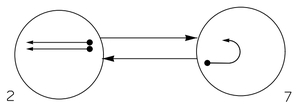
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 14.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

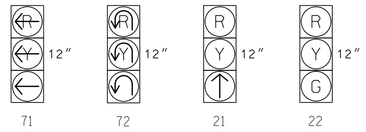
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 2	PHASE 7	FLASH
21	↑	R	R
22	G	R	R
71	~~R~~	←	~~R~~
72	(R)	↑ ∩	(R)

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

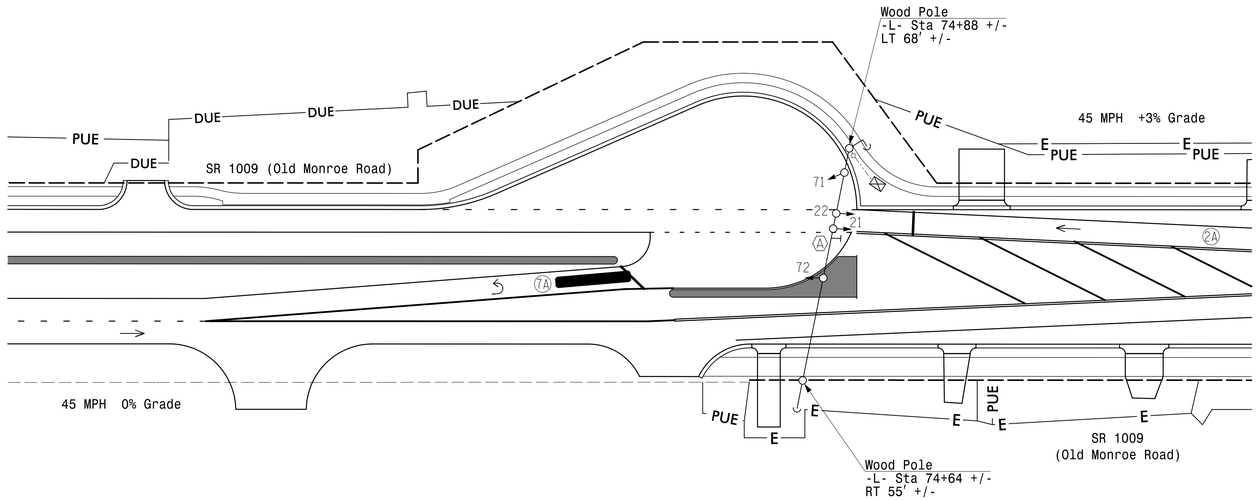
DETECTOR					PROGRAMMING							
LOOP/ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
7A	✳	0	✳	✳	7	-	-	X	-	X	-	✳

✳ Multi-zone Microwave Detection Zone

2 Phase
Fully Actuated
D10-59_Indian Trail

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○ ~	Signal Pole with Guy	● ~
○ ~ ⌐	Signal Pole with Sidewalk Guy	● ~ ⌐
▬	Microwave Detection Zone	▬
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·-·-·	2-in Underground Conduit	·-·-·
N/A	Right of Way	— — —
→	Directional Arrow	→
▬	Construction Zone	N/A
Ⓐ	"NO LEFT TURN" Sign (R3-2)	Ⓐ

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 7
Walk *	–	–
Ped Clear *	–	–
Min Green	12	7
Passage *	2.0	2.0
Max 1 *	90	30
Yellow Change	4.3	3.0
Red Clear	2.5	3.6
Red Revert	2.0	2.0
Added Initial *	–	–
Maximum Initial *	–	–
Time Before Reduction *	–	–
Time To Reduce *	–	–
Minimum Gap	–	–
Advance Walk	–	–
Non Lock Detector	–	X
Vehicle Recall	MIN RECALL	–
Dual Entry	–	–

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

Advance Microwave Detection

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

New Installation
Temporary Design - TMP Phase III

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STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

SR 1009 (Old Monroe Road) WB
at
EB U-Turn East of SR 1008
(Waxhaw-Indian Trail Road)

Division 10 Union County Indian Trail

PLAN DATE: March 2026 REVIEWED BY: T. Moody
PREPARED BY: J. Grimm REVIEWED BY: A. Wiseman

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 8/11/2026
SIGNATURE DATE

SIG. INVENTORY NO. IO-2449T

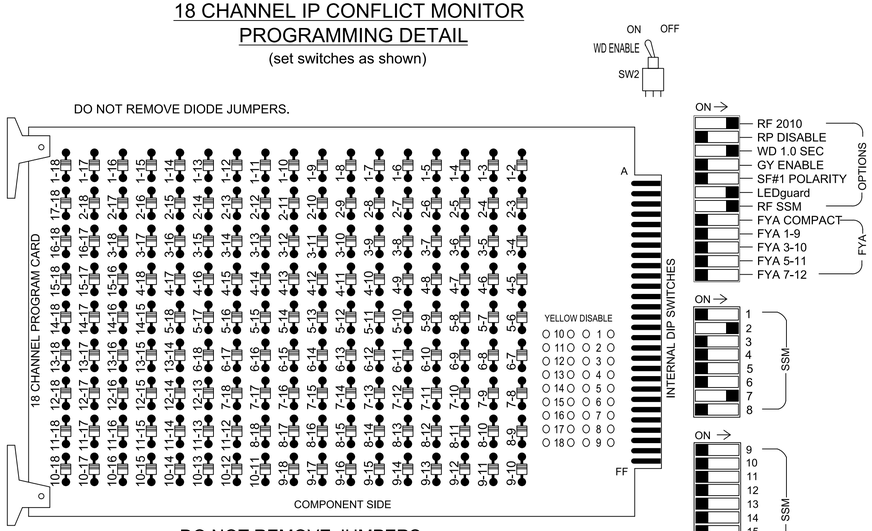
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 14.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(set switches as shown)



DO NOT REMOVE JUMPERS

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L														ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L														

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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

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

SEQUENCE DETAIL

Front Panel
Main Menu >Controller >Sequence & Phs Config>Sequences

Web Interface
Home >Controller >Sequence

Sequence 1

Ring	Sequence Data
1	2,a,7,b
2	-

NOTES

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 plan.
2. Program controller to start up in phase 2 Green No Walk and phase 6 Phase Not On.
3. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
4. The cabinet and controller are part of the D10-59_Indian Trail Signal System.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S2, S10
Phases Used.....2, 7
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

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	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21	22	NU	NU	NU	NU	NU	NU	NU	71,72	NU	NU	NU	NU	NU	NU	NU	NU
RED		128	128																
YELLOW		129	129																
GREEN			130																
RED ARROW											122								
YELLOW ARROW											123								
FLASHING YELLOW ARROW																			
GREEN ARROW		130									124								

NU = Not Used

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

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

NOTE: ALL RED FLASH

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2449T
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Temporary Design - TMP Phase III
Electrical Detail

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
State of North Carolina
Department of Transportation
Traffic Engineering & Safety Systems Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road) WB
at
EB U-Turn East of SR 1008
(Waxhaw-Indian Trail Road)

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	T.M. Moody
PREPARED BY:	J.C. Grimm	REVIEWED BY:	A.M. Wiseman

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by:
Trent Moody 8/11/2026
SIGNATURE DATE

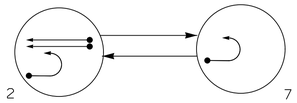
SIG. INVENTORY NO. 10-2449T

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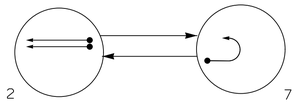
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 15.0

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

DEFAULT PHASING TABLE OF OPERATION

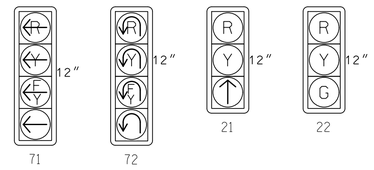
SIGNAL FACE	PHASE 2	PHASE 7	FLASH
21	↑	R	R
22	G	R	R
71	←Y	←	←R
72	(Y)	∩	(R)

DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 2	PHASE 7	FLASH
21	↑	R	R
22	G	R	R
71	←R	←	←R
72	(R)	∩	(R)

SIGNAL FACE I.D.

All Heads L.E.D.
See Note 3



MAXTIME DETECTOR INSTALLATION CHART

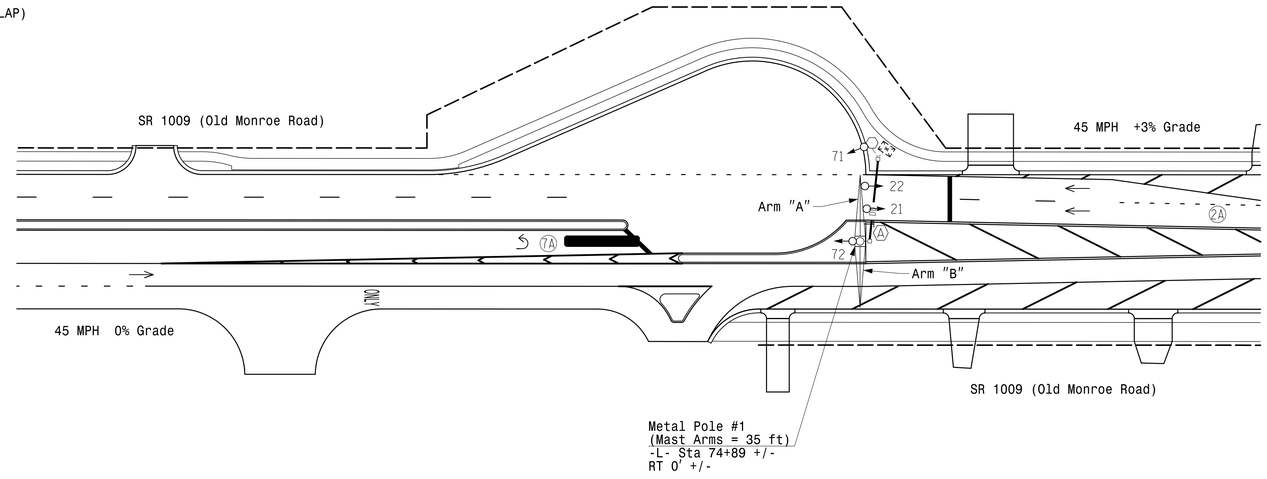
DETECTOR					PROGRAMMING							
LOOP/ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
7A	✳	0	✳	✳	7	15.0**	-	X	-	X	-	✳
					2#	-	-	X	-	X	-	✳

✳ Multi-zone Microwave Detection Zone
** Disable Delay During Alternate Phasing
# Disable Phase Call for Loop During Alternate Phasing

2 Phase
Fully Actuated
w/ Alternate Phasing
D10-59_Indian Trail

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Install backplates with retro-reflective sheeting on all signal heads.
4. Set all detector units to presence mode.
5. The Division Traffic Engineer will determine the hours of use for each phasing plan.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 7
Walk *	–	–
Ped Clear *	–	–
Min Green	12	7
Passage *	2.0	2.0
Max 1 *	90	30
Yellow Change	4.3	3.0
Red Clear	2.4	3.0
Red Revert	2.0	2.0
Added Initial *	–	–
Maximum Initial *	–	–
Time Before Reduction *	–	–
Time To Reduce *	–	–
Minimum Gap	–	–
Advance Walk	–	–
Non Lock Detector	–	X
Vehicle Recall	MIN RECALL	–
Dual Entry	–	–

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

Advance Microwave Detection

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

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
◎	Metal Strain pole	◘
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○—	Signal Pole with Guy	●—
○⌐	Signal Pole with Sidewalk Guy	●⌐
▬	Non-Intrusive Detection Zone	▬
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·····	2-in Underground Conduit	·····
N/A	Right of Way	—————
→	Directional Arrow	→
Ⓐ	"NO LEFT TURN" Sign (R3-2)	Ⓐ

Signal Upgrade - Final Design

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STV Engineers, Inc.
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NC License Number F-0991

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

SR 1009 (Old Monroe Road) WB
at
EB U-Turn East of SR 1008
(Waxhaw-Indian Trail Road)

Division 10 Union County Indian Trail

PLAN DATE:	June 2026	REVIEWED BY:	T.M. Moody
PREPARED BY:	G. Whitehouse	REVIEWED BY:	A. Wiseman

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 8/11/2026
SIGNATURE DATE

SIG. INVENTORY NO. 10-2449

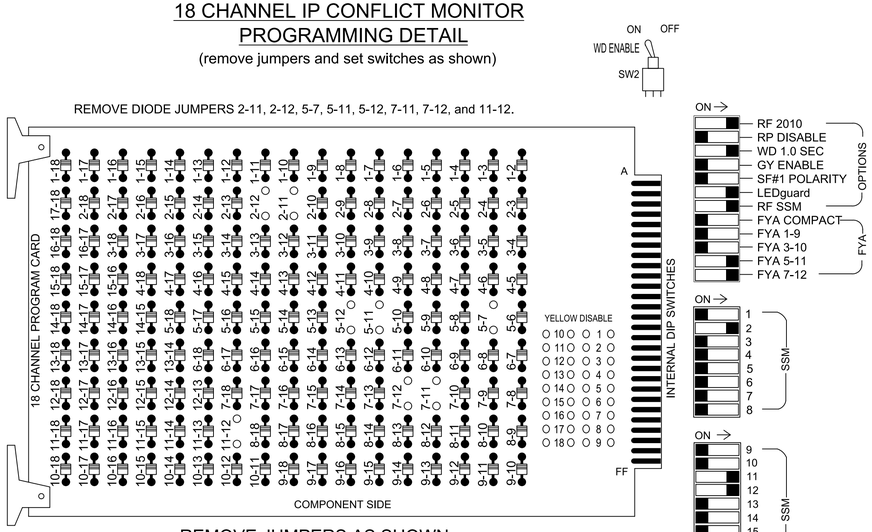
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 15.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and phase 6 Phase Not On.
3. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
4. The cabinet and controller are part of the D10-59_Indian Trail Signal System.

EQUIPMENT INFORMATION

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

*See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2		S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2		13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2		2 PED	3	4	4 PED	OL7	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21	22	NU	NU	NU	NU	72★	NU	NU	71★	NU	NU	NU	NU	NU	72★	71★	NU
RED		128	128																
YELLOW		129	129					*			*								
GREEN			130																
RED ARROW																	A114	A101	
YELLOW ARROW																	A115	A102	
FLASHING YELLOW ARROW																	A116	A103	
GREEN ARROW		130						133			124								

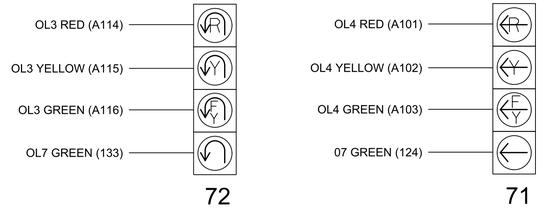
NU = Not Used

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

★See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L														ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 7 7A NOT USED	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L														

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
7A	TB5-5,6	J5U	57	19	21★	7	15.0		X		X	
				-	32★	2			X		X	

★ For the detectors to work as shown on the signal design plan, see the Detector Programming Detail for Alternate Phasing on sheet 2.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

SPECIAL DETECTOR NOTE

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

For zone 7A, inputs associated with typical detector slot for an NCDOT installation is compatible with time of day instructions located on sheet 2 of the electrical detail.

SEQUENCE DETAIL

Front Panel
Main Menu >Controller >Sequence & Phs Config>Sequences

Web Interface
Home >Controller >Sequence

Sequence 1

Ring	Sequence Data
1	2,a,7,b
2	-

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

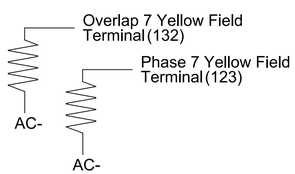
Unit Flash Parameters

All Red Flash Exit Time
6

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)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2449
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Signal Upgrade - Final Design
Electrical Detail - Sheet 1 of 2

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road) WB
at
EB U-Turn East of SR 1008
(Waxhaw-Indian Trail Road)

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	T.M. Moody
PREPARED BY:	J.C. Grimm	REVIEWED BY:	A.M. Wiseman

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

DocuSigned by:
Trent Moody
SIGNATURE
8/11/2026
DATE

SIG. INVENTORY NO. 10-2449

8/11/2026
\\stvinc.com#3#DFA#Projects#4018904#4018904_0001#50_Deliverables & Submittals#U-4714BA#Traffic#Signals#U-4714BA#Design#Signals#02449_sm.ele.2025xxx.dgn
White, Tim

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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 15.2

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

NOTICE OVERLAP 7 ASSIGNED TO CHANNEL 5 →

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

NOTE: ALL RED FLASH

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2.
A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for heads 71 and 72 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on loop 7A and reduces delay time for phase 7 call on loop 7A to 0 seconds.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOP 7A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Plan 2

7A

Detector	Call Phase	Delay
21	7	0.0
32	0	-

MAXTIME OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

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

MAXTIME OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	3	4	7
Type	FYA 4 - Section	FYA 4 - Section	Normal
Included Phases	-	-	7 ← NOTICE INCLUDED PHASE
Modifier Phases	7	7	-
Modifier Overlaps	-	-	-
Trail Green	0	0	0
Trail Yellow	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0

MAXTIME ALTERNATE PHASING PATTERN PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-2449
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Signal Upgrade - Final Design
Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Traffic Engineering Branch
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Signal & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road) WB
at
EB U-Turn East of SR 1008
(Waxhaw-Indian Trail Road)

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	T.M. Moody
PREPARED BY:	J.C. Grimm	REVIEWED BY:	A.M. Wiseman

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

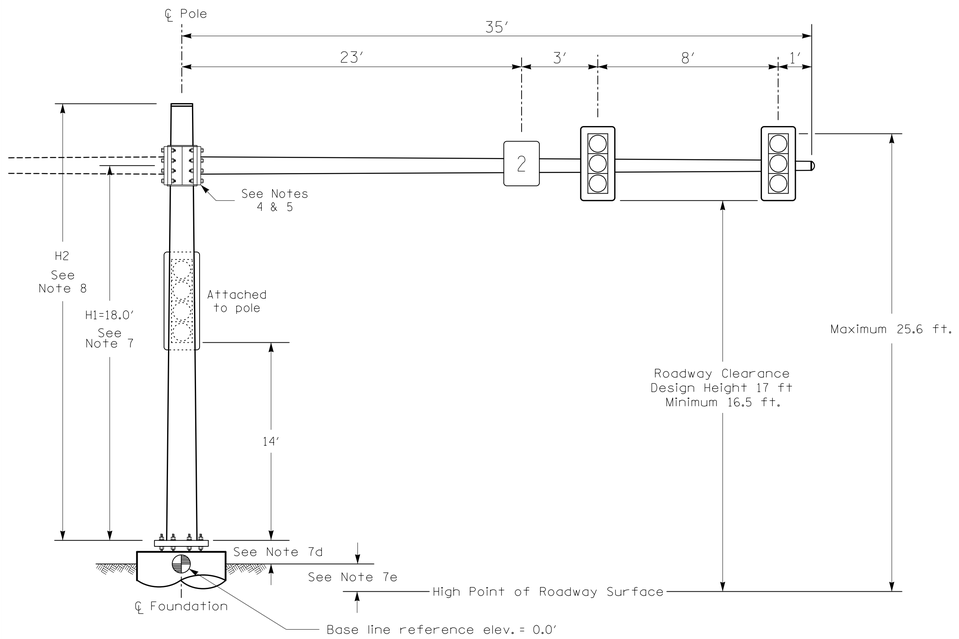
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SIG. INVENTORY NO. 10-2449

8/11/2026
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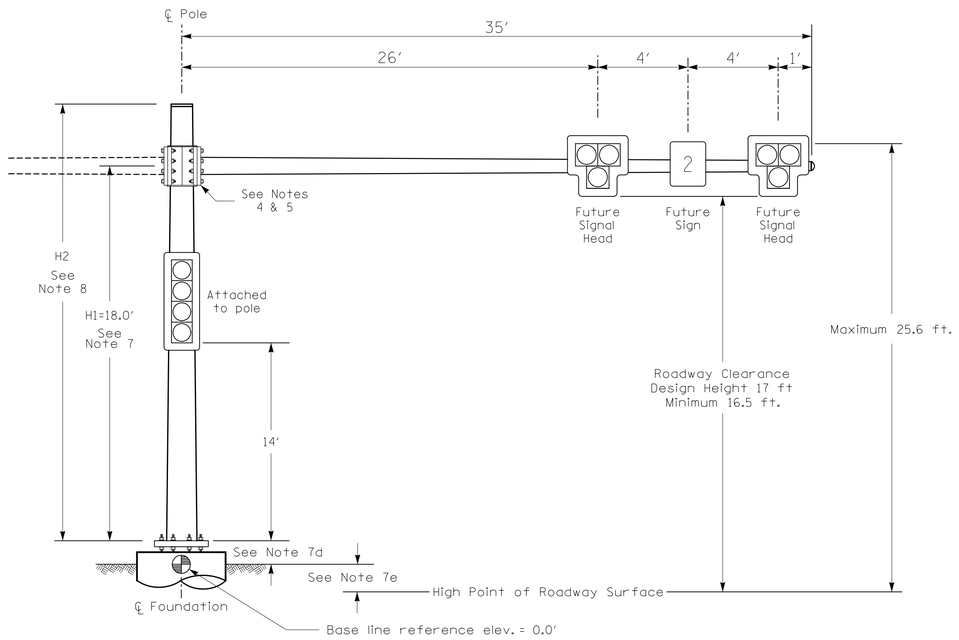
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Design Loading for METAL POLE NO. 1, MAST ARM A



Elevation View @ 0°

Design Loading for METAL POLE NO. 1, MAST ARM B



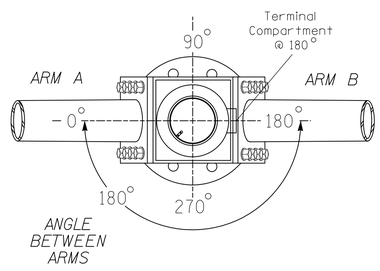
Elevation View @ 180°

SPECIAL NOTE

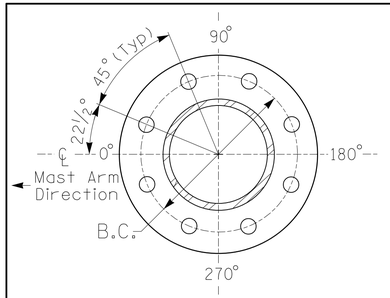
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm A	Arm B
Baseline reference point at ℄ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-0.5 ft.	-0.5 ft.
Elevation difference at Edge of travelway or face of curb	-0.5 ft.	-0.5 ft.

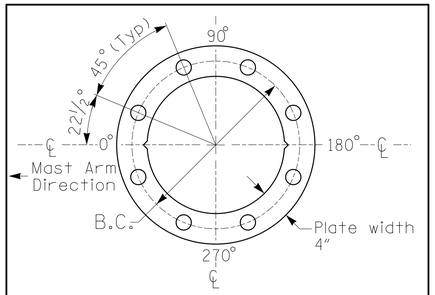


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL

For 8 Bolt Base Plate

METAL POLE No. 1

PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 15.3

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12″-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5″W X 66.0″L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12″-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5″W X 52.5″L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12″-3 SECTION-WITH BACKPLATE	10.0 S.F.	38.0″W X 38.0″L	70 LBS
2	SIGN RIGID MOUNTED	7.5 S.F.	30.0″W X 36.0″L	14 LBS

NOTES

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals," including all of the latest interim revisions.
   - The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2024 NCDOT Roadway Standard Drawings.
   - The traffic signal project plans and special provisions.
   - The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/TSMO-Design-Resources.aspx

DESIGN REQUIREMENTS

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

NOTE: All metal poles and mast arms should have black protective coating as specified in the Project Special Provisions. The selected shade BLACK #27038 must be verifed and approved by the Engineer and Municipality.

NCDOT Wind Zone 5 (110 mph)

stv
STV Engineers, Inc.
2151 Hawkins St., Suite 1400
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NC License Number F-0991

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Prepared for: NCDOT Traffic Engineering Branch, Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SR 1009 (Old Monroe Road) WB
at
EB U-Turn East of SR 1008
(Waxhaw-Indian Trail Road)

Division 10 Union County Indian Trail

PLAN DATE:	June 2026	REVIEWED BY:	T.M. Moody
PREPARED BY:	J. Grimm	REVIEWED BY:	A. Wiseman

SCALE: 0 N/A N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 8/11/2026
SIGNATURE DATE

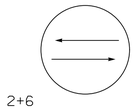
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8/11/2026
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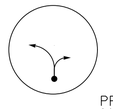
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U-4714BA	Sig. 16.0

PHASING DIAGRAM



EV PREEMPT PHASES

(Medium Priority)



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6 DARK	PHASE ACTIVATION	PHASE STEADY YELLOW	PHASE STEADY RED	PHASE 4 PRE 2	PHASE FLASH
21, 22	DRK	FY	Y	R	FR*	Y
23, 24	DRK	FY	Y	R	FR*	Y
41	DRK	DRK	DRK	DRK	FY	DRK

*ALTERNATING FLASH
Y - Steady Yellow
FY- Flashing Yellow
R- Steady Red
FR- Flashing Red
DRK - Dark

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
23, 24



41

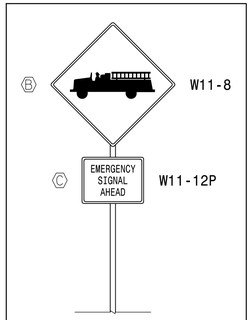
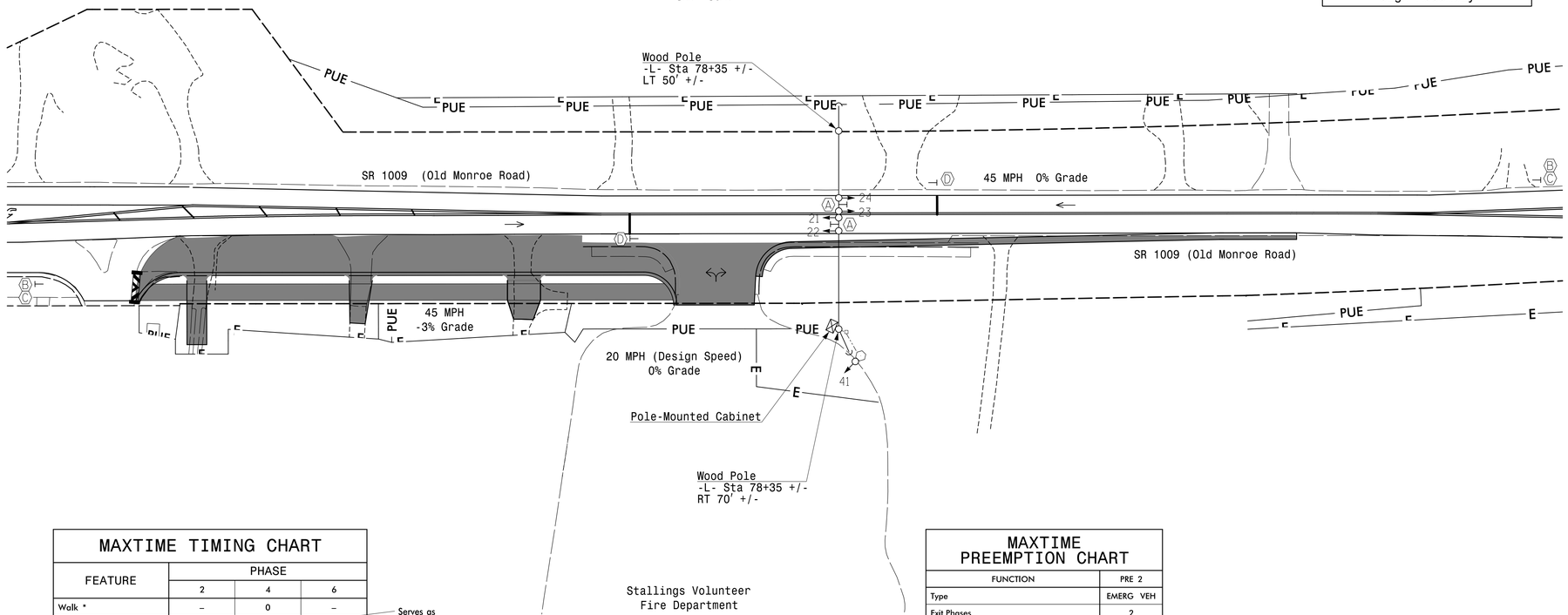


Figure 1: Advance Warning Sign Assembly

2 Phase
Semi-Actuated
Emergency Hybrid Beacon
(Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
4. Locate emergency vehicle preemption switch in Stallings Volunteer Fire Department.
5. The Division Traffic Engineer will determine the Delay before Preempt and Preempt Dwell Min Green time for the emergency vehicle preemption timing.
6. Signal head 41 shall remain Dark except during the phase 4 green interval (flashing yellow display).
7. Locate advance signs (see Figure 1) in accordance with Table 2C-3 in Section 2C.04 of the 2023 MUTCD or as otherwise directed by the engineer.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Walk *	–	0	–
Ped Clear *	–	**	–
Min Green	12	7	12
Passage *	–	–	–
Max 1 *	30	30	30
Yellow Change	4.8	3.0	4.8
Red Clear	2.4	2.1	2.4
Added Initial *	–	–	–
Maximum Initial *	–	–	–
Time Before Reduction *	–	–	–
Time To Reduce *	–	–	–
Minimum Gap	–	–	–
Advance Walk	–	–	–
Pre Clearance	5.0	–	5.0
Non Lock Detector	–	–	–
Vehicle Recall	MIN RECALL	–	MIN RECALL
Dual Entry	–	–	–

Serves as Preempt Dwell Time

Serves as Steady Yellow Clearance Time

Serves as All Red Clearance Time

Serves as Flashing Yellow Interval

* 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.
** See Note 5.

MAXTIME PREEMPTION CHART

FUNCTION	PRE 2
Type	EMERG VEH
Exit Phases	2
Delay	**
Call Extend Time	0.0
Max Presence	120
Enter Min Green	1
Enter Walk	255 *
Enter Ped Clear	255 *
Enter Yellow Change	25.5 *
Enter Red Clear	25.5 *
Track Green	0
Track Yellow Change	25.5 *
Track Red Clear	25.5 *
Dwell Green	0
Exit Min Green	255 *
Exit Yellow Change	25.5 *
Exit Red Clear	25.5 *
Exit Type	EXIT PHASES
Ped Clear Through Yellow	–
Require All Red Entry	–

* Controller uses lesser of time shown and the normal time used for phase.
** See Note 5.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
○	Signal Pole with Guy	●◗
○	Signal Pole with Sidewalk Guy	●
⊠	Controller & Cabinet	⊠
□	Junction Box	■
----	2-in Underground Conduit	----
N/A	Right of Way	— — —
→	Directional Arrow	→
⬡	Type II Signal Pedestal	⬢
▬	Construction Zone	N/A
Ⓐ	"STOP ON RED - YIELD ON FLASHING RED AFTER STOP" Sign (R10-23a)	Ⓐ
Ⓑ	Emergency Vehicle Sign (W11-8)	Ⓑ
Ⓒ	"EMERGENCY SIGNAL AHEAD" Sign (W11-12P)	Ⓒ
Ⓓ	"STOP HERE ON FLASHING RED" Sign (R10-14b)	Ⓓ

Signal Upgrade
Temporary Design 1 - TMP Phases I

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STV Engineers, Inc.
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Charlotte, NC 28203
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Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Vol. Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE: March 2026 | REVIEWED BY: T.M. Moody
PREPARED BY: J.C. Grimm | REVIEWED BY: A. Wiseman

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody SIGNATURE 8/11/2026 DATE

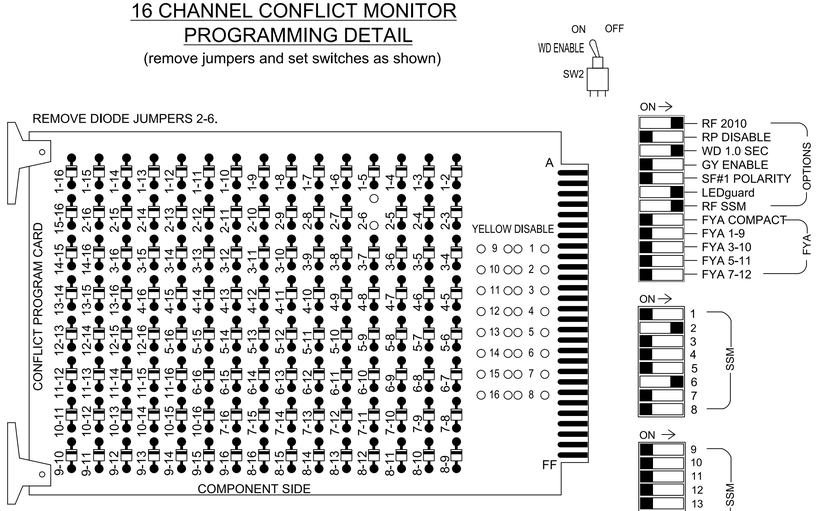
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16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



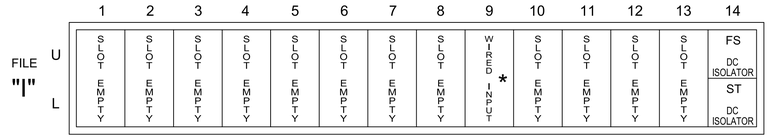
REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)



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

*Denotes preempt input wired to relay shown on sheet 3.

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

OPERATIONAL NOTES

1. In order for the controller to perform the Emergency Vehicle Hybrid Beacon (HAWK signal) sequence, the 332_NCDOT_HAWK_v1_4_1 default database must be installed on the controller.
2. The Logic Processor flashes Phase 2 Yellow during the Phase 2 Pre-Clearance interval. Phase 2 Yellow drives the solid yellow signal face during the Phase 2 vehicle Yellow Change.
3. The Phase 2 and Phase 6 Red outputs drive the solid Red displays during the Phase 2 and 6 Red Clear. The Logic Processor flashes Phase 2 and 6 Red Outputs in a wig-wag pattern during Phase 4 Ped Clear interval.
4. The controller must be programmed for Ped Clear During Red Clear for Pedestrian Phase 4 so that Red displays continue to flash during Phases 4 Yellow Change and Red Clear.
5. Make sure all Phase 2 and Phase 6 timings match each other.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file with the exception of S2 and S6 which will receive yellow flash program blocks. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Install 332_NCDOT_HAWK_v1_4_1 default database onto controller.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. Program phase 4 for No Startup Veh Call and No Startup Ped Call.
5. Program phase 4 for Ped Clear During Red Clear.

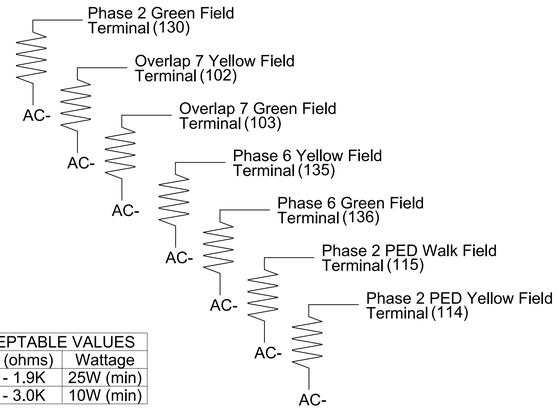
EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S2, S2P, S4, S6
Phases Used.....2, 4, 4 PED**, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED
Overlap "7".....*

*See overlap programming on sheet 2.
** Phase used for timing purposes only.

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)

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906T1
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 16.1

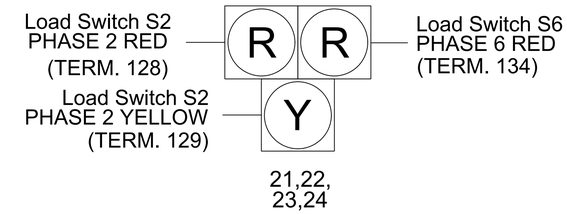
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P		S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
CMU CHANNEL NO.	1	2	13		3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	EVP 2	3	OL7	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22 23,24	NU	FIRE PILOT LAMP	NU	41	NC	NU	21,22 23,24	NU	NU	NU	NU
RED		128				101			134				
YELLOW		129				*			*				
GREEN		*				*			*				
RED ARROW													
YELLOW ARROW													
FLASHING YELLOW ARROW													
GREEN ARROW													
✋													
PED YELLOW				* 114									
🚶			*										

NU = Not Used
NC = Not Connected
*Denotes install load resistor. See load resistor installation detail this sheet.

SIGNAL HEAD WIRING DETAIL

(wire signal heads as shown)



TIMING INTERVAL

PHASE 2+6 GREEN = Dark Display
PHASE 2+6 PRE CLEARANCE = Flashing Yellow Time
PHASE 2+6 YELLOW CHANGE = Solid Yellow Time
PHASE 2+6 RED CLEAR = Steady Red Display
PHASE 4 PED CLEAR = Alternating Flashing Red Display
PHASE 4 YELLOW CHANGE = Alternating Flashing Red Display
PHASE 4 RED CLEAR = Alternating Flashing Red Display

Temporary Design 1 - TMP Phases I
Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY
DocuSigned by: Trent Moody SIGNATURE 8/11/2026 DATE
SIG. INVENTORY NO. 10-1906T1

8/11/2026
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 16.2

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Modify Program 1 as shown below and save changes.

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
21	Global Variable	33	Result=(A OR B)	Preempt Input	2	Preempt Status	2	0.0	0.0
22	Phase Phase Omit	4	Result=!A	Preempt Status	2	None	0	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 21 Description: Turns pilot lamp on when button is pushed.
Statement 22 Description: Omits phase 4 while not in preemption.

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	7
Type	Custom 1
Included Phases	4
Modifier Phases	-
Modifier Overlaps	-
Trail Green	0
Trail Yellow	0.0
Trail Red	0.0

PREEMPTION PROGRAMMING

Front Panel
Main Menu >Controller >Preemption >Preempt Phasing/Preempt Parameters

Web Interface
Home >Controller >Preempt Configuration >Preempts

Preempt Configuration

Preempt	2
Enabled	Enabled
Type	Emergency Veh
Track Phases	-
Track Overlaps	-
Dwell Phases	4
Dwell Peds	4
Dwell Overlaps	7
Cycling Phases	-
Cycling Peds	-
Cycling Overlaps	-
Exit Phases	2
Exit Overlaps	7
Delay	*
Call Ext Time	0.0
Max Presence	120
Max Pres Act	Terminate
Enter Min Green	1
Enter Walk	255
Enter Ped Clear	255
Enter Yellow Change	25.5
Enter Red Clear	25.5
Track Green	0
Track Yellow Clr	25.5
Track Red Clear	25.5
Dwell Green	0
Exit Min Green	255
Exit Yellow Change	25.5
Exit Red Clear	25.5
Exit Type	Exit Phases
Non Locking Memory	-
Not Ovrd Flash	X
Not Ovrd Nxt Pre	-
Require All Red Entry	-
Track Clear Ovrd	X
Ped Clear During Yellow	-
Entry Omit OLTG	-
Track Reserve	-

* The Division Traffic Engineer will determine the Delay before Preempt time.

CUSTOM OVERLAP PROGRAMMING

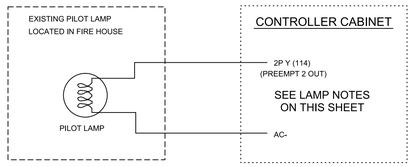
Front Panel
Main Menu >Controller >Overlap >Custom Overlap Rules

Web Interface
Home >Controller >Overlap Configuration >Custom Overlap Rules

Rule	Custom Overlap	Included Phase State	Modifier Phase State	Modifier Overlap State	Negative Phase State	Output	Flash
1	Custom 1	Ped Clear	Any	Any	Any	Red	On
2	Custom 1	Red	Any	Any	Any	Blank	Not Set

EMERGENCY VEH. PREEMPTION PILOT LAMP WIRING DETAIL

(wire push-button and lamp as shown below)



LAMP NOTES

1. If terminal 114 has a conflict monitor wire connected, remove, tape and label wire.
2. Make sure load resistors are in place as shown in load resistor installation detail on sheet 1.
3. Insert load switch for S2P.

OUTPUT POINTS PROGRAMMING

Front Panel
Main Menu >Controller >More >Advanced IO >Output Points

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >Output Points

Modify IO Module 1 as shown below and save changes.

IO Module 1

Output Point	Descripton	Output Control Type	Index
33	C1-35	Global Variable	33

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906T1
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Temporary Design 1 - TMP Phases I
Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY
DocuSigned by: Trent Moody SIGNATURE 8/11/2026 DATE
SIG. INVENTORY NO. 10-1906T1

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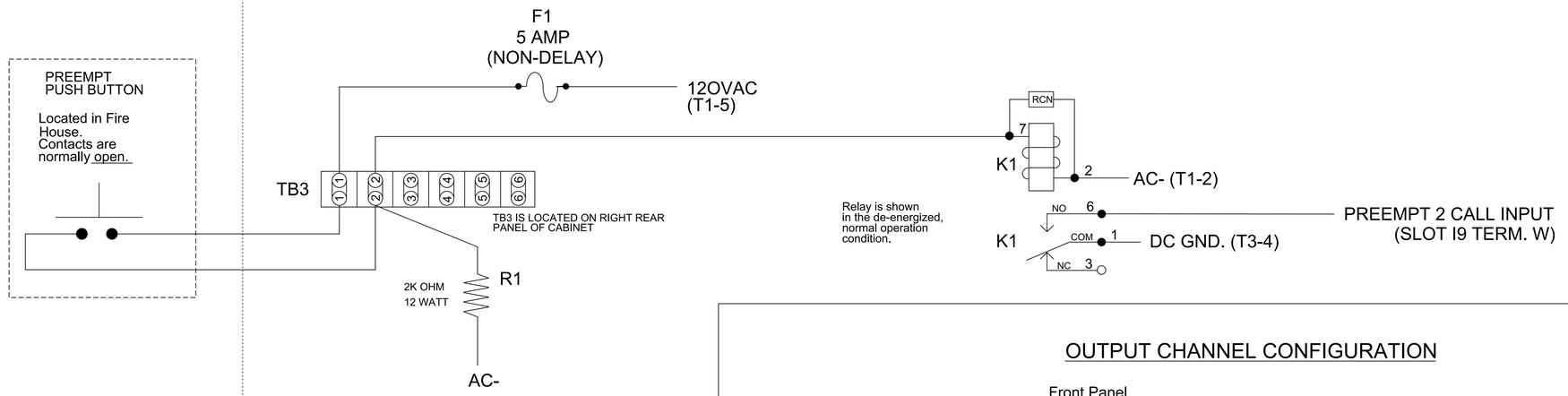
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 16.3

PREEMPT PUSH BUTTON INTERCONNECT CIRCUIT WIRING DETAIL

FIELD CONNECTIONS

CONTROLLER CABINET CONNECTIONS



NOTES

1. Relay K1 is a SPDT with a 120VAC coil with 8 pin base.
2. RCN in a resistor/capacitor network valued at .1 mico farad 100 ohm.
3. R1 is a 2k ohm, 12 watt load resistor.

OUTPUT CHANNEL CONFIGURATION

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

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

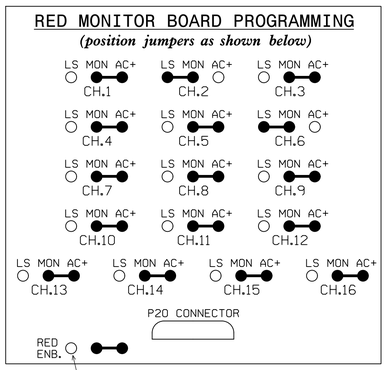
Channel Configuration

NOTICE OVERLAP 7 ASSIGNED TO CHANNEL 4 →

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

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906T1
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Temporary Design 1 - TMP Phases I
Electrical Detail - Sheet 3 of 3

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Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

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NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

DocuSigned by: Trent Moody 8/11/2026
SIGNATURE DATE

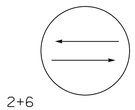
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8/11/2026
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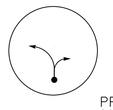
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 17.0

PHASING DIAGRAM



EV PREEMPT PHASES
(Medium Priority)



PHASING DIAGRAM DETECTION LEGEND

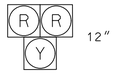
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6 DARK	PHASE ACTIVATION	PHASE STEADY YELLOW	PHASE STEADY RED	PHASE 4 PRE 2	PHASE FLASH
21, 22	DRK	FY	Y	R	FR*	Y
23, 24	DRK	FY	Y	R	FR*	Y
41	DRK	DRK	DRK	DRK	FY	DRK

*ALTERNATING FLASH
Y - Steady Yellow
FY- Flashing Yellow
R- Steady Red
FR- Flashing Red
DRK - Dark

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



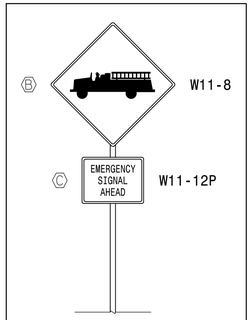
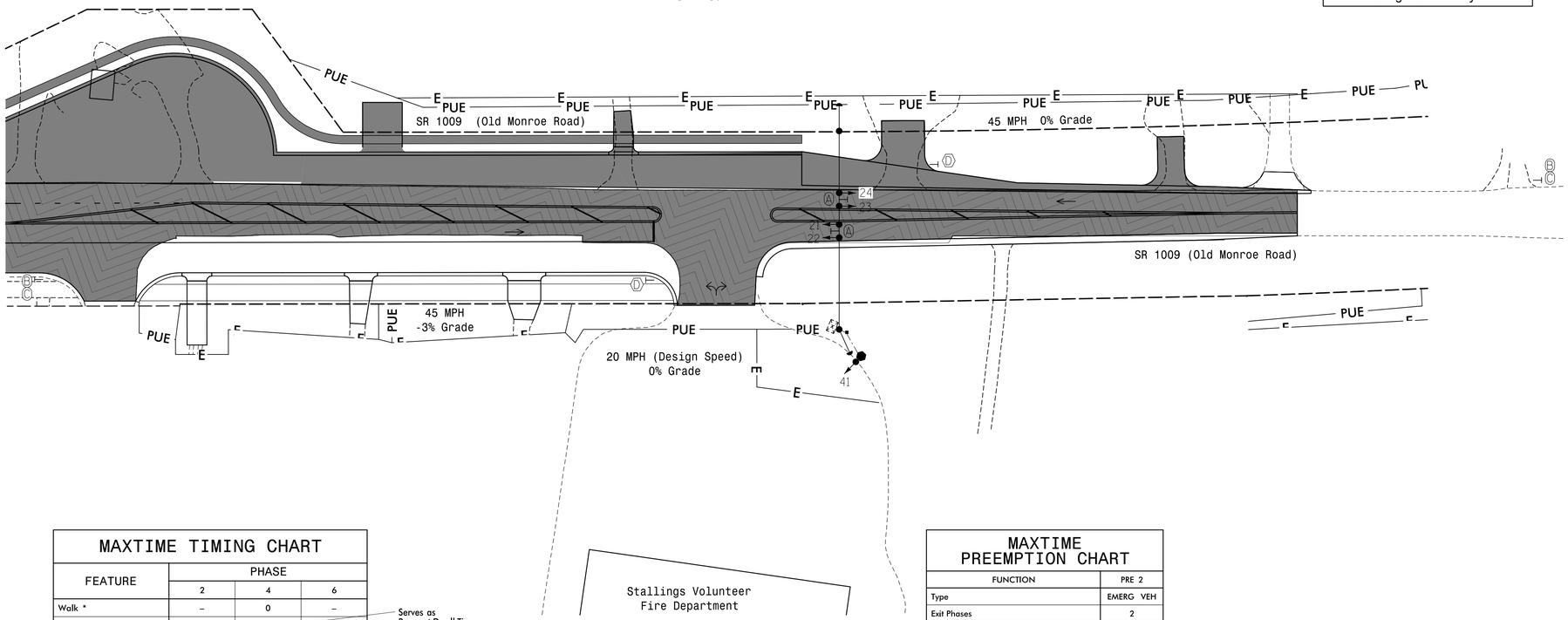


Figure 1: Advance Warning Sign Assembly

2 Phase
Semi-Actuated
Emergency Hybrid Beacon
(Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21, 22, 23, and 24.
4. Reposition existing signs A.
5. The Division Traffic Engineer will determine the Delay before Preempt and Preempt Dwell Min Green time for the emergency vehicle preemption timing.
6. Signal head 41 shall remain Dark except during the phase 4 green interval (flashing yellow display).
7. Locate advance signs (see Figure 1) in accordance with Table 2C-3 in Section 2C.04 of the 2023 MUTCD or as otherwise directed by the engineer.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Walk *	–	0	–
Ped Clear *	–	**	–
Min Green	12	7	12
Passage *	–	–	–
Max 1 *	30	30	30
Yellow Change	4.8	3.0	4.8
Red Clear	2.5	1.4	2.5
Added Initial *	–	–	–
Maximum Initial *	–	–	–
Time Before Reduction *	–	–	–
Time To Reduce *	–	–	–
Minimum Gap	–	–	–
Advance Walk	–	–	–
Pre Clearance	5.0	–	5.0
Non Lock Detector	–	–	–
Vehicle Recall	MIN RECALL	–	MIN RECALL
Dual Entry	–	–	–

Serves as Preempt Dwell Time
Serves as Steady Yellow Clearance Time
Serves as All Red Clearance Time
Serves as Flashing Yellow Interval

* 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.
** See Note 5.

MAXTIME PREEMPTION CHART

FUNCTION	PRE 2
Type	EMERG VEH
Exit Phases	2
Delay	**
Call Extend Time	0.0
Max Presence	120
Enter Min Green	1
Enter Walk	255 *
Enter Ped Clear	255 *
Enter Yellow Change	25.5 *
Enter Red Clear	25.5 *
Track Green	0
Track Yellow Change	25.5 *
Track Red Clear	25.5 *
Dwell Green	0
Exit Min Green	255 *
Exit Yellow Change	25.5 *
Exit Red Clear	25.5 *
Exit Type	EXIT PHASES
Ped Clear Through Yellow	–
Require All Red Entry	–

* Controller uses lesser of time shown and the normal time used for phase.
** See Note 5.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Type II Signal Pedestal	
	Construction Zone	N/A
A	"STOP ON RED - YIELD ON FLASHING RED AFTER STOP" Sign (R10-23a)	A
B	Emergency Vehicle Sign (W11-8)	B
C	"EMERGENCY SIGNAL AHEAD" Sign (W11-12P)	C
D	"STOP HERE ON FLASHING RED" Sign (R10-14b)	D

Signal Upgrade
Temporary Design 2 - TMP Phase II

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STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

SR 1009 (Old Monroe Road)
at
Stallings Vol. Fire Department

Division 10 Union County Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	T.M. Moody
PREPARED BY:	J.C. Grimm	REVIEWED BY:	A. Wiseman

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody SIGNATURE 8/11/2026 DATE

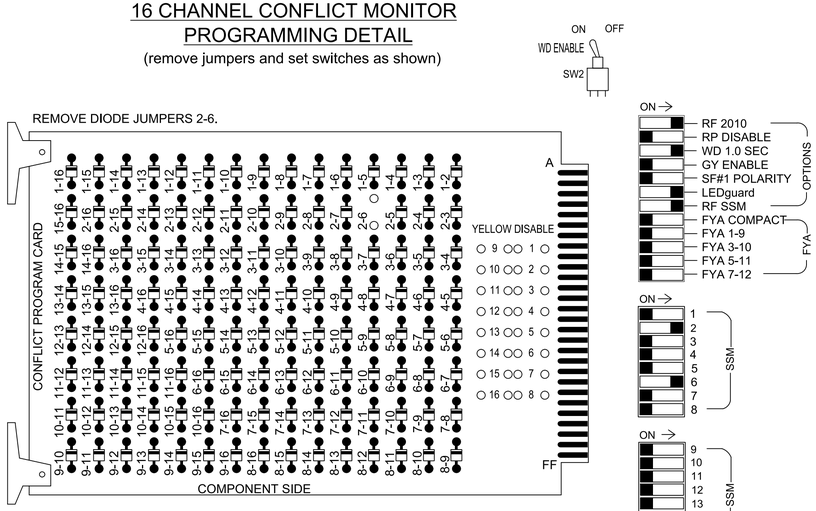
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8/11/2026
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16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

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

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	WIRED INPUT *	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
FILE "I" L														ST DC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

*Denotes preempt input wired to relay shown on sheet 3.

OPERATIONAL NOTES

1. In order for the controller to perform the Emergency Vehicle Hybrid Beacon (HAWK signal) sequence, the 332_NCDOT_HAWK_v1_4_1 default database must be installed on the controller.
2. The Logic Processor flashes Phase 2 Yellow during the Phase 2 Pre-Clearance interval. Phase 2 Yellow drives the solid yellow signal face during the Phase 2 vehicle Yellow Change.
3. The Phase 2 and Phase 6 Red outputs drive the solid Red displays during the Phase 2 and 6 Red Clear. The Logic Processor flashes Phase 2 and 6 Red Outputs in a wig-wag pattern during Phase 4 Ped Clear interval.
4. The controller must be programmed for Ped Clear During Red Clear for Pedestrian Phase 4 so that Red displays continue to flash during Phases 4 Yellow Change and Red Clear.
5. Make sure all Phase 2 and Phase 6 timings match each other.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file with the exception of S2 and S6 which will receive yellow flash program blocks. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Install 332_NCDOT_HAWK_v1_4_1 default database onto controller.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. Program phase 4 for No Startup Veh Call and No Startup Ped Call.
5. Program phase 4 for Ped Clear During Red Clear.

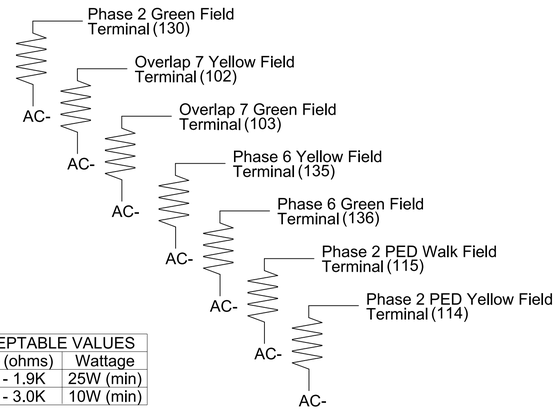
EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S2, S2P, S4, S6
Phases Used.....2, 4, 4 PED**, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED
Overlap "7".....*

*See overlap programming on sheet 2.
** Phase used for timing purposes only.

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)

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 10-1906T2
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
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(704) 372-1885
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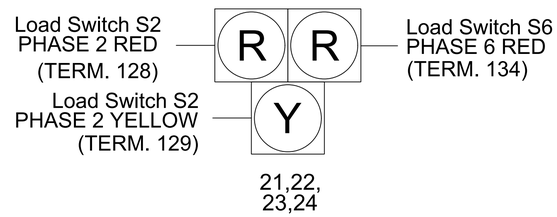
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P		S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
CMU CHANNEL NO.	1	2	13		3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	EVP 2	3	OL7	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22 23,24	NU	FIRE PILOT LAMP	NU	41	NC	NU	21,22 23,24	NU	NU	NU	NU
RED	.	128	.		.	101	.	.	134	.	.	.	.
YELLOW	.	129	.		.	*	.	.	*	.	.	.	.
GREEN	.	*	.		.	*	.	.	*	.	.	.	.
RED ARROW	.	.	.		.	.	.	.	.	.	.	.	.
YELLOW ARROW	.	.	.		.	.	.	.	.	.	.	.	.
FLASHING YELLOW ARROW	.	.	.		.	.	.	.	.	.	.	.	.
GREEN ARROW	.	.	.		.	.	.	.	.	.	.	.	.
✋	.	.	.		.	.	.	.	.	.	.	.	.
PED YELLOW				* 114									
🚶	.	.	*		.	.	.	.	.	.	.	.	.

NU = Not Used
NC = Not Connected
*Denotes install load resistor. See load resistor installation detail this sheet.

SIGNAL HEAD WIRING DETAIL

(wire signal heads as shown)



TIMING INTERVAL

PHASE 2+6 GREEN = Dark Display
PHASE 2+6 PRE CLEARANCE = Flashing Yellow Time
PHASE 2+6 YELLOW CHANGE = Solid Yellow Time
PHASE 2+6 RED CLEAR = Steady Red Display
PHASE 4 PED CLEAR = Alternating Flashing Red Display
PHASE 4 YELLOW CHANGE = Alternating Flashing Red Display
PHASE 4 RED CLEAR = Alternating Flashing Red Display

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

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Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY
DocuSigned by: Trent Moody SIGNATURE 8/11/2026 DATE
SIG. INVENTORY NO. 10-1906T2

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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 17.2

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Modify Program 1 as shown below and save changes.

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
21	Global Variable	33	Result=(A OR B)	Preempt Input	2	Preempt Status	2	0.0	0.0
22	Phase Phase Omit	4	Result=!A	Preempt Status	2	None	0	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 21 Description: Turns pilot lamp on when button is pushed.
Statement 22 Description: Omits phase 4 while not in preemption.

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	7
Type	Custom 1
Included Phases	4
Modifier Phases	-
Modifier Overlaps	-
Trail Green	0
Trail Yellow	0.0
Trail Red	0.0

PREEMPTION PROGRAMMING

Front Panel
Main Menu >Controller >Preemption >Preempt Phasing/Preempt Parameters

Web Interface
Home >Controller >Preempt Configuration >Preempts

Preempt Configuration

Preempt	2
Enabled	Enabled
Type	Emergency Veh
Track Phases	-
Track Overlaps	-
Dwell Phases	4
Dwell Peds	4
Dwell Overlaps	7
Cycling Phases	-
Cycling Peds	-
Cycling Overlaps	-
Exit Phases	2
Exit Overlaps	7
Delay	*
Call Ext Time	0.0
Max Presence	120
Max Pres Act	Terminate
Enter Min Green	1
Enter Walk	255
Enter Ped Clear	255
Enter Yellow Change	25.5
Enter Red Clear	25.5
Track Green	0
Track Yellow Clr	25.5
Track Red Clear	25.5
Dwell Green	0
Exit Min Green	255
Exit Yellow Change	25.5
Exit Red Clear	25.5
Exit Type	Exit Phases
Non Locking Memory	-
Not Ovrd Flash	X
Not Ovrd Nxt Pre	-
Require All Red Entry	-
Track Clear Ovrd	X
Ped Clear During Yellow	-
Entry Omit OLTG	-
Track Reserve	-

* The Division Traffic Engineer will determine the Delay before Preempt time.

CUSTOM OVERLAP PROGRAMMING

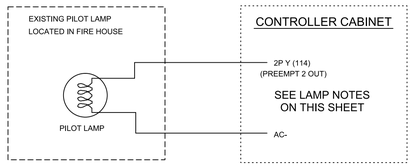
Front Panel
Main Menu >Controller >Overlap >Custom Overlap Rules

Web Interface
Home >Controller >Overlap Configuration >Custom Overlap Rules

Rule	Custom Overlap	Included Phase State	Modifier Phase State	Modifier Overlap State	Negative Phase State	Output	Flash
1	Custom 1	Ped Clear	Any	Any	Any	Red	On
2	Custom 1	Red	Any	Any	Any	Blank	Not Set

EMERGENCY VEH. PREEMPTION PILOT LAMP WIRING DETAIL

(wire push-button and lamp as shown below)



LAMP NOTES

1. If terminal 114 has a conflict monitor wire connected, remove, tape and label wire.
2. Make sure load resistors are in place as shown in load resistor installation detail on sheet 1.
3. Insert load switch for S2P.

OUTPUT POINTS PROGRAMMING

Front Panel
Main Menu >Controller >More >Advanced IO >Output Points

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >Output Points

Modify IO Module 1 as shown below and save changes.

IO Module 1

Output Point	Descripton	Output Control Type	Index
33	C1-35	Global Variable	33

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906T2
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

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SIG. INVENTORY NO. 10-1906T2

8/11/2026
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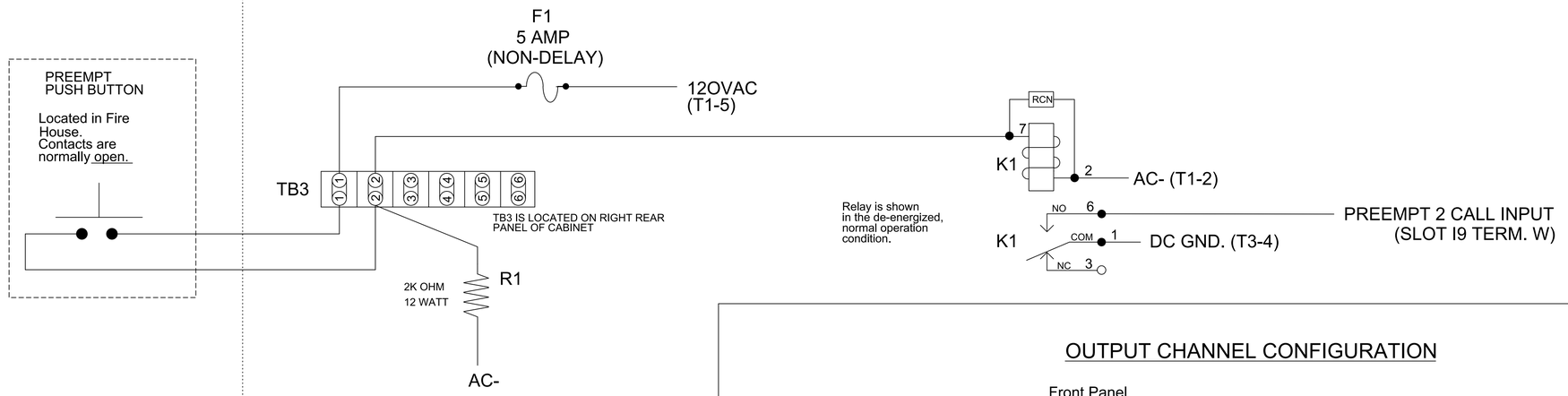
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U-4714BA	Sig. 17.3

PREEMPT PUSH BUTTON INTERCONNECT CIRCUIT WIRING DETAIL

FIELD CONNECTIONS

CONTROLLER CABINET CONNECTIONS



NOTES

1. Relay K1 is a SPDT with a 120VAC coil with 8 pin base.
2. RCN in a resistor/capacitor network valued at .1 mico farad 100 ohm.
3. R1 is a 2k ohm, 12 watt load resistor.

OUTPUT CHANNEL CONFIGURATION

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

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

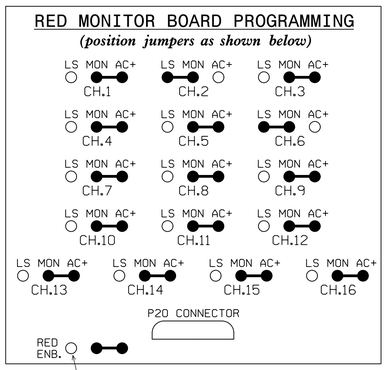
Channel Configuration

NOTICE OVERLAP 7 ASSIGNED TO CHANNEL 4 →

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

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906T2
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

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North Carolina Department of Transportation
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
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Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

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NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody 8/11/2026
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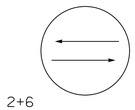
SIG. INVENTORY NO. 10-1906T2

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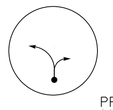
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PHASING DIAGRAM



EV PREEMPT PHASES

(Medium Priority)



PHASING DIAGRAM DETECTION LEGEND

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

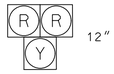
TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6 DARK	PHASE ACTIVATION	PHASE STEADY YELLOW	PHASE STEADY RED	PHASE 4 PRE 2	PHASE FLASH
21, 22	DRK	FY	Y	R	FR*	Y
23, 24	DRK	FY	Y	R	FR*	Y
41	DRK	DRK	DRK	DRK	FY	DRK

*ALTERNATING FLASH
Y - Steady Yellow
FY- Flashing Yellow
R- Steady Red
FR- Flashing Red
DRK - Dark

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
23, 24



41

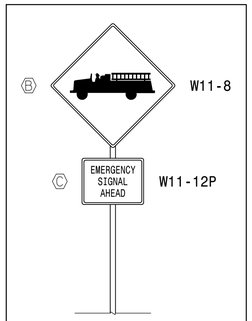
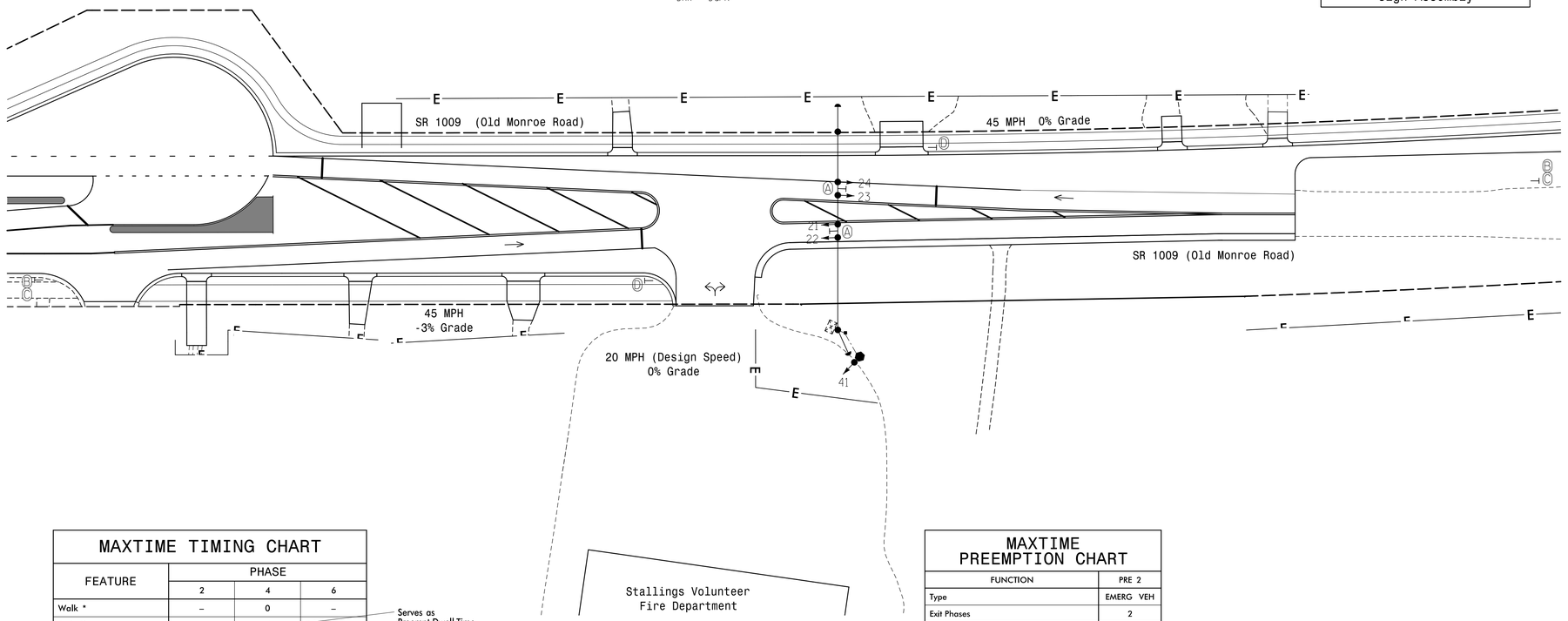


Figure 1: Advance Warning Sign Assembly

2 Phase Semi-Actuated Emergency Hybrid Beacon D10-59_Indian Trail

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 21, 22, 23, and 24.
4. Reposition existing signs A.
5. The Division Traffic Engineer will determine the Delay before Preempt and Preempt Dwell Min Green time for the emergency vehicle preemption timing.
6. Signal head 41 shall remain Dark except during the phase 4 green interval (flashing yellow display).
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Locate advance signs (see Figure 1) in accordance with Table 2C-3 in Section 2C.04 of the 2023 MUTCD or as otherwise directed by the engineer.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Walk *	–	0	–
Ped Clear *	–	**	–
Min Green	12	7	12
Passage *	–	–	–
Max 1 *	30	30	30
Yellow Change	4.8	3.0	4.8
Red Clear	2.5	1.8	2.5
Added Initial *	–	–	–
Maximum Initial *	–	–	–
Time Before Reduction *	–	–	–
Time To Reduce *	–	–	–
Minimum Gap	–	–	–
Advance Walk	–	–	–
Pre Clearance	5.0	–	5.0
Non Lock Detector	–	–	–
Vehicle Recall	MIN RECALL	–	MIN RECALL
Dual Entry	–	–	–

Serves as Preempt Dwell Time
Serves as Steady Yellow Clearance Time
Serves as All Red Clearance Time
Serves as Flashing Yellow Interval

* 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.
** See Note 5.

MAXTIME PREEMPTION CHART

FUNCTION	PRE 2
Type	EMERG VEH
Exit Phases	2
Delay	**
Call Extend Time	0.0
Max Presence	120
Enter Min Green	1
Enter Walk	255 *
Enter Ped Clear	255 *
Enter Yellow Change	25.5 *
Enter Red Clear	25.5 *
Track Green	0
Track Yellow Change	25.5 *
Track Red Clear	25.5 *
Dwell Green	0
Exit Min Green	255 *
Exit Yellow Change	25.5 *
Exit Red Clear	25.5 *
Exit Type	EXIT PHASES
Ped Clear Through Yellow	–
Require All Red Entry	–

* Controller uses lesser of time shown and the normal time used for phase.
** See Note 5.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
○	Signal Pole with Guy	●
○	Signal Pole with Sidewalk Guy	●
⊠	Controller & Cabinet	⊠
□	Junction Box	■
----------	2-in Underground Conduit	----------
N/A	Right of Way	----------
→	Directional Arrow	→
⬡	Type II Signal Pedestal	⬢
▬	Construction Zone	N/A
Ⓐ	"STOP ON RED - YIELD ON FLASHING RED AFTER STOP" Sign (R10-23a)	Ⓐ
Ⓑ	Emergency Vehicle Sign (W11-8)	Ⓑ
Ⓒ	"EMERGENCY SIGNAL AHEAD" Sign (W11-12P)	Ⓒ
Ⓓ	"STOP HERE ON FLASHING RED" Sign (R10-14b)	Ⓓ

Signal Upgrade
Temporary Design 3 - TMP Phase III

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STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

SR 1009 (Old Monroe Road)
at
Stallings Vol. Fire Department

Division 10 Union County Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	T.M. Moody
PREPARED BY:	J.C. Grimm	REVIEWED BY:	A. Wiseman

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

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NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody SIGNATURE 8/11/2026 DATE

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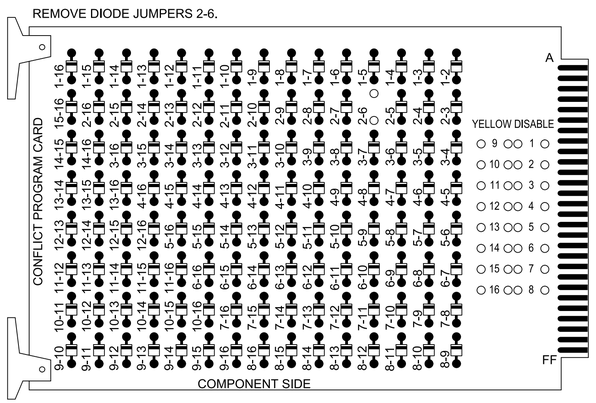
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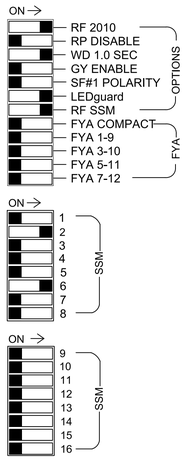
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16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)







REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	WIRED INPUT *	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L														ST DC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

*Denotes preempt input wired to relay shown on sheet 3.

OPERATIONAL NOTES

1. In order for the controller to perform the Emergency Vehicle Hybrid Beacon (HAWK signal) sequence, the 332_NCDOT_HAWK_v1_4_1 default database must be installed on the controller.
2. The Logic Processor flashes Phase 2 Yellow during the Phase 2 Pre-Clearance interval. Phase 2 Yellow drives the solid yellow signal face during the Phase 2 vehicle Yellow Change.
3. The Phase 2 and Phase 6 Red outputs drive the solid Red displays during the Phase 2 and 6 Red Clear. The Logic Processor flashes Phase 2 and 6 Red Outputs in a wig-wag pattern during Phase 4 Ped Clear interval.
4. The controller must be programmed for Ped Clear During Red Clear for Pedestrian Phase 4 so that Red displays continue to flash during Phases 4 Yellow Change and Red Clear.
5. Make sure all Phase 2 and Phase 6 timings match each other.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file with the exception of S2 and S6 which will receive yellow flash program blocks. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Install 332_NCDOT_HAWK_v1_4_1 default database onto controller.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. Program phase 4 for No Startup Veh Call and No Startup Ped Call.
5. Program phase 4 for Ped Clear During Red Clear.
6. The cabinet and controller are part of the D10-59_Indian Trail Signal System.

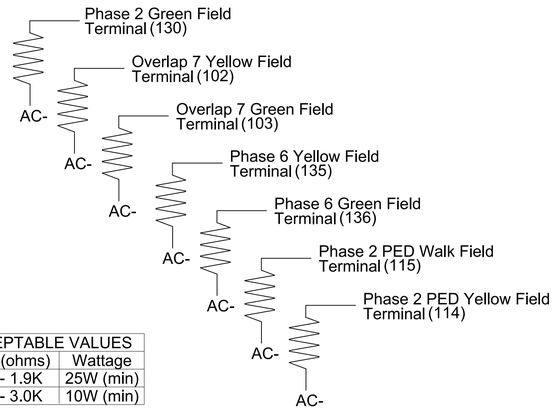
EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S2, S2P, S4, S6
Phases Used.....2, 4, 4 PED**, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED
Overlap "7".....*

*See overlap programming on sheet 2.
** Phase used for timing purposes only.

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)

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906T3
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 18.1

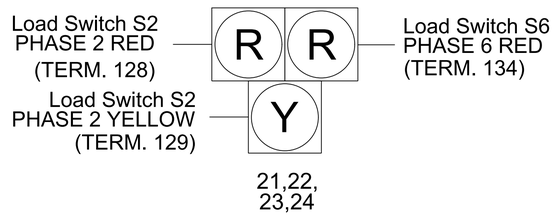
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P		S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
CMU CHANNEL NO.	1	2	13		3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	EVP 2	3	OL7	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22 23,24	NU	FIRE PILOT LAMP	NU	41	NC	NU	21,22 23,24	NU	NU	NU	NU
RED		128				101			134				
YELLOW		129				*			*				
GREEN		*				*			*				
RED ARROW													
YELLOW ARROW													
FLASHING YELLOW ARROW													
GREEN ARROW													
✋													
PED YELLOW				* 114									
🚶			*										

NU = Not Used
NC = Not Connected
*Denotes install load resistor. See load resistor installation detail this sheet.

SIGNAL HEAD WIRING DETAIL

(wire signal heads as shown)



TIMING INTERVAL

PHASE 2+6 GREEN = Dark Display
PHASE 2+6 PRE CLEARANCE = Flashing Yellow Time
PHASE 2+6 YELLOW CHANGE = Solid Yellow Time
PHASE 2+6 RED CLEAR = Steady Red Display
PHASE 4 PED CLEAR = Alternating Flashing Red Display
PHASE 4 YELLOW CHANGE = Alternating Flashing Red Display
PHASE 4 RED CLEAR = Alternating Flashing Red Display

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

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Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

DocuSigned by:
Trent Moody
SIGNATURE
8/11/2026
DATE

SIG. INVENTORY NO. 10-1906T3

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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 18.2

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Modify Program 1 as shown below and save changes.

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
21	Global Variable	33	Result=(A OR B)	Preempt Input	2	Preempt Status	2	0.0	0.0
22	Phase Phase Omit	4	Result=!A	Preempt Status	2	None	0	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 21 Description: Turns pilot lamp on when button is pushed.
Statement 22 Description: Omits phase 4 while not in preemption.

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	7
Type	Custom 1
Included Phases	4
Modifier Phases	-
Modifier Overlaps	-
Trail Green	0
Trail Yellow	0.0
Trail Red	0.0

PREEMPTION PROGRAMMING

Front Panel
Main Menu >Controller >Preemption >Preempt Phasing/Preempt Parameters

Web Interface
Home >Controller >Preempt Configuration >Preempts

Preempt Configuration

Preempt	2
Enabled	Enabled
Type	Emergency Veh
Track Phases	-
Track Overlaps	-
Dwell Phases	4
Dwell Peds	4
Dwell Overlaps	7
Cycling Phases	-
Cycling Peds	-
Cycling Overlaps	-
Exit Phases	2
Exit Overlaps	7
Delay	*
Call Ext Time	0.0
Max Presence	120
Max Pres Act	Terminate
Enter Min Green	1
Enter Walk	255
Enter Ped Clear	255
Enter Yellow Change	25.5
Enter Red Clear	25.5
Track Green	0
Track Yellow Clr	25.5
Track Red Clear	25.5
Dwell Green	0
Exit Min Green	255
Exit Yellow Change	25.5
Exit Red Clear	25.5
Exit Type	Exit Phases
Non Locking Memory	-
Not Ovrd Flash	X
Not Ovrd Nxt Pre	-
Require All Red Entry	-
Track Clear Ovrd	X
Ped Clear During Yellow	-
Entry Omit OLTG	-
Track Reserve	-

* The Division Traffic Engineer will determine the Delay before Preempt time.

CUSTOM OVERLAP PROGRAMMING

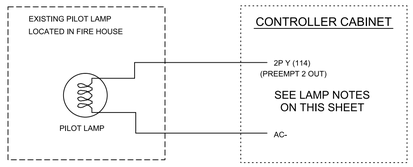
Front Panel
Main Menu >Controller >Overlap >Custom Overlap Rules

Web Interface
Home >Controller >Overlap Configuration >Custom Overlap Rules

Rule	Custom Overlap	Included Phase State	Modifier Phase State	Modifier Overlap State	Negative Phase State	Output	Flash
1	Custom 1	Ped Clear	Any	Any	Any	Red	On
2	Custom 1	Red	Any	Any	Any	Blank	Not Set

EMERGENCY VEH. PREEMPTION PILOT LAMP WIRING DETAIL

(wire push-button and lamp as shown below)



LAMP NOTES

1. If terminal 114 has a conflict monitor wire connected, remove, tape and label wire.
2. Make sure load resistors are in place as shown in load resistor installation detail on sheet 1.
3. Insert load switch for S2P.

OUTPUT POINTS PROGRAMMING

Front Panel
Main Menu >Controller >More >Advanced IO >Output Points

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >Output Points

Modify IO Module 1 as shown below and save changes.

IO Module 1

Output Point	Descripton	Output Control Type	Index
33	C1-35	Global Variable	33

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906T3
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by:
Trent Moody
SIGNATURE
8/11/2026
DATE

SIG. INVENTORY NO. 10-1906T3

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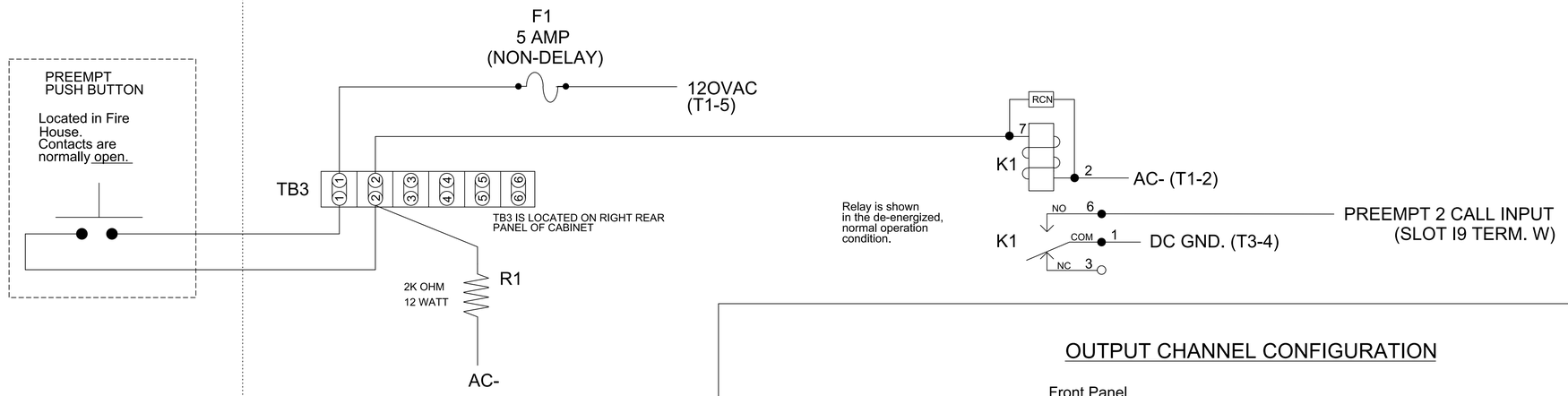
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 18.3

PREEMPT PUSH BUTTON INTERCONNECT CIRCUIT WIRING DETAIL

FIELD CONNECTIONS

CONTROLLER CABINET CONNECTIONS

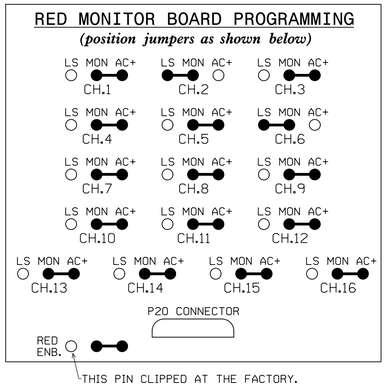


NOTES

1. Relay K1 is a SPDT with a 120VAC coil with 8 pin base.
2. RCN in a resistor/capacitor network valued at .1 mico farad 100 ohm.
3. R1 is a 2k ohm, 12 watt load resistor.

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

NOTICE OVERLAP 7 ASSIGNED TO CHANNEL 4 →

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906T3
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2151 Hawkins Street, Suite 1400
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(704) 372-1885
NC License Number F-0991

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

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Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
NCDOT Traffic Engineering Branch
Traffic Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

DocuSigned by: Trent Moody 8/11/2026
SIGNATURE DATE

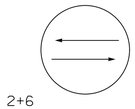
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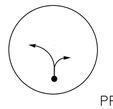
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U-4714BA	Sig. 19.0

PHASING DIAGRAM



EV PREEMPT PHASES

(Medium Priority)



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 2+6 DARK	PHASE ACTIVATION	PHASE STEADY YELLOW	PHASE STEADY RED	PHASE 4 PRE 2	PHASE FLASH
21, 22	DRK	FY	Y	R	FR*	Y
23, 24	DRK	FY	Y	R	FR*	Y
41	DRK	DRK	DRK	DRK	FY	DRK

*ALTERNATING FLASH
Y - Steady Yellow
FY- Flashing Yellow
R- Steady Red
FR- Flashing Red
DRK - Dark

SIGNAL FACE I.D.

All Heads L.E.D.





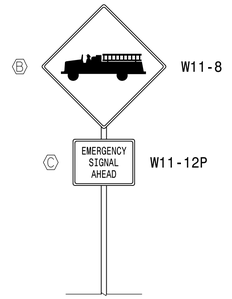
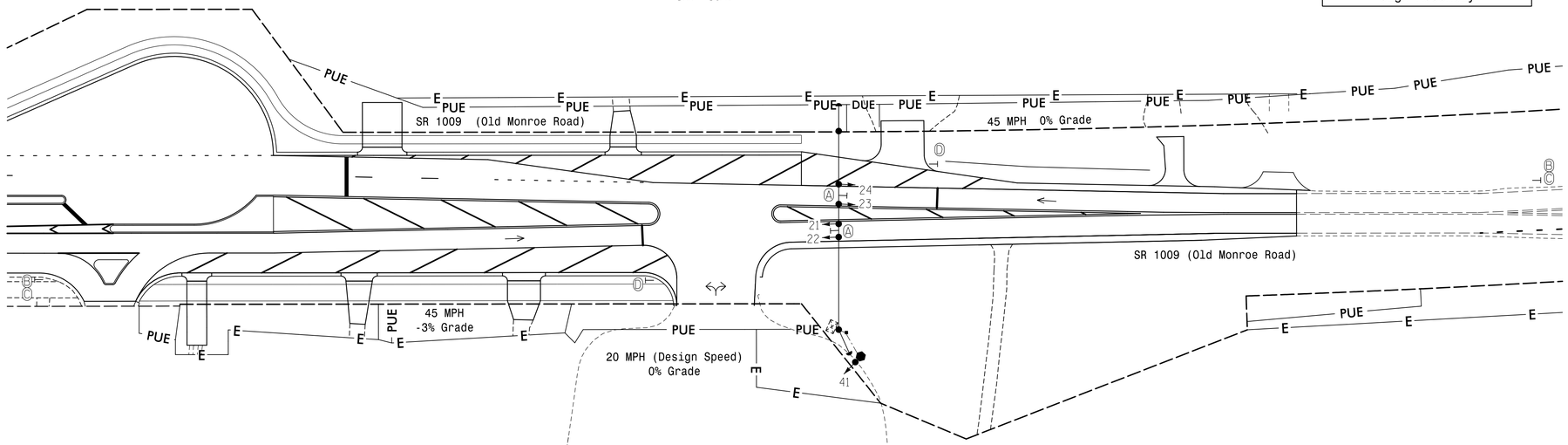


Figure 1: Advance Warning Sign Assembly

2 Phase Semi-Actuated Emergency Hybrid Beacon D10-59_Indian Trail

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 23 and 24.
4. The Division Traffic Engineer will determine the Delay before Preempt and Preempt Dwell Min Green time for the emergency vehicle preemption timing.
5. Signal head 41 shall remain Dark except during the phase 4 green interval (flashing yellow display).
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Locate advance signs (see Figure 1) in accordance with Table 2C-3 in Section 2C.04 of the 2023 MUTCD or as otherwise directed by the engineer.
8. This design will serve as the interim signal plan until U-4714BB is constructed.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	
Walk *	–	0	–	
Ped Clear *	–	**	–	Serves as Preempt Dwell Time
Min Green	12	7	12	
Passage *	–	–	–	
Max 1 *	30	30	30	
Yellow Change	4.8	3.0	4.8	Serves as Steady Yellow Clearance Time
Red Clear	2.6	2.1	2.6	Serves as All Red Clearance Time
Added Initial *	–	–	–	
Maximum Initial *	–	–	–	
Time Before Reduction *	–	–	–	
Time To Reduce *	–	–	–	
Minimum Gap	–	–	–	
Advance Walk	–	–	–	
Pre Clearance	5.0	–	5.0	Serves as Flashing Yellow Interval
Non Lock Detector	–	–	–	
Vehicle Recall	MIN RECALL	–	MIN RECALL	
Dual Entry	–	–	–	

* 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.
** See Note 4.

MAXTIME PREEMPTION CHART

FUNCTION	PRE 2
Type	EMERG VEH
Exit Phases	2
Delay	**
Call Extend Time	0.0
Max Presence	120
Enter Min Green	1
Enter Walk	255 *
Enter Ped Clear	255 *
Enter Yellow Change	25.5 *
Enter Red Clear	25.5 *
Track Green	0
Track Yellow Change	25.5 *
Track Red Clear	25.5 *
Dwell Green	0
Exit Min Green	255 *
Exit Yellow Change	25.5 *
Exit Red Clear	25.5 *
Exit Type	EXIT PHASES
Ped Clear Through Yellow	–
Require All Red Entry	–

* Controller uses lesser of time shown and the normal time used for phase.
** See Note 4.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Type II Signal Pedestal	
	Construction Zone	N/A
A	"STOP ON RED - YIELD ON FLASHING RED AFTER STOP" Sign (R10-23a)	A
B	Emergency Vehicle Sign (W11-8)	B
C	"EMERGENCY SIGNAL AHEAD" Sign (W11-12P)	C
D	"STOP HERE ON FLASHING RED" Sign (R10-14b)	D

Final Design

STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

SR 1009 (Old Monroe Road)
at
Stallings Vol. Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE: March 2026 | REVIEWED BY: T.M. Moody
PREPARED BY: J.C. Grimm | REVIEWED BY: A. Wiseman

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

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NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by:
Trent Moody
SIGNATURE
8/11/2026
DATE

SIG. INVENTORY NO. 10-1906

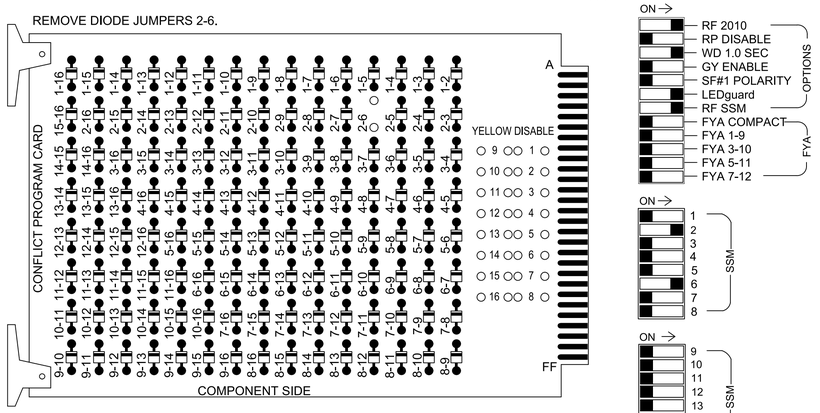
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16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)





■ = DENOTES POSITION OF SWITCH

REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	WIRED INPUT *	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
FILE "I" L														ST DC ISOLATOR

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

*Denotes preempt input wired to relay shown on sheet 3.

OPERATIONAL NOTES

1. In order for the controller to perform the Emergency Vehicle Hybrid Beacon (HAWK signal) sequence, the 332_NCDOT_HAWK_v1_4_1 default database must be installed on the controller.
2. The Logic Processor flashes Phase 2 Yellow during the Phase 2 Pre-Clearance interval. Phase 2 Yellow drives the solid yellow signal face during the Phase 2 vehicle Yellow Change.
3. The Phase 2 and Phase 6 Red outputs drive the solid Red displays during the Phase 2 and 6 Red Clear. The Logic Processor flashes Phase 2 and 6 Red Outputs in a wig-wag pattern during Phase 4 Ped Clear interval.
4. The controller must be programmed for Ped Clear During Red Clear for Pedestrian Phase 4 so that Red displays continue to flash during Phases 4 Yellow Change and Red Clear.
5. Make sure all Phase 2 and Phase 6 timings match each other.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file with the exception of S2 and S6 which will receive yellow flash program blocks. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Install 332_NCDOT_HAWK_v1_4_1 default database onto controller.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. Program phase 4 for No Startup Veh Call and No Startup Ped Call.
5. Program phase 4 for Ped Clear During Red Clear.
6. The cabinet and controller are part of the D10-59_Indian Trail Signal System.

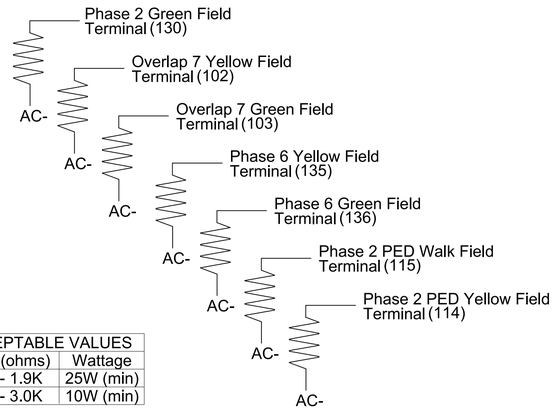
EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....336
Software.....Q-Free MAXTIME
Cabinet Mount.....Pole
Output File Positions.....12
Load Switches Used.....S2, S2P, S4, S6
Phases Used.....2, 4, 4 PED**, 6
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED
Overlap "7".....*

*See overlap programming on sheet 2.
** Phase used for timing purposes only.

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)

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
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(704) 372-1885
NC License Number F-0991

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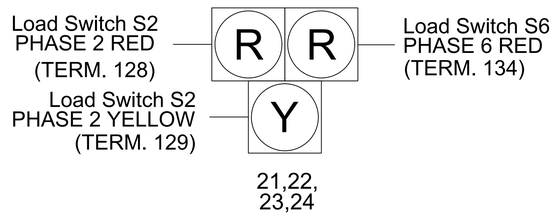
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P		S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
CMU CHANNEL NO.	1	2	13		3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	EVP 2	3	OL7	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22 23,24	NU	FIRE PILOT LAMP	NU	41	NC	NU	21,22 23,24	NU	NU	NU	NU
RED	.	128	.		.	101	.	.	134	.	.	.	.
YELLOW	.	129	.		.	*	.	.	*	.	.	.	.
GREEN	.	*	.		.	*	.	.	*	.	.	.	.
RED ARROW	.	.	.		.	.	.	.	.	.	.	.	.
YELLOW ARROW	.	.	.		.	.	.	.	.	.	.	.	.
FLASHING YELLOW ARROW	.	.	.		.	.	.	.	.	.	.	.	.
GREEN ARROW	.	.	.		.	.	.	.	.	.	.	.	.
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NU = Not Used
NC = Not Connected
*Denotes install load resistor. See load resistor installation detail this sheet.

SIGNAL HEAD WIRING DETAIL

(wire signal heads as shown)



TIMING INTERVAL

PHASE 2+6 GREEN = Dark Display
PHASE 2+6 PRE CLEARANCE = Flashing Yellow Time
PHASE 2+6 YELLOW CHANGE = Solid Yellow Time
PHASE 2+6 RED CLEAR = Steady Red Display
PHASE 4 PED CLEAR = Alternating Flashing Red Display
PHASE 4 YELLOW CHANGE = Alternating Flashing Red Display
PHASE 4 RED CLEAR = Alternating Flashing Red Display

Final Design
Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Signals Management Section

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PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

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Trent Moody
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U-4714BA	Sig. 19.2

LOGIC PROCESSOR PROGRAMMING

Front Panel
Main Menu >Controller >More >User Programs >Definition

Web Interface
Home >Controller >User Programs Configuration >User Programs Definition

Modify Program 1 as shown below and save changes.

Program 1

Statement	Result	Index	Operation	Parameter A	Index	Parameter B	Index	Delay	Ext
21	Global Variable	33	Result=(A OR B)	Preempt Input	2	Preempt Status	2	0.0	0.0
22	Phase Phase Omit	4	Result=!A	Preempt Status	2	None	0	0.0	0.0

LOGIC STATEMENT DESCRIPTION

Statement 21 Description: Turns pilot lamp on when button is pushed.
Statement 22 Description: Omits phase 4 while not in preemption.

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	7
Type	Custom 1
Included Phases	4
Modifier Phases	-
Modifier Overlaps	-
Trail Green	0
Trail Yellow	0.0
Trail Red	0.0

PREEMPTION PROGRAMMING

Front Panel
Main Menu >Controller >Preemption >Preempt Phasing/Preempt Parameters

Web Interface
Home >Controller >Preempt Configuration >Preempts

Preempt Configuration

Preempt	2
Enabled	Enabled
Type	Emergency Veh
Track Phases	-
Track Overlaps	-
Dwell Phases	4
Dwell Peds	4
Dwell Overlaps	7
Cycling Phases	-
Cycling Peds	-
Cycling Overlaps	-
Exit Phases	2
Exit Overlaps	7
Delay	*
Call Ext Time	0.0
Max Presence	120
Max Pres Act	Terminate
Enter Min Green	1
Enter Walk	255
Enter Ped Clear	255
Enter Yellow Change	25.5
Enter Red Clear	25.5
Track Green	0
Track Yellow Clr	25.5
Track Red Clear	25.5
Dwell Green	0
Exit Min Green	255
Exit Yellow Change	25.5
Exit Red Clear	25.5
Exit Type	Exit Phases
Non Locking Memory	-
Not Ovrd Flash	X
Not Ovrd Nxt Pre	-
Require All Red Entry	-
Track Clear Ovrd	X
Ped Clear During Yellow	-
Entry Omit OLTG	-
Track Reserve	-

* The Division Traffic Engineer will determine the Delay before Preempt time.

CUSTOM OVERLAP PROGRAMMING

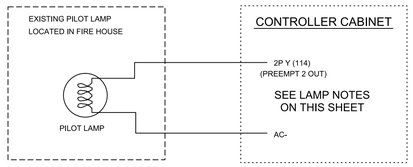
Front Panel
Main Menu >Controller >Overlap >Custom Overlap Rules

Web Interface
Home >Controller >Overlap Configuration >Custom Overlap Rules

Rule	Custom Overlap	Included Phase State	Modifier Phase State	Modifier Overlap State	Negative Phase State	Output	Flash
1	Custom 1	Ped Clear	Any	Any	Any	Red	On
2	Custom 1	Red	Any	Any	Any	Blank	Not Set

EMERGENCY VEH. PREEMPTION PILOT LAMP WIRING DETAIL

(wire push-button and lamp as shown below)



LAMP NOTES

1. If terminal 114 has a conflict monitor wire connected, remove, tape and label wire.
2. Make sure load resistors are in place as shown in load resistor installation detail on sheet 1.
3. Insert load switch for S2P.

OUTPUT POINTS PROGRAMMING

Front Panel
Main Menu >Controller >More >Advanced IO >Output Points

Web Interface
Home >Controller >Advanced IO >Cabinet Configuration >Output Points

Modify IO Module 1 as shown below and save changes.

IO Module 1

Output Point	Descripton	Output Control Type	Index
33	C1-35	Global Variable	33

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Final Design
Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Traffic & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY
DocuSigned by: Trent Moody SIGNATURE 8/11/2026 DATE
SIG. INVENTORY NO. 10-1906

8/11/2026
\\stv-cdp-stvinc.com\3WDPArojects\018904\018904_0001\50_Deliverables & Submittals\U-4714BA\Traffic\Signals\U-4714BA\Design\Signals\01906_smole.2025xxx.dgn
mwiseman

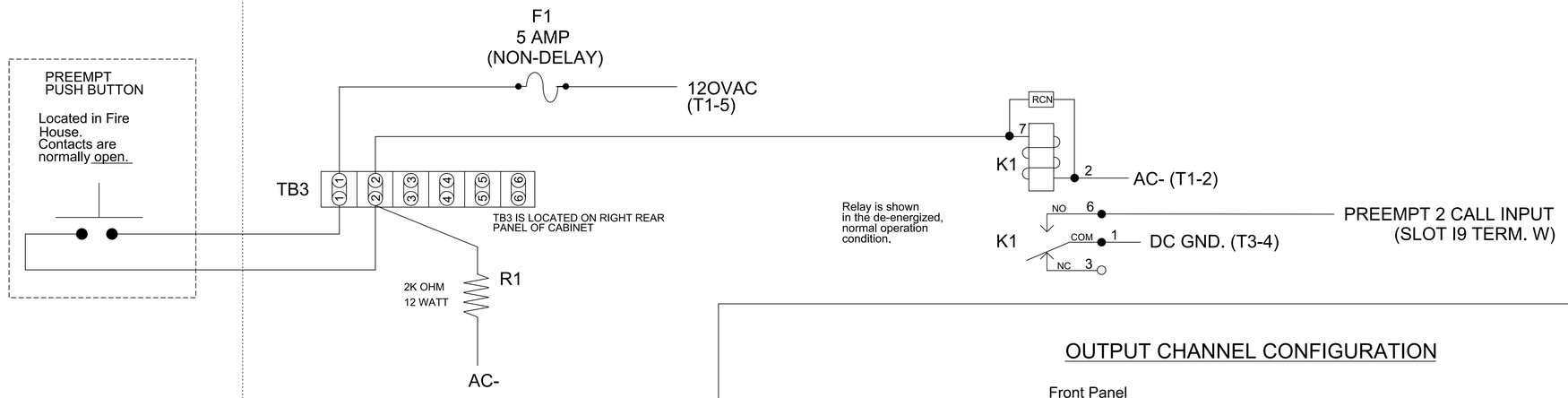
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PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	Sig. 19.3

PREEMPT PUSH BUTTON INTERCONNECT CIRCUIT WIRING DETAIL

FIELD CONNECTIONS

CONTROLLER CABINET CONNECTIONS

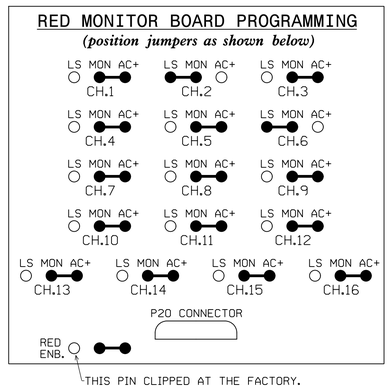


NOTES

1. Relay K1 is a SPDT with a 120VAC coil with 8 pin base.
2. RCN in a resistor/capacitor network valued at .1 mico farad 100 ohm.
3. R1 is a 2k ohm, 12 watt load resistor.

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

NOTICE OVERLAP 7 ASSIGNED TO CHANNEL 4 →

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 10-1906
DESIGNED: March 2026
SEALED: 8/11/2026
REVISED:

STV Engineers, Inc.
2151 Hawkins Street, Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

Final Design
Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

Prepared for the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1009 (Old Monroe Road)
at
Stallings Volunteer Fire Department

Division 10 | Union County | Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	J.C. Grimm
PREPARED BY:	A.M. Wiseman	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 040329
ENGINEER
TRENT M. MOODY

DocuSigned by: Trent Moody 8/11/2026
SIGNATURE DATE

SIG. INVENTORY NO. 10-1906

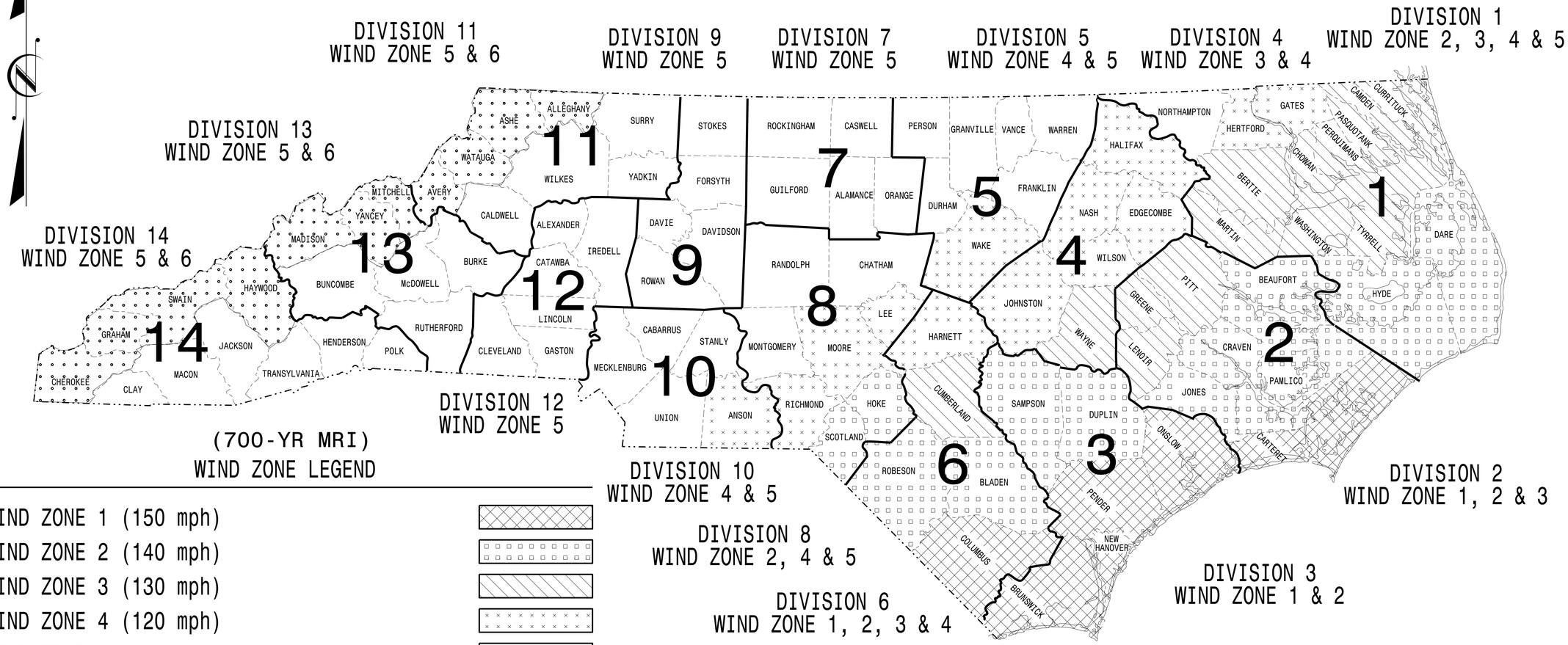
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PROJECT I.D.NO.	SHEET NO.
U-4714BA	Sig.M1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)

NCDOT METAL POLE STANDARDS



(700-YR MRI)
WIND ZONE LEGEND

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

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

Prepared in the Offices of:

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

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

AASHTO LRFD

Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

INDEX OF PLANS

DRAWING NUMBER	DESCRIPTION
Sig. M 1A	Statewide Wind Zone Map (700–yr MRI)
Sig. M 1B	Statewide Wind Zone Map (10–yr MRI)
Sig. M 2	Typical Fabrication Details–All Metal Poles
Sig. M 3	Typical Fabrication Details–Strain Poles
Sig. M 4	Typical Fabrication Details–Mast Arm Poles
Sig. M 5	Typical Fabrication Details–Mast Arm Connection
Sig. M 6	Typical Fabrication Details–Strain Pole Attachments
Sig. M 7	Construction Details–Foundations
Sig. M 8	Standard Strain Pole Foundation–All Soil Conditions
Sig. M 9	Typical Fabrication Details–CCTV Camera Poles

MOBILITY AND SAFETY DIVISION – TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS UNIT

D.Y. ISHAK – STATE SIGNALS ENGINEER

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

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

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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

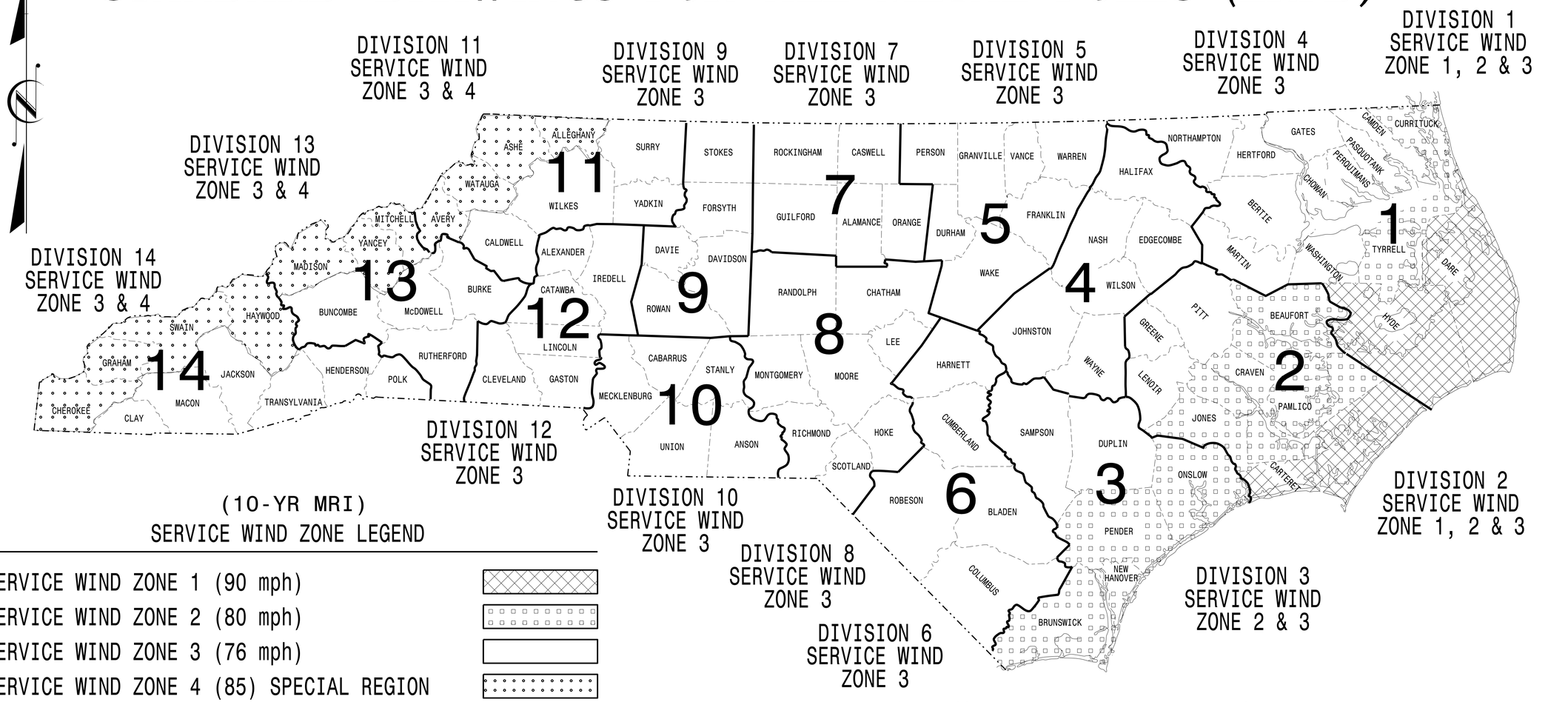
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PROJECT I.D.NO.	SHEET NO.
U-4714BA	Sig.M1B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)

NCDOT METAL POLE STANDARDS



(10-YR MRI)
SERVICE WIND ZONE LEGEND

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

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

Prepared in the Offices of:

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

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

AASHTO LRFD

Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

INDEX OF PLANS

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Sig. M 2	Typical Fabrication Details–All Metal Poles
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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

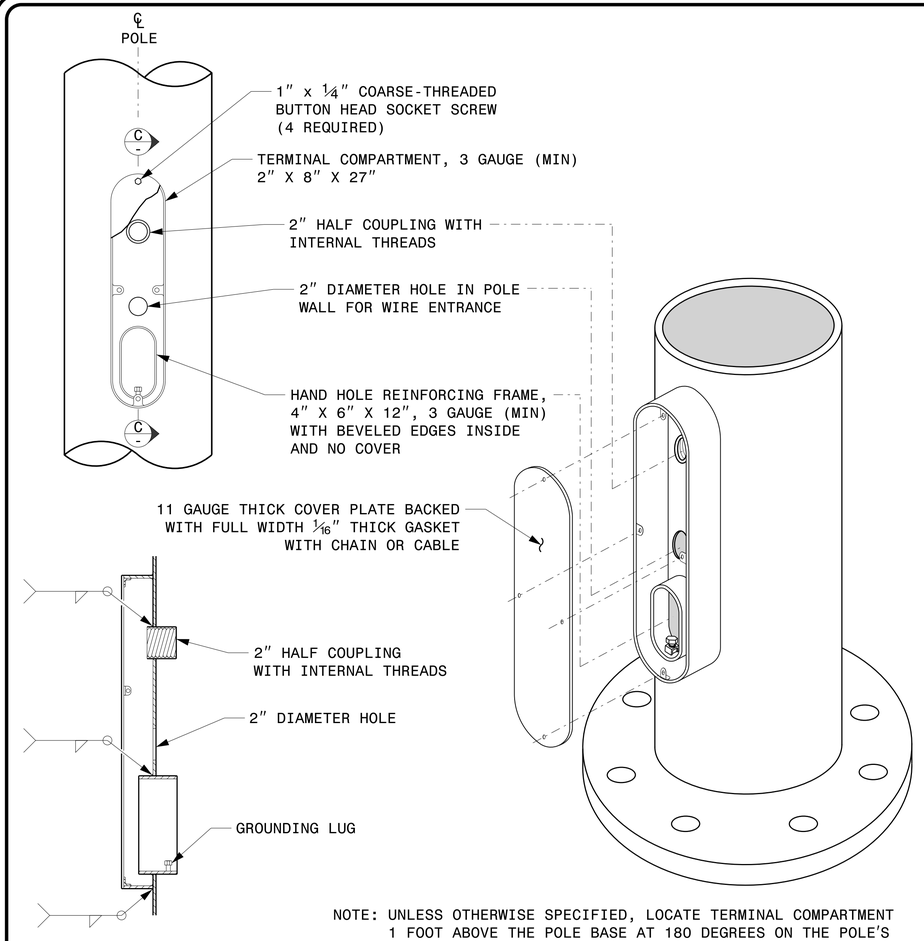
B. WALKER, P.E. – ITS AND SIGNALS STRUCTURAL ENGINEER

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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09/21/2023
DATE

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kcdurigon



SECTION C-C

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

TERMINAL COMPARTMENT DETAIL

MFG _____ MFG. DATE: MM/YY
SHAFT D/T/L/Y ----/----/----/----
ARM-A D/T/L/Y ----/----/----/----
----/----/----/----
ARM-B D/T/L/Y ----/----/----/----
----/----/----/----
A.B. DIA./B.C./L/Y ----/----/----/----
NCDOT SIG. INV. NO. _ _ _ _ _ _ _ _
NCDOT POLE NO. _ _ _ _ _ _ _ _

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

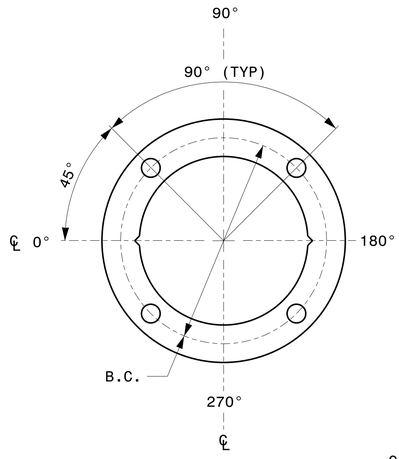
MFG _____ MFG. DATE: MM/YY
SECTION D/T/L/Y ----/----/----/----
NCDOT SIG. INV. NO. _ _ _ _ _ _ _ _
NCDOT POLE NO. _ _ _ _ _ _ _ _

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

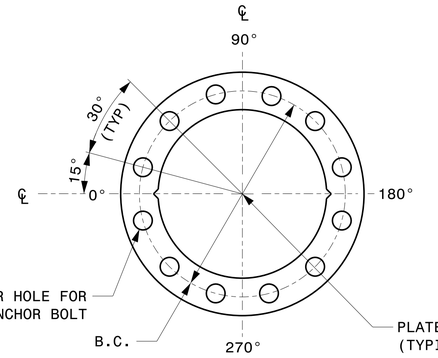
NOTES:

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

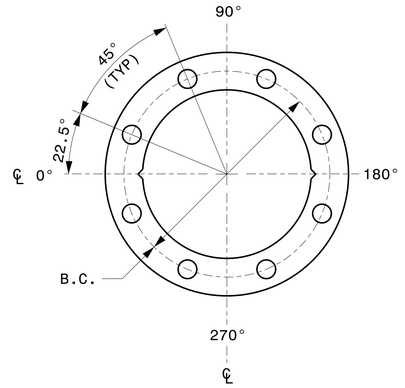
IDENTIFICATION TAG DETAILS



4 BOLT PATTERN



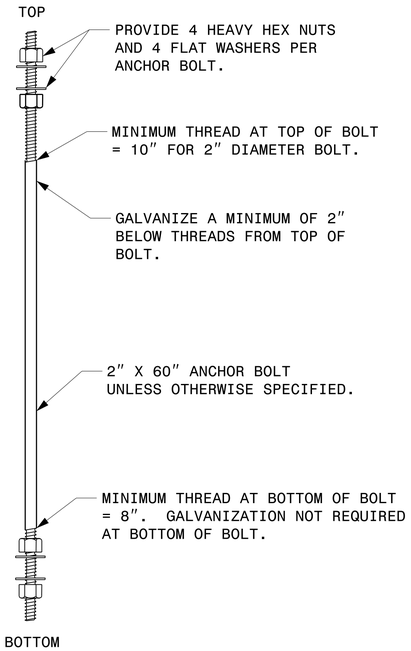
12 BOLT PATTERN



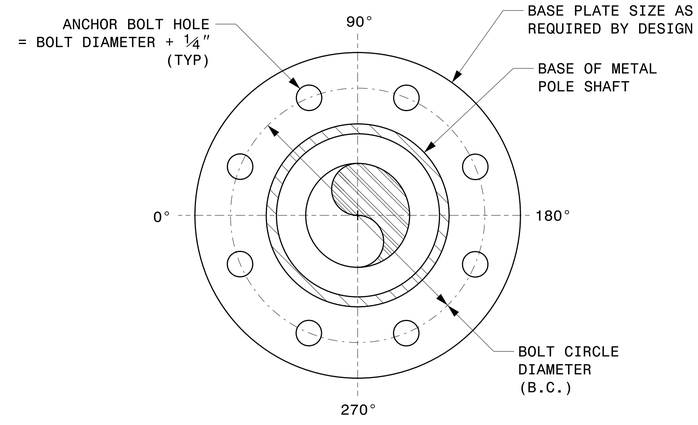
8 BOLT PATTERN

CONSTRUCT TEMPLATES AND PLATES FROM ¼″ (MIN) THICK STEEL. GALVANIZING IS NOT REQUIRED.

BASE PLATE TEMPLATE AND ANCHOR BOLT LOCK PLATE DETAILS



ANCHOR BOLT DETAIL



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

TYPICAL BASE PLATE DETAIL

PROJECT I.D. NO.	SHEET NO.
U-4714BA	Sig.M2

Fabrication Details – All Metal Poles

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
All Metal Poles

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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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

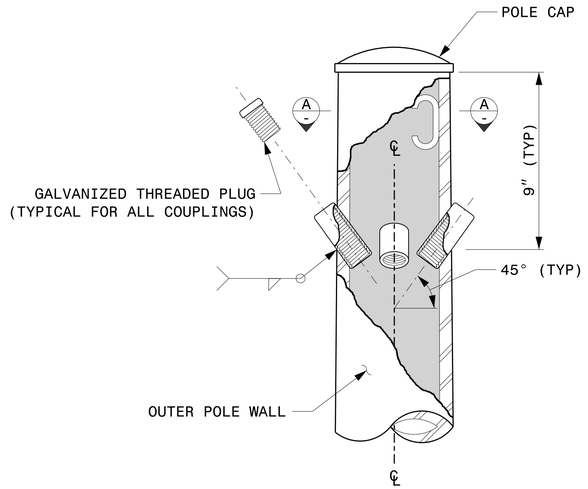
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kcdurigon

PROJECT I.D. NO.	SHEET NO.
U-4714BA	Sig.M3

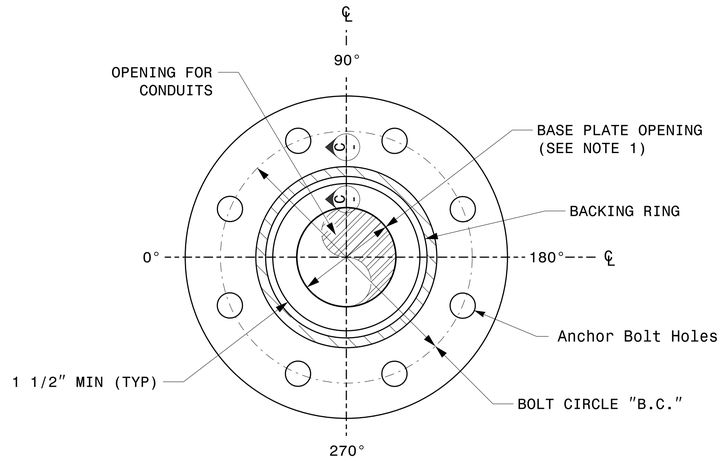
Fabrication Details – Strain Poles

NOTE:

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

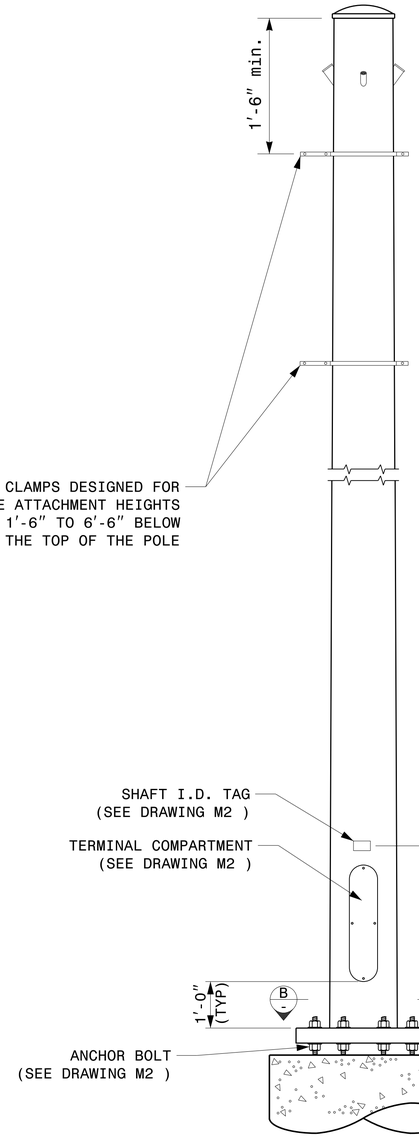


CABLE ENTRANCES AT TOP OF POLE

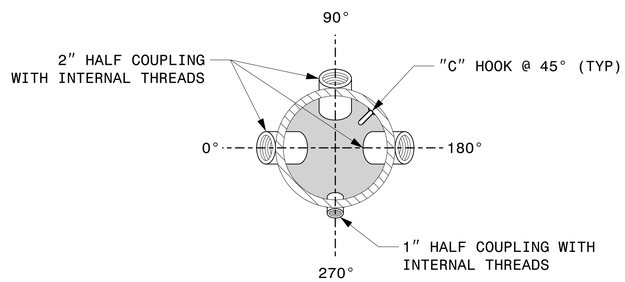


SECTION B-B

POLE BASE PLATE DETAILS
(8 AND 12 BOLT PATTERN)

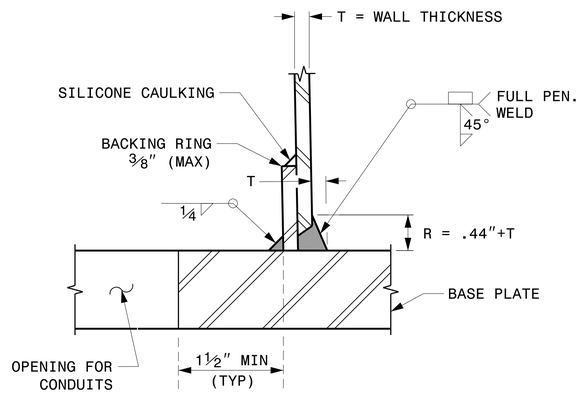


MONOTUBE STRAIN POLE



SECTION A-A

RADIAL ORIENTATION OF FACTORY INSTALLED ACCESSORIES AT TOP OF POLE



SECTION C-C

(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION GROOVE WELD DETAIL

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

Typical Fabrication Details
For
Strain Poles

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

REVISIONS	INIT.	DATE

SCALE
0 NA
NONE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
036626
ENGINEER
KEVIN C. DURIGON

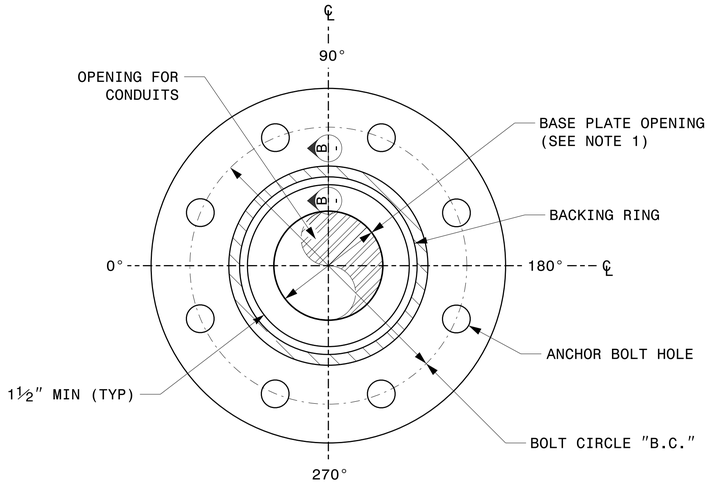
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09/21/2023
DATE

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kcdurigon

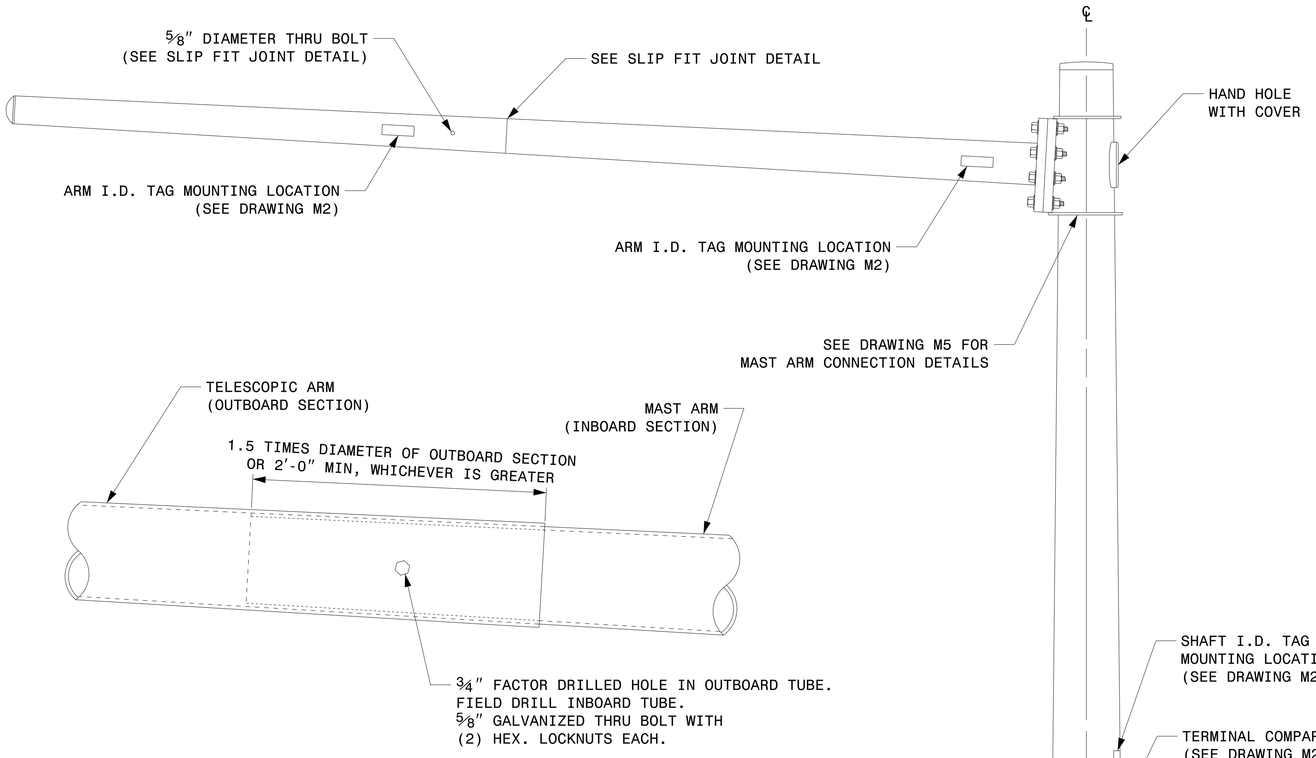
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U-4714BA	Sig.M4

NOTE:

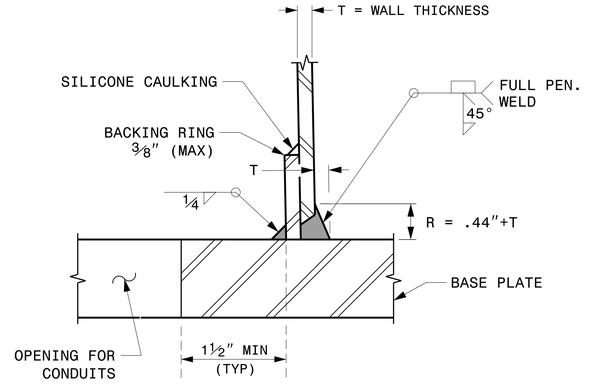
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".



SECTION A-A
POLE BASE PLATE DETAILS

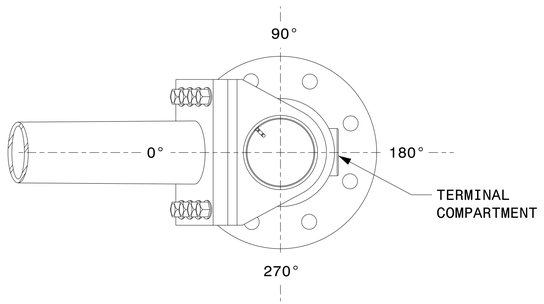


SLIP FIT JOINT DETAIL FOR MAST ARM



SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION GROOVE WELD DETAIL



MAST ARM RADIAL ORIENTATION

MAST ARM POLE

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

SCALE
0 NA
NONE

Typical Fabrication Details For Mast Arm Poles

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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

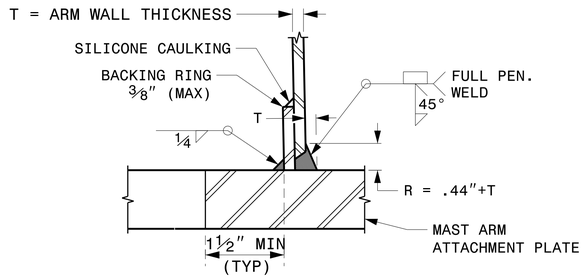
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09/21/2023
DATE

Fabrication Details – Mast Arm Poles

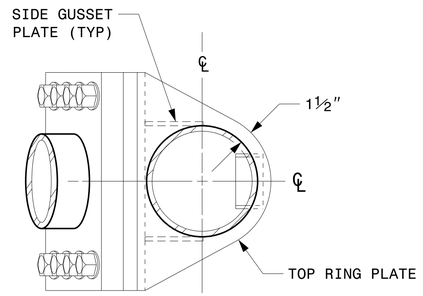
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kcdurigon

WELDED RING STIFFENED MAST ARM CONNECTION

PROJECT I.D. NO.	SHEET NO.
U-4714BA	Sig.M5



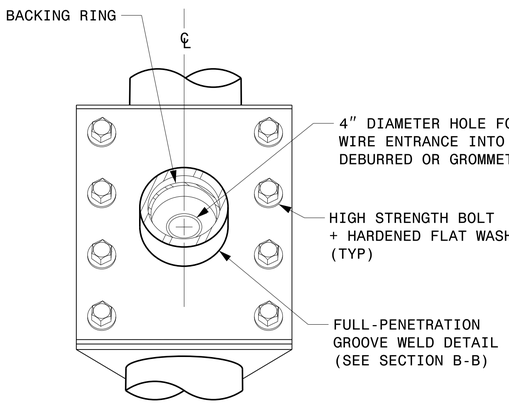
SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL



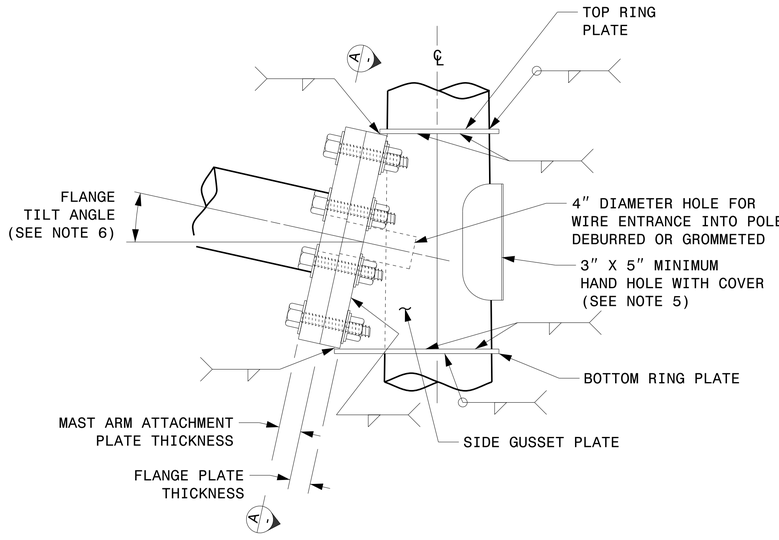
PLAN VIEW

NOTES:

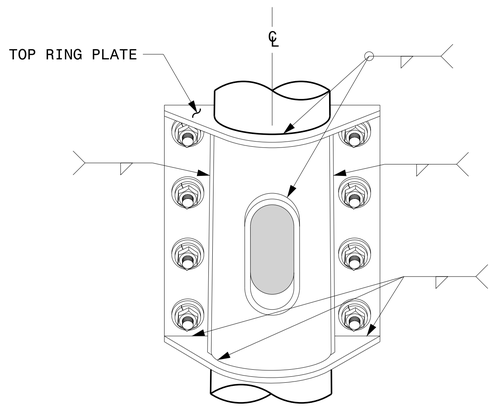
1. PROVIDE A PERMANENT MEANS OF IDENTIFICATION ABOVE THE MAST ARM TO INDICATE PROPER ATTACHMENT ORIENTATION OF THE MAST ARM.
2. DESIGNER WILL DETERMINE THE SIZE OF ALL STRUCTURAL COMPONENTS, PLATES, FASTENERS, AND WELDS SHOWN UNLESS THEY ARE ALREADY SPECIFIED.
3. FABRICATOR IS RESPONSIBLE FOR PROVIDING APPROPRIATE HOLES AT DRAINAGE POINTS TO DRAIN GALVANIZING MATERIALS.
4. FOR MINIMUM EDGE DISTANCE AND NOMINAL BOLT HOLE SIZE, FOLLOW THE LATEST AISC STEEL CONSTRUCTION MANUAL.
5. PROVIDE UPPER HANDHOLE AS NECESSARY WHEN SHAFT EXTENSIONS ARE REQUIRED FOR LUMINAIRE ARMS OR CAMERA. FOR POLES WITHOUT LUMINAIRES/CAMERA, WIRING CAN BE DONE THROUGH THE TOP OF POLE.
6. ALLOWABLE RANGE OF FLANGE TILT ANGLE WILL VARY FROM 0° TO AS REQUIRED.



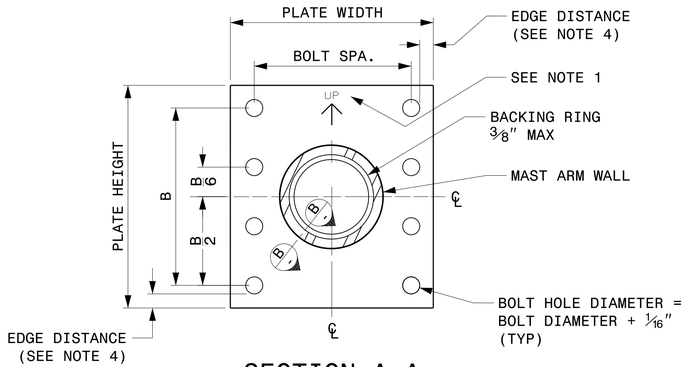
FRONT ELEVATION VIEW



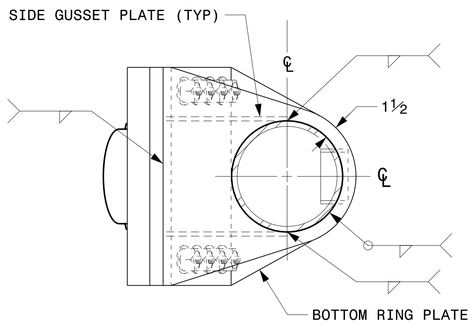
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A
MAST ARM ATTACHMENT PLATE



BOTTOM VIEW

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
Mast Arm Connection To Pole

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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
036626
ENGINEER
KEVIN C. DURIGON

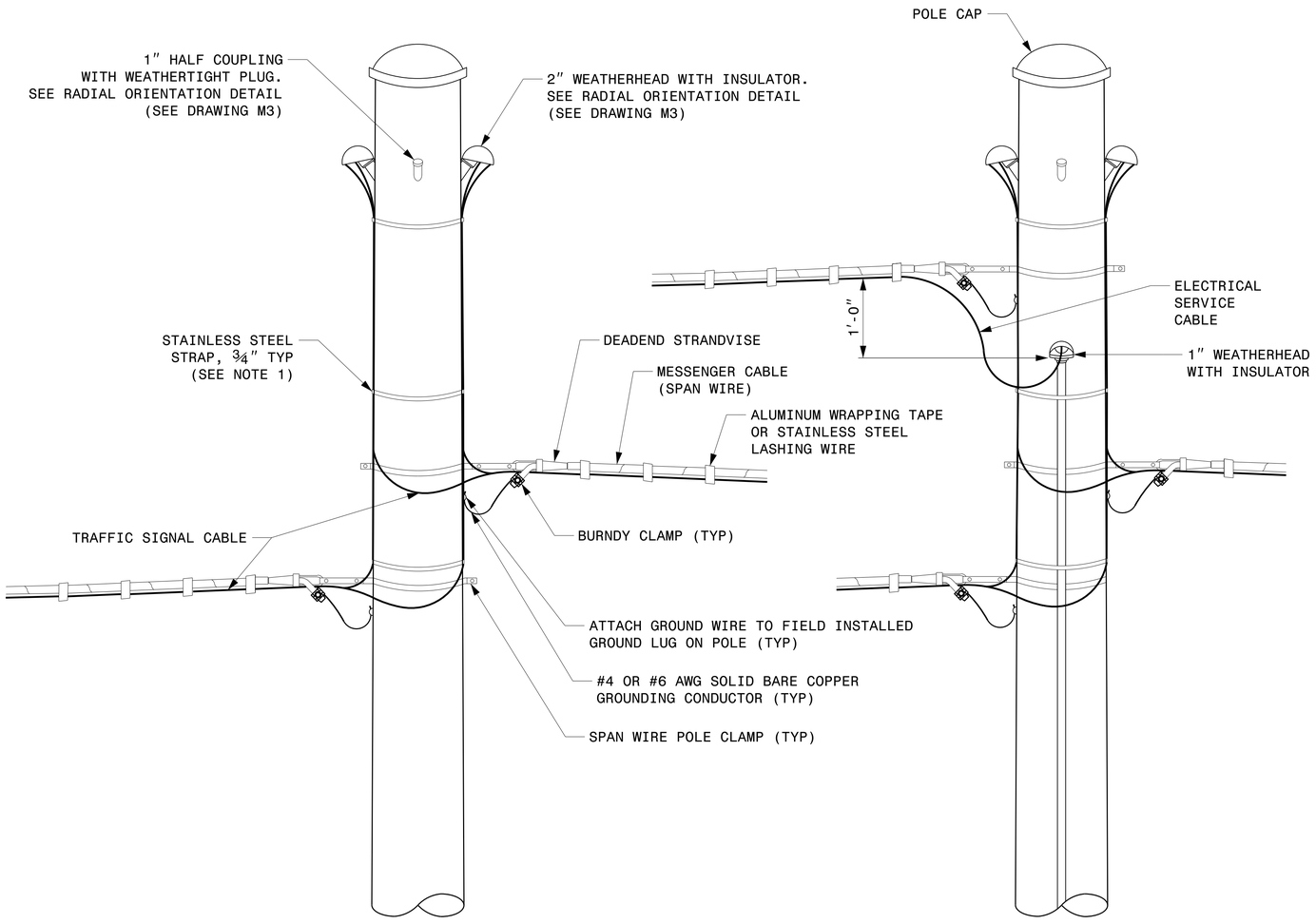
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Kevin Durigon
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DATE

Fabrication Details – Mast Arm Connection

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kcdurigon

PROJECT I.D. NO.	SHEET NO.
U-4714BA	Sig.M6

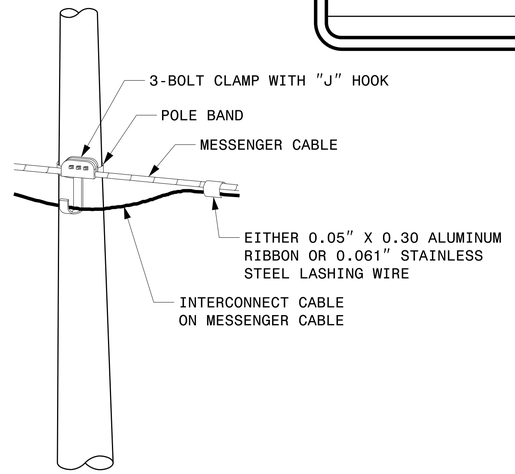
Fabrication Details – Strain Pole Attachments



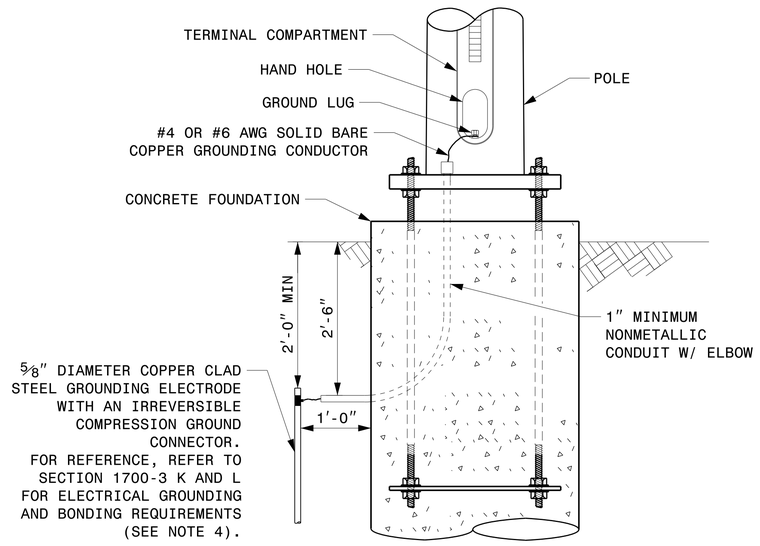
STRAIN POLE ATTACHMENTS

NOTES:

1. STRAP ALL SIGNAL CABLES TO THE SIDE OF THE POLE WITH ¾″ STAINLESS STEEL STRAPS WHEN THE DISTANCE BETWEEN SPAN WIRE ATTACHMENT CLAMP AND WEATHERHEADS EXCEEDS 3′-0″.
2. PROVIDE MINIMUM TWO SPAN WIRE POLE CLAMPS PER POLE.
3. IT IS PROHIBITED TO ATTACH TWO SPAN WIRES AT ONE POLE CLAMP.
4. FOR GENERAL REQUIREMENTS, REFER TO NCDOT STANDARD SPECIFICATIONS FOR ROADWAY AND STRUCTURES, JANUARY 2024.



ATTACHMENT OF CABLE TO INTERMEDIATE METAL POLE



METAL POLE GROUNDING DETAIL FOR STRAIN POLE AND MAST ARM

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
Strain Pole Attachments

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

REVISIONS	INIT.	DATE

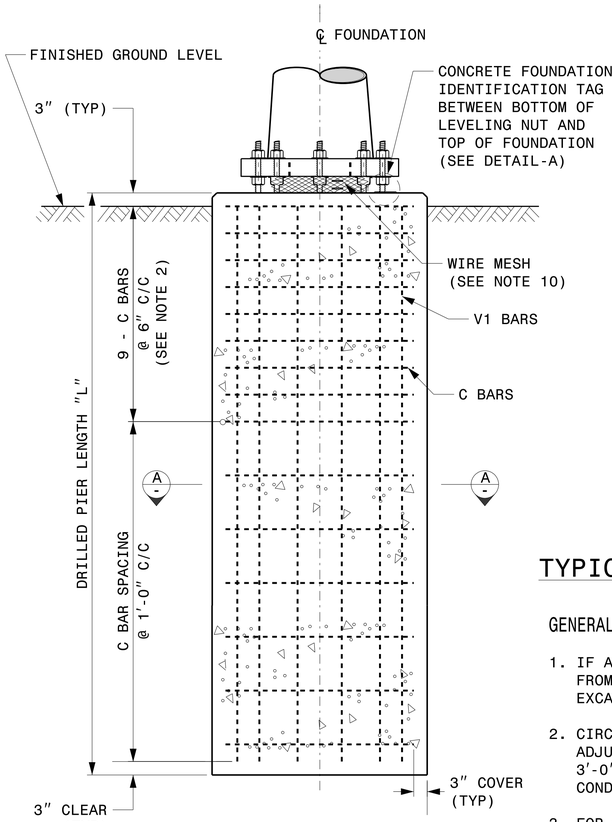
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

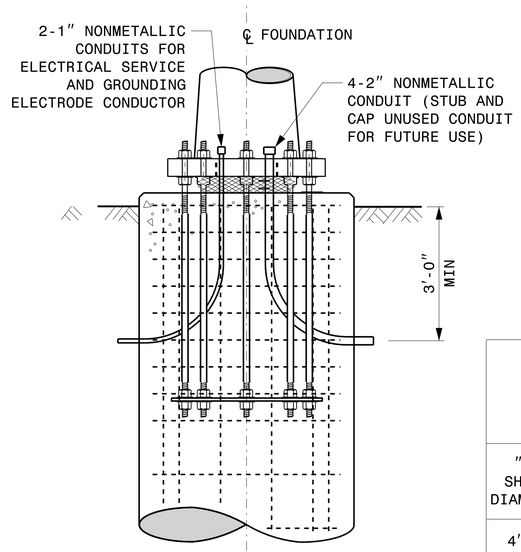
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Kevin Durigon
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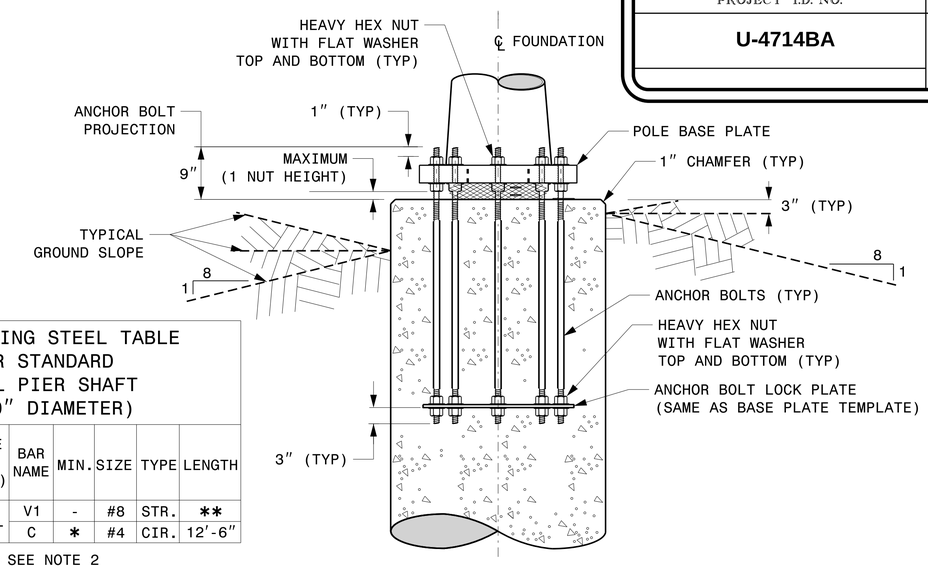
Construction Details – Foundations



CONCRETE SHAFT ELEVATION



TYPICAL FOUNDATION CONDUIT DETAILS



TYPICAL FOUNDATION ANCHOR BOLT DETAILS

(REINFORCING CAGE NOT SHOWN FOR CLARITY)

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

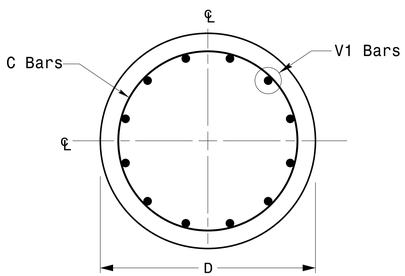
"D" SHAFT DIAMETER	CONCRETE VOLUME (CU. YDS)	BAR NAME	MIN.	SIZE	TYPE	LENGTH
4′-0″	.465 X L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12′-6″

* SEE NOTE 2
** SEE NOTE 3

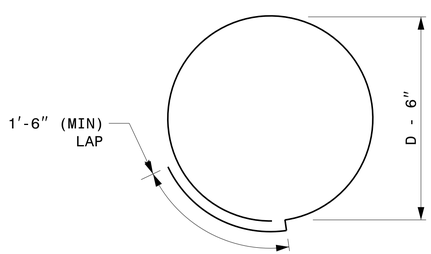
GENERAL NOTES:

1. IF ACTUAL SUBSURFACE CONDITIONS DIFFER SIGNIFICANTLY FROM BORING DATA, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
2. CIRCULAR TIE REINFORCING RINGS MAY BE VERTICALLY ADJUSTED BY +/-3″ AT A DEPTH BETWEEN 2′-0″ AND 3′-0″ TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING IN THE CAGE.
3. FOR STANDARD FOUNDATIONS, SEE SHEET SIG. M8 FOR DETAILS. VERTICAL REINFORCING BARS (V1) MAY BE HORIZONTALLY ADJUSTED BY +/-3″ TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING INTO THE CAGE.
4. PROVIDE 2″ TO 5″ FOUNDATION PROJECTION ABOVE GROUND LEVEL, DEPENDING ON THE GROUND SLOPE.
5. UNLESS OTHERWISE SHOWN, FOUNDATION DESIGNS ARE BASED ON NON-SLOPING LEVEL GROUND SURFACES WITH SLOPE RATIOS OF 8:1 (H:V) OR FLATTER. IF ACTUAL GROUND LINE SLOPES ARE STEEPER, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
6. CONSTRUCT FOUNDATIONS IN ACCORDANCE WITH NCDOT STANDARD PROVISIONS SP09 R005- FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES. ALL APPLICABLE 2024 NCDOT STANDARD SPECIFICATIONS ARE REFERENCED IN THIS PROVISION. REFER TO THE NCDOT RESOURCES/SPECIFICATIONS PAGE LOCATED ON THE CONNECT NCDOT WEBSITE.

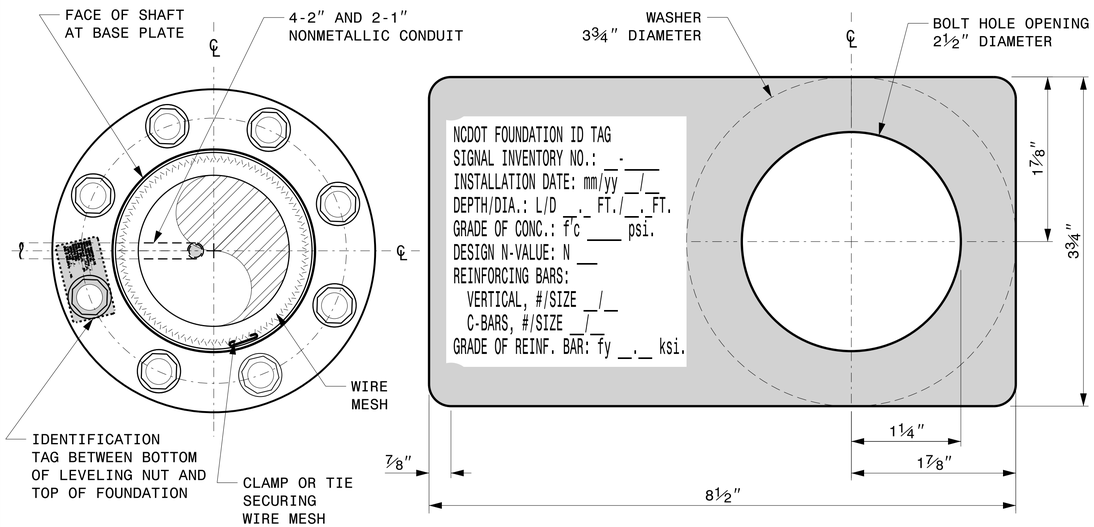
   https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx
7. USE AIR ENTRAINED AA CONCRETE MIX WITH A COMPRESSION STRENGTH OF f′c=4500 psi (MIN) AFTER 28 DAYS.
8. USE ASTM A615 GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL. MAINTAIN AT LEAST 3″ COVER ON ALL REINFORCEMENT.
9. LOCATE IDENTIFICATION TAG ON TOP OF THE FOUNDATION, DIRECTLY ABOVE THE CONDUIT'S ENTRY POINT.
10. PROVIDE TWO LAYERS OF 4 MESH GALVANIZED WELDED 23 GAUGE (0.025) 6″ WIDE AROUND PIPES UNDER THE BASE PLATE AND SECURE IT WITH TIES IF NECESSARY.
11. PREFERRED LOCATION FOR THE I.D. TAG IS AS SHOWN IN DETAIL-A: DIRECTLY ABOVE THE CONDUIT ENTERING THE FOUNDATION.



SECTION A-A



TYPICAL "C" BAR DETAIL



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

DETAIL-A

CONCRETE FOUNDATION IDENTIFICATION TAG DETAILS

Prepared in the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
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

SCALE: 0 NA — NONE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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Kevin Durigon
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DATE

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kcdurigon

SOIL CONDITION

PROJECT I.D. NO.	SHEET NO.
U-4714BA	Sig.M8

STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48″ Diameter Drilled Pier Length (L) – Feet							Reinforcement			
			Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Axial (kip)	Shear (kip)	Moment (ft–kip)	Medium N–Value 4–8	Stiff N–Value 9–15	Very Stiff N–Value 16–30	Hard N–Value >30	Loose N–Value 4–10	Medium N–Value 11–30	Dense N–Value >30	Bar Size (#)	Quantity (ea.)	Bar Size (#)	Spacing (in.)
S26L1	26	22	2	9	210	19.5	12.5	9	6.5	15.5	14.5	13	8	12	4	12
S26L2	26	23	2	10	240	19.5	12	9	6.5	15.5	14.5	13	8	12	4	12
S26L3	26	25	2	11	260	20.5	12	10	8	16	15	13	8	12	4	12
S30L1	30	22	2	9	230	19	11	9	7	15.5	14	12.5	8	12	4	12
S30L2	30	23	2	10	270	20	12	10	8	16	14.5	13	8	12	4	12
S30L3	30	25	2	11	290	21	12	10	8	17	15	13.5	8	12	4	12
S30H1	30	25	3	13	355	23	13	11	9	18	16.5	14.5	8	12	4	12
S30H2	30	29	3	15	405	25	14	11	9	19	17.5	15.5	8	14	4	12
S30H3	30	29	3	16	430	26	15	12	9	20	18	16	8	14	4	6
S35L1	35	22	3	8	260	19.5	12	10	8	15.5	14.5	13	8	12	4	12
S35L2	35	23	3	10	300	21	12	10	8	16.5	15	13.5	8	12	4	12
S35L3	35	25	3	10	320	21.5	13	10	8	17	15.5	14	8	12	4	12
S35H1	35	25	3	12	390	23.5	14	11	9	18	17	15	8	14	4	12
S35H2	35	29	4	14	460	26	15	12	9	20	18	16	8	14	4	6
S35H3	35	29	4	16	495	28.5	15	13.5	10	21.5	19	17	8	14	4	6

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

GENERAL NOTES:

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

FOUNDATION SELECTION:

1. PERFORM A STANDARD PENETRATION TEST AT EACH PROPOSED FOUNDATION SITE TO DETERMINE "N" VALUE.
2. SELECT THE APPROPRIATE WIND ZONE FROM M1 DRAWING.
3. SELECT THE SOIL TYPE (CLAY OR SAND) THAT BEST DESCRIBES THE SOIL CHARACTERISTICS.
4. GET THE APPROPRIATE STANDARD POLE CASE NUMBER FROM THE PLANS OR FROM THE ENGINEER.
5. SELECT THE APPROPRIATE COLUMN UNDER "STANDARD FOUNDATIONS" BASED ON SOIL TYPE AND "N" VALUE. SELECT THE APPROPRIATE ROW BASED ON THE POLE LOAD CASE.
6. THE FOUNDATION DEPTH IS THE VALUE SHOWN IN THE "STANDARD FOUNDATIONS" CATEGORY WHERE THE COLUMN AND THE ROW INTERSECT.
7. USE CONSTRUCTION PROCEDURES AND DESIGN METHODS PRESCRIBED BY FHWA-NHI-10-016 MANUAL FOR DRILLED SHAFTS.

Standard Strain Pole Foundation – All Soil Conditions

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

SCALE
0 NA
NONE

Standard Strain Pole Foundation for All Soil Conditions

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

REVISIONS	INIT.	DATE

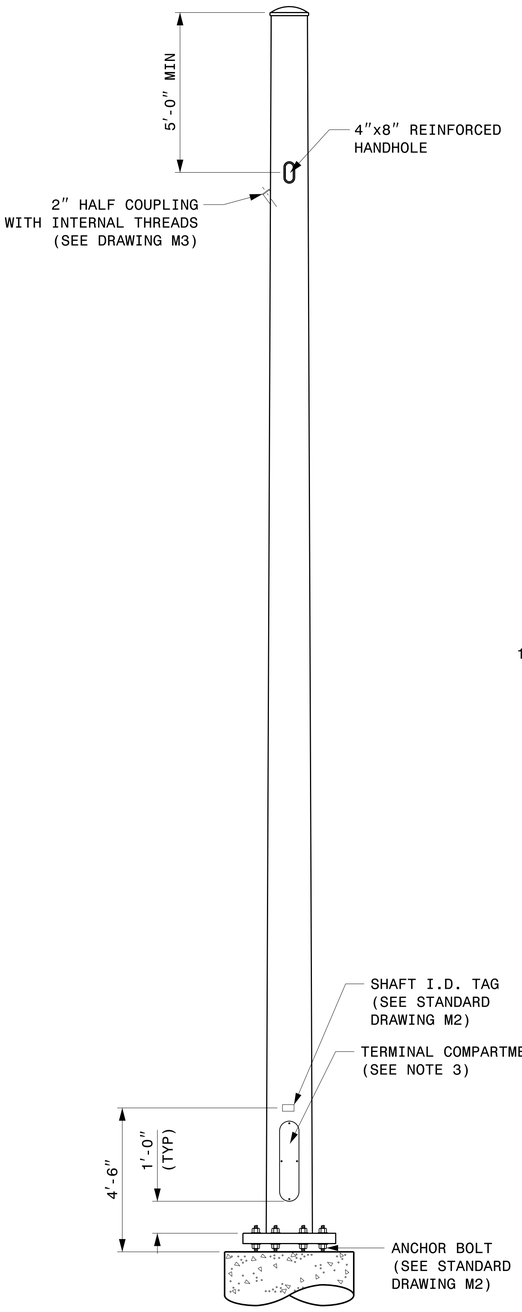
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NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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09/21/2023
DATE

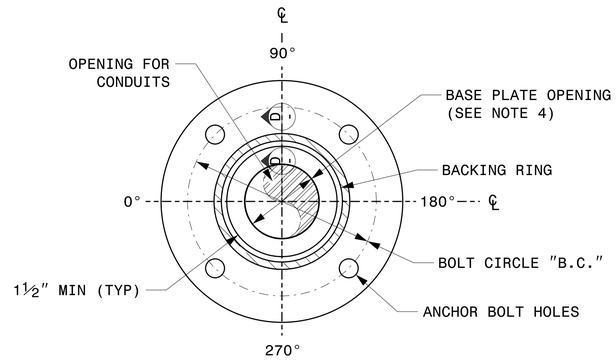
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kcdurigon

PROJECT I.D. NO.	SHEET NO.
U-4714BA	Sig.M9

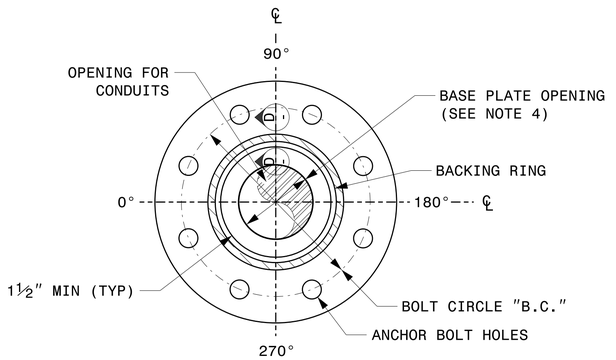
Fabrication Details – CCTV Camera Poles



CCTV CAMERA POLE
(NOT TO SCALE)

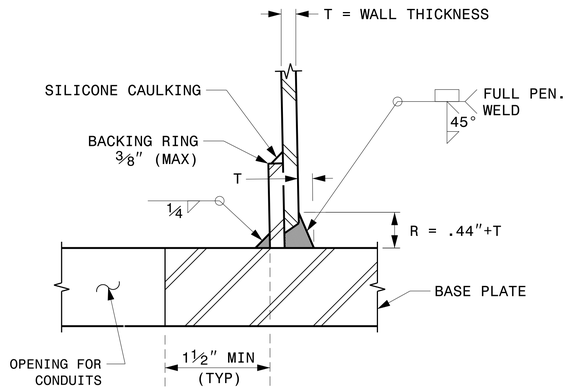


4 BOLT PATTERN
FOR POLES UP TO 40'



8 BOLT PATTERN
FOR POLES TALLER THAN 40'

BASE PLATE DETAILS



SECTION D-D
(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION
GROOVE WELD DETAIL

NOTES:

1. THIS DRAWING PROVIDES BASIC DETAILS FOR CCTV POLES. PROJECT REQUIREMENTS MAY REQUIRE SPECIAL FACTORY PREPS THAT ARE NOT SHOWN ON THESE DETAILS.
2. DETAILS FOR INTERNAL CAMERA LOWERING SYSTEMS ARE NOT SHOWN.
3. POLE MOUNTED CABINETS MAY REQUIRE MODIFICATIONS TO THE LOWER HANDHOLE OPENING TO MOUNT CABINETS. 4" X 8" REINFORCED HANDHOLES ARE ACCEPTABLE OPTIONS, AND MAY BE PREFERRED.
4. OPENING IN POLE BASE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3½" BUT SHALL NOT BE LESS THAN 8½".
5. USE COMPACT SECTION CRITERIA D/T RATIO PER AASHTO LTS-LRFD 1ST EDITION SECTION 5.7.2.

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
CCTV Poles

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

REVISIONS	INIT.	DATE

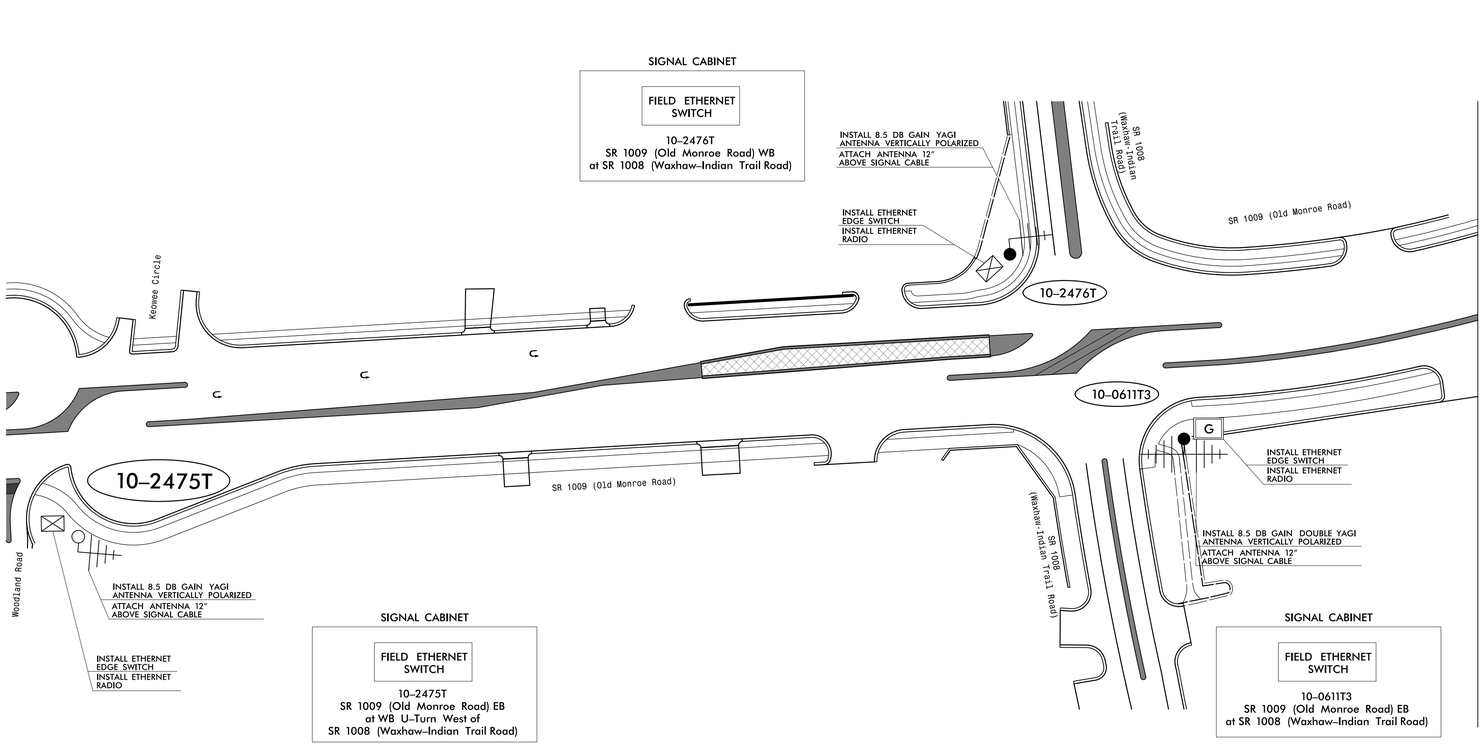
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NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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kcdurigon

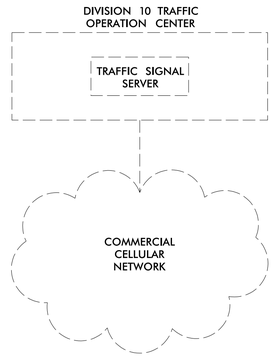
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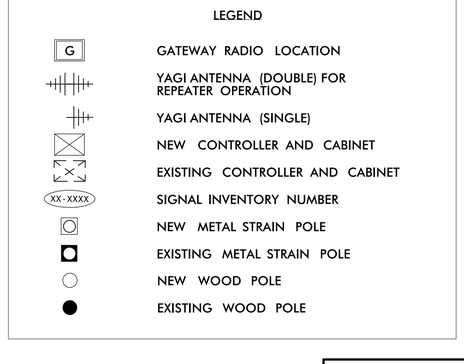
PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	SCP 1



NOTES FOR WIRELESS COMMUNICATIONS:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 10 TRAFFIC ENGINEER AT (704) 983–4400. NOTIFY THE DIVISION TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL WIRELESS CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL ALL SIGNALS ARE COMMUNICATING WITH THE CENTRAL SYSTEM.
2. INSTALL COAXIAL CABLE:
   - A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   - B. ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1⁄2" HOLE UP THROUGH THE BOTTOM OF THE MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
   - C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   - D. BETWEEN THE POINT OF EXITING THE RISER, METAL POLE, OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3⁄4" STAINLESS STEEL STRAPS EVERY 12".
3. IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISER IS AVAILABLE, INSTALL THE COAXIAL CABLE IN THE SPARE RISER.
4. INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN.
   (NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT–OWNED POLE.)
5. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRIC SAFETY CODE.
6. INSTALL WIRELESS RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET.
   (NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT–OWNED POLE.)
7. REFERENCE SPREAD SPECTRUM RADIO ROADWAY STANDARD DRAWINGS 1736.01.
8. CELL MODEMS TO BE SUPPLIED BY THE DEPARTMENT, CONTACT DIVISION 10 TRAFFIC ENGINEER AT (704) 983–4400 TO REQUEST THE CELL MODEM. ALLOW 8 WEEKS LEAD TIME BEFORE ANTICIPATED DEPLOYMENT.





Temporary Design - TMP Phase III

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STV Engineers, Inc.
2151 Hawkins St., Suite 1400
Charlotte, NC 28203
(704) 372-1885
NC License Number F-0991

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

Signal System
D10-59_Indian Trail
Wireless Communication Plans

Division 10 Union County Indian Trail

PLAN DATE:	March 2026	REVIEWED BY:	T.M. Moody
PREPARED BY:	G. Whitehouse	REVIEWED BY:	

SCALE: N/A

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

DocuSigned by: Trent Moody SIGNATURE 8/11/2026 DATE

CADD FILE NAME: U-4714BA_SCP_01

Docusign Envelope ID: 547D0E46-40FF-8A98-8021-445176A50DC6

PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	SCP 2

SIGNAL CABINET

FIELD ETHERNET SWITCH

10–2474
SR 1009 (Old Monroe Road) WB
at EB U–TurnSR 1387 (Bryson Road)

SIGNAL CABINET

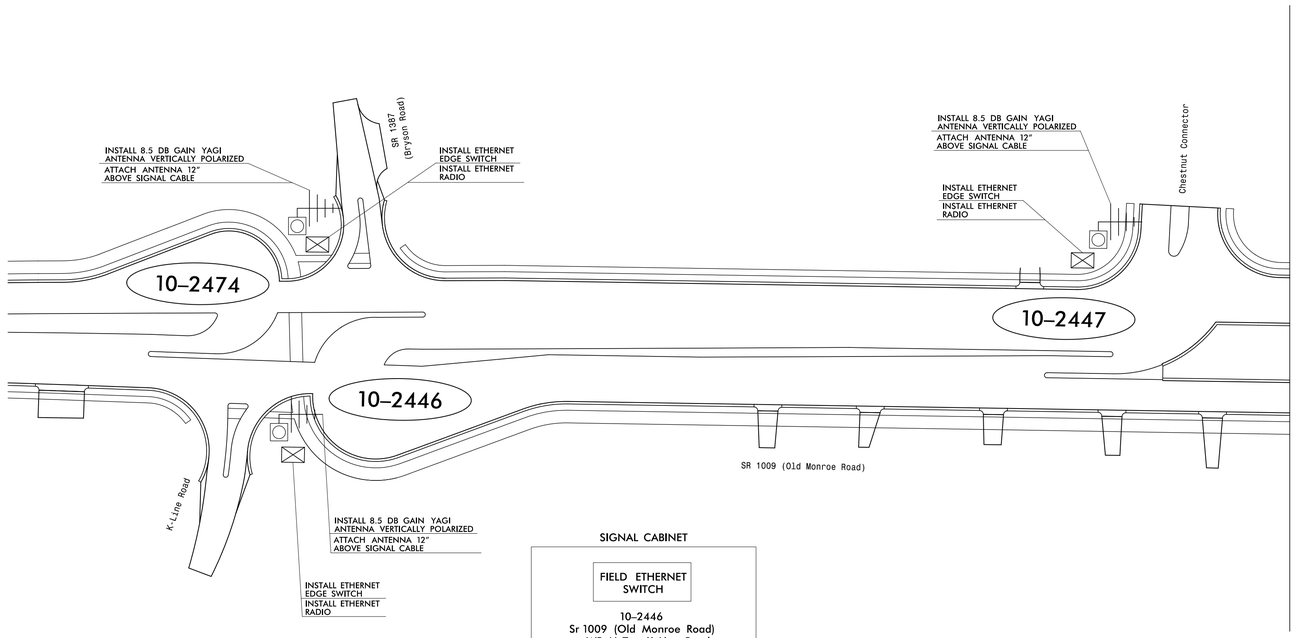
FIELD ETHERNET SWITCH

10–2447
SR 1009 (Old Monroe Road) WB
at Chestnut Connector

SIGNAL CABINET

FIELD ETHERNET SWITCH

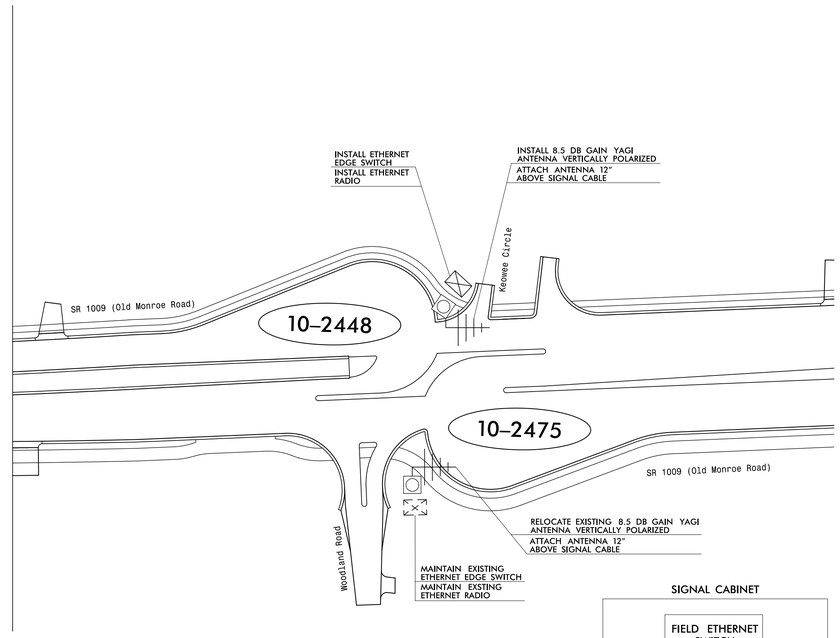
10–2448
SR 1009 (Old Monroe Road) WB
at EB U–Turn West of
SR 1008 (Waxhaw–Indian Trail Road)



SIGNAL CABINET

FIELD ETHERNET SWITCH

10–2446
Sr 1009 (Old Monroe Road)
at WB U–TurnK–Line Road



SIGNAL CABINET

FIELD ETHERNET SWITCH

10–2475
SR 1009 (Old Monroe Road) EB
at WB U–Turn West of
SR 1008 (Waxhaw–Indian Trail Road)

NOTES FOR WIRELESS COMMUNICATIONS:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 10 TRAFFIC ENGINEER AT (704) 983–4400. NOTIFY THE DIVISION TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL WIRELESS CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL ALL SIGNALS ARE COMMUNICATING WITH THE CENTRAL SYSTEM.
2. INSTALL COAXIAL CABLE:
   A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   B. ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF THE MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
   C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   D. BETWEEN THE POINT OF EXITING THE RISER, METAL POLE, OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
3. IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISER IS AVAILABLE, INSTALL THE COAXIAL CABLE IN THE SPARE RISER.
4. INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN.
   (NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT–OWNED POLE.)
5. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRIC SAFETY CODE.
6. INSTALL WIRELESS RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET.
   (NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT–OWNED POLE.)
7. REFERENCE SPREAD SPECTRUM RADIO ROADWAY STANDARD DRAWINGS 1736.01.
8. CELL MODEMS TO BE SUPPLIED BY THE DEPARTMENT, CONTACT DIVISION 10 TRAFFIC ENGINEER AT (704) 983–4400 TO REQUEST THE CELL MODEM. ALLOW 8 WEEKS LEAD TIME BEFORE ANTICIPATED DEPLOYMENT.

DIVISION 10 TRAFFIC OPERATION CENTER

TRAFFIC SIGNAL SERVER

COMMERCIAL CELLULAR NETWORK

LEGEND

- G — GATEWAY RADIO LOCATION
- YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
- YAGI ANTENNA (SINGLE)
- NEW CONTROLLER AND CABINET
- EXISTING CONTROLLER AND CABINET
- XX-XXXX — SIGNAL INVENTORY NUMBER
- NEW METAL STRAIN POLE
- EXISTING METAL STRAIN POLE
- NEW WOOD POLE
- EXISTING WOOD POLE

This plan supersedes the plan signed and sealed on 08/11/2026.

Final Design - Sheet 1 of 2

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Wireless Communication Plans

Division 10 | Union County | Indian Trail

PLAN DATE: October 2026 | REVIEWED BY: T.M. Moody
PREPARED BY: G. Whitehouse | REVIEWED BY:

SCALE: N/A

REVISIONS	INIT.	DATE

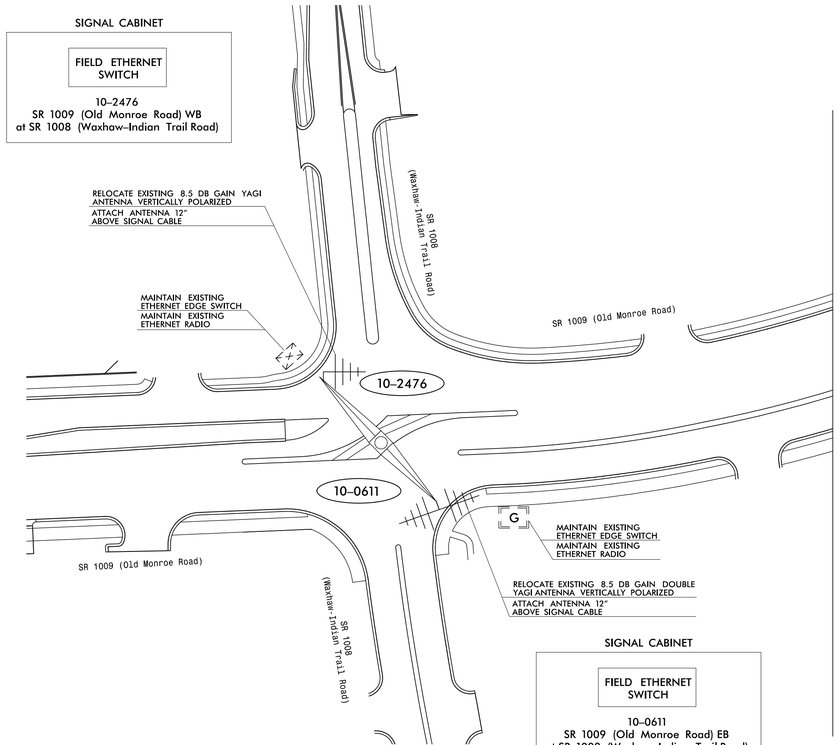
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY

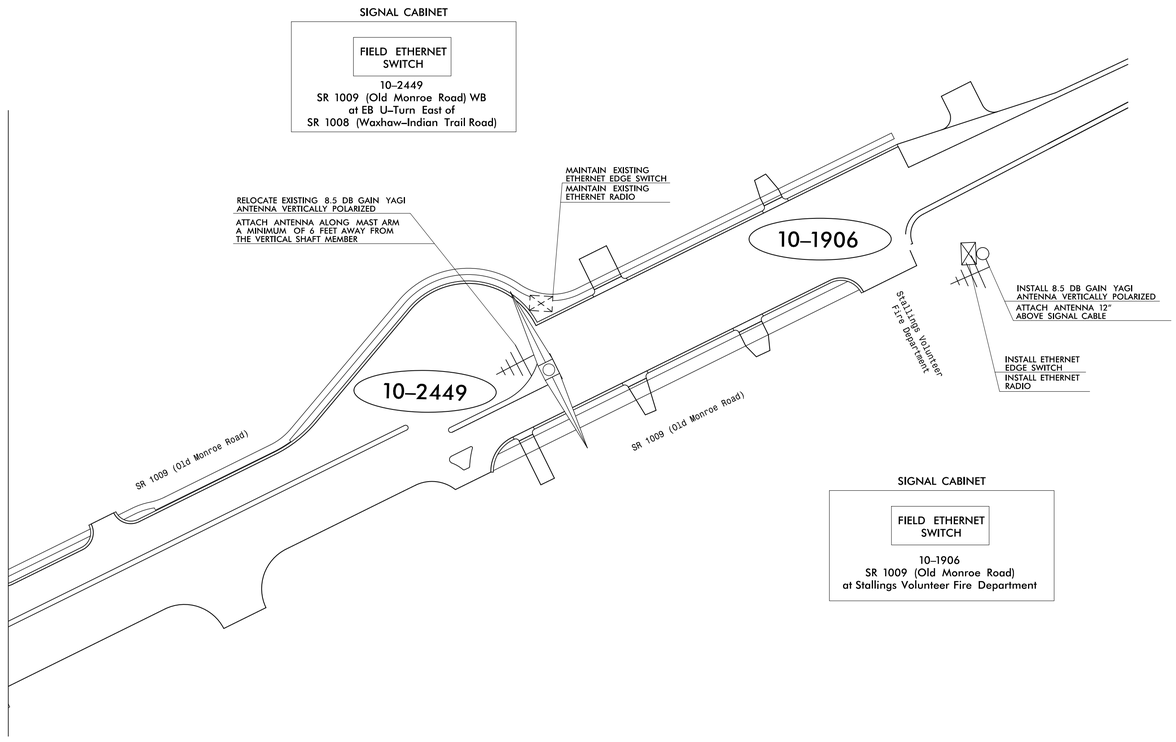
DocuSigned by: Trent Moody 10/15/2026
SIGNATURE DATE

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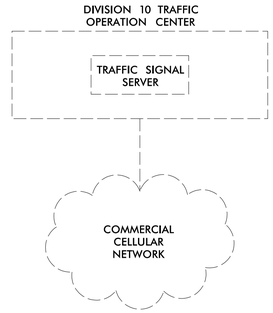
PROJECT REFERENCE NO.	SHEET NO.
U-4714BA	SCP 3





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- NEW CONTROLLER AND CABINET
- EXISTING CONTROLLER AND CABINET
- XX-XXXX — SIGNAL INVENTORY NUMBER
- NEW METAL POLE W/MAST ARM
- EXISTING METAL POLE W/MAST ARM
- NEW METAL STRAIN POLE
- EXISTING METAL STRAIN POLE
- NEW WOOD POLE
- EXISTING WOOD POLE

Final Design - Sheet 2 of 2

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DocuSigned by: Trent Moody 10/15/2026
SIGNATURE DATE

CADD FILE NAME: U-4714BA_SCP_03