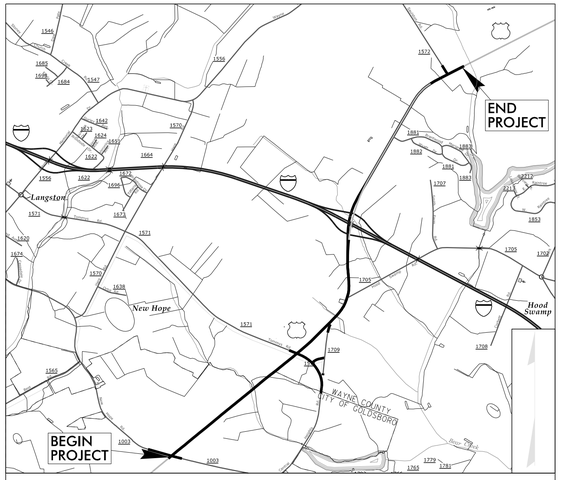
TIP PROJECT: U-3609B

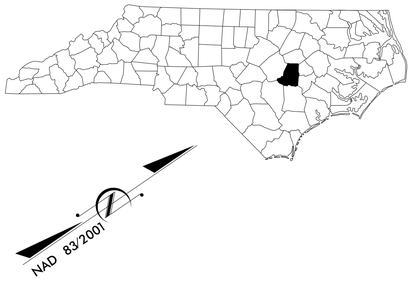
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAYNE COUNTY

Project No.	Sheet No.
U-3609B	SIG-1

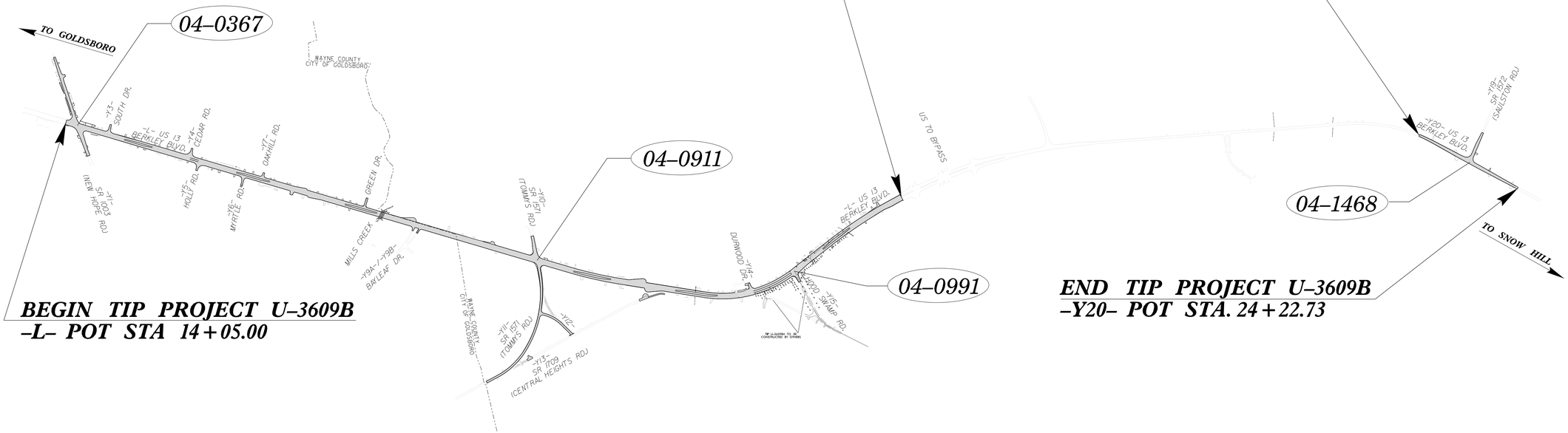


VICINITY MAP



LOCATION: *U.S. 13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO US 70 BYPASS W/ INTERSECTION IMPROVEMENTS AT AT SR 1572 (SAULSTON RD).*

TYPE OF WORK: *TRAFFIC SIGNALS and SIGNAL COMMUNICATIONS*



BEGIN TIP PROJECT U-3609B
-L- POT STA 14+05.00

END CONSTRUCTION
-L- POT STA 125+00.00

BEGIN COSTRUCTION
-Y20- POC STA. 10+25.00

END TIP PROJECT U-3609B
-Y20- POT STA. 24+22.73

INDEX OF PLANS

SHEET NUMBER	LOCATION / DESCRIPTION
Sig. 1.0	TITLE SHEET
Sig. 2.0-12.4	SIGNAL PLANS AND ELECTRICAL DETAILS
M1A-M9	METAL POLE STANDARDS
SCP 1-14	CABLE ROUTING AND FIBER SPLICING PLANS

LEGEND

XX-XXXX — SIGNAL INVENTORY No.

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS

Contacts:

Zack Little, PE – Eastern Region Signals Engineer
Ryan Hough, PE – Signal Equipment Project Engineer
Gregg Green – Signal Communications Project Engineer

Plans Prepared for:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY DIVISION

Transportation Mobility and Safety Division · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

TSMO UNIT

750 N. Greenfield Parkway, Garner, NC 27529

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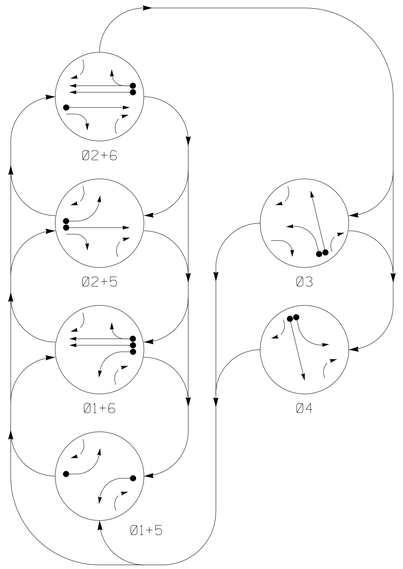
Jason Galloway, PE — *Senior Traffic Engineer*
Regina Muncey, PE — *Senior Transportation Engineer*
James Hambright — *Senior Transportation Technician*

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

11:24:45 AM
U:\Traffic\Signals\Design\Title Sheet\U3609B_sig_tsh.dgn
User:jgalloway

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-2.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

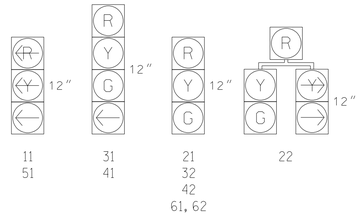
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	FLASH
11	←R	←R	←R	←R	←R	←R	←R
21	R	R	G	G	R	R	R
22	R	R	G	G	R/→	R	R
31	R	R	R	R	G/←	R	R
32	R	R	R	R	G	R	R
41	R	R	R	R	R	G/←	R
42	R	R	R	R	R	G	R
51	←R	←R	←R	←R	←R	←R	←R
61, 62	R	G	R	G	R	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	0	*	*	1	3.0	-	X	-	X	-	*
3A	6X40	0	*	*	3	3.0	-	X	-	X	-	*
3B	6X40	0	*	*	3	-	-	X	-	X	-	*
4A	6X40	0	*	*	4	3.0	-	X	-	X	-	*
4B	6X40	0	*	*	4	-	-	X	-	X	-	*
5A	6X40	0	*	*	5	3.0	-	X	-	X	-	*

* Multi-zone Microwave Detection

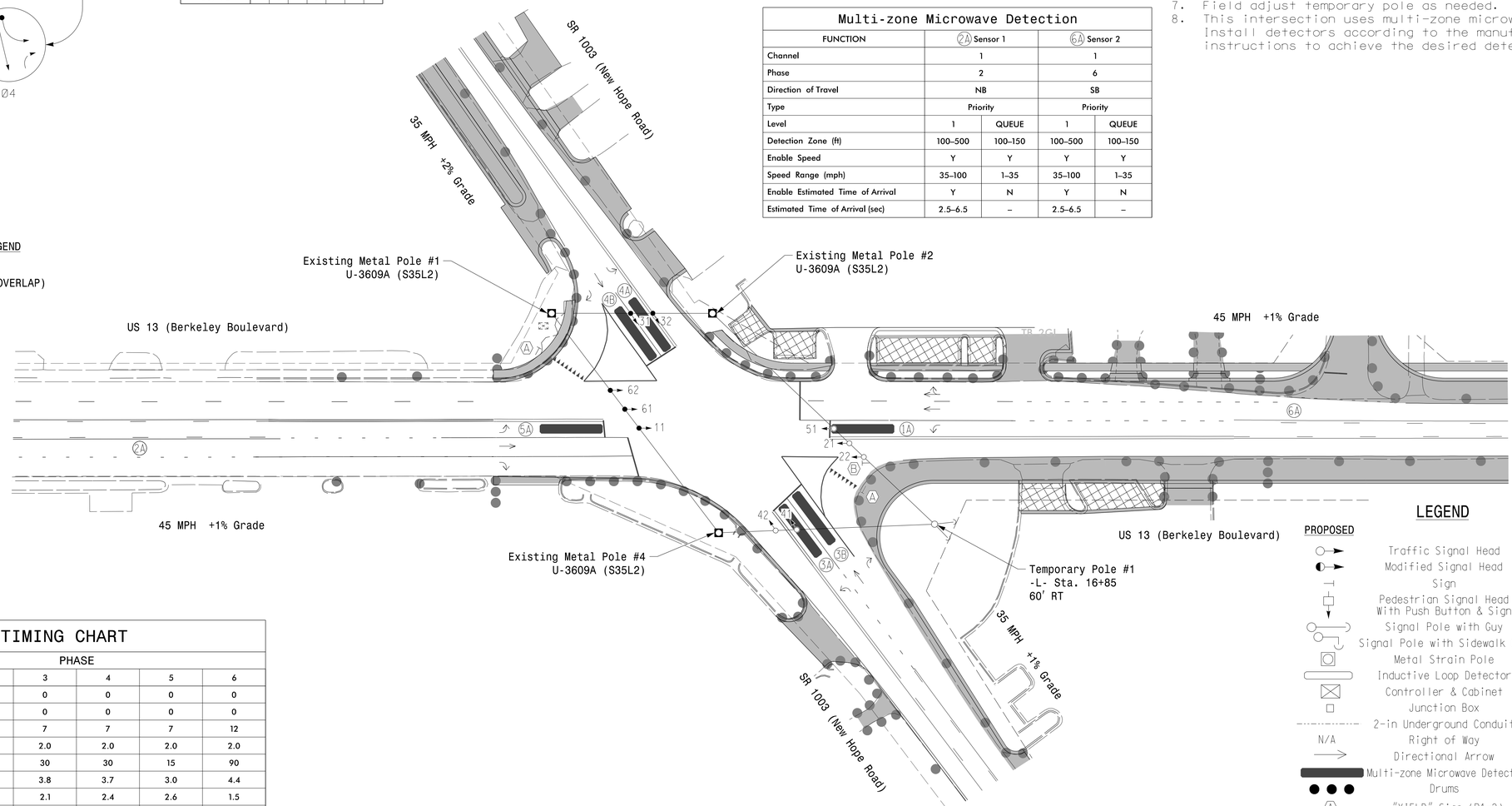
Multi-zone Microwave Detection

FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100–500	100–150	100–500	100–150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35–100	1–35	35–100	1–35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5–6.5	–	2.5–6.5	–

6 Phase Fully Actuated (Goldsboro Signal System)

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. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Field adjust temporary pole as needed.
8. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.



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	●
◯	Metal Strain Pole	◘
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
----------	2-in Underground Conduit	-·-·-·-
N/A	Right of Way	———
→	Directional Arrow	→
▬	Multi-zone Microwave Detection	N/A
●●●	Drums	N/A
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
Ⓑ	Right Turn "ONLY" Sign (R3-5R)	Ⓑ

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12
Passage *	2.0	2.0	2.0	2.0	2.0	2.0
Max 1 *	30	90	30	30	15	90
Yellow Change	3.0	4.4	3.8	3.7	3.0	4.4
Red Clear	2.4	1.5	2.1	2.4	2.6	1.5
Added Initial *	–	–	–	–	–	–
Maximum Initial *	–	–	–	–	–	–
Time Before Reduction *	–	–	–	–	–	–
Time To Reduce *	–	–	–	–	–	–
Minimum Gap	–	–	–	–	–	–
Advance Walk	–	–	–	–	–	–
Non Lock Detector	X	–	X	X	X	–
Vehicle Recall	–	MIN RECALL	–	–	–	MIN RECALL
Dual Entry	–	–	–	–	–	–

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

Signal Upgrade
Temporary Design 1 -TMP Phase I Steps 1 & 2
-TMP Phase II

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

SCALE 0 40 1" = 40'

US 13 (Berkeley Boulevard) at SR 1003 (New Hope Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	J. Galloway
PREPARED BY:	J. Hambright	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

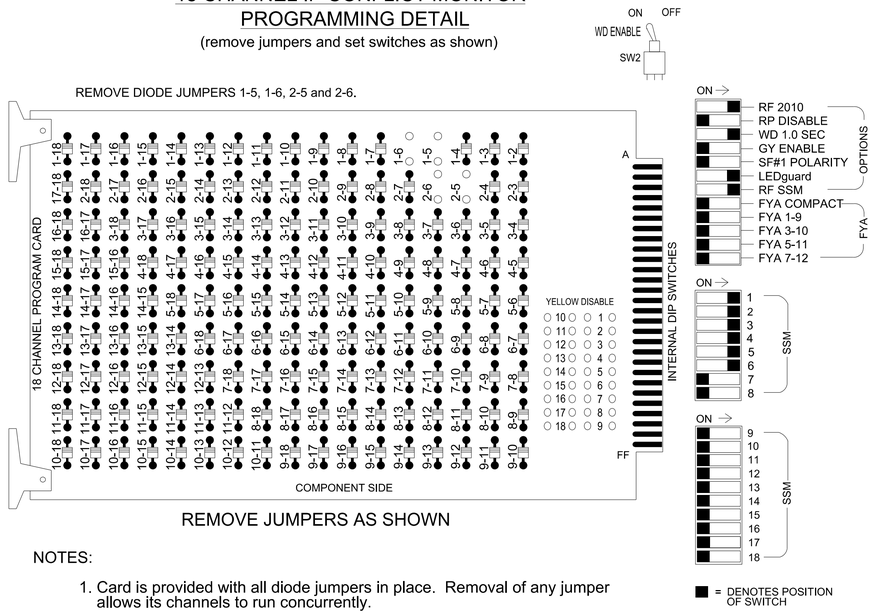
NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P GALLOWAY

Signed by: Jason Galloway 8/18/2025
DocuSigned by: DATE

SIG. INVENTORY NO. 04-0367T1

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 6 Green No Walk.
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 Goldsboro Signal System.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....12
Load Switches Used.....S1,S2,S4,S5,S7,S8
Phases Used.....1,2,3,4,5,6
Overlap "1".....N/A
Overlap "2".....N/A
Overlap "3".....N/A
Overlap "4".....N/A

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-2.1

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4			S5		S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3			4		14	5	6	15	7	8	16
PHASE	1	2	2 PED	3			4		4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21.22	NU	22	31	32	41	42	NU	51	61,62	NU	NU	NU	NU
RED		128			116	116	101	101			134				
YELLOW		129			117	117	102	102			135				
GREEN		130			118	118	103	103			136				
RED ARROW	125									131					
YELLOW ARROW	126			117						132					
FLASHING YELLOW ARROW															
GREEN ARROW	127			118	118		103			133					

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	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 multi-zone microwave detection system for vehicle detection. Perform installation according to manufacturer's directions and engineer -approved mounting locations to accomplish the NCDOT detection schemes shown on the Signal Design Plans.

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0367T1
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

TMP Phase I Steps 1 & 2
TMP Phase II
Temporary 1 Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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www.stantec.com
License No. F-0672

Electrical and Programming Details For:

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

US 13 (Berkeley Boulevard)
at
SR 1003 (New Hope Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025	REVIEWED BY: D A Waller
PREPARED BY: J Galloway	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

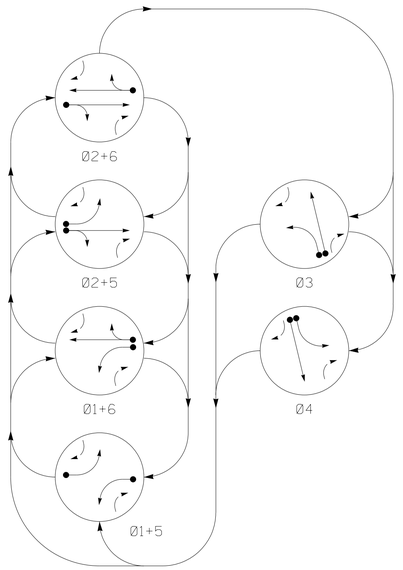
NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON G. GALLOWAY

Signed by: Jason Galloway
10D1E2B4084846E...
SIGNATURE 8/18/2025
DATE

SIG. INVENTORY NO. 04-0367T1

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-3.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

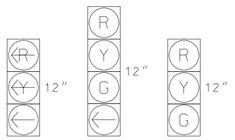
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	FLASH
11	←̶	←̶	←̶R	←̶R	←̶R	←̶R	←̶R
21, 22	R	R	G	G	R	R	R
31	R	R	R	R	G←	R	R
32	R	R	R	R	G	R	R
41	R	R	R	R	R	G←	R
42	R	R	R	R	R	G	R
51	←̶	←̶R	←̶	←̶R	←̶R	←̶R	←̶R
61, 62	R	G	R	G	R	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	0	*	*	1	3.0	-	X	-	X	-	*
3A	6X40	0	*	*	3	3.0	-	X	-	X	-	*
3B	6X40	0	*	*	3	-	-	X	-	X	-	*
4A	6X40	0	*	*	4	3.0	-	X	-	X	-	*
4B	6X40	0	*	*	4	-	-	X	-	X	-	*
5A	6X40	0	*	*	5	3.0	-	X	-	X	-	*

* Multi-zone Microwave Detection

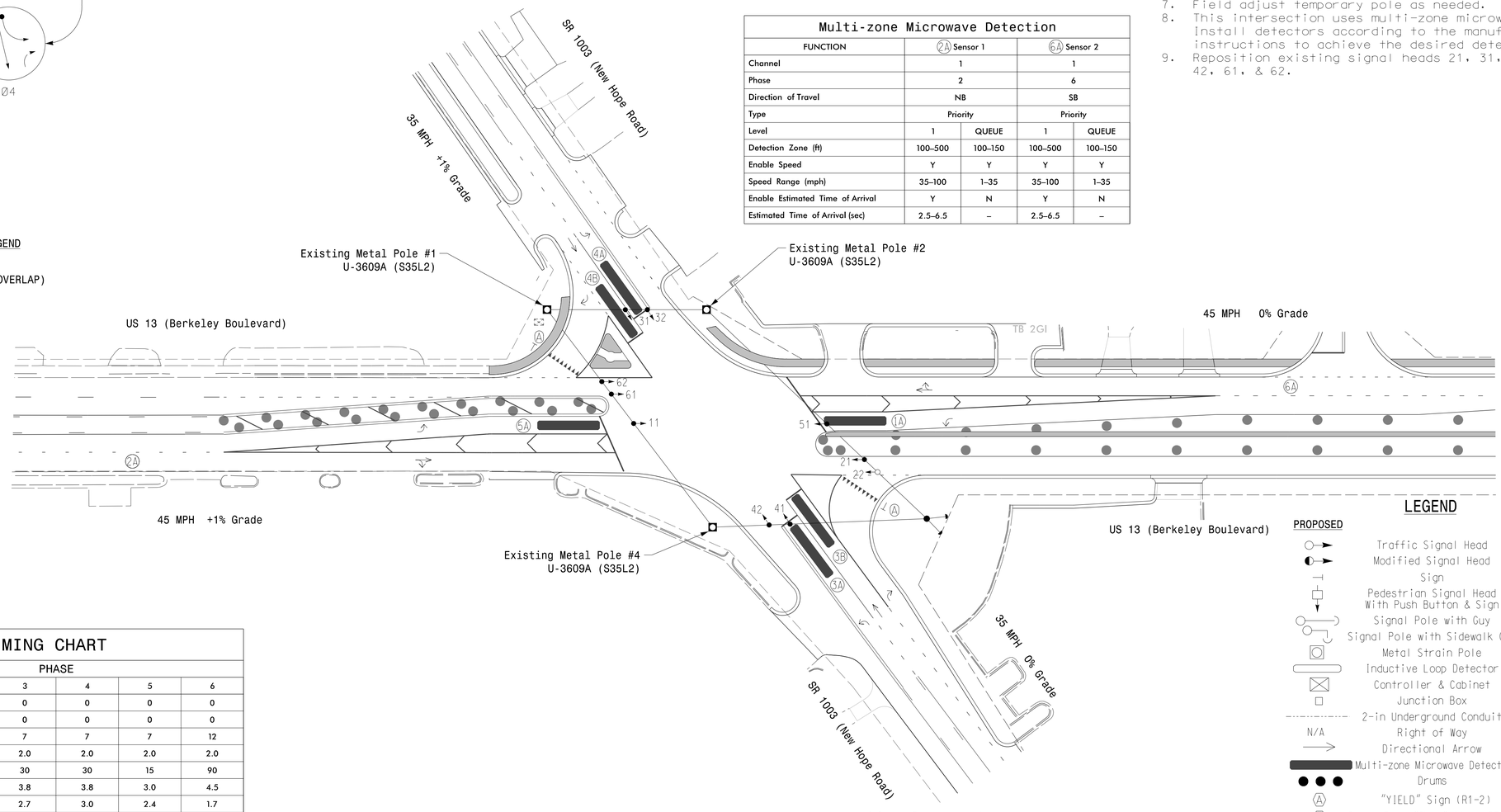
Multi-zone Microwave Detection

FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100-500	100-150	100-500	100-150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35-100	1-35	35-100	1-35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5-6.5	-	2.5-6.5	-

6 Phase
Fully Actuated
(Goldsboro Signal System)

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. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Field adjust temporary pole as needed.
8. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
9. Reposition existing signal heads 21, 31, 32, 41, 42, 61, & 62.



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	●→
◎	Metal Strain Pole	◘
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
----------	2-in Underground Conduit	----------
N/A	Right of Way	----------
→	Directional Arrow	→
▬	Multi-zone Microwave Detection	N/A
● ● ●	Drums	N/A
(A)	"YIELD" Sign (R1-2)	(A)
(B)	Right Turn "ONLY" Sign (R3-5R)	(B)

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	7	12
Passage *	2.0	2.0	2.0	2.0	2.0	2.0
Max 1 *	30	90	30	30	15	90
Yellow Change	3.0	4.5	3.8	3.8	3.0	4.5
Red Clear	2.1	1.7	2.7	3.0	2.4	1.7
Added Initial *	–	–	–	–	–	–
Maximum Initial *	–	–	–	–	–	–
Time Before Reduction *	–	–	–	–	–	–
Time To Reduce *	–	–	–	–	–	–
Minimum Gap	–	–	–	–	–	–
Advance Walk	–	–	–	–	–	–
Non Lock Detector	X	–	X	X	X	–
Vehicle Recall	–	MIN RECALL	–	–	–	MIN RECALL
Dual Entry	–	–	–	–	–	–

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

Signal Upgrade
Temporary Design 2 - TMP Phase III

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

SCALE 0 40 1" = 40'

US 13 (Berkeley Boulevard) at SR 1003 (New Hope Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	J. Galloway
PREPARED BY:	J. Hambright	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

Signed by: Jason Galloway 8/18/2025
DocuSigned by: DATE

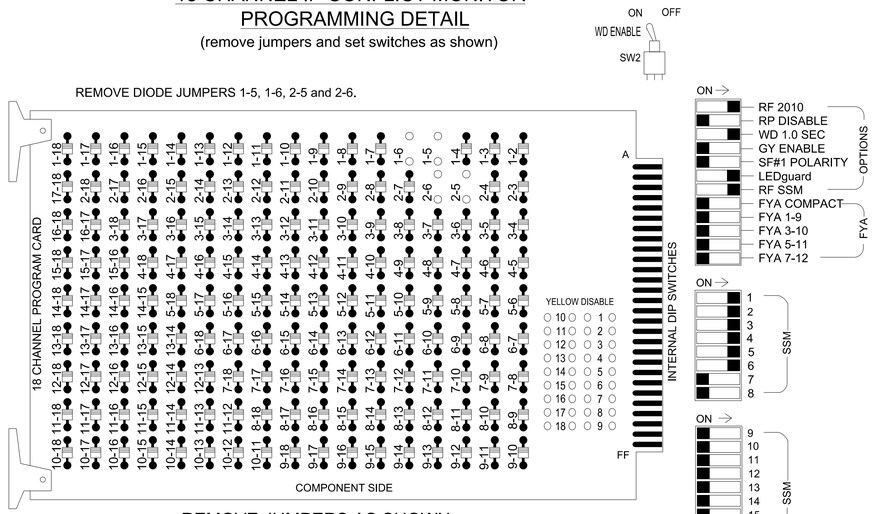
SIG. INVENTORY NO. 04-0367T2

$$$$$$SYSDATE$$$$$
11:25:08 AM
U:\Traffic\Projects\Design\Signal Design\Temporary Design\04036T2_sig_dsn.dgn
User:jgalloway

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-3.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

= DENOTES POSITION OF SWITCH

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 6 Green No Walk.
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 Goldsboro Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4		S5		S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3		4		14	5	6	15	7	8	16
PHASE	1	2	2 PED	3		4		4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21.22	NU	31	32	41	42	NU	51	61,62	NU	NU	NU	NU
RED		128		116	116	101	101			134				
YELLOW		129		117	117	102	102			135				
GREEN		130		118	118	103	103			136				
RED ARROW	125								131					
YELLOW ARROW	126								132					
FLASHING YELLOW ARROW														
GREEN ARROW	127			118		103			133					

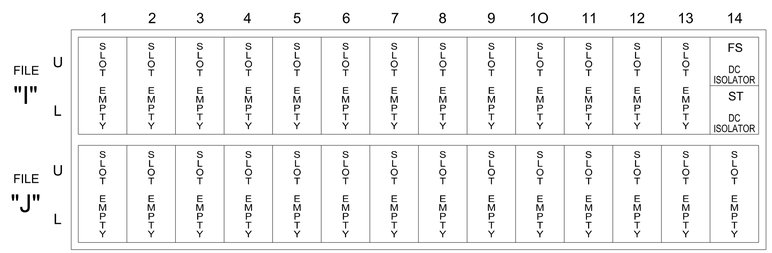
NU = Not Used

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....12
Load Switches Used.....S1,S2,S4,S5,S7,S8
Phases Used.....1,2,3,4,5,6
Overlap "1".....N/A
Overlap "2".....N/A
Overlap "3".....N/A
Overlap "4".....N/A

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

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

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0367T2
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

TMP Phase III
Temporary 2 Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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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 Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 13 (Berkeley Boulevard)
at
SR 1003 (New Hope Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025	REVIEWED BY: D A Waller
PREPARED BY: J Galloway	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON G. GALLOWAY

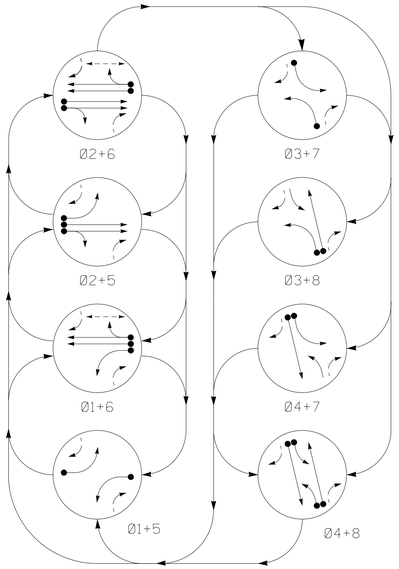
Signed by: Jason Galloway
10D1E2B4084846E...
SIGNATURE

8/18/2025
DATE

SIG. INVENTORY NO. 04-0367T2

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-4.0

DEFAULT PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

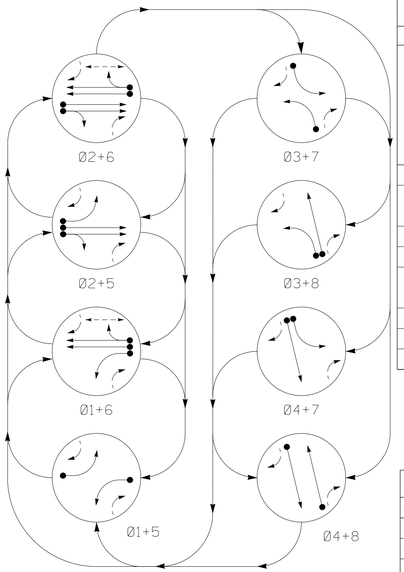
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	↩R	↩R	↩R	↩R	↩R	↩R	↩R
21, 22	R	R	G	G	R	R	R	R	R
31	↩R	↩R	↩R	↩R	←	←	FY	FY	↩R
41, 42	R	R	R	R	R	R	G	G	R
51	←	↩R	←	↩R	↩R	↩R	↩R	↩R	↩R
61, 62	R	G	R	G	R	R	R	R	R
71	↩R	↩R	↩R	↩R	←	←	FY	←	↩R
81, 82	R	R	R	R	R	G	R	G	R
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	↩R	↩R	↩R	↩R	↩R	↩R	↩R
21, 22	R	R	G	G	R	R	R	R	R
31	↩R	↩R	↩R	↩R	←	←	↩R	↩R	↩R
41, 42	R	R	R	R	R	R	G	G	R
51	←	↩R	←	↩R	↩R	↩R	↩R	↩R	↩R
61, 62	R	G	R	G	R	R	R	R	R
71	↩R	↩R	↩R	↩R	←	←	↩R	↩R	↩R
81, 82	R	R	R	R	R	G	R	G	R
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK

ALTERNATE PHASING DIAGRAM



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	0	*	*	1	3.0	-	X	-	X	-	*
3A	6X40	0	*	*	3	15.0✳	-	X	-	X	-	*
					8#	3.0	-	X	-	X	-	*
4A	6X40	0	*	*	4	3.0	-	X	-	X	-	*
5A	6X40	0	*	*	5	3.0	-	X	-	X	-	*
7A	6X40	0	*	*	7	15.0✳	-	X	-	X	-	*
					4#	3.0	-	X	-	X	-	*
8A	6X40	0	*	*	8	3.0	-	X	-	X	-	*
S1	6X6	+200	3	X	-	-	-	-	-	-	-	X
S2	6X6	+200	3	X	-	-	-	-	-	-	-	X

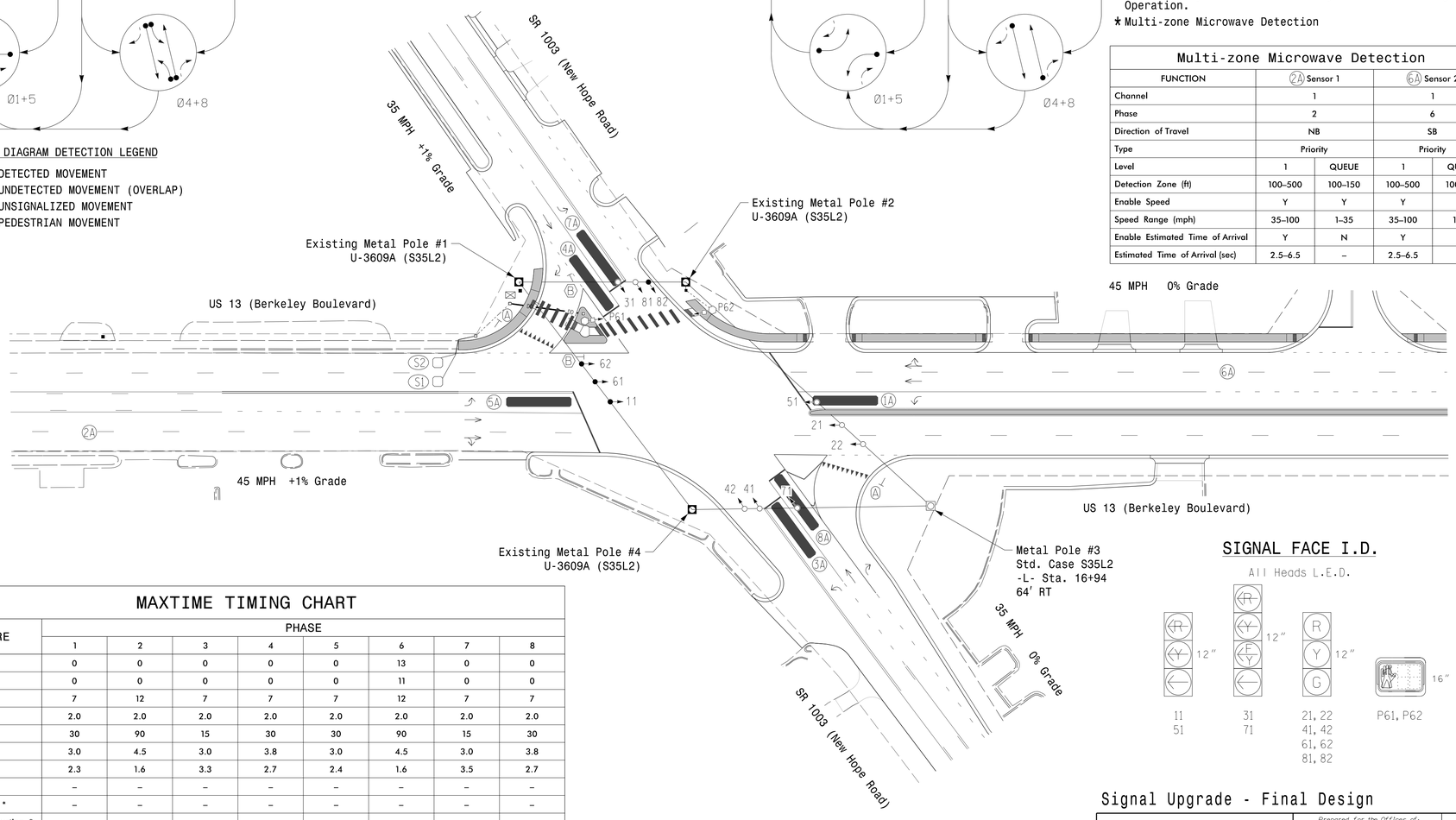
Disable Phase Call For Loops During Alternate Phasing Operation.

✳ Reduce Delay to 3 Seconds During Alternate Phasing Operation.

* Multi-zone Microwave Detection

Multi-zone Microwave Detection

FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100–500	100–150	100–500	100–150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35–100	1–35	35–100	1–35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5–6.5	–	2.5–6.5	–



MAXTIME TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Walk *	0	0	0	0	0	13	0	0
Ped Clear	0	0	0	0	0	11	0	0
Min Green *	7	12	7	7	7	12	7	7
Passage *	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Max 1 *	30	90	15	30	30	90	15	30
Yellow Change	3.0	4.5	3.0	3.8	3.0	4.5	3.0	3.8
Red Clear	2.3	1.6	3.3	2.7	2.4	1.6	3.5	2.7
Added Initial *	–	–	–	–	–	–	–	–
Maximum Initial *	–	–	–	–	–	–	–	–
Time Before Reduction *	–	–	–	–	–	–	–	–
Time To Reduce *	–	–	–	–	–	–	–	–
Minimum Gap	–	–	–	–	–	–	–	–
Advance Walk	–	–	–	–	–	6	–	–
Non Lock Detector	X	–	X	X	X	–	X	X
Vehicle Recall	–	MIN RECALL	–	–	–	MIN RECALL	–	–
Dual Entry	–	–	–	X	–	–	–	X

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

SIGNAL FACE I.D.

All Heads L.E.D.

8 Phase Fully Actuated (Goldsboro Signal System)

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. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 11, 61, 62, and 82.
6. Set all detector units to presence mode.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
10. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
12. Install new cabinet and controller on existing foundation.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○)	Signal Pole with Guy	●)
○))	Signal Pole with Sidewalk Guy	●))
▭	Inductive Loop Detector	▭
▬	Multi-zone Microwave Detection	N/A
⊠	Controller & Cabinet	⊠
□	Junction Box	■
-----	2-in Underground Conduit	-----
N/A	Right of Way	-----
→	Directional Arrow	→
◯	Metal Strain Pole	◘
(A)	"YIELD" Sign (R1-2)	(A)
(B)	Right "TURNING VEHICLES" Yield "TO" Pedestrians Sign (R10-15R)	(B)

Signal Upgrade - Final Design

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

US 13 (Berkeley Boulevard) at SR 1003 (New Hope Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025 REVIEWED BY: J. Galloway

PREPARED BY: J. Hambright REVIEWED BY: R M Muncey

SCALE: 0 40 1" = 40'

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P GALLOWAY

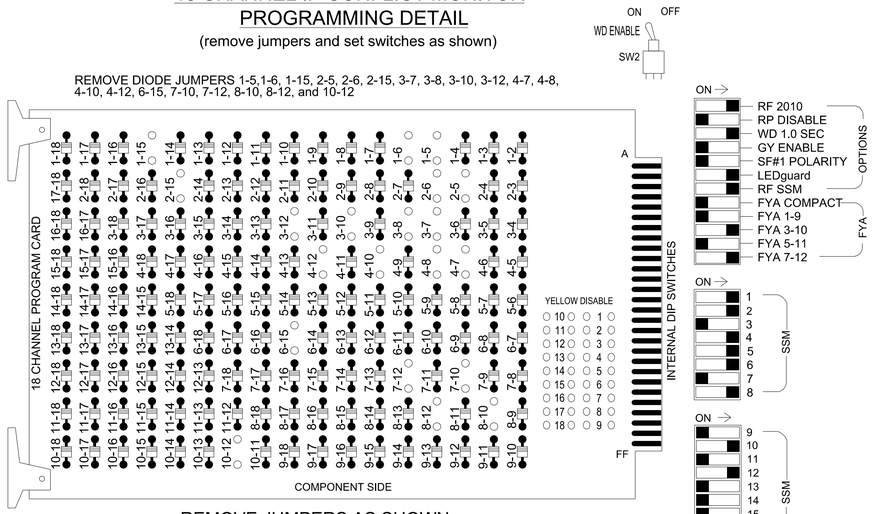
Signed by: Jason Galloway 8/18/2025
DocuSigned by: DATE

SIG. INVENTORY NO. 04-0367

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-4.1

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.

= DENOTES POSITION OF SWITCH

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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
5. The cabinet and controller are part of the Goldsboro 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.....S1, S2, S4, S5, S7, S8, S9, S10, S11, AUX S2, AUX S5
Phases Used.....1, 2, 3, 4, 5, 6, 6PED, 7, 8
Overlap "1".....N/A
Overlap "2".....*
Overlap "3".....N/A
Overlap "4".....*

*See overlap programming detail on sheet 2

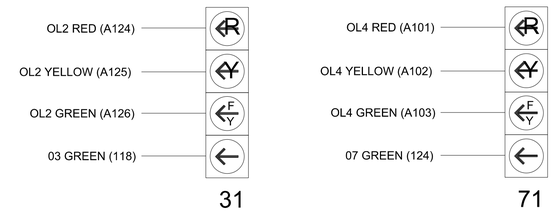
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	NU	31★	41,42	NU	51	61,62	P61, P62	71★	81,82	NU	NU	31★	NU	NU	71★	NU
RED		128			101			134			107							
YELLOW		129		*	102			135		*	108							
GREEN		130			103			136			109							
RED ARROW	125						131							A124			A101	
YELLOW ARROW	126						132							A125			A102	
FLASHING YELLOW ARROW														A126			A103	
GREEN ARROW	127			118			133			124								
									119									
									121									

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	∅ 3 3A NOT USED	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SYS. DET. S1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	∅ 6 PED DC ISOLATOR NOT USED	FS DC ISOLATOR ST DC ISOLATOR
	L									SYS. DET. S2					
FILE "J"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	∅ 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
3A	TB4-5,6	I5U	58	20	7★	3	15.0		X		X	
				-	30★	8	3.0		X		X	
*S1	TB6-9,10	I9U	60	22	13	SYS						
*S2	TB6-11,12	I9L	62	24	14	SYS						
7A	TB5-5,6	J5U	57	19	21★	7	15.0		X		X	
				-	32★	4	3.0		X		X	
PED PUSH BUTTONS												
P61,P62	TB8-7,9	I13U	68	34	6	PED 6						

NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS I13.

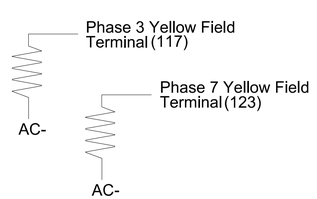
*System detector only. Remove any assigned vehicle phase.
★For the detectors to work as shown on the signal desing plan, see the MAXTIME Detector Programming Detail for Alternate Phasing on sheet 2.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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)



SPECIAL DETECTOR NOTE

Install a multi-zone 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.

Detector card placement for loops 3A and 7A are typical for a NCDOT installation. Inputs accociated with these slots are compatible with time of day instructions located on sheet 2 of this electrical detail.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0367
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

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

Electrical and Programming Details For:

US 13 (Berkeley Boulevard)
at
SR 1003 (New Hope Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025	REVIEWED BY: D A Waller
PREPARED BY: J Galloway	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY
Signed by: Jason Galloway 100182B4084846E...
8/18/2025
SIGNATURE DATE

SIG. INVENTORY NO. 04-0367

Final Electrical Detail - Sheet 1 of 2

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11:25:19 AM
U:\Traffic Signals\Design\Electrical Details\Final Design\040367_ele_dsn.dgn
User:jgalloway

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-4.2

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 31 and 71 to run protected turns only.

VEH DET PLAN 2: Disables phase 8 call on loop 3A and reduces delay time for phase 3 call on loop 3A to 3.0 seconds.

Disables phase 4 call on loop 7A and reduces delay time for phase 7 call on loop 7A to 3.0 seconds.

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.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 3A & 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

3A

Detector	Call Phase	Delay
7	3	3.0
30	0	-

7A

Detector	Call Phase	Delay
21	7	3.0
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	2	4
Type	FYA 4 - Section	FYA 4 - Section
Included Phases	4	8
Modifier Phases	3	7
Modifier Overlaps	-	-
Trail Green	0	0
Trail Yellow	0.0	0.0
Trail Red	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	2	4
Type	FYA 4 - Section	FYA 4 - Section
Included Phases	-	-
Modifier Phases	3	7
Modifier Overlaps	-	-
Trail Green	0	0
Trail Yellow	0.0	0.0
Trail Red	0.0	0.0

← NOTICE INCLUDED PHASE

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0367
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Final Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Traffic Engineering Branch
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750 N. Greenfield Pkwy, Garner, NC 27529

US 13 (Berkeley Boulevard)
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Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	D A Waller
PREPARED BY:	J Galloway	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

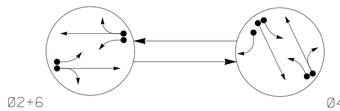
NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON F. GALLOWAY

Signed by: Jason Galloway 10D1E2B4084846E...
SIGNATURE 8/18/2025 DATE

SIG. INVENTORY NO. 04-0367

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-5.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

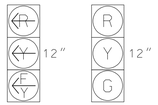
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21	~~FY~~	~~R~~	~~R~~
22, 23	G	R	R
41	~~R~~	~~FY~~	~~R~~
42, 43, 44	R	G	R
61	~~FY~~	~~R~~	~~R~~
62, 63	G	R	R
81	~~R~~	~~FY~~	~~R~~
82, 83	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



21
41
61
81

22, 23
42, 43, 44
62, 63
82, 83

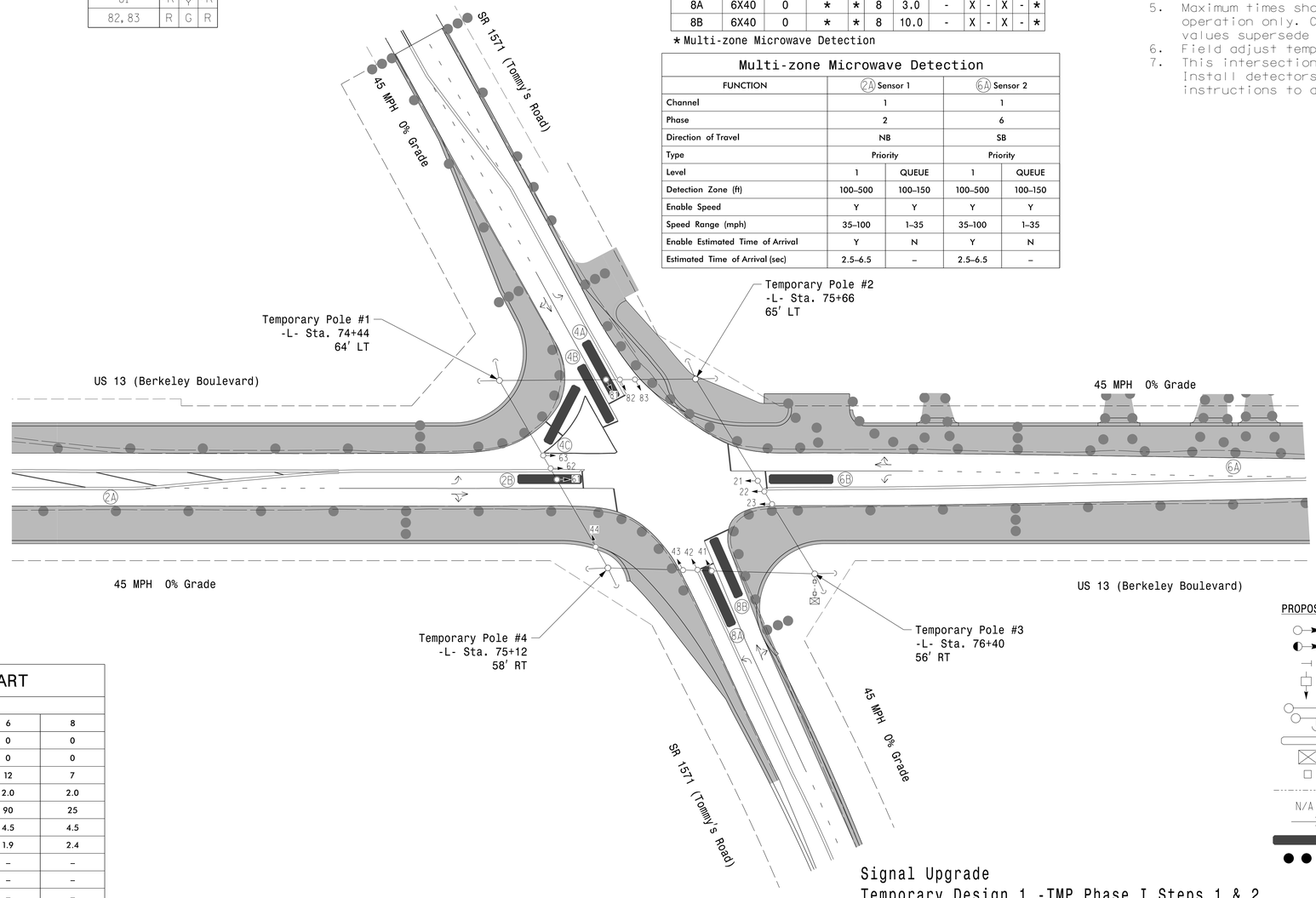
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
2B	6X40	0	*	*	2	-	-	X	-	X	-	*
4A	6X40	0	*	*	4	3.0	-	X	-	X	-	*
4B	6X40	0	*	*	4	3.0	-	X	-	X	-	*
4C	6X40	+10	*	*	4	15.0	-	X	-	X	-	*
6B	6X40	0	*	*	6	-	-	X	-	X	-	*
8A	6X40	0	*	*	8	3.0	-	X	-	X	-	*
8B	6X40	0	*	*	8	10.0	-	X	-	X	-	*

* Multi-zone Microwave Detection

Multi-zone Microwave Detection

FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100–500	100–150	100–500	100–150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35–100	1–35	35–100	1–35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5–6.5	–	2.5–6.5	–



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	12	7	12	7
Passage *	2.0	2.0	2.0	2.0
Max 1 *	90	25	90	25
Yellow Change	4.5	4.5	4.5	4.5
Red Clear	1.9	2.4	1.9	2.4
Added Initial *	–	–	–	–
Maximum Initial *	–	–	–	–
Time Before Reduction *	–	–	–	–
Time To Reduce *	–	–	–	–
Minimum Gap	–	–	–	–
Advance Walk	–	–	–	–
Non Lock Detector	–	X	–	X
Vehicle Recall	MIN RECALL	–	MIN RECALL	–
Dual Entry	–	X	–	X

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

2 Phase
Fully Actuated
(Goldsboro Signal System)

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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
6. Field adjust temporary poles as needed.
7. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○	Signal Pole with Guy	●
○	Signal Pole with Sidewalk Guy	●
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
-·-·-·-	2-in Underground Conduit	-·-·-·-
N/A	Right of Way	— — — —
→	Directional Arrow	→
▬	Multi-zone Microwave Detection	N/A
● ● ●	Drums	N/A

Signal Upgrade
Temporary Design 1 -TMP Phase I Steps 1 & 2
-TMP Phase II

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

SCALE 0 40 1" = 40'

US 13 (Berkeley Boulevard)
at
SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025 REVIEWED BY: J. Galloway
PREPARED BY: J. Hambright REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

Signed by: Jason Galloway 8/18/2025
DocuSigned by: DATE

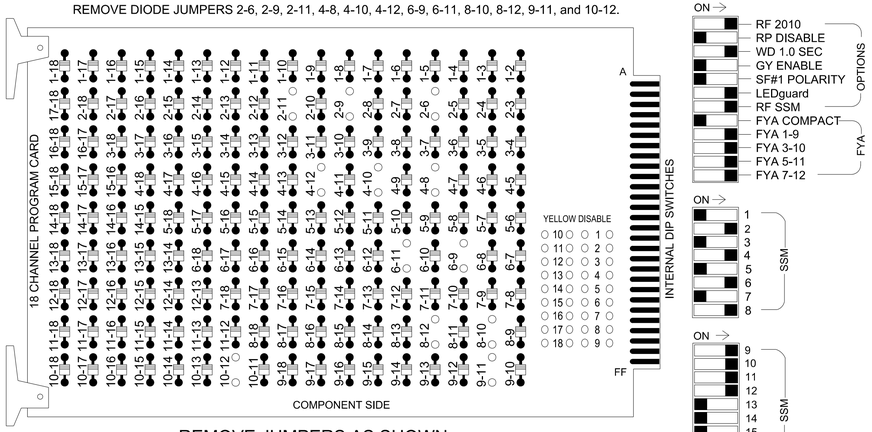
SIG. INVENTORY NO. 04-0911T1

$$$$$$SYSDATE$$$$$$
11:25:28 AM
User:jgalloway
U:\Traffic\Signals\Design\Signal Design\Temporary Design\04091111_sig_dsn.dgn

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-6, 2-9, 2-11, 4-8, 4-10, 4-12, 6-9, 6-11, 8-10, 8-12, 9-11, and 10-12.



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.

■ = DENOTES POSITION OF SWITCH

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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
5. The cabinet and controller are part of the Goldsboro 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,S5,S8,S11,AUX S1,AUX S2, AUX S4,AUX S5
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

* See Overlap Programming

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-5.1

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	22,23	NU	NU	42,43 44	NU	NU	62,63	NU	NU	82,83	NU	61 ★	81 ★	NU	21 ★	41 ★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW																		

NU = Not Used
★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	1O	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 multi-zone 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.

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	-	-	-	-
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

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	Unit Flash Parameters
StartUp Clearance Hold	All Red Flash Exit Time
6	6

TMP Phase I; Steps 1 & 2
TMP Phase II
Temporary 1 Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0911T1
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Stantec
Stantec Consulting Services Inc.
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Electrical and Programming Details For:

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

US 13 (Berkeley Boulevard)
at
SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	D A Waller
PREPARED BY:	J Galloway	REVIEWED BY:	R M Muncey

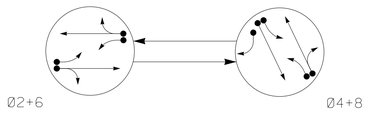
REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029904 JASON P. GALLOWAY
Signed by: Jason Galloway 10D1E2B40B4846E...
8/18/2025
SIGNATURE DATE

SIG. INVENTORY NO. 04-0911T1

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-6.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

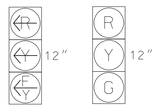
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21	~~FY~~	~~R~~	~~R~~
22, 23	G	R	R
41	~~R~~	~~FY~~	~~R~~
42, 43, 44	R	G	R
61	~~FY~~	~~R~~	~~R~~
62, 63	G	R	R
81	~~R~~	~~FY~~	~~R~~
82, 83	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



21	22, 23
41	42, 43, 44
61	62, 63
81	82, 83

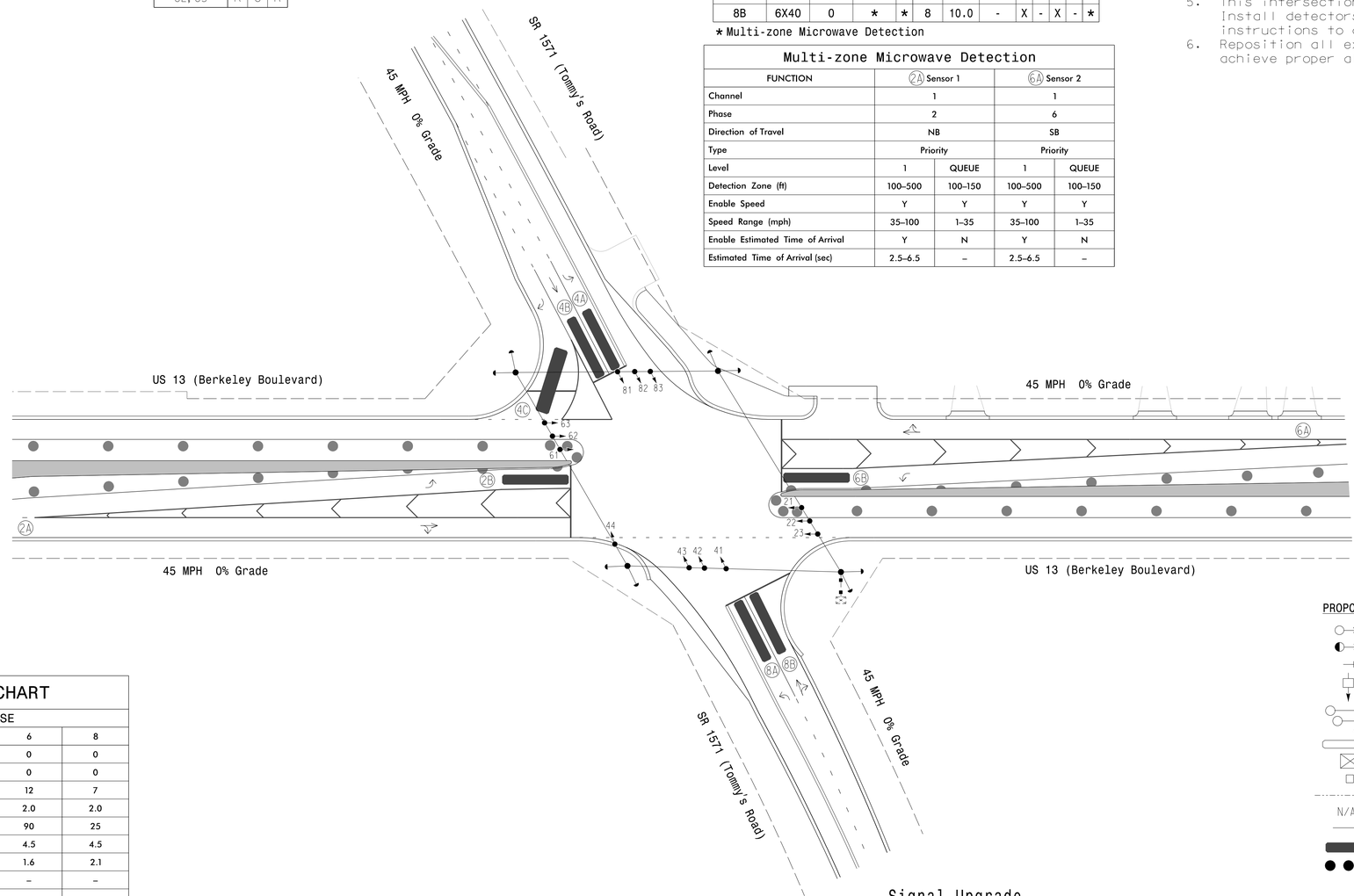
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
2B	6X40	0	*	*	2	-	-	X	-	X	-	*
4A	6X40	0	*	*	4	3.0	-	X	-	X	-	*
4B	6X40	0	*	*	4	3.0	-	X	-	X	-	*
4C	8X40	0	*	*	4	15.0	-	X	-	X	-	*
6B	6X40	0	*	*	6	-	-	X	-	X	-	*
8A	6X40	0	*	*	8	3.0	-	X	-	X	-	*
8B	6X40	0	*	*	8	10.0	-	X	-	X	-	*

* Multi-zone Microwave Detection

Multi-zone Microwave Detection

FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100–500	100–150	100–500	100–150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35–100	1–35	35–100	1–35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5–6.5	–	2.5–6.5	–



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Min Green *	12	7	12	7
Passage *	2.0	2.0	2.0	2.0
Max 1 *	90	25	90	25
Yellow Change	4.5	4.5	4.5	4.5
Red Clear	1.6	2.1	1.6	2.1
Added Initial *	–	–	–	–
Maximum Initial *	–	–	–	–
Time Before Reduction *	–	–	–	–
Time To Reduce *	–	–	–	–
Minimum Gap	–	–	–	–
Advance Walk	–	–	–	–
Non Lock Detector	–	X	–	X
Vehicle Recall	MIN RECALL	–	MIN RECALL	–
Dual Entry	–	X	–	X

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

2 Phase
Fully Actuated
(Goldsboro Signal System)

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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
5. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
6. Reposition all existing signal heads as necessary to achieve proper alignment for each lane approach.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Multi-zone Microwave Detection	N/A
	Drums	N/A

Signal Upgrade
Temporary Design 2 -TMP Phase III

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License No. F-0672

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

SCALE
0 40
1" = 40'

US 13 (Berkeley Boulevard) at SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025 REVIEWED BY: J. Galloway
PREPARED BY: J. Hambright REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

Signed by: Jason Galloway 8/18/2025
DOCUSIGNED BY: DATE

SIG. INVENTORY NO. 04-0911T2

$$$$$$$SYSDATE$$$$$$
11:25:36 AM
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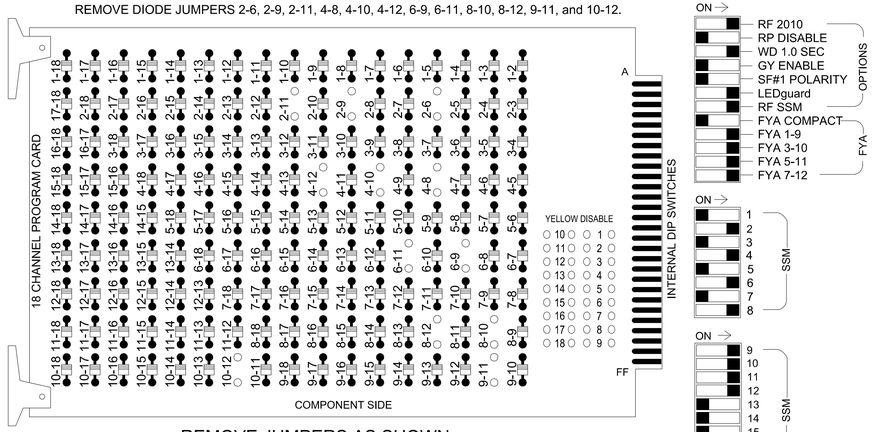
User:jgalloway

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-6, 2-9, 2-11, 4-8, 4-10, 4-12, 6-9, 6-11, 8-10, 8-12, 9-11, and 10-12.



■ = DENOTES POSITION OF SWITCH

REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that 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)

"I"	1	2	3	4	5	6	7	8	9	1O	11	12	13	14
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
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 multi-zone 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.

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
5. The cabinet and controller are part of the Goldsboro 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,S5,S8,S11,AUX S1,AUX S2, AUX S4,AUX S5
Phases Used.....2, 4, 6, 8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

* See Overlap Programming

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section
Included Phases	2	4	6	8
Modifier Phases	-	-	-	-
Modifier Overlaps	-	-	-	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-6.1

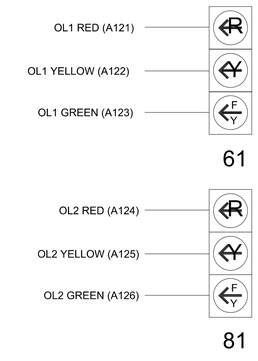
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	22,23	NU	NU	42,43 44	NU	NU	62,63	NU	NU	82,83	NU	61 ★	81 ★	NU	21 ★	41 ★	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW																		

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0911T2
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

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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

Electrical and Programming Details For:

US 13 (Berkeley Boulevard)
at
SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	D A Waller
PREPARED BY:	J Galloway	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY
Signed by: Jason Galloway 8/18/2025
10D1E2B40B4846E...
SIGNATURE DATE

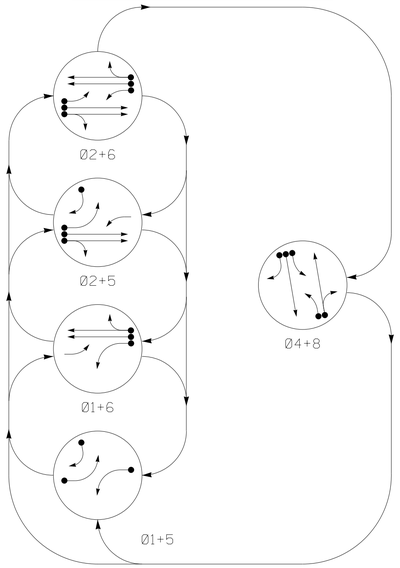
SIG. INVENTORY NO. 04-0911T2

TMP Phase III
Temporary 2 Electrical Detail

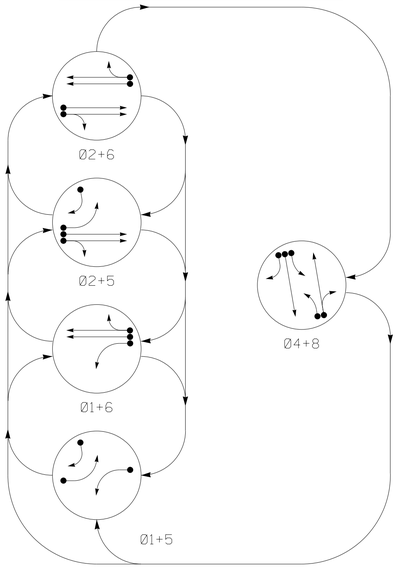
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-7.0

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←̶	←̶	←R	←R	←R	←R
21, 22	R	R	G	G	R	R
41	←R	←R	←R	←R	←F_Y	←R
42, 43	R	R	R	R	G	R
44	→̶	R	→̶	R	→̶	R
51	←̶	←R	←̶	←R	←R	←R
61, 62	R	G	R	G	R	R
81	←R	←R	←R	←R	←F_Y	←R
82, 83	R	R	R	R	G	R

MAXTIME DETECTOR INSTALLATION CHART

DETECTOR LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X40	0	*	*	1	15.0✳	-	X	-	X	-	*
					6#	-	-	X	-	X	-	*
4A	6X40	0	*	*	4	3.0	-	X	-	X	-	*
4B	6X40	0	*	*	4	3.0	-	X	-	X	-	*
5A	6X40	0	*	*	5	15.0✳	-	X	-	X	-	*
					2#	-	-	X	-	X	-	*
5B	8X40	+10	*	*	5	15.0	-	X	-	X	-	*
8A	6X40	0	*	*	8	3.0	-	X	-	X	-	*
8B	6X40	0	*	*	8	10	-	X	-	X	-	*

\# Disable Phase Call For Loops During Alternate Phasing Operation.

✳ Reduce Delay to 0 Seconds During Alternate Phasing Operation.

★ Multi-zone Microwave Detection

5 Phase Fully Actuated (Goldsboro Signal System)

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. Phase 1 and/or phase 5 may be lagged.
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.

Multi-zone Microwave Detection

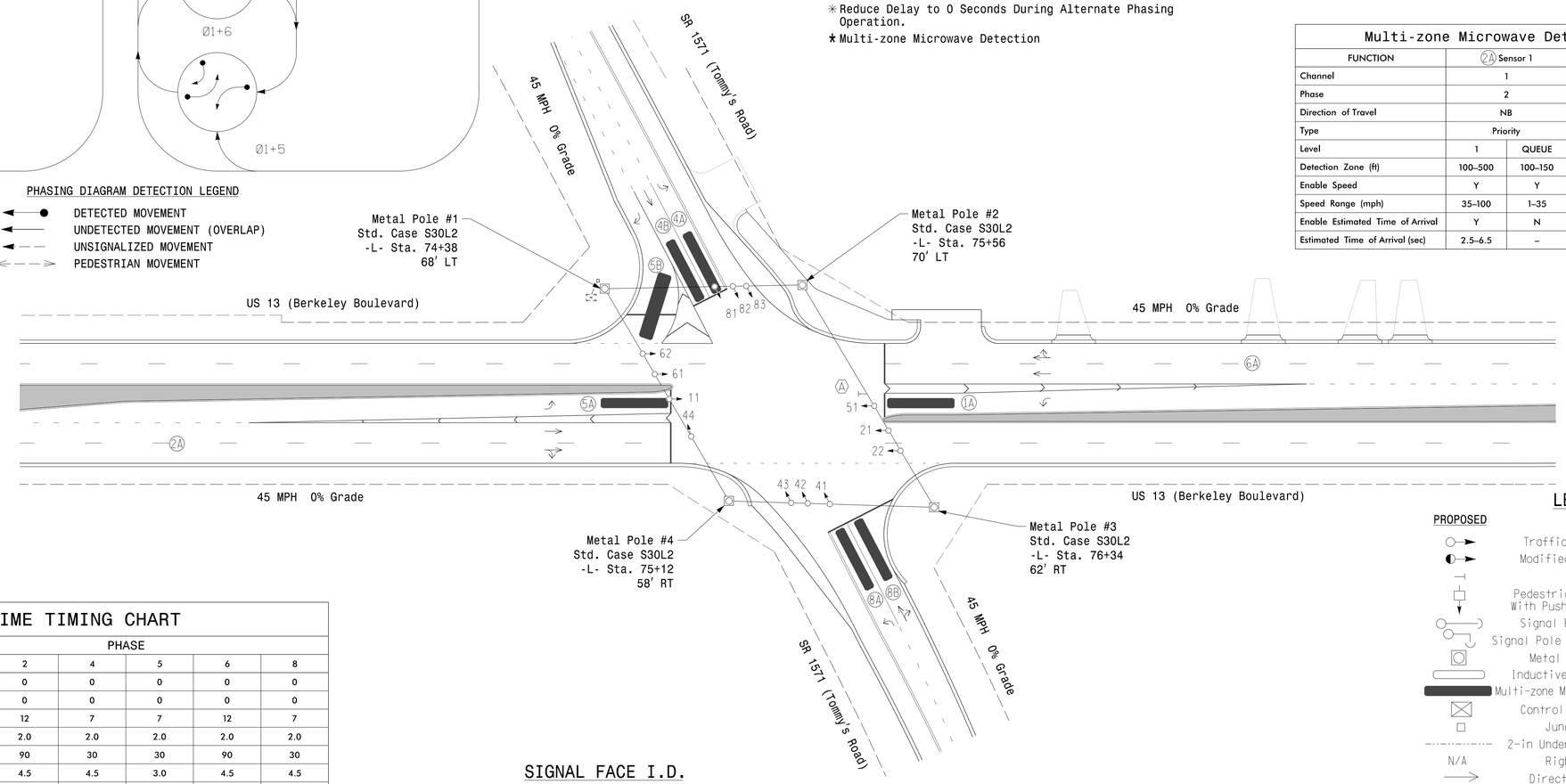
FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100–500	100–150	100–500	100–150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35–100	1–35	35–100	1–35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5–6.5	–	2.5–6.5	–

DEFAULT TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←̶	←̶	←F_Y	←F_Y	←R	←R
21, 22	R	R	G	G	R	R
41	←R	←R	←R	←R	←F_Y	←R
42, 43	R	R	R	R	G	R
44	→̶	R	→̶	R	→̶	R
51	←̶	←F_Y	←̶	←F_Y	←R	←R
61, 62	R	G	R	G	R	R
81	←R	←R	←R	←R	←F_Y	←R
82, 83	R	R	R	R	G	R

PHASING DIAGRAM DETECTION LEGEND

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



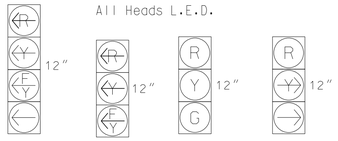
MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7
Passage *	2.0	2.0	2.0	2.0	2.0	2.0
Max 1 *	30	90	30	30	90	30
Yellow Change	3.0	4.5	4.5	3.0	4.5	4.5
Red Clear	2.4	1.6	1.9	2.3	1.6	1.9
Added Initial *	–	–	–	–	–	–
Maximum Initial *	–	–	–	–	–	–
Time Before Reduction *	–	–	–	–	–	–
Time To Reduce *	–	–	–	–	–	–
Minimum Gap	–	–	–	–	–	–
Advance Walk	–	–	–	–	–	–
Non Lock Detector	X	–	X	X	–	X
Vehicle Recall	–	MIN RECALL	–	–	MIN RECALL	–
Dual Entry	–	–	X	–	–	X

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

SIGNAL FACE I.D.

All Heads L.E.D.



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	
	Metal Strain Pole	
	Inductive Loop Detector	
	Multi-zone Microwave Detection	N/A
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓐ

Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SCALE 0 40 1" = 40'

US 13 (Berkeley Boulevard) at SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	J. Galloway
PREPARED BY:	J. Hambright	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON A GALLOWAY

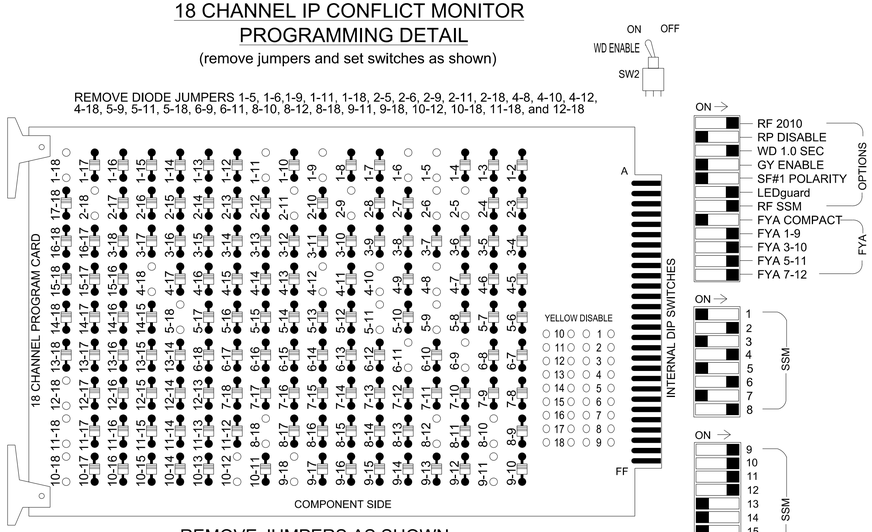
Signed by: Jason Galloway 8/18/2025
DOCUSIGNED BY: DATE

SIG. INVENTORY NO. 04-0911

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-7.1

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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
5. The cabinet and controller are part of the Goldsboro 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.....S1,S2,S5,S7,S8,S11,AUX S1,AUX S2, AUX S4,AUX S5,AUX S6
Phases Used.....1,2,4,5,6,8
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*
Overlap "6".....*

*See overlap programming detail on sheet 2

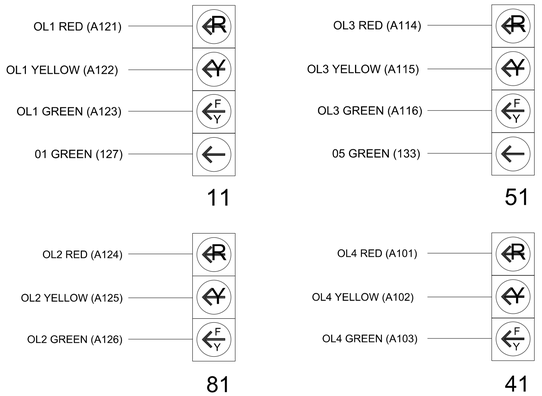
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	OL6
SIGNAL HEAD NO.	11★	21,22	NU	NU	42,43	NU	51★	61,62	NU	NU	82,83	NU	11★	81★	NU	51★	41★	44
RED		128			101			134			107							A104
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	A105
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127						133											A106

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	∅ 1 1A	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	NOT USED														ST DC ISOLATOR
FILE "J"	U	∅ 5 5A	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	NOT USED														

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
1A	TB2-1,2	I1U	56	18	1★	1	15.0		X		X	
				-	29★	6			X		X	
5A	TB3-1,2	J1U	55	17	15★	5	15.0		X		X	
				-	31★	2			X		X	

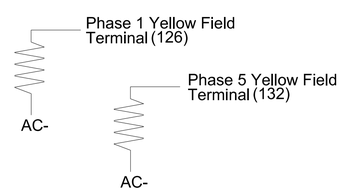
★For the detectors to work as shown on the signal desing plan, see the MAXTIME Detector Programming Detail for Alternate Phasing on sheet 2.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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)



SPECIAL DETECTOR NOTE

Install a multi-zone 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.

Detector card placement for loops 1A and 5A are typical for a NCDOT installation. Inputs accociated with these slots are compatible with time of day instructions located on sheet 2 of this electrical detail.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0911
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Final Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Electrical and Programming Details For:

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

US 13 (Berkeley Boulevard)
at
SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025	REVIEWED BY: D A Waller
PREPARED BY: J Galloway	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

Signed by: Jason Galloway 8/18/2025
10D1E2B40B4846E...
SIGNATURE DATE

SIG. INVENTORY NO. 04-0911

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-7.2

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 11 and 51 to run protected turns only.

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

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

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.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A & 5A

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

1A

Detector	Call Phase	Delay
1	1	0.0
29	0	-

5A

Detector	Call Phase	Delay
15	5	0.0
31	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	1	2	3	4	6
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	Normal
Included Phases	2	4	6	8	4,5
Modifier Phases	1	-	5	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	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	1	2	3	4	6
Type	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	FYA 4 - Section	Normal
Included Phases	-	4	-	8	4,5
Modifier Phases	1	-	5	-	-
Modifier Overlaps	-	-	-	-	-
Trail Green	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0

← NOTICE INCLUDED PHASE

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0911
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Final Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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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 Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 13 (Berkeley Boulevard)
at
SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025	REVIEWED BY: D A Waller
PREPARED BY: J Galloway	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

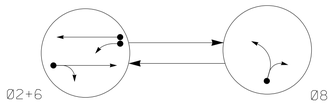
Signed by: Jason Galloway 10D1E2B4084846E...
SIGNATURE 8/18/2025 DATE

SIG. INVENTORY NO. 04-0911

11:25:58 AM
User:jgalloway
U:\Traffic\Projects\Signals\Design\Electrical Details\Final Design\040911_ele_dsn.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-8.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

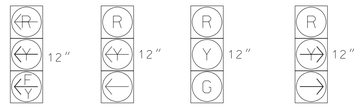
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø8	FLASH
21, 22	G	R	R
61	~~Y~~	~~R~~	~~R~~
62, 63	G	R	R
81	R	←	R
82	R	→	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
6B	6X40	0	*	*	6	-	-	X	-	X	-	*
8A	6X40	0	*	*	8	5.0	-	X	-	X	-	*
8B	6X6	0	*	*	8	15.0	-	X	-	X	-	*

* Multi-zone Microwave Detection

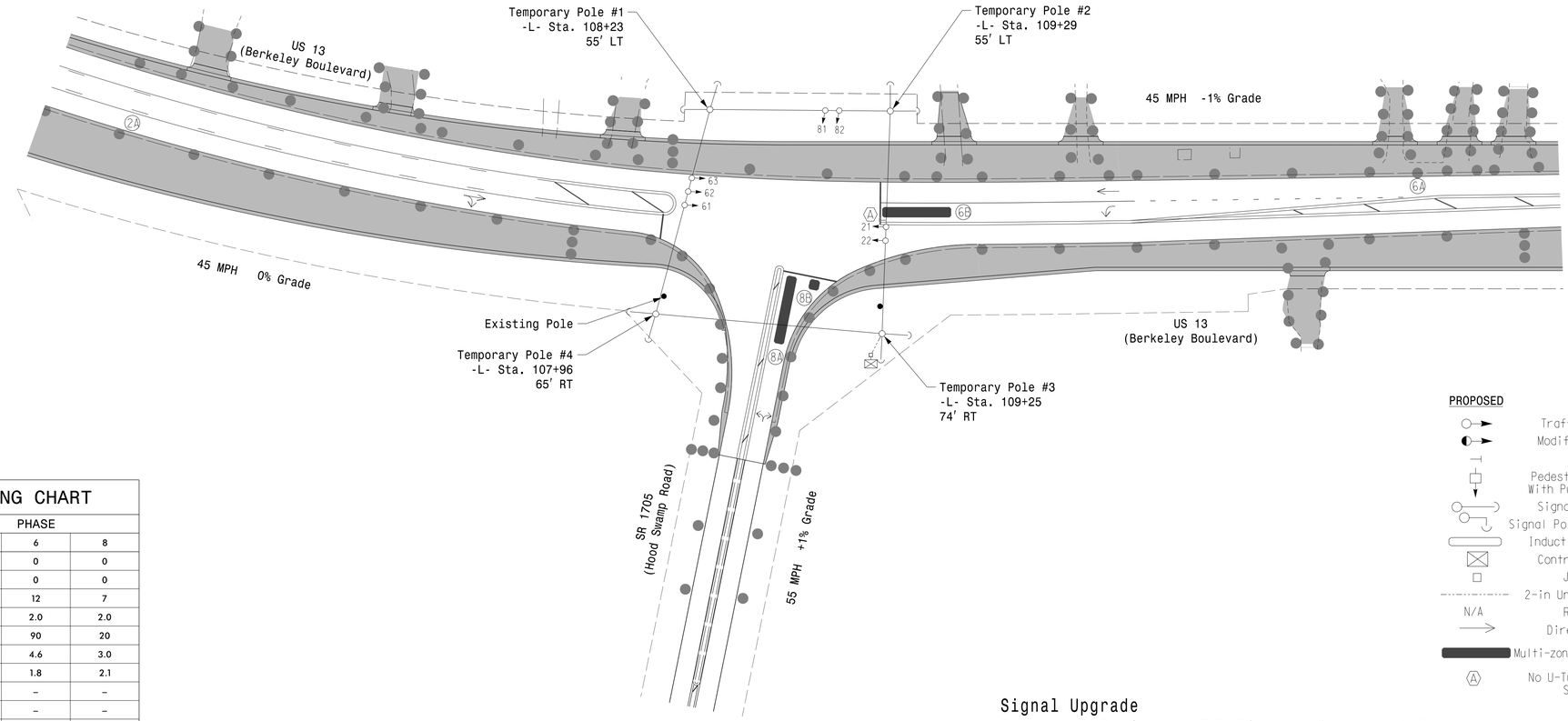
Multi-zone Microwave Detection

FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100–500	100–150	100–500	100–150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35–100	1–35	35–100	1–35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5–6.5	–	2.5–6.5	–

2 Phase
Fully Actuated
(Goldsboro Signal System)

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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
6. Field adjust temporary poles as needed.
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 6	PHASE 8
Walk *	0	0	0
Ped Clear	0	0	0
Min Green *	12	12	7
Passage *	2.0	2.0	2.0
Max 1 *	90	90	20
Yellow Change	4.6	4.6	3.0
Red Clear	1.8	1.8	2.1
Added Initial *	–	–	–
Maximum Initial *	–	–	–
Time Before Reduction *	–	–	–
Time To Reduce *	–	–	–
Minimum Gap	–	–	–
Advance Walk	–	–	–
Non Lock Detector	–	–	X
Vehicle Recall	MIN RECALL	MIN RECALL	–
Dual Entry	–	–	–

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

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○→ ○↓	Signal Pole with Guy	●→ ●↓
○→ ○↓	Signal Pole with Sidewalk Guy	●→ ●↓
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
----	2-in Underground Conduit	----
N/A	Right of Way	----
→	Directional Arrow	→
▬	Multi-zone Microwave Detection	N/A
Ⓐ	No U-Turn /No Left Turn Sign (R3-18)	Ⓐ

Signal Upgrade
Temporary Design 1 -TMP Phase I Steps 1 & 2
-TMP Phase II

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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www.stantec.com
License No. F-0672

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

US 13 (Berkeley Boulevard)
at
SR 1705 (Hood Swamp Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	J. Galloway
PREPARED BY:	J. Hambright	REVIEWED BY:	R M Muncey

SCALE 0 40 1" = 40'

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P GALLOWAY

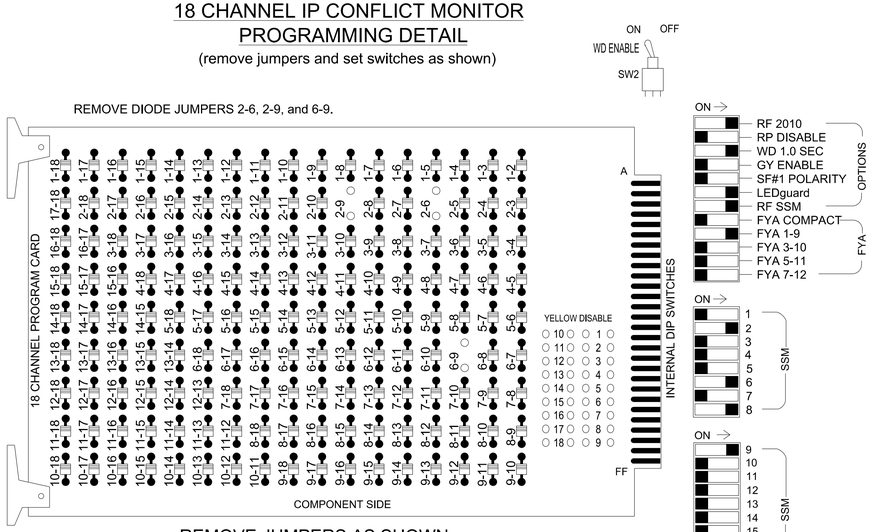
Signed by: Jason Galloway 8/18/2025
SIGNATURE DATE

SIG. INVENTORY NO. 04-0991T1

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-8.1

18 CHANNEL IP 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. 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 multi-zone microwave detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer -approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

NOTES

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 6 Green No Walk.
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 Goldsboro 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,S8,S11,AUX S1
Phases Used.....2,6,8
Overlap "1".....*
Overlap "2".....N/A
Overlap "3".....N/A
Overlap "4".....N/A

*See overlap programming detail on this sheet

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	Unit Flash Parameters
StartUp Clearance Hold	All Red Flash Exit Time
6	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	62,63	NU	NU	81,82	NU	61 ★	NU	NU	NU	NU	NU
RED		128						134			107							
YELLOW		129						135										
GREEN		130						136										
RED ARROW													A121					
YELLOW ARROW											108		A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW											109							

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

61

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1
Type	FYA 4 - Section
Included Phases	2
Modifier Phases	-
Modifier Overlaps	-
Trail Green	0
Trail Yellow	0.0
Trail Red	0.0

TMP Phase I; Steps 1 & 2
TMP Phase II
Temporary 1 Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0991T1
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
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www.stantec.com
License No. F-0672

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

Electrical and Programming Details For:

US 13 (Berkeley Boulevard) at SR 1705 (Hood Swamp Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	D A Waller
PREPARED BY:	J Galloway	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

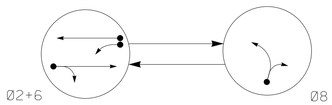
NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. CALLOWAY

Signed by: Jason Galloway 10D1E2B40B4846E...
8/18/2025
SIGNATURE DATE

SIG. INVENTORY NO. 04-0991T1

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-9.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

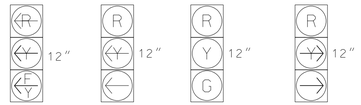
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø8	FLASH
21, 22	G	R	R
61	~~Y~~	~~R~~	~~R~~
62, 63	G	R	R
81	R	←	R
82	R	→	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
6B	6X40	0	*	*	6	-	-	X	-	X	-	*
8A	6X40	0	*	*	8	5.0	-	X	-	X	-	*
8B	6X6	0	*	*	8	15.0	-	X	-	X	-	*

* Multi-zone Microwave Detection

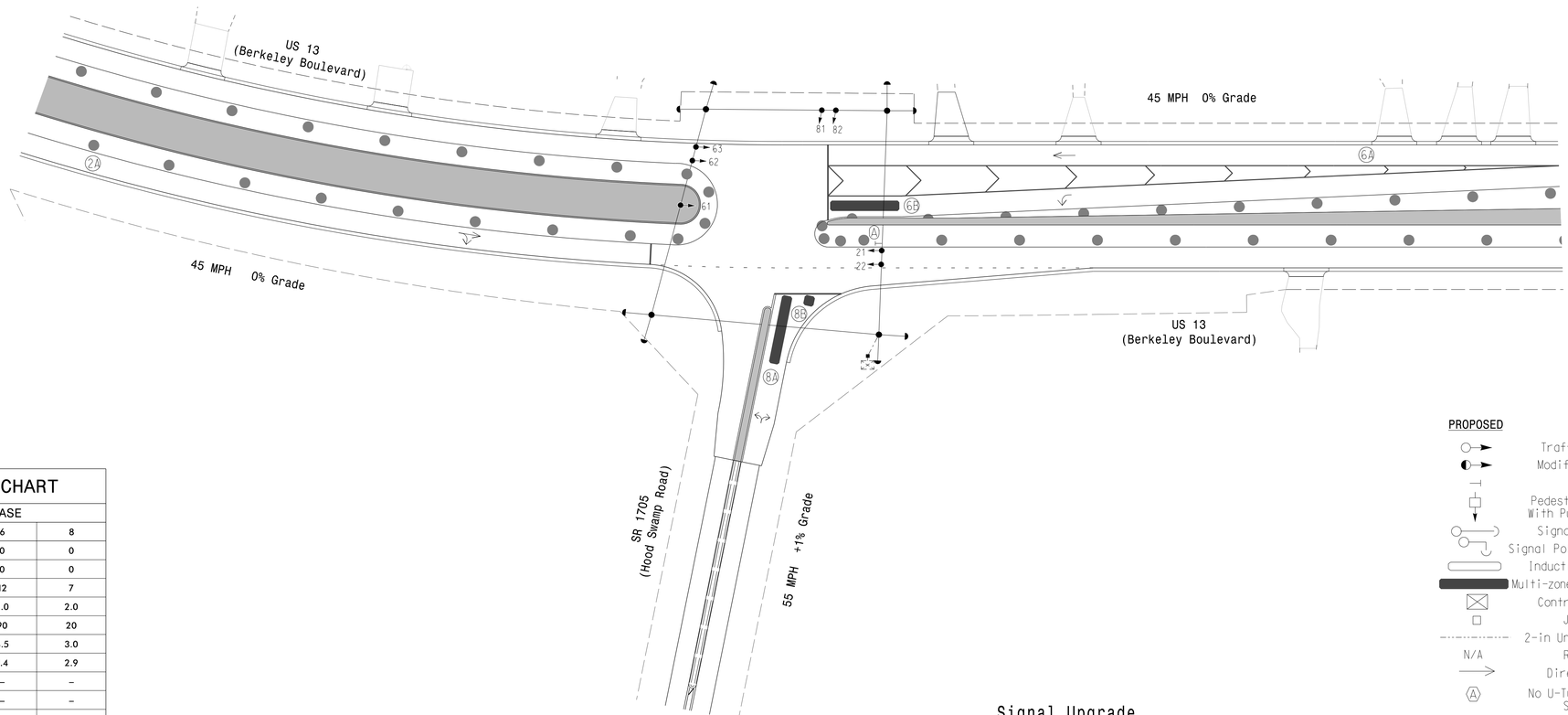
Multi-zone Microwave Detection

FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100–500	100–150	100–500	100–150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35–100	1–35	35–100	1–35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5–6.5	–	2.5–6.5	–

2 Phase
Fully Actuated
(Goldsboro Signal System)

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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
5. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
6. Reposition existing signal heads numbered #11,21,22,61, 62, & Sign A.



MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 6	PHASE 8
Walk *	0	0	0
Ped Clear	0	0	0
Min Green *	12	12	7
Passage *	2.0	2.0	2.0
Max 1 *	90	90	20
Yellow Change	4.5	4.5	3.0
Red Clear	1.4	1.4	2.9
Added Initial *	–	–	–
Maximum Initial *	–	–	–
Time Before Reduction *	–	–	–
Time To Reduce *	–	–	–
Minimum Gap	–	–	–
Advance Walk	–	–	–
Non Lock Detector	–	–	X
Vehicle Recall	MIN RECALL	MIN RECALL	–
Dual Entry	–	–	–

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

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
▭↓	Pedestrian Signal Head With Push Button & Sign	■↓
○→	Signal Pole with Guy	●→
○↓	Signal Pole with Sidewalk Guy	●↓
▭	Inductive Loop Detector	▭
▬	Multi-zone Microwave Detection	N/A
⊠	Controller & Cabinet	⛶
□	Junction Box	■
·-·-·	2-in Underground Conduit	·-·-·
N/A	Right of Way	– – –
→	Directional Arrow	→
Ⓐ	No U-Turn /No Left Turn Sign (R3-18)	Ⓐ

Signal Upgrade
Temporary Design 2 -TMP Phase III

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

US 13 (Berkeley Boulevard)
at
SR 1705 (Hood Swamp Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	J. Galloway
PREPARED BY:	J. Hambright	REVIEWED BY:	R M Muncey

SCALE 0 40 1" = 40'

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029904 JASON P. GALLOWAY
Signed by: Jason Galloway 8/18/2025
DOCUSIGNED BY: DATE

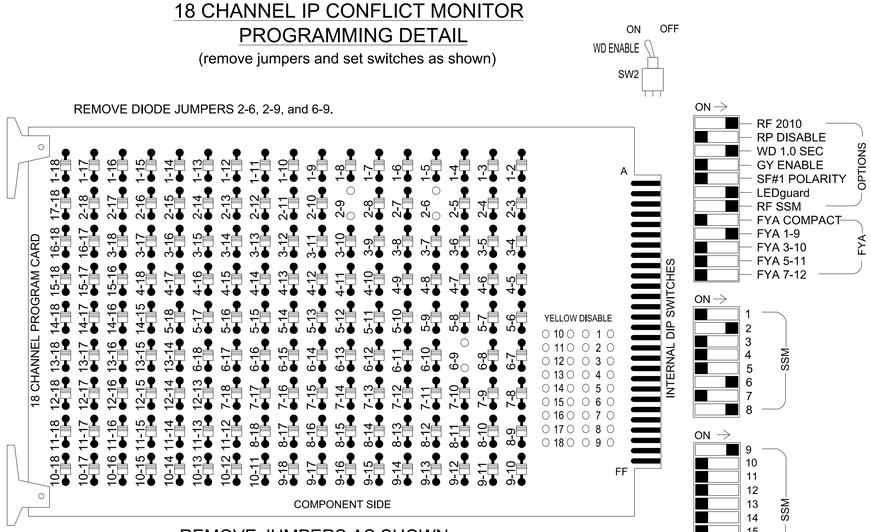
SIG. INVENTORY NO. 04-0991T2

$$$$$$$SYSDATE$$$$$$
11:26:21 AM
User:jgalloway
C:\Users\jgalloway\Documents\Design\Signal Design\Temporary Design\04099lT2_sig_dsn.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-9.1

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.

■ = DENOTES POSITION OF SWITCH

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

NOTES

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 6 Green No Walk.
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 Goldsboro 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,S8,S11,AUX S1
Phases Used.....2,6,8
Overlap "1".....*
Overlap "2".....N/A
Overlap "3".....N/A
Overlap "4".....N/A

*See overlap programming detail on this sheet

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

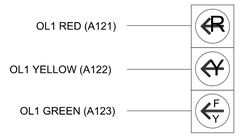
SIGNAL HEAD HOOK-UP CHART

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	62,63	NU	NU	81,82	NU	61 ★	NU	NU	NU	NU	NU
RED		128						134			107							
YELLOW		129						135										
GREEN		130						136										
RED ARROW													A121					
YELLOW ARROW											108		A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW											109							

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



61

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1
Type	FYA 4 - Section
Included Phases	2
Modifier Phases	-
Modifier Overlaps	-
Trail Green	0
Trail Yellow	0.0
Trail Red	0.0

TMP Phase III
Temporary 2 Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0991T2
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

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

US 13 (Berkeley Boulevard)
at
SR 1705 (Hood Swamp Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	D A Waller
PREPARED BY:	J Galloway	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

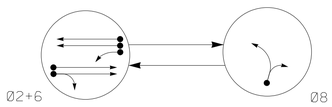
NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

Signed by: Jason Galloway 10D1E2B40B4846E...
8/18/2025
SIGNATURE DATE

SIG. INVENTORY NO. 04-0991T2

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-10.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

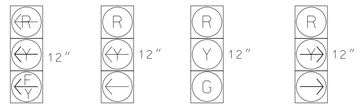
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø8	FLASH
21, 22	G	R	R
61	~~Y~~	~~R~~	~~R~~
62, 63	G	R	R
81	R	←	R
82	R	→	R

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
6B	6X40	0	*	*	6	-	-	X	-	X	-	*
8A	6X40	0	*	*	8	5.0	-	X	-	X	-	*
8B	6X6	0	*	*	8	15.0	-	X	-	X	-	*

* Multi-zone Microwave Detection

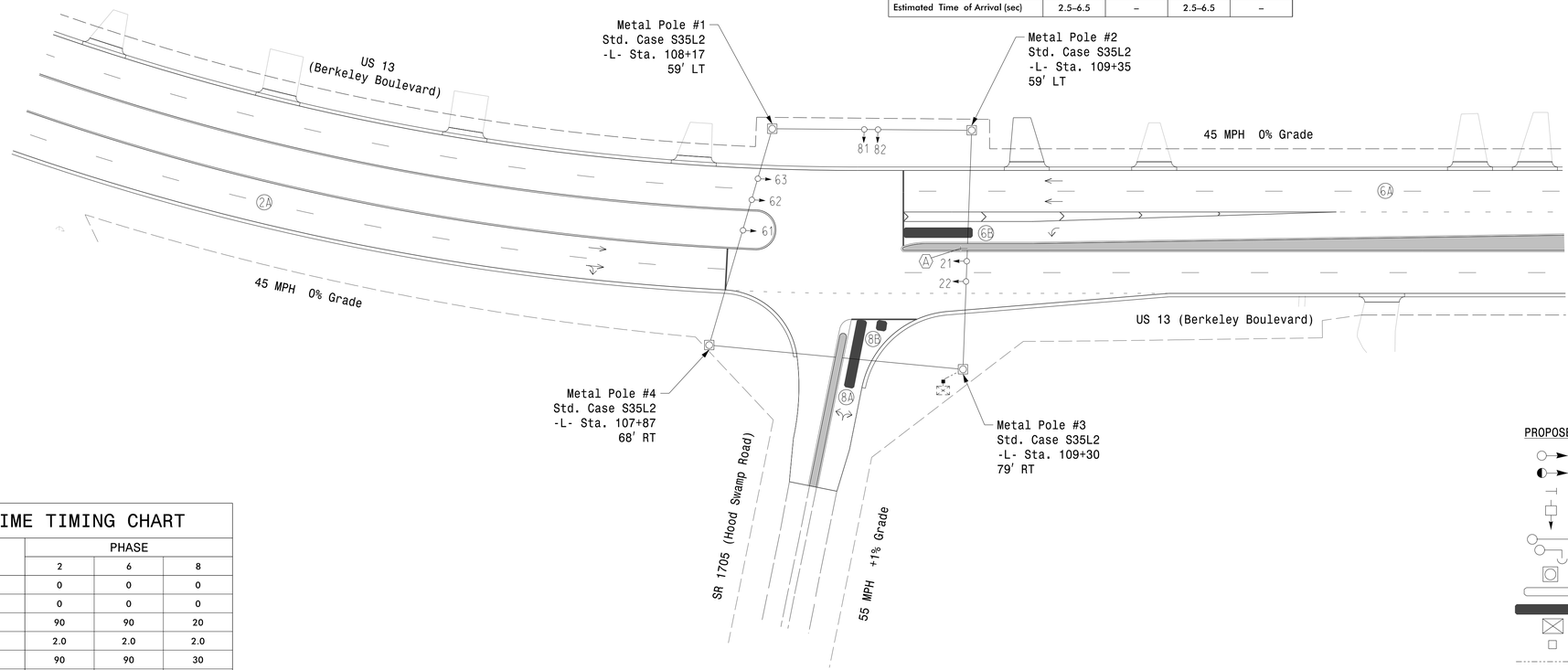
Multi-zone Microwave Detection

FUNCTION	(2A) Sensor 1		(6A) Sensor 2	
Channel	1		1	
Phase	2		6	
Direction of Travel	NB		SB	
Type	Priority		Priority	
Level	1	QUEUE	1	QUEUE
Detection Zone (ft)	100–500	100–150	100–500	100–150
Enable Speed	Y	Y	Y	Y
Speed Range (mph)	35–100	1–35	35–100	1–35
Enable Estimated Time of Arrival	Y	N	Y	N
Estimated Time of Arrival (sec)	2.5–6.5	–	2.5–6.5	–

2 Phase
Fully Actuated
(Goldsboro Signal System)

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. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
5. 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	●→ ■
◎	Metal Strain Pole	■
▭	Inductive Loop Detector	▭
▬	Multi-zone Microwave Detection	N/A
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·-·-·-·	2-in Underground Conduit	·-·-·-·
N/A	Right of Way	– – – –
→	Directional Arrow	→
Ⓐ	No U-Turn /No Left Turn Sign (R3-18)	Ⓐ

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 6	PHASE 8
Walk *	0	0	0
Ped Clear	0	0	0
Min Green *	90	90	20
Passage *	2.0	2.0	2.0
Max 1 *	90	90	30
Yellow Change	4.5	4.5	3.0
Red Clear	1.5	1.5	2.8
Added Initial *	–	–	–
Maximum Initial *	–	–	–
Time Before Reduction *	–	–	–
Time To Reduce *	–	–	–
Minimum Gap	–	–	–
Advance Walk	–	–	–
Non Lock Detector	–	–	X
Vehicle Recall	MIN RECALL	MIN RECALL	–
Dual Entry	–	–	–

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

Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

US 13 (Berkeley Boulevard)
at
SR 1705 (Hood Swamp Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	J. Galloway
PREPARED BY:	J. Hambright	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

SCALE 0 40 1" = 40'

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

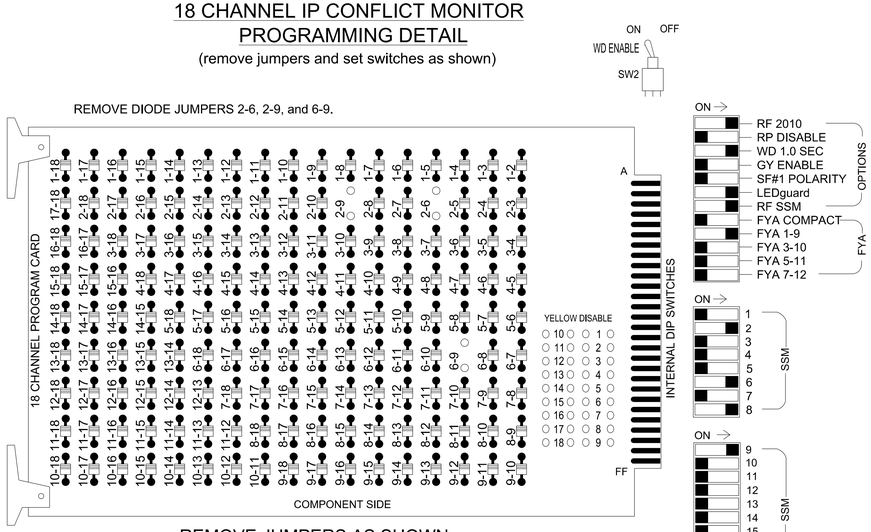
Signed by: Jason Galloway 8/18/2025
DocuSigned by: DATE

SIG. INVENTORY NO. 04-0991

$$$$$$$SYSDATE$$$$$
11:26:28 AM
User:jgalloway
U:\Projects\Signals\Design\Signal Design\Final Design\M04091_sig_dsn.dgn

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



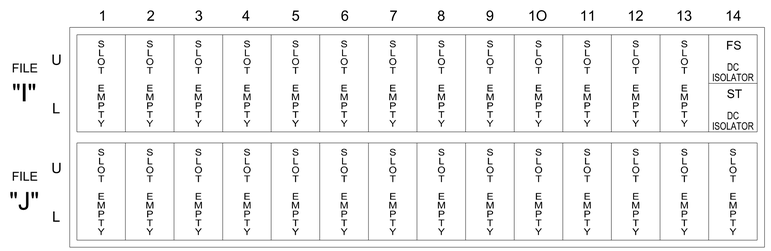
REMOVE JUMPERS AS SHOWN

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.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

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

NOTES

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 6 Green No Walk.
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 Goldsboro 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,S8,S11,AUX S1
Phases Used.....2,6,8
Overlap "1".....*
Overlap "2".....N/A
Overlap "3".....N/A
Overlap "4".....N/A

*See overlap programming detail on this sheet

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

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-10.1

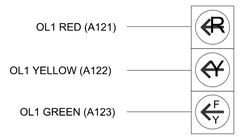
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	NU	62,63	NU	NU	81,82	NU	61 ★	NU	NU	NU	NU	NU
RED		128						134			107							
YELLOW		129						135										
GREEN		130						136										
RED ARROW													A121					
YELLOW ARROW											108		A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW											109							

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1
Type	FYA 4 - Section
Included Phases	2
Modifier Phases	-
Modifier Overlaps	-
Trail Green	0
Trail Yellow	0.0
Trail Red	0.0

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0991
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Stantec
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License No. F-0672

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

Final
Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

US 13 (Berkeley Boulevard) at SR 1705 (Hood Swamp Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	D A Waller
PREPARED BY:	J Galloway	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

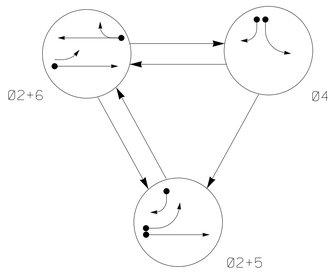
NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

Signed by: Jason Galloway
10D1E2BA084B46E...
8/18/2025
SIGNATURE DATE

SIG. INVENTORY NO. 04-0991

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-11.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

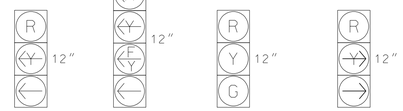
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø4	PHASE FLASH
21, 22	G	G	R	R
41	R	R	←	R
42, 43	→	R	→	R
51	←	~~←~~	~~R~~	~~R~~
61, 62	R	G	R	R

SIGNAL FACE I.D.

All Heads L.E.D.



41 51 21, 22 61, 62 42, 43

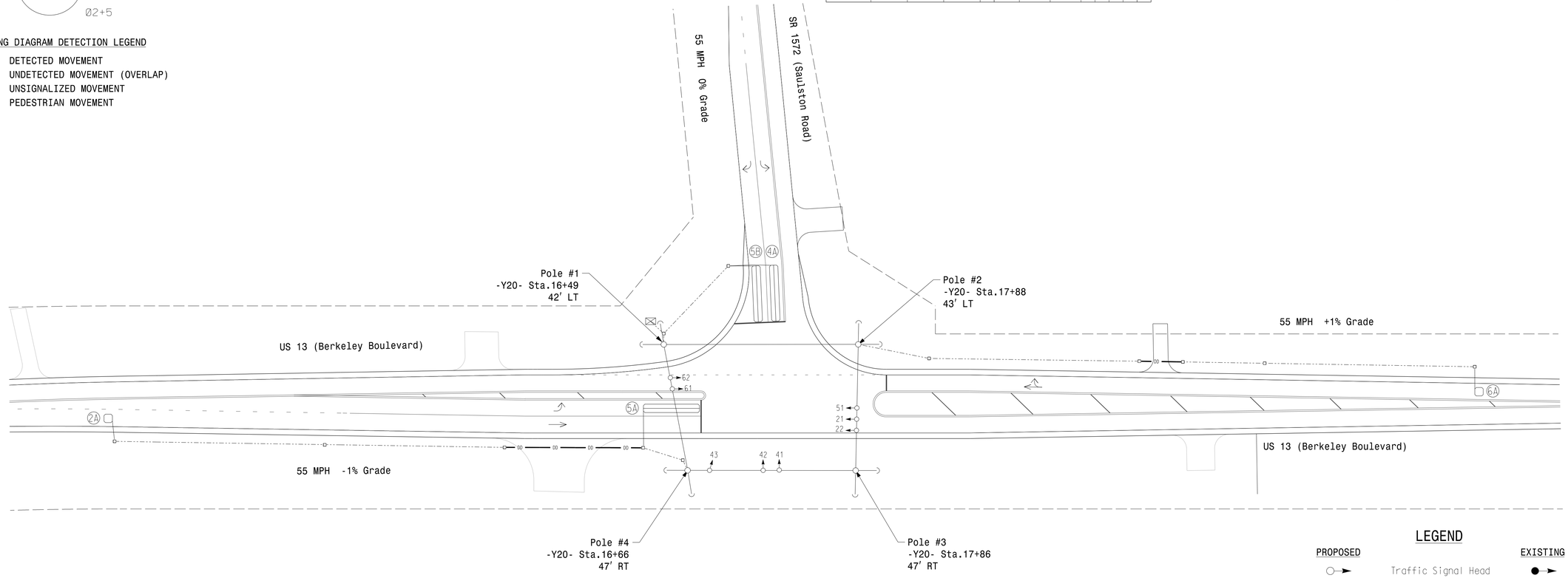
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
2A	6X6	420	6	X	2	-	-	X	X	X	-	X
4A	6X40	0	2-4-2	X	4	-	-	X	-	X	-	X
5A	6X40	0	2-4-2	X	5	15	-	X	-	X	-	X
					2	3	-	X	-	X	X	X
5B	6X40	0	2-4-2	X	5	15	-	X	-	X	-	X
6A	6X6	420	6	X	6	-	-	X	X	X	-	X

3 Phase
Fully Actuated
(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. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.



LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○	Signal Pole with Guy	●
○	Signal Pole with Sidewalk Guy	●
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·-·-·-·	2-in Underground Conduit	·-·-·-·
DD	Directional Drill	N/A
N/A	Right of Way	- - - - -
→	Directional Arrow	→

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Walk *	–	–	–	–
Ped Clear	–	–	–	–
Min Green *	12	7	7	12
Passage *	6.0	2.0	2.0	6.0
Max 1 *	90	20	15	90
Yellow Change	5.3	3.0	3.0	5.3
Red Clear	1.3	2.6	2.4	1.3
Added Initial *	2.5	–	–	2.5
Maximum Initial *	46	–	–	46
Time Before Reduction *	15	–	–	15
Time To Reduce *	30	–	–	30
Minimum Gap	3.4	–	–	3.4
Advance Walk	–	–	–	–
Non Lock Detector	–	X	X	–
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 1 ower than 4 seconds.

New Installation

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

SCALE 0 40 1" = 40'

US 13 (Berkeley Boulevard) at SR 1572 (Saulston Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025 REVIEWED BY: J. Galloway
PREPARED BY: J. Hambright REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029904 JASON P. GALLOWAY

Signed by: Jason Galloway 8/18/2025
DocuSigned by: DATE

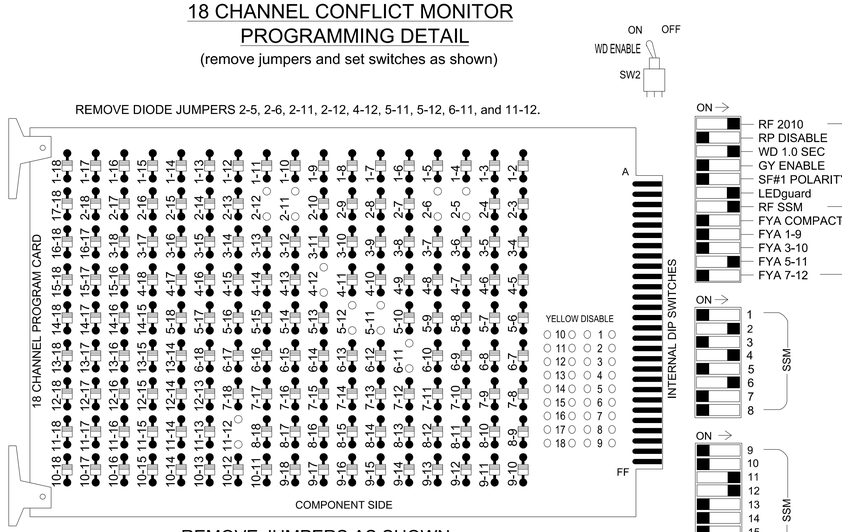
SIG. INVENTORY NO. 04-1468

$$$$$$SYSDATE$$$$$$
11:26:35 AM
User:JGalloway
U:\Traffic\Signals\Design\Signal Design\Final Design\04-1468_sig_dsn.dgn
User:JGalloway

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-11.1

18 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. 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. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

■ = DENOTES POSITION OF SWITCH

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 6 Green No Walk.
3. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

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

*See overlap programming detail this sheet

SIGNAL HEAD HOOK-UP CHART

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

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)

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	Unit Flash Parameters
StartUp Clearance Hold	All Red Flash Exit Time
6	6

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	1O	11	12	13	14
FILE "I"	U	SLOT EMPTY	ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		NOT USED				NOT USED								ST DC ISOLATOR
FILE "J"	U	ø5 5A	ø5 5B	ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	NOT USED											

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
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4			X		X	
5A	TB3-1,2	J1U	55	17	15	5	15.0		X		X	
				-	31	2	3.0		X		X	X
5B	TB3-5,6	J2U	40	2	16	5	15.0		X		X	
6A	TB3-9,10	J3U	64	30	18	6			X	X	X	

INPUT FILE POSITION LEGEND: J2L
J = FILE
2 = SLOT
L = LOWER

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

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

FLASHER CIRCUIT MODIFICATION DETAIL

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

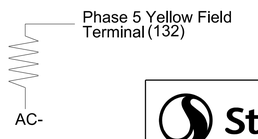
1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

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

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: 04-1468
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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www.stantec.com
License No. F-0672

Electrical and Programming Details For:

Prepared for the Offices of:
Traffic Engineering Branch
Traffic Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 13 (Berkeley Boulevard)
at
SR 1572 (Saulston Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	D A Waller
PREPARED BY:	J Galloway	REVIEWED BY:	R M Muncey

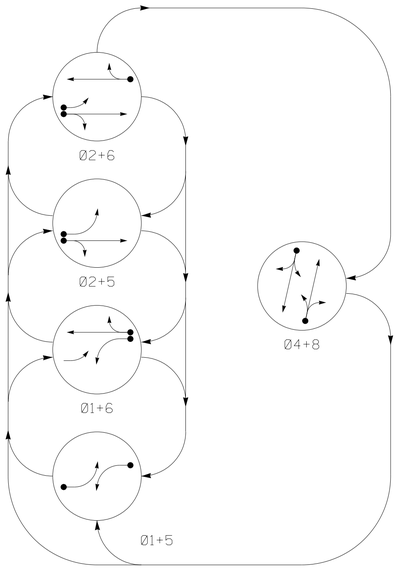
REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY
Signed by: Jason Galloway 8/18/2025
10D1E2B40B4846E...
SIGNATURE DATE

SIG. INVENTORY NO. 04-1468

PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-12.0

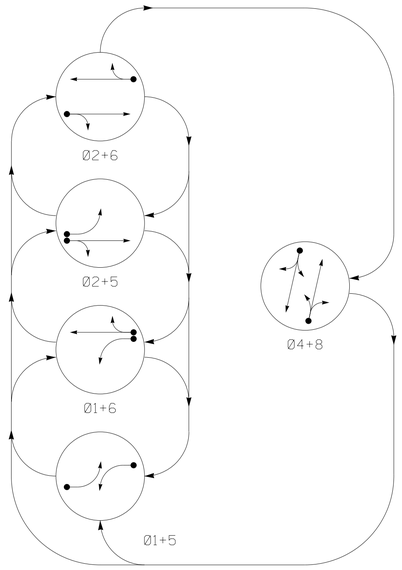
DEFAULT PHASING DIAGRAM



DEFAULT TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←●	←—	~~←R~~	~~R~~	~~←R~~	~~←R~~
21,22	R	R	G	G	R	R
41,42	R	R	R	R	G	R
51	←—	~~←FY~~	←—	~~←FY~~	~~←R~~	~~←R~~
61,62	R	G	R	G	R	R
81,82	R	R	R	R	G	R

ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←●	←—	~~←R~~	~~R~~	~~←R~~	~~←R~~
21,22	R	R	G	G	R	R
41,42	R	R	R	R	G	R
51	←—	~~←R~~	←—	~~←R~~	~~←R~~	~~←R~~
61,62	R	G	R	G	R	R
81,82	R	R	R	R	G	R

MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
1A	6X60	+5	2-4-2	-	1	3.0	-	X	-	X	-	X
2A	6X6	300	4	-	2	-	-	X	X	X	-	X
4A	6X60	+5	2-4-2	-	4	-	-	X	-	X	-	X
5A	6X60	+5	2-4-2	-	5	10.0✳	-	X	-	X	-	X
					2#	3.0	-	X	-	X	X	X
6A	6X6	300	4	-	6	-	-	X	X	X	-	X
8A	6X60	+5	2-4-2	-	8	-	-	X	-	X	-	X
8B	6X20	+5	2-4-2	-	8	15.0	-	X	-	X	-	X

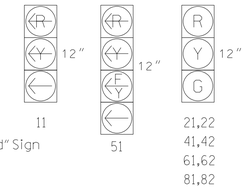
✳ Reduce Delay to 3 Seconds During Alternate Phasing Operation.
Disable Phase Call For Loop During Alternate Phasing Operation.

5 Phase Fully Actuated Goldsboro Signal System

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. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 22.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

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

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○→ ○↓	Signal Pole with Guy	●→ ●↓
○→ ○↓	Signal Pole with Sidewalk Guy	●→ ●↓
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
-----	2-in Underground Conduit	-----
N/A	Right of Way	———
→	Directional Arrow	→

MAXTIME TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Min Green *	7	12	7	7	12	7
Passage *	2.0	6.0	2.0	2.0	6.0	2.0
Max 1 *	25	90	30	20	90	30
Yellow Change	3.0	4.5	3.9	3.0	4.5	3.9
Red Clear	3.7	1.4	1.7	2.4	1.4	1.7
Added Initial *	–	2.5	–	–	2.5	–
Maximum Initial *	–	34	–	–	34	–
Time Before Reduction *	–	15	–	–	15	–
Time To Reduce *	–	30	–	–	30	–
Minimum Gap	–	3.0	–	–	3.0	–
Advance Walk	–	–	–	–	–	–
Non Lock Detector	X	–	X	X	–	X
Vehicle Recall	–	MIN RECALL	–	–	MIN RECALL	–
Dual Entry	–	–	X	–	–	X

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

Signal Upgrade
TMP Phase I Step 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SCALE 0 40 1" = 40'

SR 1003 (New Hope Road) at SR 1709 (Central Heights Road)
Division 4 Wayne County Goldsboro
PLAN DATE: March 2025 REVIEWED BY: J. Galloway
PREPARED BY: J. Hambright REVIEWED BY: R M Muncey

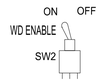
REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029904 JASON P. GALLOWAY
Signed by: Jason Galloway 8/18/2025
SIGNATURE DATE
SIG. INVENTORY NO. 04-0423

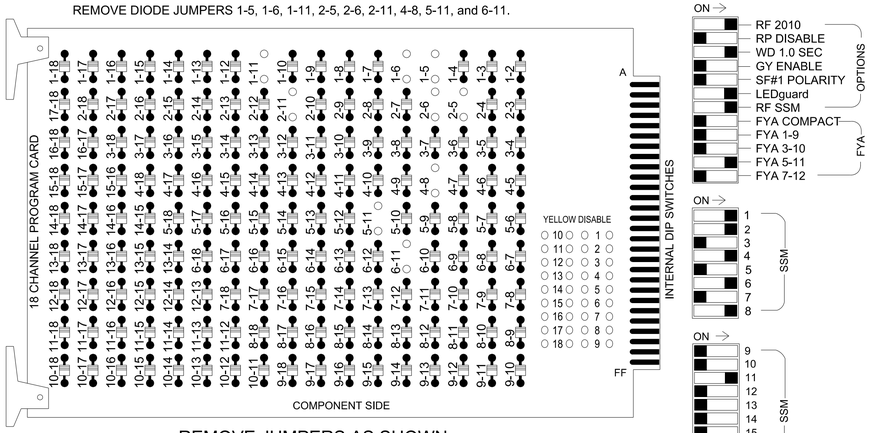
PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-12.1

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 1-11, 2-5, 2-6, 2-11, 4-8, 5-11, and 6-11.



■ = DENOTES POSITION OF SWITCH

REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that 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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
5. The cabinet and controller are part of the Goldsboro 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.....S1,S2,S5,S7,S8,S11,AUXS4
Phases Used.....1,2,4,5,6,8
Overlap "1".....N/A
Overlap "2".....N/A
Overlap "3".....*
Overlap "4".....N/A

*See overlap programming detail on sheet 2

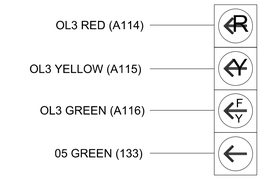
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11	21,22	NU	NU	41,42	NU	51★	61,62	NU	NU	81,82	NU	NU	NU	NU	51★	NU	NU
RED		128			101			134			107							
YELLOW		129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW	125															A114		
YELLOW ARROW	126															A115		
FLASHING YELLOW ARROW																A116		
GREEN ARROW	127						133											

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.
★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



51

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	ø1 1A	ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED				NOT USED								ST DC ISOLATOR
FILE "J"	U	ø5 5A	ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED				ø8 8B								

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
1A	TB2-1,2	I1U	56	18	1	1	3.0		X		X	
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
4A	TB4-9,10	I6U	41	3	8	4			X		X	
5A	TB3-1,2	J1U	55	17	15★	5	10.0		X		X	
				-	31★	2	3.0		X		X	X
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8			X		X	
8B	TB5-11,12	J6L	46	8	23	8	15.0		X		X	

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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

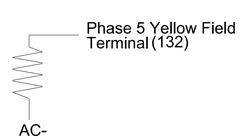
Start Up Parameters	
StartUp Clearance Hold	
6	

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: 04-0423
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

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Electrical and Programming Details For:

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

SR 1003 (New Hope Road)
at
SR 1709 (Central Heights Road)

Division 4 Wayne County Goldsboro

PLAN DATE: March 2025	REVIEWED BY: D A Waller
PREPARED BY: J Galloway	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON G. GALLOWAY
Signed by: Jason Galloway
10D1E2B4084846E...
SIGNATURE 8/18/2025
DATE

SIG. INVENTORY NO. 04-0423

Electrical Detail - Sheet 1 of 2

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PROJECT REFERENCE NO.	SHEET NO.
U-3609B	SIG-12.2

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 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3.0 seconds.

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.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 5A

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

5A

Detector	Call Phase	Delay
15	5	3.0
31	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
Type	FYA 4 - Section
Included Phases	6
Modifier Phases	5
Modifier Overlaps	-
Trail Green	0
Trail Yellow	0.0
Trail Red	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	
Type	FYA 4 - Section	
Included Phases	-	← NOTICE INCLUDED PHASE
Modifier Phases	5	
Modifier Overlaps	-	
Trail Green	0	
Trail Yellow	0.0	
Trail Red	0.0	

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0423
DESIGNED: March 2025
SEALED: 8/18/2025
REVISED:

Electrical Detail - Sheet 2 of 2

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

SR 1003 (New Hope Road)
at
SR 1709 (Central Heights Road)

Division 4 Wayne County Goldsboro

PLAN DATE:	March 2025	REVIEWED BY:	D A Waller
PREPARED BY:	J Galloway	REVIEWED BY:	R M Muncey

REVISIONS	INIT.	DATE

NORTH CAROLINA PROFESSIONAL SEAL 029904 ENGINEER JASON P. GALLOWAY

Signed by: Jason Galloway 10D1E2B40B4846E...
8/18/2025
SIGNATURE DATE

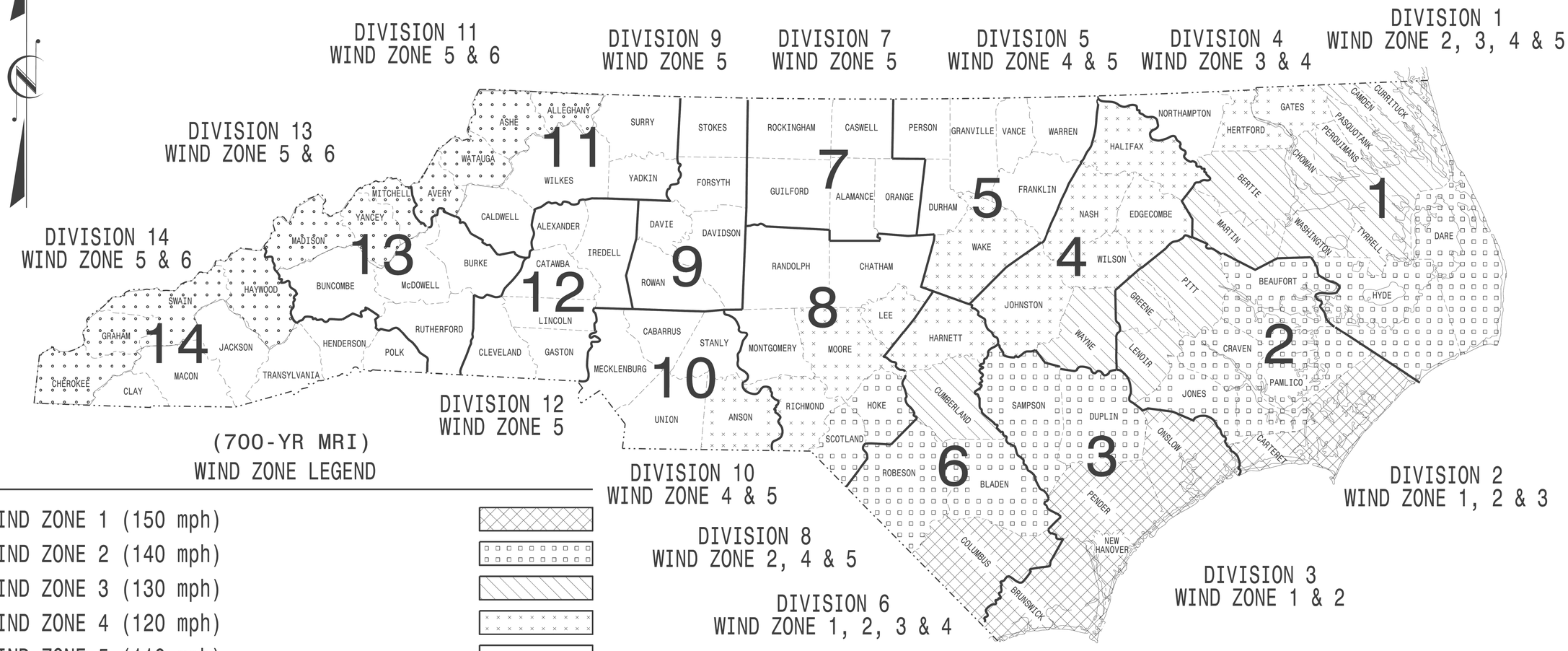
SIG. INVENTORY NO. 04-0423

PROJECT I.D.NO.	SHEET NO.
U-3609B	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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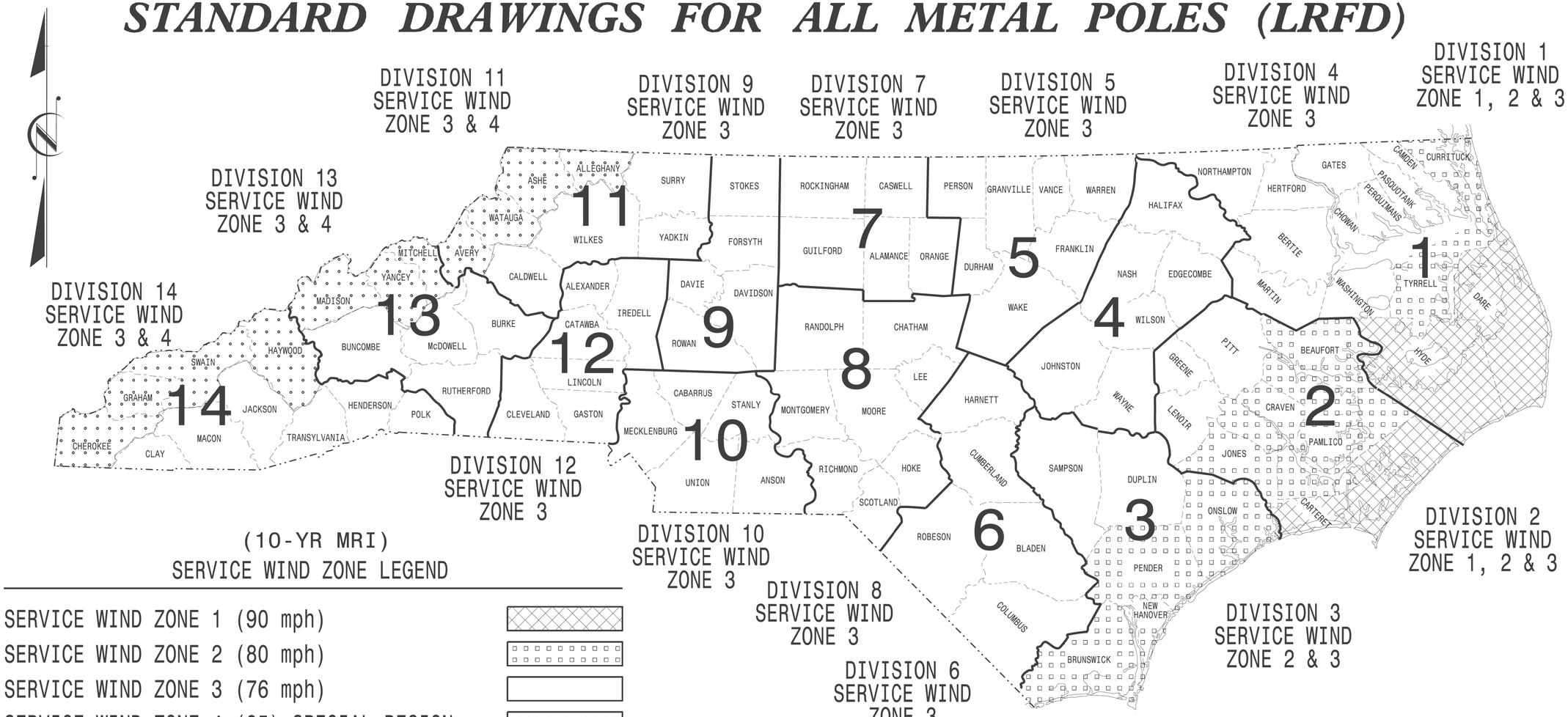
09/21/2023
DATE

PROJECT I.D. NO.	SHEET NO.
U-3609B	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
DEPARTMENT OF TRANSPORTATION • STATE OF NORTH CAROLINA

750 N.Greenfield Pkwy.
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Designed in conformance with the latest 2020 Interim to the 1st Edition 2015

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NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION - TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS UNIT

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

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

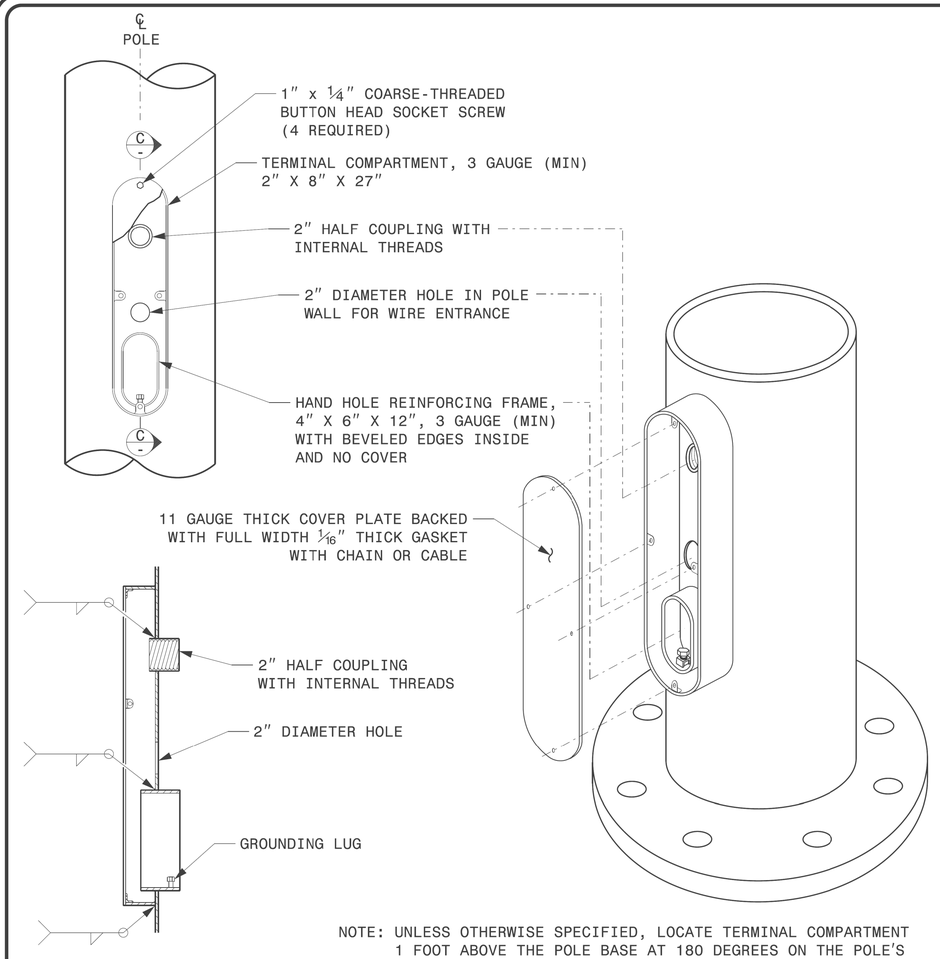
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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

PROJECT I.D. NO.	SHEET NO.
U-3609B	Sig.M2

Fabrication Details – All Metal Poles



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)

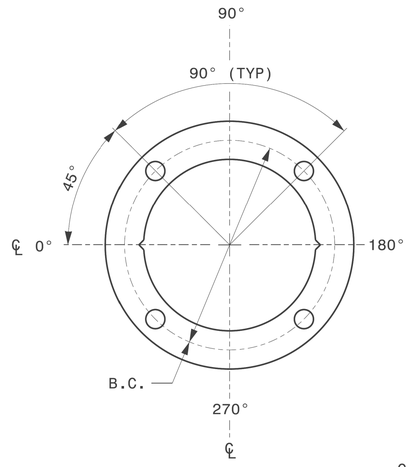
MFG _____ MFG. DATE: MM/YY
SECTION D/T/L/Y ----/----/----/----
NCDOT SIG. INV. NO. _ _ _ _ _ _ _ _
NCDOT POLE NO. _ _ _ _ _ _ _ _

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

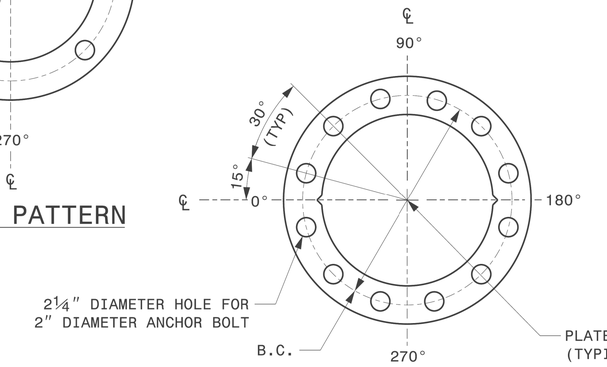
NOTES:

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.

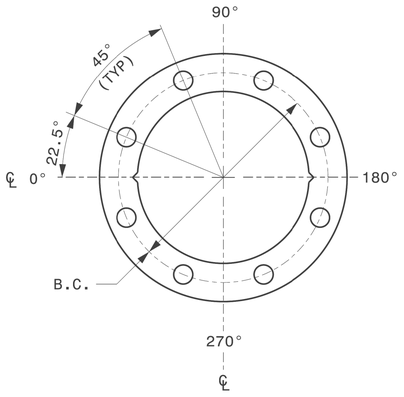
IDENTIFICATION TAG DETAILS



4 BOLT PATTERN



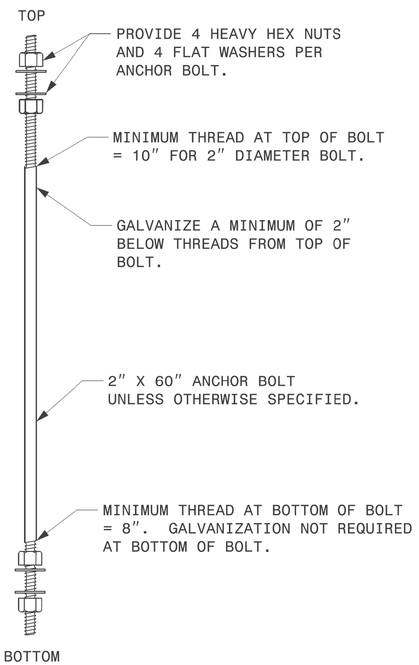
12 BOLT PATTERN



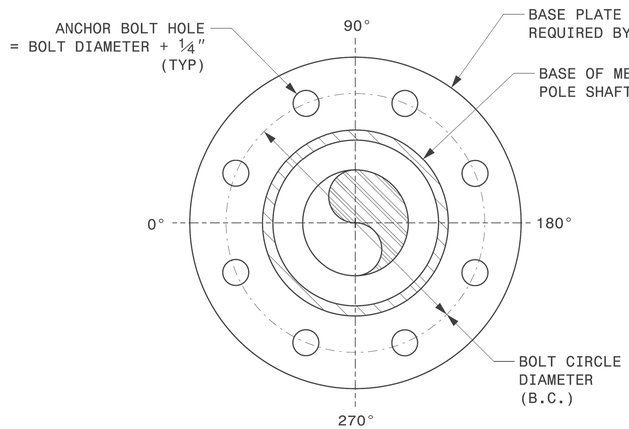
8 BOLT PATTERN

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

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

SCALE 0 NA NONE

Typical Fabrication Details For All Metal Poles

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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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

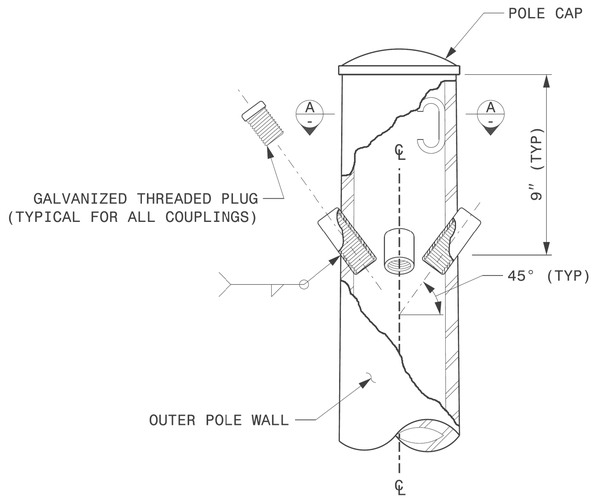
03-OCT-2023 12:24
S:\MTIS\Signals\Signal Design Section\Structures\Drawings\2024 Metal Pole Std Drawings for LRFD\2024 Sig.M2 Std. Fabrication Details-All Poles..dgn
kdurigon

PROJECT I.D. NO.	SHEET NO.
U-3609B	Sig.M3

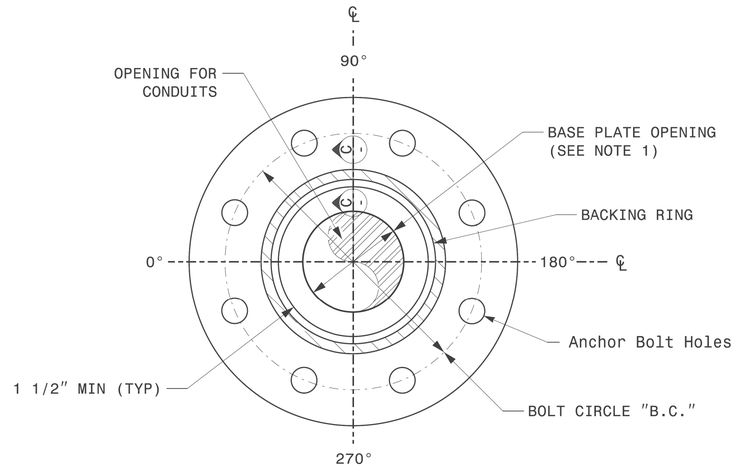
Fabrication Details – Strain Poles

NOTE:

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

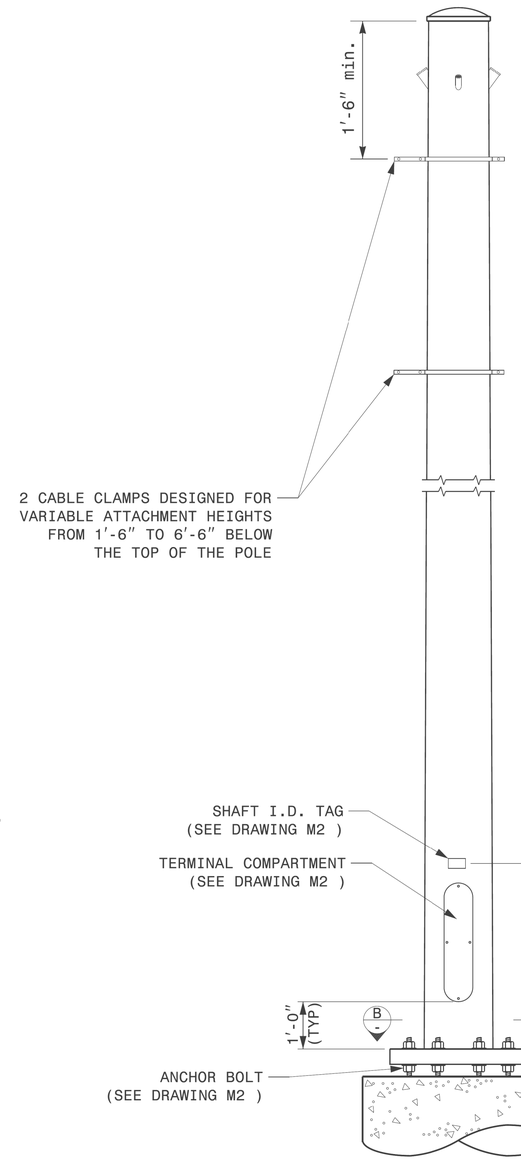


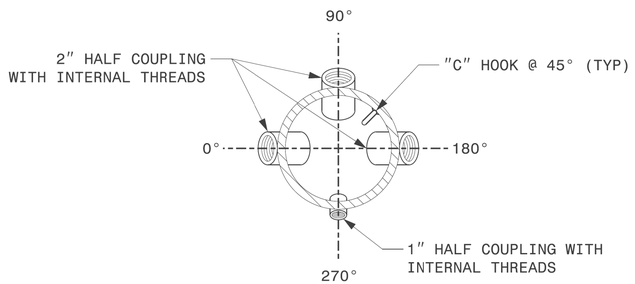
CABLE ENTRANCES AT TOP OF POLE



SECTION B-B

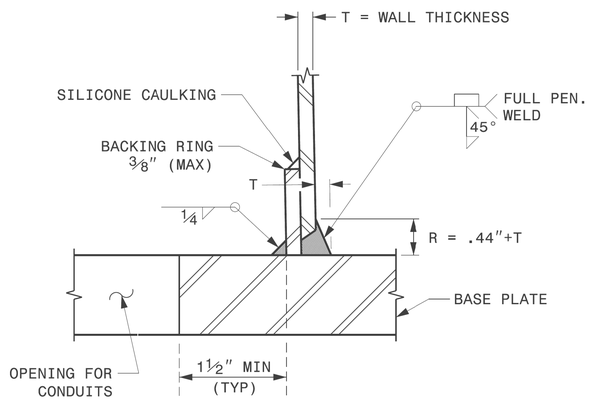
POLE BASE PLATE DETAILS
(8 AND 12 BOLT PATTERN)





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

MONOTUBE STRAIN 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
Strain Poles

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

REVISIONS	INIT.	DATE

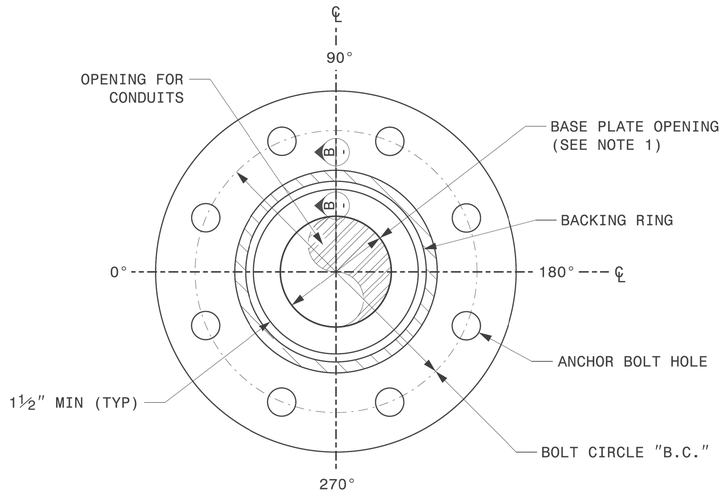
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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

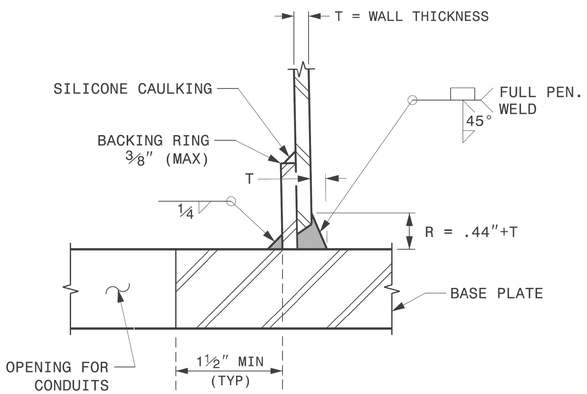
PROJECT I.D. NO.	SHEET NO.
U-3609B	Sig.M4

NOTE:

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

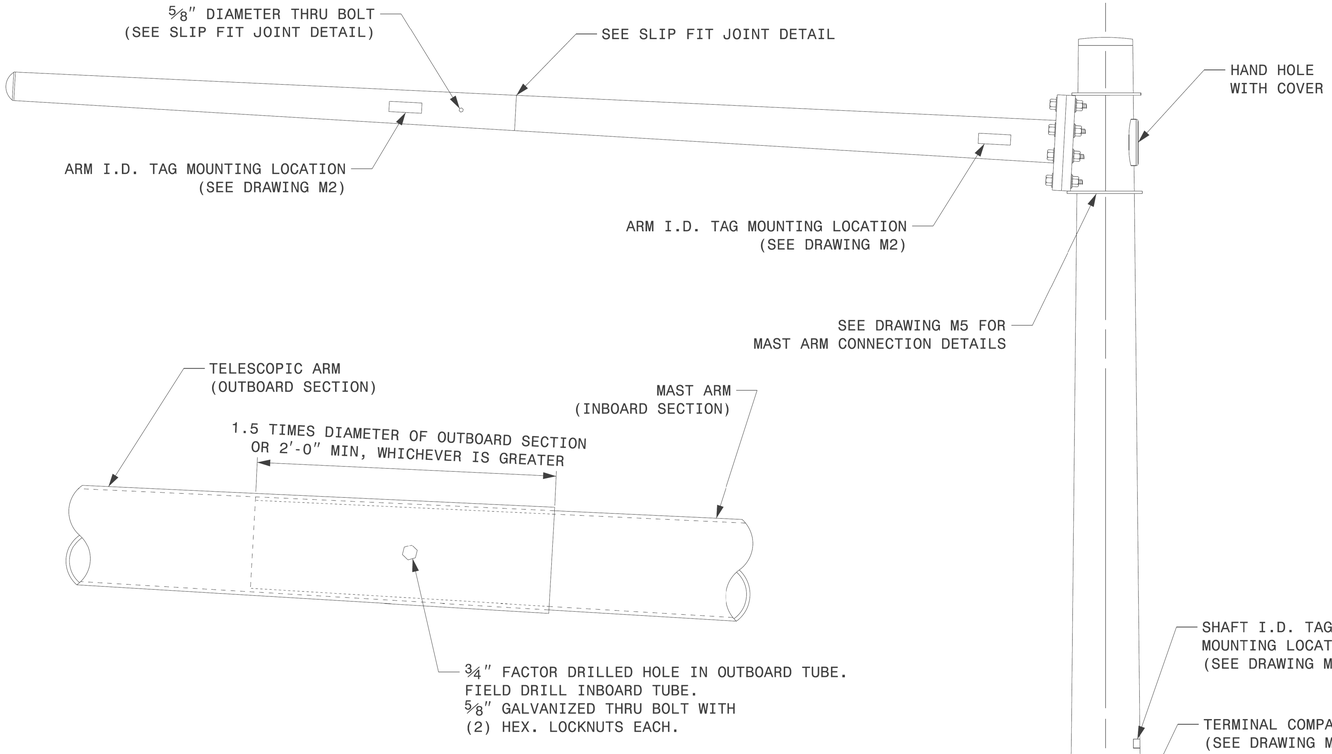


SECTION A-A
POLE BASE PLATE DETAILS

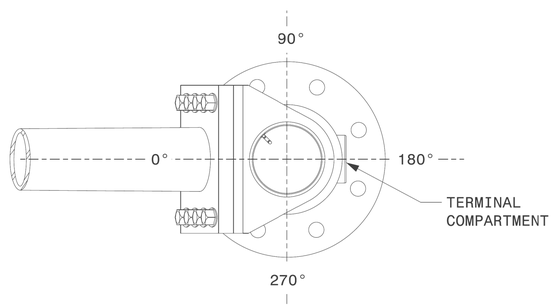


SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION GROOVE WELD DETAIL



SLIP FIT JOINT DETAIL FOR MAST ARM



MAST ARM RADIAL ORIENTATION

MAST ARM POLE

Fabrication Details – Mast Arm Poles

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

SCALE
0 NA
NONE

Typical Fabrication Details For Mast Arm Poles

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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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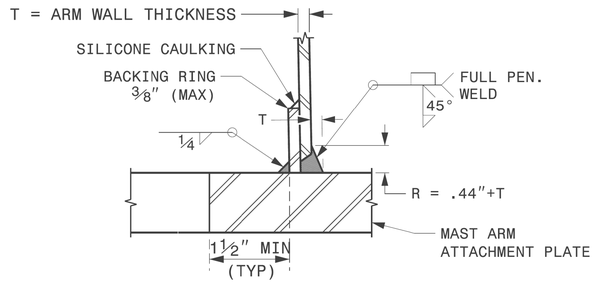
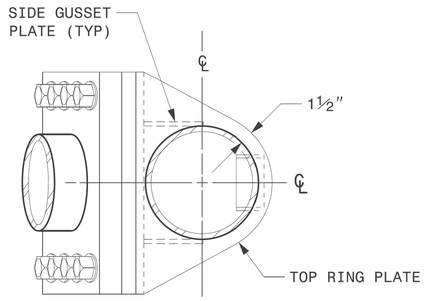
09/21/2023
DATE

WELDED RING STIFFENED MAST ARM CONNECTION

PROJECT I.D. NO.	SHEET NO.
U-3609B	Sig.M5



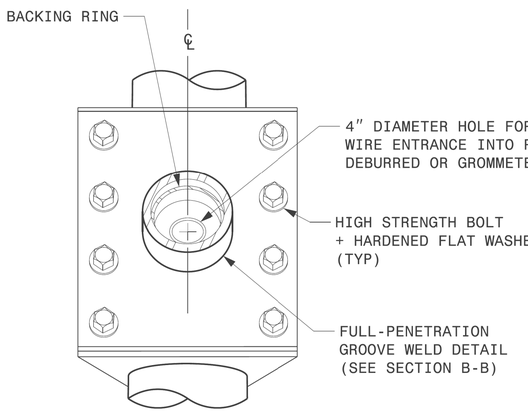
SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL



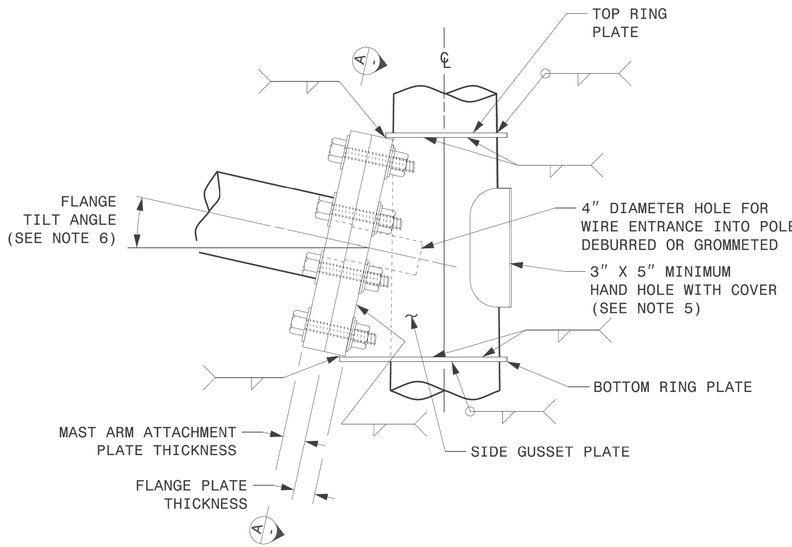
PLAN VIEW

NOTES:

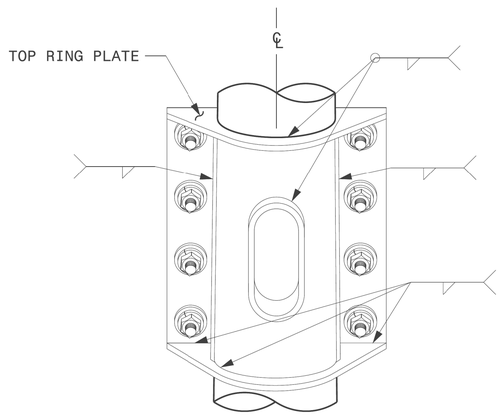
1. PROVIDE A PERMANENT MEANS OF IDENTIFICATION ABOVE THE MAST ARM TO INDICATE PROPER ATTACHMENT ORIENTATION OF THE MAST ARM.
2. DESIGNER WILL DETERMINE THE SIZE OF ALL STRUCTURAL COMPONENTS, PLATES, FASTENERS, AND WELDS SHOWN UNLESS THEY ARE ALREADY SPECIFIED.
3. FABRICATOR IS RESPONSIBLE FOR PROVIDING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



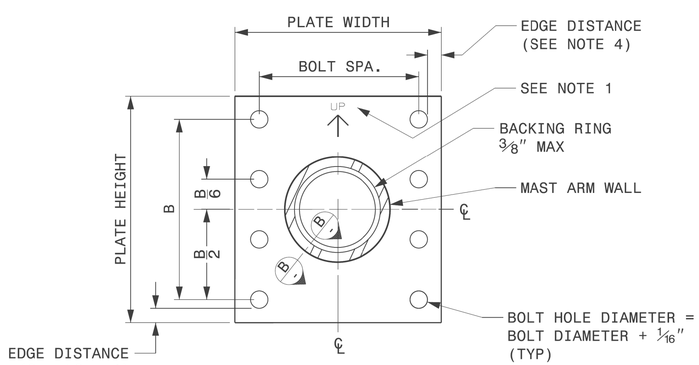
FRONT ELEVATION VIEW



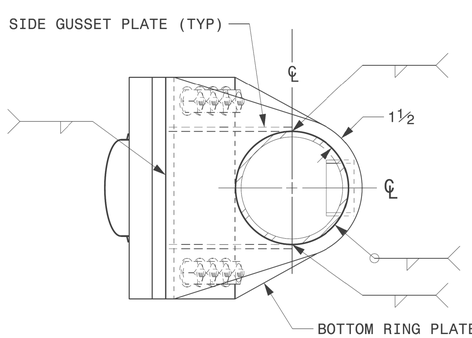
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A
MAST ARM ATTACHMENT PLATE



BOTTOM VIEW

Fabrication Details – Mast Arm Connection

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

SCALE
0 NA
NONE

Typical Fabrication Details
For
Mast Arm Connection To Pole

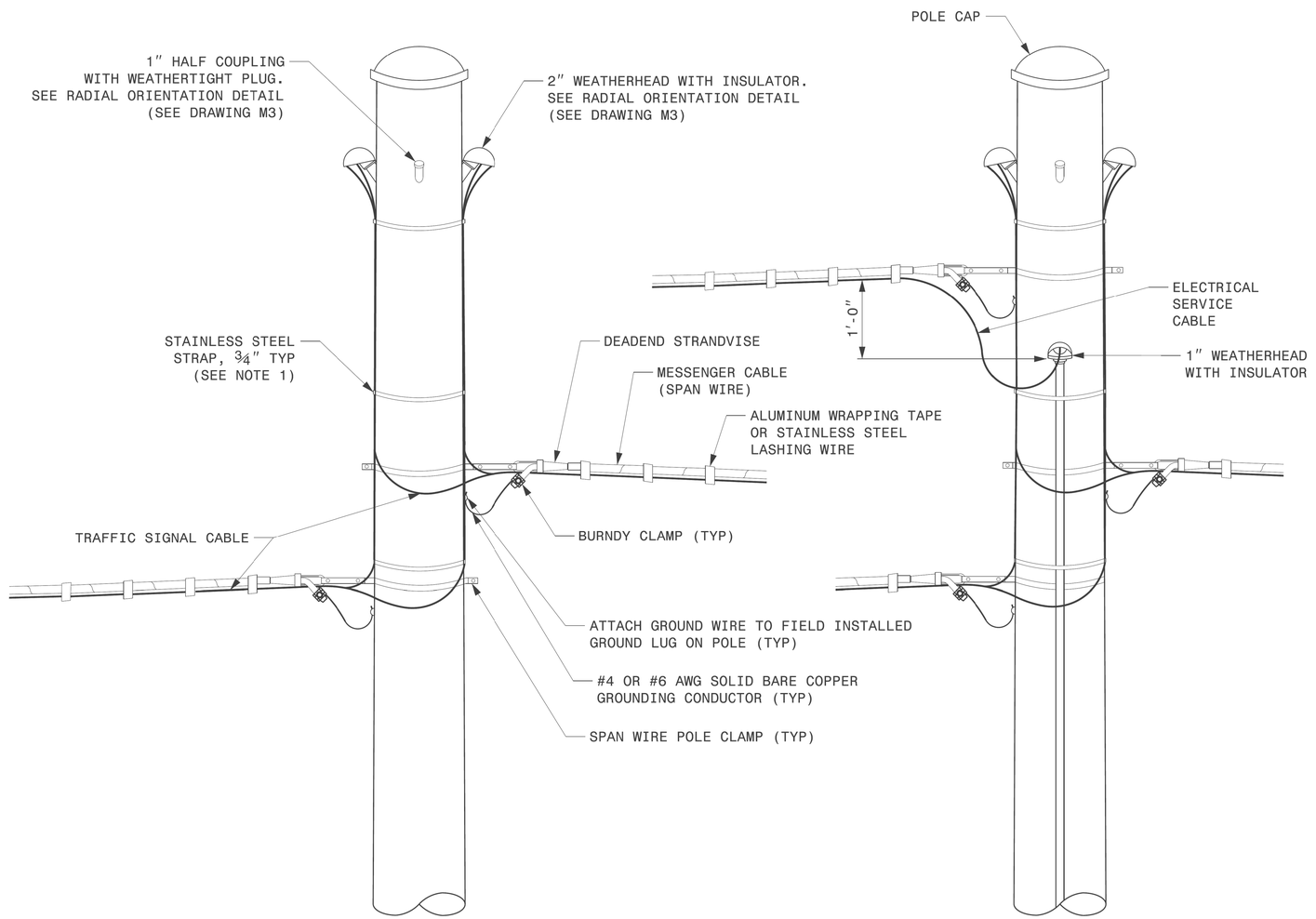
PLAN DATE:	SEPTEMBER 2023	DESIGNED BY:	C.F. ANDREWS
PREPARED BY:	K.C. DURIGON	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
036626
ENGINEER
KEVIN C. DURIGON

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

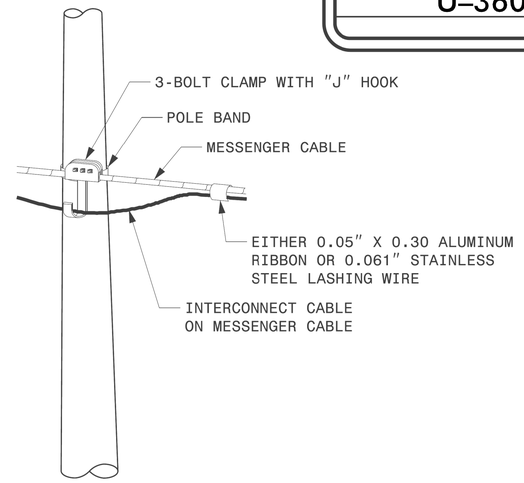
Fabrication Details – Strain Pole Attachments



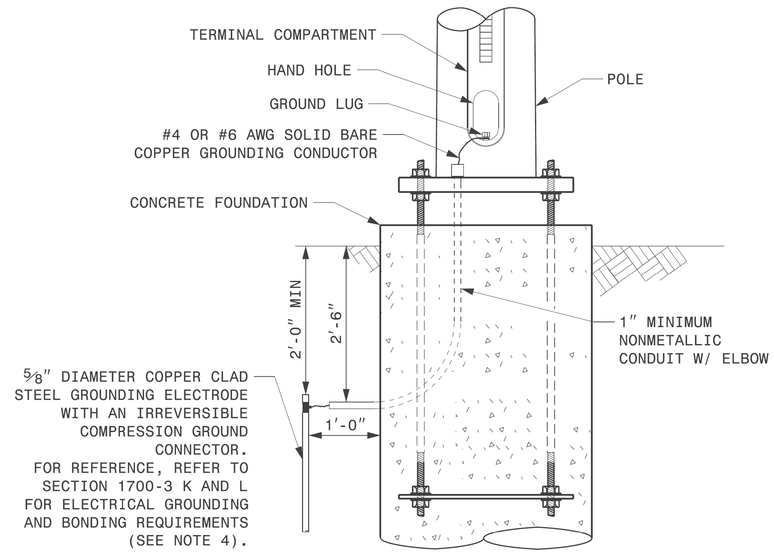
STRAIN POLE ATTACHMENTS

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
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE 0 NA NONE

Typical Fabrication Details For Strain Pole Attachments

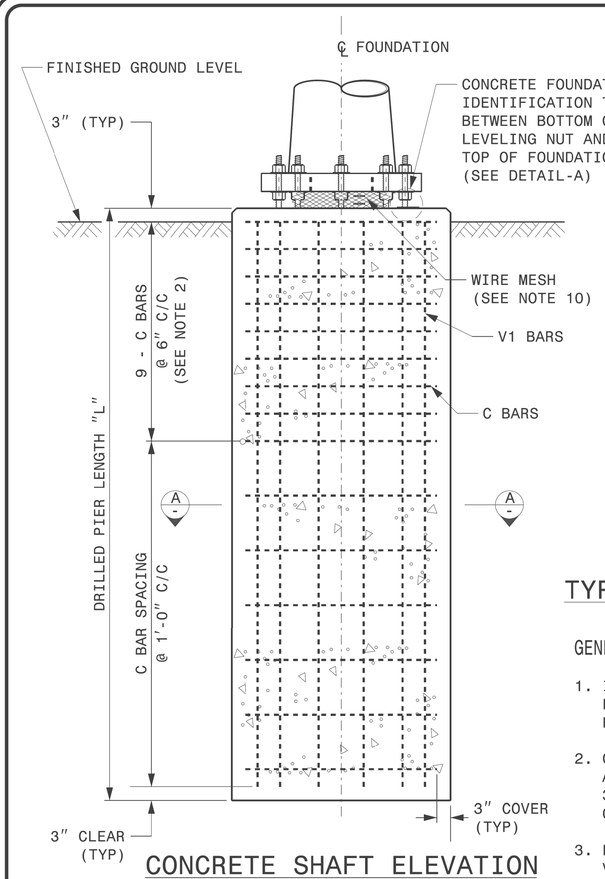
PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F. ANDREWS
PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

REVISIONS	INIT.	DATE

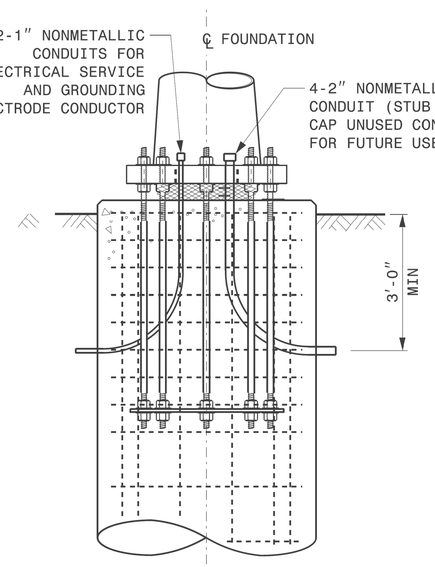
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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

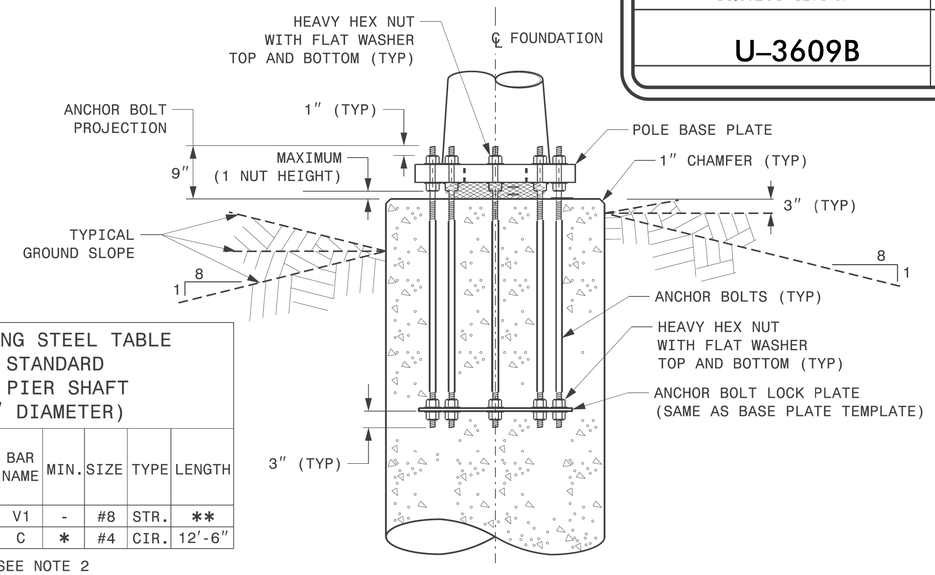
Construction Details – Foundations



CONCRETE SHAFT ELEVATION



TYPICAL FOUNDATION CONDUIT DETAILS



TYPICAL FOUNDATION ANCHOR BOLT DETAILS

(REINFORCING CAGE NOT SHOWN FOR CLARITY)

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

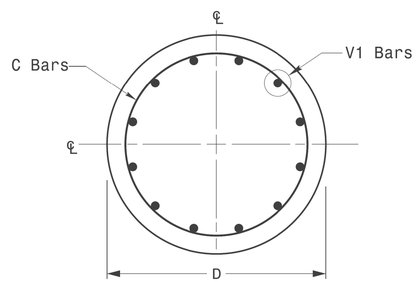
"D" SHAFT DIAMETER	CONCRETE VOLUME (CU. YDS)	BAR NAME	MIN.	SIZE	TYPE	LENGTH
4′-0″	.465 X L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12′-6″

* SEE NOTE 2
** SEE NOTE 3

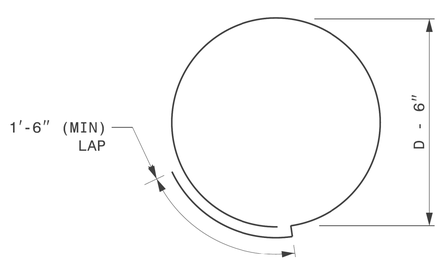
GENERAL NOTES:

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.

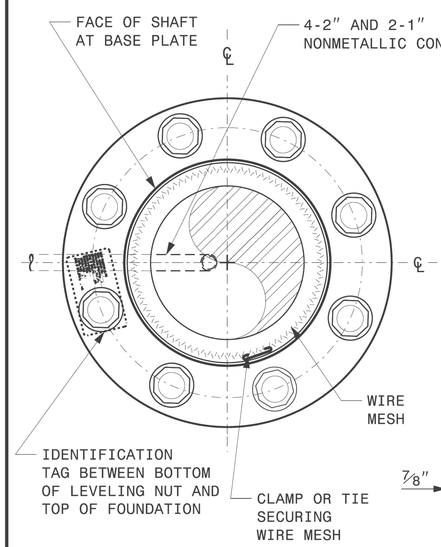
   https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx
7. USE AIR ENTRAINED AA CONCRETE MIX WITH A COMPRESSION STRENGTH OF f′c=4500 psi (MIN) AFTER 28 DAYS.
8. USE ASTM A615 GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL. MAINTAIN AT LEAST 3″ COVER ON ALL REINFORCEMENT.
9. LOCATE 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

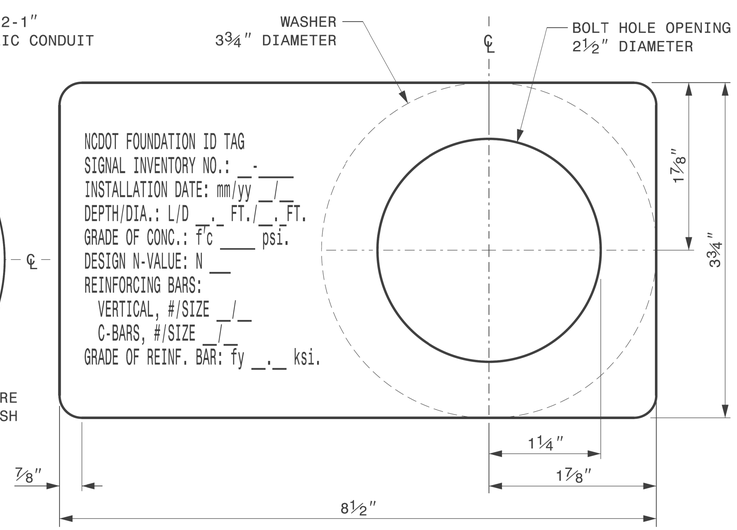


TYPICAL "C" BAR DETAIL



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

SCALE: 0 NA — NONE

Construction Details For Foundations

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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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

03-OCT-2023 12:45
S:\MTIS\CAD\MTIS Signals\Signal Design Section\Structures\Drawings\2024 Metal Pole Std Drawings for LRFD\2024 Sig_M7 Std. Construction Details-Strain Poles.dgn
KCDurigon

SOIL CONDITION

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

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

GENERAL NOTES:

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

FOUNDATION SELECTION:

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

PROJECT I.D. NO.	SHEET NO.
U–3609B	Sig.M8

Standard Strain Pole Foundation – All Soil Conditions

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

SCALE
0 NA
NONE

Standard Strain Pole Foundation for All Soil Conditions

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

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036626 ENGINEER KEVIN C. DURIGON

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