

TIP PROJECT: U-6018

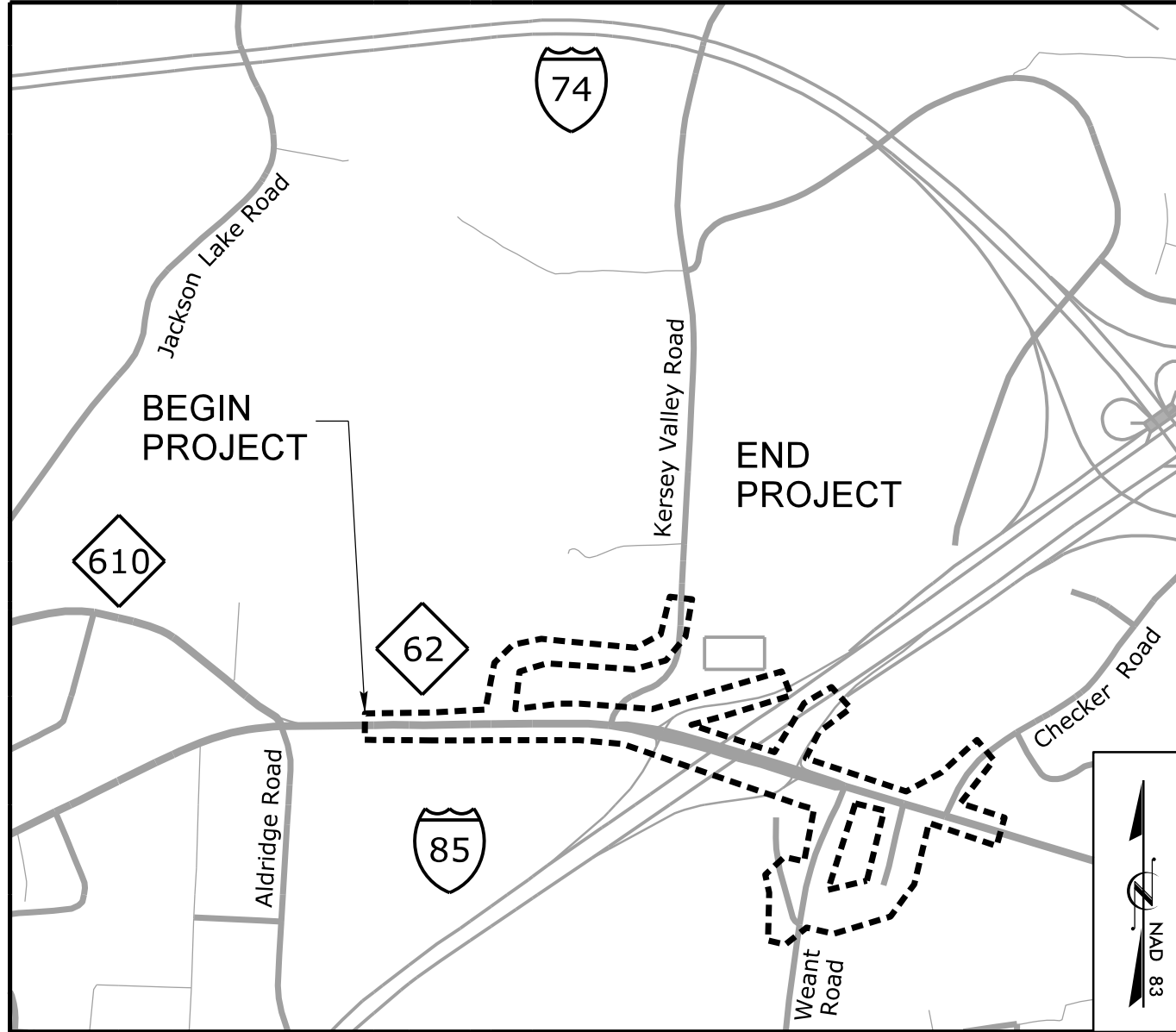
CONTRACT: C204798

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

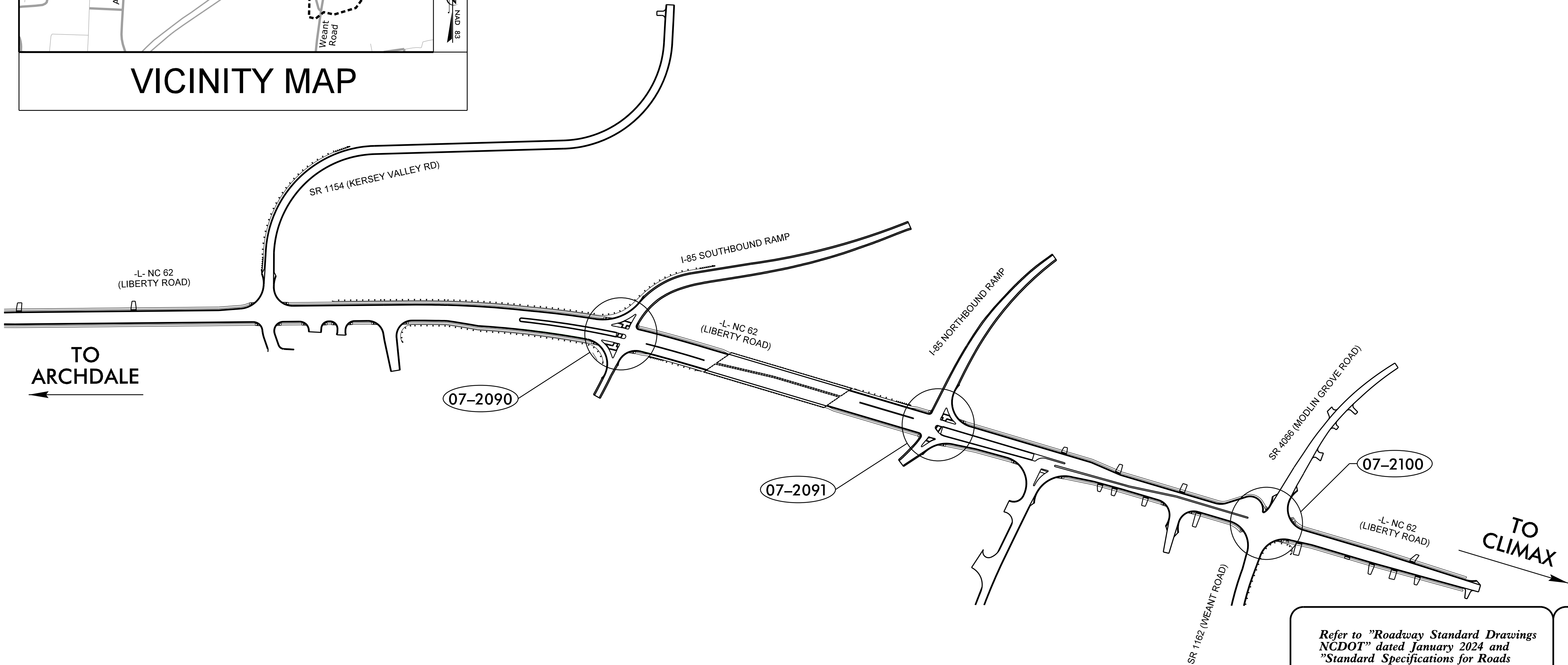
GUILFORD COUNTY

LOCATION: WIDENING OF NC 62 (LIBERTY RD) FROM EAST OF NC 610 (E FAIRFIELD RD) TO EAST OF SR 4066 (MODLIN GROVE RD) AND THE REALIGNMENT OF SR 1154 (KERSEY VALLEY RD) AND SR 1162 (WEANT RD)

TYPE OF WORK: TRAFFIC SIGNALS AND SIGNAL COMMUNICATIONS



VICINITY MAP



PROJECT REFERENCE NO. U-6018

SHEET NO. Sig 1.0

APPROVED: *Zachary M. Esposito*

DATE: 3/19/2025

SEAL

NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
054155
ZACHARY M. ESPOSITO

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PLANS PREPARED BY:

Zachary M. Esposito, P.E., TCDS – Project Manager
Andrew W. Poole, E.I. – Project Engineer

INDEX OF PLANS

Sheet Number	SIN	Title Sheet	Location/Description
Sig. 1.0	-	-	-
Sig. 2.0-5.4	07-2090	NC 62 (Liberty Road) at I-85 SB Ramps	
Sig. 6.0-9.2	07-2091	NC 62 (Liberty Road) at I-85 NB Ramps	
Sig. 10.0-12.5	07-2100	NC 62 (Liberty Road) at SR 1162 (Weant Rd)/SR 4066 (Modlin Grove Rd)	
Sig. M1A-M9	-	Standard Metal Poles Drawings	
SCP 1-9	-	Signal Communication Plans	

LEGEND

XX-XXXX

TRAFFIC SIGNAL

TRANSPORTATION SYSTEMS
MANAGEMENT & OPERATIONS UNIT

Contacts:
Robert J. Ziemba, P.E. – Central Region Signals Engineer
D. Todd Joyce, P.E. – Signal Equipment Design Review Engineer
Gregory A. Green – Signal Communications Project Engineer

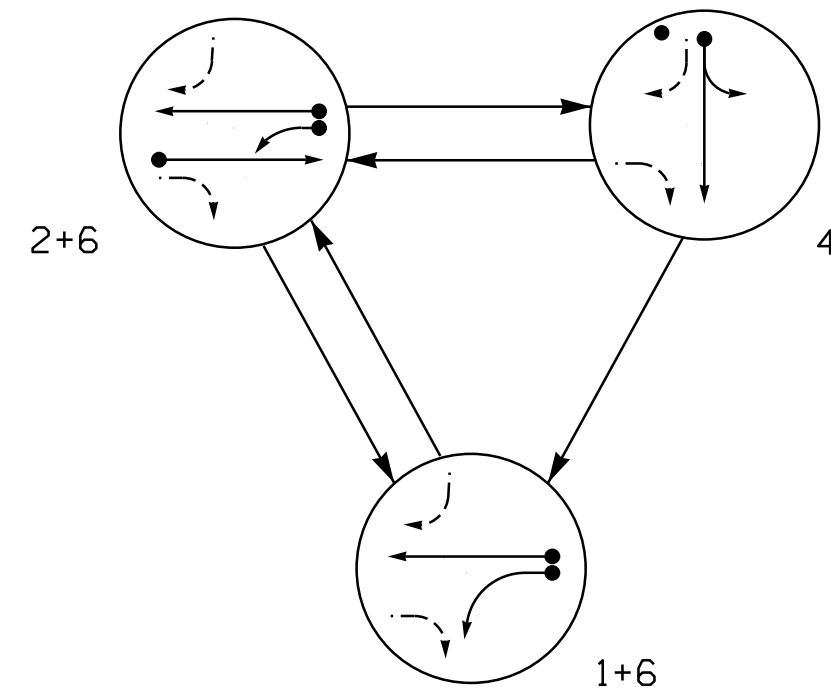
Refer to "Roadway Standard Drawings
NCDOT" dated January 2024 and
"Standard Specifications for Roads
and Structures" dated January 2024.

DRMP

DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-549-4260

NC LICENSE NO. F-1524
www.drmp.com

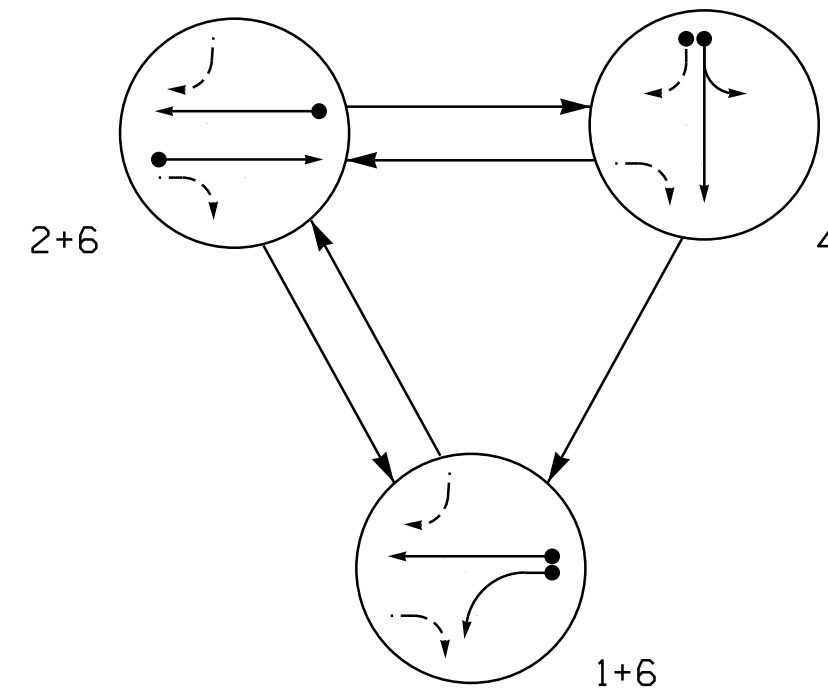
DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE			
	1 + 6	2 + 6	4	F L A S H
11	←	↕	→	→
21	R	↑	R	R
22	R	G	R	R
41,42,43	R	R	G	R
61	G	G	R	R
62	↑	↑	R	R

ALTERNATE
PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE			
	1 + 6	2 + 6	4	E A S H
11	←	→	→	→
21	R	↑	R	R
22	R	G	R	R
41,42,43	R	R	G	R
61	G	G	R	R
62	↑	↑	R	R

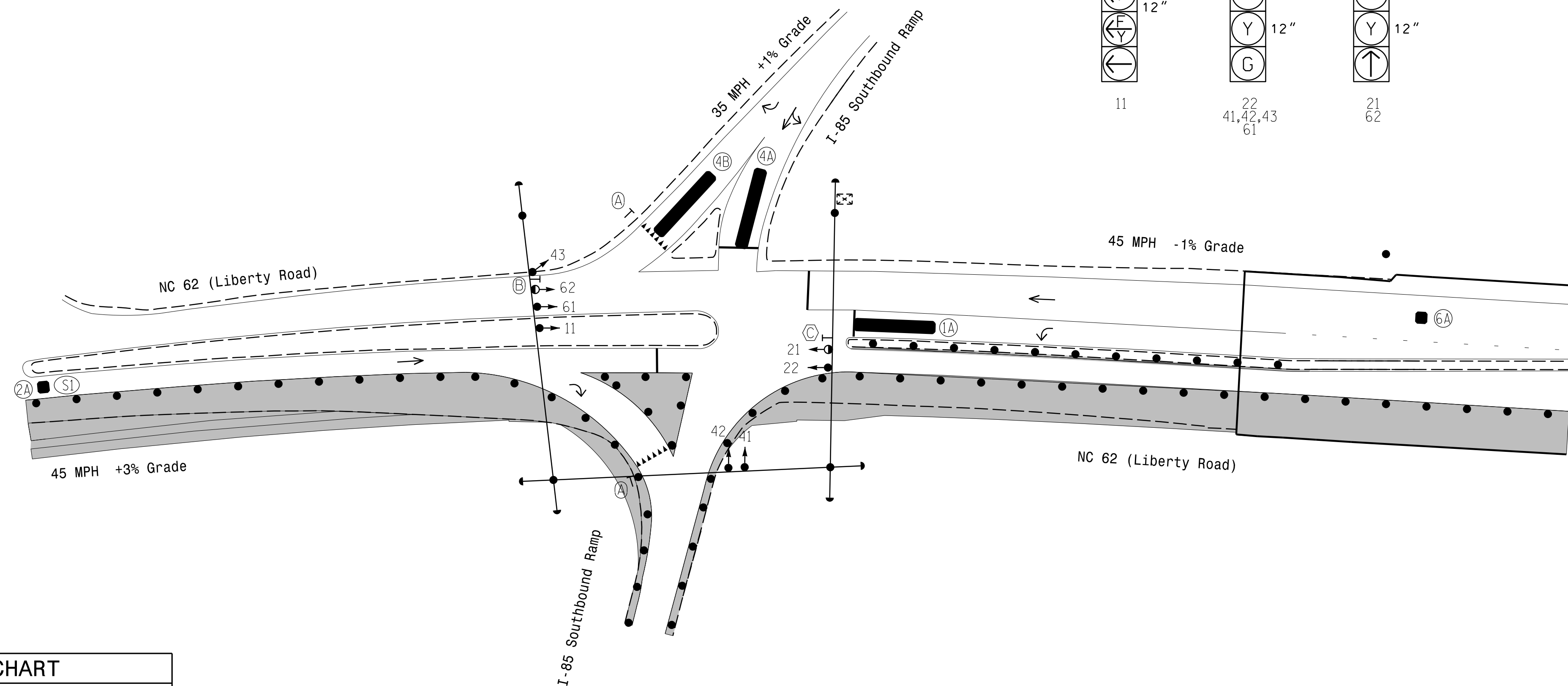
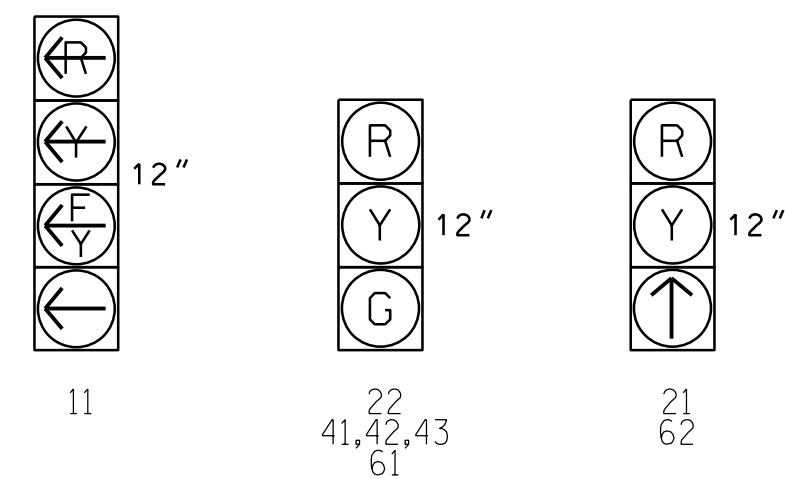
ASC/3 DETECTOR INSTALLATION CHART

DETECTOR				PROGRAMMING								
ZONE(S)	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	**	**	1 6#	Yes	-	15.0*	-	N	-	**
2A/S1	6X6	300	**	**	2	Yes	-	-	X	N	X	**
4A	6X40	0	**	**	4	Yes	-	-	-	N	-	**
4B	6X40	0	**	**	4	Yes	-	30.0	-	N	-	**
6A	6X6	300	**	**	6	Yes	-	-	X	N	-	**

```
*Disable delay during Alternate Phasing operation.
#Disable phase call for loop during Alternate Phasing operation.
**Multizone Microwave Detection.
```

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 TIMING CHART

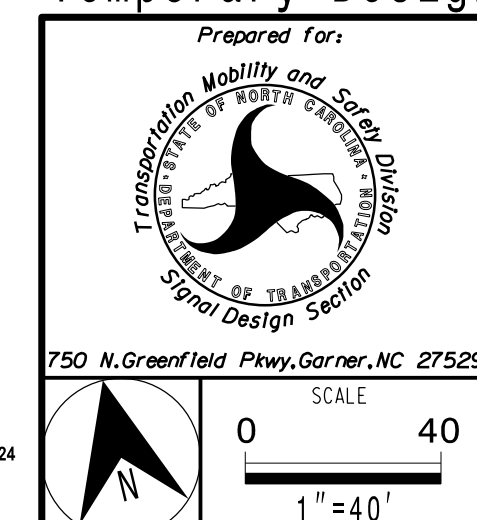
ASC/3 TIMING CHART				
FEATURE	PHASE			
	1	2	4	6
Min Green *	7	12	7	12
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	6.0
Max 1 *	20	90	30	90
Yellow	3.0	4.6	3.8	4.6
Red Clear	2.4	1.0	1.3	1.0
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	2.5	-	2.5
Max Initial *	-	34	-	34
Time Before Reduction *	-	15	-	15
Time To Reduce *	-	30	-	30
Minimum Gap	-	3.0	-	3.0
Locking Detector	-	X	-	X
Recall Position	-	VEH RECALL	-	VEH RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	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	
	Non-Intrusive Detection Zone	
	Construction Zone	N/A
	Construction Zone Drums	
	"YIELD" Sign (R1-2)	
	No Right Turn Sign (R3-1)	
	No U-Turn / No Left Turn Sign (R3-18)	

Signal Upgrade -
Temporary Design 1 (TMP Phase I)



NC 62 (Liberty Road)
at
I-85 Southbound Ramps

Division 7 Guilford County Archdale

PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
-----------------------	--------------------------

529	PREPARED BY: AW Poole	RKA PROJ. NO: 17380 (040)
-----	-----------------------	---------------------------

REVISIONS		INIT.	DATE
-----------	--	-------	------

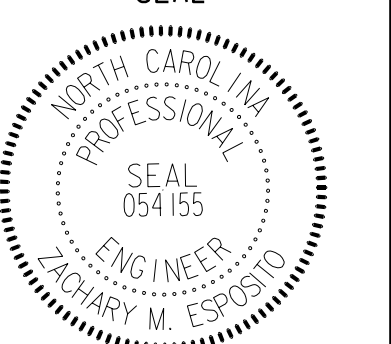
0			
---	--	--	--

[illegible]

--	--	--	--

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REAL



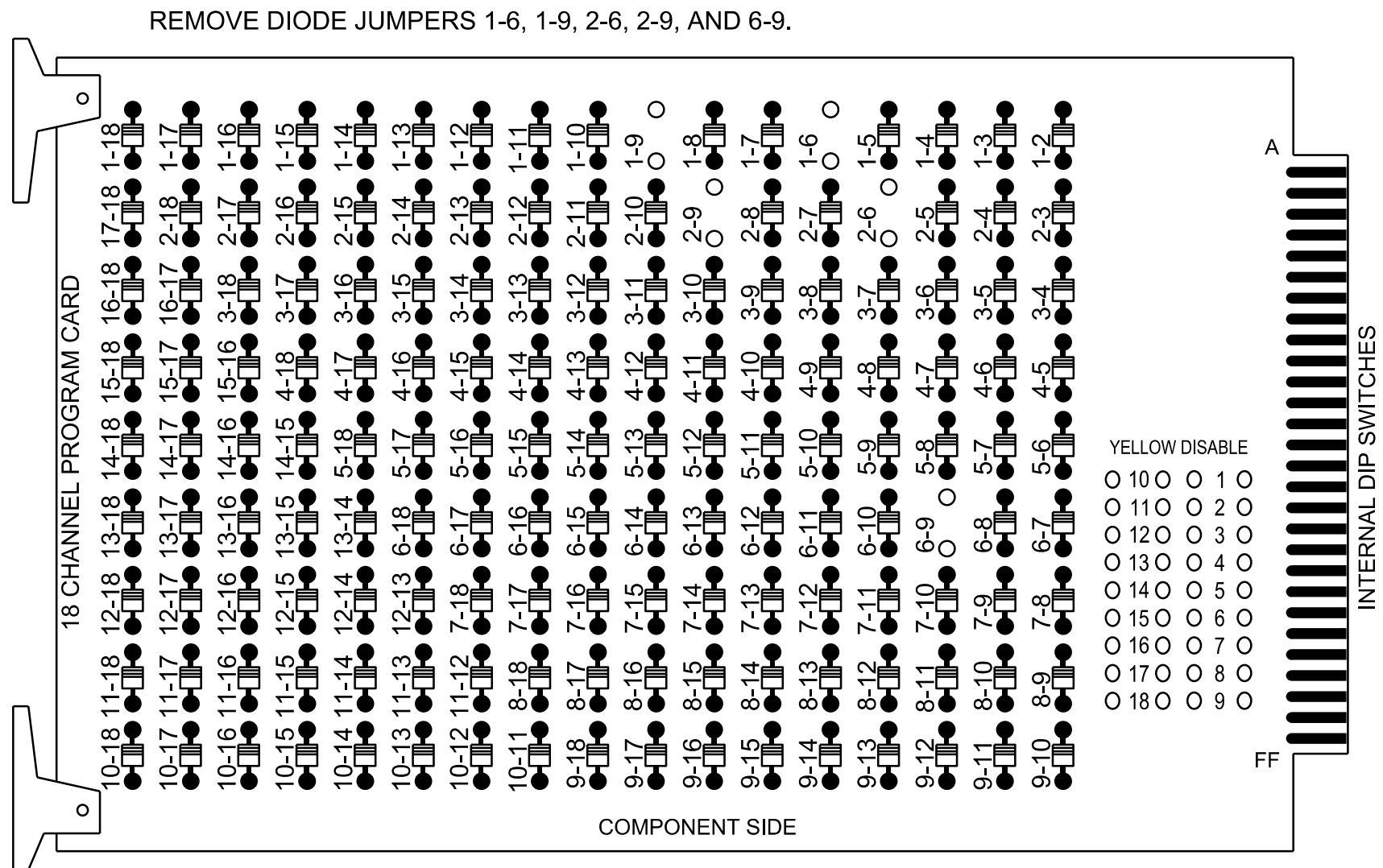
by: Y.M. S. 3/17/2025

--SIGNATURE

G. INVENTORY NO. 07-2090T1

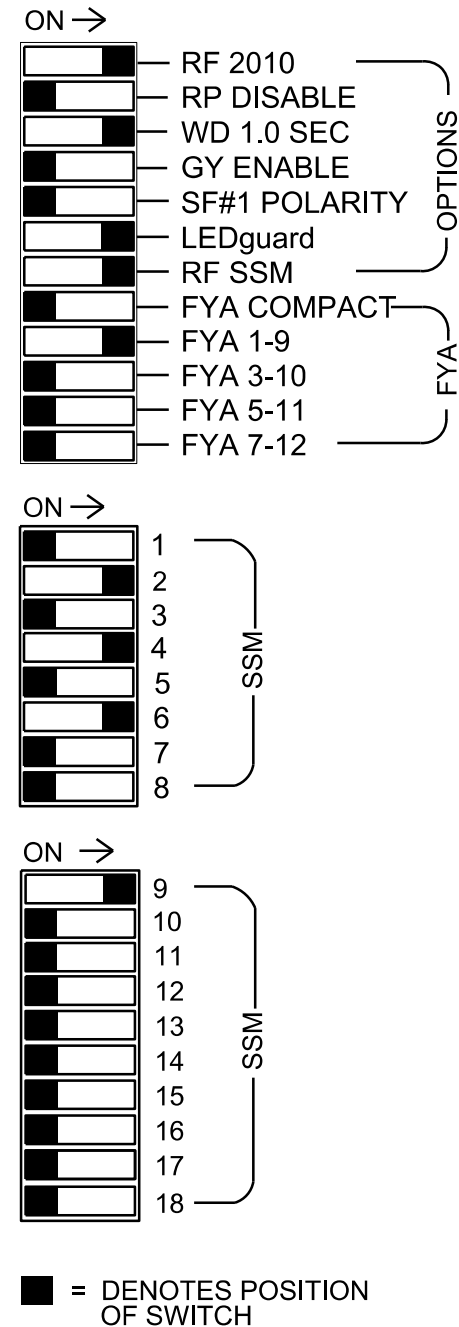
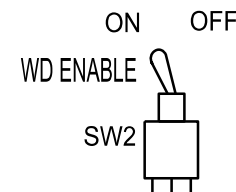
18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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



NOTES

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

EQUIPMENT INFORMATION

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

* See overlap programming on this sheet.

SPECIAL DETECTOR NOTE

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

For Detection Zone 1A, the equipment and slot reserved for wired input is typical for an NCDOT installation.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	21	22	NU	NU	41,42,43	NU	NU	61	62	NU	NU	NU	NU	11★	NU	NU	NU
RED		128	128			101			134	134								
YELLOW	*	129	129			102			135	135								
GREEN			130			103			136									
RED ARROW															A121			
YELLOW ARROW															A122			
FLASHING YELLOW ARROW															A123			
GREEN ARROW	127	130							136									

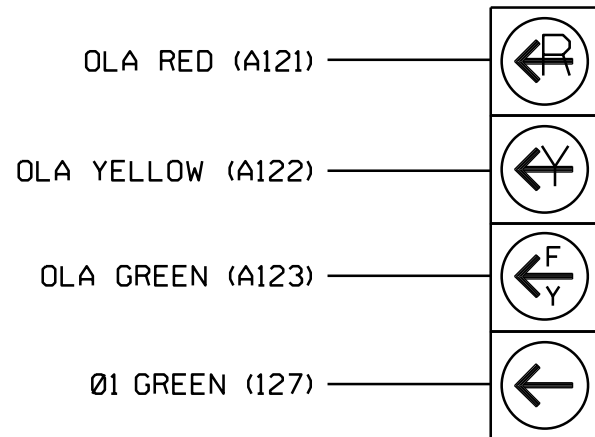
NU = Not Used

★ See pictorial of head wiring in detail this sheet.

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

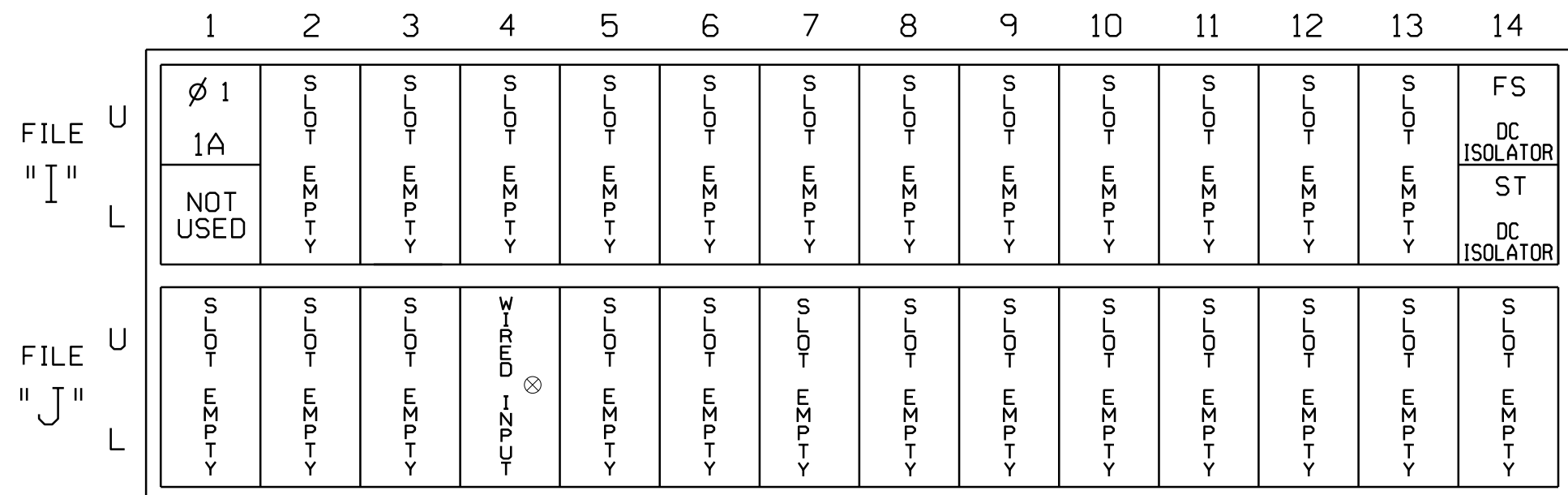
FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

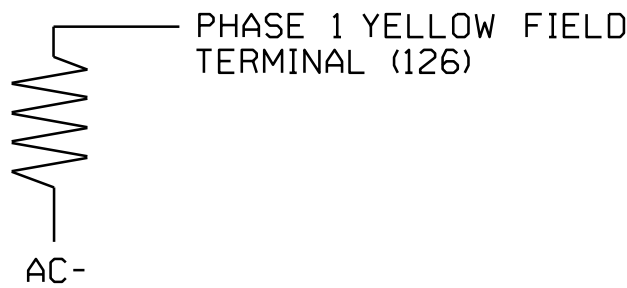
REMOVE ALL INPUT FILES TO
MATCH THE ABOVE POSITION LAYOUT

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

ACCEPTABLE VALUES

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



1. From Main Menu select 2. CONTROLLER

2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

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

TMG VEH OVLP...[A] TYPE:[PPLT FYA]
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2
FLASHING ARROW OUTPUT....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 1
END PROGRAMMING

NOTICE ACTION
PLAN SF BIT 1

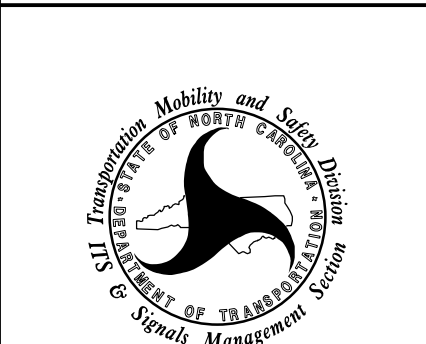


DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-549-4260

NC LICENSE NO. F-1524
www.drmp.com

Electrical Detail - Sheet 1 of 3
Temporary Design 1 - (TMP Phase I)

ELECTRICAL AND PROGRAMMING
DETAILS FOR:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 62 (Liberty Road)
at
I-85 Southbound Ramps

Division 7 Guilford County Archdale

PLAN DATE: March 2025 REVIEWED BY: ZM Esposito

PREPARED BY: AW Poole RKA PROJ. NO.: 17380 (040)

REVISIONS INIT. DATE

Signed by: Zachary M. Esposito 3/17/2025

DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL
FOR ALTERNATE PHASING LOOP 1A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY
FROM TO
PHASE TIMING.... > PHASE TIMING....
TIMING PLAN..... > TIMING PLAN.....
PH DET OPT PLAN. > PH DET OPT PLAN..
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

VEH DETECTOR [1] VEH DET PLAN [2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
CALL OPTION.... YES DELAY TIME... 0.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

VEH DETECTOR [26] VEH DET PLAN [2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

NOTICE DELAY
IS SET TO '3'

ENSURE PHASE
IS SET TO "0"

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN
PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN... [*]
PATTERN.....AUTO SYS OVERRIDE.... NO
TIMING PLAN..... 0 SEQUENCE..... 0
VEH DETECTOR PLAN.. 2 DET LOG.....NONE
FLASH..... -- RED REST..... NO
VEH DET DIAG PLN... 0 PED DET DIAG PLN..0
DIMMING ENABLE.. NO PRIORITY RETURN. NO
PED PR RETURN.. NO QUEUE DELAY..... NO
PMT COND DELAY NO
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PED RCL
WALK 2
VEX 2
VEH RCL
MAX RCL
MAX 2
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
MAX 3
CS INH
OMIT
SPC FCT X (1-8)
AUX FCT . . . (1-3)
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

* The Action Plan number(s) are to be determined by the Division Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2090T1
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3
Temporary Design 1 - (TMP Phase I)



ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at I-85 Southbound Ramps		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
		Division 7 Guilford County Archdale			
PLAN DATE: March 2025		REVIEWED BY: ZM Esposito		Signed by:	
PREPARED BY: AW Poole		RKA PROJ. NO.: 17380 (040)		DATE: 3/17/2025	
REVISIONS		INIT.		DATE	
				SIG. INVENTORY NO. 07-2090T1	

ECONOLITE ASC/3-2070
LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select3. LOAD SW ASSIGN

LD SWITCH ASSIGN									
	PHASE /OVLP	TYPE	DIMMING			---FLASH---			
			R	Y	G	D	PWR	AUT	TGR
1	1	V	.	.	.	+	A	R	X
2	2	V	.	.	.	+	A	R	.
3	3	V	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	5	V	.	.	.	-	A	R	.
6	6	V	.	.	.	-	A	R	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	1	O	.	.	.	+	A	R	X
10	2	O	.	.	.	+	A	R	X
11	3	O	.	.	.	-	A	R	.
12	4	O	.	.	.	-	A	R	.
13	2	P	.	.	.	+	A	.	.
14	4	P	.	.	.	-	A	.	.
15	6	P	.	.	.	+	A	.	.
16	8	P	.	.	.	-	A	.	.

ECONOLITE ASC/3-2070 STARTUP AND
SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select2. CONTROLLER
2. From CONTROLLER Submenu select5. START/FLASH

START/FLASH DATA																	
-----START UP-----																	
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	
PHASE	R					R											
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
OVERLAP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
FLASH>MON.	NO FL TIME..										0 ALL RED...		6				
PWR START SEQ..	1	MUTCD→ YES					Y-		G: NO								

Scroll down on this screen and set "Exit Fl" to Green "G"

ASC/3 FLASH SENSE INPUT CONTROL
FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select8. LOGIC PROCESSOR
3. From LOGIC PROCESSOR Submenu select2. LOGIC STATEMENTS

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER". select "LP SET CIB ON", hit "ENT", and then set the number to 427.

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

THIS STATEMENT IS USED
TO CONTROL THE FLASH
SENSE INPUT WHEN RUNNING
RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 1 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BIT 1: Modifies overlap parent phases for head 11 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2090T1
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

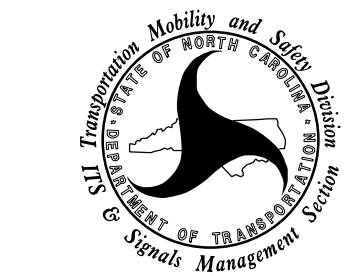
Electrical Detail - Sheet 3 of 3
Temporary Design 1 - (TMP Phase I)

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



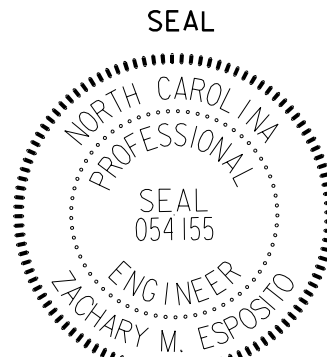
DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-549-4260

NC LICENSE NO. F-1524
www.drmp.com



750 N. Greenfield Pkwy, Garner, NC 27529

ELECTRICAL AND PROGRAMMING DETAILS FOR:			
NC 62 (Liberty Road) at I-85 Southbound Ramps			
Division 7		Guilford County Archdale	
PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	RKA PROJ. NO.:	17380 (040)
REVISIONS		INIT.	DATE



Signed by: *Zachary M. Esposito* 3/17/2025
DATE: 3/17/2025
SIG. INVENTORY NO. 07-2090T1

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL
FOR ALTERNATE PHASING LOOP 1A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY
FROM TO
PHASE TIMING.... > PHASE TIMING....
TIMING PLAN..... > TIMING PLAN....
PH DET OPT PLAN. > PH DET OPT PLAN..
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

VEH DETECTOR [1] VEH DET PLAN [2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
CALL OPTION.... YES DELAY TIME... 0.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

VEH DETECTOR [26] VEH DET PLAN [2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

NOTICE DELAY
IS SET TO '3'

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN
PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN... [*]
PATTERN.....AUTO SYS OVERRIDE.... NO
TIMING PLAN..... 0 SEQUENCE..... 0
VEH DETECTOR PLAN.. 2 DET LOG.....NONE
FLASH..... -- RED REST..... NO
VEH DET DIAG PLN... 0 PED DET DIAG PLN..0
DIMMING ENABLE.. NO PRIORITY RETURN. NO
PED PR RETURN.. NO QUEUE DELAY..... NO
PMT COND DELAY NO
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PED RCL
WALK 2
VEX 2
VEH RCL
MAX RCL
MAX 2
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
MAX 3
CS INH
OMIT
SPC FCT X (1-8)
AUX FCT . . . (1-3)
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

* The Action Plan number(s) are to be determined by the Division Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2090T2
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3
Temporary Design 2 - (TMP Phase II)



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-542-4260

NC LICENSE NO. F-1524
www.drmp.com



ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at I-85 Southbound Ramps	
Division 7		Guilford County Archdale	
PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	RKA PROJ. NO.:	17380 (040)
REVISIONS		INIT.	DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
054155
ZACHARY M. ESPOSITO

Signed by
Zachary M. Esposito
3/17/2025
DATE

SIG. INVENTORY NO. 07-2090T2

(remove jumpers and set switches as shown)

The diagram shows the back of the 18 Channel Program Card. On the left, 18 pins are labeled 10-18, 11-18, 12-18, 13-18, 14-18, 15-18, 16-18, 17-18, 1-18, 2-18, 3-18, 4-18, 5-18, 6-18, 7-18, 8-18, 9-18, and 10-19. Each pin has a corresponding symbol: a solid black square for pins 10-18, 11-18, 12-18, 13-18, 14-18, 15-18, 16-18, 17-18, 1-18, 2-18, 3-18, 4-18, 5-18, 6-18, 7-18, 8-18, and 9-18; a circle with a dot for pins 10-19, 11-19, 12-19, 13-19, 14-19, 15-19, 16-19, 17-19, and 18-19; and an open circle for pins 19-18, 20-18, 21-18, 22-18, 23-18, 24-18, 25-18, 26-18, 27-18, 28-18, 29-18, 30-18, 31-18, 32-18, 33-18, 34-18, 35-18, 36-18, 37-18, 38-18, 39-18, 40-18, 41-18, 42-18, 43-18, 44-18, 45-18, 46-18, 47-18, 48-18, 49-18, 50-18, 51-18, 52-18, 53-18, 54-18, 55-18, 56-18, 57-18, 58-18, 59-18, 60-18, 61-18, 62-18, 63-18, 64-18, 65-18, 66-18, 67-18, 68-18, 69-18, 70-18, 71-18, 72-18, 73-18, 74-18, 75-18, 76-18, 77-18, 78-18, 79-18, 80-18, 81-18, 82-18, 83-18, 84-18, 85-18, 86-18, 87-18, 88-18, 89-18, 90-18, 91-18, 92-18, 93-18, 94-18, 95-18, 96-18, 97-18, 98-18, 99-18, and 100-18. On the right, there are 18 internal dip switches labeled 10-18, 11-18, 12-18, 13-18, 14-18, 15-18, 16-18, 17-18, 1-18, 2-18, 3-18, 4-18, 5-18, 6-18, 7-18, 8-18, 9-18, and 10-19. Each switch has a corresponding symbol: a solid black square for pins 10-18, 11-18, 12-18, 13-18, 14-18, 15-18, 16-18, 17-18, 1-18, 2-18, 3-18, 4-18, 5-18, 6-18, 7-18, 8-18, and 9-18; a circle with a dot for pins 10-19, 11-19, 12-19, 13-19, 14-19, 15-19, 16-19, 17-19, and 18-19; and an open circle for pins 19-18, 20-18, 21-18, 22-18, 23-18, 24-18, 25-18, 26-18, 27-18, 28-18, 29-18, 30-18, 31-18, 32-18, 33-18, 34-18, 35-18, 36-18, 37-18, 38-18, 39-18, 40-18, 41-18, 42-18, 43-18, 44-18, 45-18, 46-18, 47-18, 48-18, 49-18, 50-18, 51-18, 52-18, 53-18, 54-18, 55-18, 56-18, 57-18, 58-18, 59-18, 60-18, 61-18, 62-18, 63-18, 64-18, 65-18, 66-18, 67-18, 68-18, 69-18, 70-18, 71-18, 72-18, 73-18, 74-18, 75-18, 76-18, 77-18, 78-18, 79-18, 80-18, 81-18, 82-18, 83-18, 84-18, 85-18, 86-18, 87-18, 88-18, 89-18, 90-18, 91-18, 92-18, 93-18, 94-18, 95-18, 96-18, 97-18, 98-18, 99-18, and 100-18. Below the switches, there are 18 yellow disable pins labeled 10-18, 11-18, 12-18, 13-18, 14-18, 15-18, 16-18, 17-18, 1-18, 2-18, 3-18, 4-18, 5-18, 6-18, 7-18, 8-18, 9-18, and 10-19. Each pin has a corresponding symbol: a solid black square for pins 10-18, 11-18, 12-18, 13-18, 14-18, 15-18, 16-18, 17-18, 1-18, 2-18, 3-18, 4-18, 5-18, 6-18, 7-18, 8-18, and 9-18; a circle with a dot for pins 10-19, 11-19, 12-19, 13-19, 14-19, 15-19, 16-19, 17-19, and 18-19; and an open circle for pins 19-18, 20-18, 21-18, 22-18, 23-18, 24-18, 25-18, 26-18, 27-18, 28-18, 29-18, 30-18, 31-18, 32-18, 33-18, 34-18, 35-18, 36-18, 37-18, 38-18, 39-18, 40-18, 41-18, 42-18, 43-18, 44-18, 45-18, 46-18, 47-18, 48-18, 49-18, 50-18, 51-18, 52-18, 53-18, 54-18, 55-18, 56-18, 57-18, 58-18, 59-18, 60-18, 61-18, 62-18, 63-18, 64-18, 65-18, 66-18, 67-18, 68-18, 69-18, 70-18, 71-18, 72-18, 73-18, 74-18, 75-18, 76-18, 77-18, 78-18, 79-18, 80-18, 81-18, 82-18, 83-18, 84-18, 85-18, 86-18, 87-18, 88-18, 89-18, 90-18, 91-18, 92-18, 93-18, 94-18, 95-18, 96-18, 97-18, 98-18, 99-18, and 100-18.

ON OFF

WD ENABLE

SW2

A

INTERNAL DIP SWITCHES

FF

ON →

RF 2010

RP DISABLE

WD 1.0 SEC

GY ENABLE

SWF#1 POLARITY

LEDguard

RF SSM

FYA COMPACT

FYA 1-9

FYA 3-10

FYA 5-11

FYA 7-12

OPTIONS

FPA

ON →

1

2

3

4

5

6

7

8

SSM

ON →

9

10

11

12

13

14

15

16

17

18

SSM

■ = DENOTES POSITION OF SWITCH

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 the Red Enable is active at all times during normal operation
4. Integrate monitor with Ethernet network in cabinet.

(front view)

[illegible]

FS = FLASH SENSE
ST = STOP TIME

(install resistor as shown)

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

PHASE 1 YELLOW FIELD
TERMINAL (126)

AC-

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

```

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

```

* See overlap programming on this sheet.

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

For Detection Zone 1A, the equipment and slot reserved for wired input is typical for an NCDOT installation.

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		N
	-	J4U	48	26 ★	6	YES		3		G

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

(program controller as shown)

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

```

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

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

FLASHING ARROW OUTPUT....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 1

END PROGRAMMING

```

NOTICE ACTION
PLAN SF BIT 1



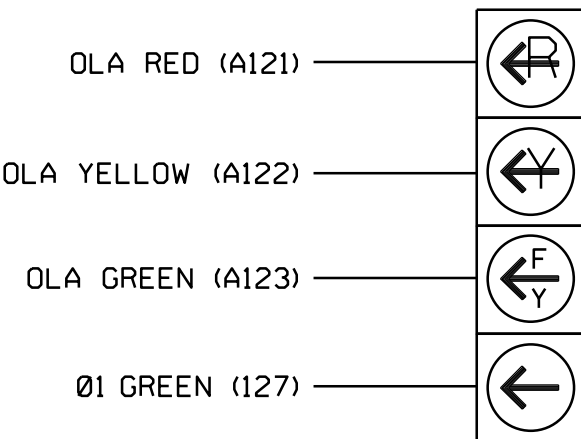
DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-549-4260

NC LICENSE NO. F-1524
www.drmp.com

[illegible]

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

(wire signal head as shown)



11

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2090T3
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 3
Temporary Design 3 - (TMP Phase III)

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL
FOR ALTERNATE PHASING LOOP 1A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY
FROM TO
PHASE TIMING.... > PHASE TIMING....
TIMING PLAN..... > TIMING PLAN.....
PH DET OPT PLAN. > PH DET OPT PLAN..
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

VEH DETECTOR [1] VEH DET PLAN [2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
CALL OPTION.... YES DELAY TIME... 0.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

VEH DETECTOR [26] VEH DET PLAN [2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

NOTICE DELAY
IS SET TO '3'

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN
PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN... [*]
PATTERN.....AUTO SYS OVERRIDE.... NO
TIMING PLAN..... 0 SEQUENCE..... 0
VEH DETECTOR PLAN.. 2 DET LOG.....NONE
FLASH..... -- RED REST..... NO
VEH DET DIAG PLN... 0 PED DET DIAG PLN..0
DIMMING ENABLE.. NO PRIORITY RETURN. NO
PED PR RETURN.. NO QUEUE DELAY..... NO
PMT COND DELAY NO
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PED RCL
WALK 2
VEX 2
VEH RCL
MAX RCL
MAX 2
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
MAX 3
CS INH
OMIT
SPC FCT X (1-8)
AUX FCT . . . (1-3)
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

* The Action Plan number(s) are to be determined by the Division Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2090T3
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3
Temporary Design 3 - (TMP Phase III)

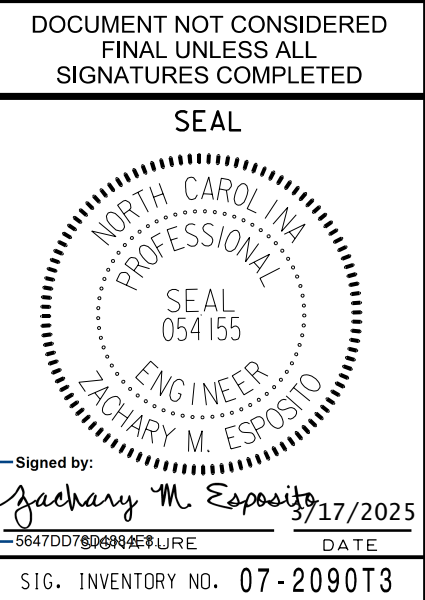


DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-549-4260

NC LICENSE NO. F-1524
www.drmp.com



ELECTRICAL AND PROGRAMMING DETAILS FOR:	
NC 62 (Liberty Road) at I-85 Southbound Ramps	
Division 7	Guilford County Archdale
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole	RKA PROJ. NO.: 17380 (040)
REVISIONS	INIT. DATE
Signed by: Zachary M. Esposito 3/17/2025	
SEALED: 3/17/2025	
SIG. INVENTORY NO. 07-2090T3	



ECONOLITE ASC/3-2070
LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select3. LOAD SW ASSIGN

LD SWITCH ASSIGN										
	PHASE /OVLP	TYPE	DIMMING			---FLASH---				
			R	Y	G	D	PWR	AUT	TGR	
1	1	V	.	.	.	+	A	R	X	
2	2	V	.	.	.	+	A	R	.	
3	3	V	.	.	.	+	A	R	X	
4	4	V	.	.	.	+	A	R	.	
5	5	V	.	.	.	-	A	R	.	
6	6	V	.	.	.	-	A	R	X	
7	7	V	.	.	.	-	A	R	.	
8	8	V	.	.	.	-	A	R	X	
9	1	O	.	.	.	+	A	R	X	
10	2	O	.	.	.	+	A	R	X	
11	3	O	.	.	.	-	A	R	.	
12	4	O	.	.	.	-	A	R	.	
13	2	P	.	.	.	+	A	.	.	
14	4	P	.	.	.	-	A	.	.	
15	6	P	.	.	.	+	A	.	.	
16	8	P	.	.	.	-	A	.	.	

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ECONOLITE ASC/3-2070 STARTUP AND
SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select2. CONTROLLER
2. From CONTROLLER Submenu select5. START/FLASH

START/FLASH DATA																		
-----START UP-----																		
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6		
PHASE	R					R												
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P		
OVERLAP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
FLASH>MON.	NO FL TIME..										0 ALL RED...					6		
PWR START SEQ..	1	MUTCD→					YES	Y-	G:	NO								

Scroll down on this screen and set "Exit Fl" to Green "G"

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 1 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

- SF BIT 1:Modifies overlap parent phases for head 11 to run protected turns only.
- VEH DET PLAN 2:Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

ASC/3 FLASH SENSE INPUT CONTROL
FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select8. LOGIC PROCESSOR
3. From LOGIC PROCESSOR Submenu select2. LOGIC STATEMENTS

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER". select "LP SET CIB ON". hit "ENT". and then set the number to 427.

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC". then 1 for "LOGIC STATEMENT CONTROL". next verify that LP#100 is ENABLED.

END PROGRAMMING

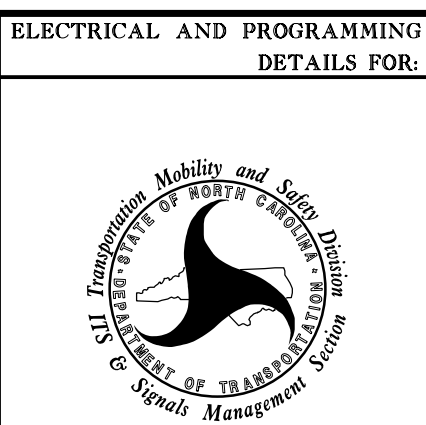
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2090T3
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 3 of 3
Temporary Design 3 - (TMP Phase III)



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-543-4260

750 N. Greenfield Pkwy, Garner, NC 27529



ELECTRICAL AND PROGRAMMING DETAILS FOR:			
NC 62 (Liberty Road) at I-85 Southbound Ramps			
Division 7		Guilford County Archdale	
PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	RKA PROJ. NO.:	17380 (040)
REVISIONS		INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEAL	
Signed by: <i>Zachary M. Esposito</i>	3/17/2025
SIGNATURE	DATE
SIG. INVENTORY NO. 07-2090T3	

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL

FOR ALTERNATE PHASING LOOP 1A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY

FROMTO

PHASE TIMING.... > PHASE TIMING....

TIMING PLAN..... > TIMING PLAN.....

PH DET OPT PLAN. > PH DET OPT PLAN.

DETECTOR PLAN... 1 > DETECTOR PLAN... 2

TOGGLE TO SELECT A "FROM" AND A "TO"

THEN PRESS ENTER

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

VEH DETECTOR [1]VEH DET PLAN [2]

TYPE: N-NTCIP

TS2 DETECTOR..... ECPI LOG..... NO

DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

1 1

CALL OPTION.... YES DELAY TIME... 0.0

EXT OPTION. PASSAGE EXTENSION TIME. 0.0

USE ADDED INITIAL . CROSS SWITCH PH.. 0

LOCK IN..... NONE NTCIP VOL . OR OCC .

PMT QUEUE DELAY. NO

NOTICE VEH DET PLAN 2

ENSURE DELAY IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

VEH DETECTOR [26]VEH DET PLAN [2]

TYPE: G-GREEN EXTENSION/DELAY

TS2 DETECTOR..... ECPI LOG..... NO

DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

26 0

EXTEND TIME... 0.0 DELAY TIME... 3.0

USE ADDED INITIAL . CROSS SWITCH PH.. 0

LOCK IN..... NONE NTCIP VOL . OR OCC .

PMT QUEUE DELAY. NO

NOTICE VEH DET PLAN 2

NOTICE DELAY IS SET TO '3'

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN

PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN... [*]

PATTERN.....AUTO

TIMING PLAN..... 0

VEH DETECTOR PLAN.. 2

FLASH..... --

VEH DET DIAG PLN... 0

DIMMING ENABLE.. NO

PED PR RETURN.. NO

PMT COND DELAY NO

SYS OVERRIDE.... NO

SEQUENCE..... 0

DET LOG.....NONE

RED REST..... NO

PED DET DIAG PLN..0

PRIORITY RETURN. NO

QUEUE DELAY..... NO

PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

PED RCL

WALK 2

VEX 2

VEH RCL

MAX RCL

MAX 2

PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

MAX 3

CS INH

OMIT

SPC FCT X (1-8)

AUX FCT (1-3)

1 2 3 4 5 6 7 8 9 0 1 2 3 4 5

LP 1-15

LP 16-30

LP 31-45

LP 46-60

LP 61-75

LP 76-90

LP 91-100

* The Action Plan number(s) are to be determined by the Division and/or City Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 07-2090

DESIGNED: Mar 2025

SEALED: 3/17/2025

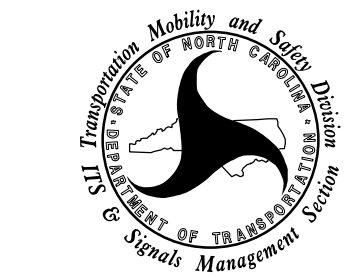
REVISED: N/A

Electrical Detail - Sheet 2 of 4
Final Design



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-549-4260

NC LICENSE NO. F-1524
www.drmp.com



750 N. Greenfield Pkwy, Garner, NC 27529

ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at I-85 Southbound Ramps	
Division 7		Guilford County	Archdale
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito		
PREPARED BY: AW Poole	RKA PROJ. NO.: 17380 (040)		
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NOTICE

SEAL

054155

ENGINEER

JOACHIM M. ESPOSITO

Signed by: Joachym M. Esposito

3/17/2025

SIGNATURE

DATE

SIG. INVENTORY NO. 07-2090

ECONOLITE ASC/3-2070
LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select3. LOAD SW ASSIGN

LD SWITCH ASSIGN										
	PHASE	/OVLP	TYPE	DIMMING			---FLASH---			
				R	Y	G	D	PWR	AUT	TGR
1	1	V		.	.	.	+	A	R	X
2	2	V		.	.	.	+	A	R	.
3	3	V		.	.	.	+	A	R	X
4	4	V		.	.	.	+	A	R	.
5	5	V		.	.	.	-	A	R	.
6	6	V		.	.	.	-	A	R	X
7	7	V		.	.	.	-	A	R	.
8	8	V		.	.	.	-	A	R	X
9	1	O		.	.	.	+	A	R	X
10	2	O		.	.	.	+	A	R	X
11	3	O		.	.	.	-	A	R	.
12	4	O		.	.	.	-	A	R	.
13	2	P		.	.	.	+	A	.	.
14	4	P		.	.	.	-	A	.	.
15	6	P		.	.	.	+	A	.	.
16	8	P		.	.	.	-	A	.	.

ECONOLITE ASC/3-2070 STARTUP AND
SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select2. CONTROLLER
2. From CONTROLLER Submenu select5. START/FLASH

START/FLASH DATA																	
-----START UP-----																	
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	
PHASE	R					R											
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
OVERLAP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
FLASH>MON.	NO FL TIME..										0 ALL RED...		6				
PWR START SEQ..	1 MUTCD> YES					Y- G: NO											

Scroll down on this screen and set "Exit Fl" to Green "G"

ASC/3 FLASH SENSE INPUT CONTROL
FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select8. LOGIC PROCESSOR
3. From LOGIC PROCESSOR Submenu select2. LOGIC STATEMENTS

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER". select "LP SET CIB ON". hit "ENT". and then set the number to 427.

LP#:100	COPY FROM:100	ACTIVE: M	FALSE
IF LP CIB CODE ON		331	F
THEN LP	DELAY FOR	1.0 SECONDS	
LP	SET CIB ON	427	
ELSE			

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC". then 1 for "LOGIC STATEMENT CONTROL". next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL
FOR LEADING PED INTERVAL (DELAYED GREEN)

(program controller as shown)

The following logic processor configuration holds the FYA on signal head 11 red for the duration of the delayed green time (leading ped interval) when serving a ped call on the opposing through phase.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select8. LOGIC PROCESSOR
3. From the LOGIC PROCESSOR Submenu select2. LOGIC STATEMENTS

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

LP#:	1	COPY FROM:	1	ACTIVE:	M	(T/F)
IF	PED ON PH WALK		2	IS	ON	
AND	VEH GREEN ON PH		2	IS	OFF	
THEN	SIG SET OLP RED		1		ON	
	SIG SET OLP YELLOW		1		OFF	
	SIG SET OVLP GREEN		1		OFF	
ELSE						

HOLD SIGNAL HEAD 11 FYA RED DURING THE PHASE 2 DELAYED GREEN TIME (LEADING PED INTERVAL)

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select8. LOGIC PROCESSOR
3. From the LOGIC PROCESSOR Submenu select1. LOGIC STATEMENT CONTROL

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

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

END PROGRAMMING

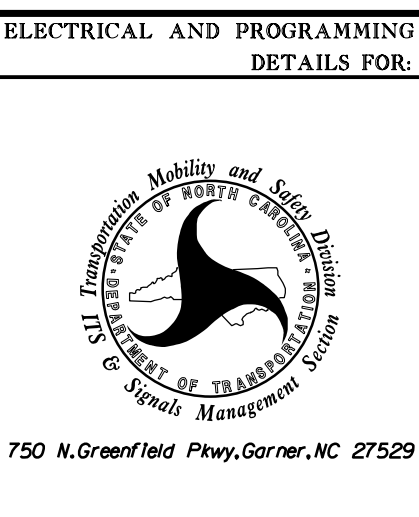
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2090
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 3 of 4
Final Design



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-542-4260

750 N. Greenfield Pkwy, Garner, NC 27529



NC 62 (Liberty Road) at I-85 Southbound Ramps		
Division 7	Guilford County	Archdale
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito	
PREPARED BY: AW Poole	RKA PROJ. NO.: 17380 (040)	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL	
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 054155	
ZACHARY M. ESPOSITO	
Signed by: Zachary M. Esposito	DATE: 3/17/2025
CERTIFIED SIGNATURE	DATE
SIG. INVENTORY NO.	07-2090

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN.
SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED
TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED
TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

<u>PHASING</u>	<u>VEH DET PLAN</u>	<u>SF BITS ENABLED</u>
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY
EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE
RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN
SF BIT 1 AND VEH DET PLAN 2 ACTIVATE TO CALL THE
"ALTERNATE PHASING":

- SF BIT 1:

Modifies overlap parent phases
for head 11 to run protected
turns only.
- VEH DET PLAN 2:

Disables phase 6 call on loop 1A
and reduces delay time for phase 1
call on loop 1A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2090
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 4 of 4
Final Design



ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at I-85 Southbound Ramps		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
		Division 7 Guilford County Archdale			
PLAN DATE: March 2025		REVIEWED BY: ZM Esposito		Signed by: <i>Zachary M. Esposito</i> 3/17/2025	
PREPARED BY: AW Poole		RKA PROJ. NO.: 17380 (040)		DATE: 3/17/2025	
REVISIONS		INIT.		DATE	
				SIG. INVENTORY NO. 07-2090	

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL

FOR ALTERNATE PHASING LOOP 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY

FROM TO

PHASE TIMING.... > PHASE TIMING....

TIMING PLAN..... > TIMING PLAN.....

PH DET OPT PLAN. > PH DET OPT PLAN.

DETECTOR PLAN... 1 > DETECTOR PLAN... 2

TOGGLE TO SELECT A "FROM" AND A "TO"

THEN PRESS ENTER

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "0".

VEH DETECTOR [5] VEH DET PLAN [2]

TYPE: N-NTCIP

TS2 DETECTOR..... ECPI LOG..... NO

DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

5 5

CALL OPTION.... YES DELAY TIME... 0.0

EXT OPTION. PASSAGE EXTENSION TIME. 0.0

USE ADDED INITIAL . CROSS SWITCH PH.. 0

LOCK IN..... NONE NTCIP VOL . OR OCC .

PMT QUEUE DELAY. NO

NOTICE VEH DET PLAN 2

ENSURE DELAY IS SET TO '0'

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

VEH DETECTOR [22] VEH DET PLAN [2]

TYPE: G-GREEN EXTENSION/DELAY

TS2 DETECTOR..... ECPI LOG..... NO

DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

22 0

EXTEND TIME... 0.0 DELAY TIME... 3.0

USE ADDED INITIAL . CROSS SWITCH PH.. 0

LOCK IN..... NONE NTCIP VOL . OR OCC .

PMT QUEUE DELAY. NO

NOTICE VEH DET PLAN 2

NOTICE DELAY IS SET TO '3'

ENSURE PHASE IS SET TO "0"

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN

PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN... [*]

PATTERN.....AUTO SYS OVERRIDE.... NO

TIMING PLAN..... 0 SEQUENCE..... 0

VEH DETECTOR PLAN.. 2 DET LOG.....NONE

FLASH..... -- RED REST..... NO

VEH DET DIAG PLN... 0 PED DET DIAG PLN..0

DIMMING ENABLE.. NO PRIORITY RETURN. NO

PED PR RETURN.. NO QUEUE DELAY..... NO

PMT COND DELAY NO

PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

PED RCL

WALK 2

VEX 2

VEH RCL

MAX RCL

MAX 2

PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

MAX 3

CS INH

OMIT

SPC FCT X . . . (1-8)

AUX FCT . . . (1-3)

1 2 3 4 5 6 7 8 9 0 1 2 3 4 5

LP 1-15

LP 16-30

LP 31-45

LP 46-60

LP 61-75

LP 76-90

LP 91-100

* The Action Plan number(s) are to be determined by the Division Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2091T1
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3
Temporary Design 1 - (TMP Phase I)



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR. NC LICENSE NO. F-1524
SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-548-4260
www.drmp.com



ELECTRICAL AND PROGRAMMING DETAILS FOR:	
NC 62 (Liberty Road) at I-85 Northbound Ramps	
Division 7	Guilford County Archdale
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole	RKA PROJ. NO.: 17380 (040)
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEAL	
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 054155	
JACOBARY M. ESPOSITO	
Signed by: Jacobary M. Esposito	3/17/2025
DATE	
SIG. INVENTORY NO. 07-2091T1	

ECONOLITE ASC/3-2070

LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select3. LOAD SW ASSIGN

LD SWITCH ASSIGN											
	PHASE		DIMMING			---FLASH---					
	/OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR		
1	1	V	.	.	.	+	A	R	X		
2	2	V	.	.	.	+	A	R	.		
3	3	V	.	.	.	+	A	R	X		
4	4	V	.	.	.	+	A	R	.		
5	5	V	.	.	.	-	A	R	.		
6	6	V	.	.	.	-	A	R	X		
7	7	V	.	.	.	-	A	R	.		
8	8	V	.	.	.	-	A	R	X		
9	1	O	.	.	.	+	A	R	X		
10	2	O	.	.	.	+	A	R	X		
11	3	O	.	.	.	-	A	R	.		
12	4	O	.	.	.	-	A	R	.		
13	2	P	.	.	.	+	A	.	.		
14	4	P	.	.	.	-	A	.	.		
15	6	P	.	.	.	+	A	.	.		
16	8	P	.	.	.	-	A	.	.		

ECONOLITE ASC/3-2070 STARTUP AND

SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select2. CONTROLLER
2. From CONTROLLER Submenu select5. START/FLASH

START/FLASH DATA																			
-----START UP-----																			
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6			
PHASE	R					R													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P			
OVERLAP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
FLASH>MON.	NO FL TIME..										0 ALL RED...		6						
PWR START SEQ..	1 MUTCD>					YES					Y- G: NO								

Scroll down on this screen and set "Exit Fl" to Green "G"

ASC/3 FLASH SENSE INPUT CONTROL

FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

1. From Main Menu select1. CONFIGURATION
2. From CONFIGURATION Submenu select8. LOGIC PROCESSOR
3. From LOGIC PROCESSOR Submenu select2. LOGIC STATEMENTS

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "c" key. then hit "ENTER". select "LP SET CIB ON", hit "ENT", and then set the number to 427.

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

THIS STATEMENT IS USED
TO CONTROL THE FLASH
SENSE INPUT WHEN RUNNING
RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BIT 5: Modifies overlap parent phases for head 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2091T1
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 3 of 3
Temporary Design 1 - (TMP Phase I)

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

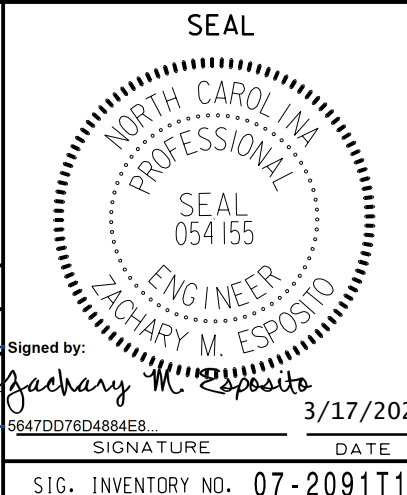


DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR. SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-548-4260

NC LICENSE NO. F-1524
www.drmp.com



NC 62 (Liberty Road) at I-85 Northbound Ramps			
Division 7		Guilford County Archdale	
PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	RKA PROJ. NO.:	17380 (040)
REVISIONS		INIT.	DATE

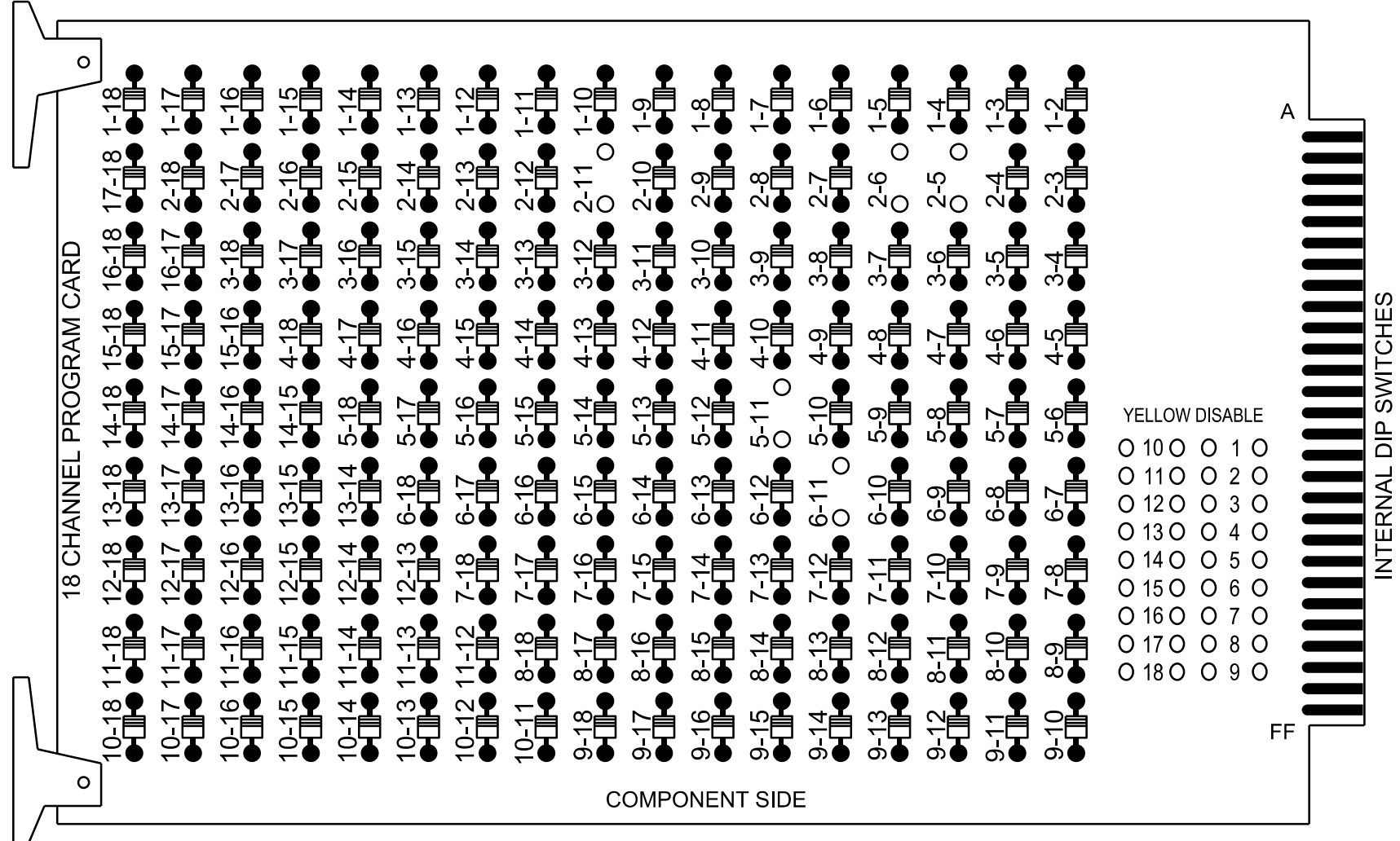


Signed by: *Zachary M. Esposito*
05470707048848
SIGNATURE DATE
3/17/2025
SIG. INVENTORY NO. 07-2091T1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-11, 5-11 AND 6-11.



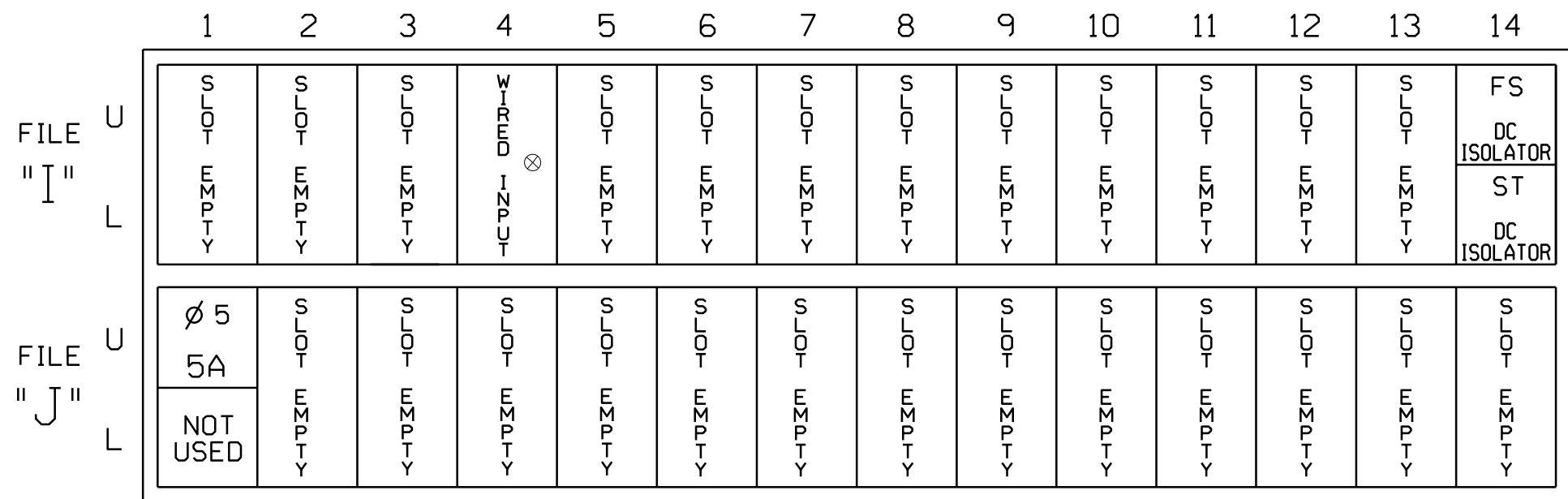
REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)



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

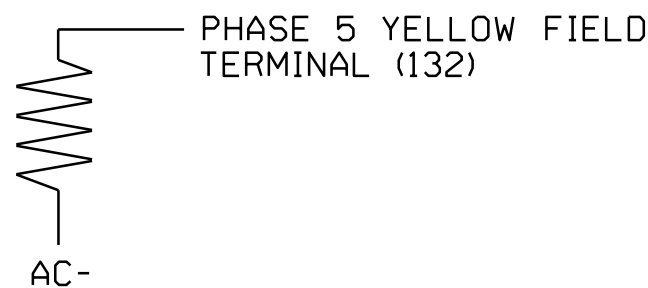
FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S7,S8,S11,AUX S4
PHASES USED.....2,5,6,8
OVERLAP "A".....NOT USED
OVERLAP "B".....NOT USED
OVERLAP "C".....*
OVERLAP "D".....NOT USED

* See overlap programming on this sheet.

SPECIAL DETECTOR NOTE

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

For Detection Zone 5A, the equipment and slot reserved for wired input is typical for an NCDOT installation.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
5A ¹	TB3-1,2	J1U	55	5 ★	5	YES		15		N
	-	I4U	47	22 ★	2	YES		3		G

¹Add jumper from J1-W to I4-W, on rear of input file.

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

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

Toggle Until 'Overlap C'

OVERLAP C

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

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

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT....CH11 ISOLATE

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

ACTION PLAN SF BIT DISABLE..... 5

END PROGRAMMING

NOTICE ACTION
PLAN SF BIT 5



SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21	22	NU	NU	NU	51★	61	62	NU	NU	81,82,83	NU	NU	NU	51★	NU	NU
RED		128	128					134	134			107						
YELLOW		129	129				*	135	135			108						
GREEN		130							136			109						
RED ARROW																A114		
YELLOW ARROW																A115		
FLASHING YELLOW ARROW																A116		
GREEN ARROW			130				133	136										

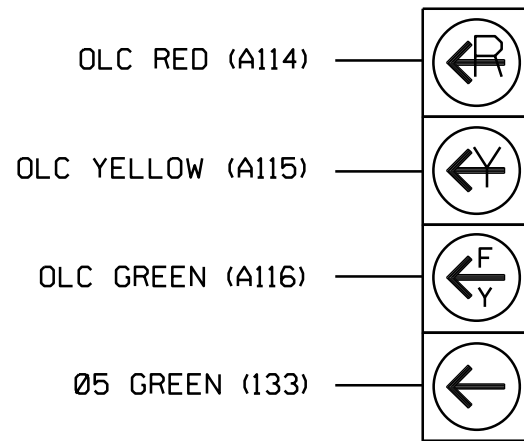
NU = Not Used

★ See pictorial of head wiring in detail this sheet.

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

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



51

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2091T2
DESIGNED: March 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 3
Temporary Design 2 - (TMP Phase II)

ELECTRICAL AND PROGRAMMING DETAILS FOR:		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
NC 62 (Liberty Road) at I-85 Northbound Ramps		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 054155 JACOBARY M. ESPOSITO	
Division 7 Guilford County Archdale		Signed by: <i>Jacoby M. Esposito</i> 3/17/2025	
PLAN DATE: March 2025		REVIEWED BY: ZM Esposito	
PREPARED BY: AW Poole		RKA PROJ. NO.: 17380 (040)	
REVISIONS		INIT. DATE	
		SIGNATURE DATE	
		SIG. INVENTORY NO. 07-2091T2	

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL
FOR ALTERNATE PHASING LOOP 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY
FROM TO
PHASE TIMING.... > PHASE TIMING....
TIMING PLAN..... > TIMING PLAN.....
PH DET OPT PLAN. > PH DET OPT PLAN..
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "0".

VEH DETECTOR [5] VEH DET PLAN [2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
CALL OPTION.... YES DELAY TIME... 0.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '0'

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

VEH DETECTOR [22] VEH DET PLAN [2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

NOTICE DELAY
IS SET TO '3'

ENSURE PHASE
IS SET TO "0"

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN
PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN... [*]
PATTERN.....AUTO SYS OVERRIDE.... NO
TIMING PLAN..... 0 SEQUENCE..... 0
VEH DETECTOR PLAN.. 2 DET LOG.....NONE
FLASH..... -- RED REST..... NO
VEH DET DIAG PLN... 0 PED DET DIAG PLN..0
DIMMING ENABLE.. NO PRIORITY RETURN. NO
PED PR RETURN.. NO QUEUE DELAY..... NO
PMT COND DELAY NO
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PED RCL
WALK 2
VEX 2
VEH RCL
MAX RCL
MAX 2
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
MAX 3
CS INH
OMIT
SPC FCT X . . . (1-8)
AUX FCT . . . (1-3)
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

* The Action Plan number(s) are to be determined by the Division Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2091T2
DESIGNED: March 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3
Temporary Design 2 - (TMP Phase II)



ELECTRICAL AND PROGRAMMING DETAILS FOR: 	NC 62 (Liberty Road) at I-85 Northbound Ramps		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	Division 7 Guilford County Archdale			
	PLAN DATE: March 2025	REVIEWED BY: ZM Esposito		
	PREPARED BY: AW Poole	RKA PROJ. NO.: 17380 (040)		
	REVISIONS	INIT. DATE		
750 N. Greenfield Pkwy, Garner, NC 27529		Signed by:		
		DATE: 3/17/2025		
		SIG. INVENTORY NO. 07-2091T2		

ECONOLITE ASC/3-2070
LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

LD SWITCH ASSIGN										
	PHASE		DIMMING				---FLASH---			
	/OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR	
1	1	V	.	.	.	+	A	R	X	
2	2	V	.	.	.	+	A	R	.	
3	3	V	.	.	.	+	A	R	X	
4	4	V	.	.	.	+	A	R	.	
5	5	V	.	.	.	-	A	R	.	
6	6	V	.	.	.	-	A	R	X	
7	7	V	.	.	.	-	A	R	.	
8	8	V	.	.	.	-	A	R	X	
9	1	O	.	.	.	+	A	R	X	
10	2	O	.	.	.	+	A	R	X	
11	3	O	.	.	.	-	A	R	.	
12	4	O	.	.	.	-	A	R	.	
13	2	P	.	.	.	+	A	.	.	
14	4	P	.	.	.	-	A	.	.	
15	6	P	.	.	.	+	A	.	.	
16	8	P	.	.	.	-	A	.	.	

ECONOLITE ASC/3-2070 STARTUP AND
SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 5. START/FLASH

START/FLASH DATA																
-----START UP-----																
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
PHASE	R										R					
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
OVERLAP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLASH>MON.	NO	FL	TIME..				0	ALL	RED...						6	
PWR START SEQ..			1	MUTCD>	YES		Y-	G:	NO							

Scroll down on this screen and set "Exit Fl" to Green "G"

ASC/3 FLASH SENSE INPUT CONTROL
FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

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

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER". select "LP SET CIB ON", hit "ENT", and then set the number to 427.

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

THIS STATEMENT IS USED
TO CONTROL THE FLASH
SENSE INPUT WHEN RUNNING
RED-RED FLASH OPERATION.

Hit "ESC". then 1 for "LOGIC STATEMENT CONTROL". next verify that LP#100 is ENABLED.

END PROGRAMMING

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

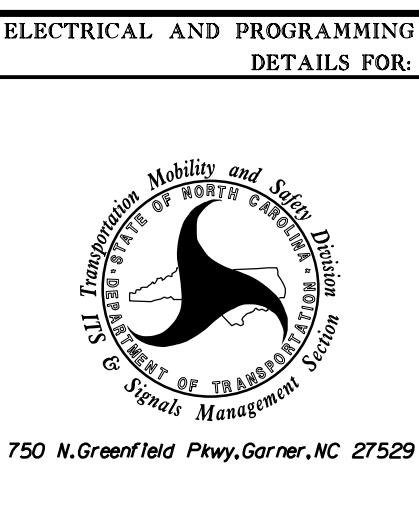
- SF BIT 5: Modifies overlap parent phases for head 51 to run protected turns only.
- VEH DET PLAN 2: Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2091T2
DESIGNED: March 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 3 of 3
Temporary Design 2 - (TMP Phase II)



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR. SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-548-4260
NC LICENSE NO. F-1524
www.drmp.com



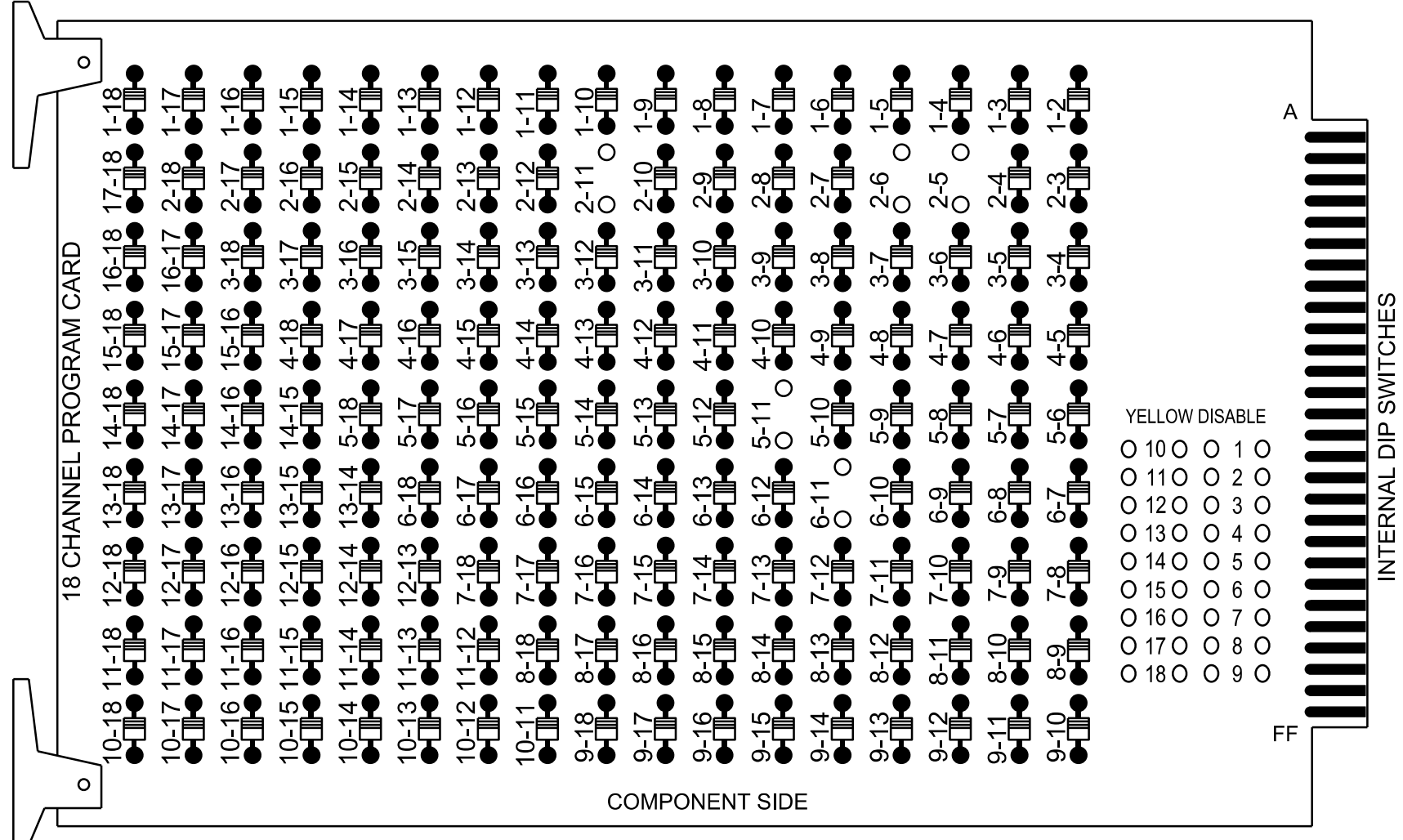
ELECTRICAL AND PROGRAMMING DETAILS FOR:		
NC 62 (Liberty Road) at I-85 Northbound Ramps		
Division 7	Guilford County	Archdale
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito	
PREPARED BY: AW Poole	RKA PROJ. NO.: 17380 (040)	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEAL	
Signed by: <i>Zachary M. Esposito</i>	3/17/2025
DATE	
SIG. INVENTORY NO. 07-2091T2	

18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-11, 5-11 AND 6-11.



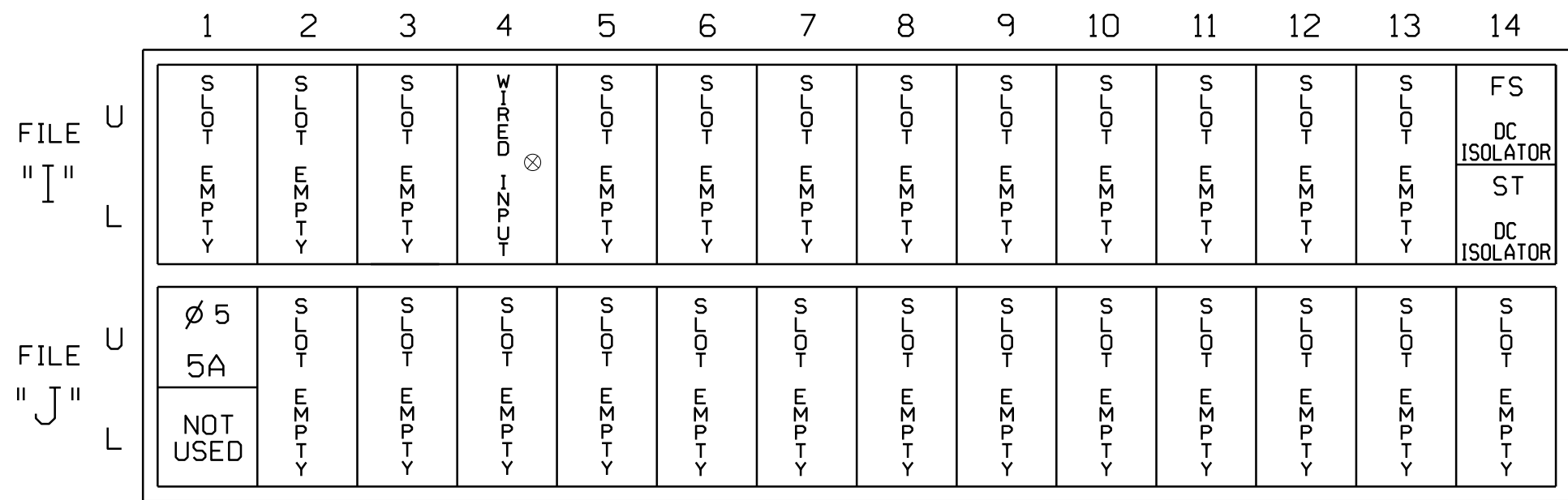
REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)



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

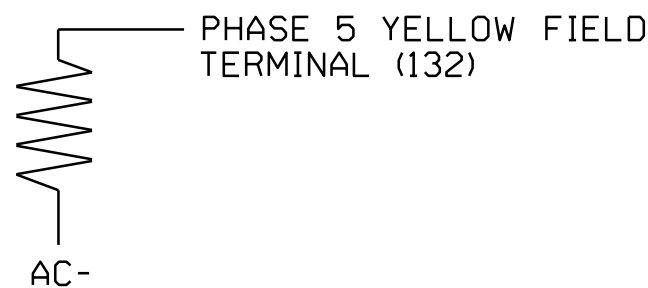
FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S7,S8,S11,AUX S4
PHASES USED.....2,5,6,8
OVERLAP "A".....NOT USED
OVERLAP "B".....NOT USED
OVERLAP "C".....*
OVERLAP "D".....NOT USED

* See overlap programming on this sheet.

SPECIAL DETECTOR NOTE

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

For Detection Zone 5A, the equipment and slot reserved for wired input is typical for an NCDOT installation.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
5A ¹	TB3-1,2	J1U	55	5 ★	5	YES		15		N
	-	I4U	47	22 ★	2	YES		3		G

¹Add jumper from J1-W to I4-W, on rear of input file.

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

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

Toggle Until 'Overlap C'

OVERLAP C

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

TMG VEH OVLP...[C] TYPE:[PPLT FYA]
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6
FLASHING ARROW OUTPUT....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 5
END PROGRAMMING

NOTICE ACTION
PLAN SF BIT 5



SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21	22	NU	NU	NU	51 ★	61	62	NU	NU	81,82,83	NU	NU	NU	51 ★	NU	NU
RED		128	128					134	134			107						
YELLOW		129	129				*	135	135			108						
GREEN		130							136			109						
RED ARROW																A114		
YELLOW ARROW																A115		
FLASHING YELLOW ARROW																A116		
GREEN ARROW			130				133	136										

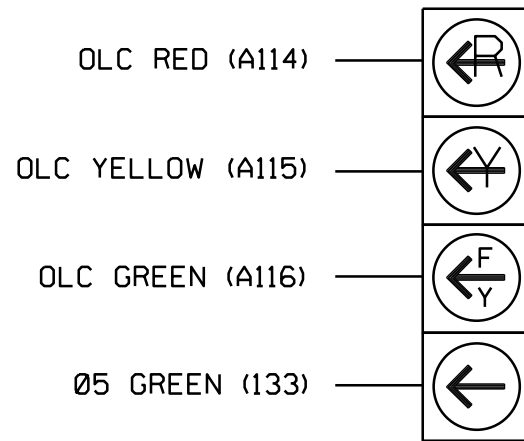
NU = Not Used

★ See pictorial of head wiring in detail this sheet.

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

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



51

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2091T3
DESIGNED: March 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 3
Temporary Design 3 - (TMP Phase III)

ELECTRICAL AND PROGRAMMING DETAILS FOR:		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
NC 62 (Liberty Road) at I-85 Northbound Ramps		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 054155 ZACHARY M. ESPOSITO	
Division 7 Guilford County Archdale		Signed by: ZACHARY M. ESPOSITO 3/17/2025	
PLAN DATE: March 2025 REVIEWED BY: ZM Esposito		DATE	
PREPARED BY: AW Poole RKA PROJ. NO.: 17380 (040)		DATE	
REVISIONS		DATE	
750 N. Greenfield Pkwy, Garner, NC 27529		DATE	
SIG. INVENTORY NO. 07-2091T3		DATE	

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL
FOR ALTERNATE PHASING LOOP 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY
FROM TO
PHASE TIMING.... > PHASE TIMING....
TIMING PLAN..... > TIMING PLAN.....
PH DET OPT PLAN. > PH DET OPT PLAN..
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "0".

VEH DETECTOR [5] VEH DET PLAN [2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
CALL OPTION.... YES DELAY TIME... 0.0
EXT OPTION. PASSAGE EXTENSION TIME. 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '0'

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

VEH DETECTOR [22] VEH DET PLAN [2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

NOTICE DELAY
IS SET TO '3'

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN
PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN... [*]
PATTERN.....AUTO SYS OVERRIDE.... NO
TIMING PLAN..... 0 SEQUENCE..... 0
VEH DETECTOR PLAN.. 2 DET LOG.....NONE
FLASH..... -- RED REST..... NO
VEH DET DIAG PLN... 0 PED DET DIAG PLN..0
DIMMING ENABLE.. NO PRIORITY RETURN. NO
PED PR RETURN.. NO QUEUE DELAY..... NO
PMT COND DELAY NO
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PED RCL
WALK 2
VEX 2
VEH RCL
MAX RCL
MAX 2
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
MAX 3
CS INH
OMIT
SPC FCT X . . . (1-8)
AUX FCT . . . (1-3)
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90
LP 91-100

* The Action Plan number(s) are to be determined by the Division Traffic Engineer.

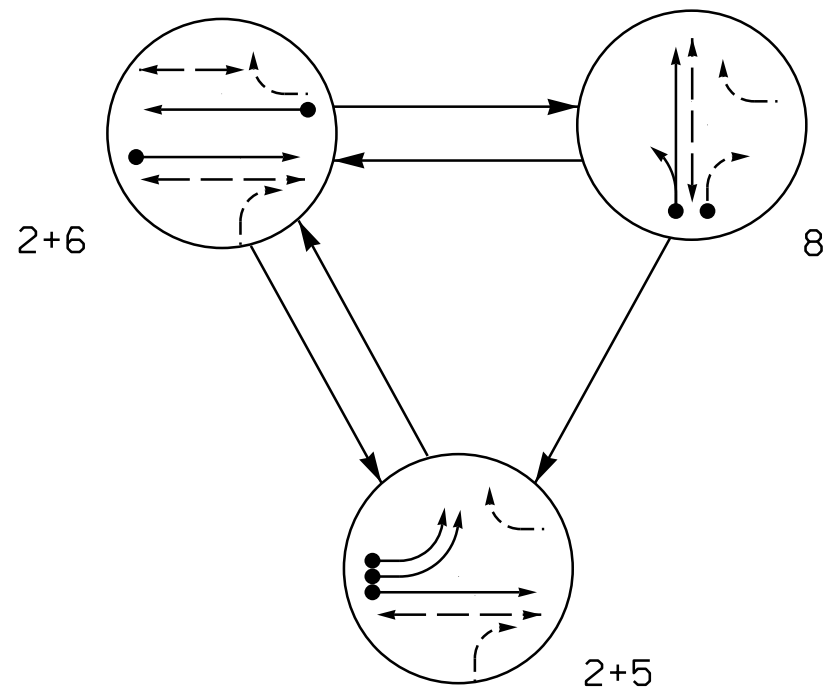
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2091T3
DESIGNED: March 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 2 of 3
Temporary Design 3 - (TMP Phase III)

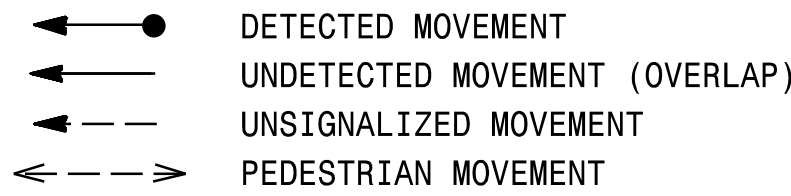


ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at I-85 Northbound Ramps		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
		Division 7 Guilford County Archdale			
PLAN DATE: March 2025		REVIEWED BY: ZM Esposito		Signed by:	
PREPARED BY: AW Poole		RKA PROJ. NO.: 17380 (040)		DATE: 3/17/2025	
REVISIONS		INIT.		DATE	
				SIG. INVENTORY NO. 07-2091T3	

PHASING DIAGRAM



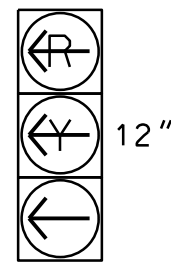
PHASING DIAGRAM DETECTION LEGEND



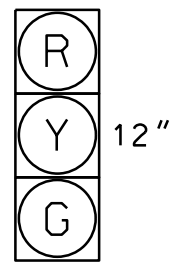
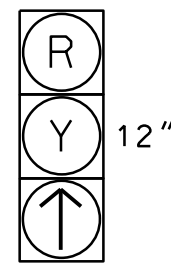
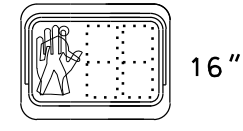
SIGNAL FACE	PHASE			
	2 + 5	2 + 6	8	FLUSH
21	G	G	R	R
22	↑	↑	R	R
51,52	←	←	←	←
61	R	↑	R	R
62	R	G	R	R
81,82,83	R	R	G	R
P21,P22	W	W	DW	DRK
P61,P62	DW	W	DW	DRK
P81,P82	DW	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



51,52

21
62
81,82,8322
61P21,P22
P61,P62
P81,P82

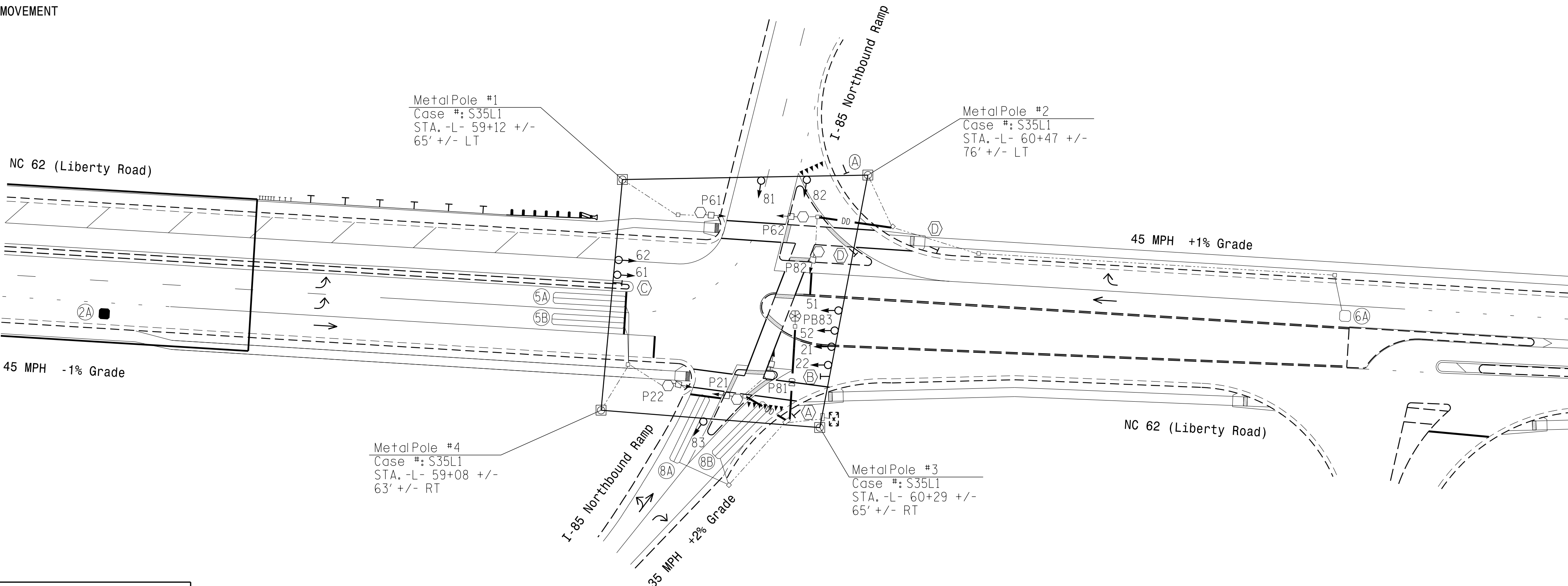
DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
LOOP / ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURN	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM NEW CARD
2A	6X6	300	*	*	2	Yes	-	-	X	N	- *
5A	6X40	0	2-4-2	X	5	Yes	-	-	-	N	- X
5B	6X40	0	2-4-2	X	5	Yes	-	-	-	N	- X
6A	6X6	300	5	X	6	Yes	-	-	X	N	- X
8A	6X40	0	2-4-2	X	8	Yes	-	-	-	N	- X
8B	6X40	0	2-4-2	X	8	Yes	-	30.0	-	N	- X

* Multizone Microwave Detection.

3 Phase Fully Actuated (High Point Signal System)

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.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

PROPOSED	EXISTING

ASC/3 TIMING CHART

FEATURE	PHASE			
	2	5	6	8
Min Green *	12	7	12	7
Delayed Green	-	-	-	-
Walk *	7	-	7	7
Ped Clear	4	-	7	5
Veh. Extension *	6.0	2.0	6.0	2.0
Max I *	90	20	90	30
Yellow	4.6	3.0	4.6	3.7
Red Clear	1.2	3.3	1.2	1.9
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	2.5	-	2.5	-
Max Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Locking Detector	X	-	X	-
Recall Position	VEH RECALL	-	VEH RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

Signal Upgrade - Final Design



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR., SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-549-4260

NC LICENSE NO. F-1524
www.drmp.com



NC 62 (Liberty Road) at I-85 Northbound Ramps			
Division 7	Guilford County	Archdale	
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito	PREPARED BY: AW Poole	RKA PROJ. NO: 17380 (040)
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL
Signed by:
DATE: 3/17/2025
SIGNATURE
DATE
SIG. INVENTORY NO. 07-2091

ECONOLITE ASC/3-2070
LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select
1. CONFIGURATION
2. From CONFIGURATION Submenu select
3. LOAD SW ASSIGN

LD SWITCH ASSIGN		PHASE		DIMMING		---FLASH---		
		/OVLP	TYPE	R	Y	G	D	PWR AUT TGR
1	1	V		.	.	.	+	A R X
2	2	V		.	.	.	+	A R .
3	3	V		.	.	.	+	A R X
4	4	V		.	.	.	+	A R .
5	5	V		.	.	.	-	A R .
6	6	V		.	.	.	-	A R X
7	7	V		.	.	.	-	A R .
8	8	V		.	.	.	-	A R X
9	1	O		.	.	.	+	A R X
10	2	O		.	.	.	+	A R X
11	3	O		.	.	.	-	A R .
12	4	O		.	.	.	-	A R .
13	2	P		.	.	.	+	A . .
14	4	P		.	.	.	-	A . .
15	6	P		.	.	.	+	A . .
16	8	P		.	.	.	-	A . .

ECONOLITE ASC/3-2070 STARTUP AND
SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select
2. CONTROLLER
2. From CONTROLLER Submenu select
5. START/FLASH

START/FLASH DATA	
-----START UP-----	
1	2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE	R R
	A B C D E F G H I J K L M N O P
OVERLAP	X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME..	0 ALL RED... 6
PWR START SEQ..	1 MUTCD> YES Y- G: NO

Scroll down on this screen and set "Exit Fl" to Green "G"

ASC/3 FLASH SENSE INPUT CONTROL
FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

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

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key. then hit "ENTER". select "LP SET CIB ON". hit "ENT". and then set the number to 427.

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

THIS STATEMENT IS USED
TO CONTROL THE FLASH
SENSE INPUT WHEN RUNNING
RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2091
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

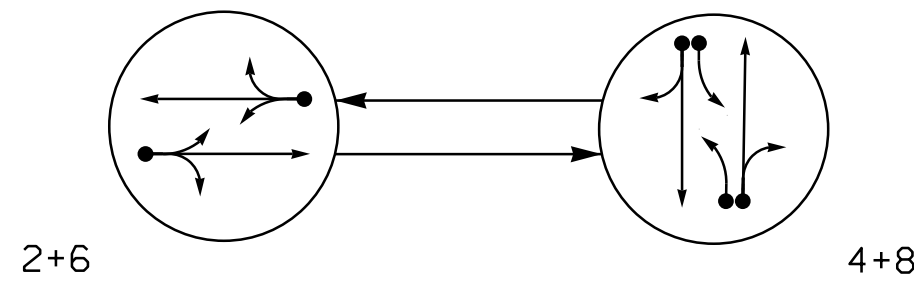
Electrical Detail - Sheet 2 of 2
Final Design



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-546-4260
NC LICENSE NO. F-1524
www.drmp.com

ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at I-85 Northbound Ramps		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
		Division 7 Guilford County Archdale			
PLAN DATE: March 2025		REVIEWED BY: ZM Esposito		Signed by:	
PREPARED BY: AW Poole		RKA PROJ. NO.: 17380 (040)		DATE: 3/17/2025	
REVISIONS		INIT.		DATE	
750 N. Greenfield Pkwy, Garner, NC 27529					
				SIG. INVENTORY NO. 07-2091	

PHASING DIAGRAM



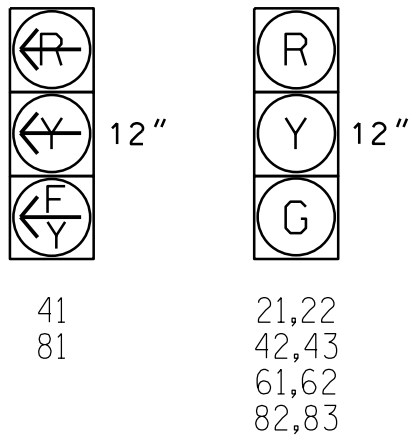
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE		
	2+6	4+8	FLASH
21,22	G	R	R
41	R	G	R
42,43	R	G	R
61,62	G	R	R
81	R	G	R
82,83	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



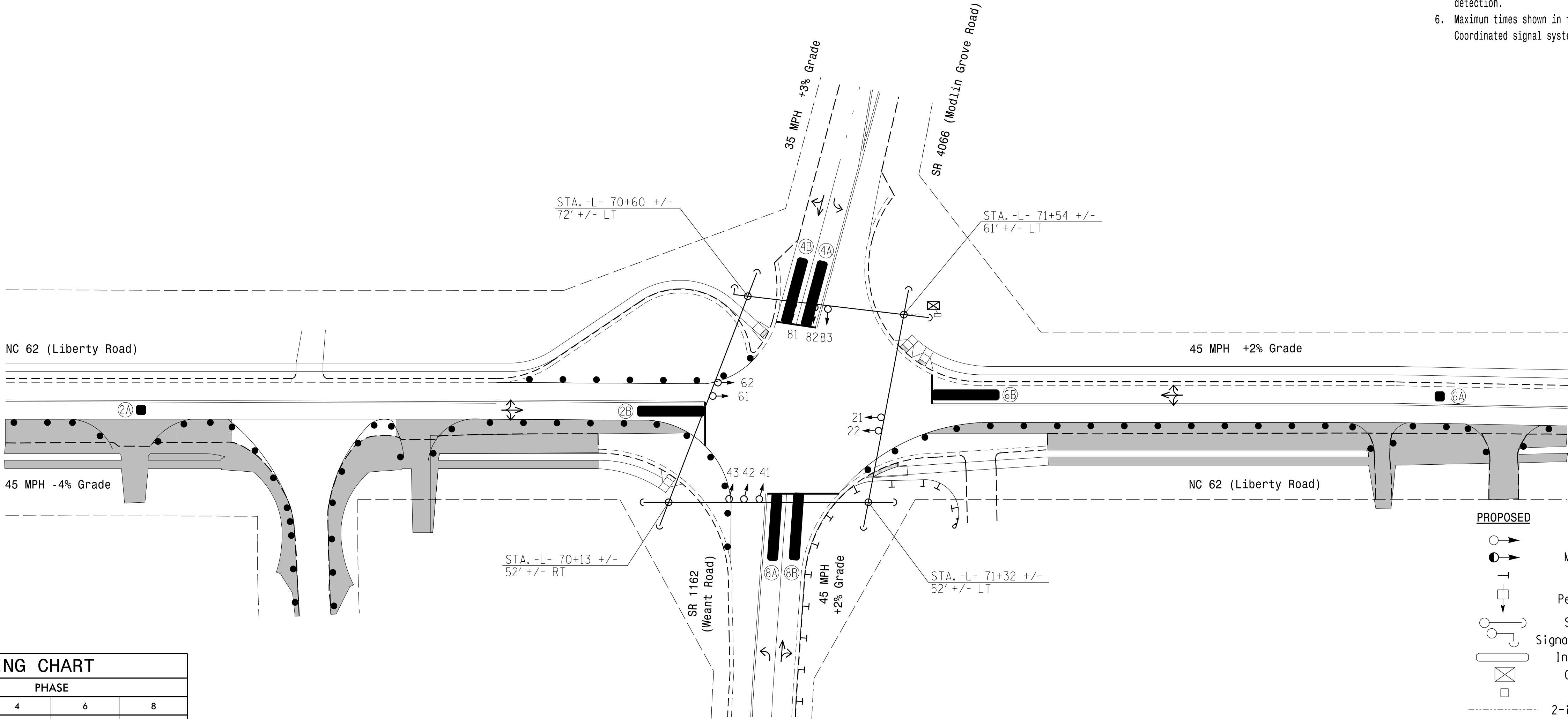
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
ZONE(S)	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	300	*	*	2	Yes	-	-	-	N	-	*
2B	6X40	0	*	*	2	Yes	2.0	5.0	-	G	-	*
4A	6X40	0	*	*	4	Yes	-	3.0	-	N	-	*
4B	6X40	0	*	*	4	Yes	-	10.0	-	N	-	*
6A	6X6	300	*	*	6	Yes	-	-	-	N	-	*
6B	6X40	0	*	*	6	Yes	2.0	5.0	-	G	-	*
8A	6X40	0	*	*	8	Yes	-	3.0	-	N	-	*
8B	6X40	0	*	*	8	Yes	-	10.0	-	N	-	*

* Multizone Microwave Detection.

2 Phase
Fully Actuated
(High Point Signal System)

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.
- 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.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

PROPOSED	EXISTING

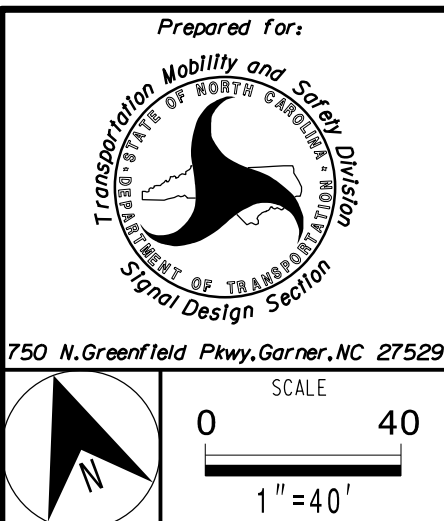
ASC/3 TIMING CHART				
FEATURE	PHASE			
	2	4	6	8
Min Green *	12	7	12	7
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Veh. Extension *	6.0	2.0	6.0	2.0
Max 1 *	75	30	75	30
Yellow	4.9	4.3	4.9	4.3
Red Clear	2.0	1.2	2.0	1.2
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Locking Detector	-	-	-	-
Recall Position	VEH RECALL	-	VEH RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

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

New Installation -
Temporary Design 1 (TMP Phase II)



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-548-4260
NC LICENSE NO. F-1524
www.drmp.com

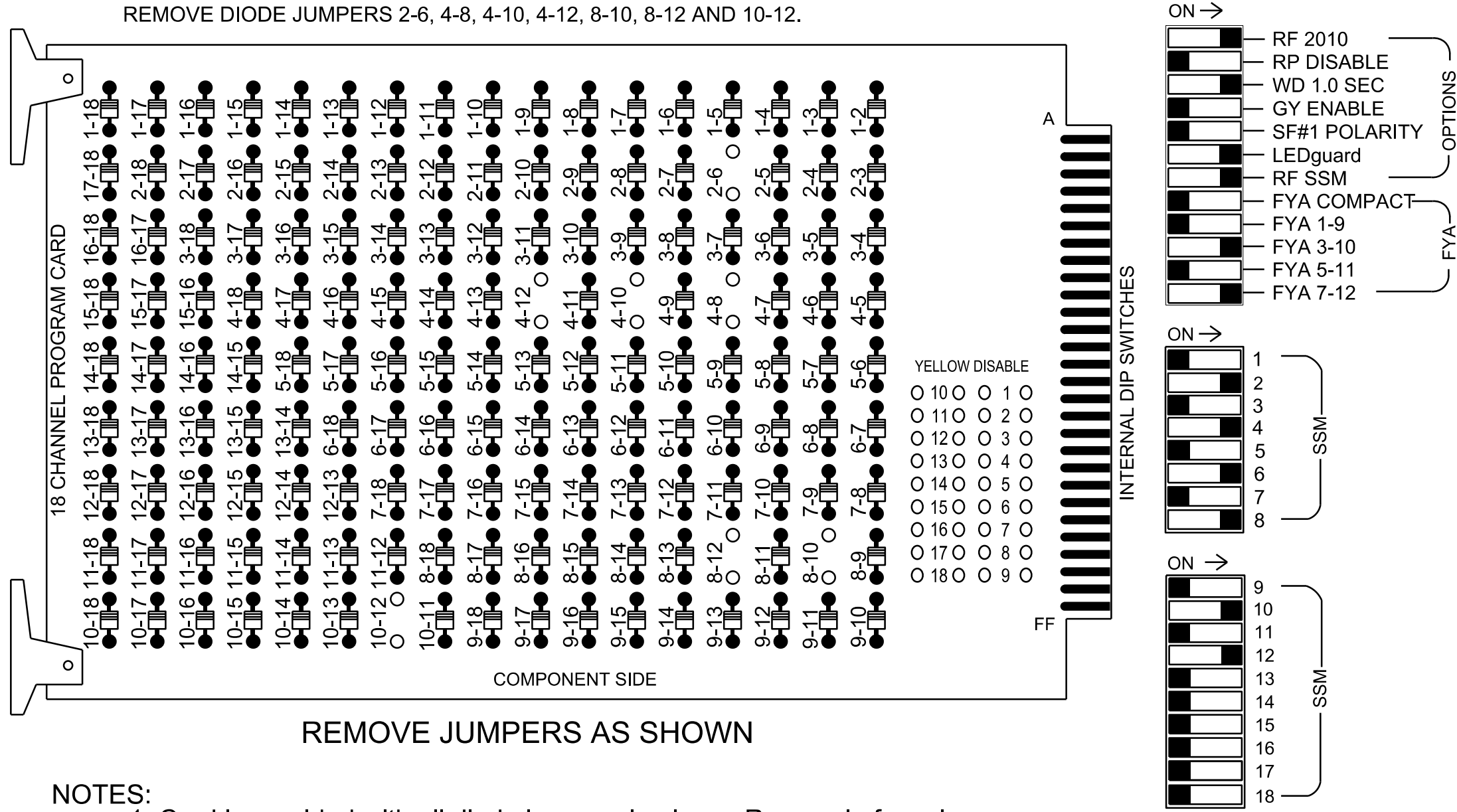


NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road) Division 7 Guilford County Archdale			
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito	PREPARED BY: AW Poole	RKA PROJ. NO: 17380 (040)
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	SEAL
	Signed by:
	DATE: 3/17/2025
	SIG. INVENTORY NO. 07-2100T1

18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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

NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S5,S8,S11,AUX S2,AUX S5
PHASES USED.....2,4,6,8
OVERLAP "A".....NOT USED
OVERLAP "B".....*
OVERLAP "C".....NOT USED
OVERLAP "D".....*

*See overlap programming this sheet.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	42,43	NU	NU	61,62	NU	NU	82,83	NU	NU	81★	NU	NU	41★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW														A124			A101	
YELLOW ARROW														A125			A102	
FLASHING YELLOW ARROW														A126			A103	
GREEN ARROW																		

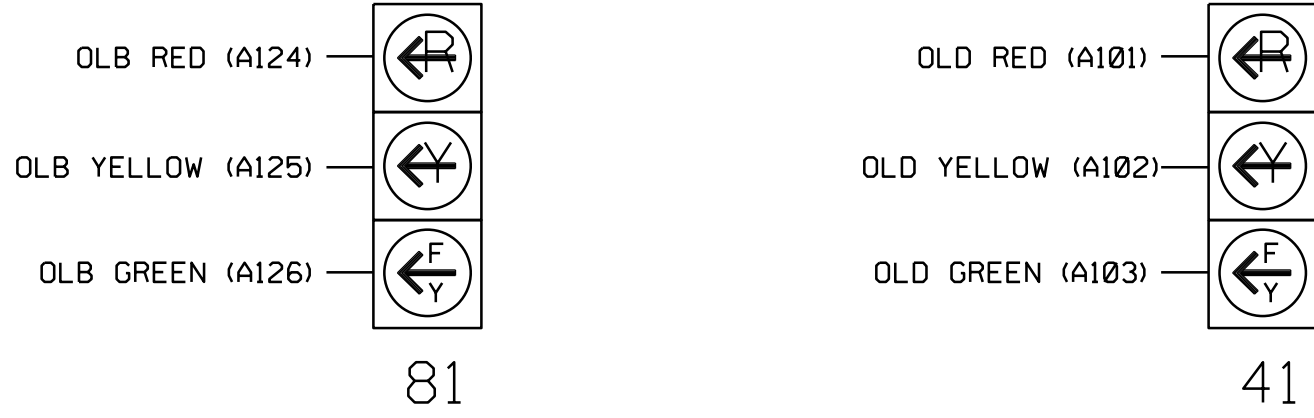
NU = Not Used
★ See pictorial of head wiring in detail this sheet.

SPECIAL DETECTOR NOTE

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

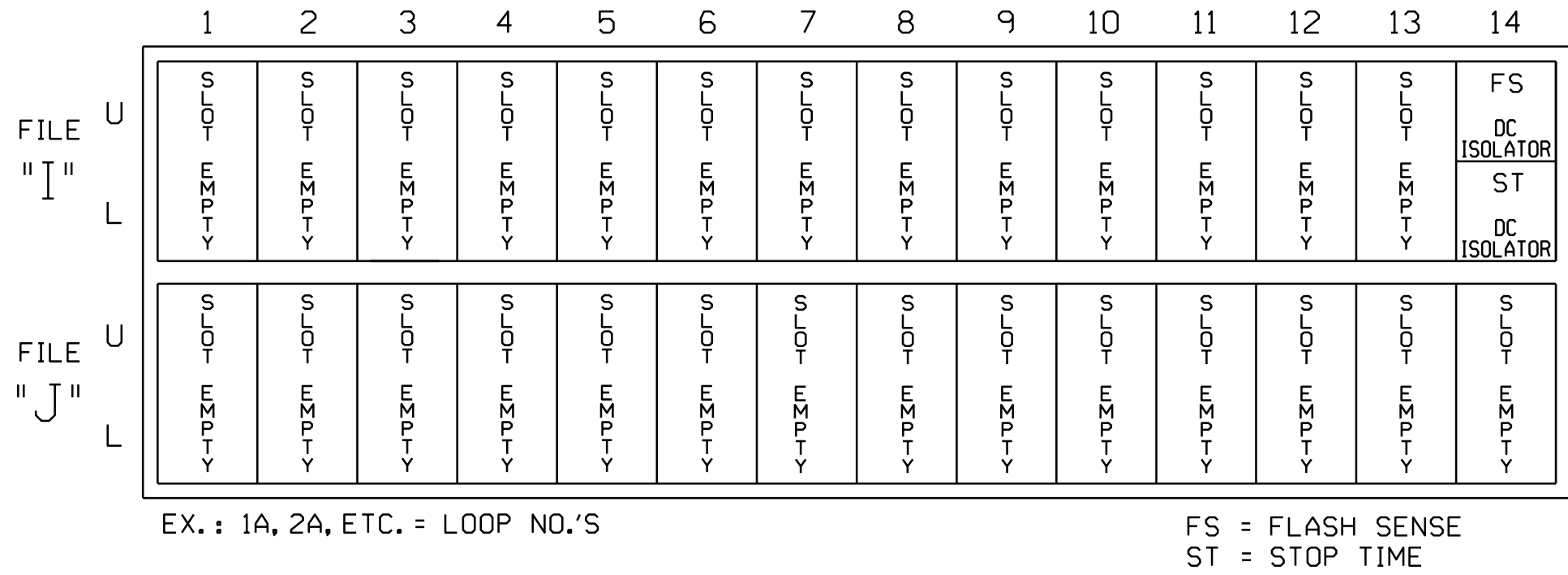
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



INPUT FILE TO REMAIN EMPTY

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

Toggle Until Overlap B

OVERLAP B

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

TMG VEH OVLP...[B]	TYPE:OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
INCLUDED . . . X	
PROTECT	
PED PRTC	
NOT OVLP	
FLSH GRN 1	
LAG X PH	
LAG 2 PH	
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0	

Toggle Twice

OVERLAP D

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

TMG VEH OVLP...[D]	TYPE:OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
INCLUDED X	
PROTECT	
PED PRTC	
NOT OVLP	
FLSH GRN 1	
LAG X PH	
LAG 2 PH	
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0	

END PROGRAMMING

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

ELECTRICAL AND PROGRAMMING DETAILS FOR:	NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road) Division 7 Guilford County Archdale		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
	PLAN DATE: March 2025	REVIEWED BY: ZM Esposito	
	PREPARED BY: AW Poole	RKA PROJ. NO.: 17380 (040)	
	REVISIONS	INIT.	
Signed by: <i>Zachary M. Esposito</i>		DATE: 3/17/2025	SIGNED BY: <i>Zachary M. Esposito</i>
SIGNATURE		DATE	
750 N. Greenfield Pkwy, Garner, NC 27529		SIC. INVENTORY NO. 07-2100T1	



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-543-4260

NC LICENSE NO. F-1524
www.drmp.com

ECONOLITE ASC/3-2070
LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

LD	SWITCH ASSIGN		DIMMING				---FLASH---		
	PHASE /OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR
1	1	V	.	.	.	+	A	R	X
2	2	V	.	.	.	+	A	R	.
3	3	V	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	5	V	.	.	.	-	A	R	.
6	6	V	.	.	.	-	A	R	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	1	O	.	.	.	+	A	R	X
10	2	O	.	.	.	+	A	R	X
11	3	O	.	.	.	-	A	R	.
12	4	O	.	.	.	-	A	R	.
13	2	P	.	.	.	+	A	.	.
14	4	P	.	.	.	-	A	.	.
15	6	P	.	.	.	+	A	.	.
16	8	P	.	.	.	-	A	.	.

ASC/3 FLASH SENSE INPUT CONTROL
FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

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

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key, then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

LP#:100	COPY FROM:100	ACTIVE: M	FALSE
IF	LP CIB CODE ON		331 F
THEN LP	DELAY FOR	1.0 SECONDS	
LP	SET CIB ON	427	
ELSE			

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO ENSURE 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.

ECONOLITE ASC/3-2070 STARTUP AND
SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 5. START/FLASH

START/FLASH DATA
-----START UP-----
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE R R
A B C D E F G H I J K L M N O P
OVERLAP X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO

Scroll down on this screen and set "Exit Fl" to Green "G"

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2100T1
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

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



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-542-4260

750 N. Greenfield Pkwy, Garner, NC 27529



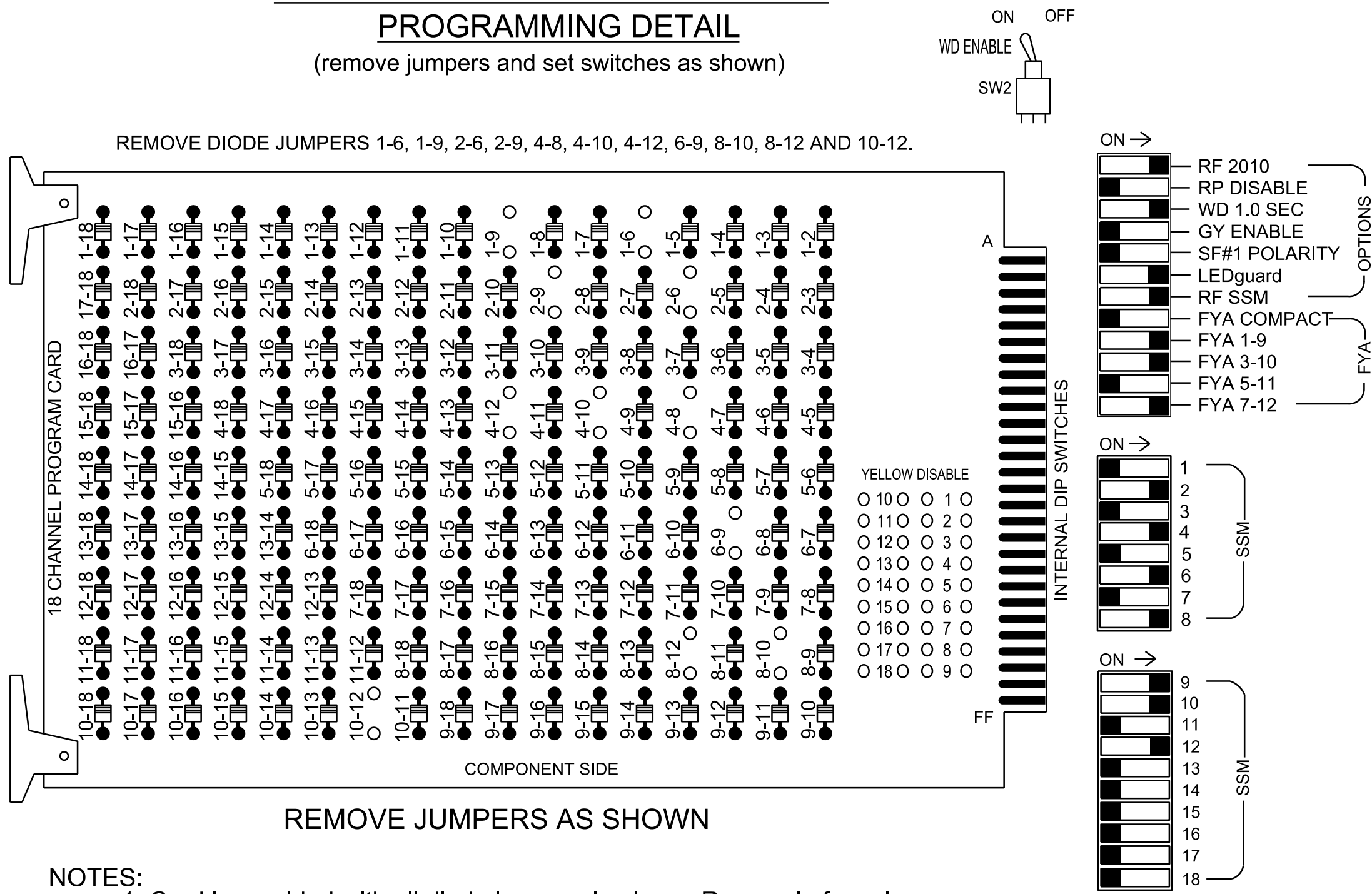
NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road) Division 7 Guilford County Archdale	
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole	RKA PROJ. NO.: 17380 (040)
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO
Signed by Zachary M. Esposito DATE 3/17/2025
SIG. INVENTORY NO. 07-2100T1

18 CHANNEL IP CONFLICT MONITOR

PROGRAMMING DETAIL

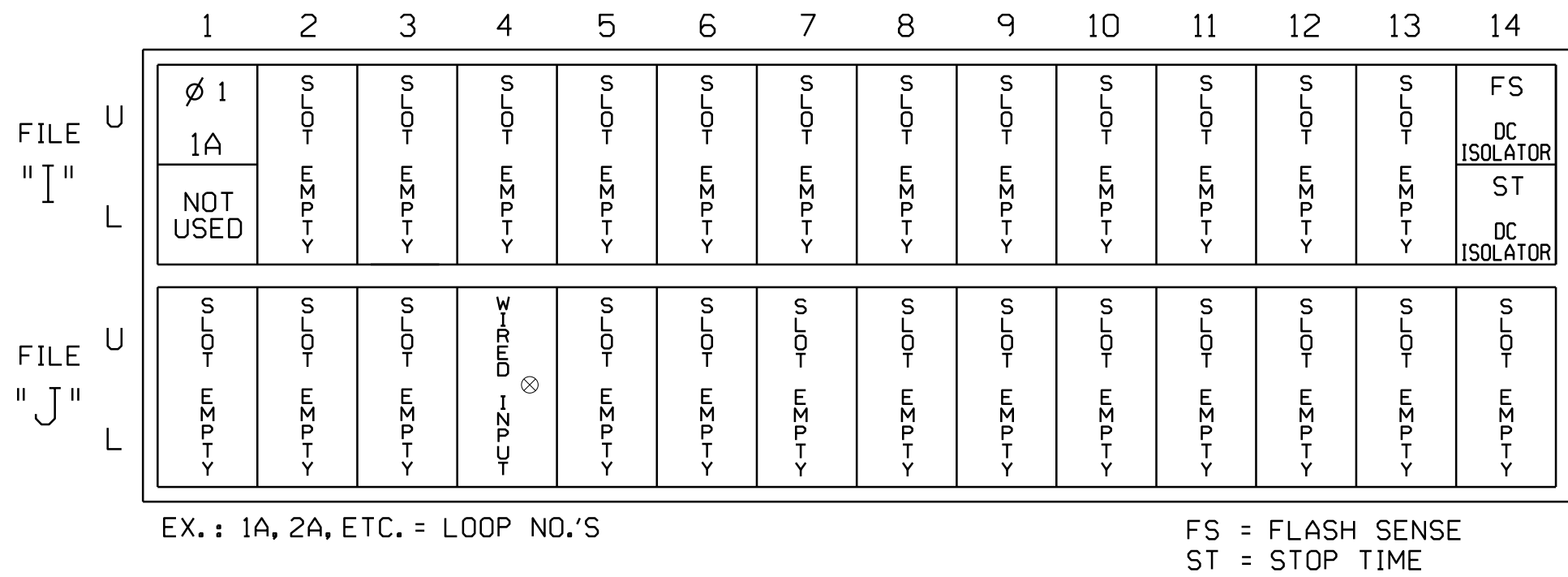
(remove jumpers and set switches as shown)



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

INPUT FILE POSITION LAYOUT

(front view)

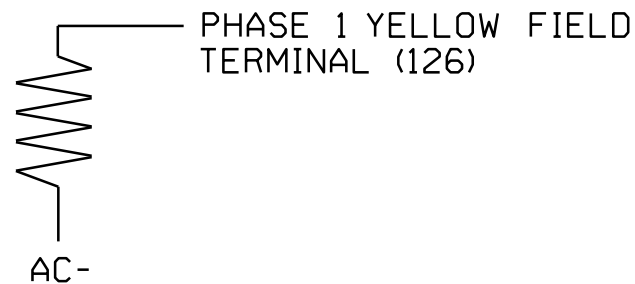


LOAD RESISTOR

INSTALLATION DETAIL

(install resistor as shown)

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



NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S5,S8,S11,
AUX S1,AUX S2,AUX S5
PHASES USED.....1,2,4,6,8
OVERLAP "A".....*
OVERLAP "B".....*
OVERLAP "C".....NOT USED
OVERLAP "D".....*
* See overlap programming on sheet 2.

SPECIAL DETECTOR NOTE

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

For Detection Zone 1A, the equipment and slot reserved for wired input is typical for an NCDOT installation.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		N
	-	J4U	48	26 ★	6	YES		3		G

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

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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11 ★	21,22	NU	NU	42,43	NU	NU	61,62	NU	NU	82,83	NU	11 ★	81 ★	NU	NU	41 ★	NU
RED		128			101			134			107							
YELLOW	*	129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124			A101	
YELLOW ARROW													A122	A125			A102	
FLASHING YELLOW ARROW													A123	A126			A103	
GREEN ARROW	127																	

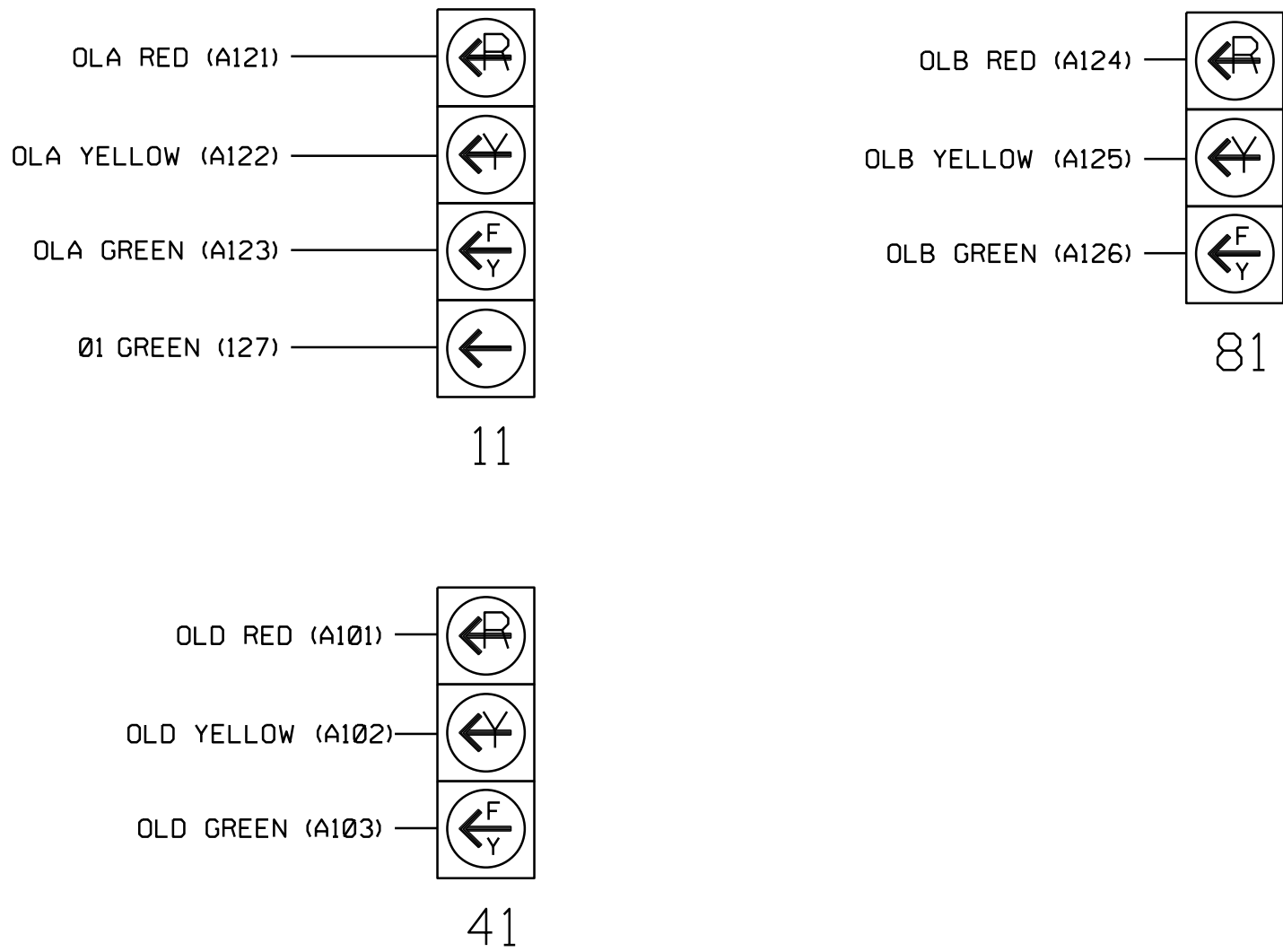
NU = Not Used

★ See pictorial of head wiring in detail this sheet.

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2100T2
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 1 of 4
Temporary Design 2 (TMP Phase 2, Step B and TMP Phase III)

ELECTRICAL AND PROGRAMMING DETAILS FOR:		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 054155 JACOBARY M. ESPOSITO	
Division 7 Guilford County Archdale		Signed by: Jacobary M. Esposito 3/17/2025	
PLAN DATE: March 2025 REVIEWED BY: ZM Esposito		DATE	
PREPARED BY: AW Poole RKA PROJ. NO.: 17380 (040)		DATE	
REVISIONS		DATE	
SIGNATURE		DATE	
SIC. INVENTORY NO. 07-2100T2			



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-543-4260

NC LICENSE NO. F-1524
www.drmp.com

750 N. Greenfield Pkwy, Garner, NC 27529

ECONOLITE ASC/3-2070 OVERLAP
PROGRAMMING DETAIL

(program controller as shown)

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

OVERLAP A

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

TMG VEH OVLP...[A] TYPE:	PPLT FYA
PROTECTED LEFT TURN....	PHASE 1
OPPOSING THROUGH.....	PHASE 2
FLASHING ARROW OUTPUT.....CH9	ISOLATE
DELAY START OF: FYA..0.0	CLEARANCE..0.0
ACTION PLAN SF BIT	DISABLE..... 1

Toggle Once

OVERLAP B

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

TMG VEH OVLP...[B] TYPE:	OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
INCLUDED . . . X	
PROTECT	
PED PRTC	
NOT OVLP	
FLSH GRN . . . 1	
LAG X PH	
LAG 2 PH	
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0	

Toggle Twice

OVERLAP D

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

TMG VEH OVLP...[D] TYPE:	OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
INCLUDED X	
PROTECT	
PED PRTC	
NOT OVLP	
FLSH GRN 1	
LAG X PH	
LAG 2 PH	
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0	

END PROGRAMMING

ECONOLITE ASC/3-2070 VEHICLE DETECTOR
SETUP PROGRAMMING DETAIL

FOR ALTERNATE PHASING LOOP 1A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY	FROM	TO
PHASE TIMING....	>	PHASE TIMING....
TIMING PLAN.....	>	TIMING PLAN.....
PH DET OPT PLAN..	>	PH DET OPT PLAN..
DETECTOR PLAN... 1	>	DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO" THEN PRESS ENTER		

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "3".

VEH DETECTOR [1]	VEH DET PLAN [2]
TYPE: N-NTCIP	
TS2 DETECTOR.....	ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
1 1	
CALL OPTION....	YES DELAY TIME... 3.0
EXT OPTION. PASSAGE	EXTENSION TIME. 0.0
USE ADDED INITIAL .	CROSS SWITCH PH.. 0
LOCK IN.....	NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY.	NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

VEH DETECTOR [26]	VEH DET PLAN [2]
TYPE: G-GREEN EXTENSION/DELAY	
TS2 DETECTOR.....	ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
26 0	
EXTEND TIME... 0.0	DELAY TIME... 3.0
USE ADDED INITIAL .	CROSS SWITCH PH.. 0
LOCK IN.....	NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY.	NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '3'

END PROGRAMMING

ECONOLITE ASC/3-2070 BACKUP
PROTECTION ENABLE PROGRAMMING

(program controller as shown)

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

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

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

END PROGRAMMING

NOTE

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

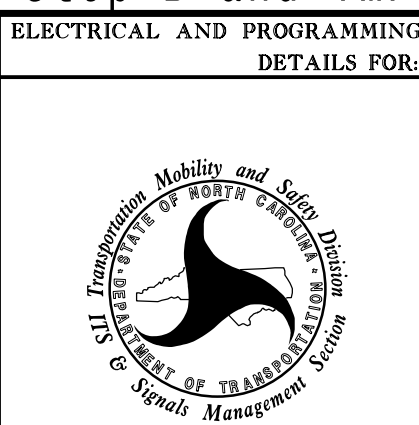
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2100T2
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 2 of 4
Temporary Design 2 (TMP Phase 2,
Step B and TMP Phase III)



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-542-4260

750 N. Greenfield Pkwy, Garner, NC 27529



ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road) Division 7 Guilford County Archdale	
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito	RKA PROJ. NO.: 17380 (040)	
PREPARED BY: AW Poole	REVISIONS	INIT.	DATE
.....			
.....			
.....			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEAL NORTH CAROLINA PROFESSIONAL ENGINEER 054155 ZACHARY M. ESPOSITO	
Signed by: <i>Zachary M. Esposito</i>	3/17/2025
DATE	DATE
SIG. INVENTORY NO. 07-2100T2	

ECONOLITE ASC/3-2070 STARTUP AND
SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select
2. CONTROLLER
2. From CONTROLLER Submenu select
5. START/FLASH

START/FLASH DATA

-----START UP-----

1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

PHASE R R

A B C D E F G H I J K L M N O P

OVERLAP X X X X X X X X X X X X X X X X

FLASH>MON. NO FL TIME.. 0 ALL RED... 6

PWR START SEQ.. 1 MUTCD> YES Y- G: NO

Scroll down on this screen and set "Exit Fl" to Green "G"

ASC/3 FLASH SENSE INPUT CONTROL
FOR RED-RED FLASH

*The NCDOT default database is programmed to address Yellow-Red flash.
Logic Statement 100 must be modified as shown when running Red-Red flash.

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

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key, then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

LP#:100 COPY FROM:100 ACTIVE: M FALSE

IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS

LP SET CIB ON 427

ELSE

THIS STATEMENT IS USED
TO CONTROL THE FLASH
SENSE INPUT WHEN RUNNING
RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL",
next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 ACTION PLAN
PROGRAMMING DETAIL

1. From Main Menu select
5. TIME BASE
2. From TIME BASE Submenu select
2. ACTION PLAN

ACTION PLAN...[*]

PATTERN.....AUTO SYS OVERRIDE.... NO

TIMING PLAN..... 0 SEQUENCE..... 0

VEH DETECTOR PLAN.. 2 DET LOG.....NONE

FLASH..... -- RED REST..... NO

VEH DET DIAG PLN.. 0 PED DET DIAG PLN..0

DIMMING ENABLE.. NO PRIORITY RETURN. NO

PED PR RETURN.. NO QUEUE DELAY..... NO

PMT COND DELAY NO

PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

PED RCL

WALK 2

VEX 2

VEH RCL

MAX RCL

MAX 2

PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

MAX 3

CS INH

OMIT

SPC FCT X (1-8)

AUX FCT . . . (1-3)

1 2 3 4 5 6 7 8 9 0 1 2 3 4 5

LP 1-15

LP 16-30

LP 31-45

LP 46-60

LP 61-75

LP 76-90

LP 91-100

* The Action Plan number(s) are to be determined by
the Division Traffic Engineer.

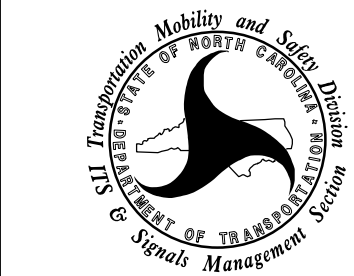
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2100T2
DESIGNED: March 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 3 of 4
Temporary Design 2 (TMP Phase 2,
Step B and TMP Phase III)



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-543-4260

750 N. Greenfield Pkwy, Garner, NC 27529



ELECTRICAL AND PROGRAMMING
DETAILS FOR:

NC 62 (Liberty Road)

at

SR 1162 (Weant Road) /

SR 4066 (Modlin Grove Road)

Division 7 Guilford County Archdale

PLAN DATE: March 2025 REVIEWED BY: ZM Esposito

PREPARED BY: AW Poole RKA PROJ. NO.: 17380 (040)

REVISIONS

INIT. DATE

Signed by: *Zachary M. Esposito* 3/17/2025

SEALED BY: DATE

SIG. INVENTORY NO. 07-2100T2

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL

NORTH CAROLINA
PROFESSIONAL
SEAL
054155
ENGINEER
ZACHARY M. ESPOSITO

Signed by: *Zachary M. Esposito* 3/17/2025

SEALED BY: DATE

SIG. INVENTORY NO. 07-2100T2

ECONOLITE ASC/3-2070
LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select 1. CONFIGURATION

2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

LD	SWITCH	ASSIGN	DIMMING						---FLASH---		
			PHASE	TYPE	R	Y	G	D	PWR	AUT	TGR
1	1	V			.	.	.	+	A	R	X
2	2	V			.	.	.	+	A	R	.
3	3	V			.	.	.	+	A	R	X
4	4	V			.	.	.	+	A	R	.
5	5	V			.	.	.	-	A	R	.
6	6	V			.	.	.	-	A	R	X
7	7	V			.	.	.	-	A	R	.
8	8	V			.	.	.	-	A	R	X
9	1	O			.	.	.	+	A	R	X
10	2	O			.	.	.	+	A	R	X
11	3	O			.	.	.	-	A	R	.
12	4	O			.	.	.	-	A	R	.
13	2	P			.	.	.	+	A	.	.
14	4	P			.	.	.	-	A	.	.
15	6	P			.	.	.	+	A	.	.
16	8	P			.	.	.	-	A	.	.

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN DEFAULT PHASING	1	NONE
ACTIONS REQUIRED TO RUN ALTERNATE PHASING	2	1

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 1 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

- SF BIT 1:

Modifies overlap parent phases for head 11 to run protected turns only.
- VEH DET PLAN 2:

Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

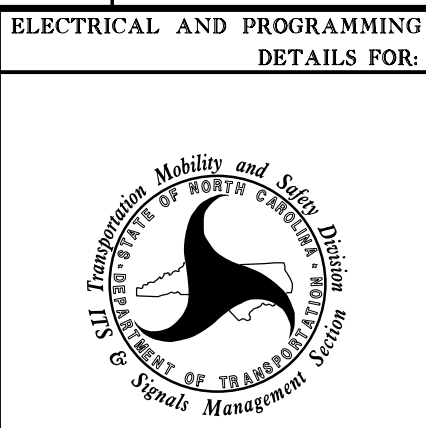
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2100T2
DESIGNED: March 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 4 of 4
Temporary Design 2 (TMP Phase 2, Step B and TMP Phase III)



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-543-4260

750 N. Greenfield Pkwy, Garner, NC 27529



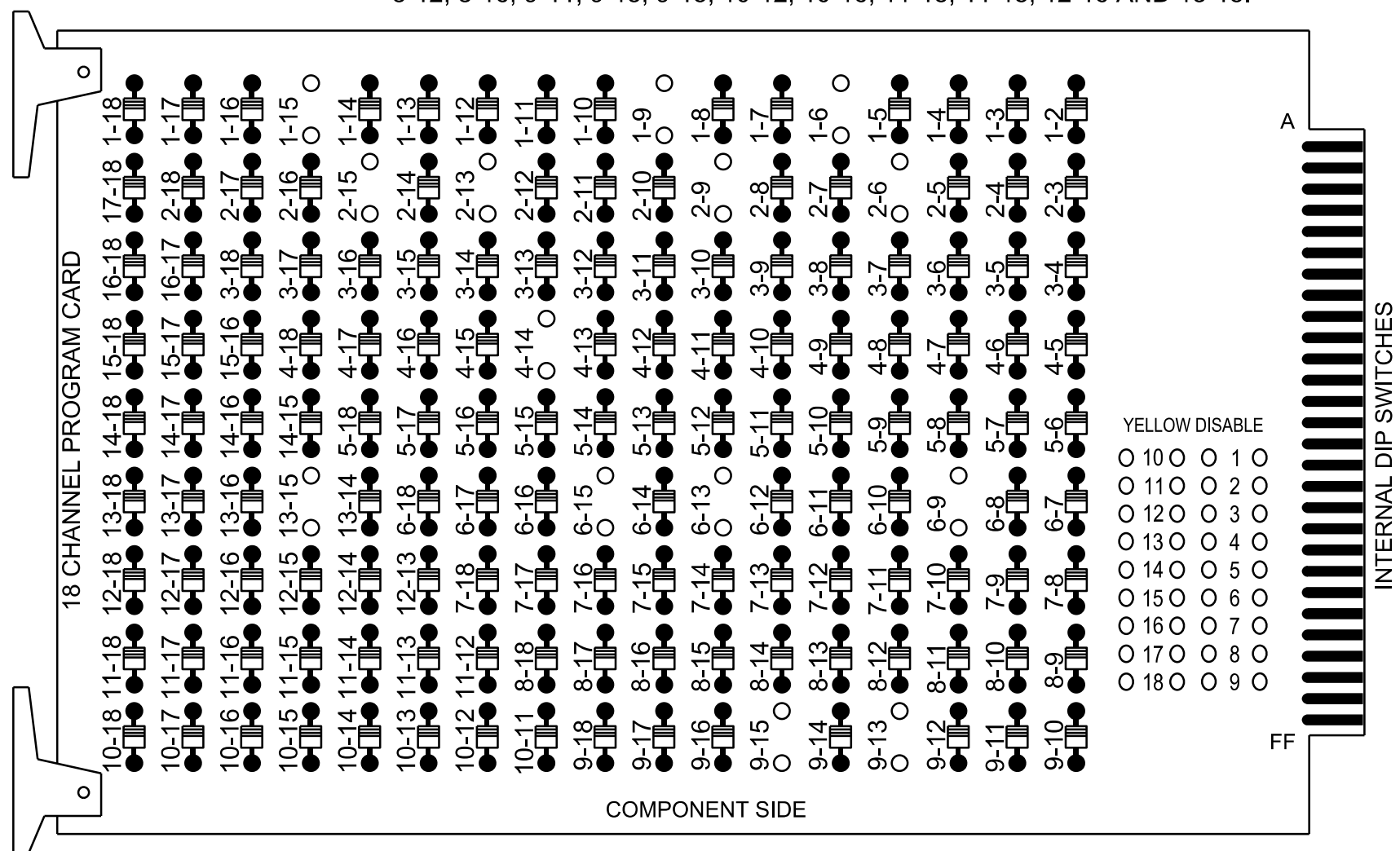
ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road) Division 7 Guilford County Archdale	
PLAN DATE:	March 2025	REVIEWED BY:	ZM Esposito
PREPARED BY:	AW Poole	RKA PROJ. NO.:	17380 (040)
REVISIONS		INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER ZACHARY M. ESPOSITO
Signed by Zachary M. Esposito DATE 3/17/2025
SIG. INVENTORY NO. 07-2100T2

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-8,
4-10, 4-12 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 8-10,
8-12, 8-16, 9-11, 9-13, 9-15, 10-12, 10-16, 11-13, 11-15, 12-16 AND 13-15.



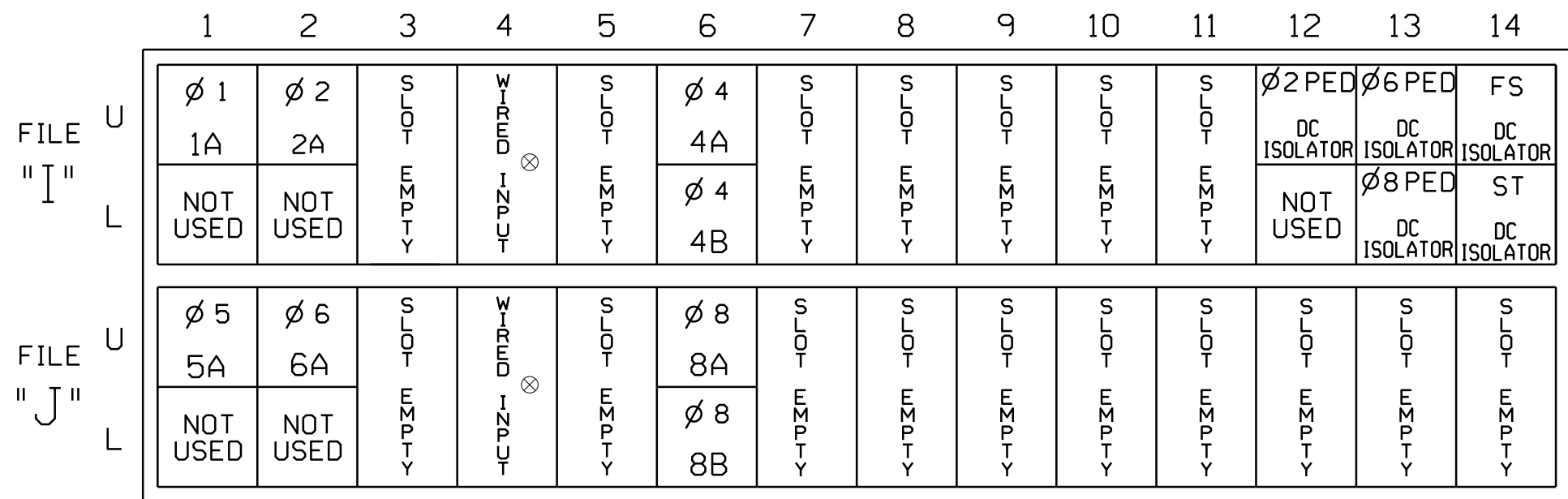
REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)



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

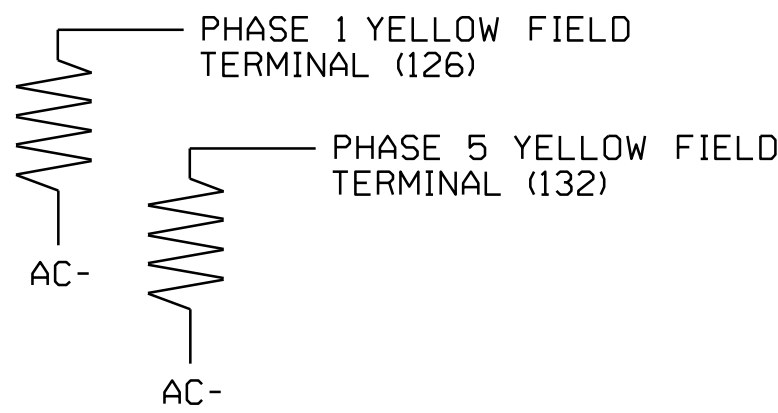
FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

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



NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S3,S5,S7,S8,S9,S11,S12,
AUX S1,AUX S2,AUX S4,AUX S5
PHASES USED.....1,2,2PED,4,5,6,6PED,8,8PED
OVERLAP "A".....*
OVERLAP "B".....*
OVERLAP "C".....*
OVERLAP "D".....*

* See overlap programming on sheet 2.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		N
	-	J4U	48	26 ★	6	YES		3		G
2A	TB2-5,6	I2U	39	2	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		3		N
4B	TB4-11,12	I6L	45	14	4	YES		10		N
5A ²	TB3-1,2	J1U	55	5 ★	5	YES		15		N
	-	I4U	47	22 ★	2	YES		3		G
6A	TB3-5,6	J2U	40	6	6	YES			X	N
8A	TB5-9,10	J6U	42	8	8	YES		3		N
8B	TB5-11,12	J6L	46	18	8	YES		10		N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

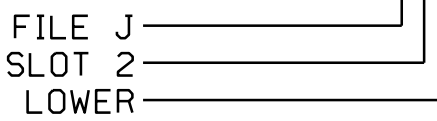
NOTE:
INSTALL DC ISOLATORS
IN INPUT FILE SLOTS
112 AND 113.

★See vehicle detector setup programming detail for alternate phasing on sheet 3.

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

²Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



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.

REMOVE

SPECIAL DETECTOR NOTE

Remove microwave detection equipment used during construction phases.



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-543-4260

750 N. Greenfield Pkwy, Garner, NC 27529

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	PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21, P22	NU	42,43	NU	51	61,62	P61, P62	NU	82,83	P81, P82	11	81	NU	51	41	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	127						133											
Hand			113						119			110						
Walking			115						121			112						

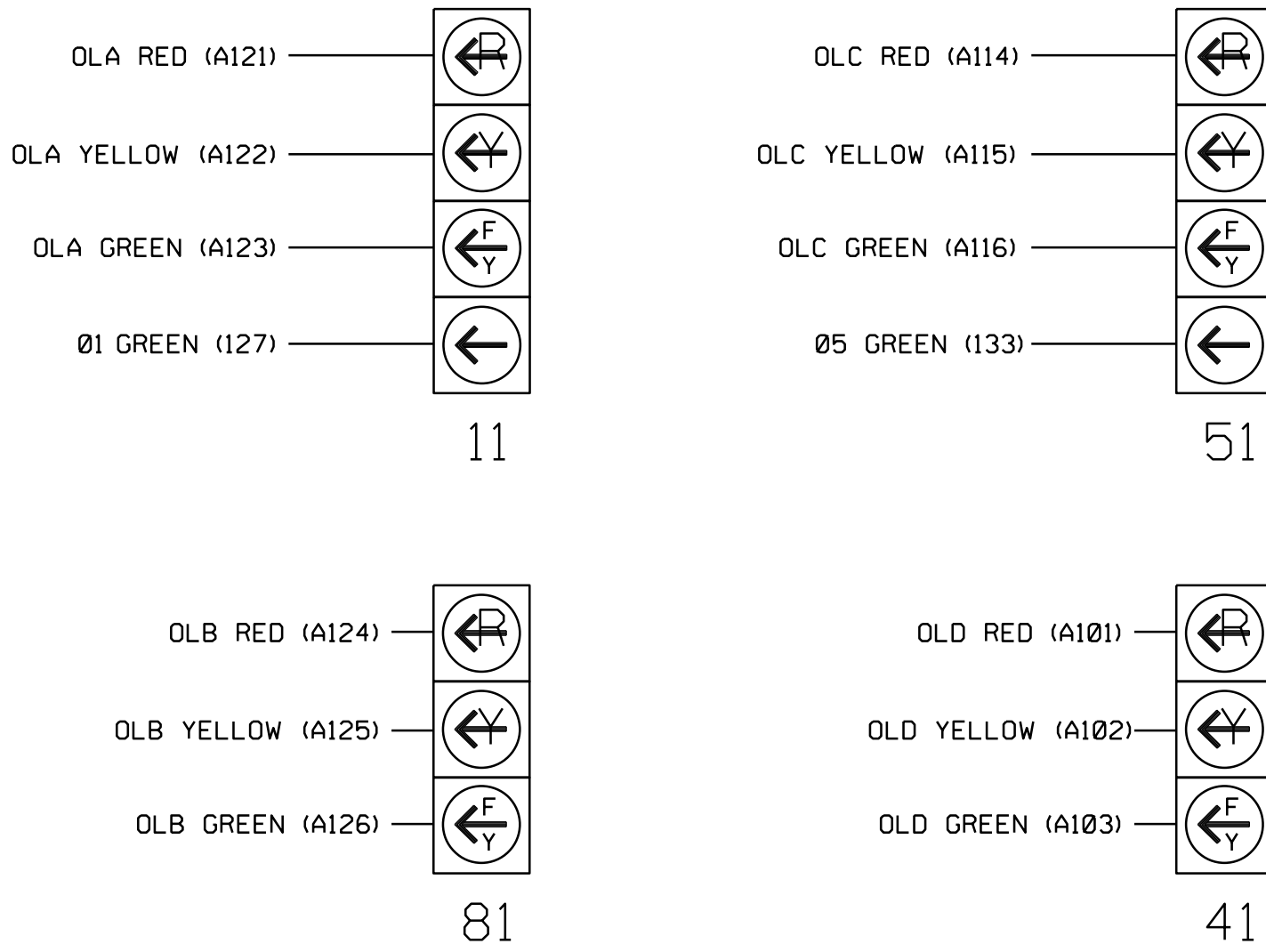
NU = Not Used

★ See pictorial of head wiring in detail this sheet.

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



Electrical Detail - Sheet 1 of 5
Final Design

ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road)		Division 7 Guilford County Archdale	
PLAN DATE: March 2025		REVIEWED BY: ZM Esposito		PREPARED BY: AW Poole	
RKA PROJ. NO.: 17380 (040)		REVISIONS		INIT. DATE	
750 N. Greenfield Pkwy, Garner, NC 27529		SEAL		SIGNED BY: Zachary M. Esposito	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		SIC. INVENTORY NO. 07-2100		DATE 3/17/2025	

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL
(program controller as shown)

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

OVERLAP A
Select TMG VEH OVLP [A] and 'PPLT FYA'
TMG VEH OVLP...[A] TYPE:PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2
FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 1

OVERLAP B
Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'
TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X
PROTECT
PED PRTC
NOT OVLP
FLSH GRN . . . 1
LAG X PH
LAG 2 PH
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

OVERLAP C
Select TMG VEH OVLP [C] and 'PPLT FYA'
TMG VEH OVLP...[C] TYPE:PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6
FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 5

OVERLAP D
Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'
TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED X
PROTECT
PED PRTC
NOT OVLP
FLSH GRN 1
LAG X PH
LAG 2 PH
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

Table with 2 columns: PROJECT REFERENCE NO., SHEET NO.
Values: U-6018, Sig-12.2

IN ORDER TO ENSURE 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.

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash. Logic Statement 100 must be modified as shown when running Red-Red flash.

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

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "c" key. then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F
THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427
ELSE

THIS STATEMENT IS USED TO CONTROL THE FLASH SENSE INPUT WHEN RUNNING RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

- 1. From Main Menu select 2. CONTROLLER
- 2. From CONTROLLER Submenu select 5. START/FLASH

START/FLASH DATA
-----START UP-----
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE R R
A B C D E F G H I J K L M N O P
OVERLAP X X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO

Scroll down on this screen and set "Exit FI" to Green "G"

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2100
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-542-4260

750 N. Greenfield Pkwy, Garner, NC 27529

Electrical Detail - Sheet 2 of 5
Final Design

Table with 4 columns: ELECTRICAL AND PROGRAMMING DETAILS FOR:, ADDRESS, PREPARED BY, REVIEWED BY.
Includes project details for NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road) in Guilford County, Archdale.
Prepared by: AW Poole, 3/17/2025. Reviewed by: ZM Esposito, 3/17/2025.
Includes a professional seal for Zachary M. Esposito, Engineer, No. 054155.

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP

PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu selet 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

COPY / CLEAR UTILITY

FROM TO

PHASE TIMING.... > PHASE TIMING....

TIMING PLAN.... > TIMING PLAN....

PH DET OPT PLAN. > PH DET OPT PLAN..

DETECTOR PLAN... 1 > DETECTOR PLAN... 2

TOGGLE TO SELECT A "FROM" AND A "TO"

THEN PRESS ENTER

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "3".

VEH DETECTOR [1] VEH DET PLAN [2]

TYPE: N-NTCIP

TS2 DETECTOR..... ECPI LOG..... NO

DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

1 1

CALL OPTION.... YES DELAY TIME... 3.0

EXT OPTION. PASSAGE EXTENSION TIME. 0.0

USE ADDED INITIAL . CROSS SWITCH PH.. 0

LOCK IN..... NONE NTCIP VOL . OR OCC .

PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

VEH DETECTOR [26] VEH DET PLAN [2]

TYPE: G-GREEN EXTENSION/DELAY

TS2 DETECTOR..... ECPI LOG..... NO

DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

26 0

EXTEND TIME... 0.0 DELAY TIME... 3.0

USE ADDED INITIAL . CROSS SWITCH PH.. 0

LOCK IN..... NONE NTCIP VOL . OR OCC .

PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "0".

VEH DETECTOR [5] VEH DET PLAN [2]

TYPE: N-NTCIP

TS2 DETECTOR..... ECPI LOG..... NO

DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

5 5

CALL OPTION.... YES DELAY TIME... 0.0

EXT OPTION. PASSAGE EXTENSION TIME. 0.0

USE ADDED INITIAL . CROSS SWITCH PH.. 0

LOCK IN..... NONE NTCIP VOL . OR OCC .

PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '0'

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

VEH DETECTOR [22] VEH DET PLAN [2]

TYPE: G-GREEN EXTENSION/DELAY

TS2 DETECTOR..... ECPI LOG..... NO

DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

22 0

EXTEND TIME... 0.0 DELAY TIME... 3.0

USE ADDED INITIAL . CROSS SWITCH PH.. 0

LOCK IN..... NONE NTCIP VOL . OR OCC .

PMT QUEUE DELAY. NO

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '3'

END PROGRAMMING

ENSURE PHASE
IS SET TO "0"

ECONOLITE ASC/3-2070 ACTION PLAN

PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN...[*]

PATTERN.....AUTO SYS OVERRIDE.... NO

TIMING PLAN..... 0 SEQUENCE..... 0

VEH DETECTOR PLAN.. 2 DET LOG.....NONE

FLASH..... -- RED REST..... NO

VEH DET DIAG PLN.. 0 PED DET DIAG PLN..0

DIMMING ENABLE.. NO PRIORITY RETURN. NO

PED PR RETURN.. NO QUEUE DELAY..... NO

PMT COND DELAY NO

PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

PED RCL

WALK 2

VEX 2

VEH RCL

MAX RCL

MAX 2

PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

MAX 3

CS INH

OMIT

SPC FCT X . . . X . . . (1-8)

AUX FCT . . . (1-3)

1 2 3 4 5 6 7 8 9 0 1 2 3 4 5

LP 1-15

LP 16-30

LP 31-45

LP 46-60

LP 61-75

LP 76-90

LP 91-100

* The Action Plan number(s) are to be determined by the Division Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 07-2100

DESIGNED: Mar 2025

SEALED: 3/17/2025

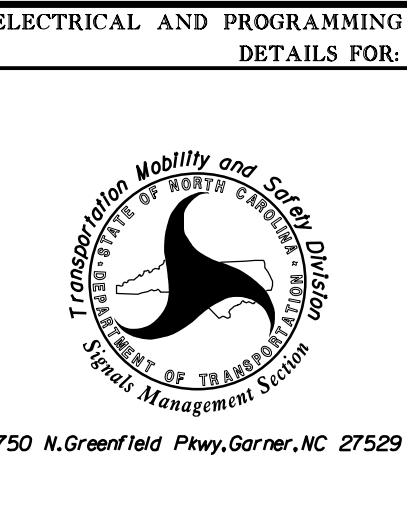
REVISED: N/A

Electrical Detail - Sheet 3 of 5
Final Design



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-542-4260

NC LICENSE NO. F-1524
www.drmp.com



NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road)	
Division 7	Guilford County Archdale
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole	REVIEWED BY: 17380 (040)
REVISIONS	INIT. DATE
Signed by: Zachary M. Esposito	
3/17/2025	
SIGNATURE DATE	
SIG. INVENTORY NO. 07-2100	

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL

SEAL
054155
ENGINEER
ZACHARY M. ESPOSITO

Sig. INVENTORY NO. 07-2100

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL
FOR LEADING PED INTERVAL (DELAYED GREEN)

(program controller as shown)

The following logic processor configuration holds the FYA's on signal heads 11, 41 and 51 red for the duration of the delayed green time (leading ped interval) when serving a ped call on the opposing through phase.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 8. LOGIC PROCESSOR
3. From the LOGIC PROCESSOR Submenu select 2. LOGIC STATEMENTS

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

LP#:	1	COPY FROM:	1	ACTIVE:	M	(T/F)
IF	PED ON PH WALK	2	IS	ON		
AND	VEH GREEN ON PH	2	IS	OFF		
THEN	SIG SET OLP RED	1		ON		
	SIG SET OLP YELLOW	1		OFF		
	SIG SET OVLP GREEN	1		OFF		
ELSE						

HOLD SIGNAL HEAD 11 FYA
RED DURING THE PHASE 2
DELAYED GREEN TIME
(LEADING PED INTERVAL)

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 8. LOGIC PROCESSOR
3. From the LOGIC PROCESSOR Submenu select 1. LOGIC STATEMENT CONTROL

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

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

END PROGRAMMING

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

LP#:	2	COPY FROM:	2	ACTIVE:	M	(T/F)
IF	PED ON PH WALK	8	IS	ON		
AND	VEH GREEN ON PH	8	IS	OFF		
THEN	SIG SET OLP RED	4		ON		
	SIG SET OLP YELLOW	4		OFF		
	SIG SET OVLP GREEN	4		OFF		
ELSE						

HOLD SIGNAL HEAD 41 FYA
RED DURING THE PHASE 8
DELAYED GREEN TIME
(LEADING PED INTERVAL)

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

LP#:	3	COPY FROM:	3	ACTIVE:	M	(T/F)
IF	PED ON PH WALK	6	IS	ON		
AND	VEH GREEN ON PH	6	IS	OFF		
THEN	SIG SET OLP RED	3		ON		
	SIG SET OLP YELLOW	3		OFF		
	SIG SET OVLP GREEN	3		OFF		
ELSE						

HOLD SIGNAL HEAD 51 FYA
RED DURING THE PHASE 6
DELAYED GREEN TIME
(LEADING PED INTERVAL)

ECONOLITE ASC/3-2070
LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

All channels must be programmed to flash red in controller for red-red flash operation as shown below. Notice "AUT" for all channels is programmed for RED.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

LD SWITCH ASSIGN		PHASE		DIMMING		---FLASH---	
		/OVLP	TYPE	R	Y	G	D PWR AUT TGR
1	1	V	.	.	.	+	A R X
2	2	V	.	.	.	+	A R .
3	3	V	.	.	.	+	A R X
4	4	V	.	.	.	+	A R .
5	5	V	.	.	.	-	A R .
6	6	V	.	.	.	-	A R X
7	7	V	.	.	.	-	A R .
8	8	V	.	.	.	-	A R X
9	1	O	.	.	.	+	A R X
10	2	O	.	.	.	+	A R X
11	3	O	.	.	.	-	A R .
12	4	O	.	.	.	-	A R .
13	2	P	.	.	.	+	A . .
14	4	P	.	.	.	-	A . .
15	6	P	.	.	.	+	A . .
16	8	P	.	.	.	-	A . .

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2100
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 4 of 5
Final Design



NC 62 (Liberty Road) at SR 1162 (Weant Road) / SR 4066 (Modlin Grove Road)	
Division 7	Guilford County Archdale
PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole	REVIEWED BY: 17380 (040)
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
SEAL NORTH CAROLINA PROFESSIONAL SEAL 054155 ENGINEER JACOBARY M. ESPOSITO	
Signed by: Jacobary M. Esposito	DATE: 3/17/2025
SEALED BY: JME	DATE:
SIG. INVENTORY NO. 07-2100	

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN – PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN.
SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED
TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

TO RUN ALT. PHASING DURING COORDINATION – SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED
TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1, 5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY
EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE
RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN
SF BITS 1, AND 5 AND VEH DET PLAN 2 ACTIVATE TO CALL
THE "ALTERNATE PHASING":

- SF BITS 1,5:Modifies overlap parent phases
for heads 11 and 51 to run protected
turns only.
- VEH DET PLAN 2:Disables phase 6 call on loop 1A
and reduces delay time for phase 1
call on loop 1A to 3 seconds.
- Disables phase 2 call on loop 5A
and reduces delay time for phase 5
call on loop 5A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2100
DESIGNED: Mar 2025
SEALED: 3/17/2025
REVISED: N/A

Electrical Detail - Sheet 5 of 5
Final Design

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR.
SUITE 200
CHARLOTTE, NC 28262
PHONE: 704-542-4260

NC LICENSE NO. F-1524
www.drmp.com



NC 62 (Liberty Road)
at
SR 1162 (Weant Road) /
SR 4066 (Modlin Grove Road)
Division 7 Guilford County Archdale

PLAN DATE: March 2025	REVIEWED BY: ZM Esposito
PREPARED BY: AW Poole	REVIEWED BY: 17380 (040)
REVISIONS	INIT. DATE

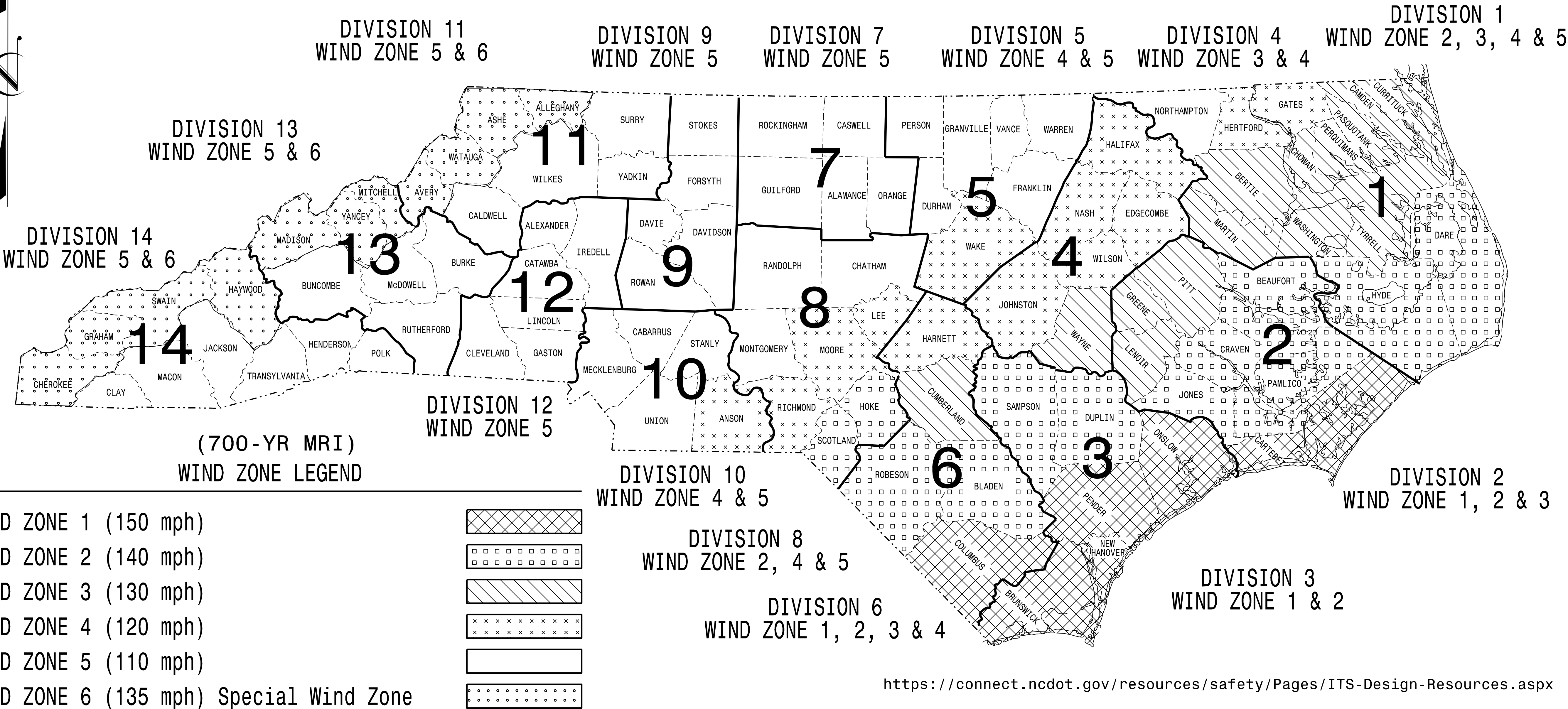
SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
054155
ENGINEER
JACQUARY M. ESPOSITO

Signed by: *Jacquary M. Esposito*
3/17/2025
SIGNATURE DATE
SIG. INVENTORY NO. 07-2100

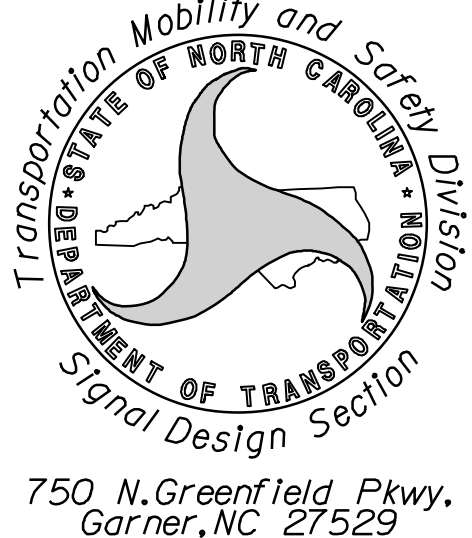
STATE OF NORTH CAROLINA

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

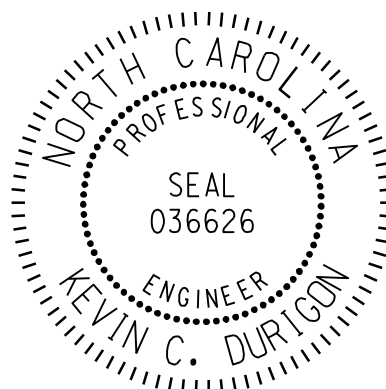
INDEX OF PLANS
DESCRIPTION

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

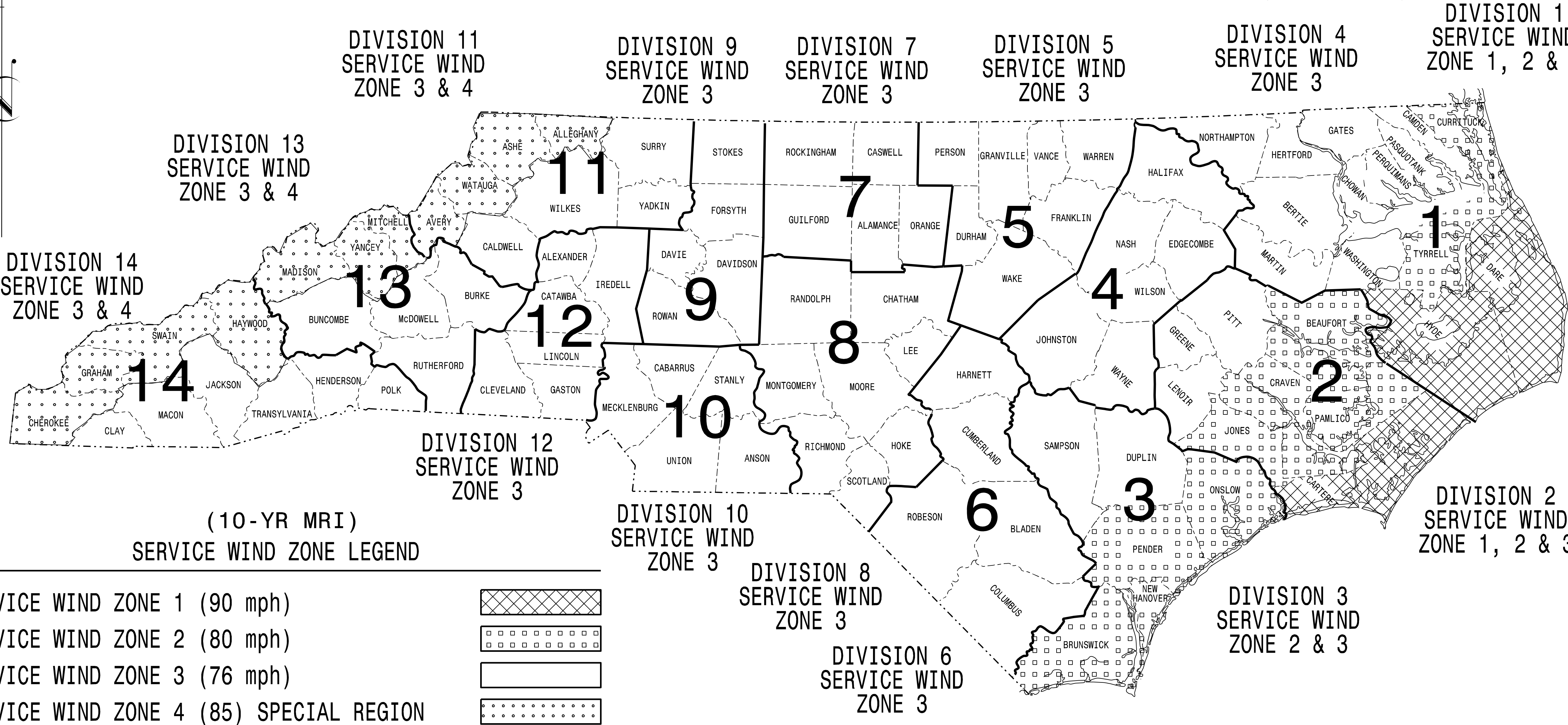


09/21/2023
DATE

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



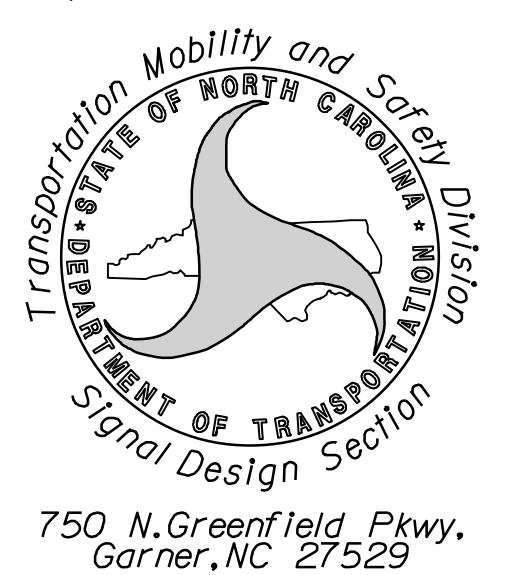
(10-YR MRI)

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:



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

AASHTO
LRFD

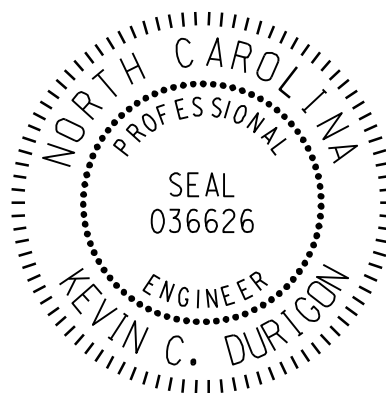
Standard Specifications for
Highway Signs, Luminaires,
and Traffic Signals

DRAWING NUMBER	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

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

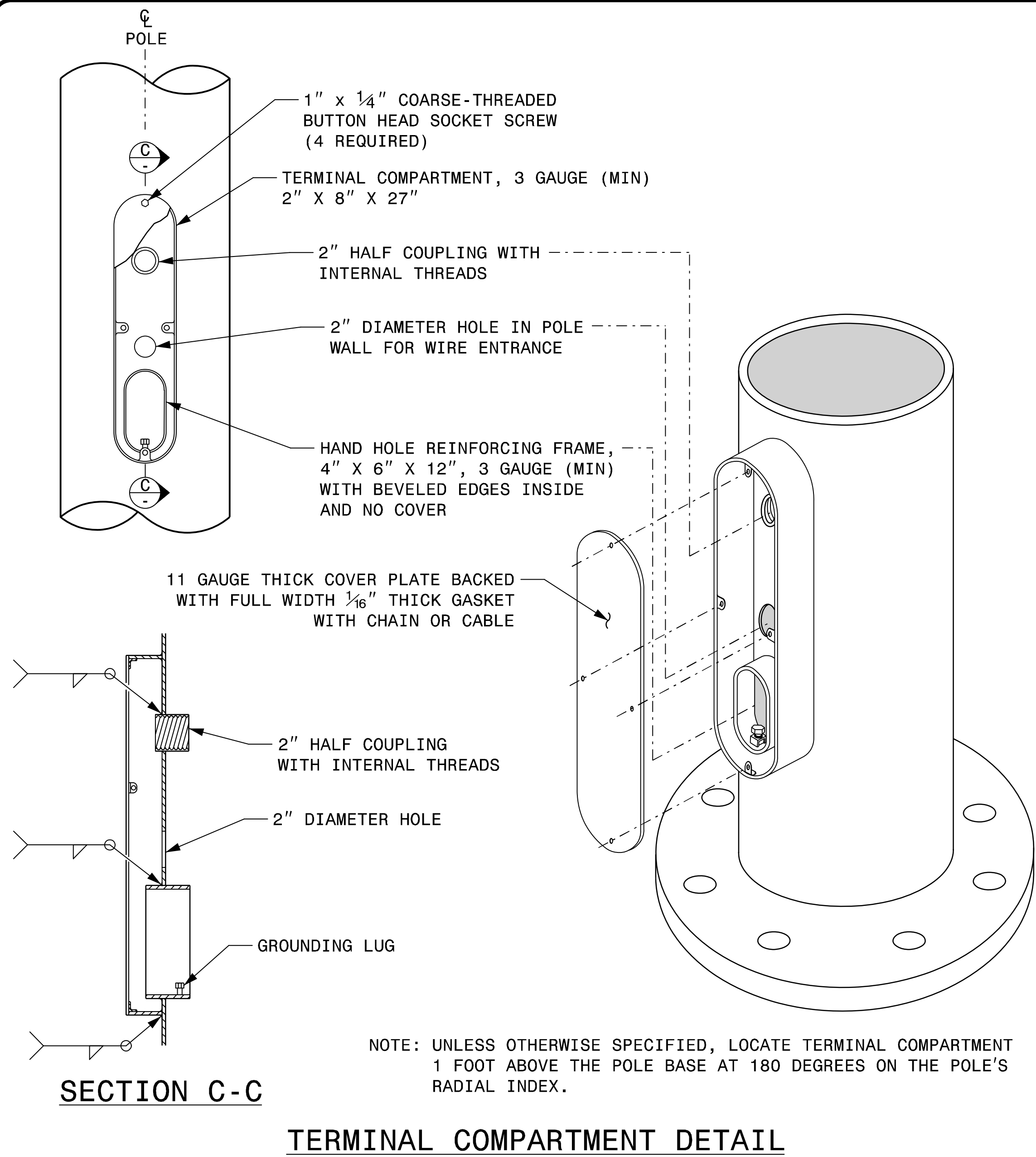
SEAL



DocuSigned by:

Kevin Durigon
SIGNATURE
4B23DC79B3784DA

09/21/2023
DATE



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. _____	

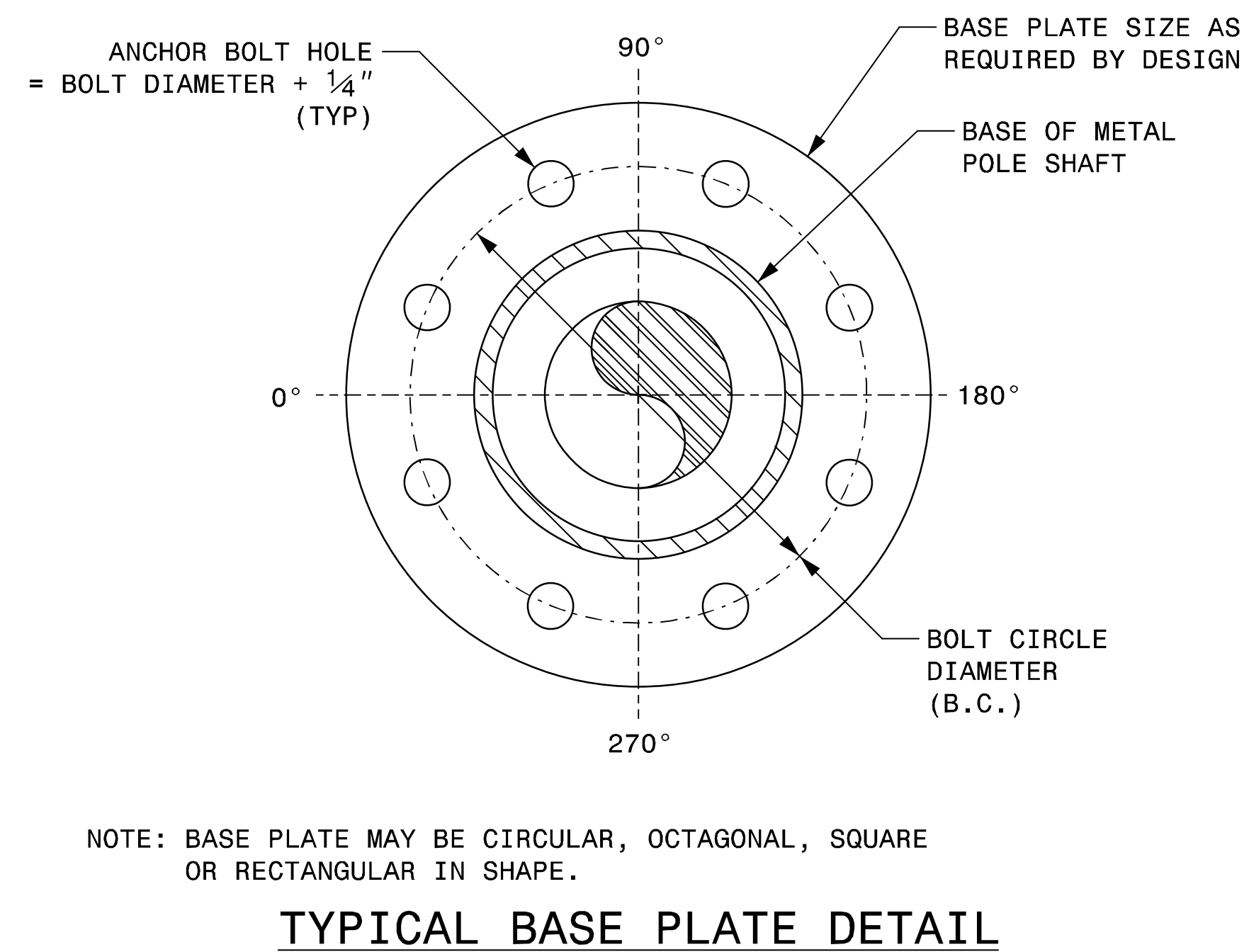
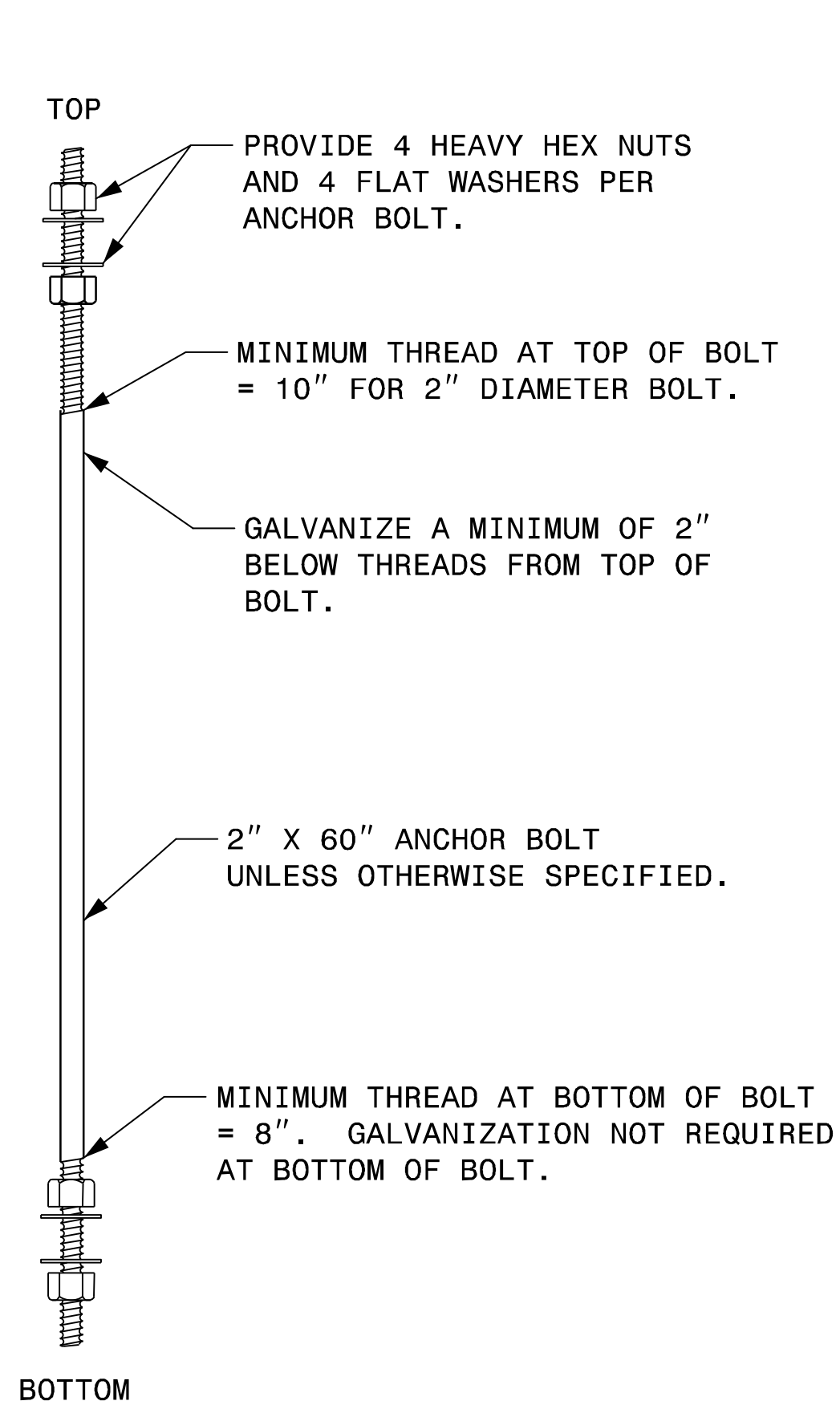
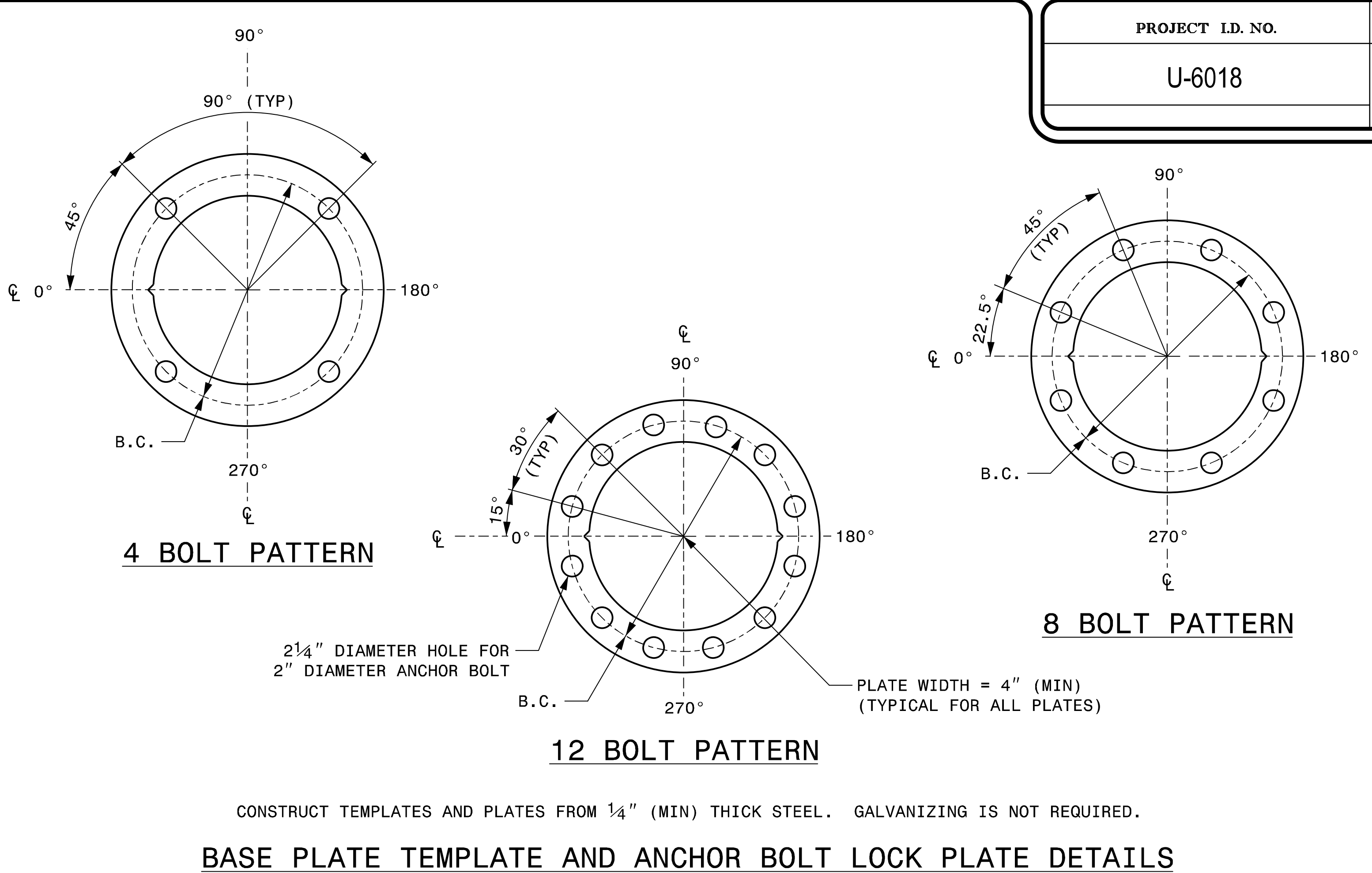
SHAFT I.D. TAG
(PROVIDE ON SHAFT OF STRAIN POLES AND MAST ARM POLE SHAFT)

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.

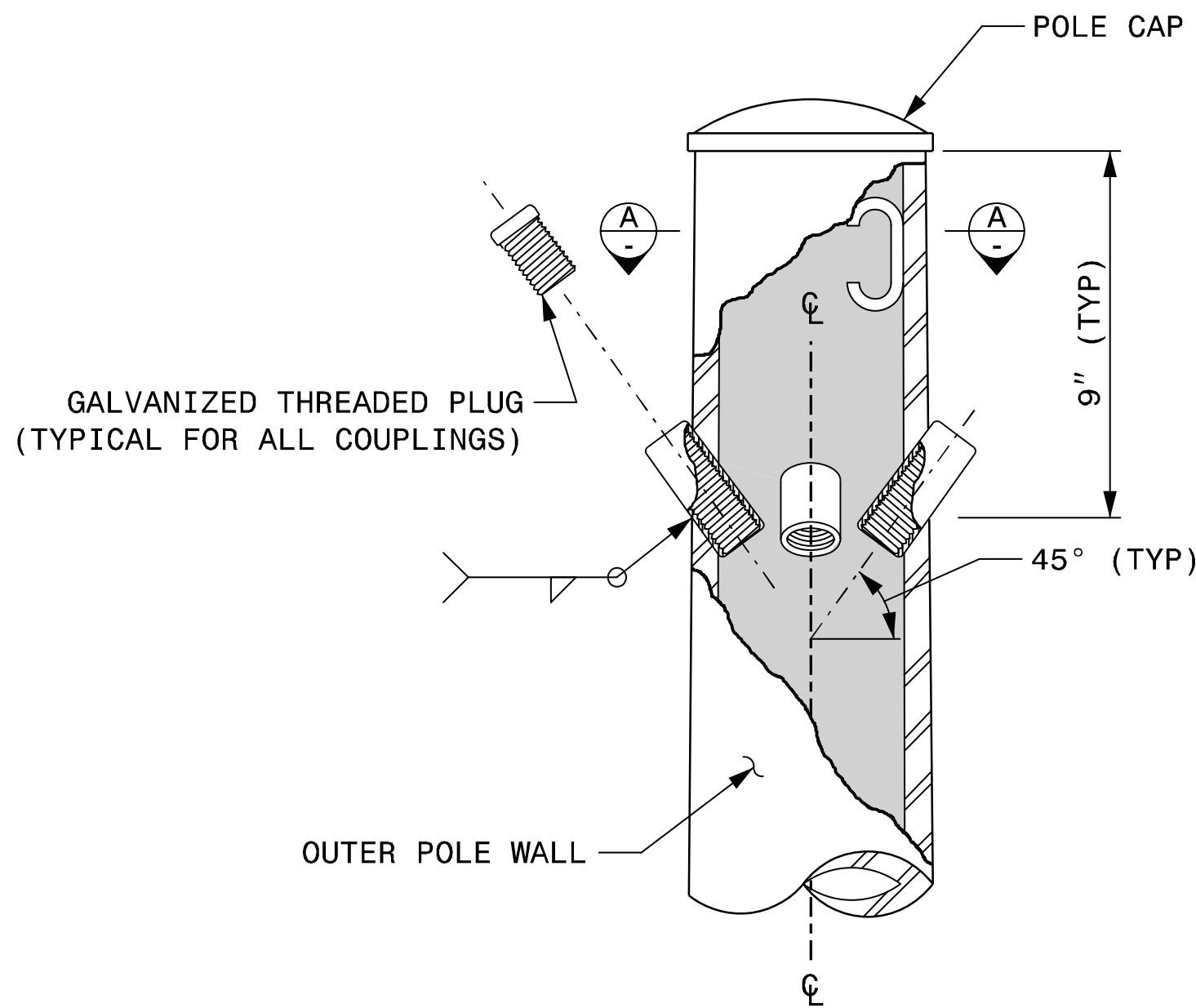
IDENTIFICATION TAG DETAILS



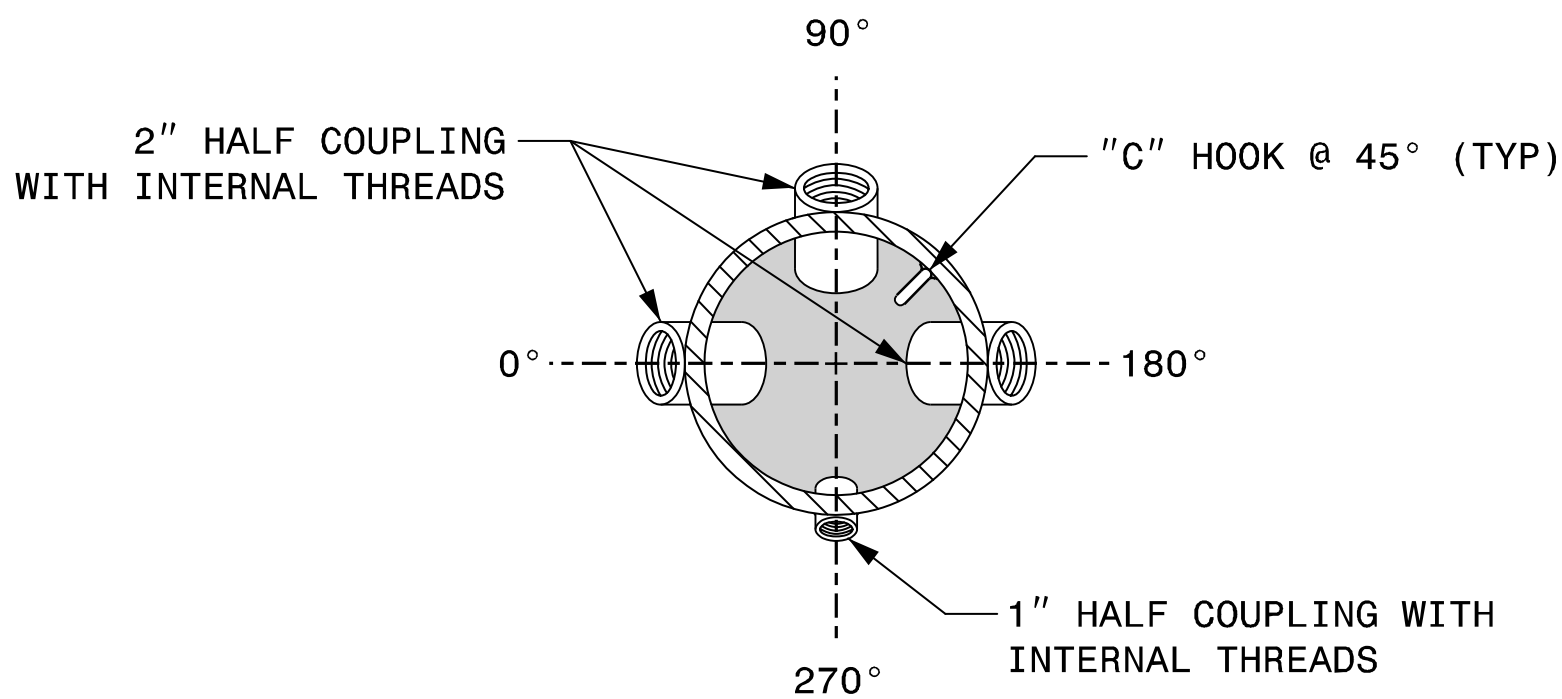
 750 N. Greenfield Pkwy, Garner, NC 27529	Typical Fabrication Details For All Metal Poles		 DocuSigned by: Kevin Durigon 4B23DC79B3784DA
	PLAN DATE: SEPTEMBER 2023	DESIGNED BY: C.F. ANDREWS	
	PREPARED BY: K.C. DURIGON	REVIEWED BY: D.C. SARKAR	
	REVISIONS	INIT. DATE	

NOTE:

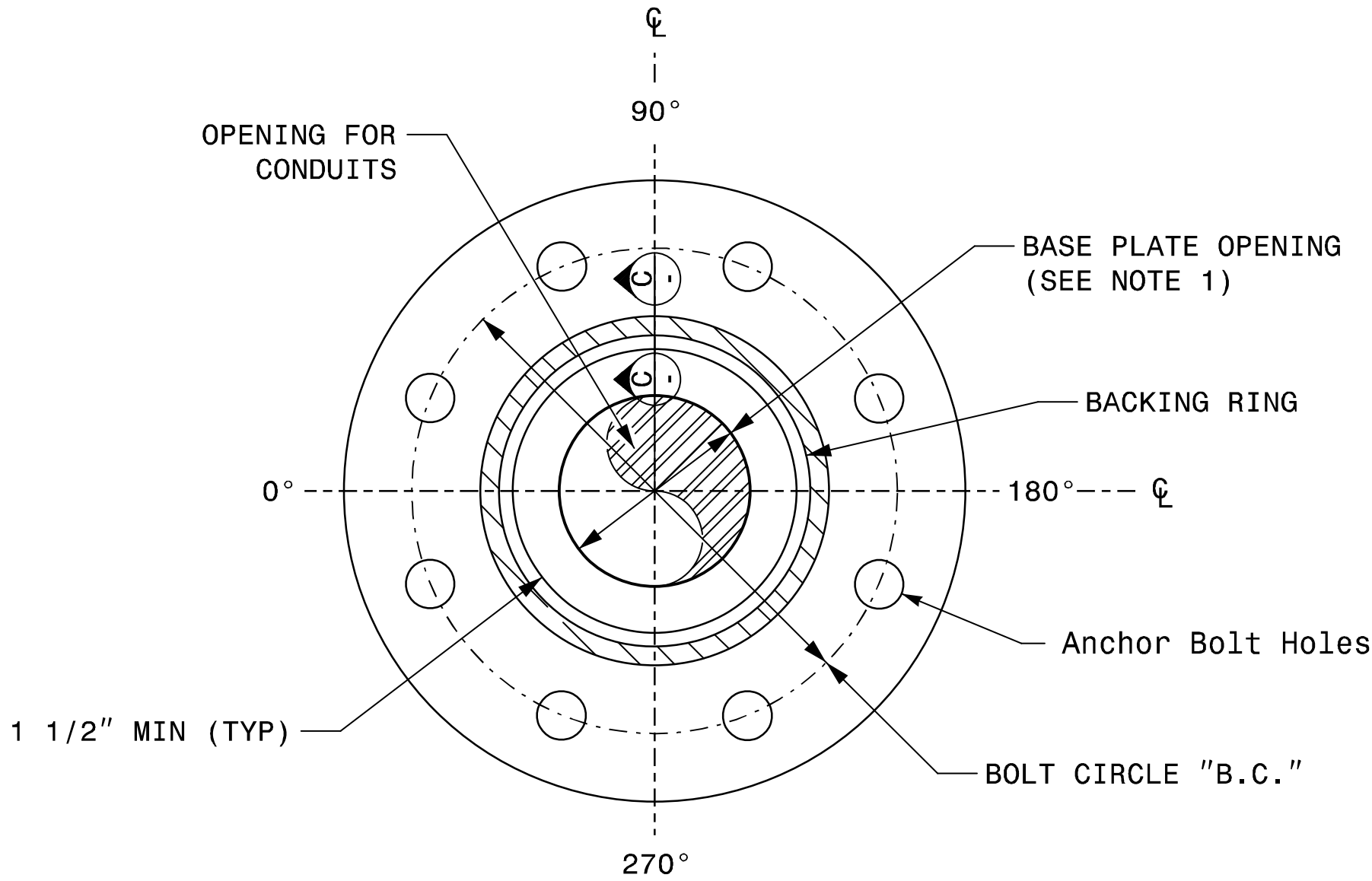
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3 1/2" BUT SHALL NOT BE LESS THAN 8 1/2".



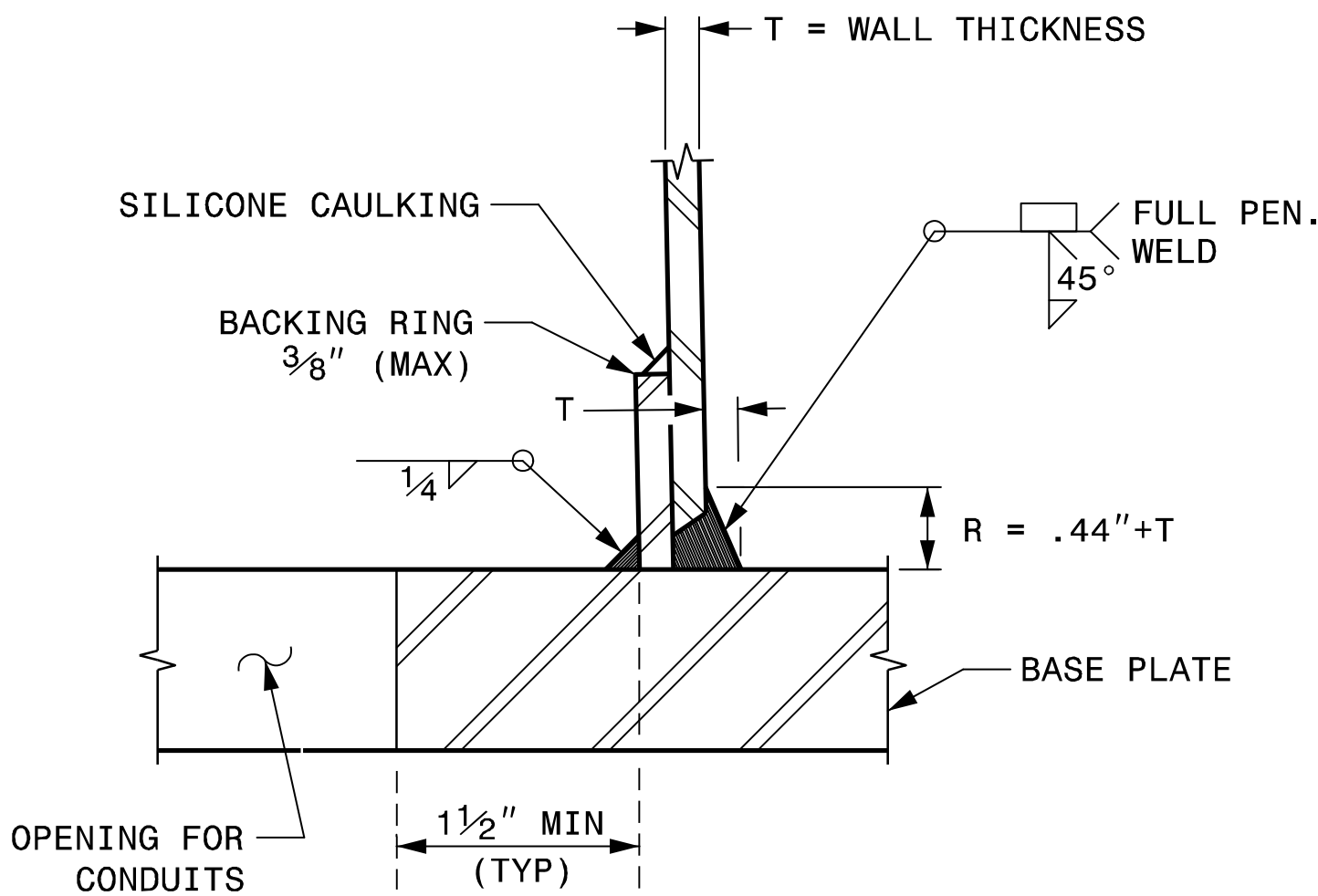
CABLE ENTRANCES AT TOP OF POLE



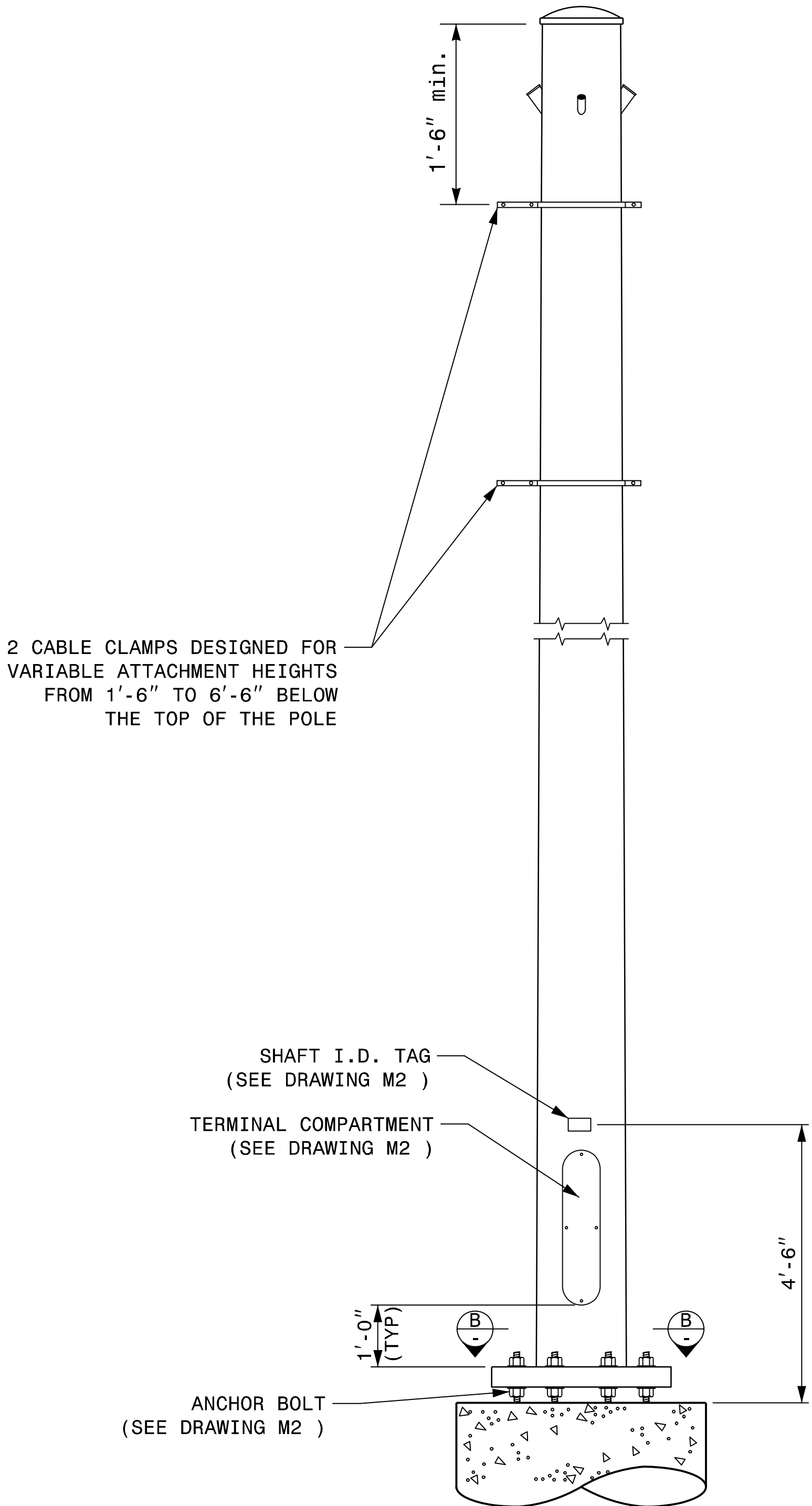
RADIAL ORIENTATION OF FACTORY INSTALLED ACCESSORIES AT TOP OF POLE



SECTION B-B
POLE BASE PLATE DETAILS
(8 AND 12 BOLT PATTERN)



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



MONOTUBE STRAIN POLE

Prepared in the Office of:

750 N. Greenfield Pkwy, Garner, NC 27529

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

SCALE

0 NONE NA

SEAL

DocuSigned by:

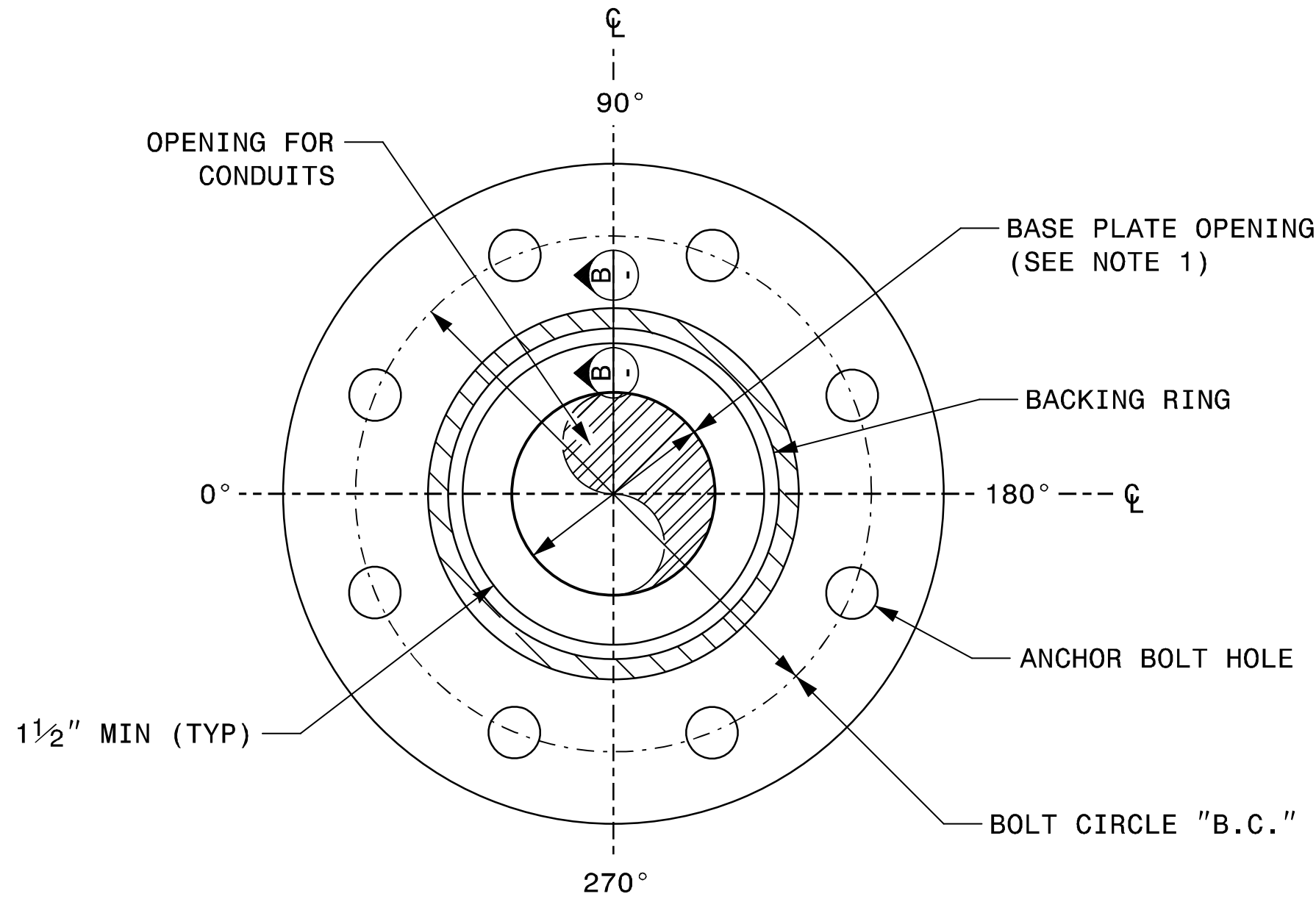
K.C. DURIGON

09/21/2023
DATE

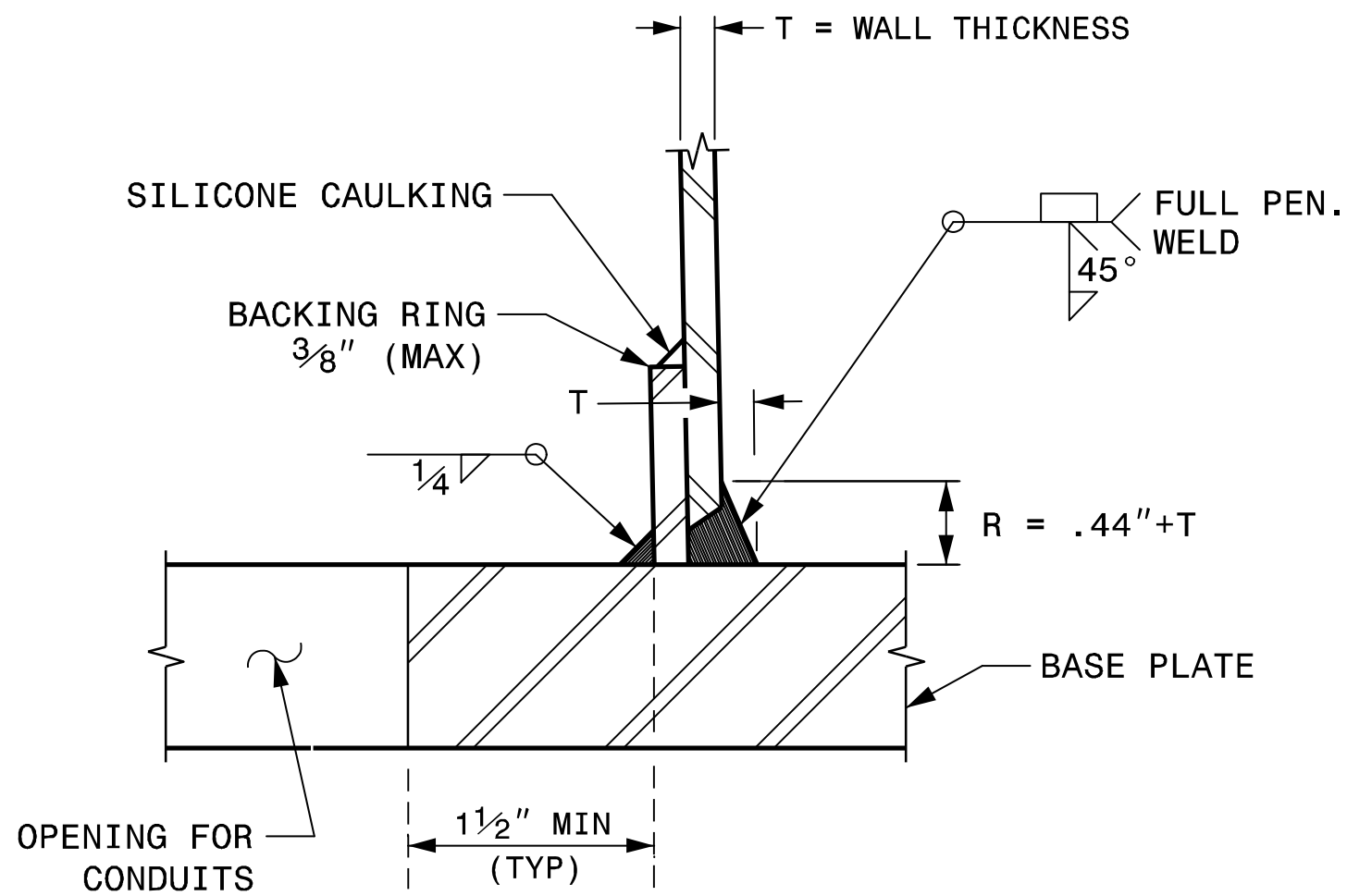
PROJECT I.D. NO.	SHEET NO.
U-6018	Sig.M4

NOTE:

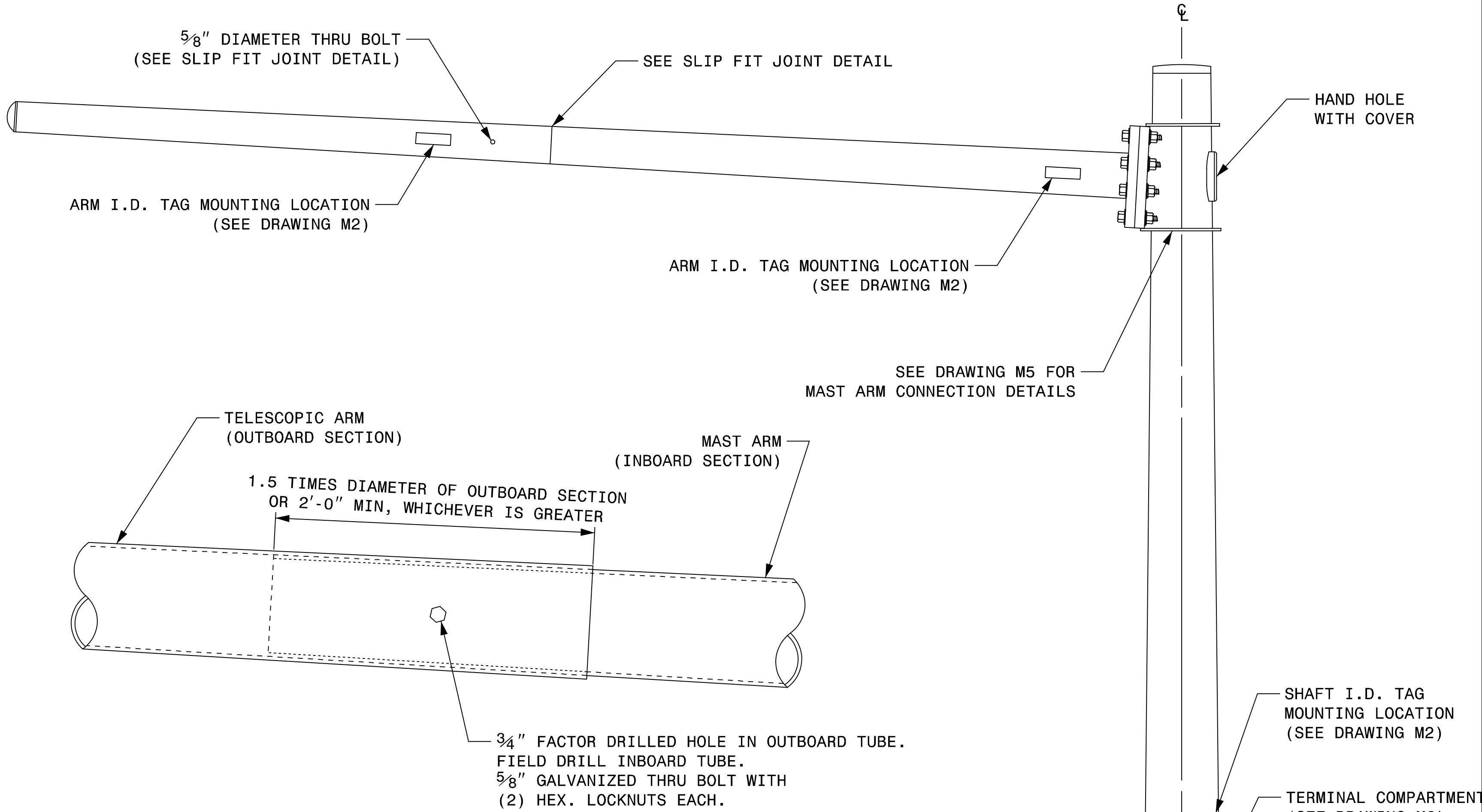
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS $3\frac{1}{2}$ " BUT SHALL NOT BE LESS THAN $8\frac{1}{2}$ ".



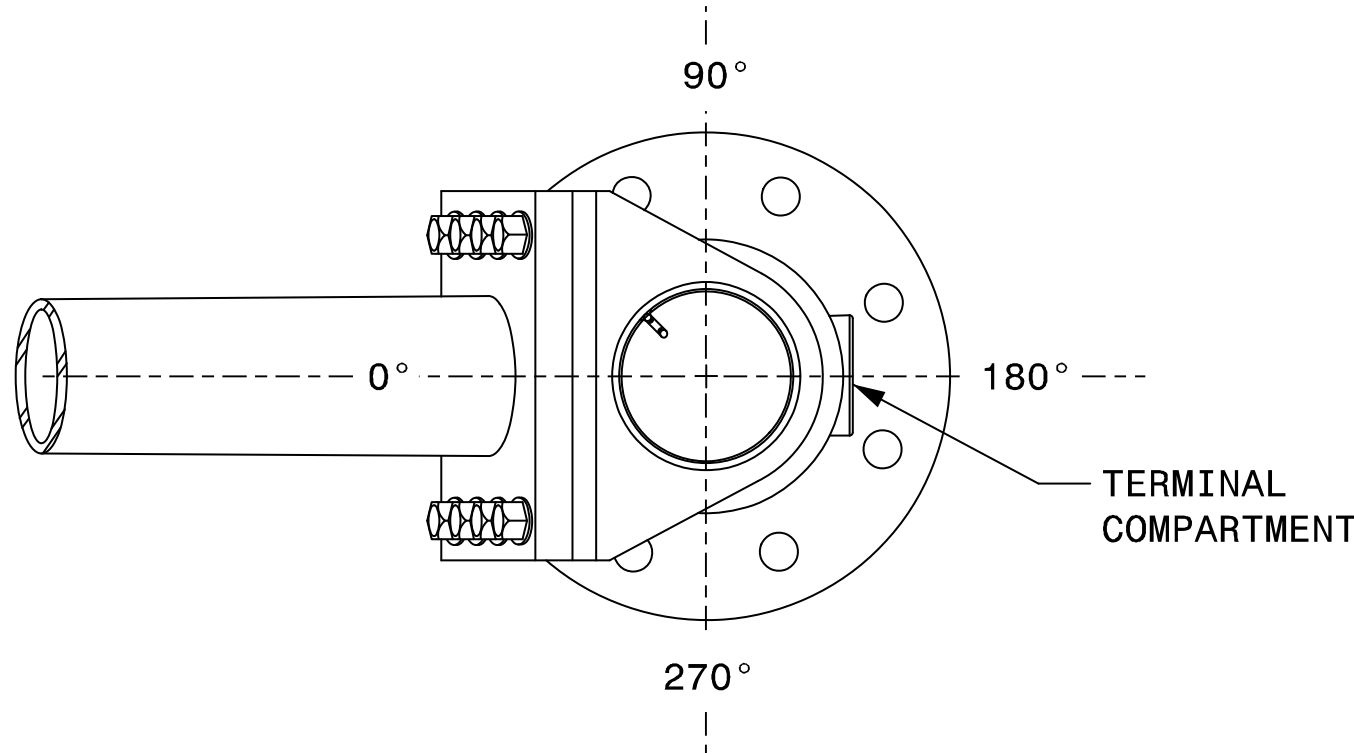
SECTION A-A
POLE BASE PLATE DETAILS



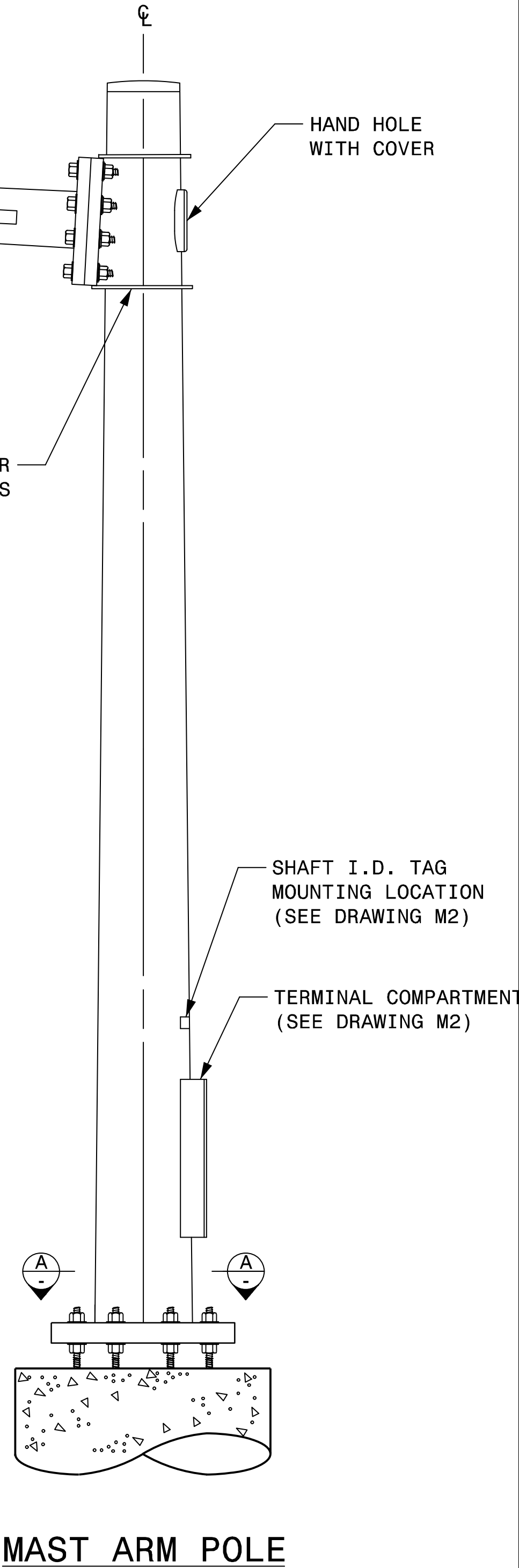
SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)
FULL-PENETRATION
GROOVE WELD DETAIL



SLIP FIT JOINT DETAIL FOR MAST ARM



MAST ARM RADIAL ORIENTATION



MAST ARM POLE

Prepared in the Office of:

TRANSPORTATION MOBILITY AND SAFETY DIVISION
SIGNAL DESIGN SECTION

750 N. Greenfield Pkwy, Garner, NC 27529

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

SCALE: 0 NA NONE

SEAL

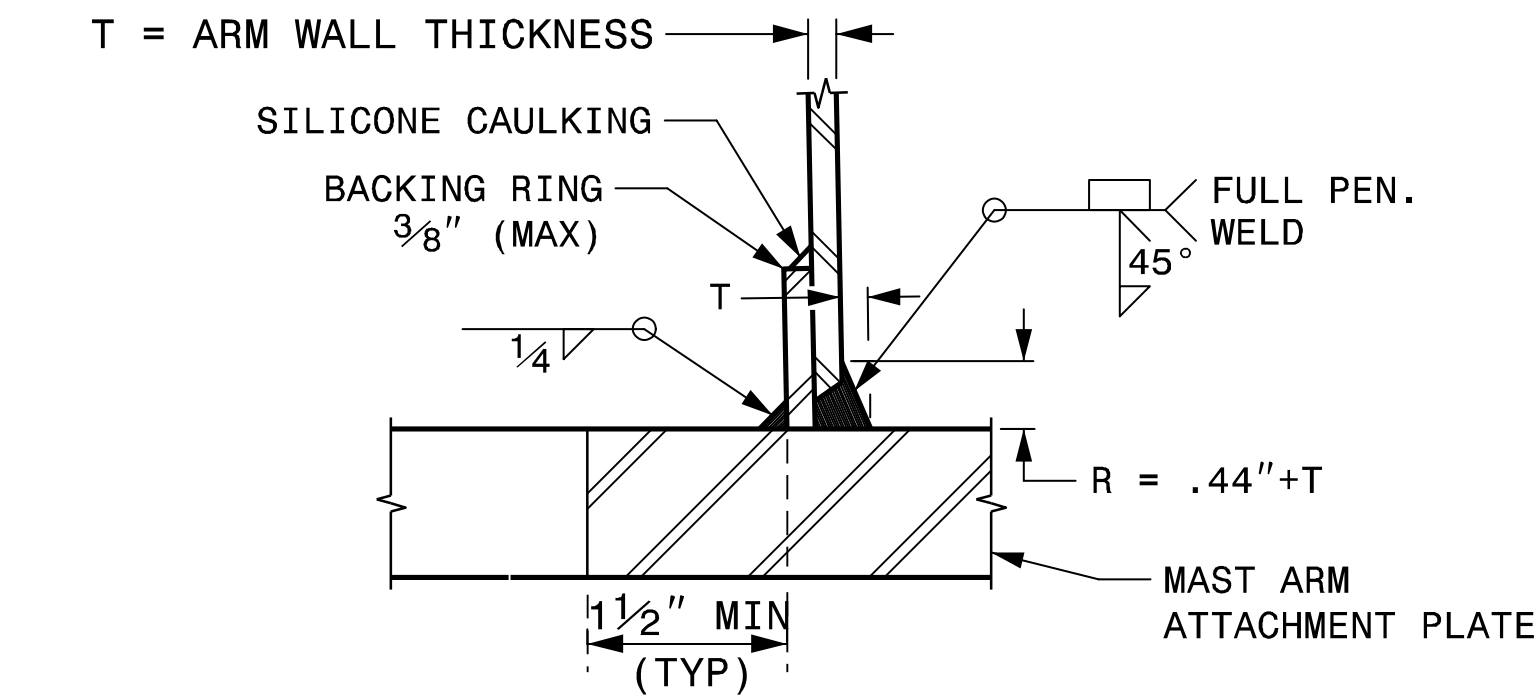
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL 036626
KEVIN C. DURIGON

DocuSigned by:
Kevin Durigon
4B23DC70B378A0A

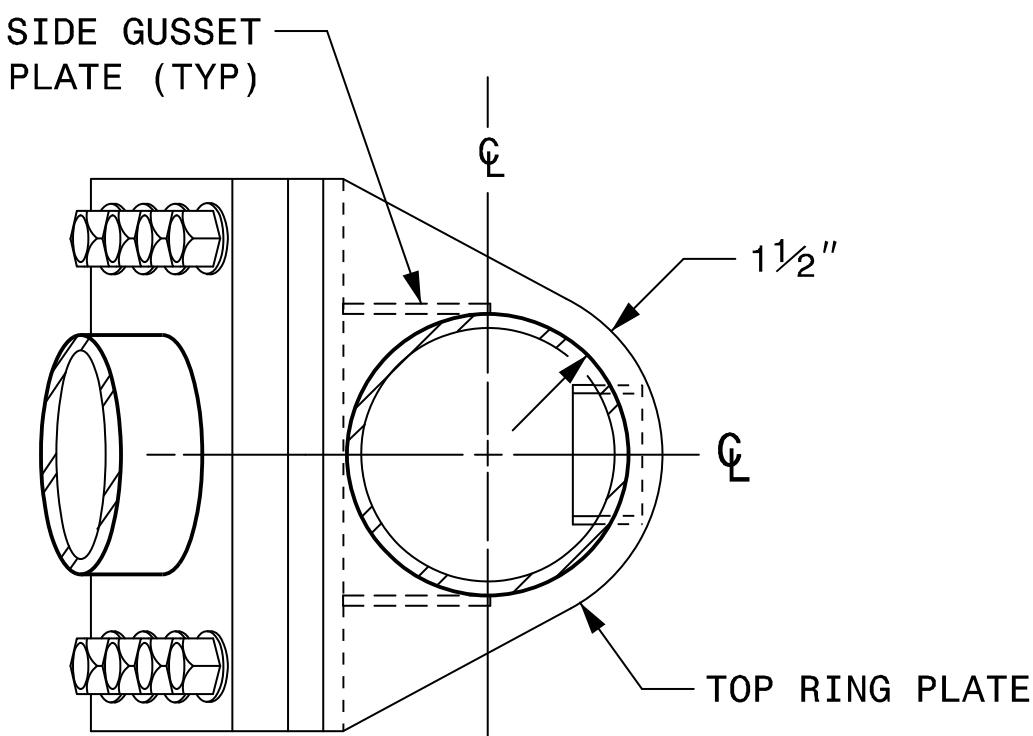
09/21/2023
DATE

WELDED RING STIFFENED MAST ARM CONNECTION

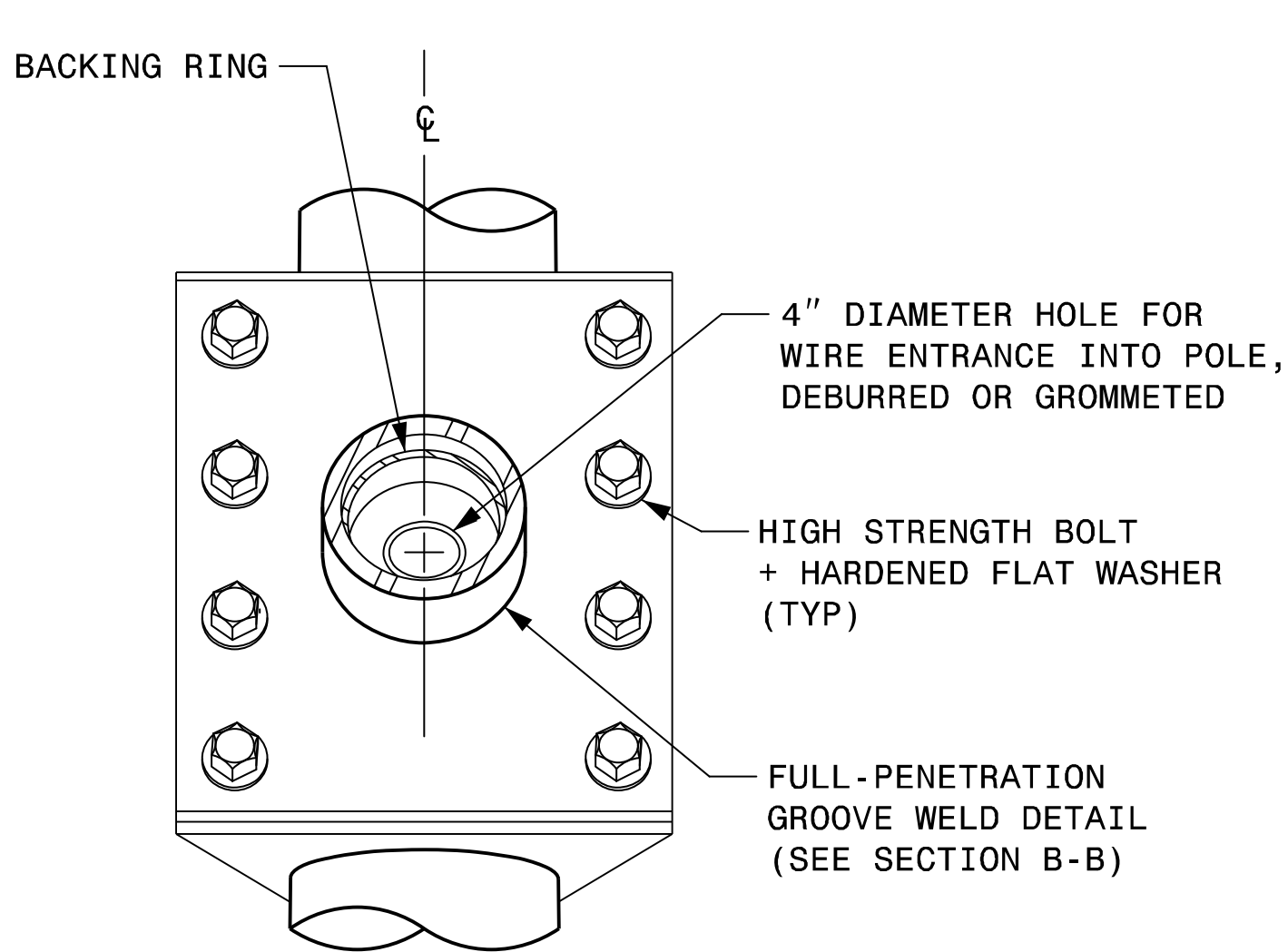
PROJECT I.D. NO.	SHEET NO.
U-6018	Sig.M5



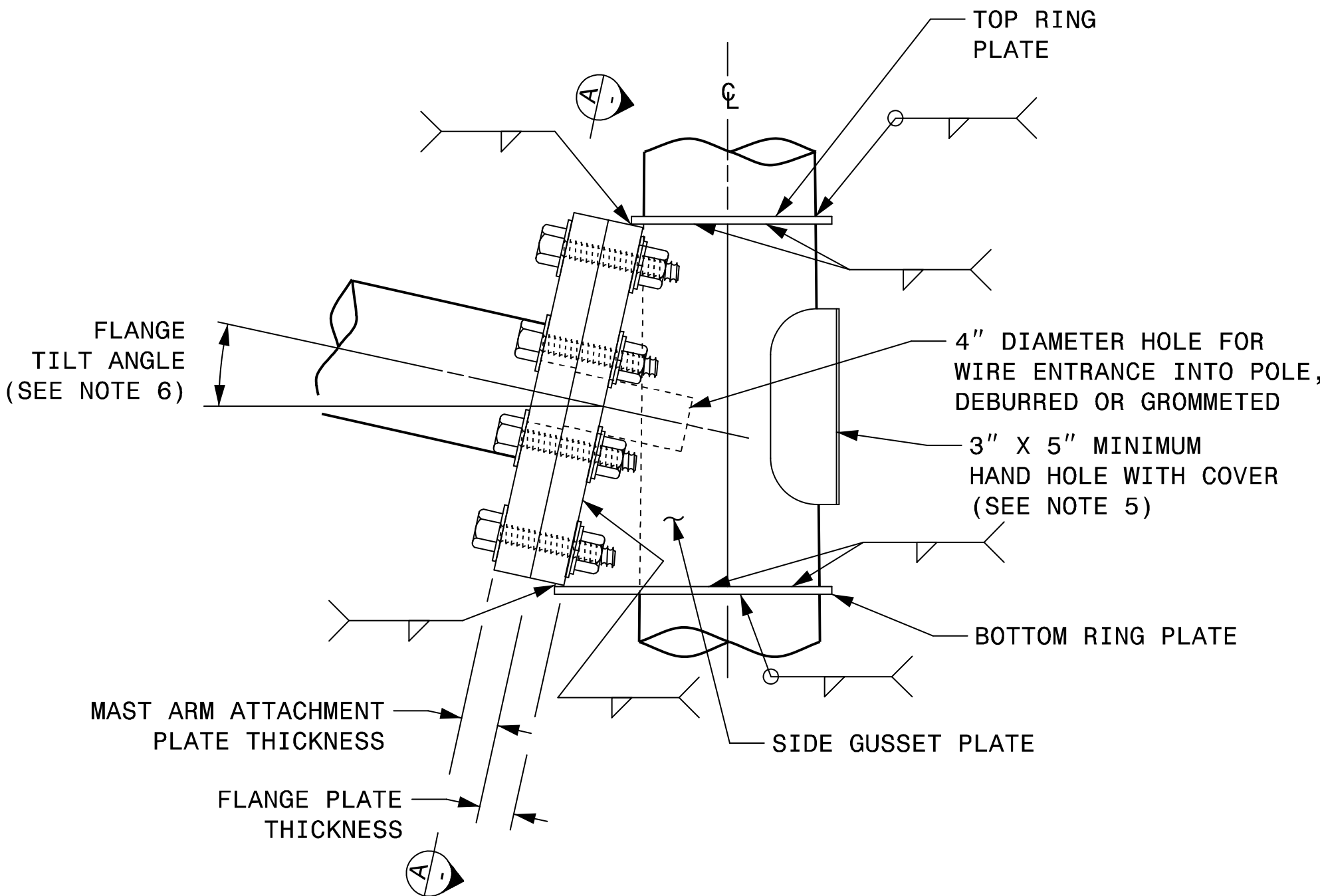
SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL



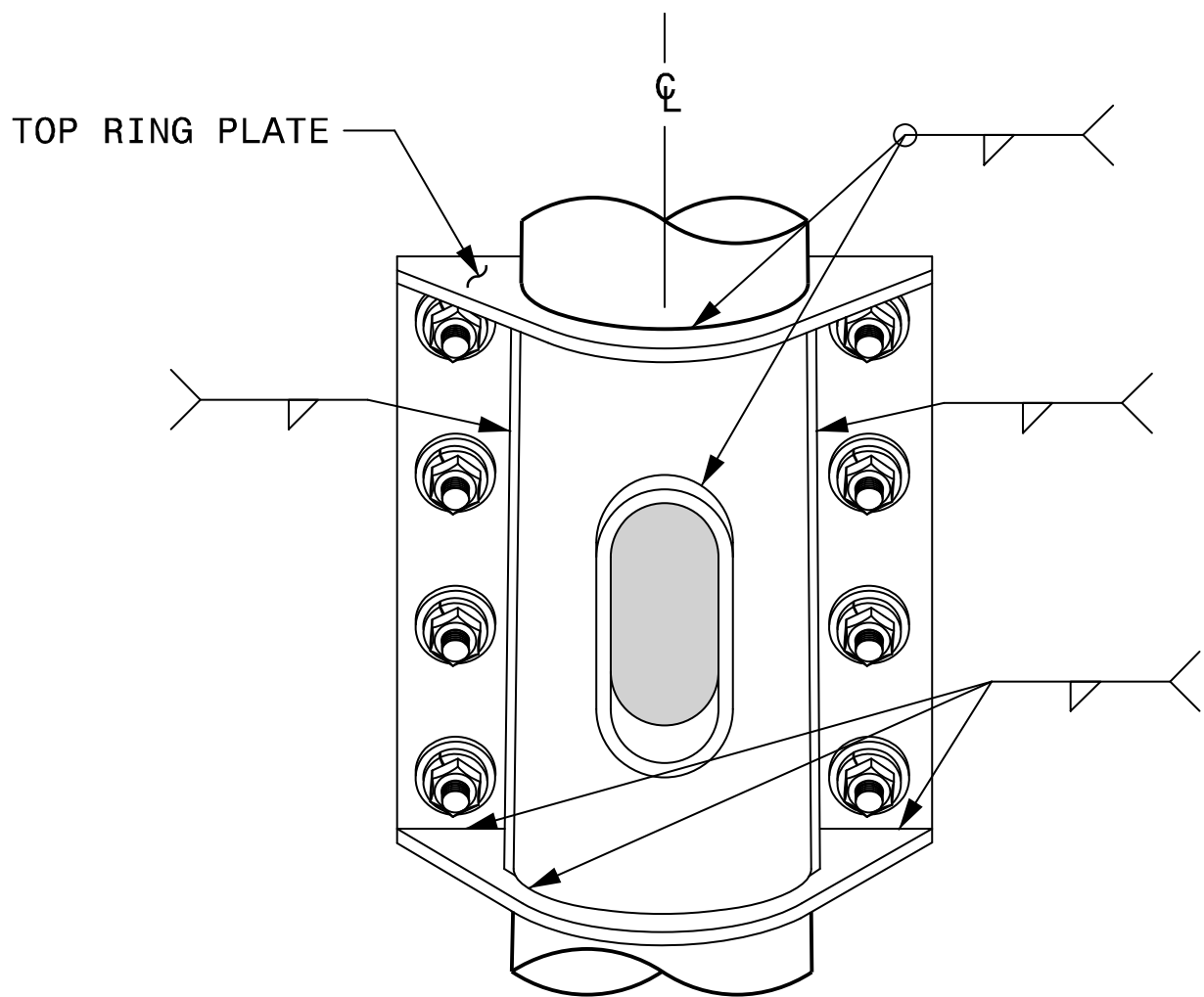
PLAN VIEW



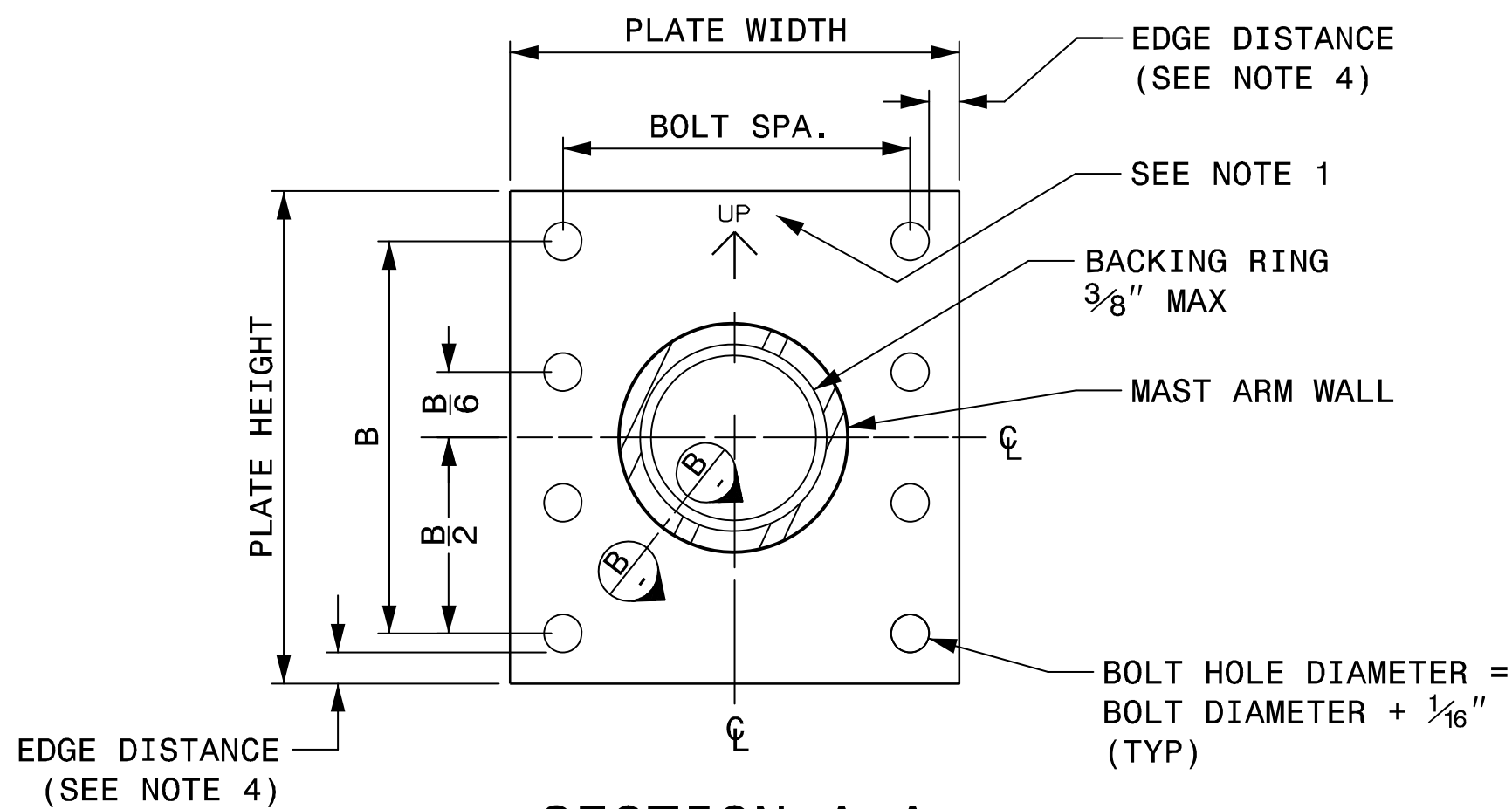
FRONT ELEVATION VIEW



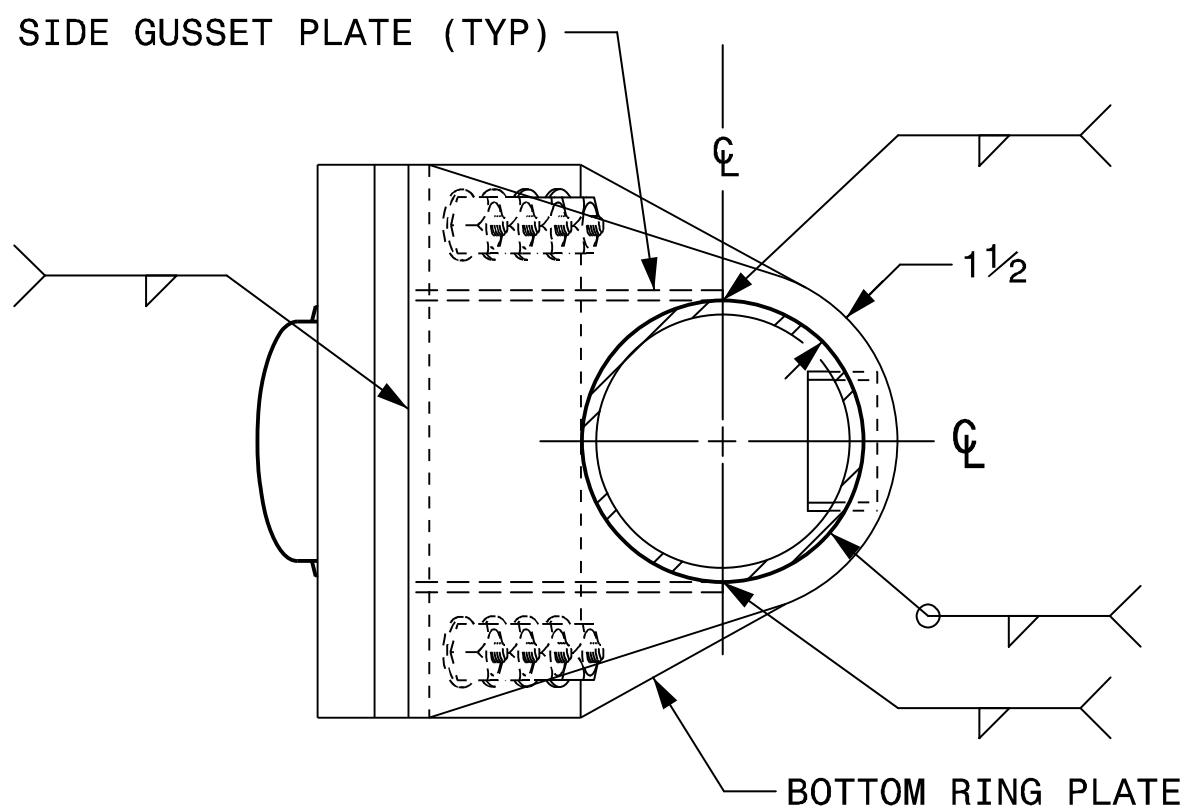
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A
MAST ARM ATTACHMENT PLATE



BOTTOM VIEW

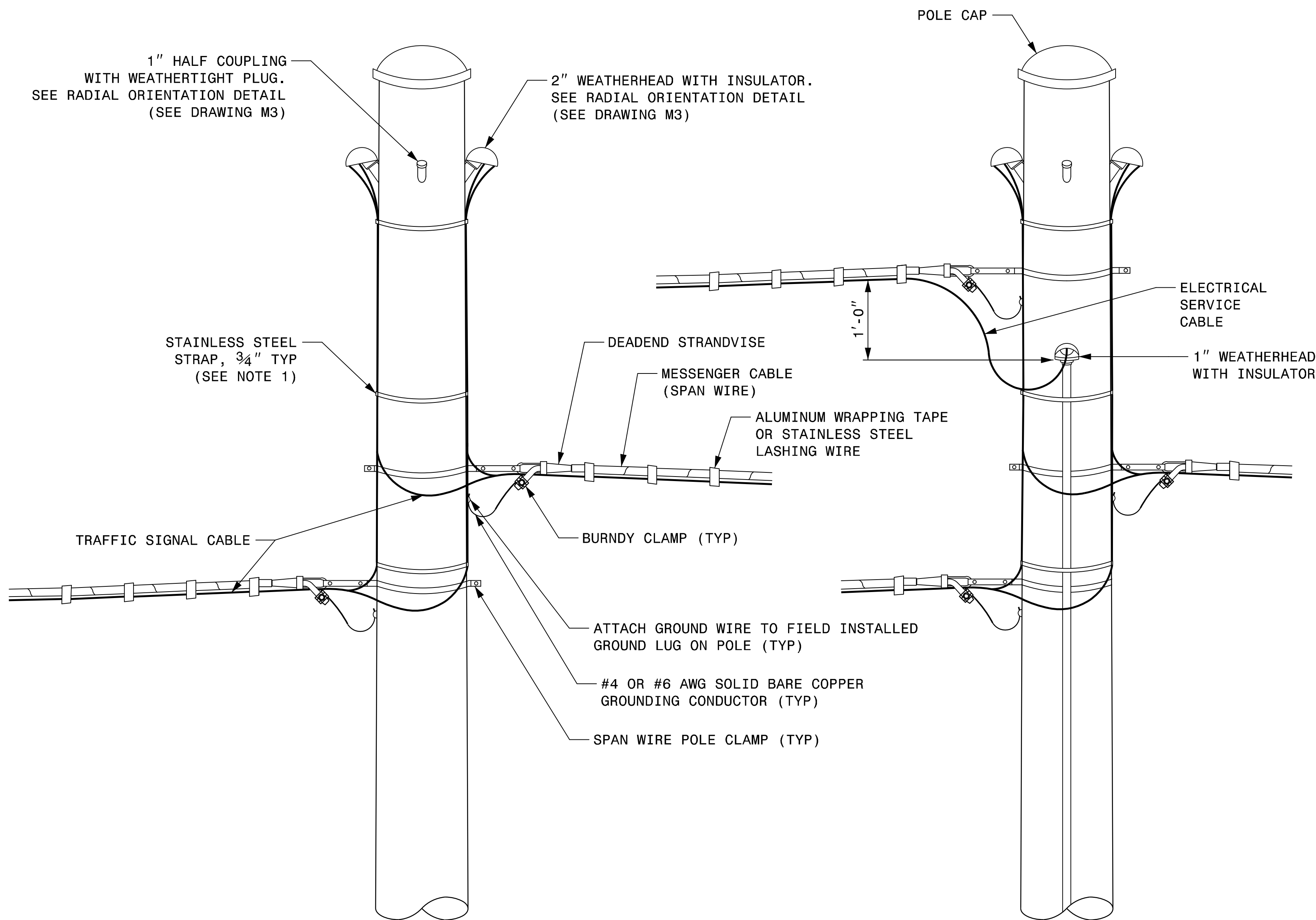
NOTES:

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.

	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			DocuSigned by: 4B23DC79B3784DA
			09/21/2023 DATE

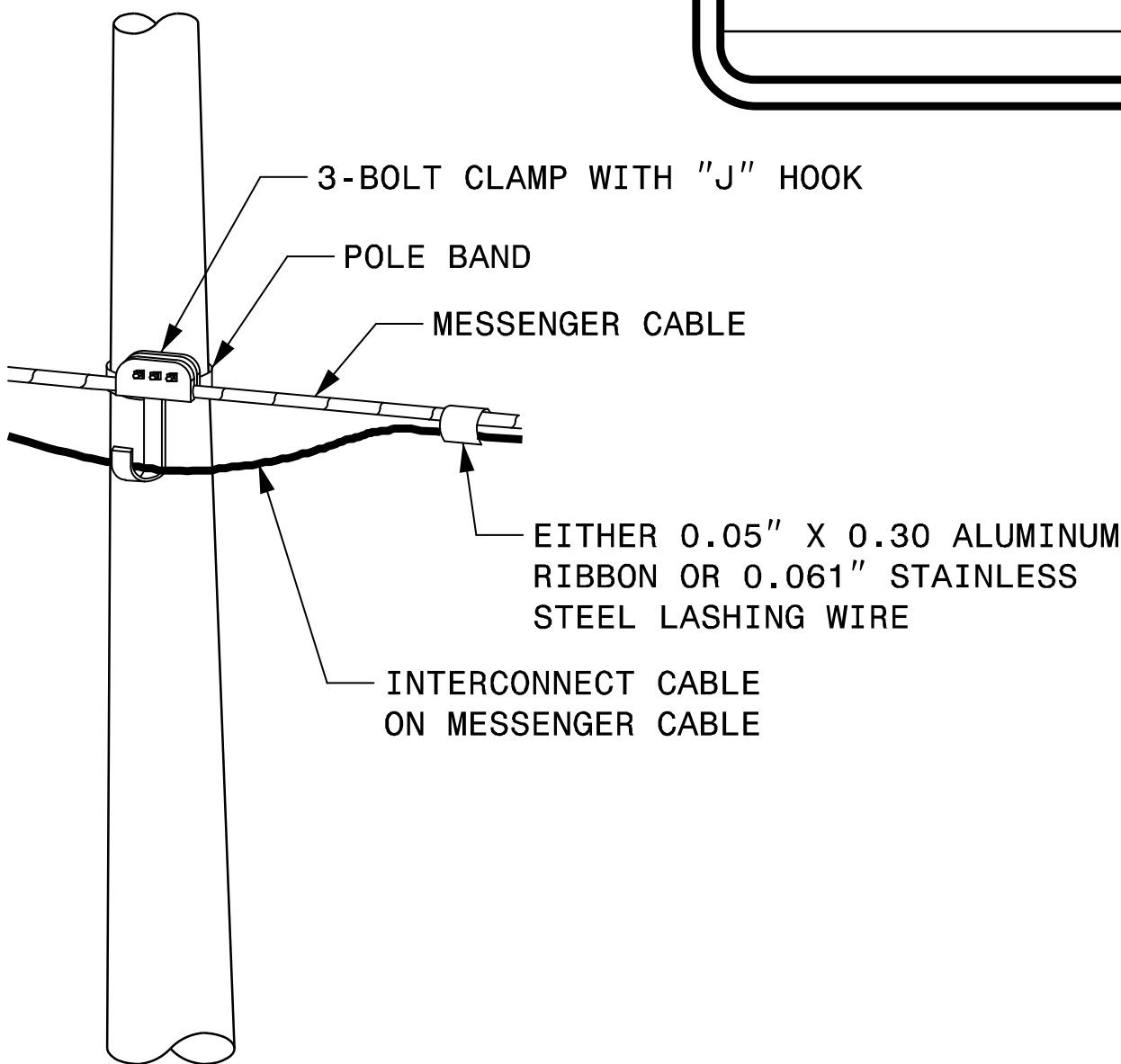
09-OCT-2023 12:38
S:\TSS\Signal Design\Structures\Drawings\2024\Metal Pole Std Drawings for LRF\2024 Sig.M5 Str. Connection Fabrication Detail\U-Mast Arm Poles.dgn
Kedur100n

Fabrication Details – Mast Arm Connection

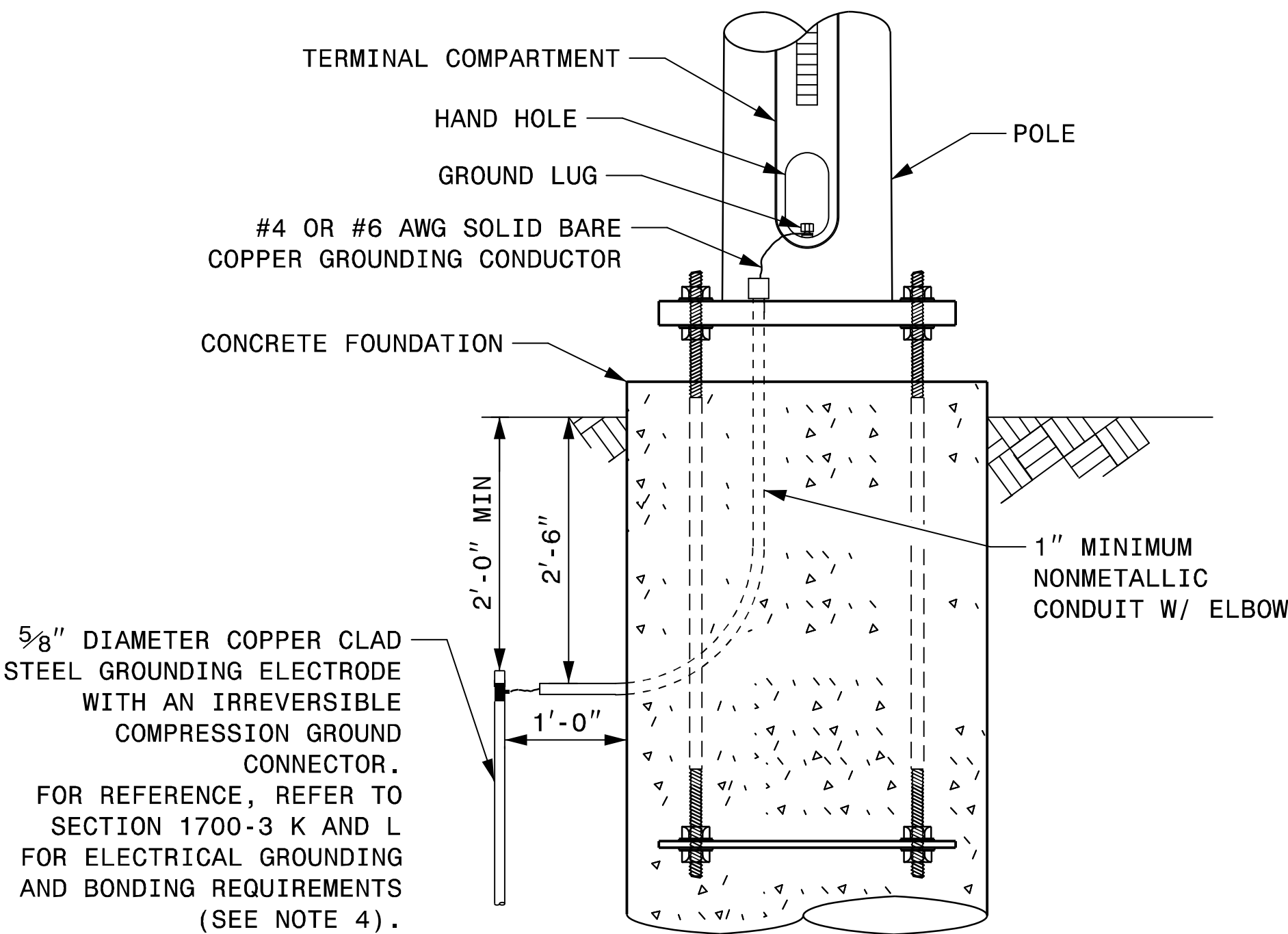


STRAIN POLE ATTACHMENTS

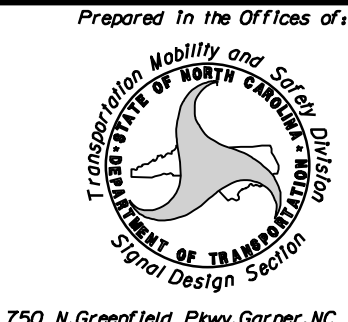
- NOTES:
1. STRAP ALL SIGNAL CABLES TO THE SIDE OF THE POLE WITH 3/4" STAINLESS STEEL STRAPS WHEN THE DISTANCE BETWEEN SPAN WIRE ATTACHMENT CLAMP AND WEATHERHEADS EXCEEDS 3'-0".
 2. PROVIDE MINIMUM TWO SPAN WIRE POLE CLAMPS PER POLE.
 3. IT IS PROHIBITED TO ATTACH TWO SPAN WIRES AT ONE POLE CLAMP.
 4. 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



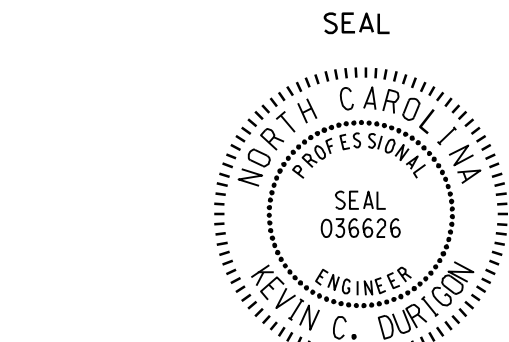
750 N. Greenfield Pkwy, Garner, NC 27529

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

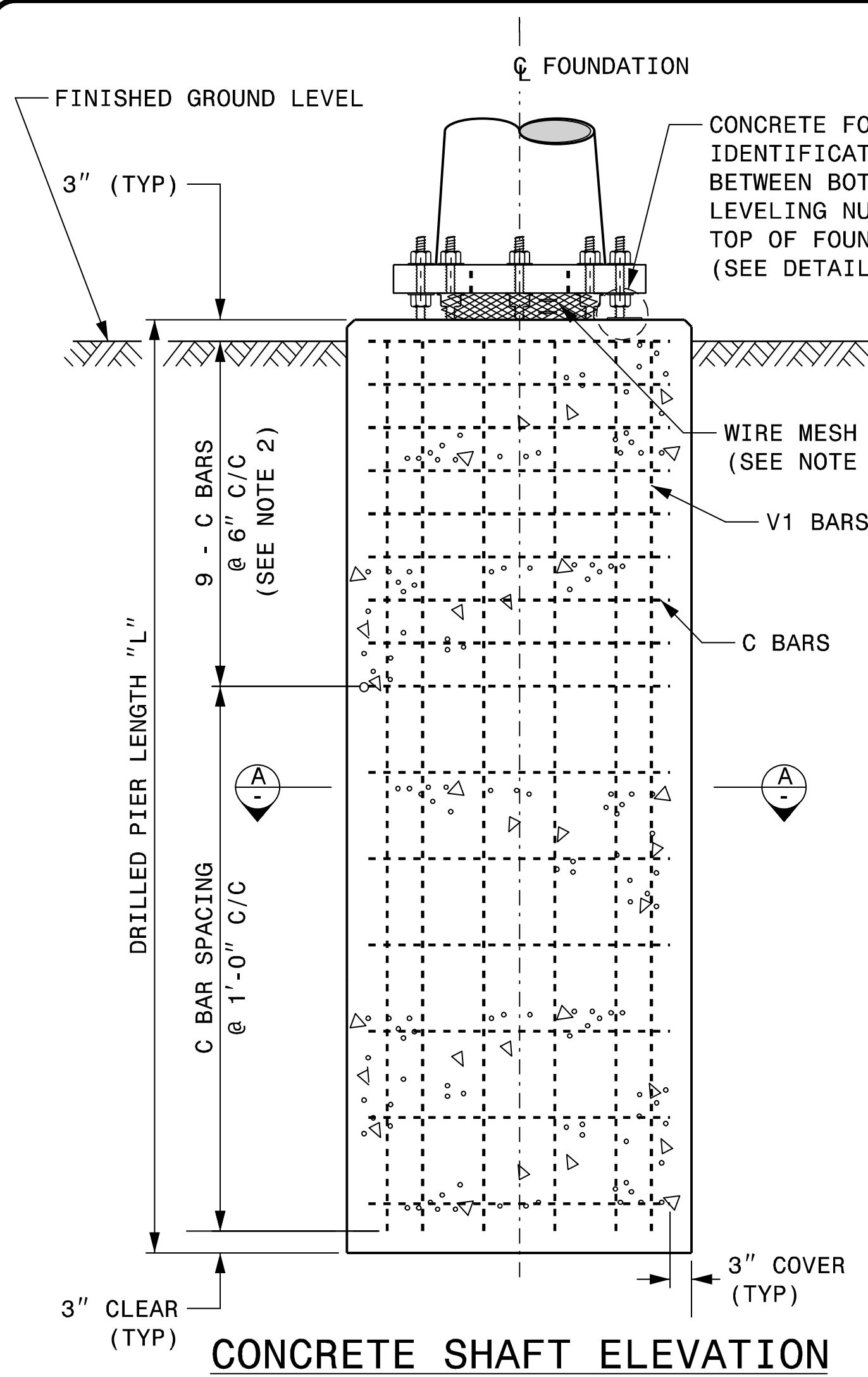
REVISIONS	INIT.	DATE



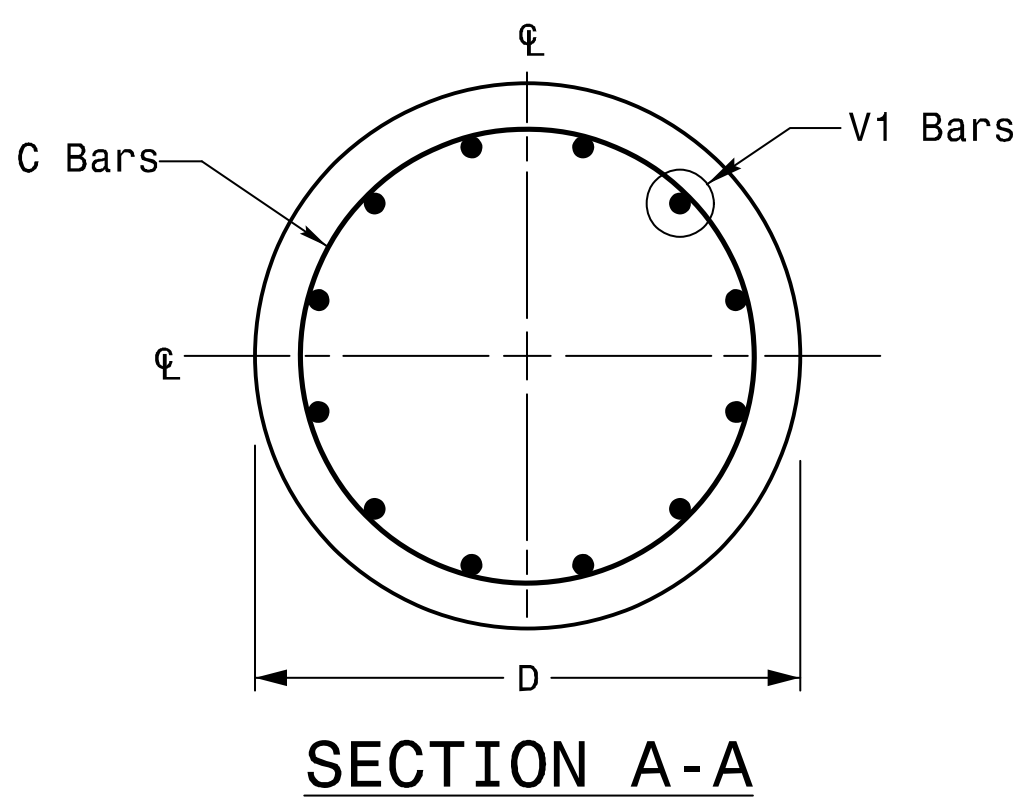
DocuSigned by:

Kevin Durigon
4B23DC79B3784DA

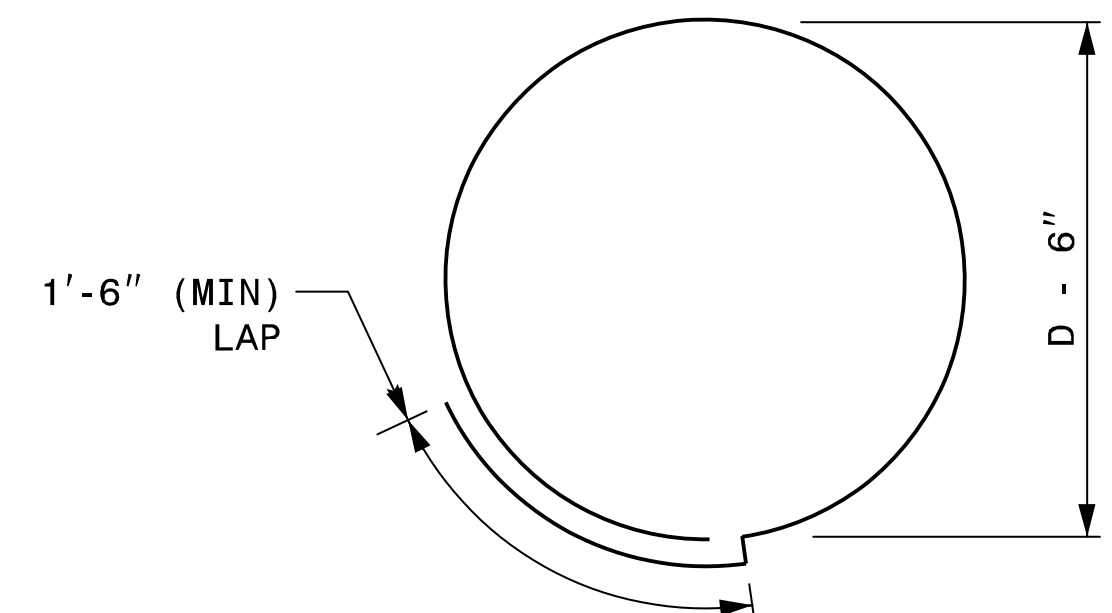
09/21/2023
DATE



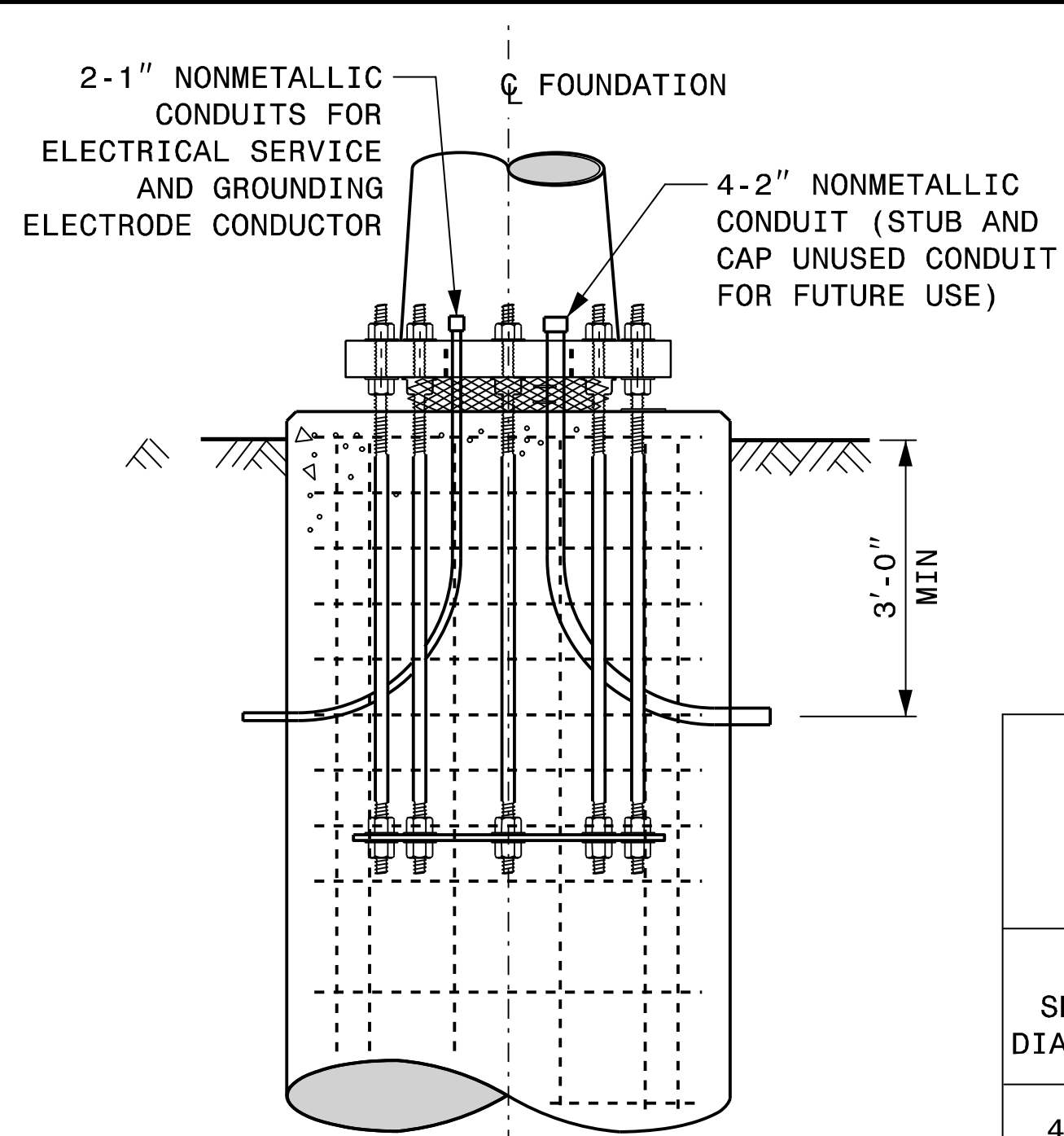
CONCRETE SHAFT ELEVATION



SECTION A-A



TYPICAL "C" BAR DETAIL



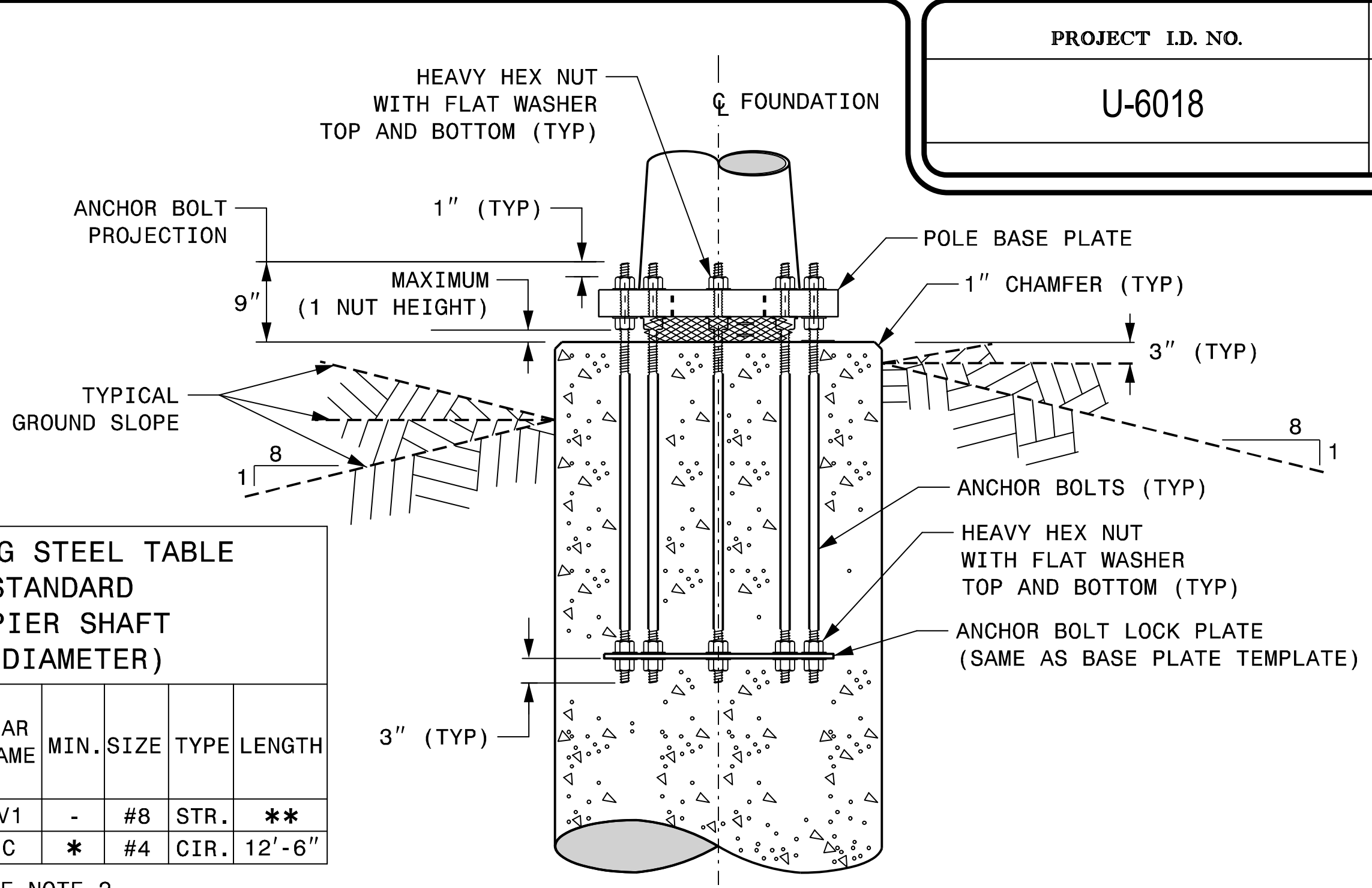
TYPICAL FOUNDATION CONDUIT DETAILS

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.

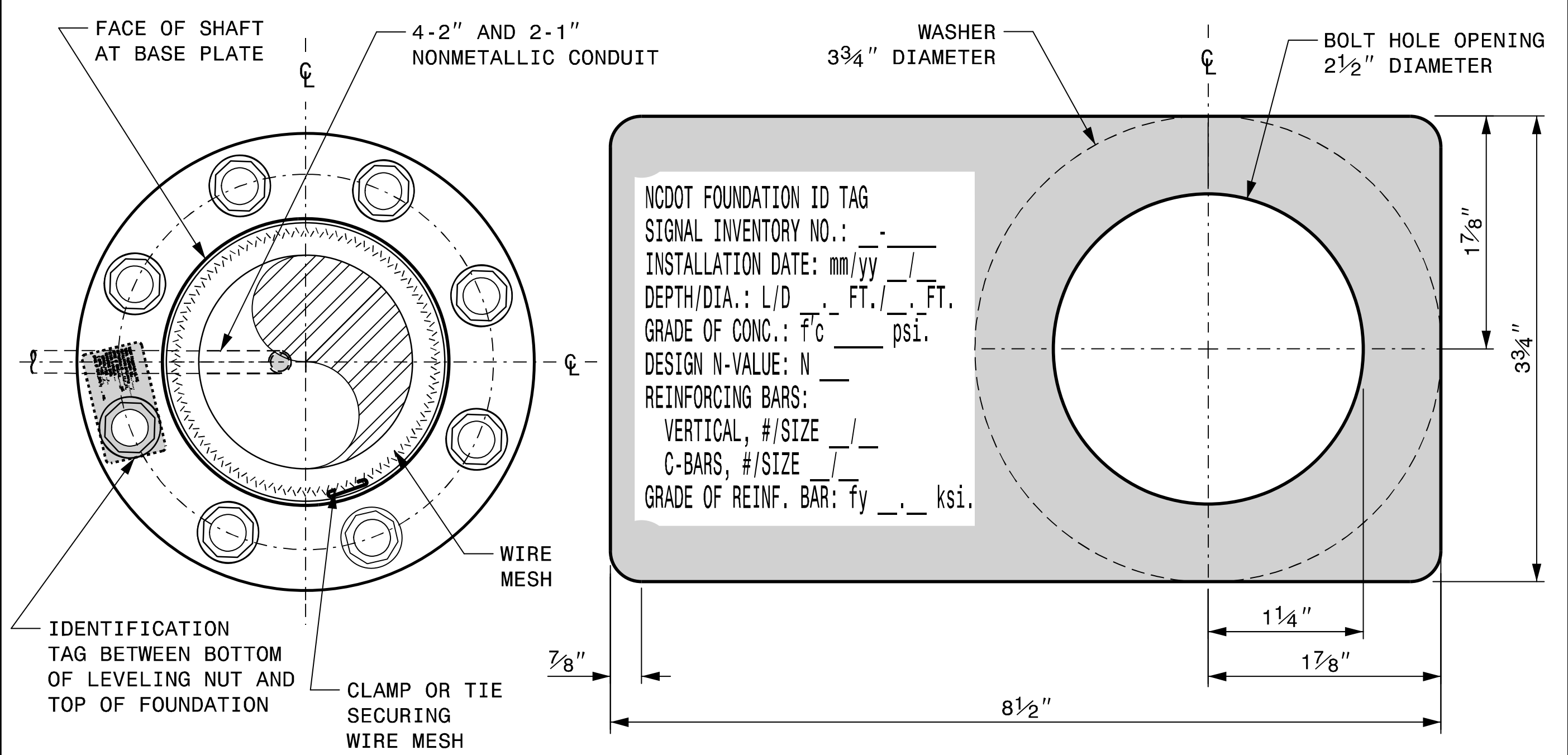
REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'-0" DIAMETER)						
"D" SHAFT DIAMETER	CONCRETE VOLUME (CU. YDS)	BAR NAME	MIN. SIZE	TYPE	LENGTH	
4'-0"	.465 X L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* SEE NOTE 2
** SEE NOTE 3



TYPICAL FOUNDATION ANCHOR BOLT DETAILS

(REINFORCING CAGE NOT SHOWN FOR CLARITY)



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

DETAIL-A

CONCRETE FOUNDATION IDENTIFICATION TAG DETAILS

Prepared In the Offices of:



TRANSPORTATION
DEPARTMENT OF TRANSPORTATION
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

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
ENGINEER
KEVIN C. DURIGON
036626

DocuSigned by:

4B23DC79B3784DA

09/21/2023
DATE

SOIL CONDITION

PROJECT I.D. NO.	SHEET NO.
U-6018	Sig.M8

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

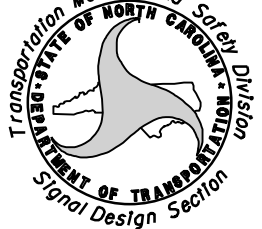
1. VALUES SHOWN IN THE "REACTIONS AT THE POLE BASE" COLUMN REPRESENT THE MINIMUM ACCEPTABLE CAPACITY ALLOWED FOR DESIGN USING A COMBINED FORCE RATIO (CFR) OF 1.00.
2. USE CHAIRS AND SPACERS TO MAINTAIN PROPER CLEARANCE.
3. FOR FOUNDATION, ALWAYS USE AIR-ENTRAINED CONCRETE MIX.

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.

09-07-2023, 12:48
S:\TSS\HITS Signal\Drawings\Drawings\2024 Metal Pole Std Drawings for LRF\2024 Sig.M8 Std. Strain Pole Found.-Saturated Soil Condition.dgn
KedarJagan

Prepared In the Offices of:



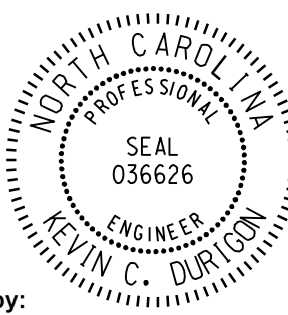
TRANSPORTATION MOBILITY AND SAFETY DIVISION
DEPARTMENT OF TRANSPORTATION
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

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

SCALE: NA
NONE

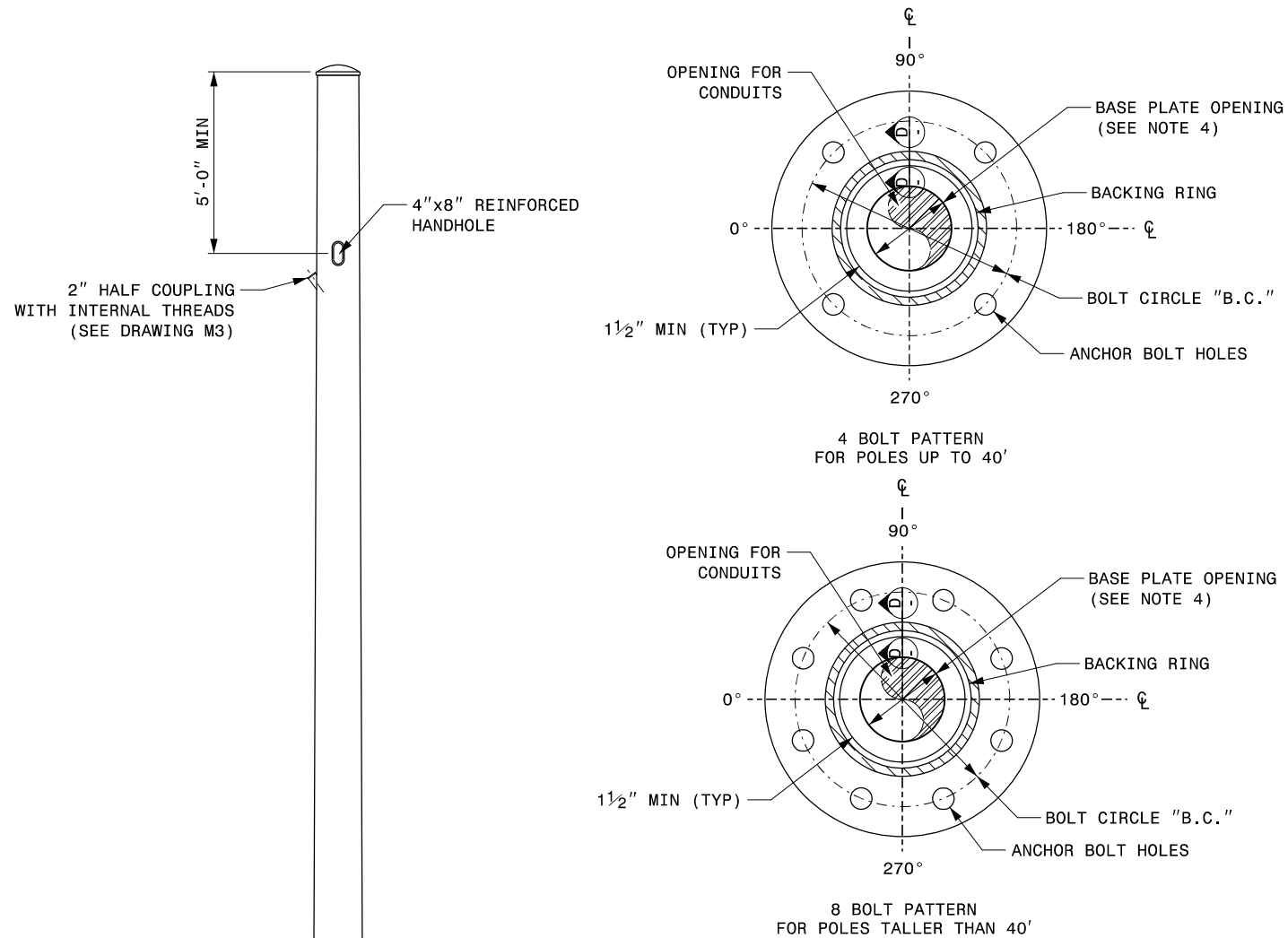
SEAL

ENGINEER
KEVIN C. DURIGON

DocuSigned by:

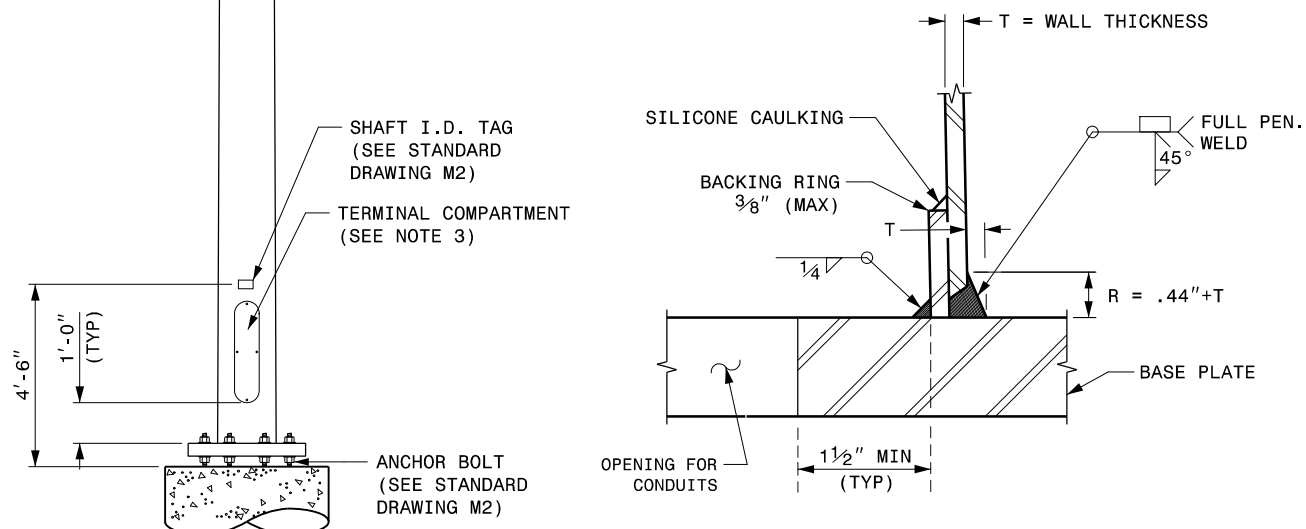
4B23DC79B378ADA

09/21/2023
DATE

Standard Strain Pole Foundation – All Soil Conditions



BASE PLATE DETAILS



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

CCTV CAMERA POLE
(NOT TO SCALE)

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.

Prepared in the Office of:



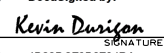
750 N. Greenfield Pkwy, Garner, NC 27529

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

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL
036626
KEVIN C. DURIGON

DocuSigned by:

4823DC79B3784DA

09/21/2023
DATE

SCALE
0 NA
NONE

- 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
DO NOT BOND TRACER WIRE TO
EQUIPMENT GROUND BUS
- 61

BOND RISER AND MESSENGER CABLE
TO POLE GROUND
- 62

BOND RISER TO POLE GROUND
- 63

BOND MESSENGER CABLE TO POLE GROUND
- 64

INSTALL HEAT SHRINK TUBING RETROFIT KIT
- 65

INSTALL MOLDABLE DUCT SEAL
- 66

SLACK SPAN
- 67