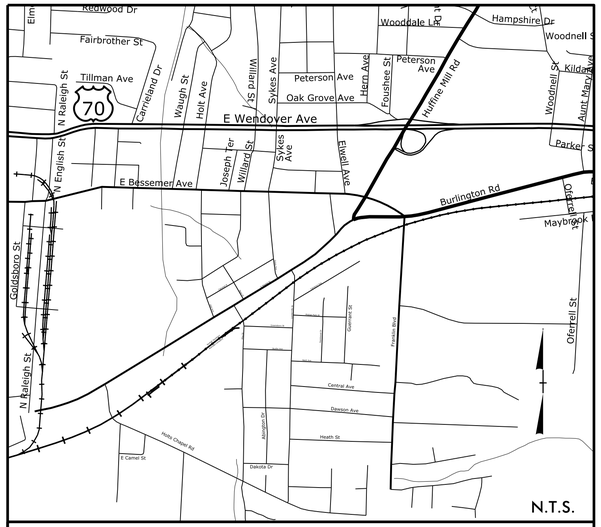
Project No.	Sheet No.
Y-4807B	Sig. 1.0

Project: Y-4807B

CONTRACT: C204908

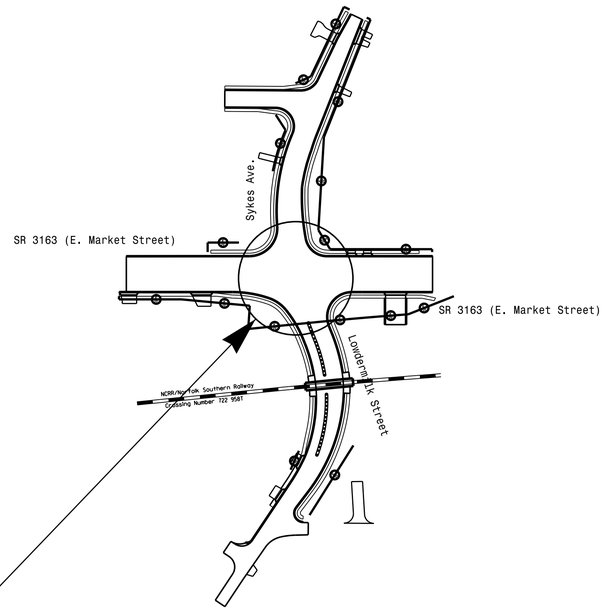


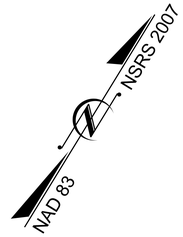
Vicinity Map

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: SR 3163 (E. MARKET STREET) FROM PINE STREET TO LOWDERMILK STREET
TYPE OF WORK: SIGNALS AND SIGNAL COMMUNICATIONS





07-0424

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

Index of Plans

Sheet #	Reference #	Location/Description
Sig. 1.0	--------	Title Sheet
Sig. 2.0-2.5	07-0424	SR 3163 (E. Market Street) at Sykes Ave. & Lowdermilk Street
M1A-M9	--------	Standard Drawings For Metal Poles
SCP 1-4	--------	Signal Communications Plans

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS UNIT

Contacts:

Robert J. Ziemba, PE – Central Region Signals Engineer
Ryan W. Hough, PE – Signal Equipment Design Review Engineer
Gregg A. Green – Signal Communications Project Engineer

Prepared In the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY DIVISION

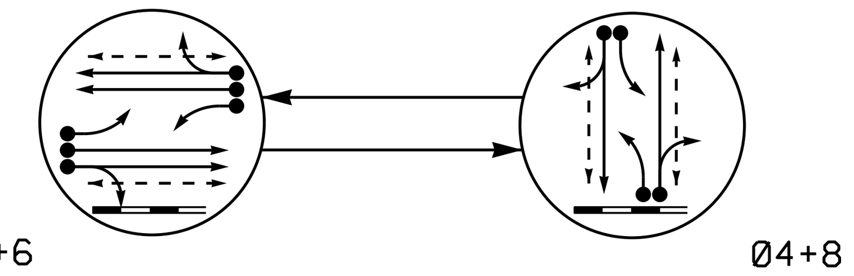
TSMO UNIT

750 N. Greenfield Parkway, Garner, NC 27529

PROJECT REFERENCE NO.	SHEET NO.
Y-4807B	Sig. 2.0

2 Phase
Fully Actuated
With Railroad Preemption
(Greensboro Signal System)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

RAIL PREEMPT PHASES

(High Priority)

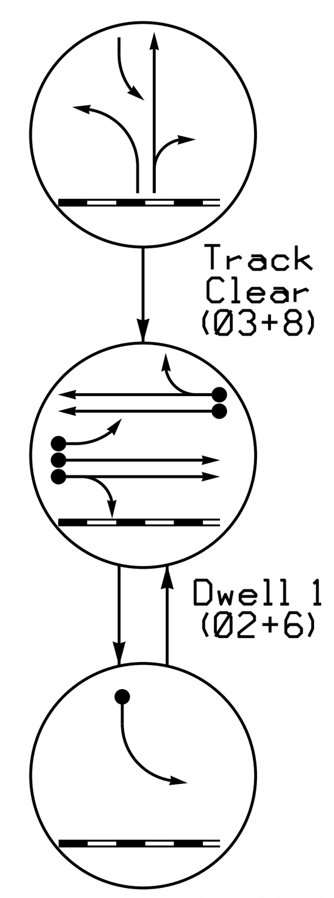


TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	Ø4+8	RR CLEAR	DWELL 1	DWELL 2	FLASH
21	←F/Y	←R	←R	←F/Y	←R	←Y
22, 23	G	R	R	G	G	Y
31	←R	←F/Y	←	←R	←R	←R
41, 42	R	G	R	R	R	R
61	←F/Y	←R	←R	←R	←R	←Y
62, 63	G	R	R	G	G	Y
71	←R	←F/Y	←F/Y	←R	←	←R
81, 82	R	G	G	R	R	R
P21, P22	W	DW	DW	DW	DW	DRK
P41, P42	DW	W	DW	DW	DW	DRK
P61, P62	W	DW	DW	DW	DW	DRK
P81, P82	DW	W	DW	DW	DW	DRK

LOOP & DETECTOR UNIT INSTALLATION CHART

TRAFFICWARE APOGEE SOFTWARE 2070 CONTROLLER

INDUCTIVE LOOPS					DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	SWITCH (PHASE)	DELAY TIME	STRETCH TIME	CALLING	EXTENSION	ADDED INIT.	SYSTEM LOOP	NEW CARD
2A	6X6	70	4	X	2	-	-	-	X	X	X	-	X
2B	6X6	70	4	X	2	-	-	-	X	X	X	-	X
2C	6X40	0	2-4-2	X	2	-	-	-	X	X	-	-	X
4A	6X40	0	2-4-2	X	4/7	-	3	-	X	X	-	-	X
4B	6X40	0	2-4-2	X	4	-	10	-	X	X	-	-	X
6A	6X6	70	4	X	6	-	-	-	X	X	X	-	X
6B	6X6	70	4	X	6	-	-	-	X	X	X	-	X
6C	6X40	0	2-4-2	X	6	-	-	-	X	X	-	-	X
8A	6X40	0	2-4-2	X	8	-	-	-	X	X	-	-	X
8B	6X40	0	2-4-2	X	8	-	10	-	X	X	-	-	X

NOTES

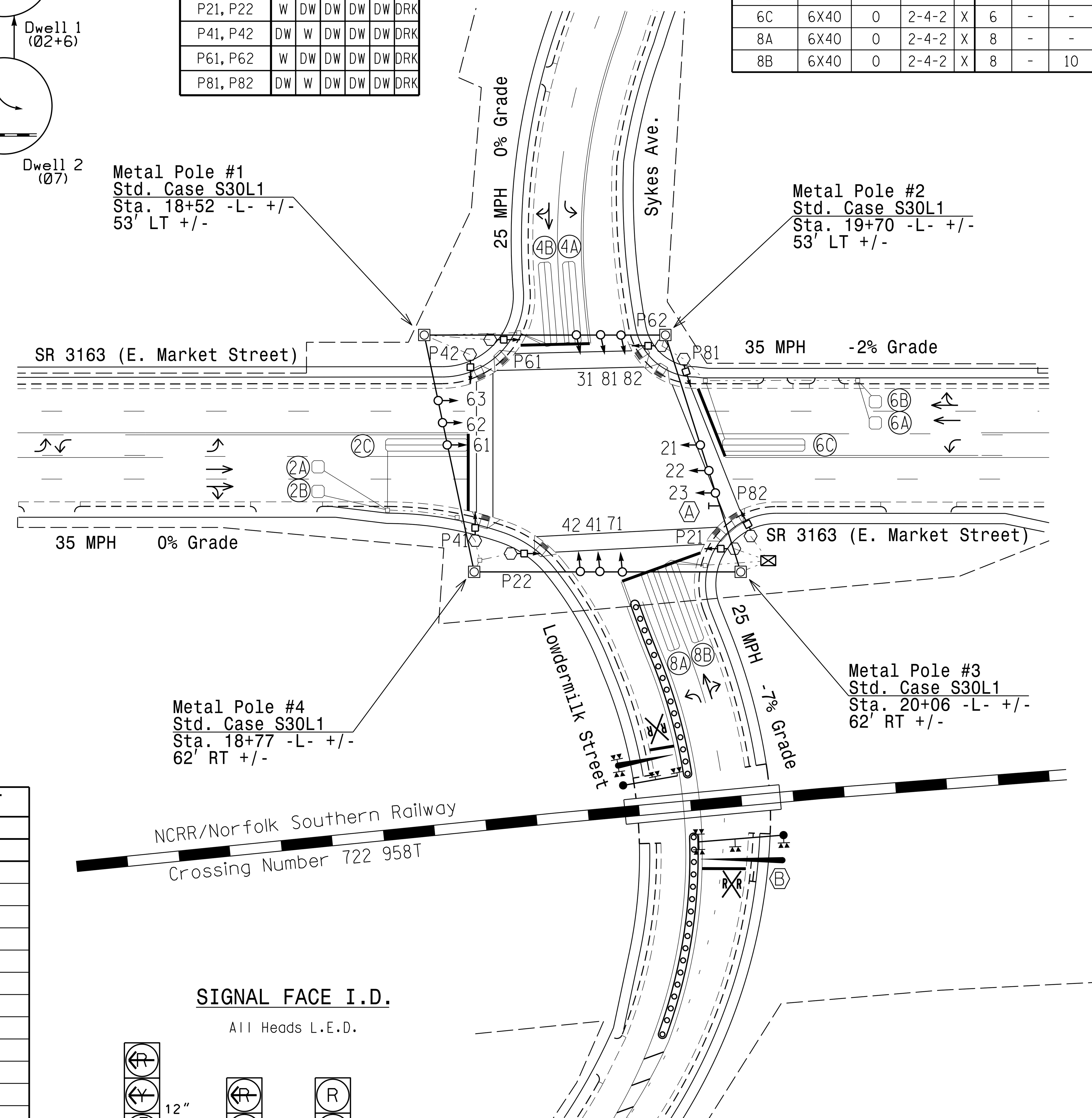
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

APOGEE 2070 RAIL PREEMPT

Function	PRE 1
Delay Before Preempt	0
Minimum Duration	10
Min Green Before Preempt	1
Min Walk Before Preempt	1
Ped Clear Before Preempt	5
Track Clearance Green	28
Minimum Dwell	0
Exit Ped Clear	0
Exit Yellow Change	25.5*
Exit Red Clear	25.5*
Enter Yellow Change	4.9
Enter Red Clear	2.9
Track Yellow Change	3.6
Track Red Clear	2.9
All-Red B4 Dwell	OFF
Lock Input	ON
Overide Higher # Preempt	ON
Exit Preempt To	4+8

* Time defaults to time used for phase during normal operation.

This signal was designed for advanced preemption.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Type II Signal Pedestal	
N/A	Railroad Cantilever	
N/A	Railroad Gate and Flasher	
N/A	Railroad Tracks	
Ⓐ	"NO RIGHT TURN - TRAIN" L.E.D. Blankout Sign	Ⓐ
Ⓑ	"DO NOT STOP ON TRACKS" Sign (R8-8)	Ⓑ

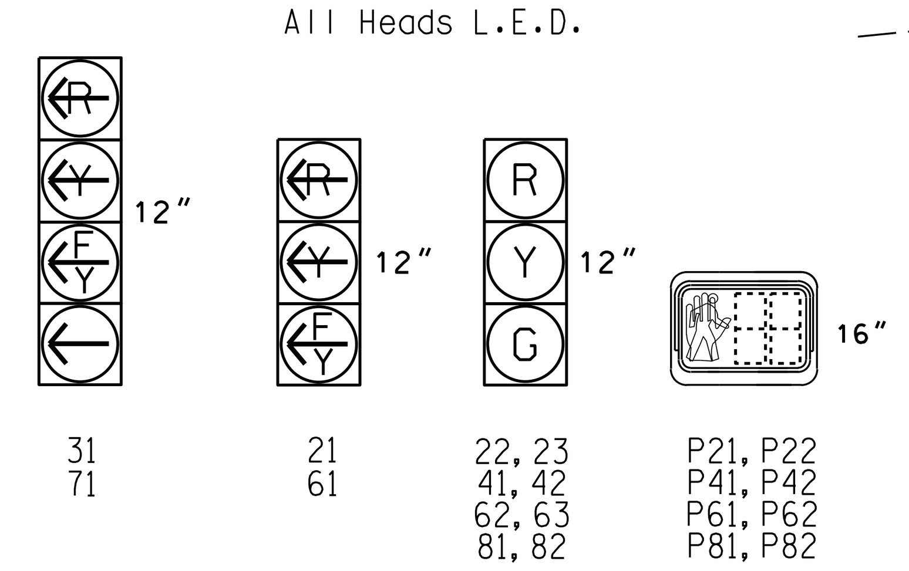
TRAFFICWARE APOGEE 2070 TIMING CHART

FEATURE	PHASE 2	4	6	7	8
Min Green *	10	7	10	7	7
Gap, Extension *	3.0	2.0	3.0	2.0	2.0
Maximum Green 1 *	45	15	45	15	15
Maximum Green 2 *	60	30	60	20	30
Yellow Clear	4.0	3.6	4.0	3.0	3.6
Red Clear	2.4	2.9	2.4	3.1	2.9
Walk *	7	7	7	-	7
Pedestrian Clear	21	17	16	-	17
GreenPed Delay	3	3	3	-	3
Added Initial *	-	-	-	-	-
Maximum Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-	-
Lock Calls	YES	-	YES	-	-
Dual Entry	-	ON	-	-	ON
Simultaneous Gap	ON	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 FACE I.D.

All Heads L.E.D.



New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 3163 (E. Market Street) at Sykes Ave. & Lowdermilk Street

Division 7 Guilford County Greensboro

PLAN DATE: November 2023 REVIEWED BY:

PREPARED BY: I. O. Umozurike REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026486 ROBERT J. ZIEMBA

SIGNATURE 01/17/2024 DATE

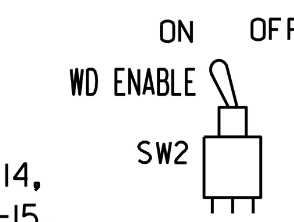
SIG. INVENTORY NO. 07-0424

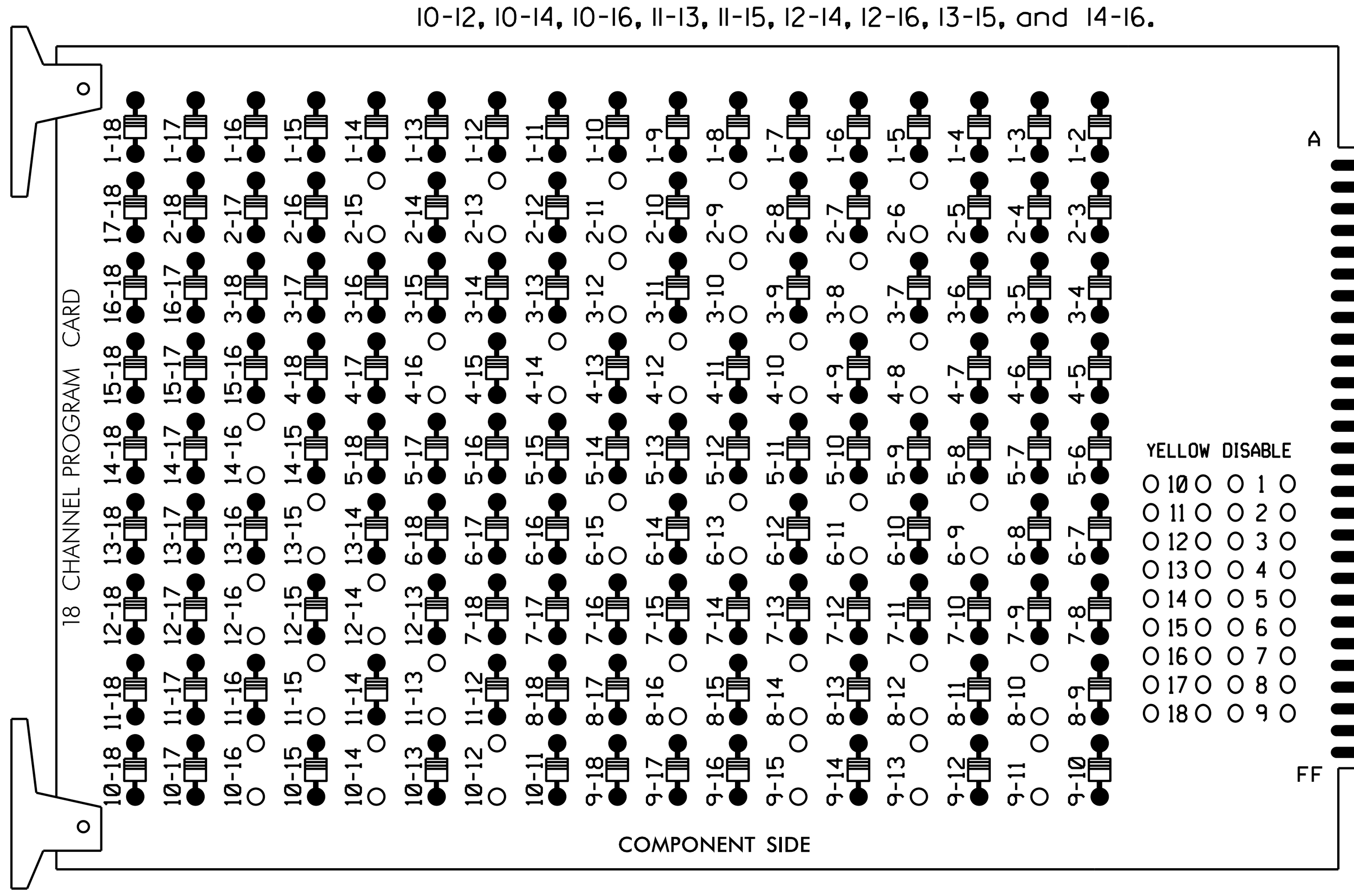
17-JAN-2024 17:02
RZiemba

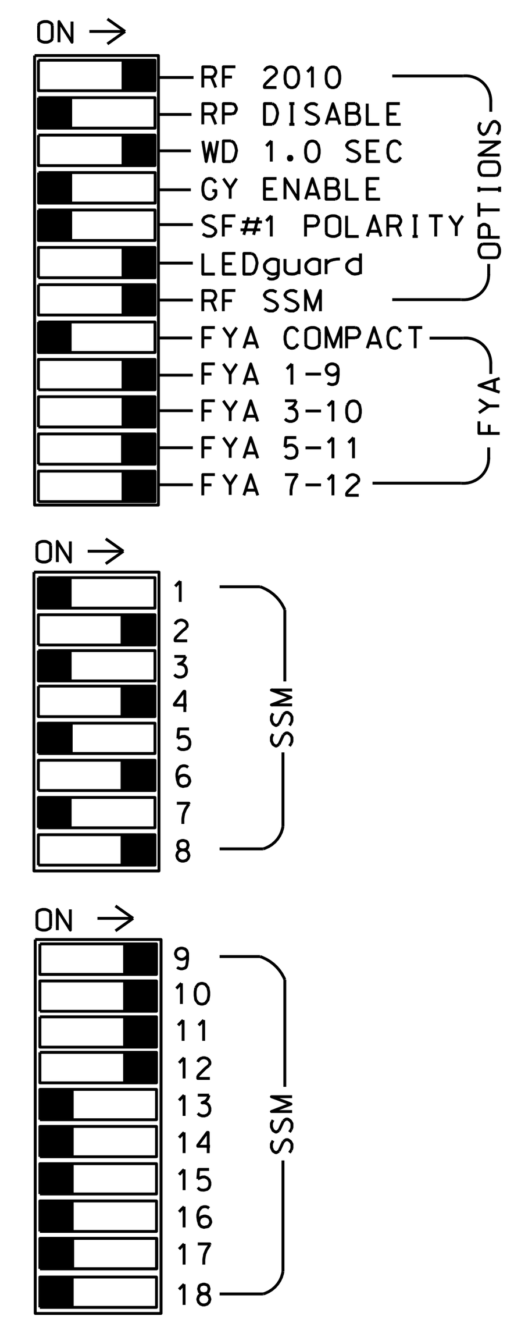
18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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







■ = DENOTES POSITION OF SWITCH

REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Initialize database in Naztec 2070 local software (Apogee) as FULL-CALTRANS. This initialization should be done prior to programming controller.
3. Initialize I/O "C1-C11-ABC 10 Mode" to USER (MM 1-8-6). Then set "Init 2A" to MODE 5 (MM 1-8-9-3).
4. Program phases 2 and 6 for Start Up In Green.
5. Program "Start Up Flash" for 0 sec. The conflict monitor will govern start-up flash time.
6. Ensure "Local Flash Start" feature is set to "DRK".
7. Ensure "InhFYARedSt feature is set to "ON".
8. Program controller to provide a 1 second delay on the Flash Sense/Local Flash input. Use the following logic statement to provide this functionality:

   FROM MAIN MENU->1->8->7 (I/O LOGIC)

Result	Src.Fcn	TimeOp	Time
I208 =	01208	DLY	1

9. Program phases 4 and 8 for Dual Entry.
10. The cabinet and controller are part of the Greensboro Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	22,23	P21, P22	31★	41,42	P41, P42	NU	62,63	P61, P62	71★	81,82	P81, P82	61★	31★	NU	21★	71★	NU
RED		128			101			134			107							
YELLOW		129		*	102			135		*	108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW				118						124								
(hand symbol)			113			104			119			110						
(walking person symbol)			115			106			121			112						

NU = Not Used

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

★ See pictorial of head wiring in detail below.

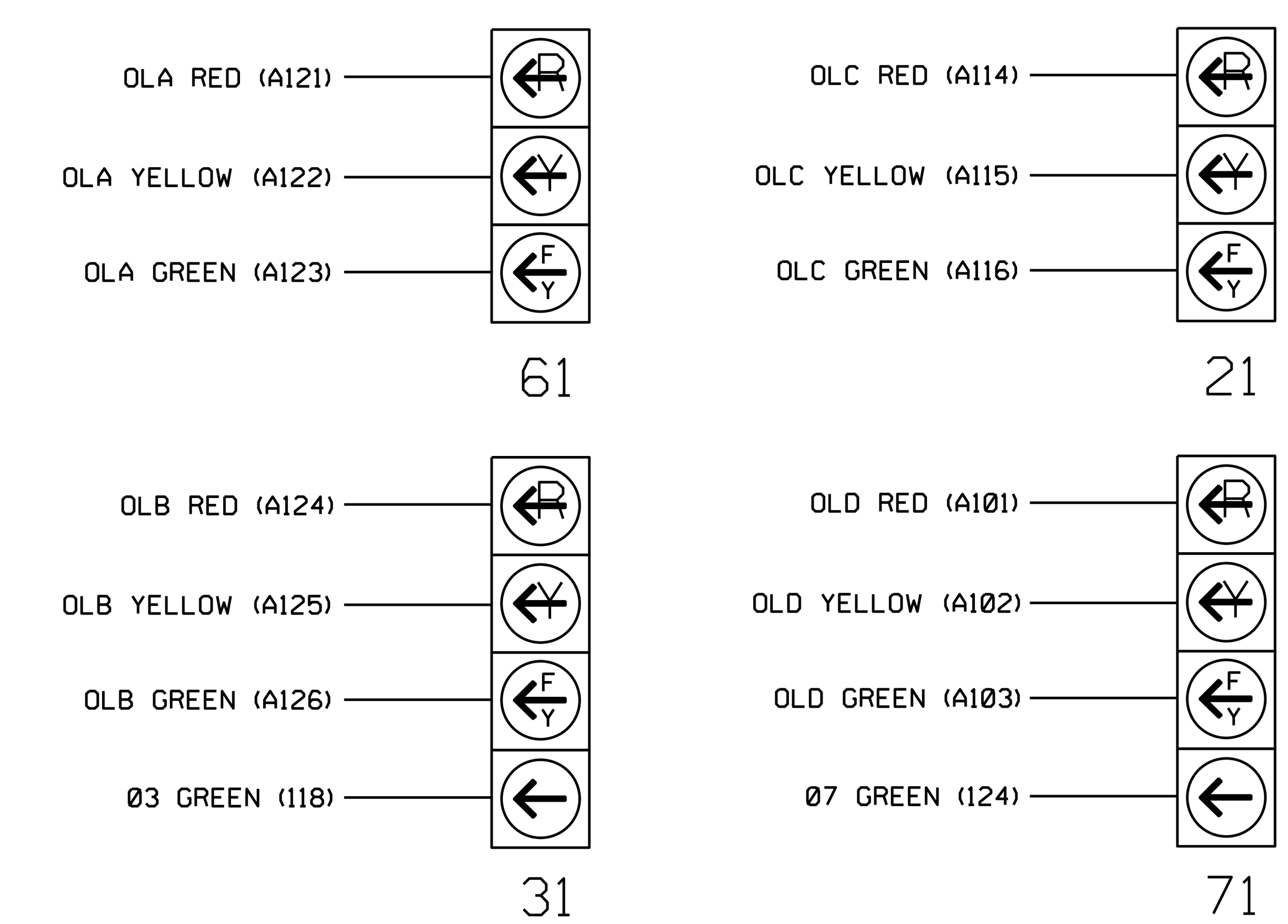
EQUIPMENT INFORMATION

CONTROLLER..............2070
CABINET.................332 W/ AUX
SOFTWARE................TRAFFICWARE APOGEE
CABINET MOUNT...........BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED......S2,S3,S4,S5,S6,S8,S9,S10,S11, S12,AUX S1,AUX S1,AUX S4,AUX S5
PHASES USED.............2,2PED,3*,4,4PED,6,6PED,7*,8,8PED
OVERLAP A...............**
OVERLAP B...............**
OVERLAP C...............**
OVERLAP D...............**

* Phase used during Preemption only.
** See Overlap Programming Detail Sheet 2.

FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	Ø2 2A	Ø2 2C	SLOT	SLOT	Ø4/7 4A	SLOT	SLOT	SLOT	SLOT	SLOT	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
	L	EMPTY	Ø2 2B	NOT USED	EMPTY	EMPTY	Ø4 4B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	Ø4 PED DC ISOLATOR	Ø8 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J"	U	SLOT	Ø6 6A	Ø6 6C	SLOT	SLOT	Ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	PRE1 AC ISOLATOR
	L	EMPTY	Ø6 6B	NOT USED	EMPTY	EMPTY	Ø8 8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	NOT USED

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

FS = FLASH SENSE
ST = STOP TIME

NOTE: Loop 4A will call phase 7 during Preemption only by way of special logic programming. See sheet 5 for programming details.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	CALL PHASE	SWITCH	DELAY TIME	EXTEND TIME	CALL	EXTEND	ADDED INIT.
2A	TB2-5,6	I2U	39	2	2				X	X	X
2B	TB2-7,8	I2L	43	3	2				X	X	X
2C	TB2-9,10	I3U	63	4	2				X	X	
4A	TB4-9,10	I6U	41	8	4/7		3		X	X	
4B	TB4-11,12	I6L	45	9	4		10		X	X	
6A	TB3-5,6	J2U	40	16	6				X	X	X
6B	TB3-7,8	J2L	44	17	6				X	X	X
6C	TB3-9,10	J3U	64	18	6				X	X	
8A	TB5-9,10	J6U	42	22	8				X	X	
8B	TB5-11,12	J6L	46	23	8		10		X	X	
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED						
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED						
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED						
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED						

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

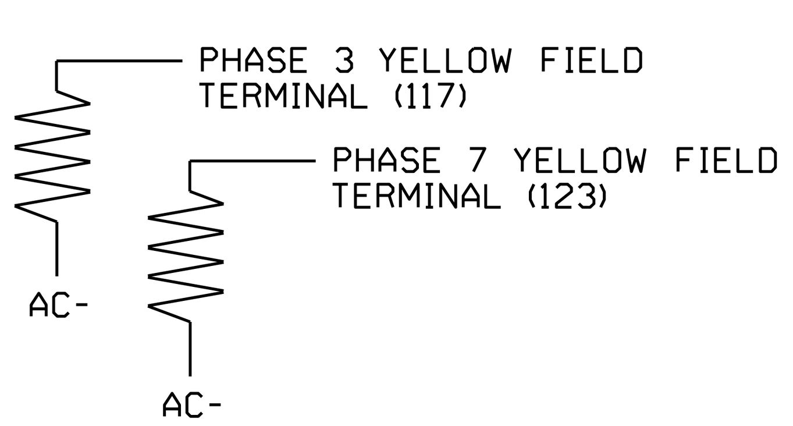
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0424
DESIGNED: November 2023
SEALED: 1/17/2024
REVISED: N/A

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)



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 3163 (E. Market Street)
at
Sykes Ave. & Lowdermilk Street

Division 7 Guilford County Greensboro

Prepared in the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

PLAN DATE: January 2024	REVIEWED BY:
PREPARED BY: James Peterson	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by:
Ryan W. Hough
430320FAA2654C3...
01/19/2024
DATE

SIG. INVENTORY NO. 07-0424

OVERLAP PROGRAMMING DETAIL FOR OVERLAPS A, B, C, and D*

(program controller as shown below)

*NOTE FOR ALL OVERLAPS: Use Default values for Overlap 'PLUS' programming details.

FROM MAIN MENU PRESS "1" CONTROLLER AND THEN "5" OVERLAPS

Overlaps
1.General Parms
2.Program
3.Status

General Overlap Parameters
Lock Inhibit OFF
Confl Lock Enable OFF
Parent P Clrncs ON
Extra Included Phases OFF
InhibitLockInterval ALWAYS

PRESS "ESC"

Overlaps
1.General Parms
2.Program
3.Status

Enter Overlap # 1
then press Enter

Overlap A-1
1.Program Parms
2.Confl Prog+
3.Program Parms+

Ovrlp A-1 Ps.....................
Included Ps 2 0 0 0 0 0 0 0
Modifier Ps 0 0 0 0 0 0 0 0
Type:NORMAL Grn: 0 Yel: 3.5 Red: 1.5

PRESS "ESC"

Overlap A-1
1.Program Parms
2.Confl Prog+
3.Program Parms+

Ovrlp A-1
LeadGreen OFF Transit 0
GreenExtInh 2 0 0 0 0 0 0 0

PRESS "ESC" TWICE

Enter Overlap # 2
then press Enter

Overlap B-2
1.Program Parms
2.Confl Prog+
3.Program Parms+

Notice type FYA-4 →

Ovrlp B-2 Ps.....................
Included Ps 3 0 0 0 0 0 0 0
Modifier Ps 4 0 0 0 0 0 0 0
Type:FYA-4 Grn: 0 Yel: 3.5 Red: 1.5

PRESS "ESC" TWICE

Enter Overlap # 3
then press Enter

Overlap C-3
1.Program Parms
2.Confl Prog+
3.Program Parms+

Ovrlp C-3 Ps.....................
Included Ps 6 0 0 0 0 0 0 0
Modifier Ps 0 0 0 0 0 0 0 0
Type:NORMAL Grn: 0 Yel: 3.5 Red: 1.5

PRESS "ESC"

Overlap C-3
1.Program Parms
2.Confl Prog+
3.Program Parms+

Ovrlp C-3
LeadGreen OFF Transit 0
GreenExtInh 6 0 0 0 0 0 0 0

PRESS "ESC" TWICE

Enter Overlap # 4
then press Enter

Overlap D-4
1.Program Parms
2.Confl Prog+
3.Program Parms+

Notice type FYA-4 →

Ovrlp D-4 Ps.....................
Included Ps 7 0 0 0 0 0 0 0
Modifier Ps 8 0 0 0 0 0 0 0
Type:FYA-4 Grn: 0 Yel: 3.5 Red: 1.5

END OF OVERLAP PROGRAMMING DETAIL

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0424
DESIGNED: November 2023
SEALED: 1/17/2024
REVISED: N/A

Electrical Detail - Sheet 2 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 3163 (E. Market Street)
at
Sykes Ave. & Lowdermilk Street

Division 7 Guilford County Greensboro

PLAN DATE: January 2024 | REVIEWED BY:
PREPARED BY: James Peterson | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared In the Offices of: ITS & Signals Management Section, Transportation Mobility and Safety Division, State of North Carolina Department of Transportation
750 N.Greenfield Pkwy,Garner,NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 430320FAA2654C3... 01/19/2024 DATE

SIG. INVENTORY NO. 07-0424

19-JAN-2024 08:15
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Peterson*070424_sm_ele_20210301.dgn
JTPeterson

4-SECTION PPLT FYA OUTPUT PROGRAMMING DETAIL

(program controller as shown below)

1. Before proceeding with output programming, be sure to switch the "RUN ENABLE STATUS" to "OFF". The "RUN ENABLE STATUS" setting is located from Main Menu, key strokes 1-7.

2. The Flashing Yellow Arrow in a 4-section PPLT FYA head is controlled by a normally unused PED Yellow output. This programming takes a specific PED Yellow output and remaps it to the appropriate Overlap Green output.

FROM MAIN MENU, KEYSTROKES 1-8

Channel & I/O
1.Chan 1-16 | 4.Chan+ 1-16 | 7.IO Logic
2.chan 17-24 | 5.chan+ 17-24 | 8.IO Viewer
3.Chan Parms | [6.IO Parms] | 9.IO UserMap

SELECT USER MODE →

I/O Parameters
C1-C11-ABC IO Mode: USER
D Conn Mapping: NONE
T&F Biu Map: DEFAULT
Invert Rail Inputs: OFF
EVP Ped Confirm: OFF
Peer-Peer Timeout: 0

PRESS "ESC"

Channel & I/O
1.Chan 1-16 | 4.Chan+ 1-16 | 7.IO Logic
2.chan 17-24 | 5.chan+ 17-24 | 8.IO Viewer
3.Chan Parms | 6.IO Parms | [9.IO UserMap]

User I/O Maps
1. Inputs
2. Outputs
[3. Init Map]

SELECT MODE 5 →

Initialize User I/O Maps
Init ABC with: VIRCTL
Init D with: NONE
Init 2A with: MODE 5
Init TF BIUs with: NONE

PRESS "ESC"

User I/O Maps
1. Inputs
[2. Outputs]
3. Init Map

User Output Maps
1.NEMA A | 4.NEMA D
2.NEMA B | [5.FIO 2A]
3.NEMA C | | 9.TS2 IO

PRESS "+" KEY TWICE

Pin	Fcn	Description	Pin	Fcn	Description
4-5	54	Ch6 Green	-4-6	5	Ch5 Red
4-7	29	Ch5 Yellow	4-8	53	Ch5 Green
5-1	37	Ch13 Yellow	5-2	39	Ch15 Yellow
5-3	0	Unused	5-4	0	Unused
5-5	115	Not Used	5-6	124	LdSwtchFlsh
5-7	115	Not Used	5-8	114	Watchdog
6-1	115	Not Used	+6-2	115	Not Used

Programming notes:

Pin	Default Fcn	Default Description	Change To: Fcn	Change To: Description
5-3	38	Ch14 Yellow	0	Unused
5-4	40	Ch16 Yellow	0	Unused

PRESS "+" KEY ONCE

Pin	Fcn	Description	Pin	Fcn	Description
6-3	12	Ch12 Red	-6-4	36	Ch12 Yellow
6-5	40	Ch16 Yellow	6-6	11	Ch11 Red
6-7	35	Ch11 Yellow	6-8	59	Ch11 Green
7-1	115	Not Used	7-2	115	Not Used
7-3	10	Ch10 Red	7-4	34	Ch10 Yellow
7-5	38	Ch14 Yellow	7-6	9	Ch9 Red
7-7	33	Ch9 Yellow	+7-8	57	Ch9 Green

Programming notes:

Pin	Default Fcn	Default Description	Change To: Fcn	Change To: Description
7-5	58	Ch10 Green	38	Ch14 Yellow
6-5	60	Ch12 Green	40	Ch16 Yellow

OUTPUT PROGRAMMING COMPLETE

Pin 5-3 (C1 pin 37) = Load Switch S6-Y
Pin 5-4 (C1 pin 38) = Load Switch S12-Y
Pin 7-5 (C1 pin 96) = Load Switch AUX S2-G
Pin 6-5 (C1 pin 87) = Load Switch AUX S5-G

! Press the "*" key to return to Main Menu. Now go back to "RUN-ENABLE STATUS" and switch to "ON".

NOTE

I/O re-programming is necessary for proper FYA operation. See Channel & I/O Programming Detail For FYA Operation on this sheet.

CHANNEL & I/O PROGRAMMING DETAIL FOR FYA OPERATION

(program controller as shown below)

This programming takes the output that drives a Flashing Yellow Arrow and makes it flash. It also specifies which overlap is to be overridden for the FYA to display properly.

FROM MAIN MENU, KEYSTROKES 1-8

Channel & I/O
1.Chan 1-16 | [4.Chan+ 1-16] | 7.IO Logic
2.chan 17-24 | 5.chan+ 17-24 | 8.IO Viewer
3.Chan Parms | 6.IO Parms | 9.IO UserMap

PRESS THE RIGHT ARROW KEY UNTIL THE SCREEN AT RIGHT APPEARS

Chan.	1	2	3	4	5	6	7	8 >
Flash Red	.	.	.	.	.	.	.	.
Flash Yel	.	.	.	.	.	.	.	.
Flash Grn	.	.	.	.	.	.	.	.
Inhibit Red Flash In Preempt	.	.	.	.	.	.	.	.
Olap Ovrd	0	0	0	0	0	0	0	0

Chan.	9	10	11	12	13	14	15	16
Flash Red	.	.	.	.	.	.	.	.
Flash Yel	.	.	.	.	.	X	.	X
Flash Grn	X	.	X	.	.	.	.	.
Inhibit Red Flash In Preempt	.	.	.	.	.	.	.	.
Olap Ovrd	0	0	0	0	0	2	0	4

Program the controller as shown above.

CHANNEL & I/O PROGRAMMING COMPLETE

NOTE

Output re-mapping is necessary for proper FYA operation. See the 4-Section PPLT FYA Output Programming Detail on this sheet.

GREEN DELAY PROGRAMMING DETAIL FOR LEADING PEDESTRIAN INTERVAL OPERATION

(program controller as shown below)

FROM MAIN MENU, KEYSTROKES 1-1

Channel & I/O
1.Times | 4.Ring,Start,Concur | 7.Times+
2.Options | 5.Call,Inh,Redirect | 8.Copy
[3.Options+] | 6.Alt Progs+ | 9.AdvWarn

PRESS "+" KEY ONCE

Options+	P..1	2	3	4	5	6	7	8 >
Ped Delay -	.	.	.	.	.	.	.	.
Red Rest On Gap	.	.	.	.	.	.	.	.
Conflicting P	0	0	0	0	0	0	0	0
Grn/Ped Delay	0	3	0	3	0	3	0	3
Omit Yel, Yel P	0	0	0	0	0	0	0	0
Ped Out/Ovrlp P	0	0	0	0	0	0	0	0
StartYel,Next P +	0	0	0	0	0	0	0	0

CHANNEL & I/O PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0424
DESIGNED: November 2023
SEALED: 1/17/2024
REVISED: N/A

Electrical Detail - Sheet 3 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared In the Offices of: Transportation Mobility and Safety Division, ITS & Signals Management Section, State of North Carolina Department of Transportation
750 N.Greenfield Pkwy,Garner,NC 27529

SR 3163 (E. Market Street)
at
Sykes Ave. & Lowdermilk Street

Division 7 | Guilford County | Greensboro
PLAN DATE: January 2024 | REVIEWED BY:
PREPARED BY: James Peterson | REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 430320EAA2654C3
DATE 01/19/2024

SIG. INVENTORY NO. 07-0424

18-JAN-2024 12:21
S:*ITS&SU*ITS Signals*Workgroups*Sig Man*Peterson*070424_sm_ele_20210301.dgn
JTPeterson

RAILROAD PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS "3" PREEMPTS

```
Preemption Menu
[1.HiPriority]  4.LowPriority
2.Events
3.Sequences
```

ENTER PREEMPT #1

```
# 1          Preemption
[1.Times]     4.Times+
2.Phases      5.Overlaps+    8.AdvTimes
3.Options     6.Options+     9.Init'Dwell
```

```
# 1  Times   :   Begin     :    Other
  Delay    0   MinGrn    1   Track Grn  28
MinDura   10   MinWlk    1   Min Dwell   0
MaxPres    0   PedClr    5
```

PRESS "ESC"

```
# 1          Preemption
1.Times       4.Times+
[2.Phases]    5.Overlaps+    8.AdvTimes
3.Options     6.Options+     9.Init'Dwell
```

```
# 1       ---- Preempt Phases ----
Track Veh        3  8  0  0
DwellCyc Veh     2  6  7  0  0  0  0  0
DwellCyc(more)   0  0  0  0
DwellCyc (Ped)   0  0  0  0  0  0  0  0
Exit             4  8  0  0
```

PRESS "ESC"

```
# 1          Preemption
1.Times       4.Times+
2.Phases      5.Overlaps+    8.AdvTimes
[3.Options]   6.Options+     9.Init'Dwell
```

```
# 1        Preempt Options
                Lock input ON
        Override Auto Flash ON
     Override higher # preempt ON
             Flash in dwell OFF
          Link to preempt # 0
```

PRESS "ESC"

```
# 1          Preemption
1.Times      [4.Times+]
2.Phases      5.Overlaps+    8.AdvTimes
3.Options     6.Options+     9.Init'Dwell
```

```
# 1 Preempt Times+    --- Exit --
                      Ped Clr    0
  Extend Dwell   0        Yel  0.0
    Return Max   0        Red  0.0
```

PRESS "ESC"

```
# 1          Preemption
1.Times       4.Times+
2.Phases     [5.Overlaps+]   8.AdvTimes
3.Options     6.Options+     9.Init'Dwell
```

```
# 1           -- Preempt Overlaps+ --
      Track    2  4  0  0  0  0  0  0
      (more)   0  0  0  0
    DwellCyc   3  4  2  0  0  0  0  0
      (more)   0  0  0  0
```

PRESS "ESC"

```
# 1          Preemption
1.Times       4.Times+
2.Phases      5.Overlaps+    8.AdvTimes
3.Options    [6.Options+]    9.Init'Dwell
```

```
# 1      Preempt Options +
Enable ON                 Pattern   0
  Type RAIL      Skip Track if Overide OFF
Output TS-2              Coord+Preempt OFF
                        Volt Mon Flash OFF
                       Return Max/Min  MAX
```

PRESS "ESC"

```
# 1          Preemption
1.Times       4.Times+
2.Phases      5.Overlaps+   [8.AdvTimes]
3.Options     6.Options+     9.Init'Dwell
```

```
# 1  AdvTimes
  AllRedB4Prmpt OFF     EnterYelChg  4.9
  ResetExtDwell OFF     EnterRedClr  2.9
ReservicePrempt OFF     TrackYelChg  3.6
       EndDwell OFF     TrackRedClr  2.9
  DynExitThresh    0         1111111
 DsblDwellCalls OFF   12345678   90123456
 +  ExitVehCall       ........   ........
```

PRESS "ESC"

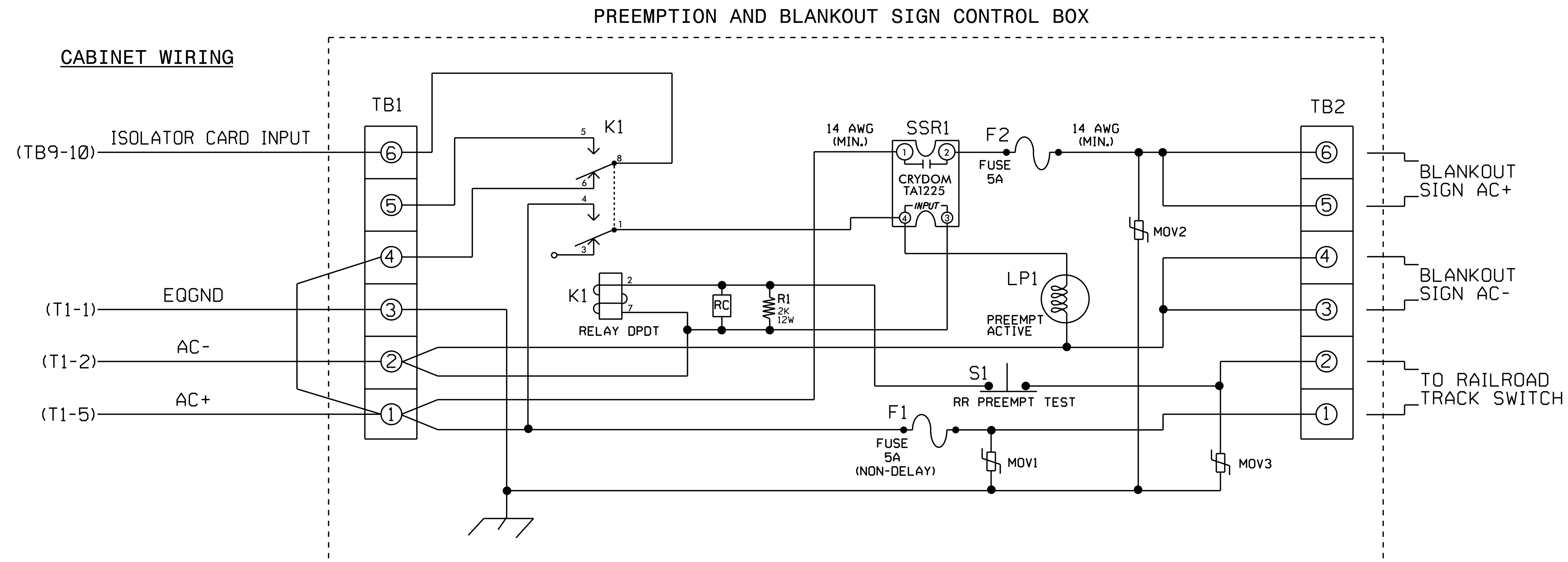
```
# 1          Preemption
1.Times       4.Times+
2.Phases      5.Overlaps+    8.AdvTimes
3.Options     6.Options+    [9.Init'Dwell]
```

```
# 1        --   Initial Dwell    --
Phases     0  0  0  0
Peds       0  0  0  0
Overlaps   0  0  0  0  0  0  0  0
  (more)   0  0  0  0  0  0  0  0
```

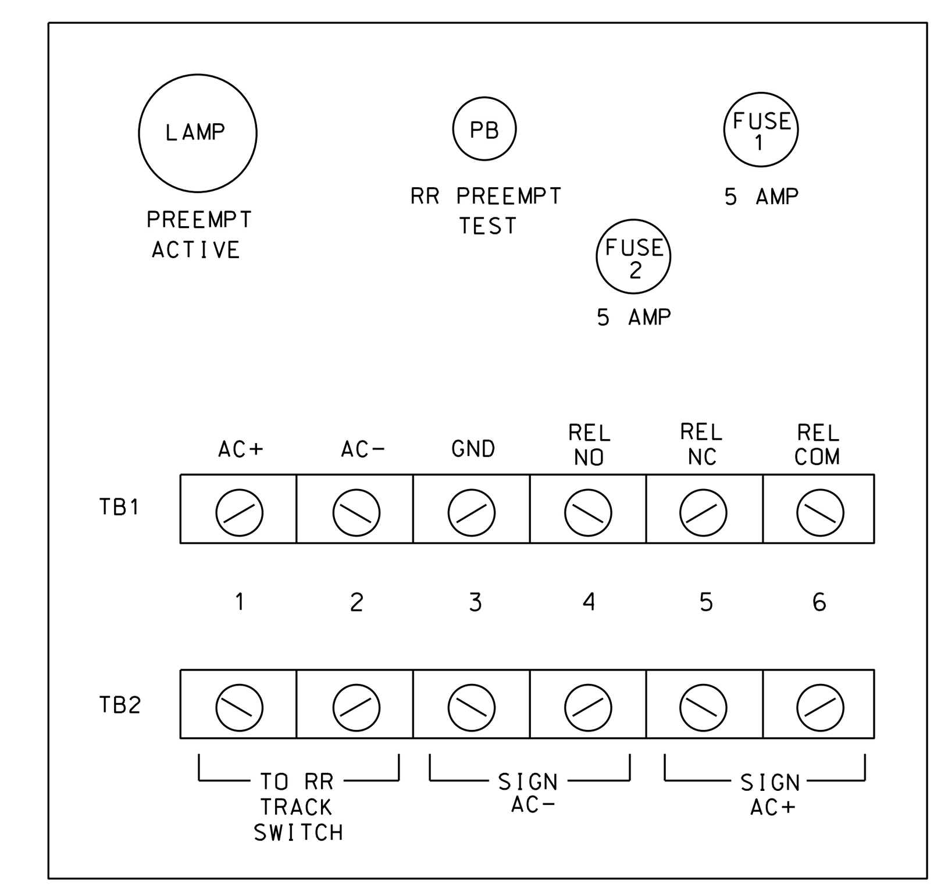
PROGRAMMING COMPLETE

RAILROAD PREEMPTION WIRING DETAIL

(wire as shown below)



FRONT VIEW



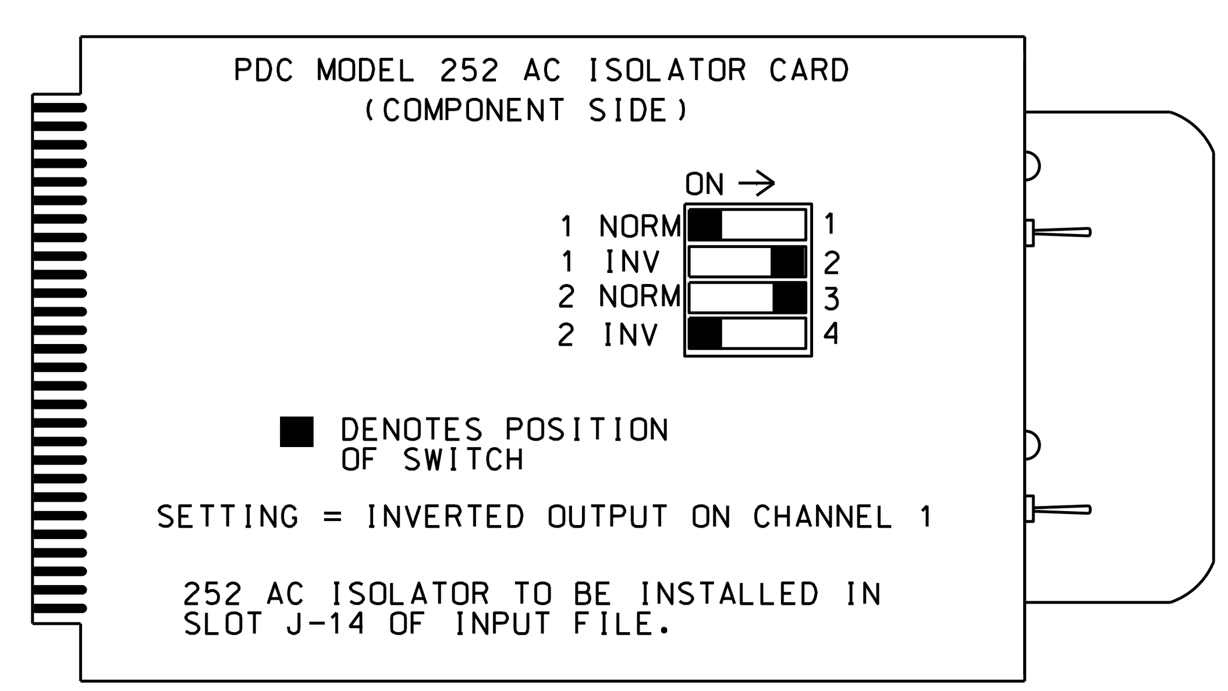
NOTES

1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay K1 is a DPDT with 120VAC coil with octal base.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
5. IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0424
DESIGNED: November 2023
SEALED: 1/17/2024
REVISED: N/A

PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)



NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

Electrical Detail - Sheet 4 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 3163 (E. Market Street)
at
Sykes Ave. & Lowdermilk Street

Division 7 — Guilford County — Greensboro

PLAN DATE: January 2024 — REVIEWED BY:
PREPARED BY: James Peterson — REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division — ITS & Signals Management Section
750 N.Greenfield Pkwy,Garner,NC 27529

SIG. INVENTORY NO. 07-0424

I/O LOGIC PROGRAMMING DETAIL FOR VEHICLE LOOP 4A TO CALL TWO PHASES

This logic will allow loop 4A to call vehicle phase 7 when Preempt 1 is active.

(program controller as shown below)

FROM MAIN MENU, KEYSTROKES 1-8

```
             Channel & I/O
1.Chan  1-16  4.Chan+  1-16 [7.IO Logic]
2.chan 17-24  5.chan+ 17-24  8.IO Viewer
3.Chan Parms  6.IO Parms     9.IO UserMap
```

Result		Src.Fcn		Op	Src.Fcn		Op	Src.Fcn		>
I 21	=	OI	8	&	OI	198		OI	0	
I 0	=	OI	0		OI	0		OI	0	
I 0	=	OI	0		OI	0		OI	0	
I 0	=	OI	0		OI	0		OI	0	
I 0	=	OI	0		OI	0		OI	0	
I 0	=	OI	0		OI	0		OI	0	
I 0	=	OI	0		OI	0		OI	0	

I/O REFERENCE SCHEDULE

INPUT FUNCTION 8 = Vehicle 4 Call
INPUT FUNCTION 21 = Vehicle 7 Call
INPUT FUNCTION 198 = Preempt 1 In

STARTUP PHASES PROGRAMMING DETAIL

(program controller as shown below)

This signal omits phases 3 and 7 during normal operation and serves them only during preemption. In order to make sure phases 3 and 7 are not served during normal phasing, the controller startup phases must be specified by the user. This is accomplished as shown in the programming steps below.

STEP 1

From the Main Menu, keystrokes 1-2-1 (Unit Parameters). Press the down arrow key until the "StartupCalls" is displayed on the left of the display. Change the value to "UsePrg" and press the "ent" key. The controller is now ready for the user to specify exactly which phases should be called for service at startup (see Step 2).

STEP 2

From the Main Menu, keystrokes 1-1-3 (Phase Options+). Press the down arrow key until "StartupVehCall" and "StartupPedCall" are displayed on the left of the display. Select phases 2, 4, 6, and 8 for "StartupVehCall" and "StartupPedCall". The controller will now serve these vehicle and ped phases exclusively at startup.

PHASE 4 INHIBIT PROGRAMMING DETAIL

(program controller as shown below)

This programming prevents the controller from serving phase 4 and 7 simultaneously in the event preemption ends while phase 7 is being served.

From Main Menu press '1' (Controller), then '1' (Phases), then '5' (CAll, Inh, Redirect).

P	..Call.Ps..				Inhibit Ps 12345678	1111111 90123456	>
1	0	0	0	0	....	....	
2	0	0	0	0	....	....	
3	0	0	0	0	....	....	
4	0	0	0	0	....	....	
5	0	0	0	0	....	....	
6	0	0	0	0	....	....	
7	0	0	0	0	...X....	....	
8	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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0424
DESIGNED: November 2023
SEALED: 1/17/2024
REVISED: N/A

Electrical Detail - Sheet 5 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 3163 (E. Market Street)
at
Sykes Ave. & Lowdermilk Street

Division 7 Guilford County Greensboro

PLAN DATE: January 2024 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
ITS & Signals Management Section, Transportation Mobility and Safety Division, State of North Carolina Department of Transportation
750 N.Greenfield Pkwy,Garner,NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 430320EAA2654C3
01/19/2024 DATE

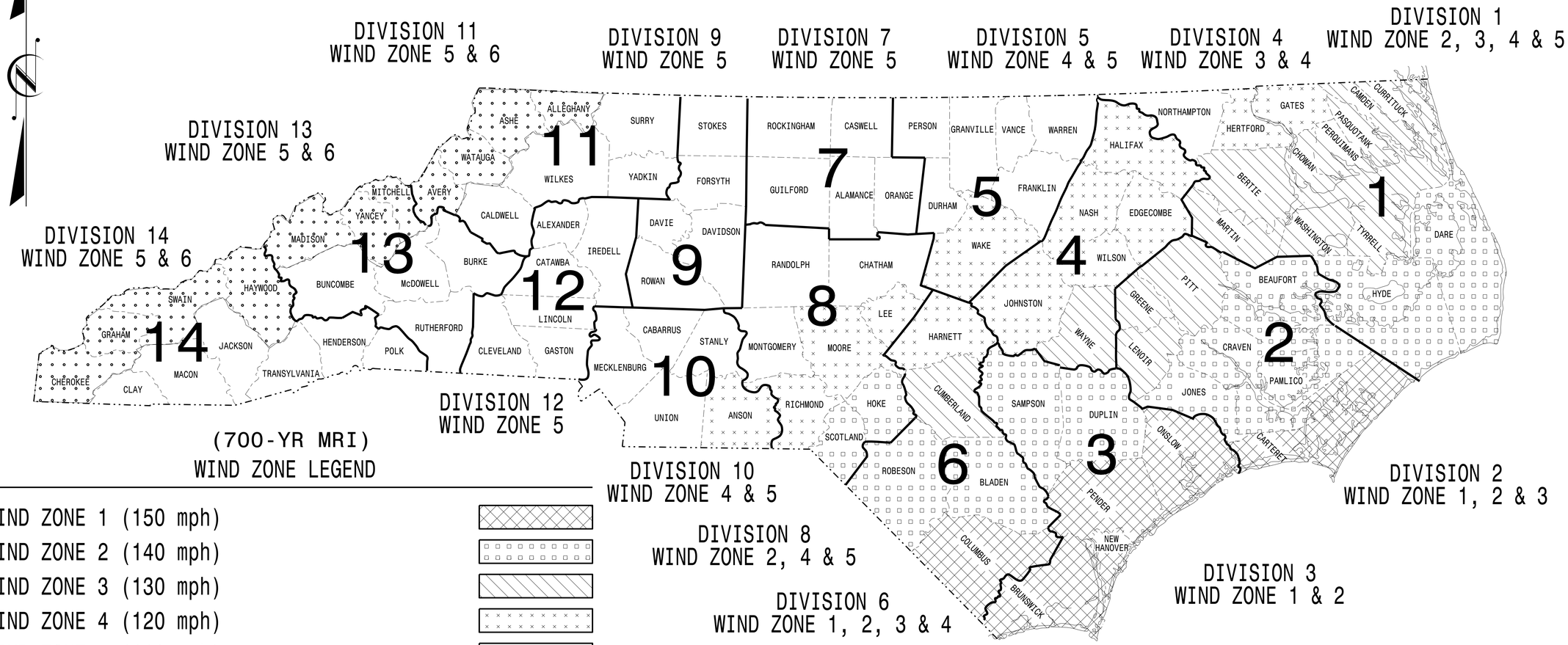
SIG. INVENTORY NO. 07-0424

PROJECT I.D.NO.	SHEET NO.
Y-4807B	Sig.M1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)

NCDOT METAL POLE STANDARDS



(700-YR MRI)
WIND ZONE LEGEND

WIND ZONE 1 (150 mph)	
WIND ZONE 2 (140 mph)	
WIND ZONE 3 (130 mph)	
WIND ZONE 4 (120 mph)	
WIND ZONE 5 (110 mph)	
WIND ZONE 6 (135 mph) Special Wind Zone	

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

Prepared in the Offices of:

Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.
Garner, NC 27529

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

AASHTO LRFD

Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

INDEX OF PLANS

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

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

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

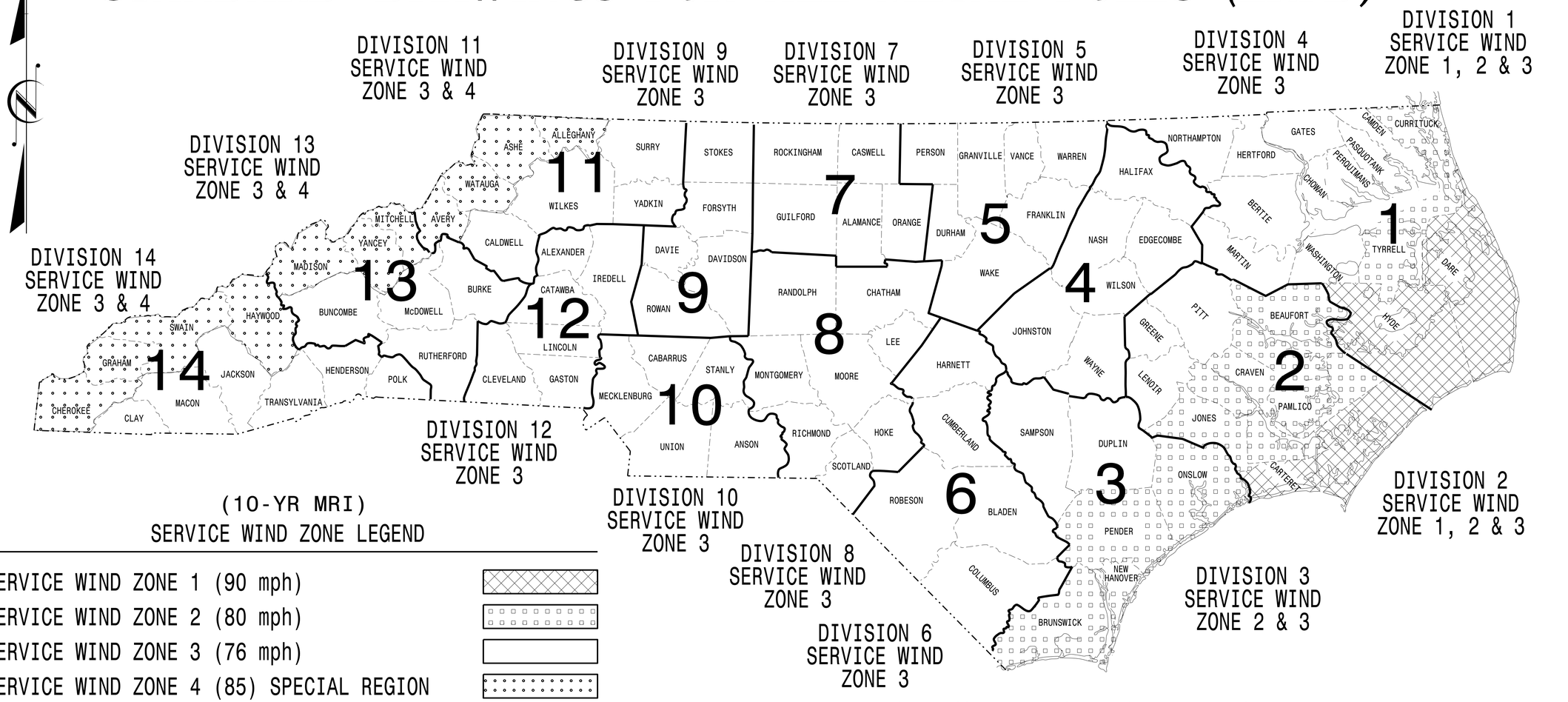
DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

PROJECT I.D.NO.	SHEET NO.
Y-4807B	Sig.M1B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)

NCDOT METAL POLE STANDARDS



(10-YR MRI)
SERVICE WIND ZONE LEGEND

SERVICE WIND ZONE 1 (90 mph)	
SERVICE WIND ZONE 2 (80 mph)	
SERVICE WIND ZONE 3 (76 mph)	
SERVICE WIND ZONE 4 (85) SPECIAL REGION	

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

Prepared in the Offices of:

Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.
Garner, NC 27529

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

AASHTO LRFD

Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

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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

NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION – TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS UNIT

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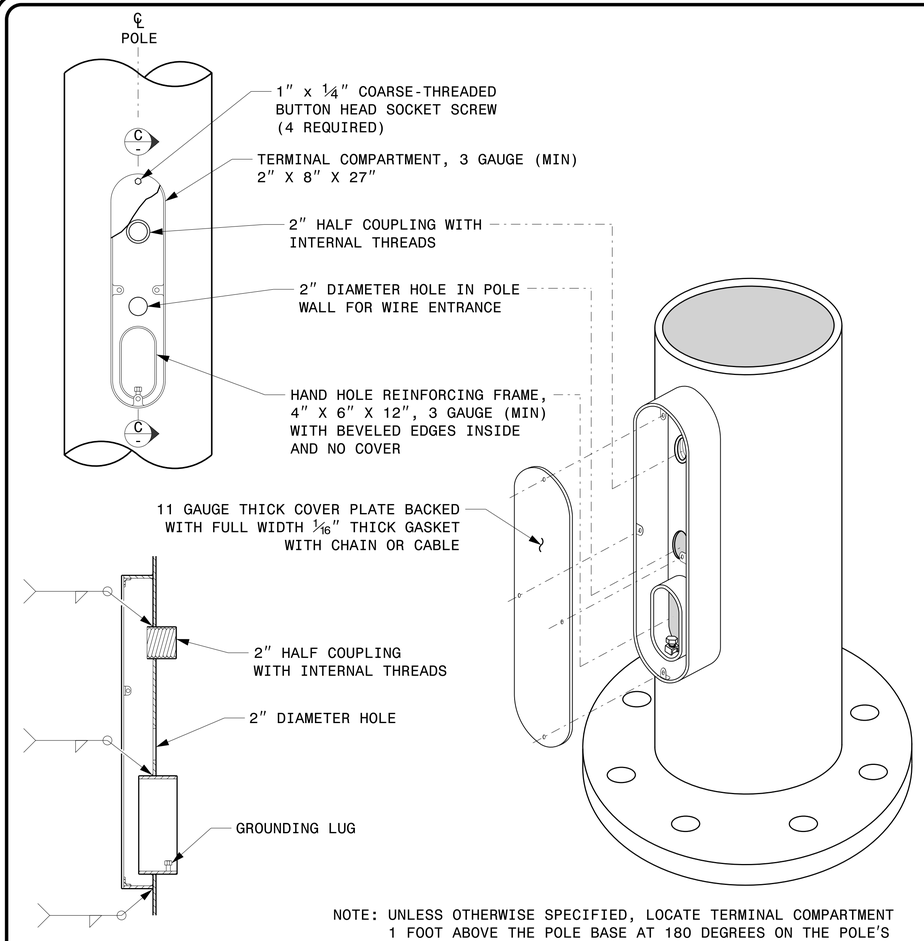
K. DURIGON, P.E. – ITS AND SIGNALS STRUCTURAL ENGINEER

B. WALKER, P.E. – ITS AND SIGNALS STRUCTURAL ENGINEER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE



SECTION C-C

NOTE: UNLESS OTHERWISE SPECIFIED, LOCATE TERMINAL COMPARTMENT 1 FOOT ABOVE THE POLE BASE AT 180 DEGREES ON THE POLE'S RADIAL INDEX.

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)

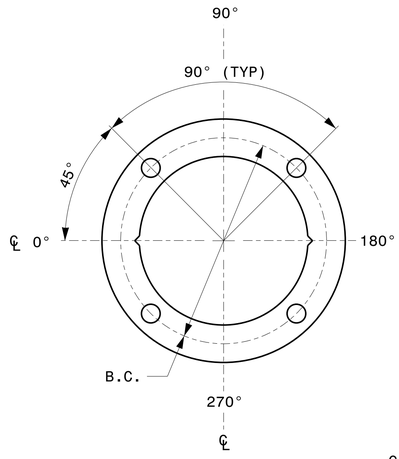
MFG _____ MFG. DATE: MM/YY
SECTION D/T/L/Y ----/----/----/----
NCDOT SIG. INV. NO. _ _ _ _ _ _ _ _
NCDOT POLE NO. _ _ _ _ _ _ _ _

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

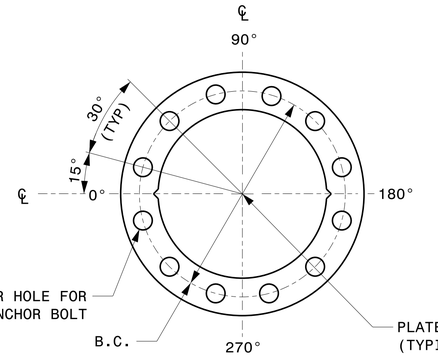
NOTES:

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.

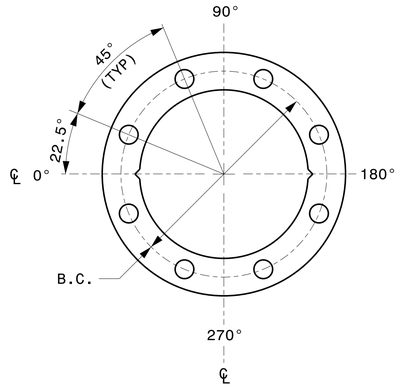
IDENTIFICATION TAG DETAILS



4 BOLT PATTERN



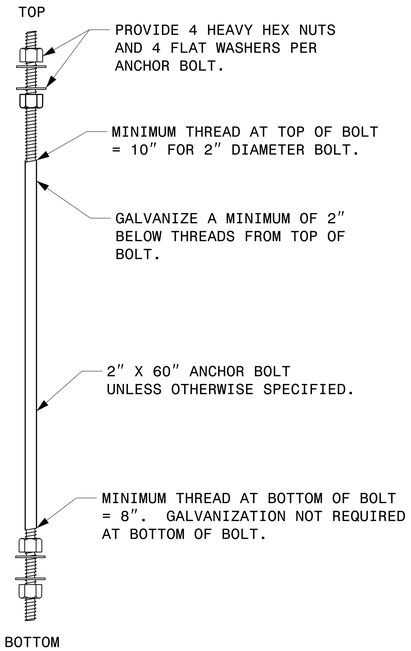
12 BOLT PATTERN



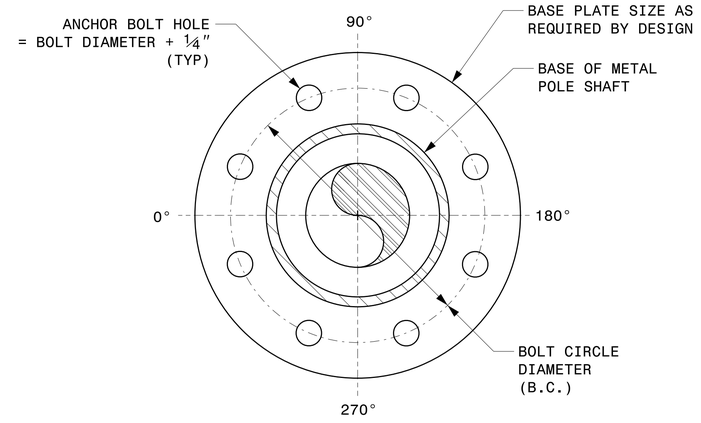
8 BOLT PATTERN

CONSTRUCT TEMPLATES AND PLATES FROM ¼″ (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

PROJECT I.D. NO.	SHEET NO.
Y-48078	Sig.M2

Fabrication Details – All Metal Poles

Prepared In the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

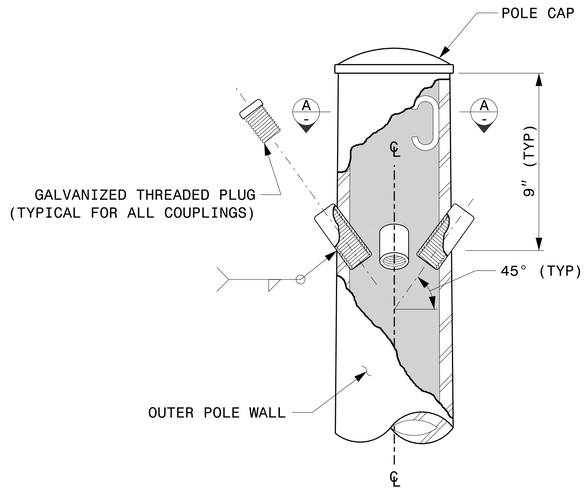
DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

03-OCT-2023 12:24
S:*TIS&SUM\TIS\Signal Design Section\Structures\Drawings\2024 Metal Pole Std Drawings for LRFD\2024 Sig-M2 Std. Fabrication Details-All Poles.dgn
kcdurigon

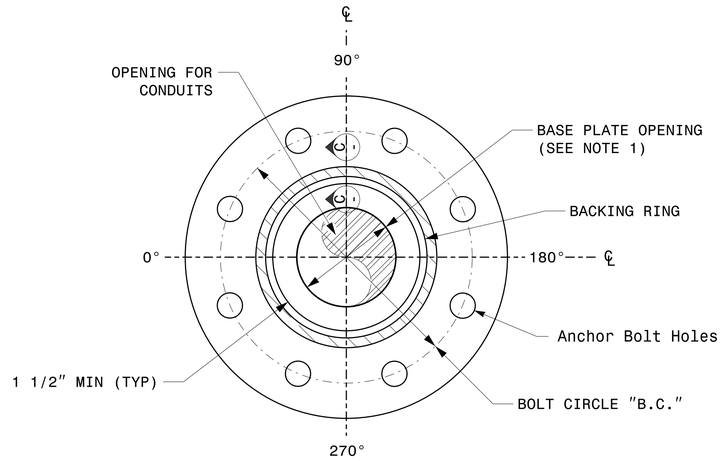
PROJECT I.D. NO.	SHEET NO.
Y-4807B	Sig.M3

NOTE:

1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".

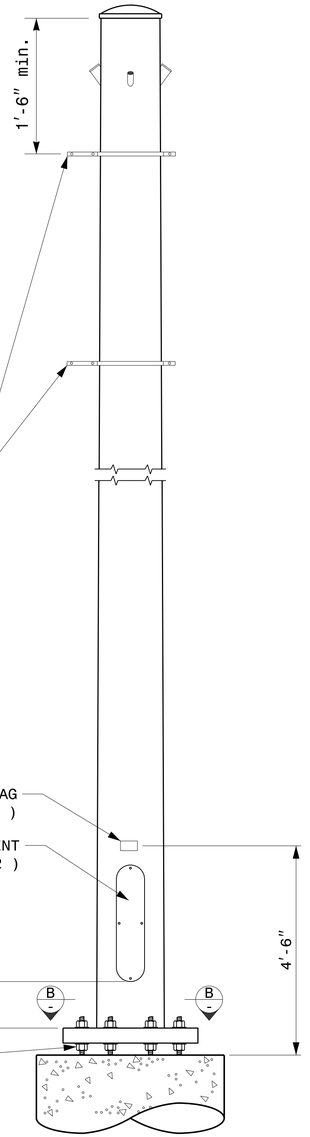


CABLE ENTRANCES AT TOP OF POLE

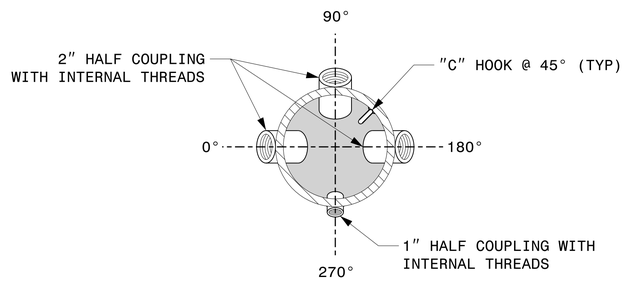


SECTION B-B

POLE BASE PLATE DETAILS
(8 AND 12 BOLT PATTERN)

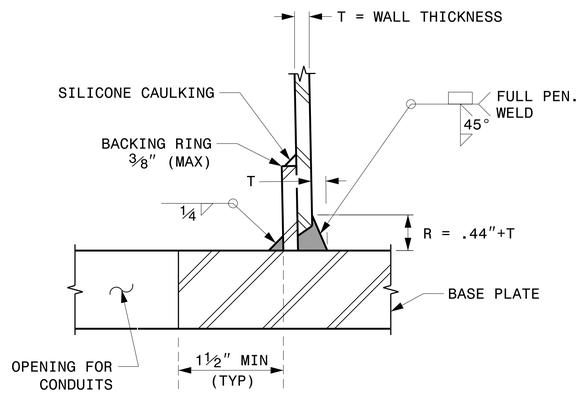


MONOTUBE STRAIN POLE



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

Prepared In the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE
0 NA
NONE

Typical Fabrication Details
For
Strain Poles

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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
036626
ENGINEER
KEVIN C. DURIGON

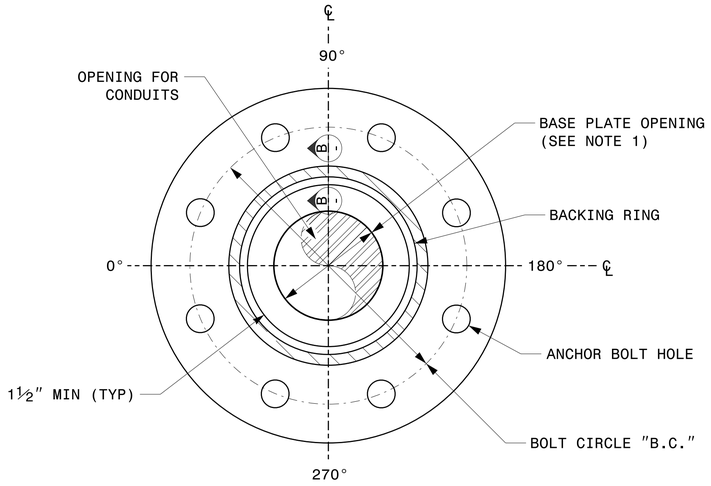
DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

Fabrication Details – Strain Poles

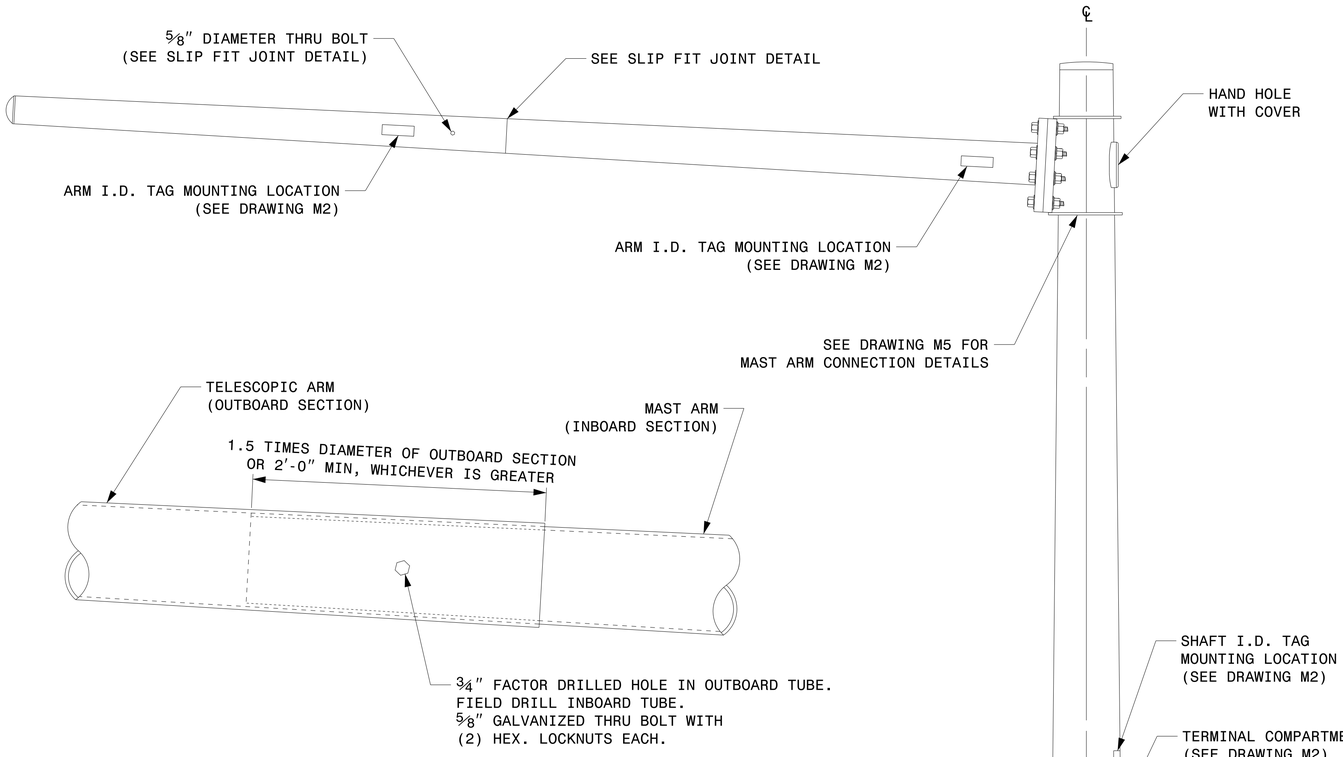
PROJECT I.D. NO.	SHEET NO.
Y-4807B	Sig.M4

NOTE:

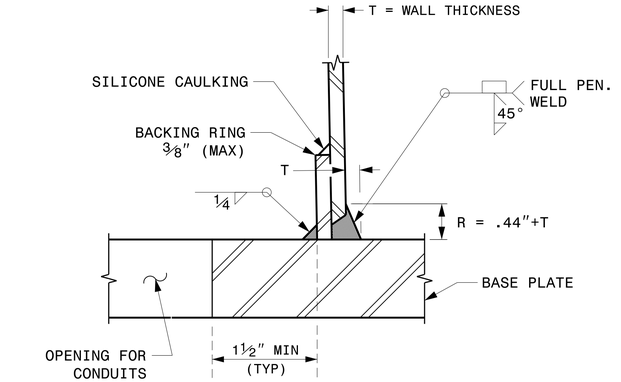
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".



SECTION A-A
POLE BASE PLATE DETAILS

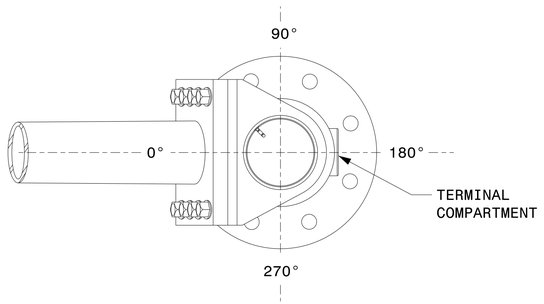


SLIP FIT JOINT DETAIL FOR MAST ARM



SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION GROOVE WELD DETAIL



MAST ARM RADIAL ORIENTATION

MAST ARM POLE

Fabrication Details – Mast Arm Poles

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
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

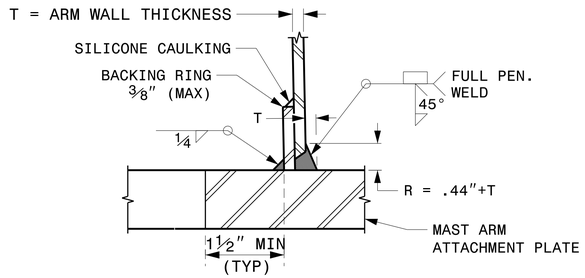
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

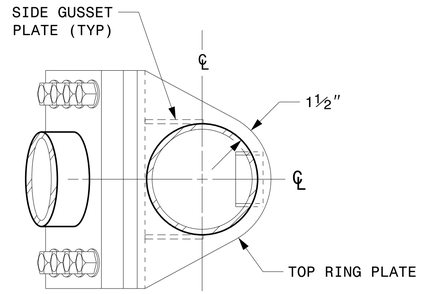
DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

WELDED RING STIFFENED MAST ARM CONNECTION

PROJECT I.D. NO.	SHEET NO.
Y-48078	Sig.M5



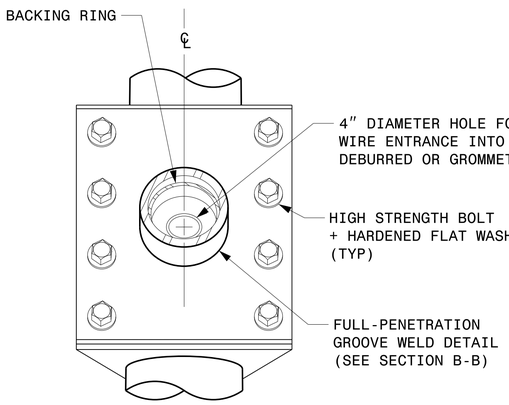
SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL



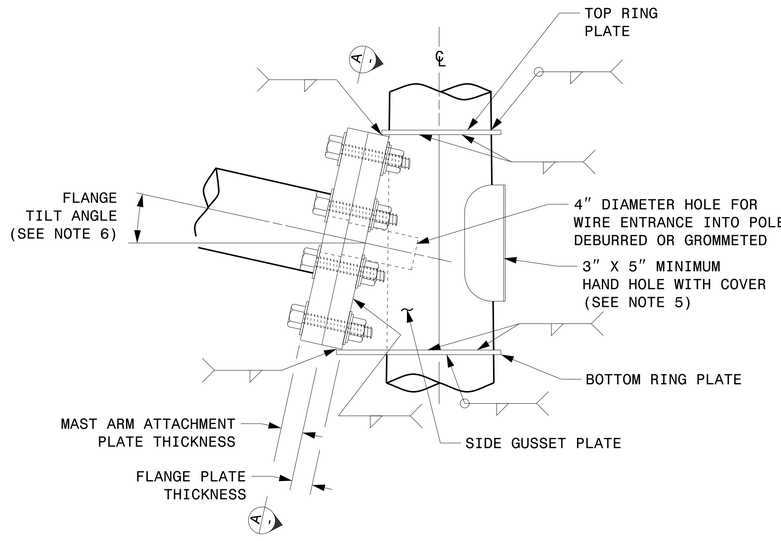
PLAN VIEW

NOTES:

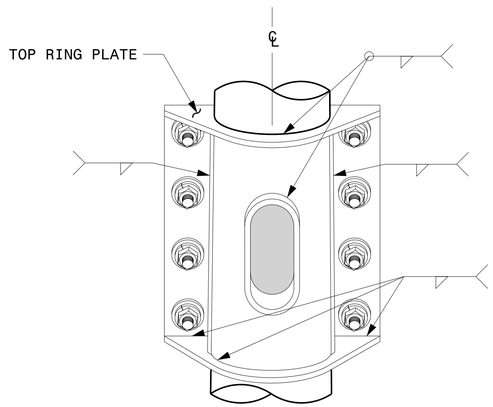
1. PROVIDE A PERMANENT MEANS OF IDENTIFICATION ABOVE THE MAST ARM TO INDICATE PROPER ATTACHMENT ORIENTATION OF THE MAST ARM.
2. DESIGNER WILL DETERMINE THE SIZE OF ALL STRUCTURAL COMPONENTS, PLATES, FASTENERS, AND WELDS SHOWN UNLESS THEY ARE ALREADY SPECIFIED.
3. FABRICATOR IS RESPONSIBLE FOR PROVIDING 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.



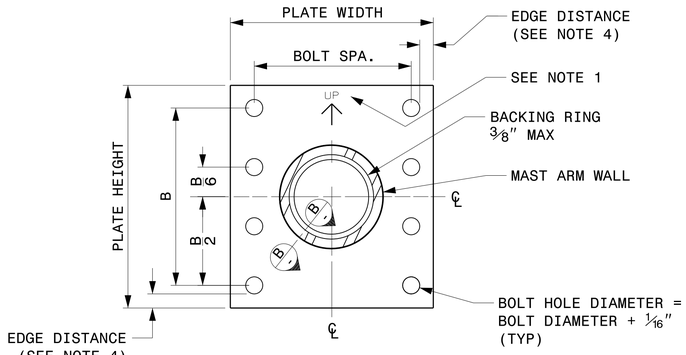
FRONT ELEVATION VIEW



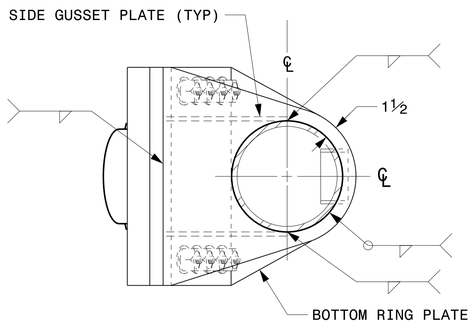
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A
MAST ARM ATTACHMENT PLATE



BOTTOM VIEW

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SCALE
0 NA
NONE

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

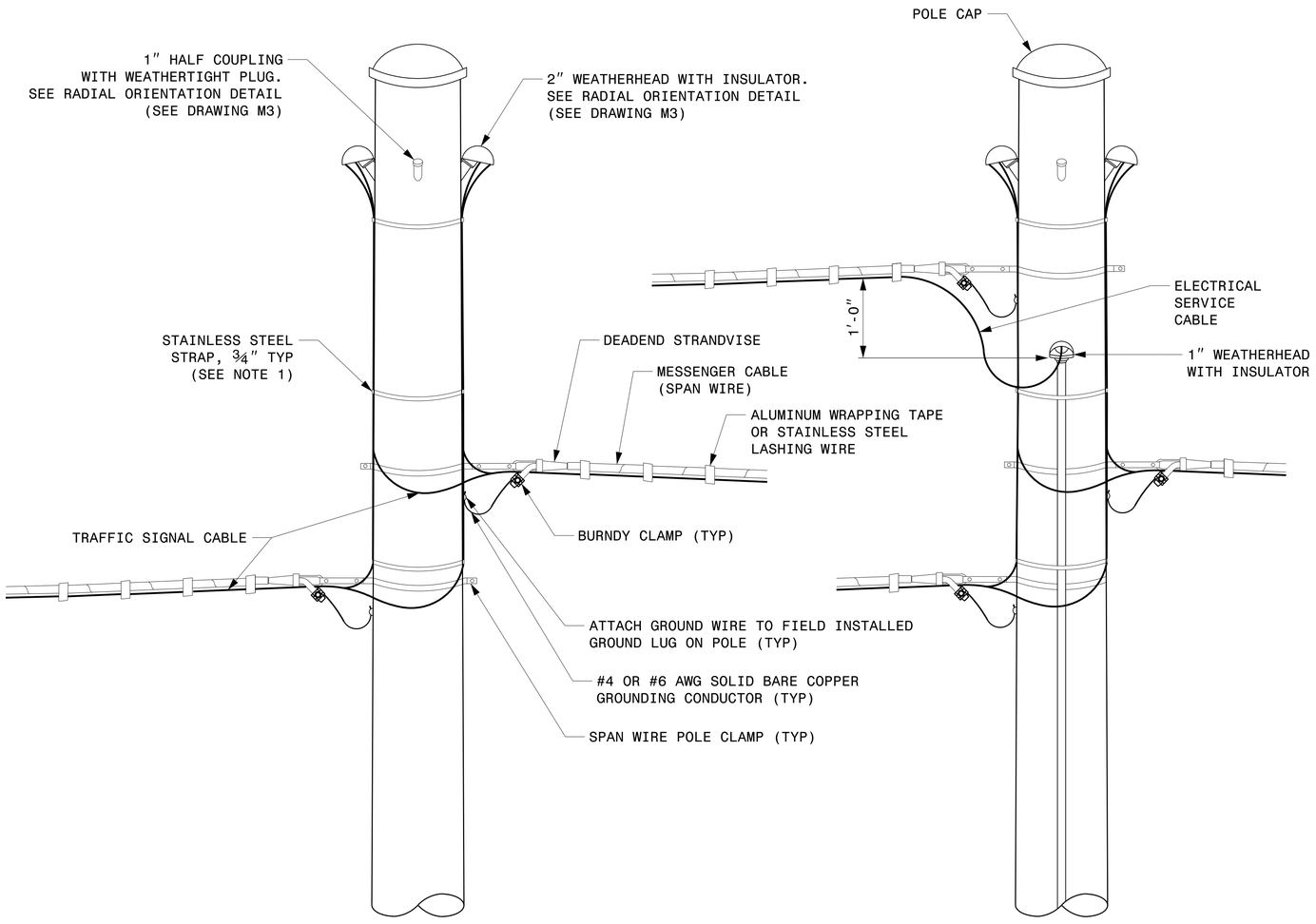
SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
036626
ENGINEER
KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

Fabrication Details – Mast Arm Connection

PROJECT I.D. NO.	SHEET NO.
Y-4807B	Sig.M6

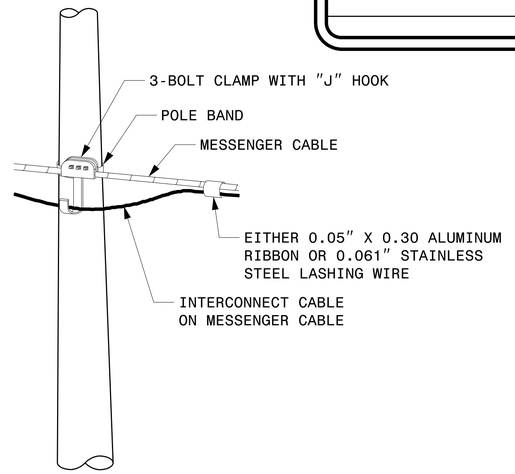
Fabrication Details – Strain Pole Attachments



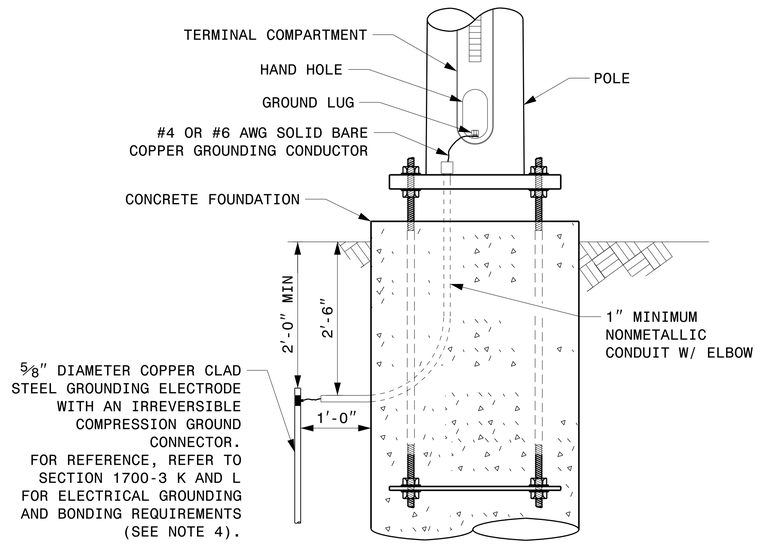
STRAIN POLE ATTACHMENTS

NOTES:

1. STRAP ALL SIGNAL CABLES TO THE SIDE OF THE POLE WITH ¾″ 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:
Transportation Mobility and Safety Division
Signal Design Section
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

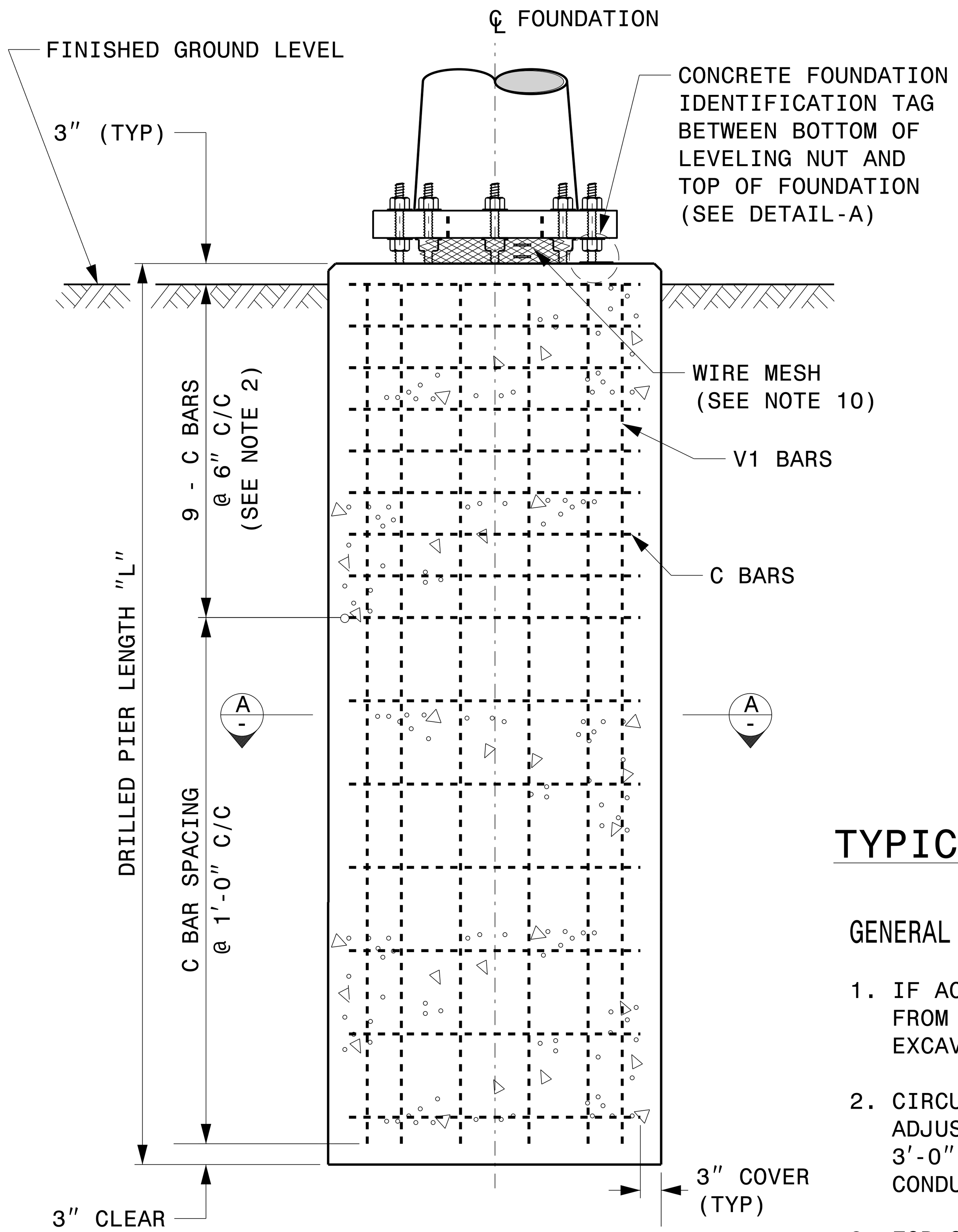
REVISIONS	INIT.	DATE

SEAL

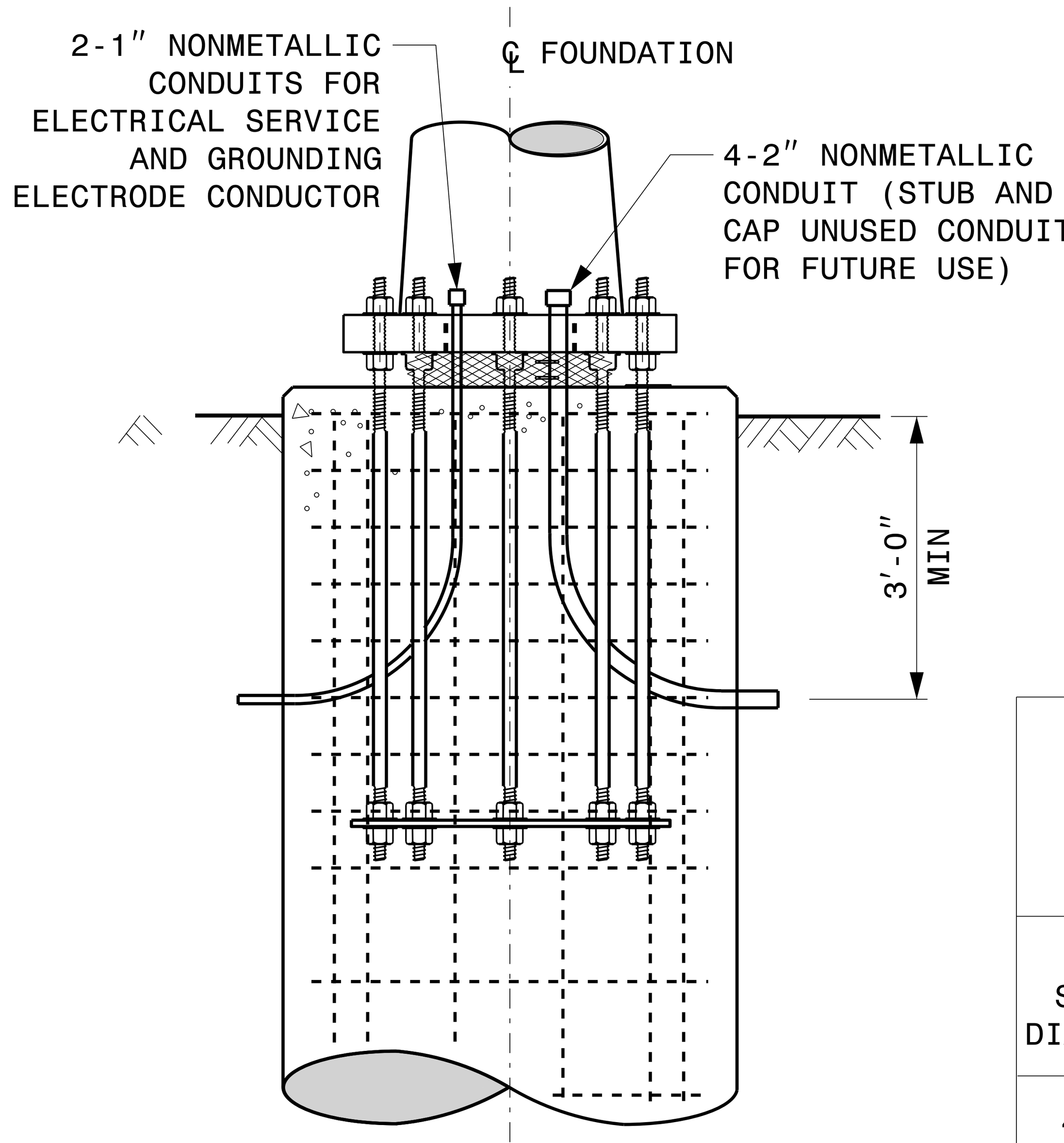
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

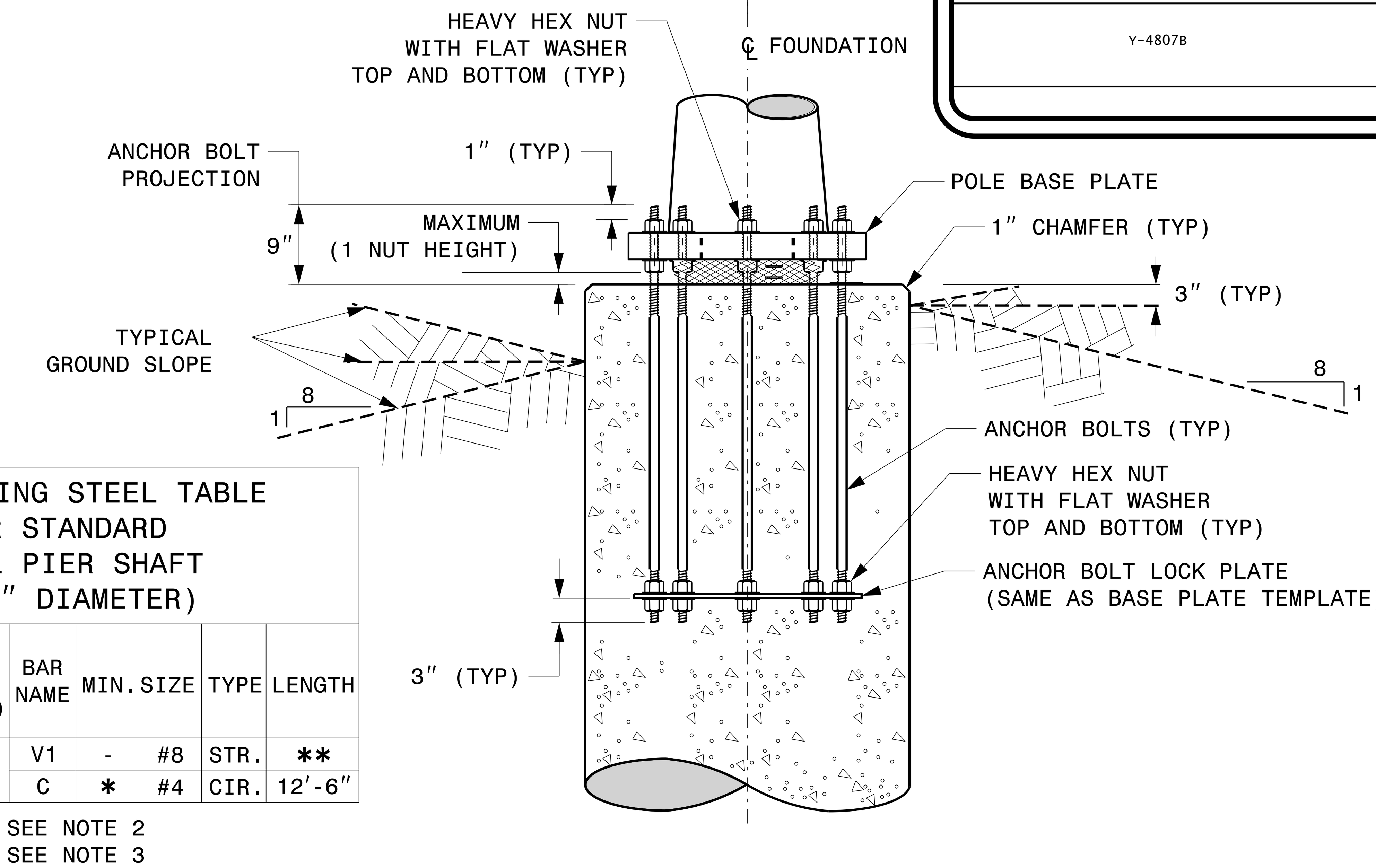
Construction Details – Foundations



CONCRETE SHAFT ELEVATION



TYPICAL FOUNDATION CONDUIT DETAILS



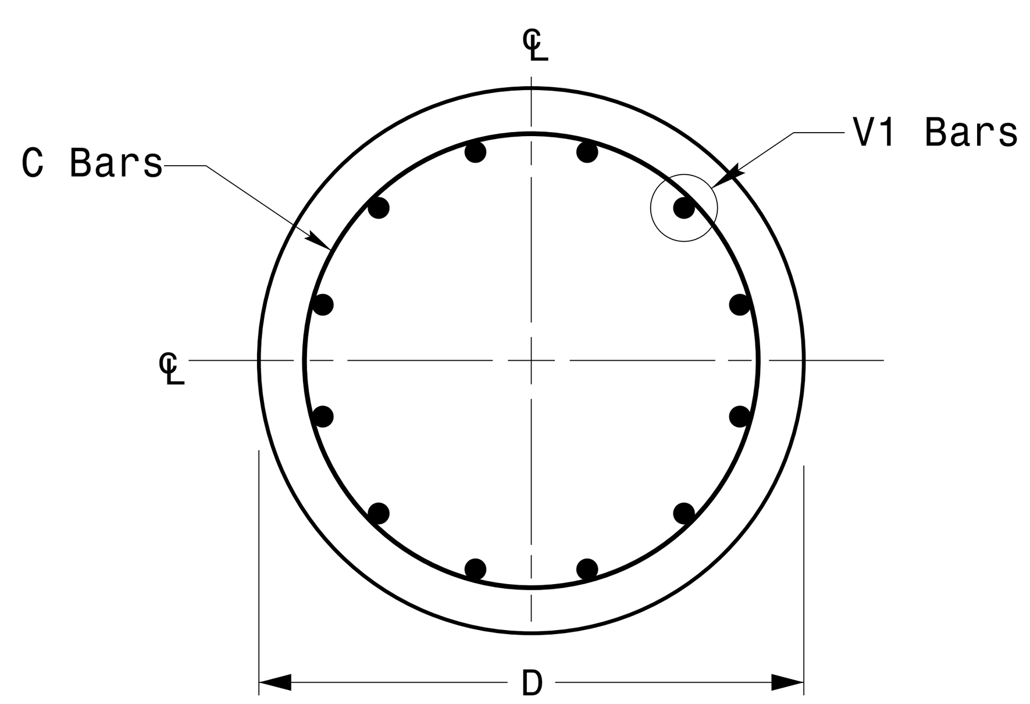
TYPICAL FOUNDATION ANCHOR BOLT DETAILS

(REINFORCING CAGE NOT SHOWN FOR CLARITY)

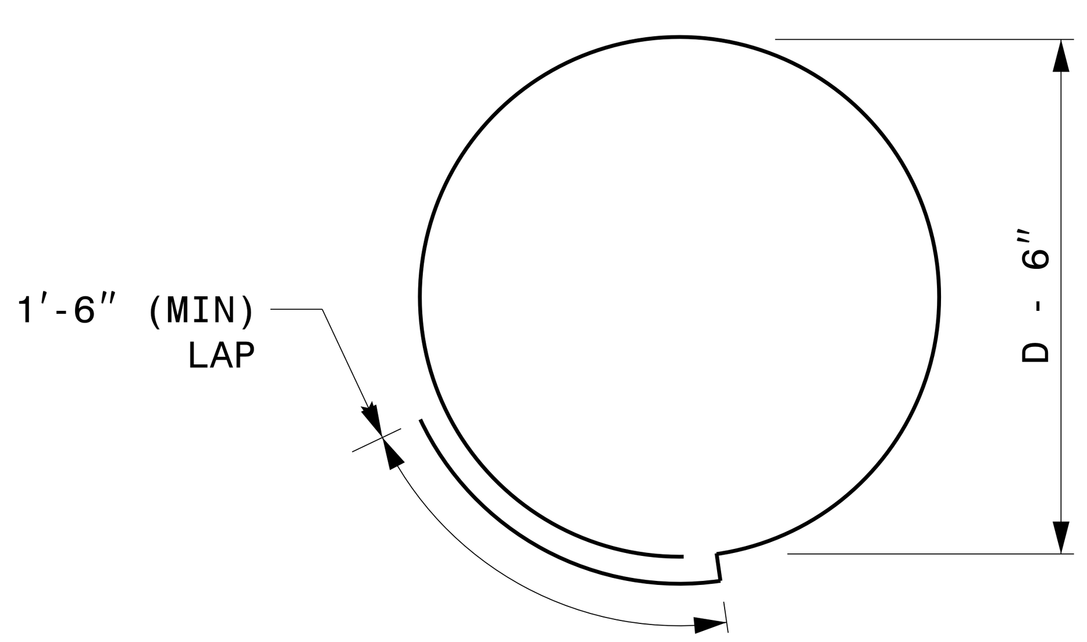
REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4′-0″ DIAMETER)

"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



SECTION A-A

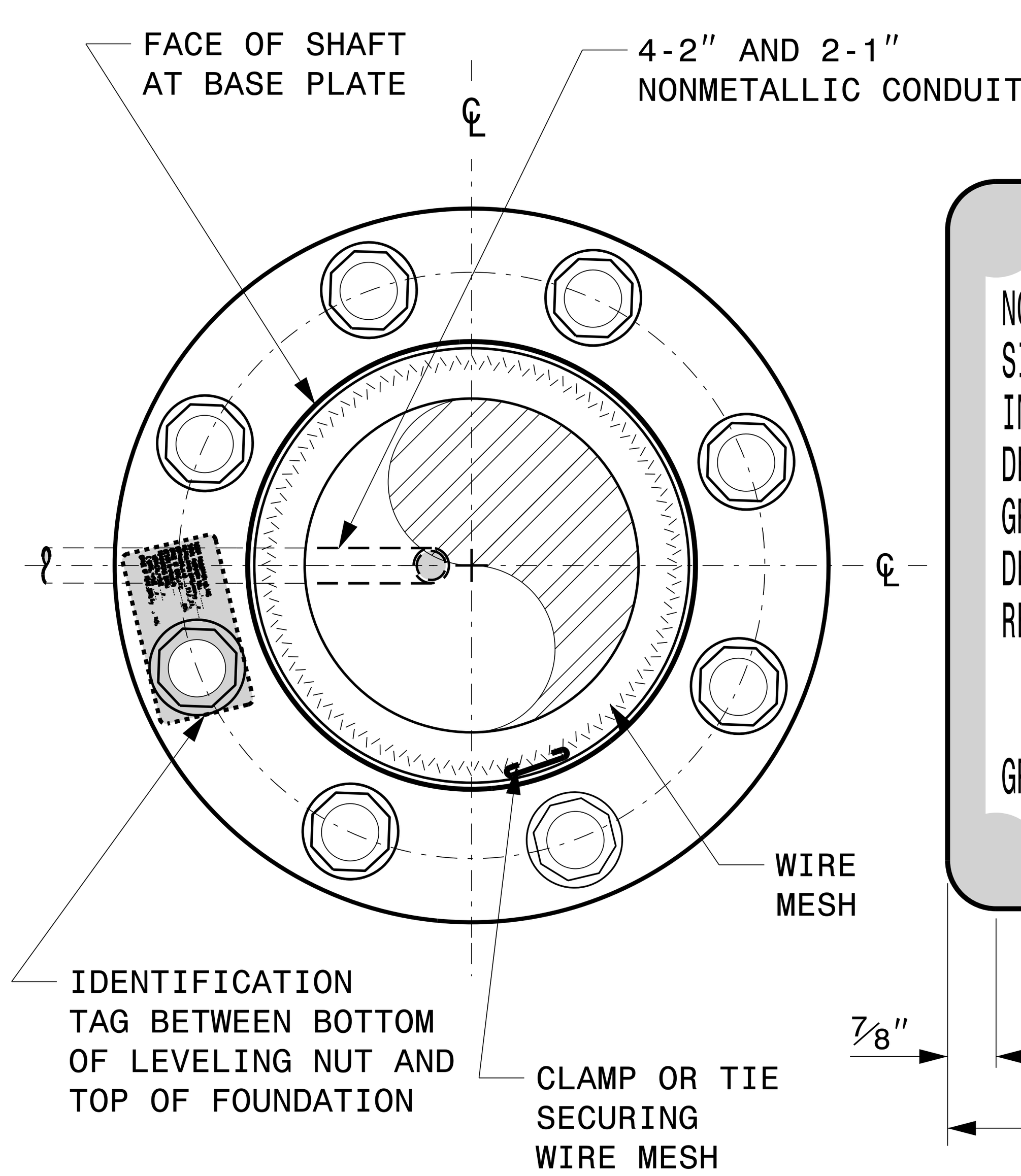


TYPICAL "C" BAR DETAIL

GENERAL NOTES:

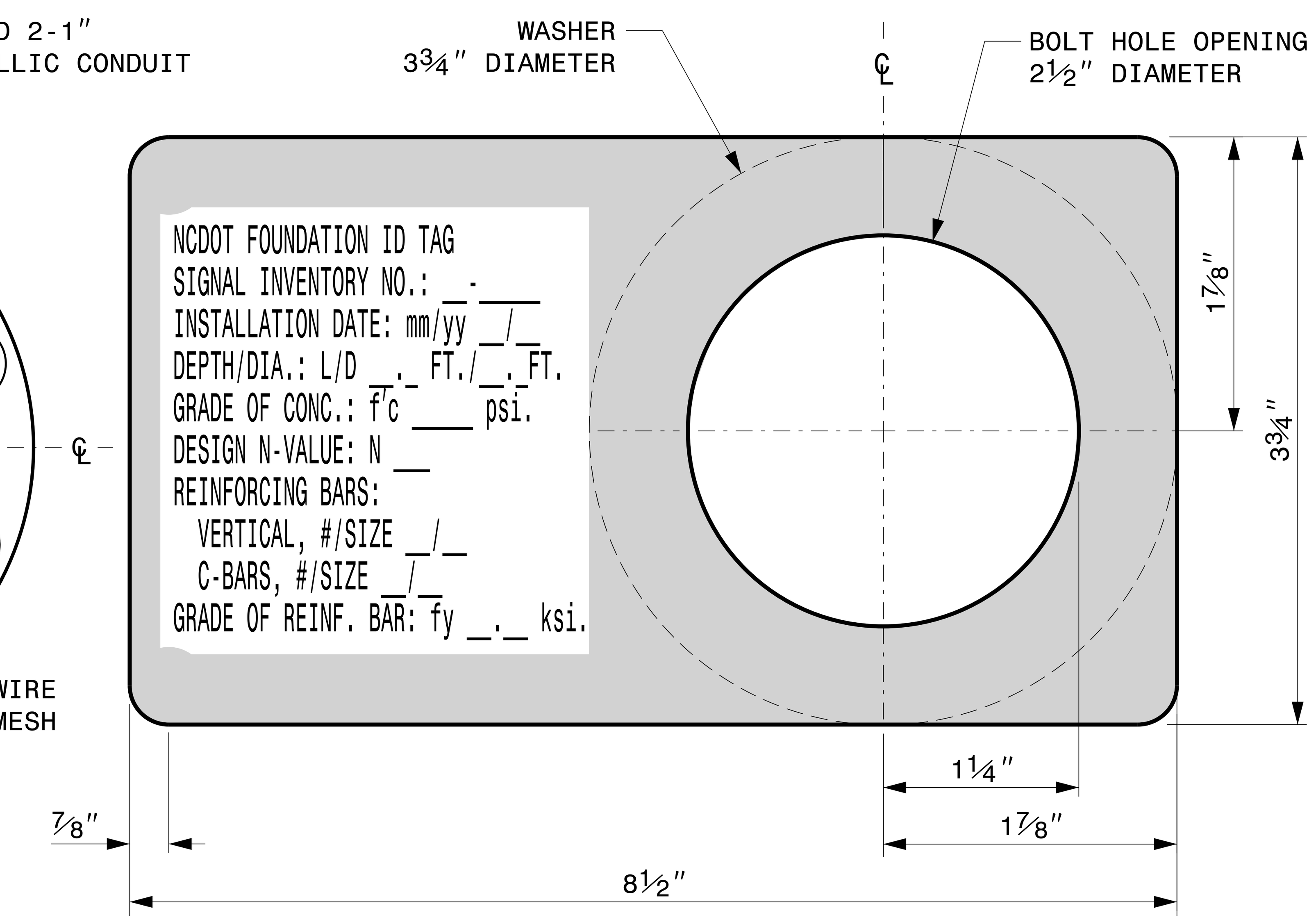
1. IF ACTUAL SUBSURFACE CONDITIONS DIFFER SIGNIFICANTLY FROM BORING DATA, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
2. CIRCULAR TIE REINFORCING RINGS MAY BE VERTICALLY ADJUSTED BY +/-3″ AT A DEPTH BETWEEN 2′-0″ AND 3′-0″ TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING IN THE CAGE.
3. FOR STANDARD FOUNDATIONS, SEE SHEET SIG. M8 FOR DETAILS. VERTICAL REINFORCING BARS (V1) MAY BE HORIZONTALLY ADJUSTED BY +/-3″ TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING INTO THE CAGE.
4. PROVIDE 2″ TO 5″ FOUNDATION PROJECTION ABOVE GROUND LEVEL, DEPENDING ON THE GROUND SLOPE.
5. UNLESS OTHERWISE SHOWN, FOUNDATION DESIGNS ARE BASED ON NON-SLOPING LEVEL GROUND SURFACES WITH SLOPE RATIOS OF 8:1 (H:V) OR FLATTER. IF ACTUAL GROUND LINE SLOPES ARE STEEPER, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
6. CONSTRUCT FOUNDATIONS IN ACCORDANCE WITH NCDOT STANDARD PROVISIONS SP09 R005- FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES. ALL APPLICABLE 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
7. USE AIR ENTRAINED AA CONCRETE MIX WITH A COMPRESSION STRENGTH OF f′c=4500 psi (MIN) AFTER 28 DAYS.
8. USE ASTM A615 GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL. MAINTAIN AT LEAST 3″ COVER ON ALL REINFORCEMENT.
9. LOCATE IDENTIFICATION TAG ON TOP OF THE FOUNDATION, DIRECTLY ABOVE THE CONDUIT′S ENTRY POINT.
10. 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.
11. PREFERRED LOCATION FOR THE I.D. TAG IS AS SHOWN IN DETAIL-A: DIRECTLY ABOVE THE CONDUIT ENTERING THE FOUNDATION.



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

DETAIL-A



CONCRETE FOUNDATION IDENTIFICATION TAG DETAILS

Prepared In the Offices of: Transportation Mobility and Safety Division, Signal Design Section
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
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by: Kevin Durigon
SIGNATURE 4B23DC79B3784DA...
09/21/2023 DATE

SOIL CONDITION

STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48″ Diameter Drilled Pier Length (L) – Feet							Reinforcement			
			Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
Case No.	Pole Height (Ft.)	Base Plate BC (In.)	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

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: Transportation Mobility and Safety Division, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 NA NONE

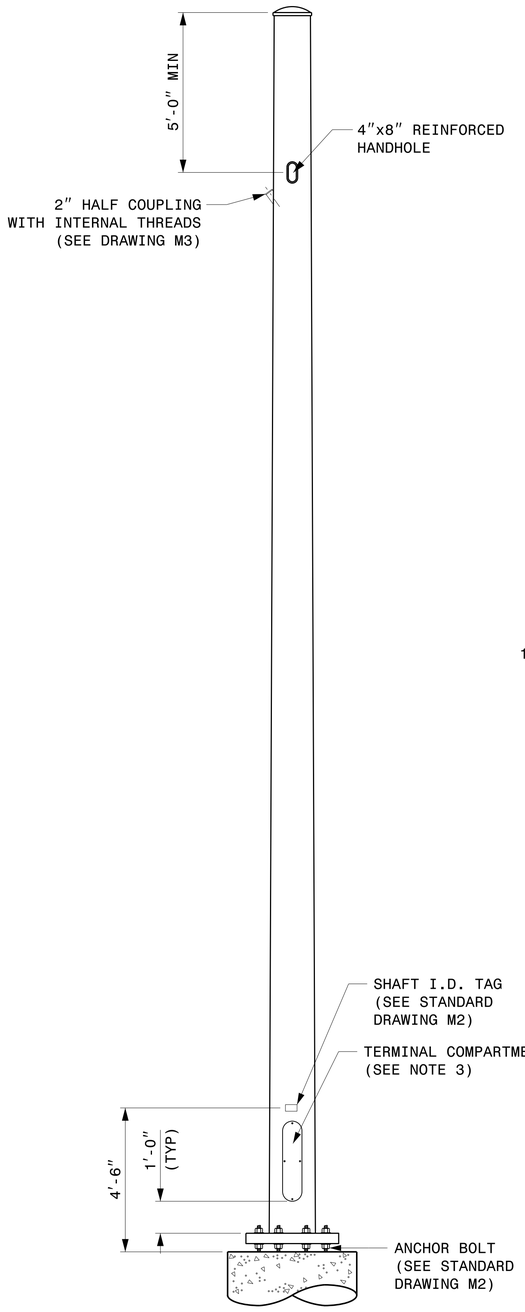
Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR
REVISIONS | INIT. | DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON
DocuSigned by: Kevin Durigon
4B23DC79B3784DA...
SIGNATURE 09/21/2023 DATE

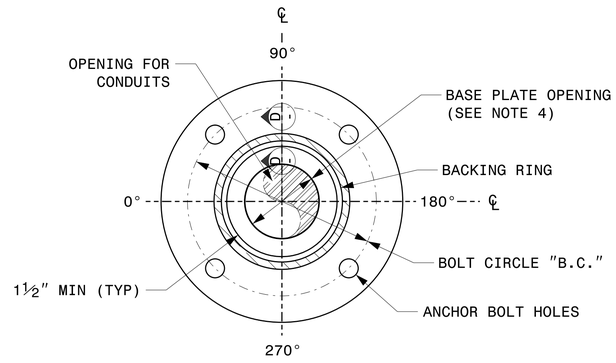
PROJECT I.D. NO.	SHEET NO.
Y-48078	Sig.M9

Fabrication Details – CCTV Camera Poles

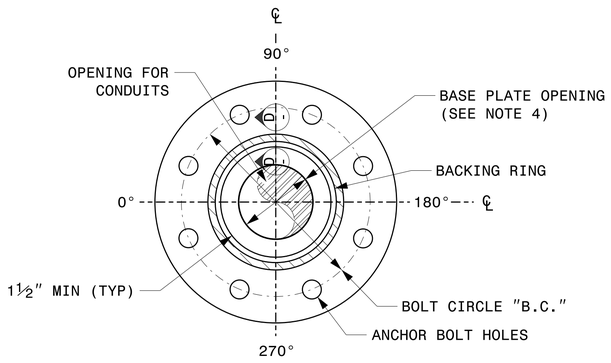


CCTV CAMERA POLE

(NOT TO SCALE)

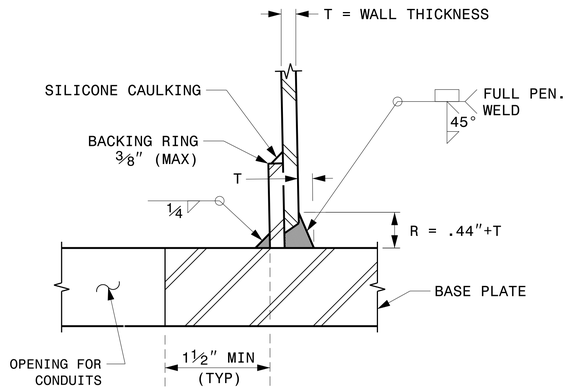


4 BOLT PATTERN
FOR POLES UP TO 40'



8 BOLT PATTERN
FOR POLES TALLER THAN 40'

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 3½" BUT SHALL NOT BE LESS THAN 8½".
5. USE COMPACT SECTION CRITERIA D/T RATIO PER AASHTO LTS-LRFD 1ST EDITION SECTION 5.7.2.

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SCALE
0 NA
NONE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
SIGNATURE
4B23DC79B3784DA...
09/21/2023
DATE

PROJECT REFERENCE NO.	SHEET NO.
Y-4807B	SCP-01

1. INSTALL COAX CABLE
2. INSTALL ETHERNET CABLE
3. EXISTING ETHERNET (OR COAX) CABLE
4. INSTALL SMFO CABLE
5. EXISTING SMFO CABLE
6. INSTALL FIBER OPTIC DROP CABLE
7. INSTALL TRACER WIRE
8. TRENCH
9. INSTALL PVC CONDUIT
10. INSTALL RIGID, GALVANIZED STEEL CONDUIT
11. INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
12. INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
13. INSTALL OUTER–DUCT POLYETHYLENE CONDUIT
14. INSTALL POLYETHYLENE CONDUIT
15. DIRECTIONAL DRILL CONDUIT
16. BORE AND JACK CONDUIT
17. INSTALL CABLE(S) IN EXISTING CONDUIT
18. INSTALL CABLE(S) IN NEW CONDUIT
19. INSTALL CABLE(S) IN EXISTING RISER
20. INSTALL CABLE(S) IN NEW RISER
21. INSTALL CABLE(S) IN EXISTING CONDUIT STUB–OUTS
22. INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB–OUTS WHEN AVAILABLE)
23. INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB–OUTS WHEN AVAILABLE)
24. INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
25. INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
26. INSTALL NEW ETHERNET EDGE SWITCH
27. INSTALL NEW FIBER OPTIC TRANSCEIVER
28. INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
29. INSTALL UNDERGROUND SPLICE ENCLOSURE
30. INSTALL AERIAL SPLICE ENCLOSURE
31. MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE
32. INSTALL POLE MOUNTED SPLICE CABINET
33. INSTALL BASE MOUNTED SPLICE CABINET
34. INSTALL CABINET FOUNDATION
35. INSTALL CCTV CAMERA POLE MOUNTED CABINET
36. INSTALL CCTV CAMERA ASSEMBLY
37. INSTALL CCTV CAMERA WOOD POLE
38. INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
39. INSTALL JUNCTION BOX
40A. INSTALL OVERSIZED JUNCTION BOX
40B. INSTALL SPECIAL OVERSIZED JUNCTION BOX (36" x 24" x 24")
41. REMOVE EXISTING JUNCTION BOX
42. INSTALL WOOD POLE
43. REMOVE EXISTING WOOD POLE
44. INSTALL AERIAL GUY ASSEMBLY
45. INSTALL STANDARD GUY ASSEMBLY
46. INSTALL SIDEWALK GUY ASSEMBLY
47. INSTALL MESSENGER CABLE
48A. REMOVE EXISTING COMMUNICATIONS AND MESSENGER CABLE
48B. REMOVE EXISTING COMMUNICATIONS CABLE
49. BACK PULL EXISTING COMMUNICATIONS CABLE
50. INSTALL CELL MODEM AND ANTENNA
51. INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
52A. INSTALL DELINEATOR MARKER
52B. INSTALL JUNCTION BOX MARKER
53A. STORE 20 FEET OF COMMUNICATIONS CABLE
53B. STORE 50 FEET OF EACH COMMUNICATIONS CABLE
54. LASH CABLE(S) TO EXISTING COMMUNICATIONS CABLE
55. LASH CABLE(S) TO EXISTING MESSENGER CABLE
56. LASH CABLE(S) TO NEW MESSENGER CABLE
57. MODIFY EXISTING ELECTRICAL SERVICE
58. INSTALL NEW ELECTRICAL SERVICE
59. INSTALL NEW EQUIPMENT CABINET DISCONNECT
60. BOND TRACER WIRE TO EQUIPMENT GROUND BUS
61. DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS
62. BOND RISER AND MESSENGER CABLE TO POLE GROUND
63. BOND RISER TO POLE GROUND
64. BOND MESSENGER CABLE TO POLE GROUND
65. INSTALL HEAT SHRINK TUBING RETROFIT KIT
66. INSTALL MOLDABLE DUCT SEAL
67. SLACK SPAN

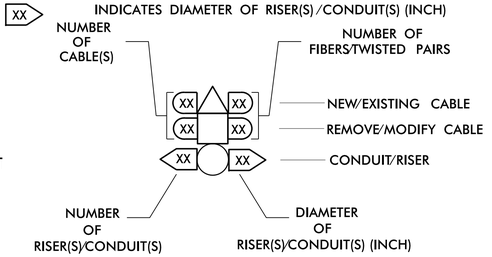
LEGEND

- FO — NEW FIBER OPTIC COMMUNICATIONS CABLE
- EXI — EXISTING COMMUNICATIONS CABLE
- REM — EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- DD — NEW DIRECTIONAL DRILLED CONDUIT

NEW		EXISTING
	OVERSIZED JUNCTION BOX	
	WOOD POLE	
S	AERIAL SPLICE ENCLOSURE	S
S	UNDERGROUND SPLICE ENCLOSURE	S
	METAL POLE	
	CCTV ASSEMBLY	
	STANDARD GUY ASSEMBLY	
	SIDEWALK GUY ASSEMBLY	
	CABLE STORAGE RACKS (SNOW SHOES)	
	SIGNAL/EQUIPMENT CABINET	
S	SPLICE CABINET	S
	FLAT PANEL ANTENNA (SINGLE)	
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION	
	YAGI ANTENNA (SINGLE)	
	OMNI ANTENNA	
SP	SIGNAL POLE	SP
XX–XXXX	SIGNAL INVENTORY NUMBER	XX–XXXX

CONSTRUCTION NOTE SYMBOLOGY KEY

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



ATTACHMENT POINT:

- XX"/SS / YYY — DISTANCE ABOVE (IN)/ATTACHMENT POINT REFERENCE POINT
- YYY / XX"/SS — REFERENCE POINT DISTANCE BELOW (IN)/ATTACHMENT POINT

"SS"	REFERENCE LOCATION
FS =	FRONT SIDE OF POLE
BS =	BACK SIDE OF POLE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION — Integrated Mobility and Safety Division — Intelligent Transportation Systems

750 N. Greenfield Pkwy., Garner, NC 27529

CONSTRUCTION NOTES

DIVISION 7 GUILFORD CO. GREENSBORO

PLAN DATE: MARCH 2024 REVIEWED BY:

PREPARED BY: G. GREEN

REVISIONS	INIT.	DATE

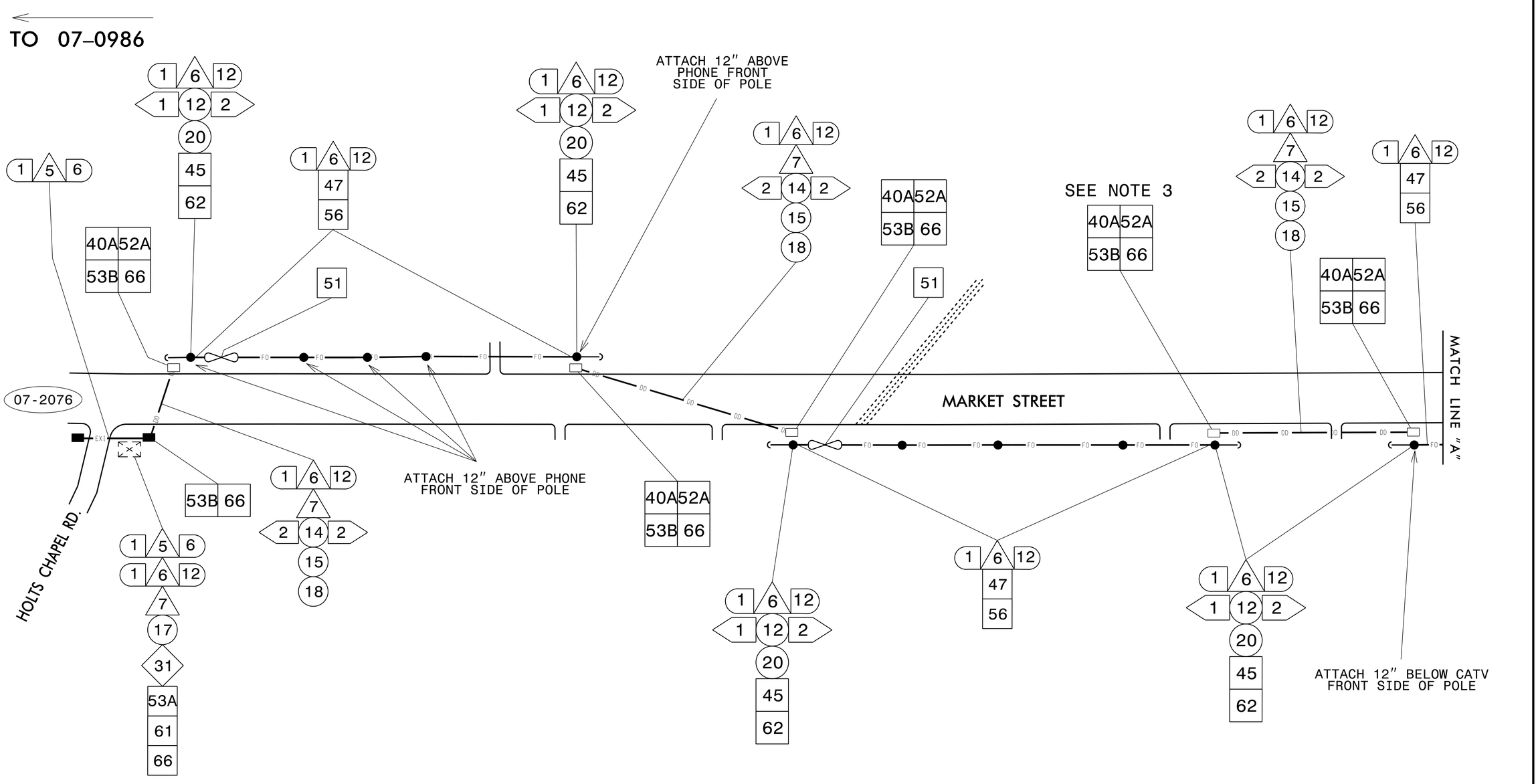
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 046152 ENGINEER ALEX D. STEWART

Alex D. Stewart 03/14/2024

SIGNATURE DATE

PROJECT REFERENCE NO.	SHEET NO.
Y-4807B	SCP-02



1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE GREENSBORO SIGNAL OPTIMIZATION ENGINEER AT (336) 373–2437 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE SIGNAL SYSTEM SUPERVISOR AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL
2) ALL NCDOT ATTACHMENT POINTS ARE 12" BELOW PHONE, UNLESS OTHERWISE NOTED, FRONT SIDE OF POLE.
3) REPLACE ENTIRE SLAB OF SIDEWALK. UTILIZE A CONCRETE MIX THAT MATCHES ADJACENT SIDEWALK.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:

NC Department of Transportation Integrated Mobility Division

750 N. Greenfield Pkwy., Garner, NC 27529

COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS

DIVISION 7 GUILFORD CO. GREENSBORO

PLAN DATE: MARCH 2024 REVIEWED BY:

PREPARED BY: G. GREEN REVIEWED BY:

SCALE 0

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 046152 ENGINEER ALEX D. STEWART

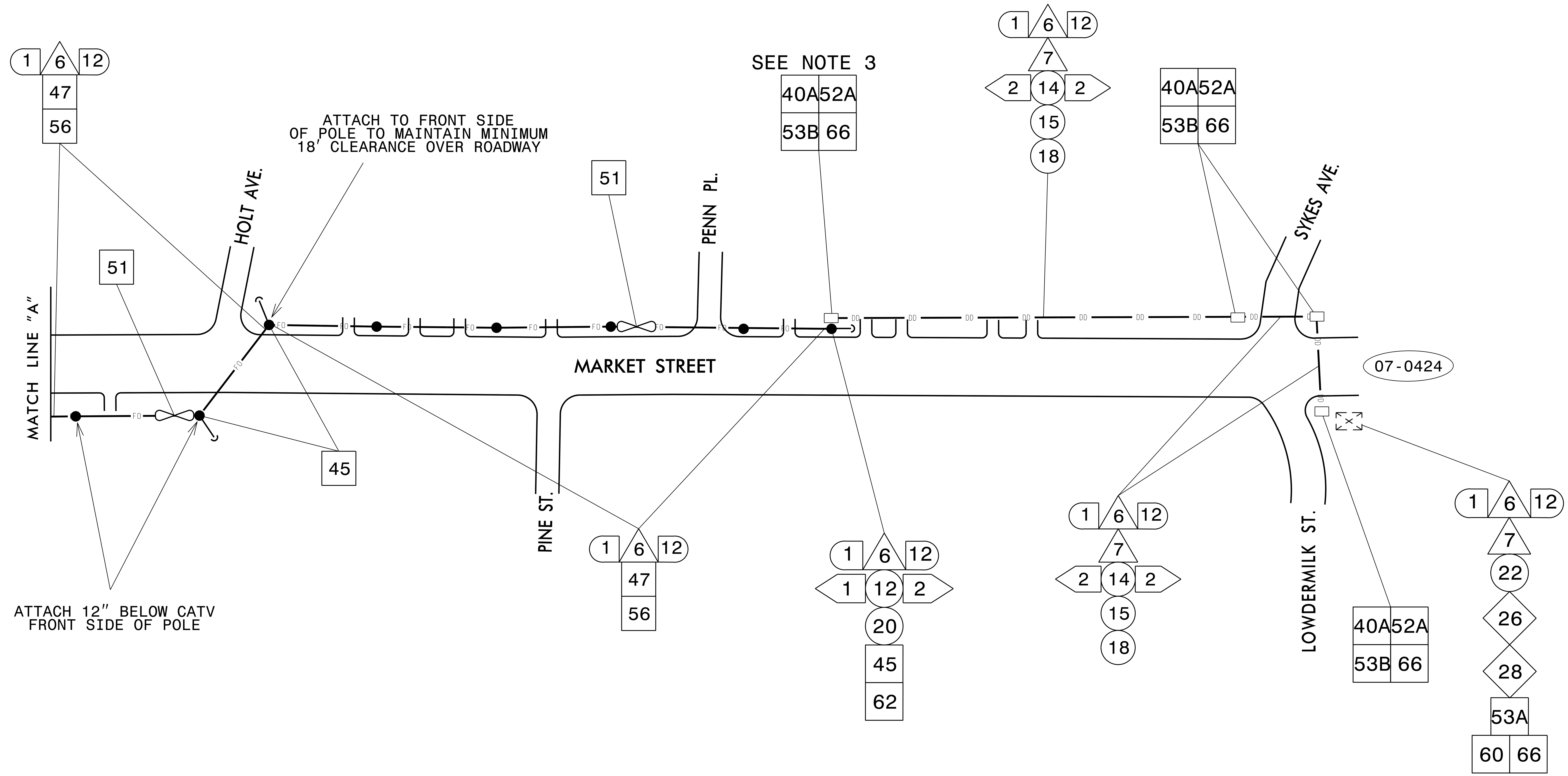
Documents not considered final unless signed and sealed

Alex D. Stewart 03/14/2024

SIGNATURE DATE

CADD Filename:

PROJECT REFERENCE NO.	SHEET NO.
Y-4807B	SCP-03



1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE GREENSBORO SIGNAL OPTIMIZATION ENGINEER AT (336) 373-2437 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE SIGNAL SYSTEM SUPERVISOR AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL

2) ALL NCDOT ATTACHMENT POINTS ARE 12" BELOW PHONE, UNLESS OTHERWISE NOTED, FRONT SIDE OF POLE.

3) REPLACE ENTIRE SLAB OF SIDEWALK. UTILIZE A CONCRETE MIX THAT MATCHES ADJACENT SIDEWALK.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:

Transportation Mobility and Safety Division — State of North Carolina Department of Transportation — Intelligent Transportation Systems Section

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0

COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS

DIVISION 7 GUILFORD CO. GREENSBORO

PLAN DATE: MARCH 2024	REVIEWED BY:
PREPARED BY: G. GREEN	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 046152 ENGINEER ALEX D. STEWART

DocuSigned by: BE9EB5EF3A784A5 — SIGNATURE 03/14/2024 DATE

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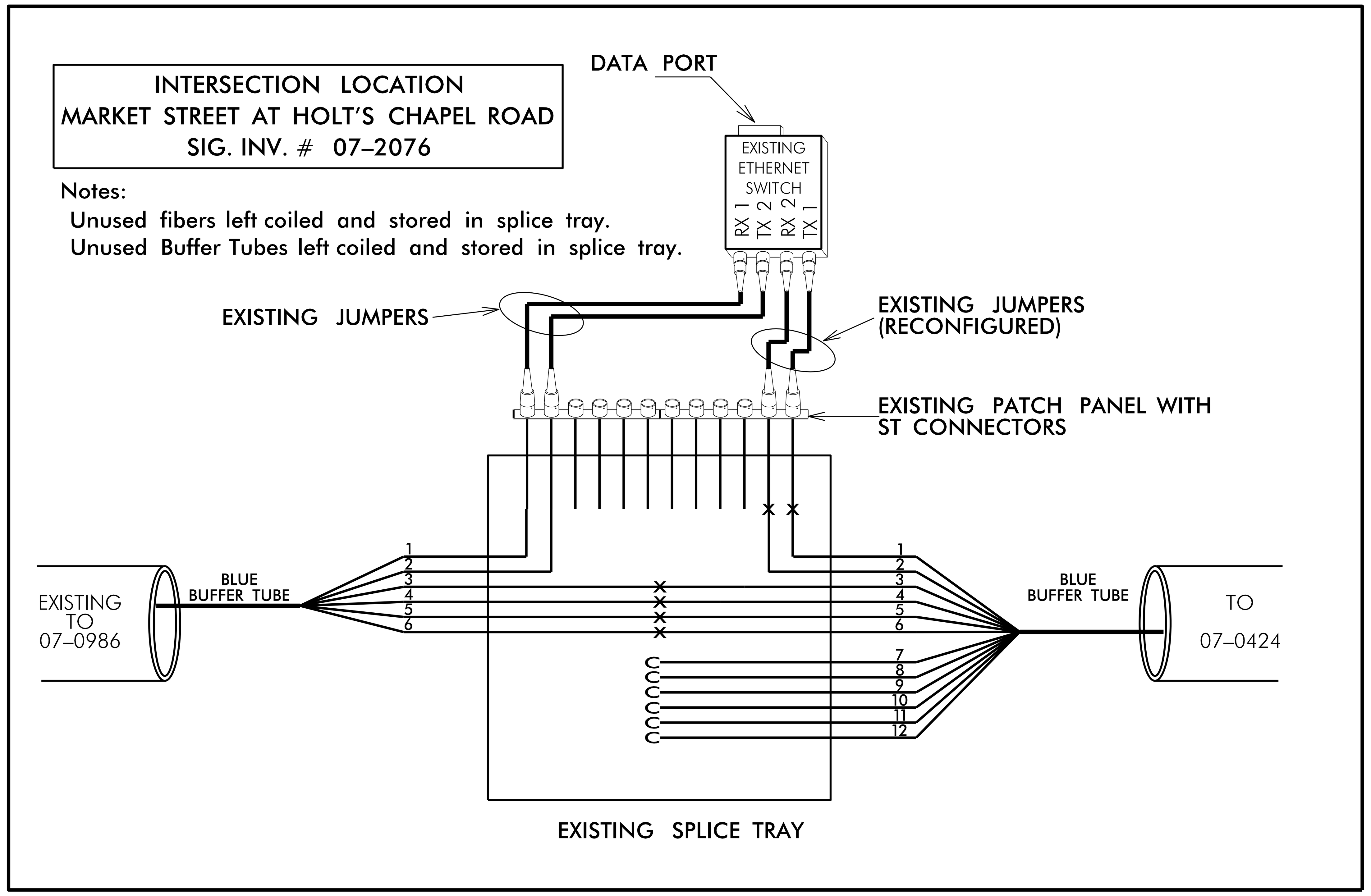

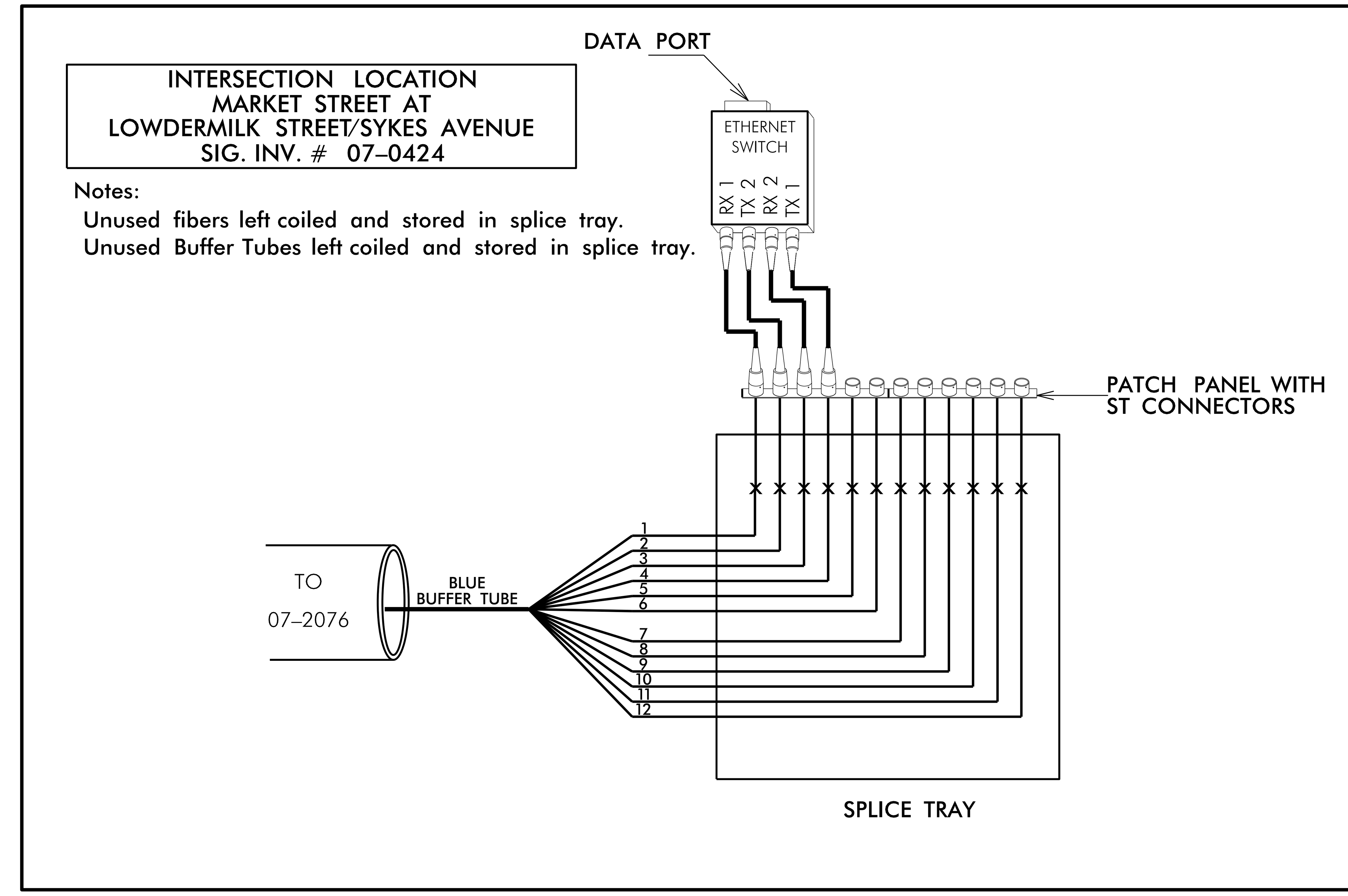

1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE GREENSBORO SIGNAL OPTIMIZATION ENGINEER AT (336) 373–2437 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE SIGNAL SYSTEM SUPERVISOR AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL

2) ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.

3) INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING: REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

1) SPLICE LOCATION
2) DATE
3) COMPANY NAME
4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1–4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

COLOR CODE
TIA/EIA 598–A

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

<u>LEGEND</u>

X = FUSION SPLICE
C = CAP IN TRAY

Notes:
Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
750 N. Greenfield Pkwy., Garner, NC 27529

SPLICE DETAIL

DIVISION 07 GILFORD CO. GREENSBORO
PLAN DATE: MARCH 2024
PREPARED BY: G. GREEN
REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046152 ALEX D. STEWART

DocuSigned by:
SIGNATURE 03/14/2024 DATE
CADD Filename: