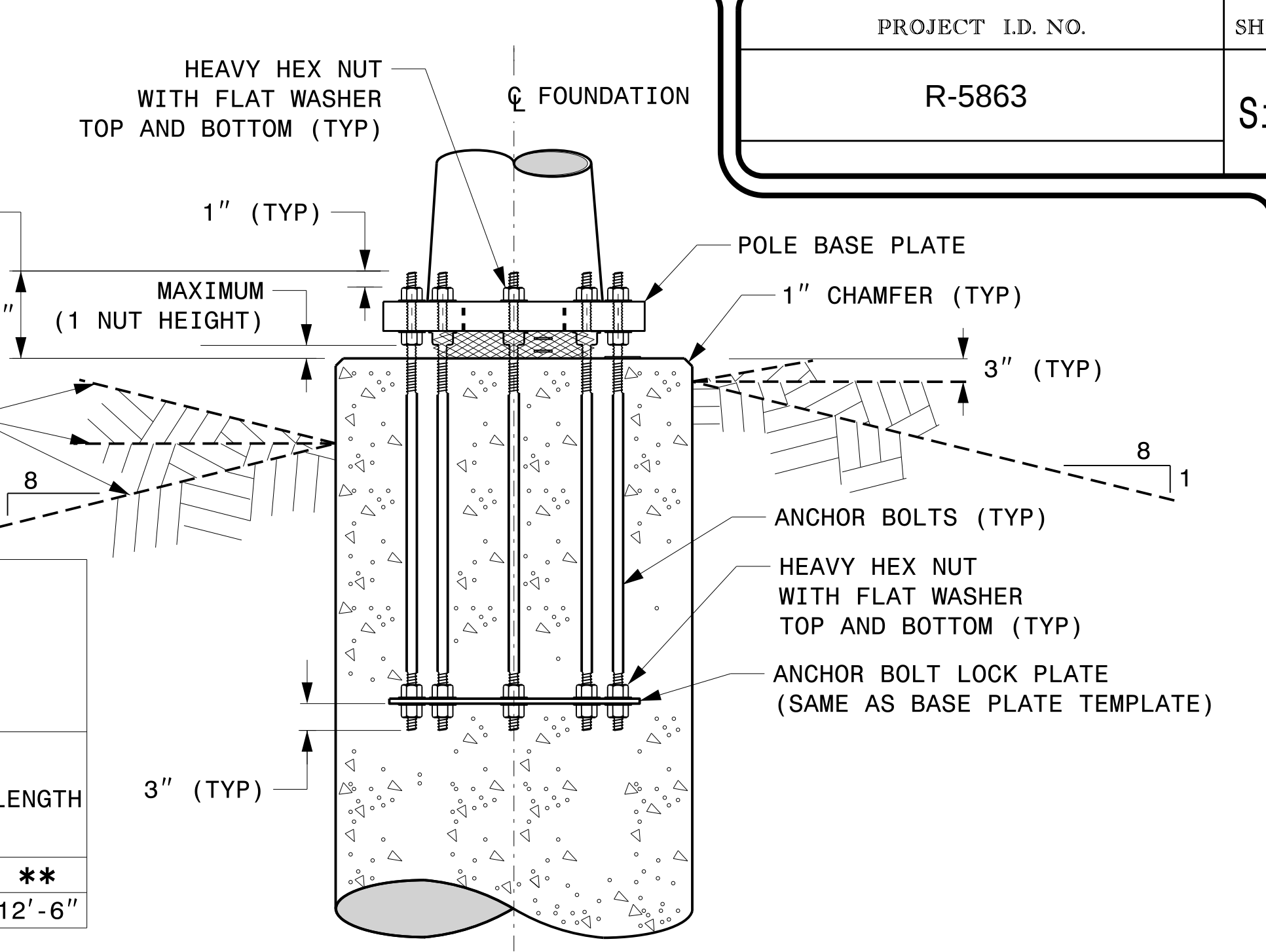
REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'-0" DIAMETER)						
"D" SHAFT DIAMETER	CONCRETE VOLUME (CU. YDS)	BAR NAME	MIN. SIZE	TYPE	LENGTH	
4'-0"	.465 X L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* SEE NOTE 2
** SEE NOTE 3

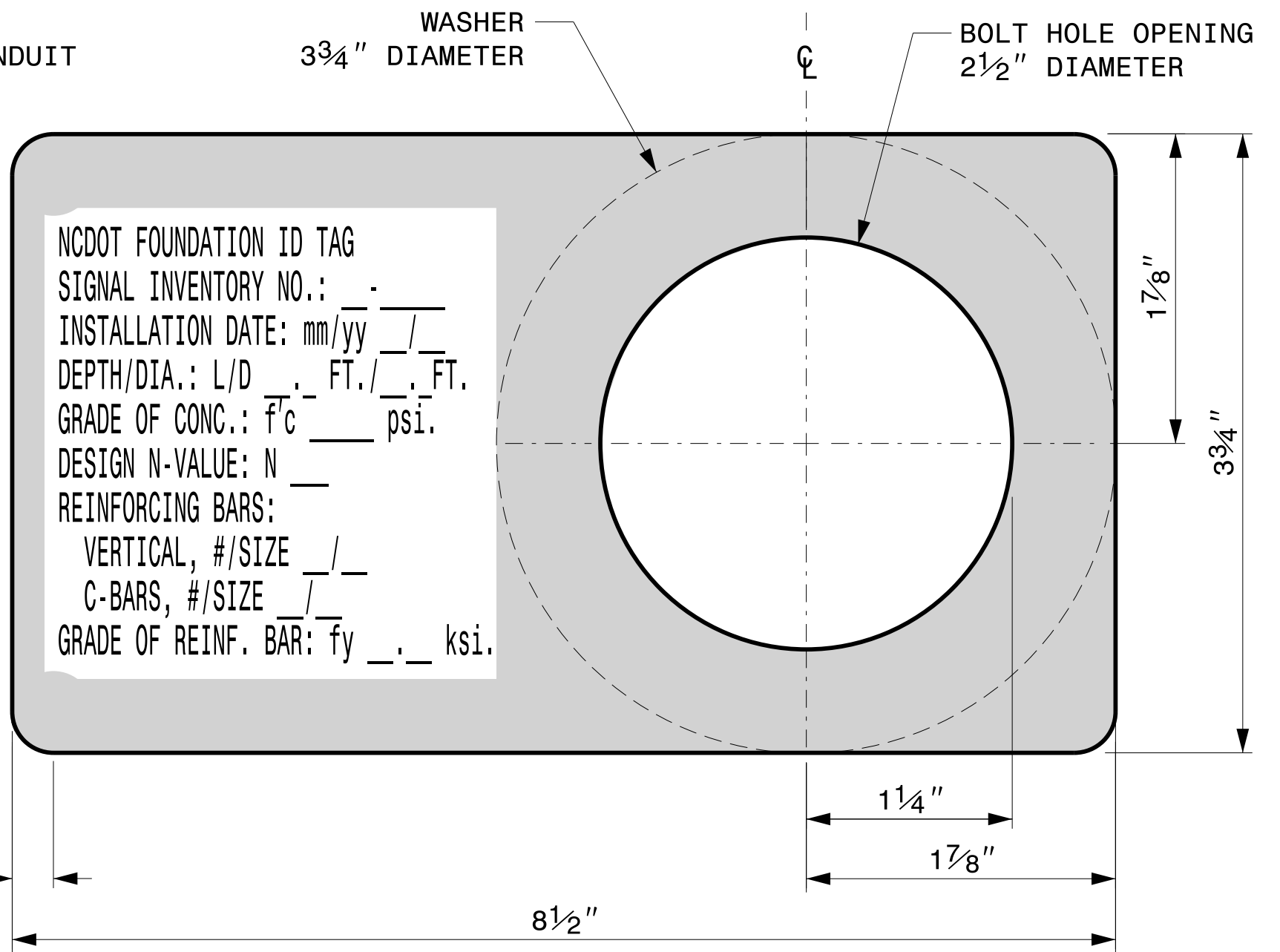


DETAIL-A

D = DIAMETER
L = LENGTH / DEPTH
mm = MONTH
yy = YEAR



TYPICAL FOUNDATION ANCHOR BOLT DETAILS
(REINFORCING CAGE NOT SHOWN FOR CLARITY)



CONCRETE FOUNDATION
IDENTIFICATION TAG DETAILS

Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529 SCALE: 0 NA, NONE		Construction Details For Foundations PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR REVISIONS: INIT. DATE		SEAL DocuSigned by: 4B23DC79B3784DA		DATE: 09/23/2023
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03-gdt-2023 19x48
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Kedur.fgm

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.)
S26L1	26	22	2	9	210	19.5	12.5	9	6.5	15.5	14.5	13	8	12	4	12
S26L2	26	23	2	10	240	19.5	12	9	6.5	15.5	14.5	13	8	12	4	12
S26L3	26	25	2	11	260	20.5	12	10	8	16	15	13	8	12	4	12
S30L1	30	22	2	9	230	19	11	9	7	15.5	14	12.5	8	12	4	12
S30L2	30	23	2	10	270	20	12	10	8	16	14.5	13	8	12	4	12
S30L3	30	25	2	11	290	21	12	10	8	17	15	13.5	8	12	4	12
S30H1	30	25	3	13	355	23	13	11	9	18	16.5	14.5	8	12	4	12
S30H2	30	29	3	15	405	25	14	11	9	19	17.5	15.5	8	14	4	12
S30H3	30	29	3	16	430	26	15	12	9	20	18	16	8	14	4	6
S35L1	35	22	3	8	260	19.5	12	10	8	15.5	14.5	13	8	12	4	12
S35L2	35	23	3	10	300	21	12	10	8	16.5	15	13.5	8	12	4	12
S35L3	35	25	3	10	320	21.5	13	10	8	17	15.5	14	8	12	4	12
S35H1	35	25	3	12	390	23.5	14	11	9	18	17	15	8	14	4	12
S35H2	35	29	4	14	460	26	15	12	9	20	18	16	8	14	4	6
S35H3	35	29	4	16	495	28.5	15	13.5	10	21.5	19	17	8	14	4	6

48" DIAMETER FOUNDATION CONCRETE VOLUME (CUBIC YARDS) = (0.465) x DRILLED PIER LENGTH

PROJECT I.D. NO.	SHEET NO.
R-5863	Sig.M8

GENERAL NOTES:

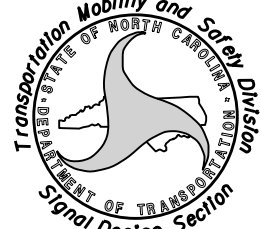
1. VALUES SHOWN IN THE "REACTIONS AT THE POLE BASE" COLUMN REPRESENT THE MINIMUM ACCEPTABLE CAPACITY ALLOWED FOR DESIGN USING A COMBINED FORCE RATIO (CFR) OF 1.00.
2. USE CHAIRS AND SPACERS TO MAINTAIN PROPER CLEARANCE.
3. FOR FOUNDATION, ALWAYS USE AIR-ENTRAINED CONCRETE MIX.

FOUNDATION SELECTION:

1. PERFORM A STANDARD PENETRATION TEST AT EACH PROPOSED FOUNDATION SITE TO DETERMINE "N" VALUE.
2. SELECT THE APPROPRIATE WIND ZONE FROM M1 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 MANUAL FOR DRILLED SHAFTS.

Standard Strain Pole Foundation – All Soil Conditions

Prepared In the Offices of:



750 N.Greenfield Pkwy,Garner,NC 27529

SCALE

0 1"=10' NA

NONE

Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE: SEPTEMBER 2023

DESIGNED BY: K.C. DURIGON

PREPARED BY: K.C. DURIGON

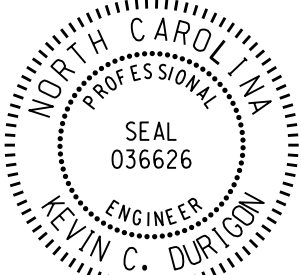
REVIEWED BY: D.C. SARKAR

REVISIONS

INIT.

DATE

SEAL



DocuSigned by:

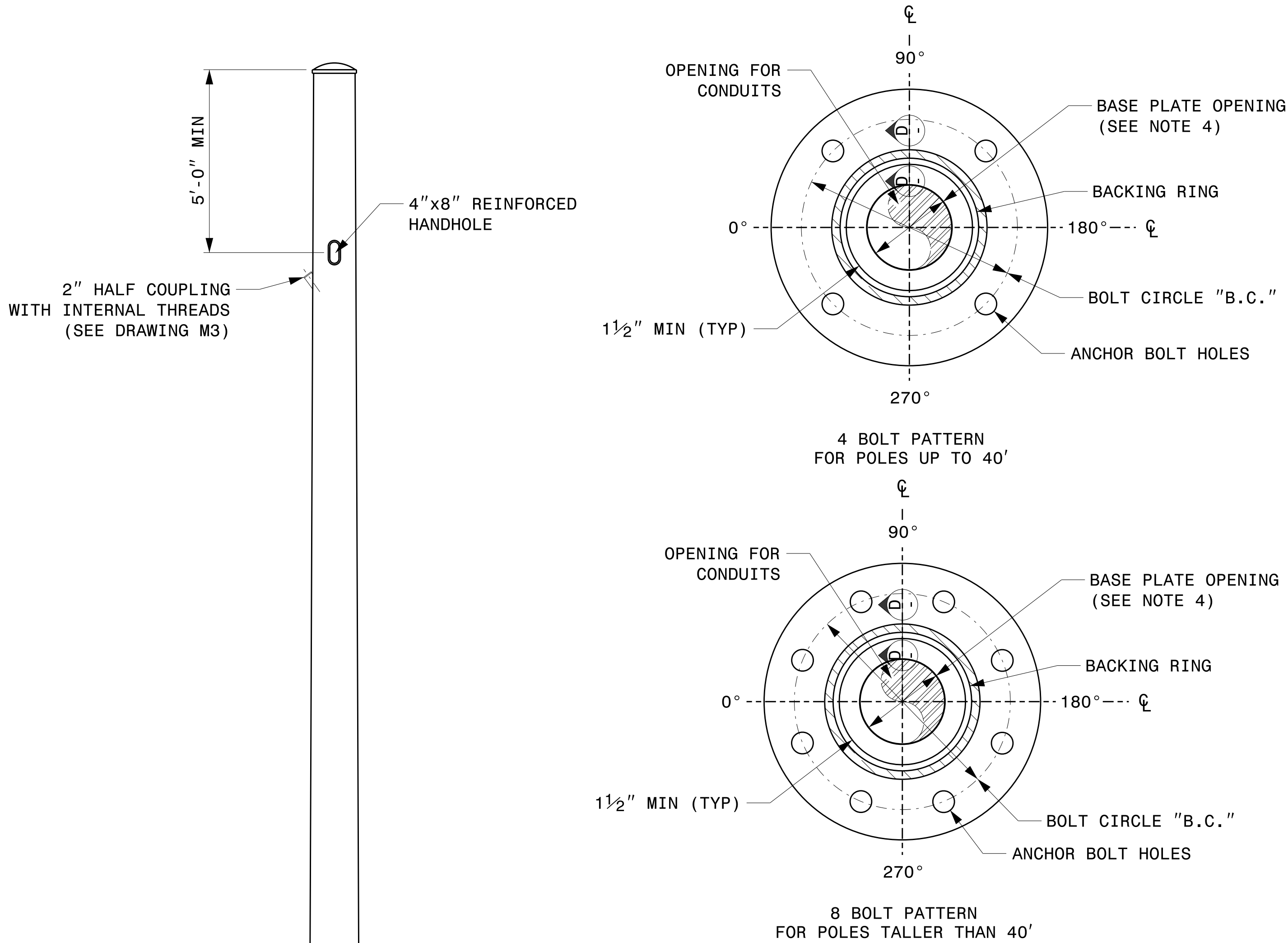


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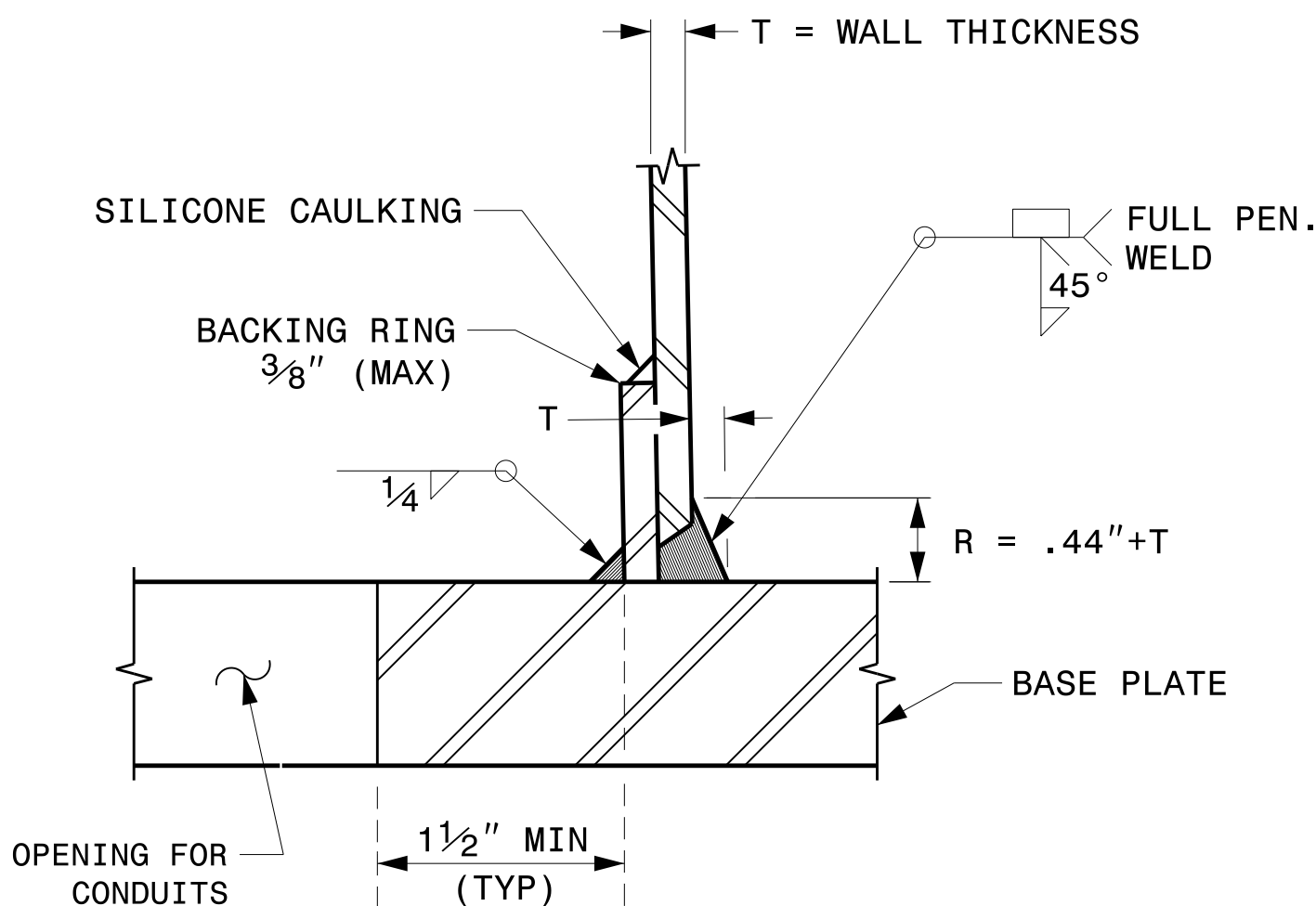
09/21/2023

DATE

PROJECT I.D. NO.	SHEET NO.
R-5863	Sig.M9



BASE PLATE DETAILS



SECTION D-D
(POLE ATTACHMENT TO BASE PLATE)
FULL - PENETRATION
GROOVE WELD DETAIL

NOTES:

1. THIS DRAWING PROVIDES BASIC DETAILS FOR CCTV POLES. PROJECT REQUIREMENTS MAY REQUIRE SPECIAL FACTORY PREPS THAT ARE NOT SHOWN ON THESE DETAILS.
2. DETAILS FOR INTERNAL CAMERA LOWERING SYSTEMS ARE NOT SHOWN.
3. POLE MOUNTED CABINETS MAY REQUIRE MODIFICATIONS TO THE LOWER HANDHOLE OPENING TO MOUNT CABINETS. 4" X 8" REINFORCED HANDHOLES ARE ACCEPTABLE OPTIONS, AND MAY BE PREFERRED.
4. OPENING IN POLE BASE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3 1/2" BUT SHALL NOT BE LESS THAN 8 1/2".
5. USE COMPACT SECTION CRITERIA D/T RATIO PER AASHTO LTS-LRFD 1ST EDITION SECTION 5.7.2.

CCTV CAMERA POLE
(NOT TO SCALE)

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Fabrication Details
For
CCTV Poles

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON REVIEWED BY: C.F. ANDREWS

REVISIONS	INIT.	DATE

SCALE
0 NA
NONE

SEAL

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...

09/21/2023
DATE