

(remove jumpers and set switches as shown)

(remove jumpers and set switches as shown)

18 CHANNEL PROGRAM CARD

COMPONENT SIDE

FF

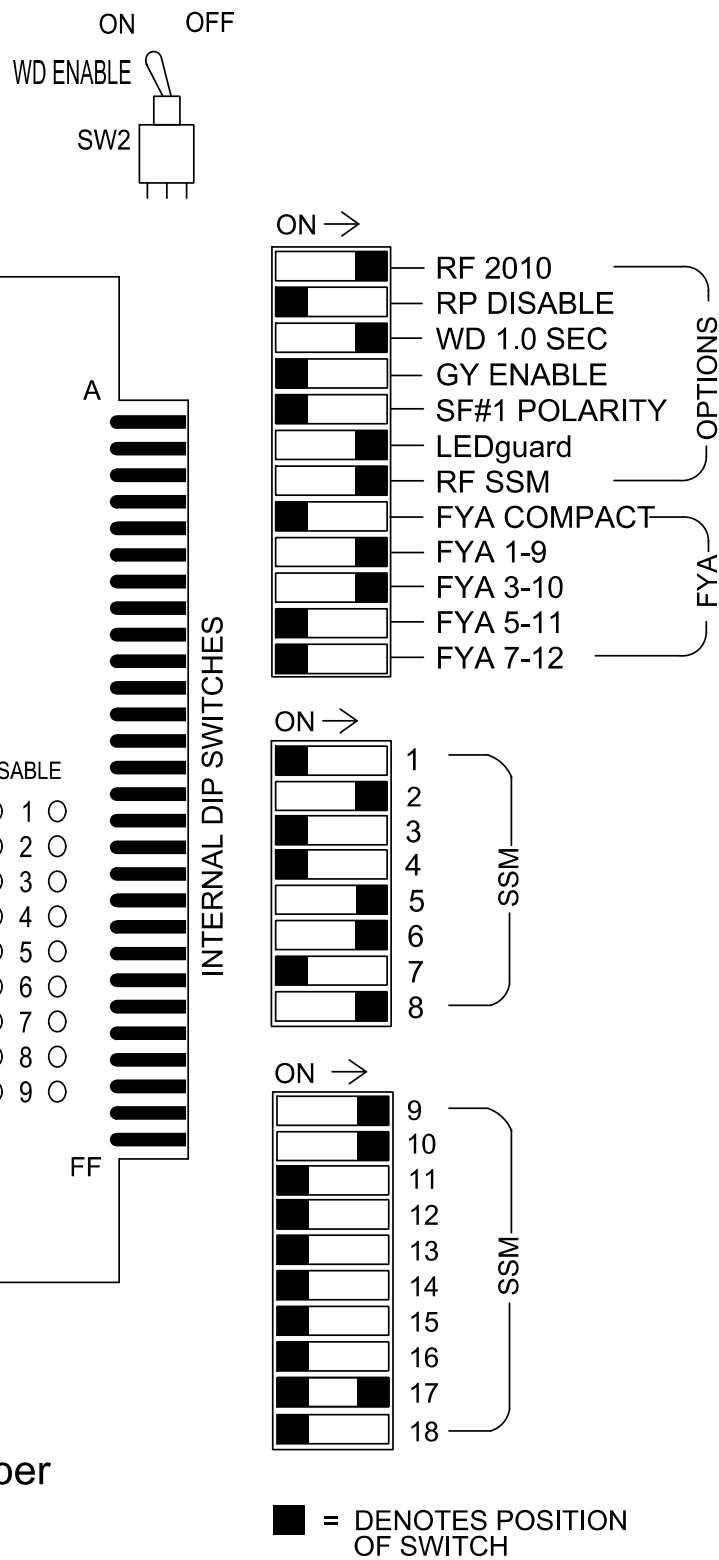
YELLOW DISABLE

INTERVAL DIP SWITCHES

10-18 11-18 12-18 13-18 14-18 15-18 16-18 17-18 1-18
 10-17 11-17 12-17 13-17 14-17 15-17 16-17 1-17
 10-16 11-16 12-16 13-16 14-16 15-16 3-18 2-17 1-16
 10-15 11-15 12-15 13-15 14-15 4-18 3-17 2-16 1-15
 10-14 11-14 12-14 13-14 5-18 4-17 3-16 2-15 1-14
 10-13 11-13 12-13 6-18 5-17 4-16 3-15 2-14 1-13
 10-12 11-12 7-18 6-17 5-16 4-15 3-14 2-13 1-12
 10-11 8-18 7-17 6-16 5-15 4-14 3-13 2-12 1-11
 9-18 8-17 7-16 6-15 5-14 4-13 3-12 2-11 1-10
 9-17 8-16 7-15 6-14 5-13 4-12 3-11 2-10 1-9
 9-16 8-15 7-14 6-13 5-12 4-11 3-10 2-9 1-8
 9-15 8-14 7-13 6-12 5-11 4-10 3-9 2-8 1-7
 9-14 8-13 7-12 6-11 5-10 4-9 3-8 2-7 1-6
 9-13 8-12 7-11 6-10 5-9 4-8 3-7 2-6 1-5
 9-12 8-11 7-10 6-9 5-8 4-7 3-6 2-5 1-4
 9-11 8-10 7-9 6-8 5-7 4-6 3-5 2-4 1-3
 9-10 8-9 7-8 6-7 5-6 4-5 3-4 2-3 1-2

REMOVE JUMPERS AS SHOWN

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.



1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and phase 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 Signal System #D06-17 Lumberton US 301 and SR 1997 (Fayetteville Road).

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, S6, S7, S8, S9, S11, S12, AUX S1, AUX S2, AUX S3
Phases Used.....	1, 2, 3, 3PED, **4, 4PED, 5, 6, 6PED
Overlap "1".....	*
Overlap "2".....	*
Overlap "3".....	NOT USED
Overlap "4".....	NOT USED
Overlap "5".....	*
Overlap "7".....	*
Overlap "8".....	*
Overlap "9".....	*

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

(front view)

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

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

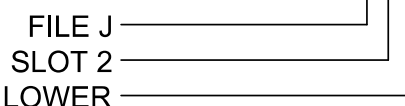
FS = FLASH SENSE
ST = STOP TIME

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

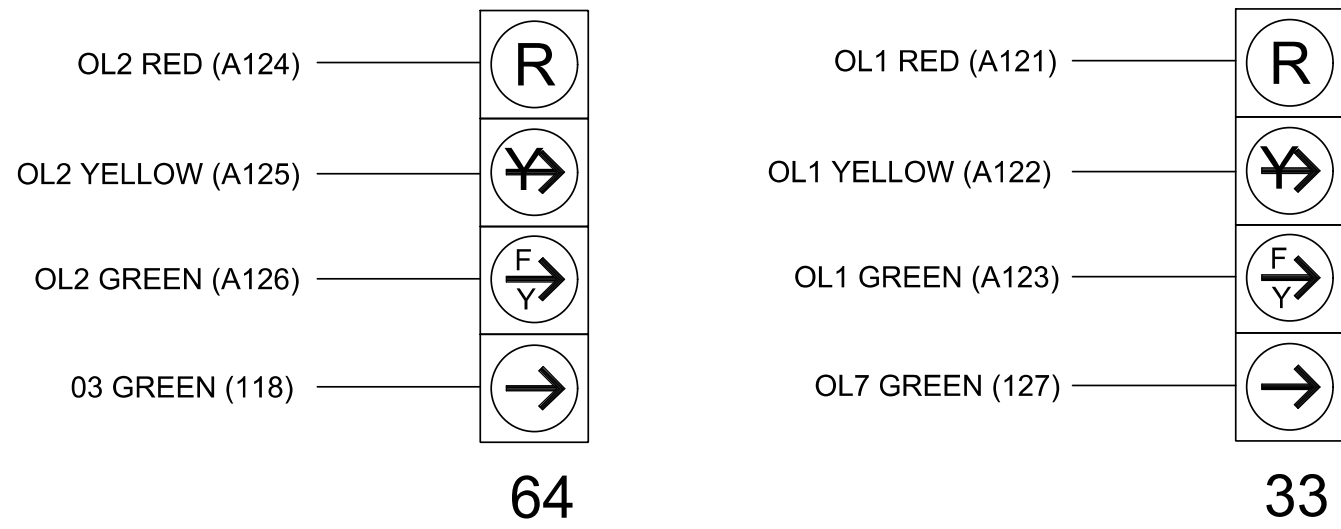
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE
PED PUSH BUTTONS						
P41,P42	TB8-5,6	I12L	69	35	4	PED 4
P61,P62	TB8-7,9	I13U	68	34	6	PED 6
P31,P32	TB8-8,9	I13L	70	36	8	PED 3

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

INPUT FILE POSITION LEGEND: J2L

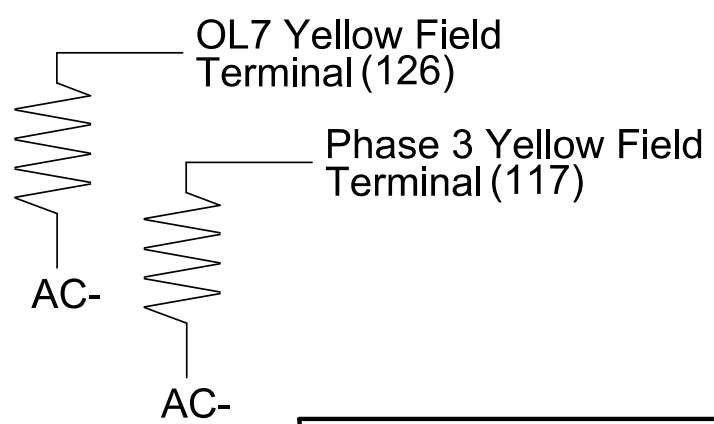


(wire signal heads as shown)



(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: 06-0537T5
DESIGNED: June 2025
SEALED: 6/11/2025
REVISED:

Temporary Design 5 - TMP Phase IV, Step 2
Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

**ELECTRICAL AND PROGRAMMING
DETAILS FOR:**

SR 1997 (Fayetteville Road)
at
SR 1984 (Linkhaw Road)

SEAL

Signed by: Rent Moody DATE 6/11/202
45EA158NATURE _____
SIG. INVENTORY NO. 06-0537T5

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

PED 3 PROGRAMMING DETAIL

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

Web Interface
Home >Controller >Detector Configuration >Pedestrian Detector

Plan 1

Detector	Description	Call Phase	Call Overlap
2		2	0
4	P41, P42	4	0
6	P61, P62	6	0
8	P31, P32	3	0

NOTICE PHASE 3 PED
ASSIGNED TO
DETECTOR 8 PED



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

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

Channel Configuration

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

NOTICE OL7
ASSIGNED TO CHANNEL 1



NOTICE OL8
ASSIGNED TO CHANNEL 5



NOTICE OL9
ASSIGNED TO CHANNEL 8



NOTICE PHASE 3 PED
ASSIGNED TO CHANNEL 16



↑
NOTE: ALL RED FLASH
↑

MAXTIME OVERLAP PROGRAMMING DETAIL

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	5	7	8	9
Type	FYA 4 - Section	FYA 4 - Section	Normal	Normal	Normal	Normal
Included Phases	3	6	1	4,5	4,5	3
Modifier Phases	4,5	3	-	-	-	-
Modifier Overlaps	-	-	-	-	-	-
Trail Green	0	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0	0.0

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

MAXTIME STARTUP AND SOFTWARE FLASH
PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0537T5
DESIGNED: June 2025
SEALED: 6/11/2025
REVISED:

Temporary Design 5 - TMP Phase IV, Step 2
Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

SR 1997 (Fayetteville Road)
at
SR 1984 (Linkhaw Road)

Division 6 Robeson County Lumberton

PLAN DATE: June 2025 REVIEWED BY: H.M. Surti

PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Moody

REVISIONS INIT. DATE

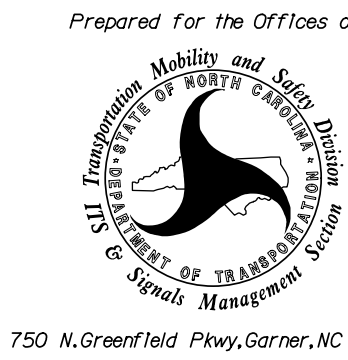
DocuSigned by: Trent M. Moody 6/11/2025

SEALED SIGNATURE DATE

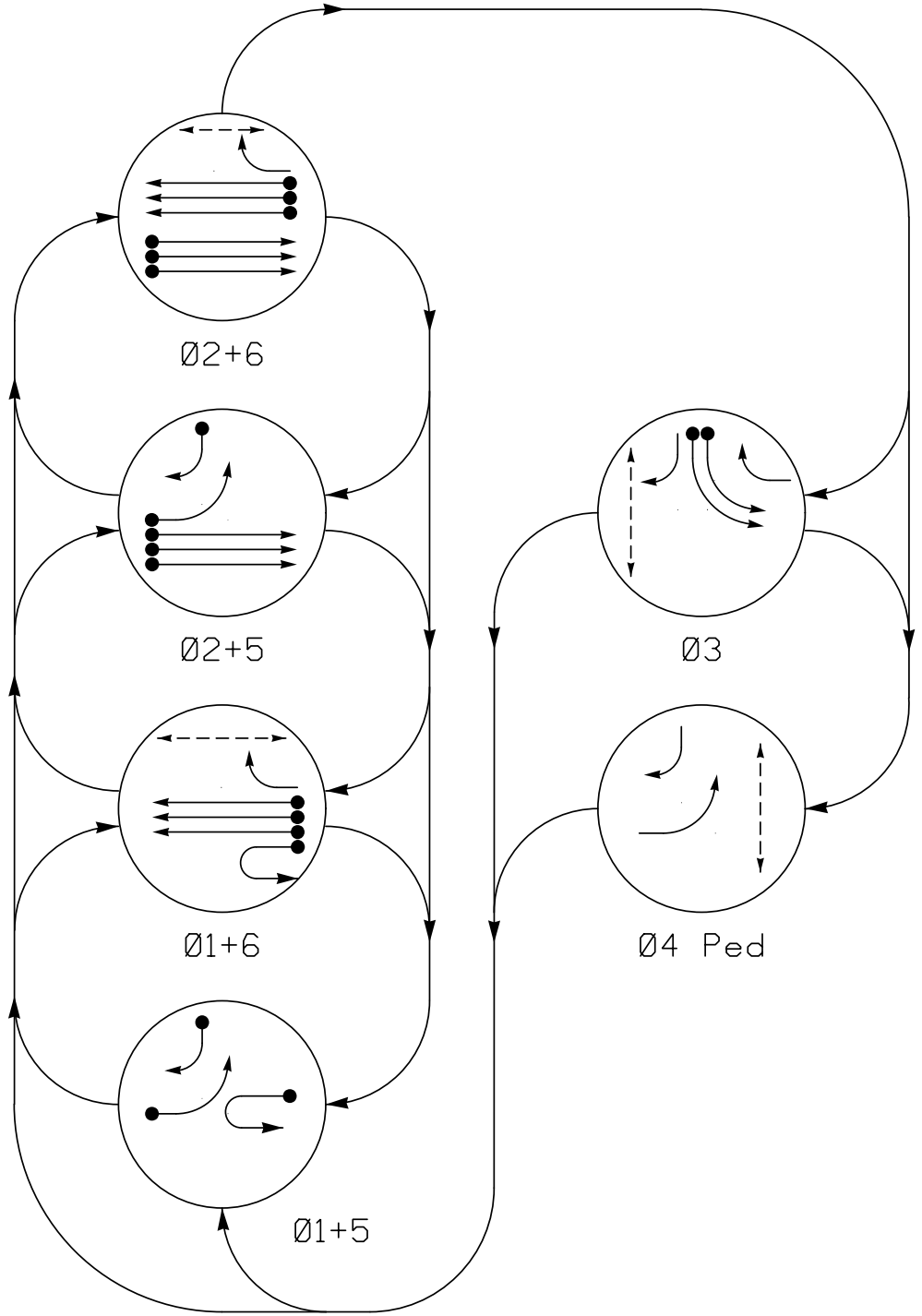
SIG. INVENTORY NO. 06-0537T5



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



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

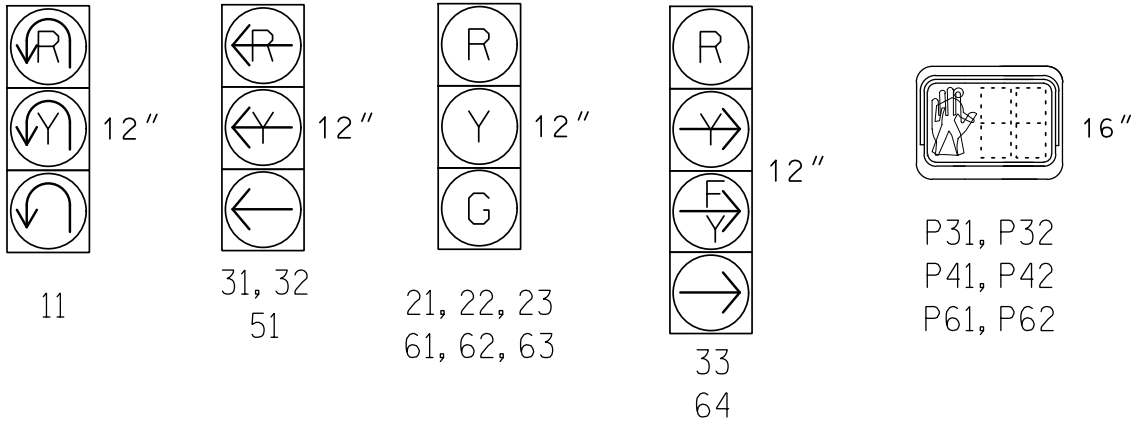
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3	Ø 4	PED	FLASH
II	←	←	←	←	←	←	←	←
21, 22, 23	R	R	G	G	R	R	R	R
31, 32	←	←	←	←	←	←	←	←
33	→	R	→	R	→	→	→	→
51	←	←	←	←	←	←	←	←
61, 62, 63	R	G	R	G	R	R	R	R
64	R	→	R	→	→	→	→	→
P31, P32	DW	DW	DW	DW	W	DW	DRK	DRK
P41, P42	DW	DW	DW	DW	DW	W	DRK	DRK
P61, P62	DW	W	DW	W	DW	DW	DRK	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME DETECTOR INSTALLATION CHART

DETECTOR				PROGRAMMING						
LOOP/ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL
1A	6X40	0	*	*	1	15	-	X	-	X
3A	6X40	0	*	*	3	-	-	X	-	X
3B	6X40	0	*	*	3	-	-	X	-	X
5A	6X40	0	*	*	5	15	-	X	-	X
5B	6X40	0	*	*	5	15	-	X	-	X

* Multi-zone Microwave Detection Zone

RADAR DETECTION SYSTEM

FUNCTION	SENSOR 1 - (2A)	SENSOR 2 - (6A)
Channel	1	2
Phase	2	6
Direction of Travel	EB	WB
Detection Zone (ft)	500 - 100	500 - 100
Enable Speed	Y	Y
Speed Range (mph)	35 - 100	35 - 100
Enable Estimated Time of Arrival	Y	Y
Estimated Time of Arrival (sec)	2.5 - 6.5	2.5 - 6.5

FEATURE	PHASE					
	1	2	3	4 (PED)	5	6
Walk *	-	-	14	13	-	14
Ped Clear *	-	-	31	31	-	31
Min Green	7	12	7	7	7	12
Passage *	2.0	2.0	2.0	-	2.0	2.0
Max 1 *	20	90	30	39	20	90
Yellow Change	3.0	4.6	3.0	3.0	3.0	4.6
Red Clear	3.3	2.2	3.7	1.0	3.4	2.2
Added Initial *	-	-	-	-	-	-
Maximum Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Advance Walk	-	-	7	6	-	7
Non Lock Detector	X	-	-	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 lower than 4 seconds.

6 Phase
Fully Actuated
Signal System #D06-17 Lumberton
US 301/SR 1997 (Fayetteville Road)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

- | PROPOSED | EXISTING |
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Signal Upgrade - Final Design

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

Prepared For the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529
SCALE
0 40
1" = 40'

SR 1997 (Fayetteville Road)
at
SR 1984 (Linkhaw Road)

Division 6	Robeson County	Lumberton
PLAN DATE: June 2025	REVIEWED BY: H.M. Surti	
PREPARED BY: J.C. Grimm	REVIEWED BY: T.M. Woody	
REVISIONS	INIT.	DATE

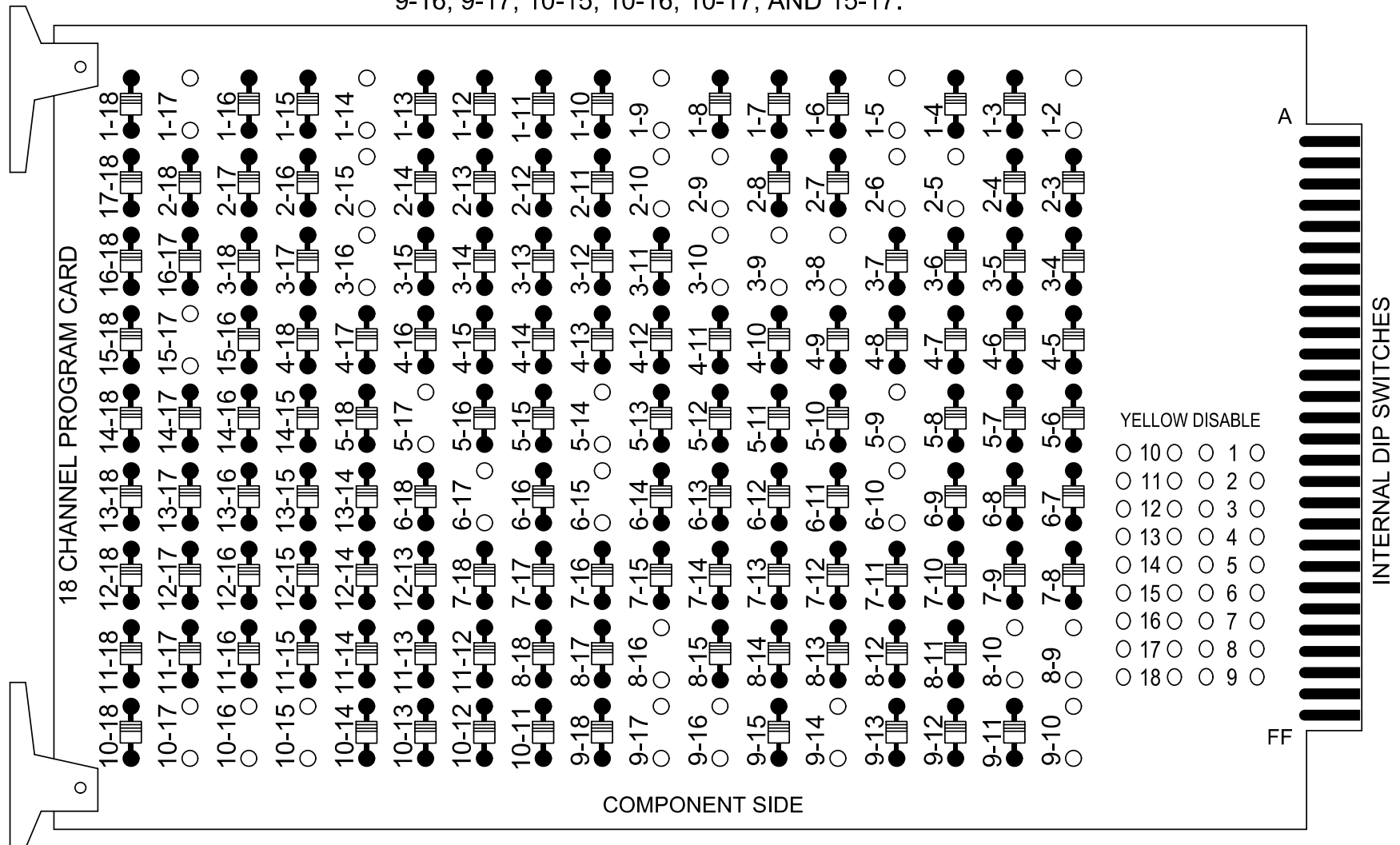
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
040329
ENGINEER
T.M. WOODY
DATE
6/11/2025
SIC. INVENTORY NO. 06-0537

18 CHANNEL CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS: 1-2, 1-5, 1-9, 1-14, 1-17, 2-5, 2-6, 2-9, 2-10, 2-15, 3-8, 3-9, 3-10, 3-16, 5-9, 5-14, 5-17, 6-10, 6-15, 6-17, 8-9, 8-10, 8-16, 9-10, 9-14, 9-16, 9-17, 10-15, 10-16, 10-17, AND 15-17.



REMOVE JUMPERS AS SHOWN

NOTES:

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

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program controller to start up in phase 2 Green No Walk and phase 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #D06-17 Lumberton US 301 and SR 1997 (Fayetteville Road).

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, S6, S7, S8, S9, S11, S12, AUX S1, AUX S2, AUX S3
Phases Used.....1, 2, 3, 3PED, **4, 4PED, 5, 6, 6PED
Overlap "1".....*
Overlap "2".....*
Overlap "3".....NOT USED
Overlap "4".....NOT USED
Overlap "5".....*
Overlap "7".....*
Overlap "8".....*
Overlap "9".....*

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

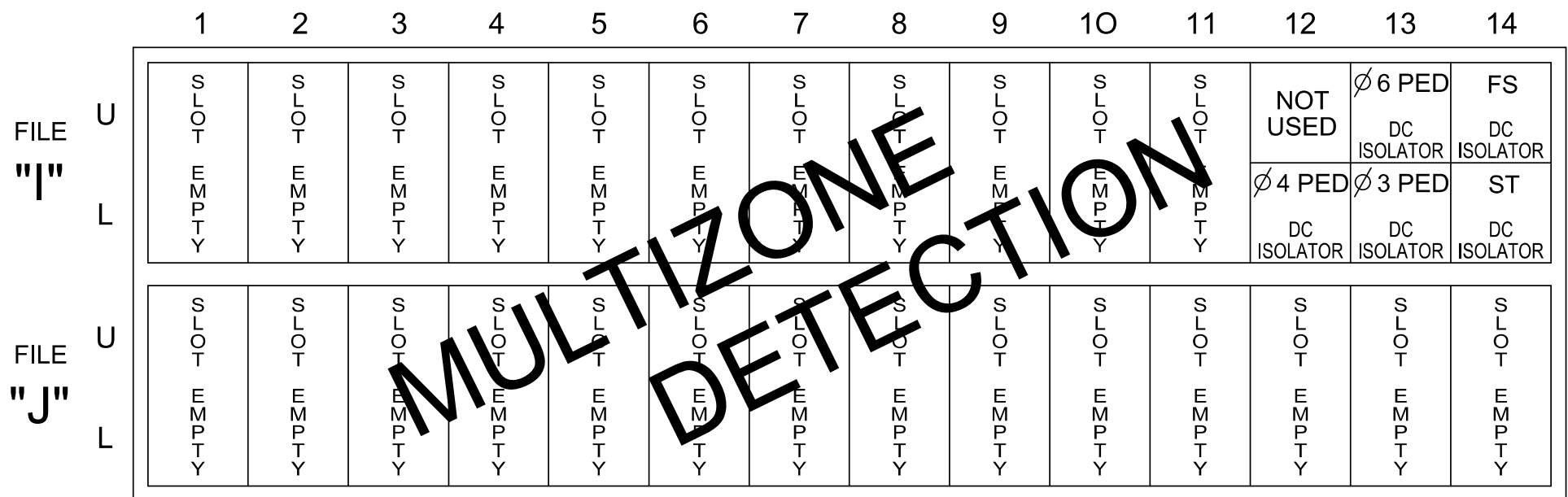
SIGNAL HEAD HOOK-UP CHART

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
GMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	OL7	2	2 PED	3	4	4 PED	OL8	6	6 PED	7	OL9	3 PED	OL1	OL2	OL5	OL3	OL4	SPARE
SIGNAL HEAD NO.	33★	21,22 23	NU	64★	NU	P41 P42	51	61,62 63	P61 P62	NU	31,32	P31 P32	33★	64★	11	NU	NU	NU
RED		128						134					A121	A124				
YELLOW	*	129		*				135										
GREEN		130						136										
RED ARROW							131				107				A111			
YELLOW ARROW							132				108		A122	A125	A112			
FLASHING YELLOW ARROW													A123	A126				
GREEN ARROW	127			118			133				109				A113			
Hand icon						104			119			110						
Walking person icon						106			121			112						

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

INPUT FILE POSITION LAYOUT

(front view)



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

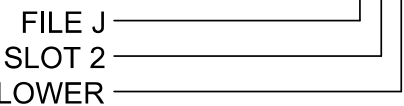
FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE
PED PUSH BUTTONS						
P41,P42	TB8-5,6	I12L	69	35	4	PED 4
P61,P62	TB8-7,9	I13U	68	34	6	PED 6
P31,P32	TB8-8,9	I13L	70	36	8	PED 3

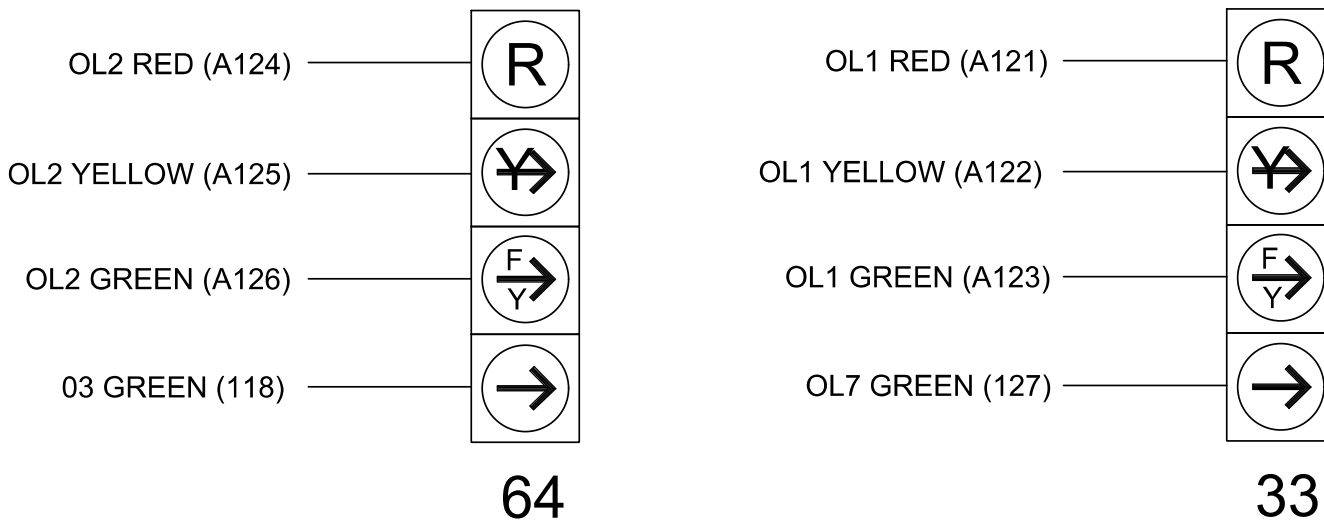
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

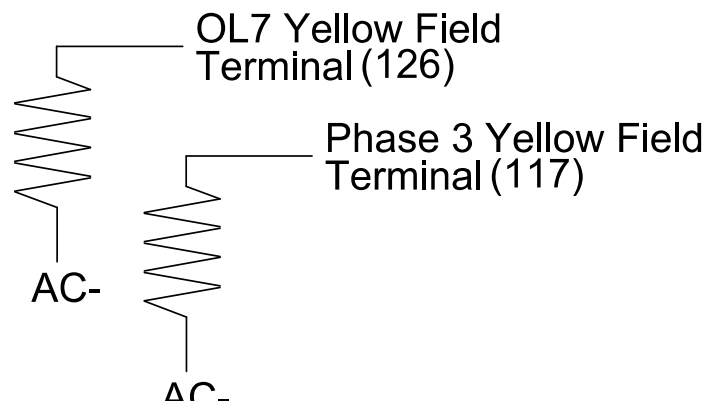
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

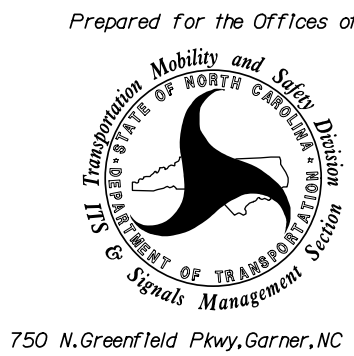
ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0537
DESIGNED: June 2025
SEALED: 6/11/2025
REVISED:

Final Design
Electrical Detail - Sheet 1 of 2

stv
STV Engineers, Inc.
900 West Trade St., Suite 715
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NC License Number F-0991

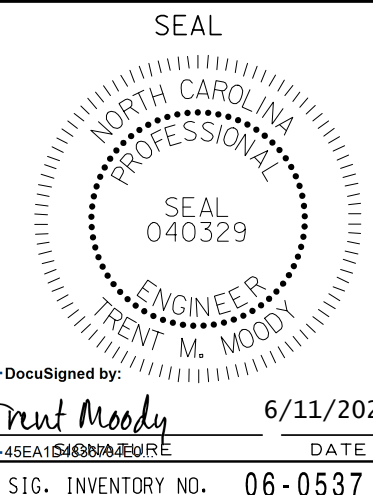


SR 1997 (Fayetteville Road)
at
SR 1984 (Linkhaw Road)

Division 6 Robeson County Lumberton
PLAN DATE: June 2025 REVIEWED BY: H.M. Surti
PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Woody

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



PED 3 PROGRAMMING DETAIL

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

Web Interface
Home >Controller >Detector Configuration >Pedestrian Detector

Plan 1

Detector	Description	Call Phase	Call Overlap
2		2	0
4	P41, P42	4	0
6	P61, P62	6	0
8	P31, P32	3	0

NOTICE PHASE 3 PED
ASSIGNED TO
DETECTOR 8 PED ➡

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

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

Channel Configuration

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

NOTICE OL7
ASSIGNED TO CHANNEL 1 ➡

NOTICE OL8
ASSIGNED TO CHANNEL 5 ➡

NOTICE OL9
ASSIGNED TO CHANNEL 8 ➡

NOTICE PHASE 3 PED
ASSIGNED TO CHANNEL 16 ➡

↑ ↑
NOTE: ALL RED FLASH

MAXTIME OVERLAP PROGRAMMING DETAIL

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	5	7	8	9
Type	FYA 4 - Section	FYA 4 - Section	Normal	Normal	Normal	Normal
Included Phases	3	6	1	4,5	4,5	3
Modifier Phases	4,5	3	-	-	-	-
Modifier Overlaps	-	-	-	-	-	-
Trail Green	0	0	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0	0.0	0.0

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0537
DESIGNED: June 2025
SEALED: 6/11/2025
REVISED:

Final Design
Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

SR 1997 (Fayetteville Road)
at
SR 1984 (Linkhaw Road)

Division 6 Robeson County Lumberton

PLAN DATE: June 2025 REVIEWED BY: H.M. Surti

PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Woody

REVISIONS INIT. DATE

.....

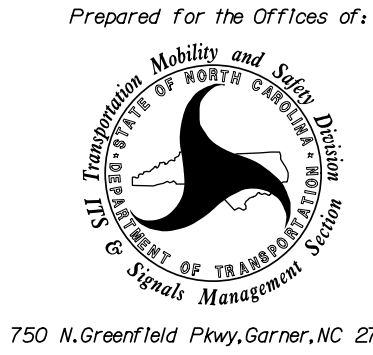
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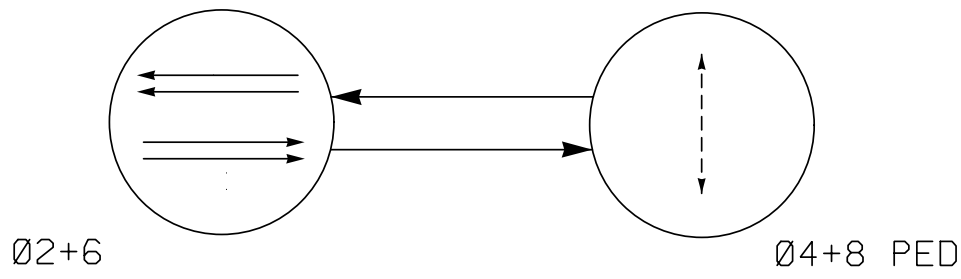
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Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991



SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
Trent M. Moody
040329
DocuSigned by:
Trent M. Moody
6/11/2025
DATE
SIG. INVENTORY NO. 06-0537

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

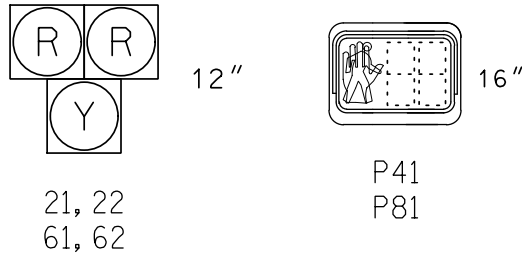
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE					
	Ø 2 + 6 DARK	ACTIVATION	STEADY YELLOW	ALL RED	Ø 4 + 8 PED WALK	Ø 4 + 8 PED CLEAR
21,22	DRK	FY	Y	R	R	FR*
61,62	DRK	FY	Y	R	R	FR*
P41	DW	DW	DW	DW	W	FDWDRK
P81	DW	DW	DW	DW	W	FDWDRK

* ALTERNATING FLASH

SIGNAL FACE I.D.

All Heads L.E.D.

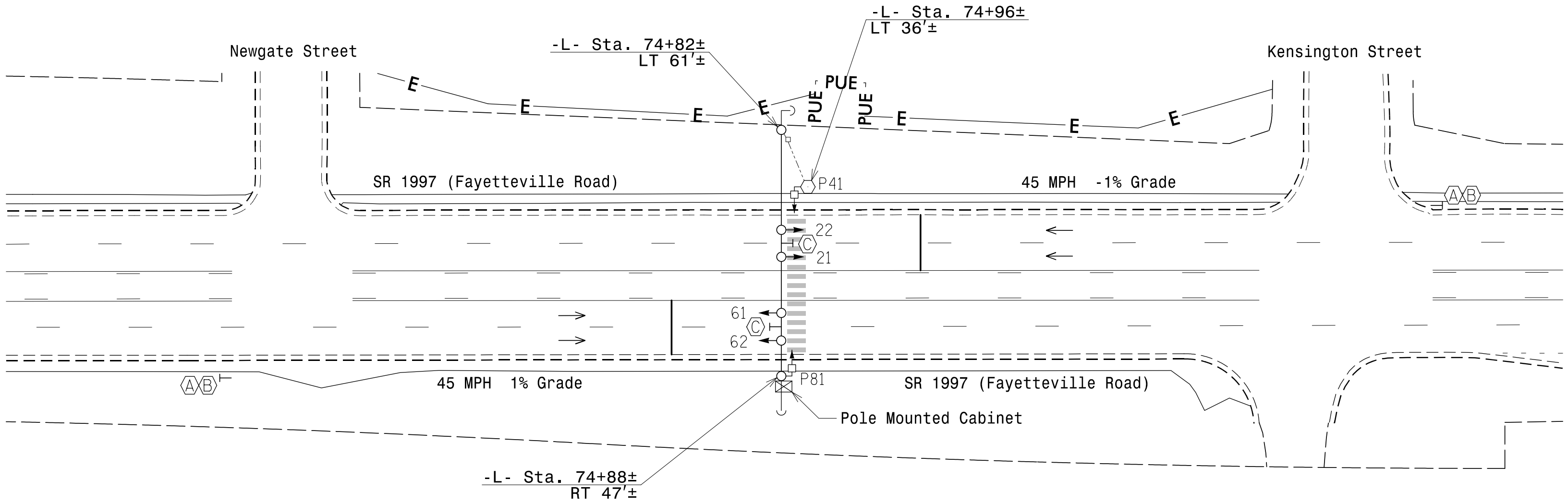


- Y - Steady Yellow
- FY - Flashing Yellow
- R - Steady Red
- FR - Flashing Red
- W - Walk
- DW - Don't Walk
- FDW - Flashing Don't Walk
- DRK - Dark

2 Phase
Semi-Actuated
Pedestrian Hybrid Beacon
(Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Enable Ped Clear During Red for phase 4 PED and phase 8 PED.
- Locate Pedestrian and Crosswalk advance signs in accordance with Table 2C-3 in Section 2C.04 of the 2023 MUTCD or as otherwise directed by the Engineer.



LEGEND

- | PROPOSED | EXISTING |
|---|---|
| Traffic Signal Head | N/A |
| Modified Signal Head Sign | N/A |
| Pedestrian Signal Head With Push Button & Sign | N/A |
| Signal Pole with Guy | N/A |
| Signal Pole with Sidewalk Guy | N/A |
| Inductive Loop Detector | N/A |
| Controller & Cabinet | N/A |
| Junction Box | N/A |
| 2-in Underground Conduit | N/A |
| Right of Way | N/A |
| Directional Arrow | N/A |
| Curb Ramp | N/A |
| Construction Zone | N/A |
| (A) Pedestrian Crossing Sign (W11-2) (See Figure 1) | (A) Pedestrian Crossing Sign (W11-2) (See Figure 1) |
| (B) "AHEAD" Plaque (W16-9P) (See Figure 1) | (B) "AHEAD" Plaque (W16-9P) (See Figure 1) |
| (C) "STOP ON RED - YIELD ON FLASHING RED AFTER STOP" Sign (R10-23a) | (C) "STOP ON RED - YIELD ON FLASHING RED AFTER STOP" Sign (R10-23a) |

MAXTIME TIMING CHART				
FEATURE	PHASE			
	2	4 PED	6	8 PED
Walk *	-	7	-	7
Ped Clear *	-	16	-	16
Min Green	10	7	10	7
Passage *	0.0	0.0	0.0	0.0
Max 1 *	30	7	30	7
Yellow Change	4.6	3.0	4.6	3.0
Red Clear	2.0	0.0	2.0	0.0
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	-
Pre Clearance	5.0	-	5.0	-
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 lower than 4 seconds.



New Installation
Temporary Design 1 - TMP Phase I

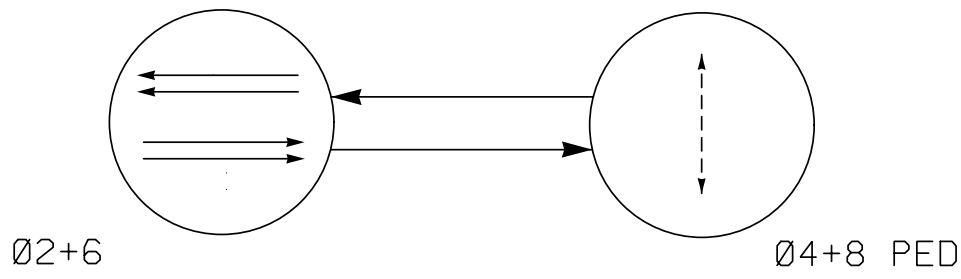
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STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991

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

SR 1997 (Fayetteville Road)
at
Pedestrian Hybrid Beacon/
N. of SR 1948 (Linkhaw Road)
Division 6 Robeson County Lumberton
PLAN DATE: Feb 2025 REVIEWED BY: H.M. Surti
PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Woody
REVISIONS INIT. DATE
DocuSigned by: Trent Moody 2/10/2025
SEALED BY: DATE
SIG. INVENTORY NO. 06-141611

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED
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NORTH CAROLINA
PROFESSIONAL
ENGINEER
Trent M. Moody
040329
2/10/2025
DATE
SIG. INVENTORY NO. 06-141611

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

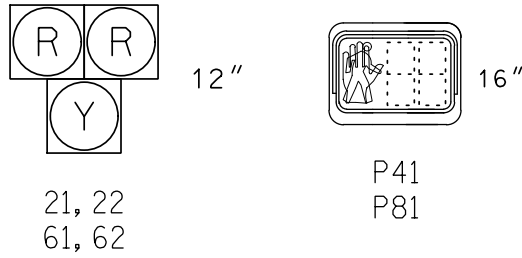
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE		PHASE							
		Ø 2 + 6	ACTIVATION	STEADY YELLOW	ALL RED	Ø 4 + 8 PED	Ø 4 + 8 PED	FLASH	
21,22	DRK	FY	Y	R	R	FR*	Y		
61,62	DRK	FY	Y	R	R	FR*	Y		
P41	DW	DW	DW	DW	W	FDW	DRK		
P81	DW	DW	DW	DW	W	FDW	DRK		

* ALTERNATING FLASH

SIGNAL FACE I.D.

All Heads L.E.D.

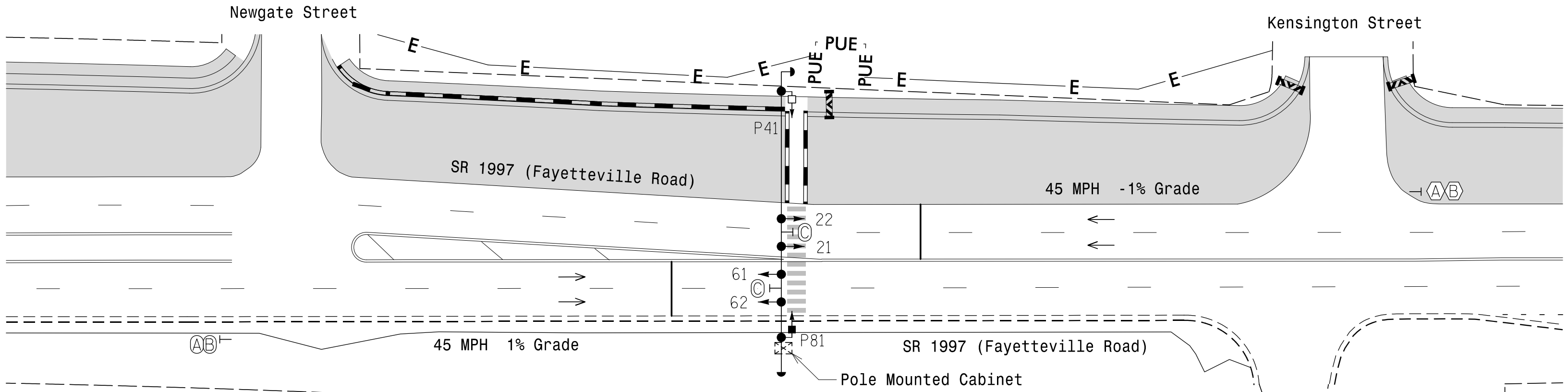


- Y - Steady Yellow
- FY - Flashing Yellow
- R - Steady Red
- FR - Flashing Red
- W - Walk
- DW - Don't Walk
- FDW - Flashing Don't Walk
- DRK - Dark

2 Phase
Semi-Actuated
Pedestrian Hybrid Beacon
(Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Reposition existing signal heads numbered 21 and 22.
- Reposition existing sign C.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Enable Ped Clear During Red for phase 4 PED and phase 8 PED.
- Locate Pedestrian and Crosswalk advance signs in accordance with Table 2C-3 in Section 2C.04 of the 2023 MUTCD or as otherwise directed by the Engineer.

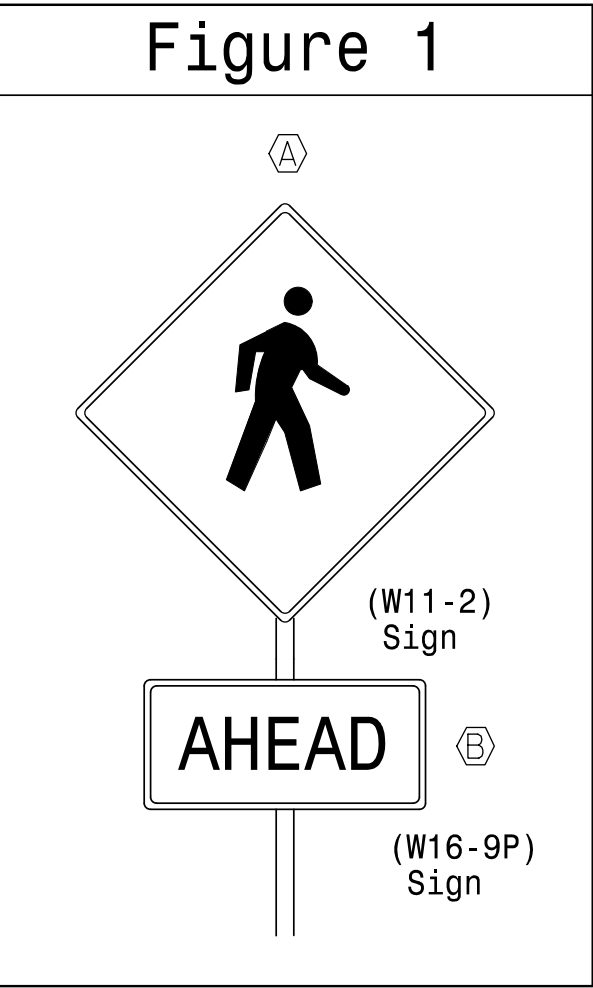


LEGEND

PROPOSED	EXISTING

MAXTIME TIMING CHART				
FEATURE	PHASE			
	2	4 PED	6	8 PED
Walk *	-	13	-	13
Ped Clear *	-	25	-	25
Min Green	10	7	10	7
Passage *	0.0	0.0	0.0	0.0
Max 1 *	30	7	30	7
Yellow Change	4.6	3.0	4.6	3.0
Red Clear	2.0	0.0	2.0	0.0
Added Initial *	-	-	-	-
Maximum Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Advance Walk	-	-	-	-
Pre Clearance	5.0	-	5.0	-
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 lower than 4 seconds.

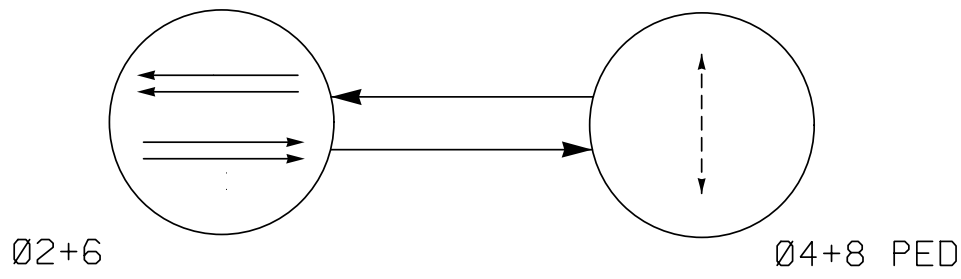


Pedestrian Crossing
Temporary Design 2 - TMP Phase II, Step 3

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Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991

Prepared for the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	SR 1997 (Fayetteville Road) at Pedestrian Hybrid Beacon/ N. of SR 1948 (Linkhaw Road) Division 6 Robeson County Lumberton PLAN DATE: Feb 2025 REVIEWED BY: H.M. Surti PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Woody	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER RENT M. MOODY 2/10/2025 DATE SIG. INVENTORY NO. 06-1416T2
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PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

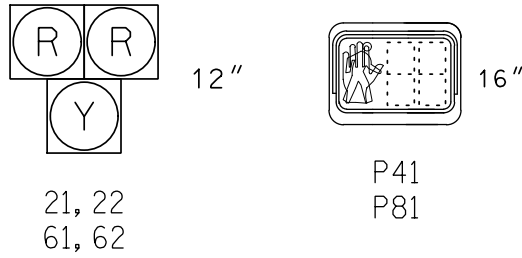
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION		PHASE							
SIGNAL FACE	Ø2+6	ACTIVATION	STEADY YELLOW	ALL RED	Ø4+8 PED WALK	Ø4+8 PED CLEAR	FLASH		
	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6		
	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6		
	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6		
	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6	Ø2+6		
21,22	DRK	FY	Y	R	R	FR*	Y		
61,62	DRK	FY	Y	R	R	FR*	Y		
P41	DW	DW	DW	DW	W	FDW	DRK		
P81	DW	DW	DW	DW	W	FDW	DRK		

* ALTERNATING FLASH

SIGNAL FACE I.D.

All Heads L.E.D.

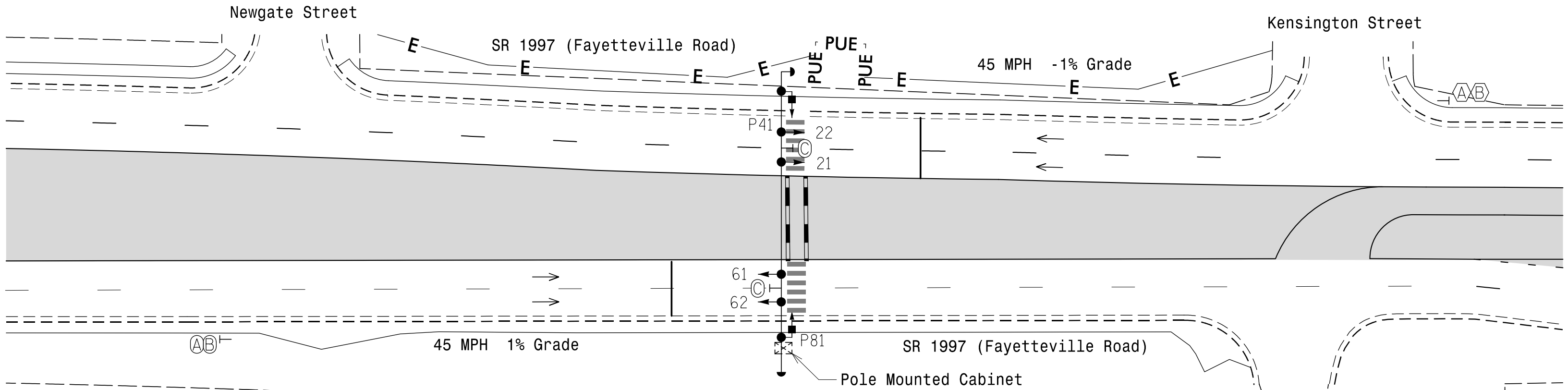


- Y - Steady Yellow
- FY - Flashing Yellow
- R - Steady Red
- FR - Flashing Red
- W - Walk
- DW - Don't Walk
- FDW - Flashing Don't Walk
- DRK - Dark

2 Phase
Semi-Actuated
Pedestrian Hybrid Beacon
(Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Reposition existing signal heads numbered 21 and 22.
- Reposition existing sign C.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Enable Ped Clear During Red for phase 4 PED and phase 8 PED.
- Locate Pedestrian and Crosswalk advance signs in accordance with Table 2C-3 in Section 2C.04 of the 2023 MUTCD or as otherwise directed by the Engineer.

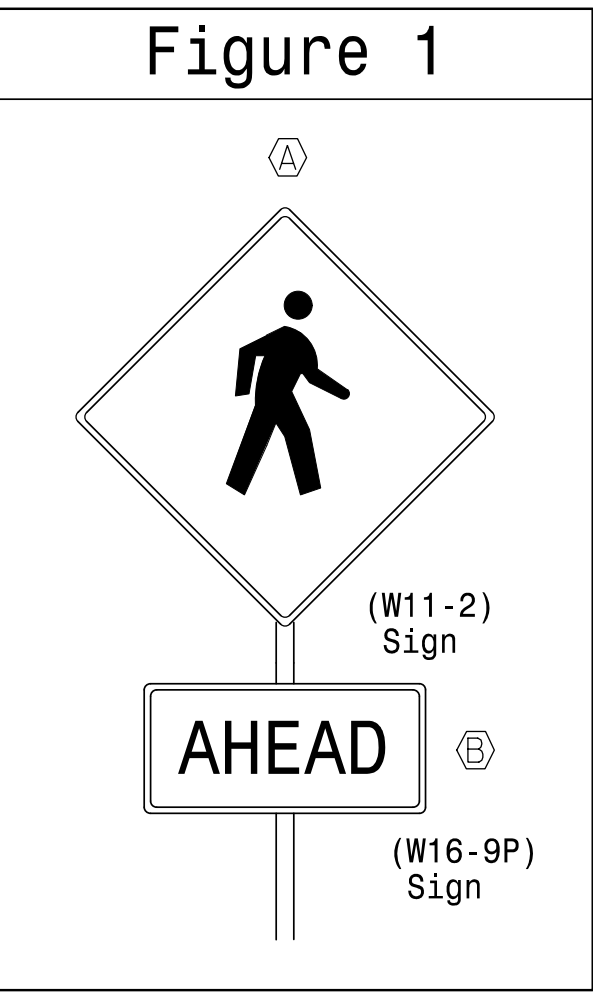


LEGEND

- | PROPOSED | EXISTING |
|---|----------|
| Traffic Signal Head | N/A |
| Modified Signal Head Sign | N/A |
| Pedestrian Signal Head With Push Button & Sign | N/A |
| Signal Pole with Guy | N/A |
| Signal Pole with Sidewalk Guy | N/A |
| Inductive Loop Detector | N/A |
| Controller & Cabinet | N/A |
| Junction Box | N/A |
| 2-in Underground Conduit | N/A |
| Right of Way | N/A |
| Directional Arrow | N/A |
| Curb Ramp | N/A |
| Construction Zone | N/A |
| Pedestrian Crossing Sign (W11-2) (See Figure 1) | N/A |
| "AHEAD" Plaque (W16-9P) (See Figure 1) | N/A |
| "STOP ON RED - YIELD ON FLASHING RED AFTER STOP" Sign (R10-23a) | N/A |

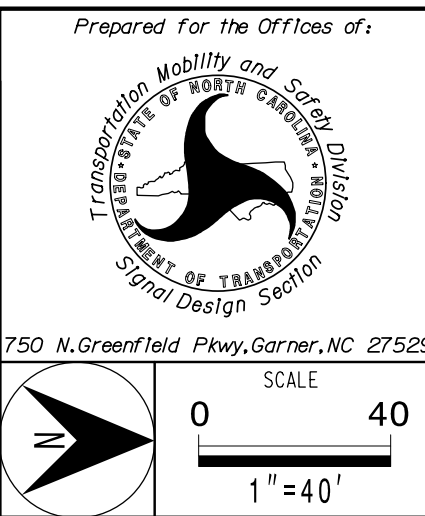
MAXTIME TIMING CHART		PHASE			
FEATURE		2	4 PED	6	8 PED
Walk *		-	7	-	7
Ped Clear *		-	23	-	23
Min Green		10	7	10	7
Passage *		0.0	0.0	0.0	0.0
Max 1 *		30	7	30	7
Yellow Change		4.6	3.0	4.6	3.0
Red Clear		2.0	0.0	2.0	0.0
Added Initial *		-	-	-	-
Maximum Initial *		-	-	-	-
Time Before Reduction *		-	-	-	-
Time To Reduce *		-	-	-	-
Minimum Gap		-	-	-	-
Advance Walk		-	-	-	-
Pre Clearance		5.0	-	5.0	-
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 lower than 4 seconds.



Pedestrian Crossing
Temporary Design 3 - TMP Phase III, Step 1

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Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991



SR 1997 (Fayetteville Road) at Pedestrian Hybrid Beacon/ N. of SR 1948 (Linkhaw Road)	
Division 6	Robeson County Lumberton
PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti
PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Woody
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
RENT M. MOODY
040329

DocuSigned by:
Rent M. Moody
2/10/2025
DATE

SIG. INVENTORY NO. 06-1416T3

1/21/2025 4:44PM Project: 4018560\4018560_0001\450_Deliverables & Submittals\4018560-5797\Traffic\Signal\Temporary Signal\4018560-1389T (FYA)rev11\le-L\Linkhaw North U-Turn\4018560-1389T-sm.ele.2024xxxx.dgn LeonAR

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

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

NOTE OL3 ASSIGNED
TO CHANNEL 5
NOTE OL4 ASSIGNED
TO CHANNEL 7

↑ ↑
NOTE: ALL RED FLASH

MAXTIME OVERLAP PROGRAMMING DETAIL

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

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

← NOTICE INCLUDED PHASES
ON OL3 AND OL4

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

FYA SIGNAL OUTPUT REMAPPING ASSIGNMENT
PROGRAMMING DETAIL FOR SIGNAL HEADS 71&72

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

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

IO Module 1

Output Point	Description	Output Control Type	Index
33	C1-35	Not Active	
34	C1-36	Phase Green	7
35	C1-37	Not Active	
36	C1-38	Phase Green	7

NOTICE
OUTPUT
REMAPPING

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-1389T
DESIGNED: Feb 2025
SEALED: 2/10/2025
REVISED:

Temporary Signal - TMP Phase III, Step 1
Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

SR 1997 (Fayetteville Road)
at
SR 1984 (Linkhaw Road)
Temporary U-Turn North

Division 6 Robeson County Lumberton

PLAN DATE: Feb 2025 REVIEWED BY: H.M. Surti

PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Woody

REVISIONS INIT. DATE

DATE

DATE

DATE

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



DocuSigned by: Trent M. Moody 2/10/2025

DATE

SIG. INVENTORY NO. 06-1389T

1/21/2025
A:\P\016016184\4018560\4018560_0001450_Deliverables & Submittals\SMU-5797\RFI\offices\Signal&Temporary_Signal&06-1389T_(Fayetteville)le-Linkhaw North U-Turn\061389T-smu.ele.2024xxxx.dgn
LeonAR

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 <u>RUN DEFAULT PHASING</u>	1	1
ACTIVE PLAN REQUIRED TO <u>RUN ALTERNATE PHASING</u>	2	2

ALTERNATE PHASING CHANGE SUMMARY

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

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

VEH DET PLAN 2: Reduces delay time for phase 7 call on loop 7A 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 LOOP 7A

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

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

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

Plan 2		
Detector	Call Phase	Delay
7A 21	7	0

PED YELLOW CONFLICT MONITOR WIRING DETAIL
(make cabinet wiring changes as shown below)

In order to use FYA COMPACT mode with the 16 or 18 Channel Monitor, the cabinet must be wired such that the (unused) Ped Yellow load switch outputs are wired to the conflict monitor as follows: From 6 PY (field term. 120) to chan. 10 green (monitor pin R), from 8 PY (field term. 111) to chan. 10 yellow (monitor pin U).

Follow the instructions below to make appropriate connections:

- STEP 1: Fold down rear panel of output file.
STEP 2: Find unused wiring harness fom conflict monitor card edge connector (which should be tied and bundled together).
STEP 3: Find the connector that correspond to the folloeing conflict monitor card edge pins and solder wire the the appropriate terminal on the rear of the output file shown below:

CMU-R -----6PY (term. 120)
CMU-U -----8PY (term. 111)

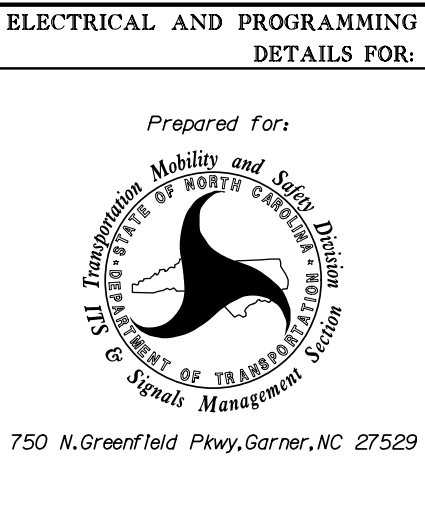
NOTE: Some cabinet manufacturers use keyed connectors to accomplish this wiring configuration. If connectors are used, fold down the rear panel of the output file and find the set of 3 keyed connectors and connect them as shown below:

1 - 2PY	-----	1- CMU-13
2 - 4PY	-----	2- CMU-16
3 - 6PY	-----	3- CMU-R
4 - 8PY	-----	4- CMU-U

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-1389T
DESIGNED: Feb 2025
SEALED:2/10/2025
REVISED:

Temporary Signal - TMP Phase III, Step 1
Electrical Detail - Sheet 3 of 3

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



ELECTRICAL AND PROGRAMMING DETAILS FOR:			
Prepared for: SR 1997 (Fayetteville Road) at SR 1984 (Linkhaw Road) Temporary U-Turn North			
Division 6	Robeson County	Lumberton	
PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti		
PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Woody		
REVISIONS	INIT.	DATE	
.....			
.....			
.....			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

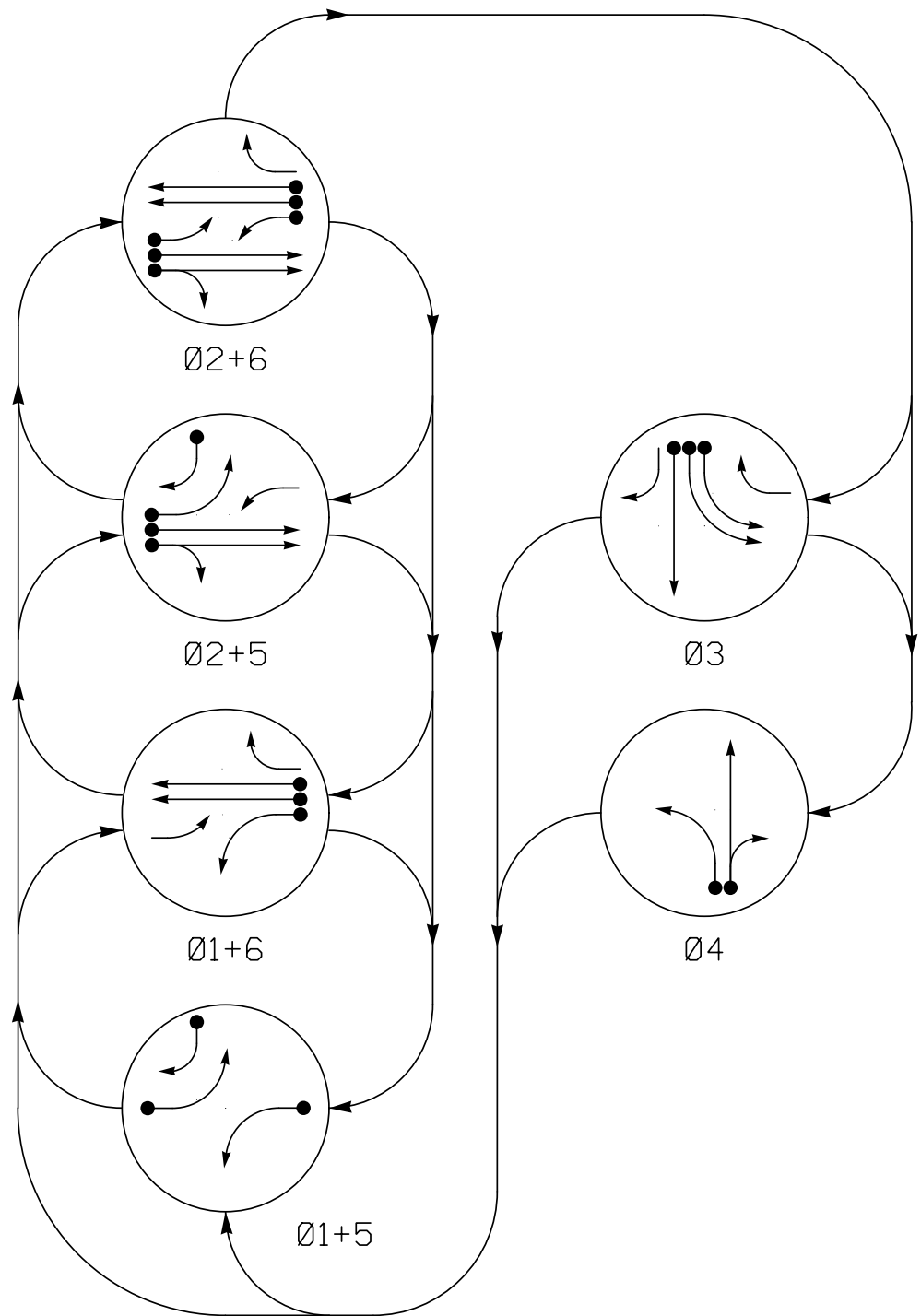
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PROFESSIONAL
ENGINEER
SEAL 040329
TRENT M. MOODY

DocuSigned by:
Trent Moody
SEALED SIGNATURE

2/10/2025
DATE

SIG. INVENTORY NO. 06-1389T

PHASING DIAGRAM



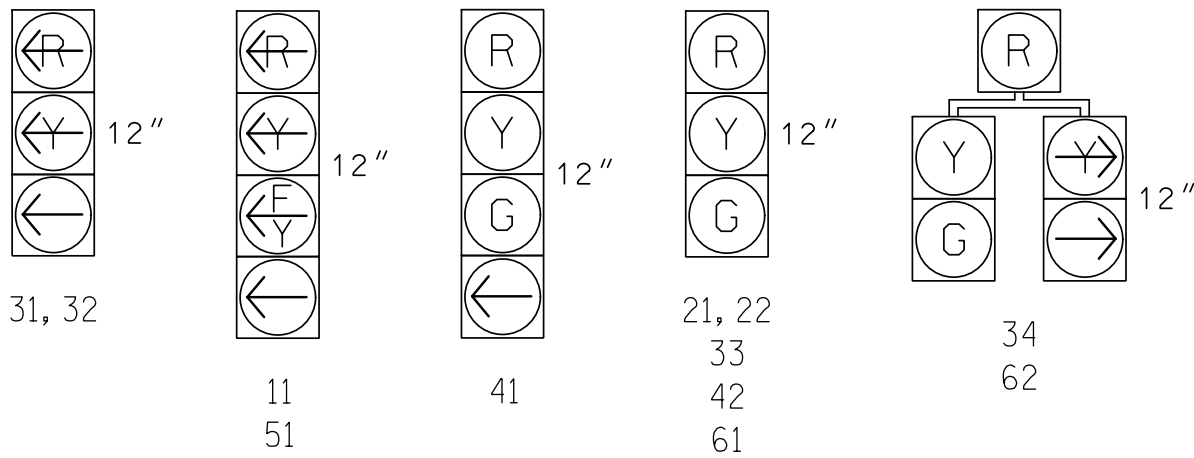
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE						
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3	Ø 4	PEDESTRIAN
II	←	←	←	←	←	←	←
21, 22	R	R	G	G	R	R	R
31, 32	R	R	R	R	←	←	R
33	R	R	R	R	G	R	R
34	R	R	R	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	G	R	R
51	←	←	←	←	R	R	R
61	R	G	R	G	R	R	R
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	NEW CARD
1A	6X40	0	*	*	1 6	15 -	-	X -	X -	-	*
3A	6X40	0	*	*	3 -	-	-	X -	X -	-	*
3B	6X40	0	*	*	3 -	-	-	X -	X -	-	*
3C	6X40	0	*	*	3 -	-	-	X -	X -	-	*
4A	6X40	0	*	*	4 3	-	-	X -	X -	-	*
4B	6X40	0	*	*	4 10	-	-	X -	X -	-	*
5A	6X40	0	*	*	5 15	-	-	X -	X -	-	*
5B	6X40	0	*	*	2 -	-	-	X -	X -	-	*

* Multi-zone Microwave Detection Zone

RADAR DETECTION SYSTEM

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

6 Phase Fully Actuated Signal System #D06-17 Lumberton US 301 and SR 1997 (Fayetteville Road)

NOTES

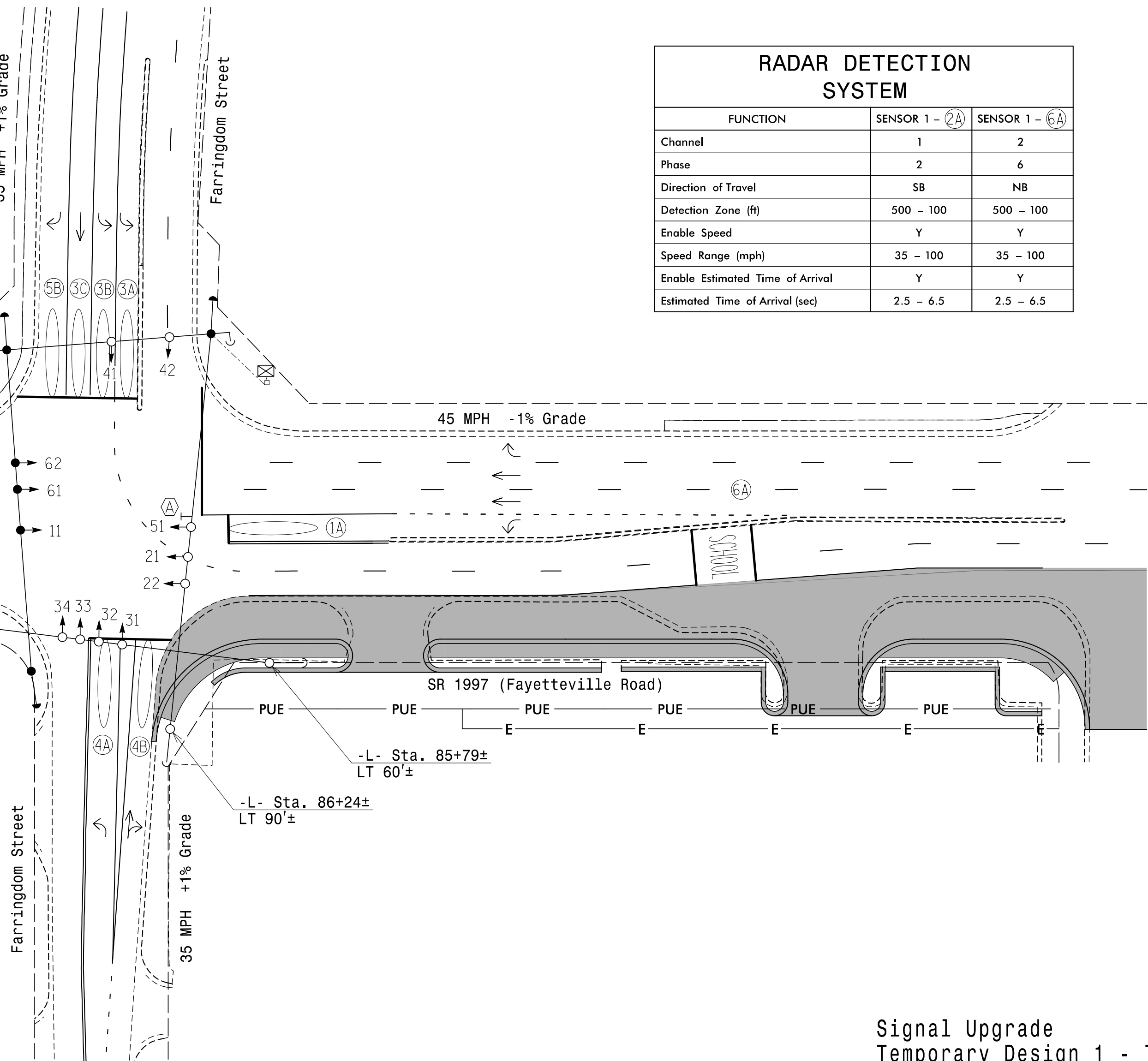
- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase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

LEGEND

PROPOSED	EXISTING
Traffic Signal Head	N/A
Modified Signal Head Sign	N/A
Pedestrian Signal Head	N/A
Signal Pole with Guy	N/A
Signal Pole with Sidewalk Guy	N/A
Inductive Loop Detector	N/A
Controller & Cabinet	N/A
Junction Box	N/A
2-in Underground Conduit	N/A
Right of Way	N/A
Directional Arrow	N/A
Construction Zone	N/A
Microwave Detection Zone	N/A
"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	N/A

FEATURE	PHASE					
	1	2	3	4	5	6
Walk *	-	-	-	-	-	-
Ped Clear *	-	-	-	-	-	-
Min Green	7	12	7	7	7	12
Passage *	2.0	2.0	2.0	2.0	2.0	2.0
Max 1 *	20	90	30	30	20	90
Yellow Change	3.0	4.6	3.8	3.8	3.0	4.6
Red Clear	2.6	1.4	2.1	1.9	2.9	1.4
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 Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade Temporary Design 1 - TMP Phase II, Step 3

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

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

SR 1997 (Fayetteville Road) at Farrington Street

Division 6	Robeson County	Lumberton
PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti	
PREPARED BY: J.C. Grimm	REVIEWED BY: T.M. Woody	

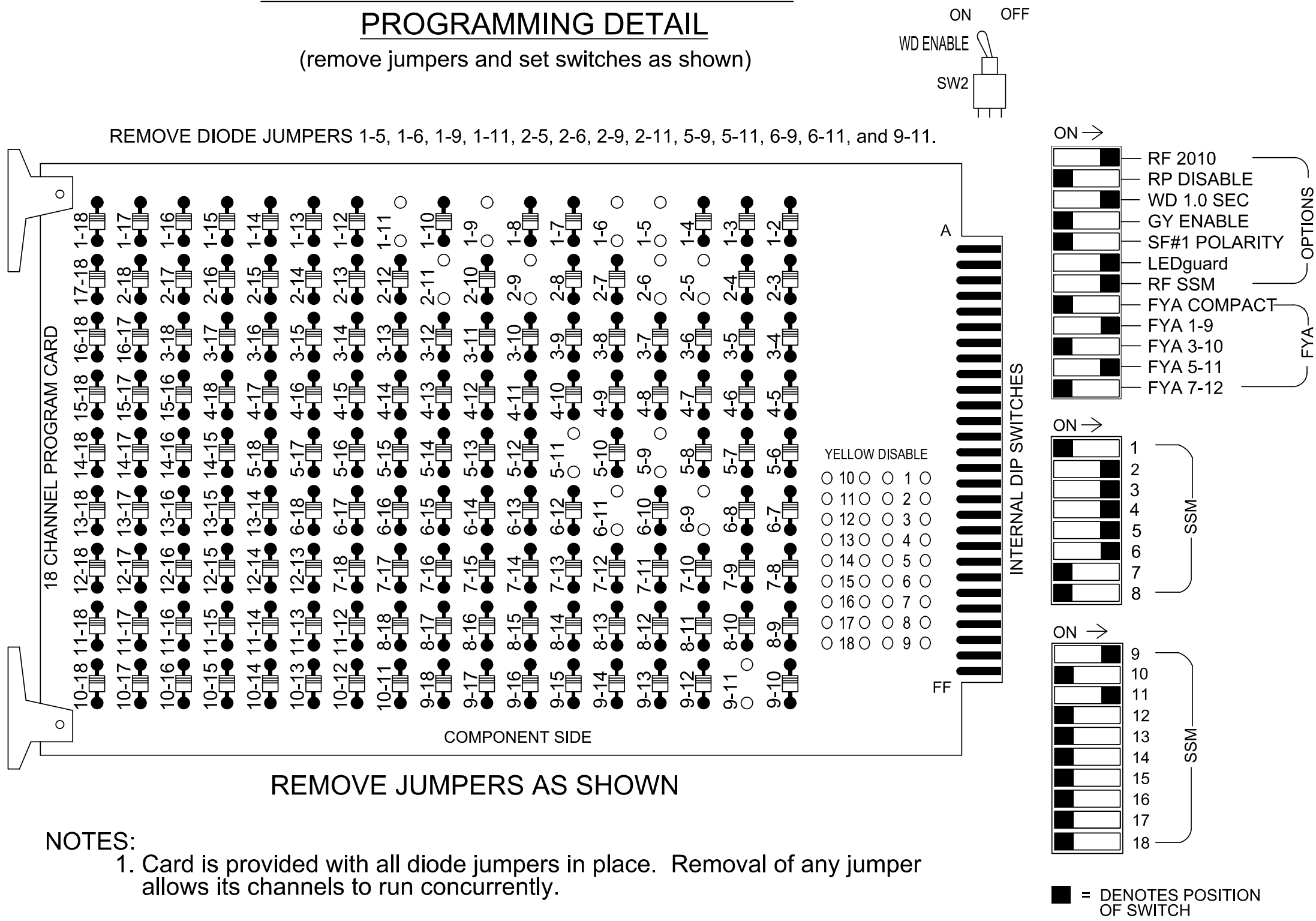
REVISIONS	INIT.	DATE

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SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL 040329
ENGINEER
T.M. MOODY
DocuSigned by:
T.M. Moody
2/10/2025
DATE
SIG. INVENTORY NO. 06-075711

18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #D06-17 Lumberton.

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,
AUX S1, AUX S4
Phases Used.....1, 2, 3, 4, 5, 6
Overlap "1".....*
Overlap "2".....NOT USED
Overlap "3".....*
Overlap "4".....NOT USED

*See overlap programming detail on sheet 2

PROJECT REFERENCE NO.	SHEET NO.
U-5797	Sig. 32.1

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.	11★	21,22	NU	31,32	33,34	62	41	42	NU	34	51★	61,62	NU	NU	NU	11★	NU	51★
RED		128		116		101	101				*	134						
YELLOW	*	129		117		102	102					135						
GREEN		130		118		103	103					136						
RED ARROW				116									A121			A114		
YELLOW ARROW				117		117							A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127			118		118	103				133	133						
⬇																		
⬇																		

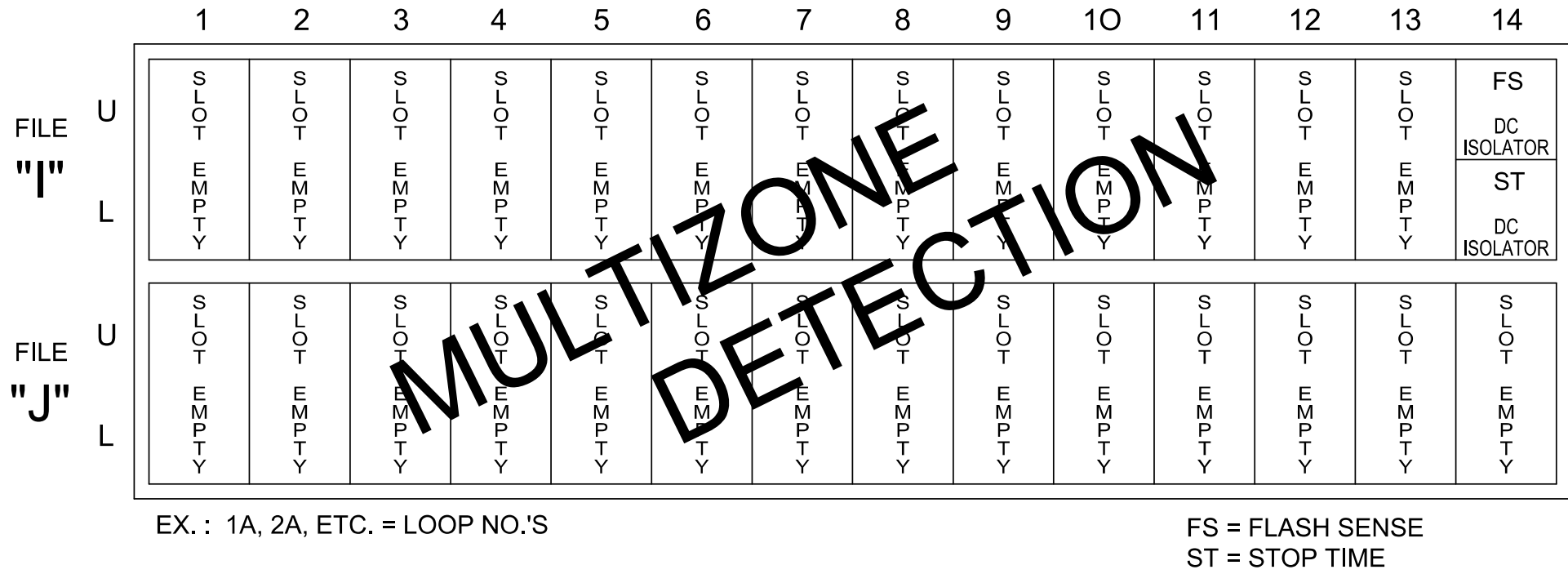
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

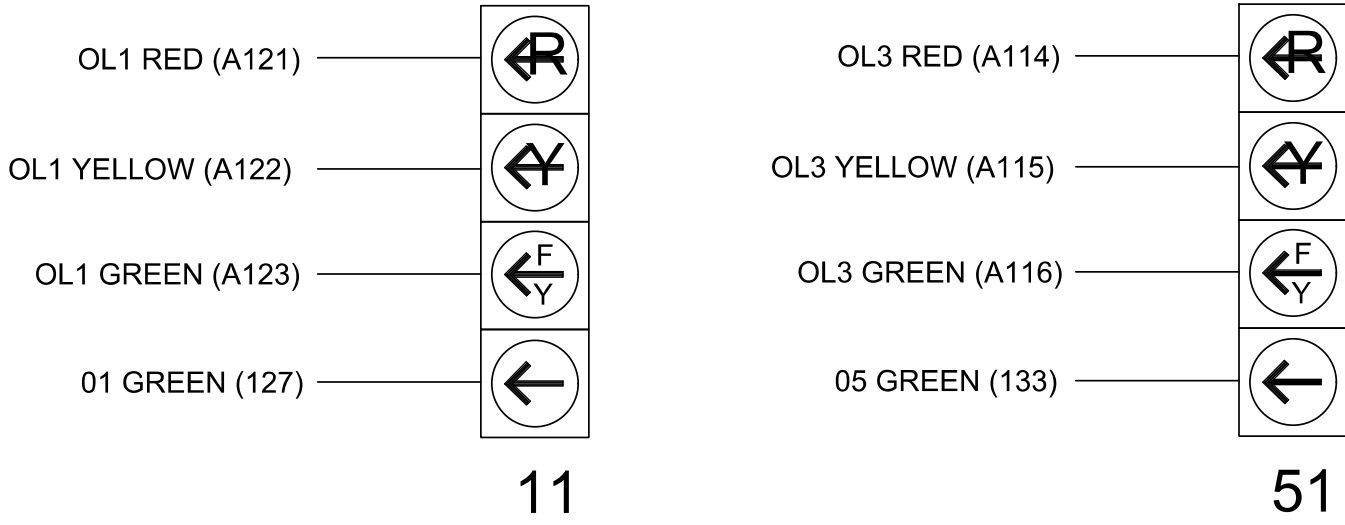


SPECIAL DETECTOR NOTE

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

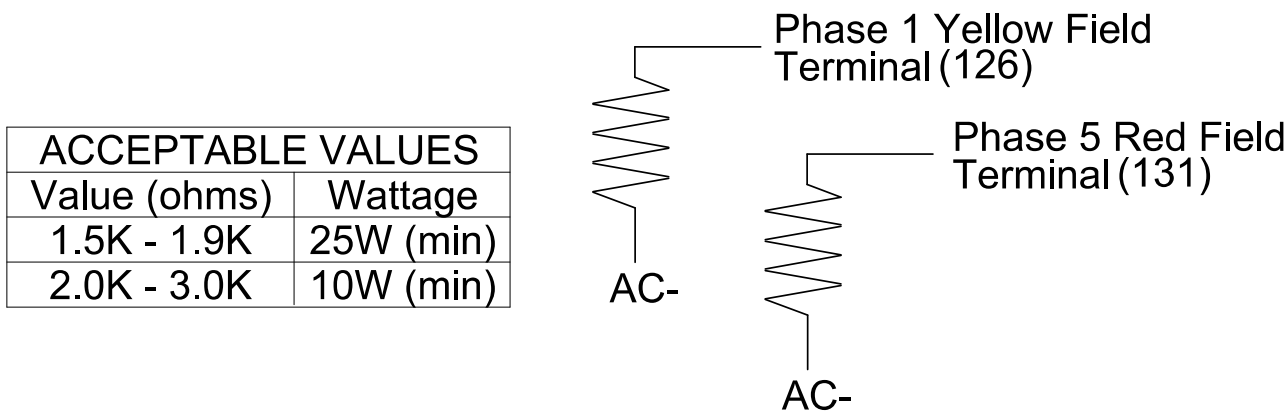
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

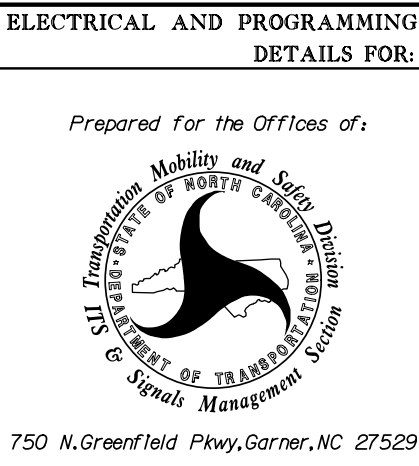
(install resistors as shown)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0757T1
DESIGNED: Feb 2025
SEALED: 2/10/2025
REVISED:

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

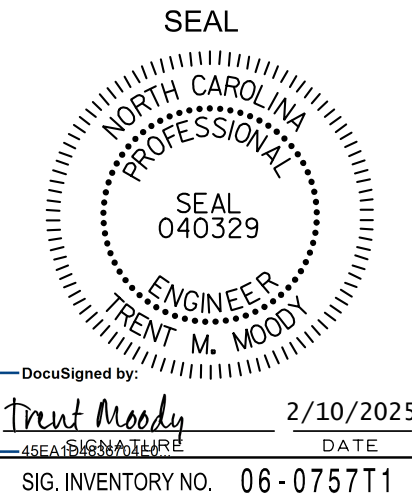
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900 West Trade St., Suite 715
Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991



SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6	Robeson County	Lumberton
PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti	
PREPARED BY: J.C. Grimm	REVIEWED BY: T.M. Woody	
REVISIONS	INIT.	DATE

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FINAL UNLESS ALL
SIGNATURES COMPLETED



OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

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

↑ ↑
NOTE: ALL RED FLASH

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

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

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0757T1
DESIGNED: Feb 2025
SEALED: 2/10/2025
REVISED:

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

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NC License Number F-0991

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared for the Offices of:



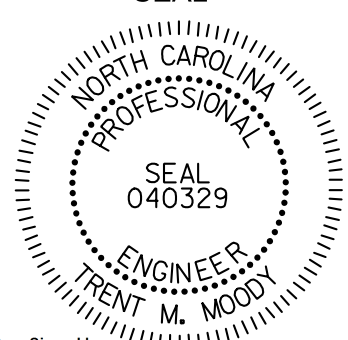
750 N.Greenfield Pkwy, Garner, NC 27529

SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6 Robeson County Lumberton

PLAN DATE:	Feb 2025	REVIEWED BY:	H.M. Surti
PREPARED BY:	J.C. Grimm	REVIEWED BY:	T.M. Woody
REVISIONS		INIT.	DATE

SEAL



SEAL 040329
ENGINEER
TRENT M. WOODY

DocuSigned by:
 2/10/2025
DATE

SIG. INVENTORY NO. 06-0757T1

Figure 1 shows a directed graph with four nodes, labeled 02+6, 02+5, 03, and 04. The nodes are arranged in a square pattern. Directed edges connect the nodes as follows: 02+6 to 02+5, 02+5 to 02+6, 02+6 to 03, 03 to 02+6, 02+5 to 04, 04 to 02+5, 03 to 04, and 04 to 03. Each node contains a diagram of a directed graph with nodes and edges. Node 02+6 has a diagram with 6 nodes and 2 edges. Node 02+5 has a diagram with 5 nodes and 2 edges. Node 03 has a diagram with 3 nodes and 3 edges. Node 04 has a diagram with 4 nodes and 4 edges.

SIGNAL FACE I.D.

MAXTIME DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP/ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
3A	6X40	0	*	*	3	-	-	X	-	X	-	*
3B	6X40	0	*	*	3	-	-	X	-	X	-	*
4A	6X40	0	*	*	4	3	-	X	-	X	-	*
4B	6X40	0	*	*	4	10	-	X	-	X	-	*
4C	6X12	0	*	*	4	15	-	X	-	X	-	*
5A	6X40	0	*	*	5	15	-	X	-	X	-	*
					2	-	-	X	-	X	-	*
5B	6X40	0	*	*	5	15	-	X	-	X	-	*

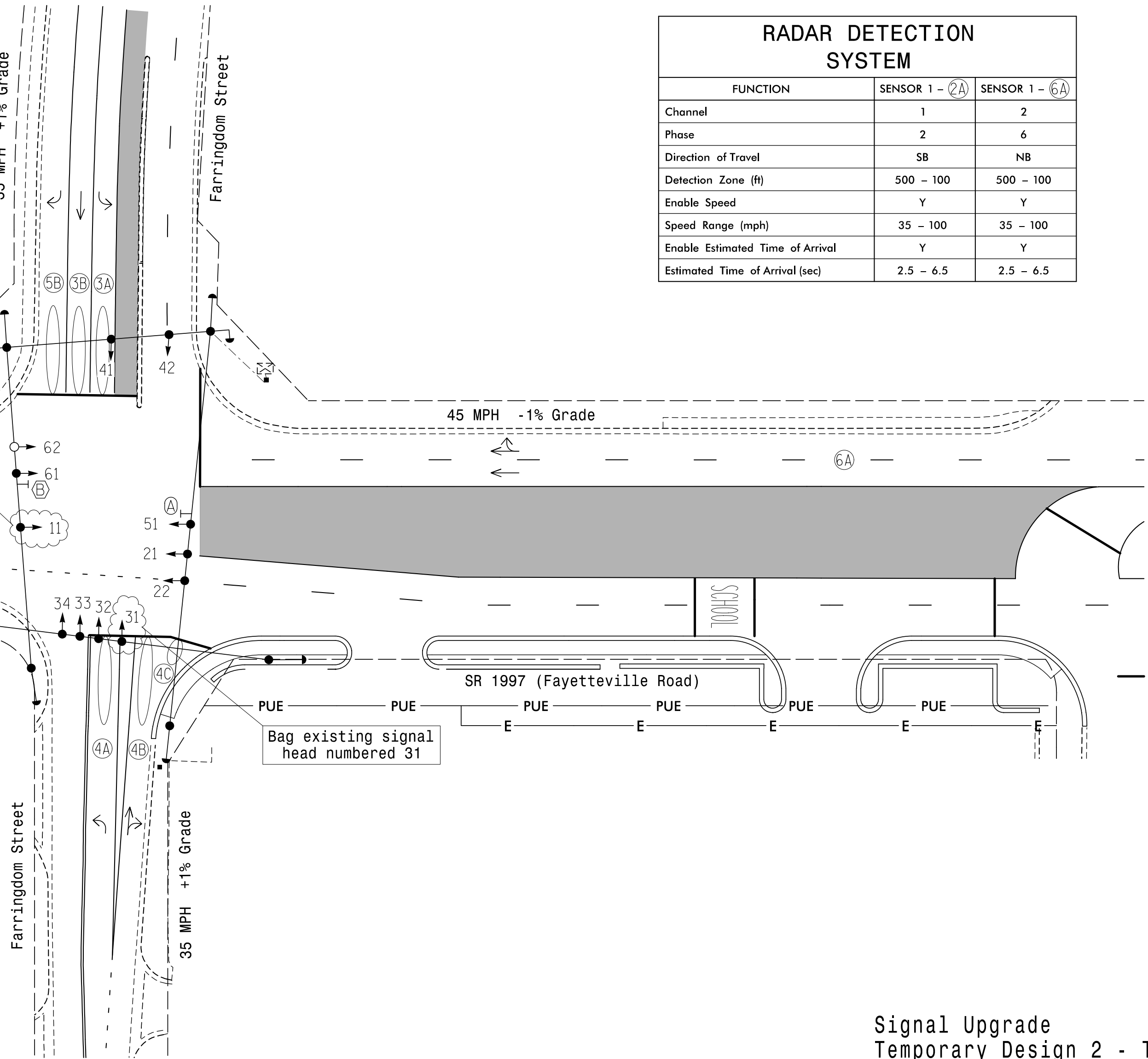
* Multi-zone Microwave Detection Zone

	DETECTED MOVEMENT
	UNDETECTED MOVEMENT (OVERLAP)
	UNSIGNALIZED MOVEMENT
	PEDESTRIAN MOVEMENT

LEGEND

PROPOSED	EXISTING
	N/A

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

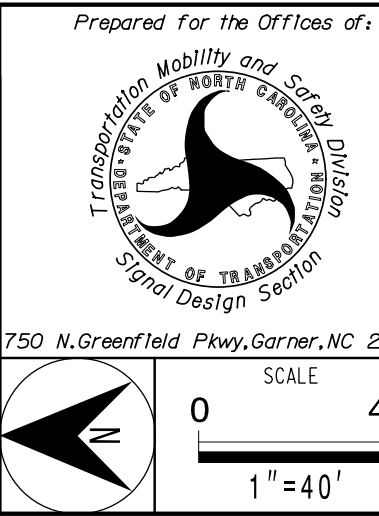


Signal Upgrade
Temporary Design 2 - TMP Phase III, Step 1

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



SR 1997 (Fayetteville Road)
at
Farringdom Street

Division 6 Robeson County Lumberton

PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti
---------------------	-------------------------

PREPARED BY:	J.C. Grimm	REVIEWED BY:	T.M. Moody
--------------	------------	--------------	------------

REVISIONS	INIT.	DATE

[illegible]

SEAL

NORTH CAROLINA
PROFESSIONAL
SEAL
040329
ENGINEER
TRENT M. MOODY

DocuSigned by:
Trent Moody
K5EA-BY5G4-URE

SIC. INVENTORY NO. 06

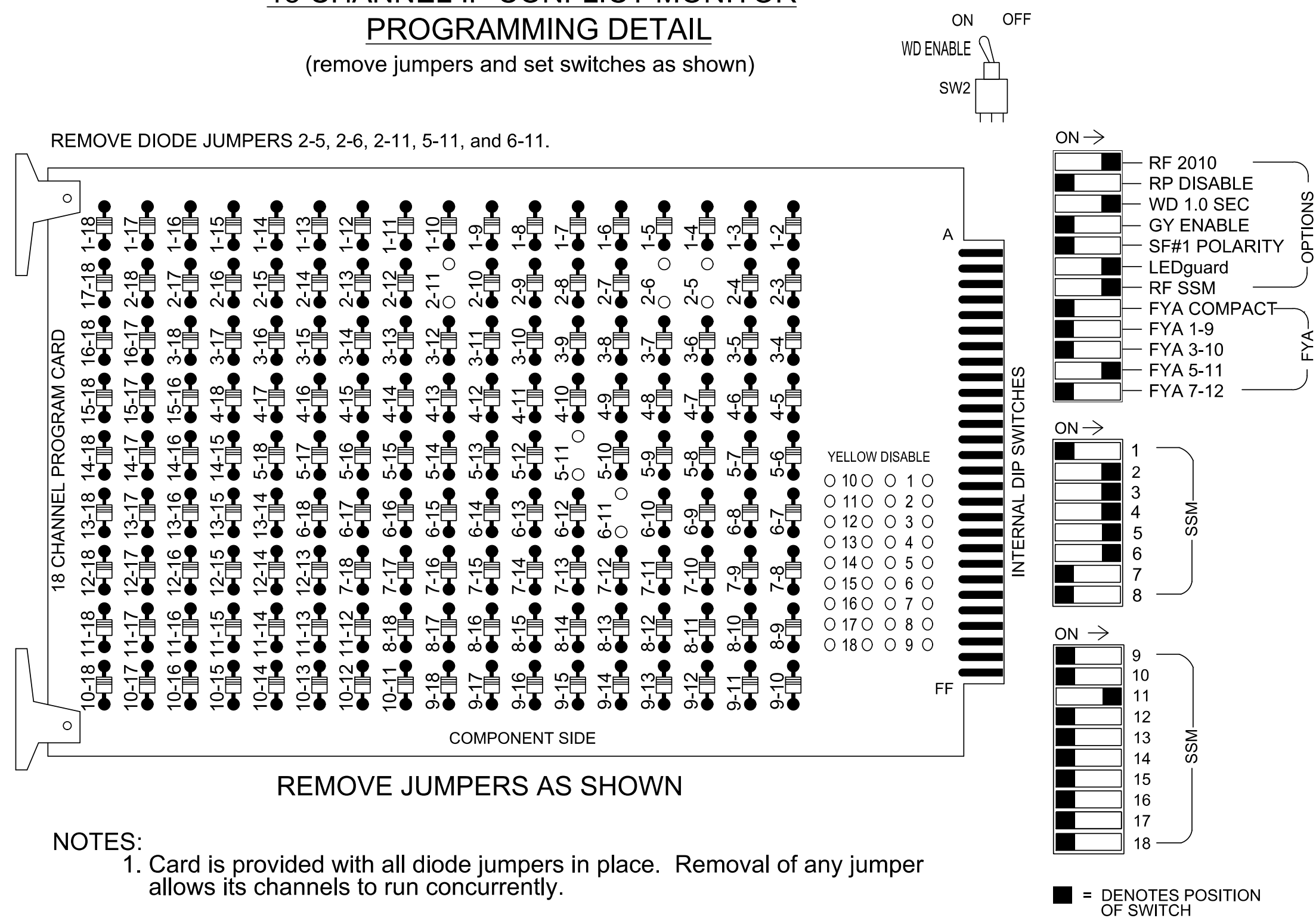
DocuSigned by:
3/10/20

Ken Moody 2/18/20
SIGNATURE DATE
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SIG. INVENTORY NO. 06-0757T

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal 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 Signal System #D06-17 Lumberton.

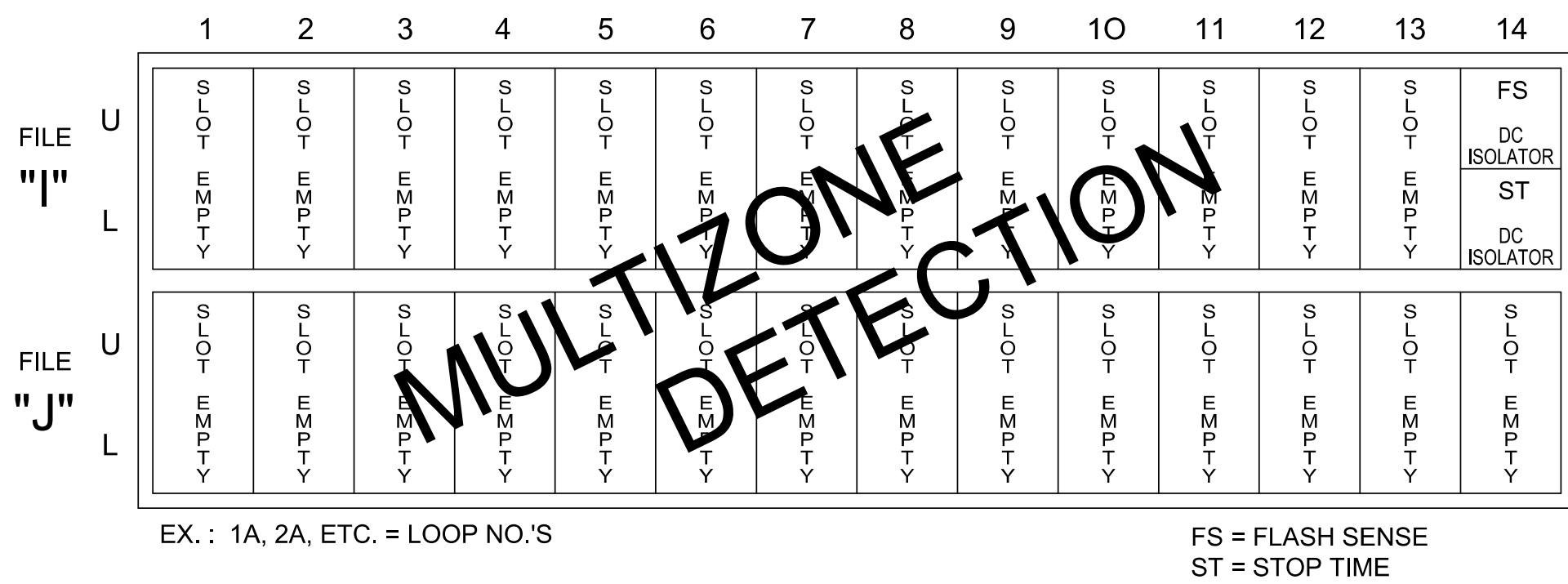
EQUIPMENT INFORMATION

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, S4, S5, S7, S8, AUX S4
Phases Used.....	2, 3, 4, 5, 6
Overlap "1".....	NOT USED
Overlap "2".....	NOT USED
Overlap "3".....	*
Overlap "4".....	NOT USED

*See overlap programming detail on sheet 2

INPUT FILE POSITION LAYOUT

(front view)

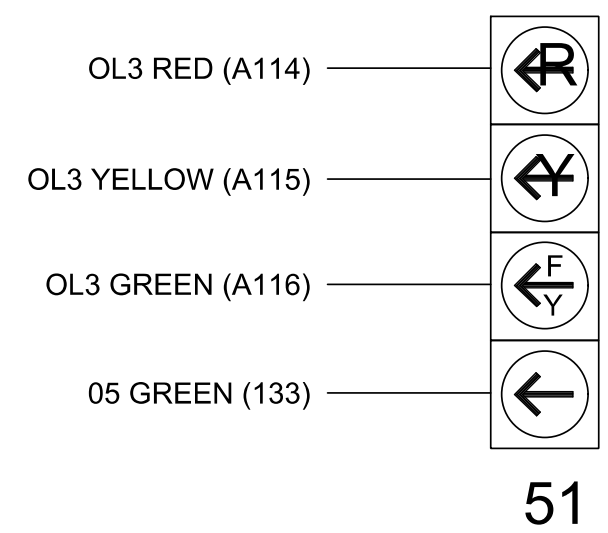


SPECIAL DETECTOR NOTE

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

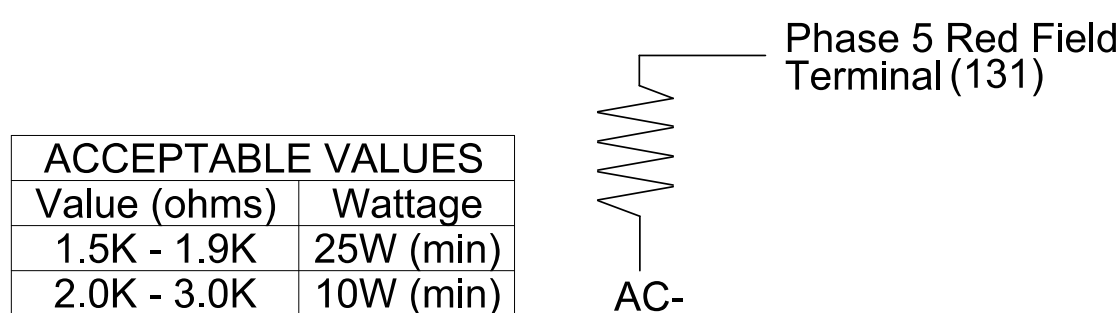
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0757T2
DESIGNED: Feb 2025
SEALED: 2/10/2025
REVISED:

Temporary Design 2 - TMP Phase III, Step 1
Electrical Detail - Sheet 1 of 2

**ELECTRICAL AND PROGRAMMING
DETAILS FOR:**

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6 Robeson County Lumberton

PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti
---------------------	-------------------------

PREPARED BY: J.C. Grimm	REVIEWED BY: T.M. Moody
REVISIONS	INIT DATE

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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NORTH CAROLINA
PROFESSIONAL
SEAL
040329
ENGINEER
TRENT M. MOODY

DocuSigned by:
Trent Moody
Trent M. Moody
2/10/2025
DATE

SIG. INVENTORY NO. 06-0757T2

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

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

↑ ↑
NOTE: ALL RED FLASH

OVERLAP PROGRAMMING

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 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

Temporary Design 2 - TMP Phase III, Step 1
Electrical Detail - Sheet 2 of 2

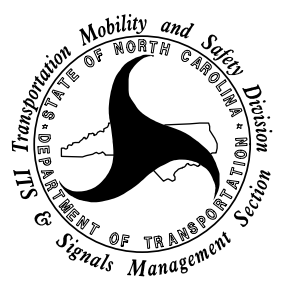
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(704) 372-1885
NC License Number F-0991

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared for the Offices of:



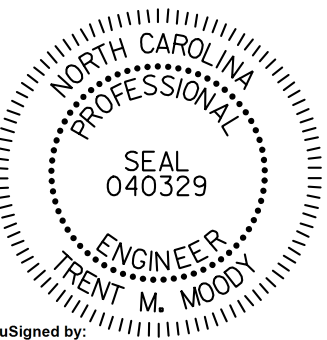
750 N.Greenfield Pkwy, Garner, NC 27529

SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6 Robeson County Lumberton

PLAN DATE:	Feb 2025	REVIEWED BY:	H.M. Surti
PREPARED BY:	J.C. Grimm	REVIEWED BY:	T.M. Woody
REVISIONS		INIT.	DATE

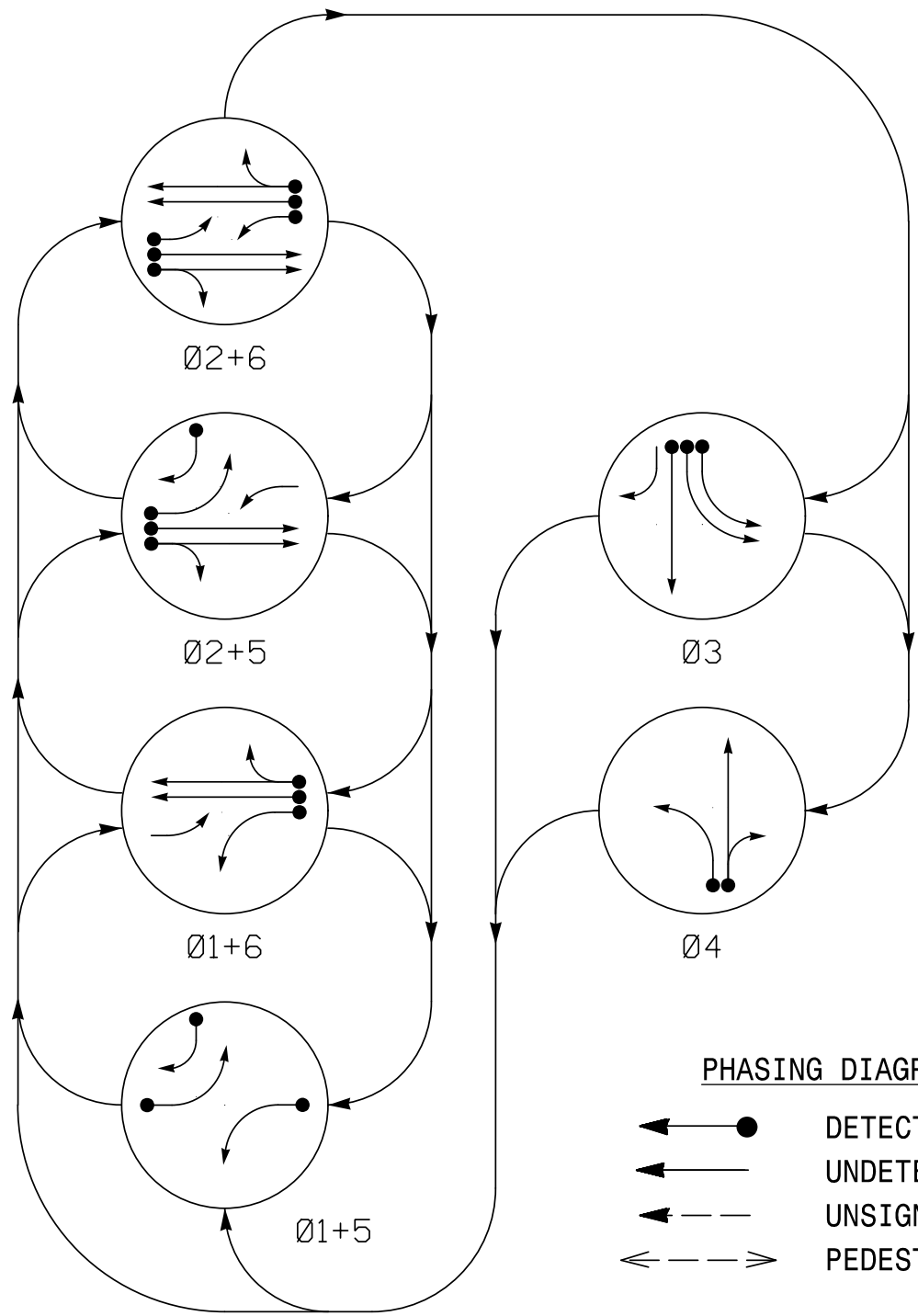
SEAL



DocuSigned by:
Trent M. Woody 2/10/2025
DATE

SIG. INVENTORY NO. 06-0757T2

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

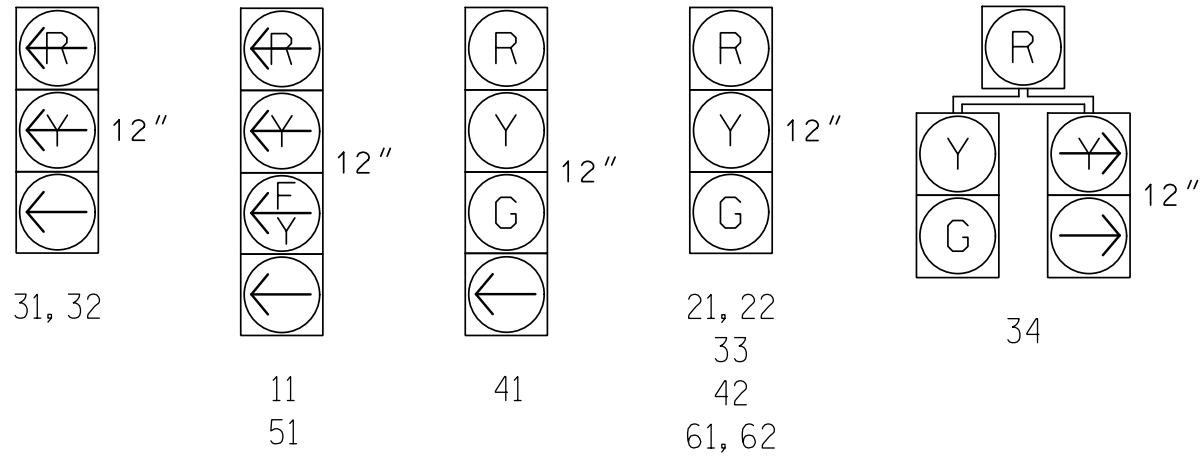
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE									
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3	Ø 4	FLTS	HS	IS	RS
II	←	←	←	←	←	←	←	←	←	←
21, 22	R	R	G	G	R	R	R	R	R	R
31, 32	←	←	←	←	←	←	←	←	←	←
33	R	R	R	R	G	R	R	R	R	R
34	←	←	←	←	R	G	R	R	R	R
41	R	R	R	R	R	G	R	R	R	R
42	R	R	R	R	G	R	R	R	R	R
51	←	←	←	←	←	←	←	←	←	←
61, 62	R	G	R	G	R	R	R	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)	URNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL DURING GREEN
1A	6X40	0	*	X	1	15	-	X	-	X
3A	6X40	0	*	X	3	-	-	X	-	X
3B	6X40	0	*	X	3	-	-	X	-	X
3C	6X40	0	*	X	3	-	-	X	-	X
4A	6X40	0	*	X	4	3	-	X	-	X
4B	6X40	0	*	X	4	10	-	X	-	X
4C	6X12	0	*	X	4	15	-	X	-	X
5A	6X40	0	*	X	5	15	-	X	-	X
5B	6X40	0	*	X	5	15	-	X	-	X

* Multi-zone Microwave Detection Zone

RADAR DETECTION SYSTEM

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

6 Phase
Fully Actuated
Signal System #D06-17 Lumberton
US 301 and SR 1997 (Fayetteville Road)

NOTES

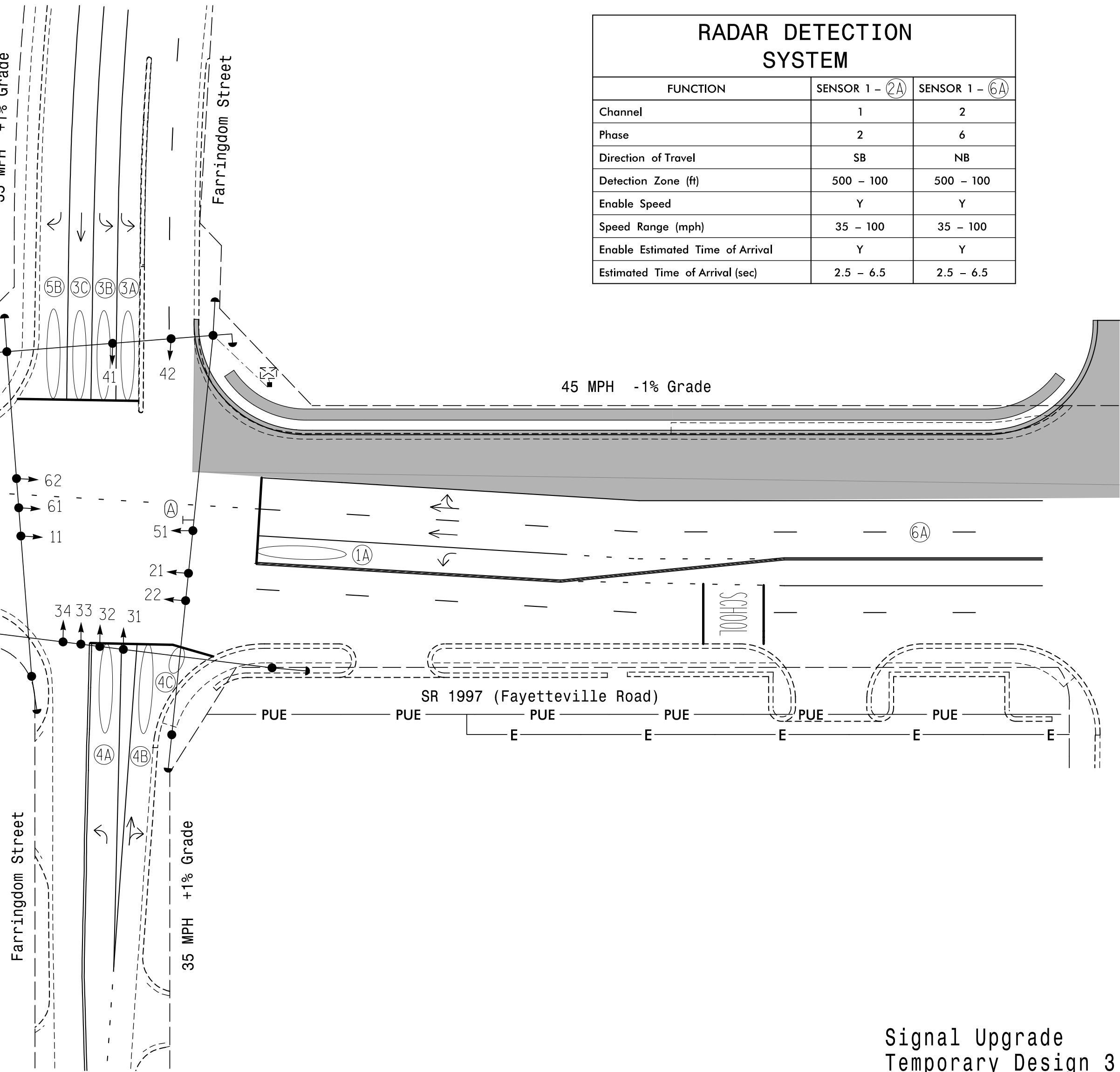
- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Reposition existing signal heads numbered 11, 21, 22, 61, and 62.
- Set all detector units to presence mode.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Remove bags from signal heads numbered 11 and 31.

LEGEND

PROPOSED	EXISTING
Traffic Signal Head	N/A
Modified Signal Head Sign	N/A
Pedestrian Signal Head	N/A
Signal Pole with Guy	N/A
Signal Pole with Sidewalk Guy	N/A
Inductive Loop Detector	N/A
Controller & Cabinet	N/A
Junction Box	N/A
2-in Underground Conduit	N/A
Right of Way	N/A
Directional Arrow	N/A
Right of Way	N/A
Directional Arrow	N/A
Construction Zone	N/A
Microwave Detection Zone	N/A
"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	N/A

MAXTIME TIMING CHART						
FEATURE	PHASE					
	1	2	3	4	5	6
Walk *	-	-	-	-	-	-
Ped Clear *	-	-	-	-	-	-
Min Green	7	12	7	7	7	12
Passage *	2.0	2.0	2.0	2.0	2.0	2.0
Max 1 *	20	90	30	30	20	90
Yellow Change	3.0	4.6	3.8	3.8	3.0	4.6
Red Clear	2.8	1.6	2.3	1.6	2.8	1.6
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 Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade
Temporary Design 3 - TMP Phase IV, Step 1

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

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

SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6	Robeson County	Lumberton
PLAN DATE:	Feb 2025	REVIEWED BY: H.M. Surti
PREPARED BY: J.C. Grimm	REVIEWED BY: T.M. Woody	
REVISIONS	INIT.	DATE

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SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
RENT M. MOODY
2/10/2025
DATE
SIC. INVENTORY NO. 06-0757T3

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

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

↑ ↑
NOTE: ALL RED FLASH

OVERLAP PROGRAMMING

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

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

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

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

Temporary Design 3 - TMP Phase IV, Step 1
Electrical Detail - Sheet 2 of 2

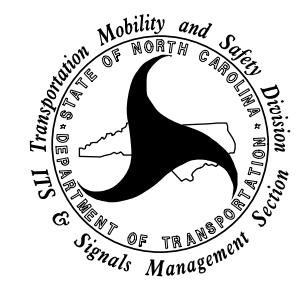
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NC License Number F-0991

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared for the Offices of:



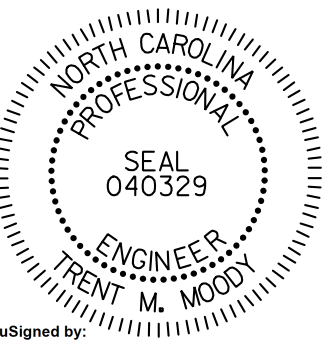
750 N.Greenfield Pkwy, Garner, NC 27529

SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6 Robeson County Lumberton

PLAN DATE:	Feb 2025	REVIEWED BY:	H.M. Surti
PREPARED BY:	J.C. Grimm	REVIEWED BY:	T.M. Woody
REVISIONS		INIT.	DATE

SEAL



DocuSigned by:
Trent M. Woody 2/10/2025
DATE

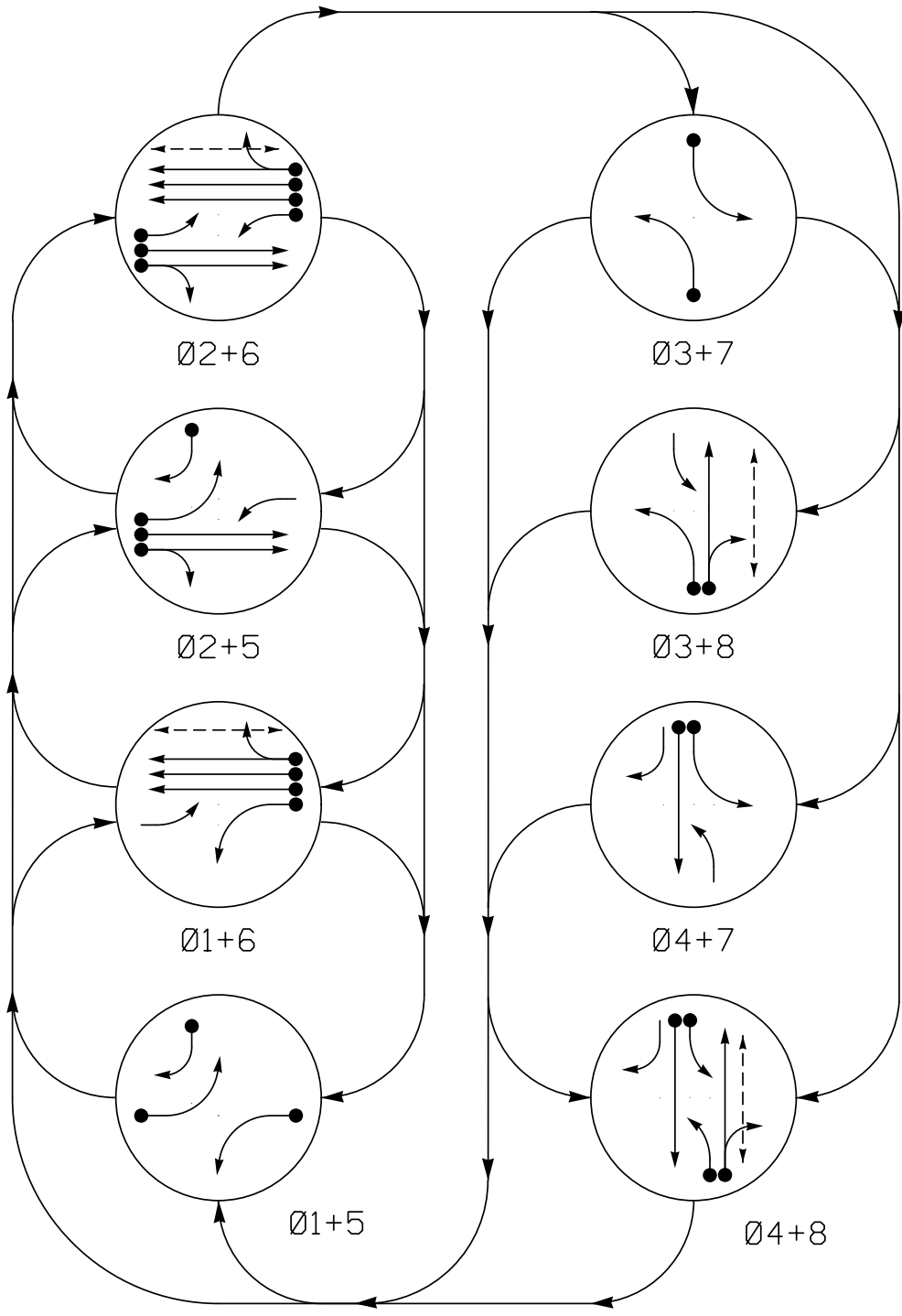
SIG. INVENTORY NO. 06-0757T3

8 Phase
Fully Actuated
Signal System #D06-17 Lumberton
US 301 and SR 1997 (Fayetteville Road)

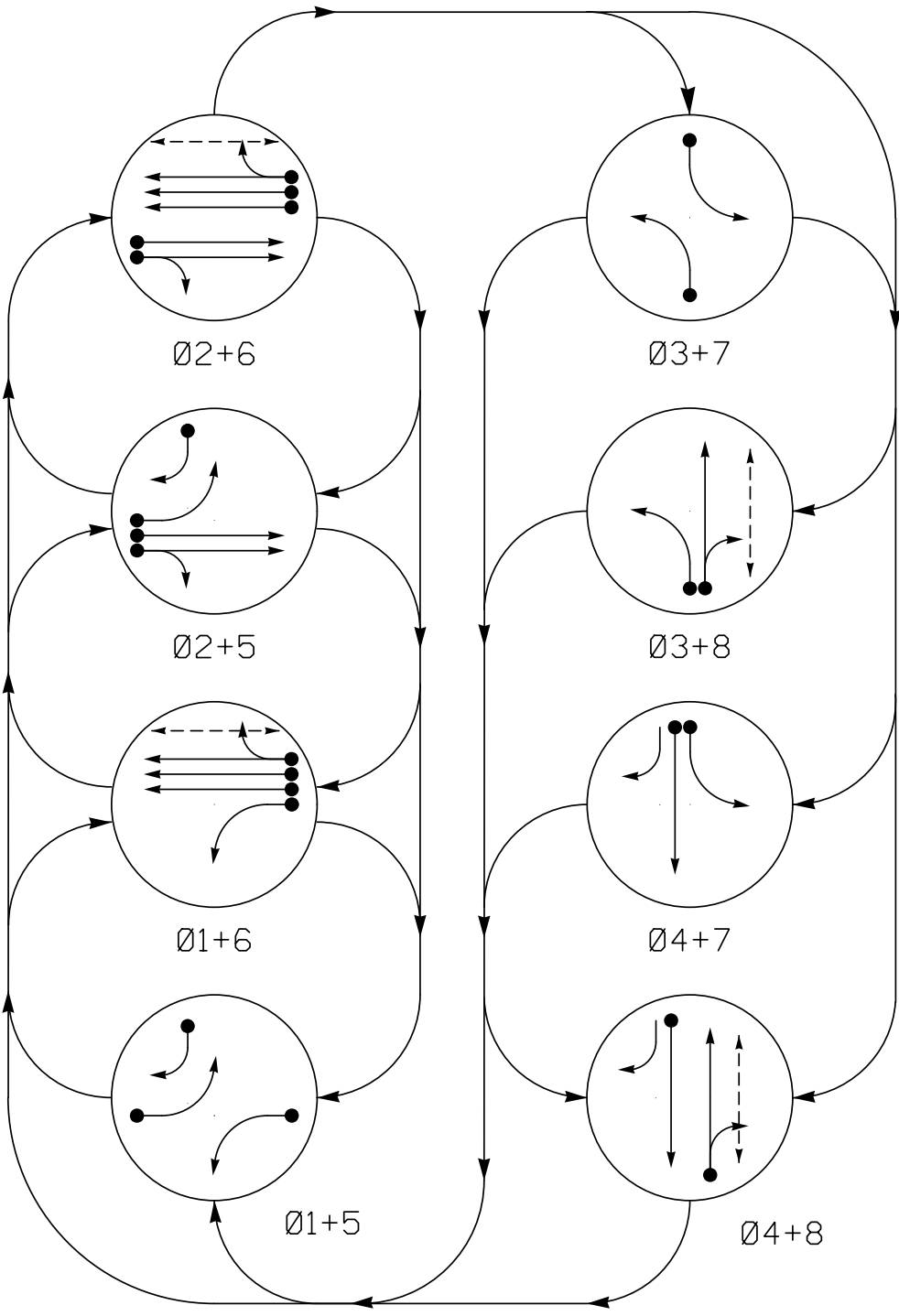
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

DEFAULT PHASING
TABLE OF OPERATION

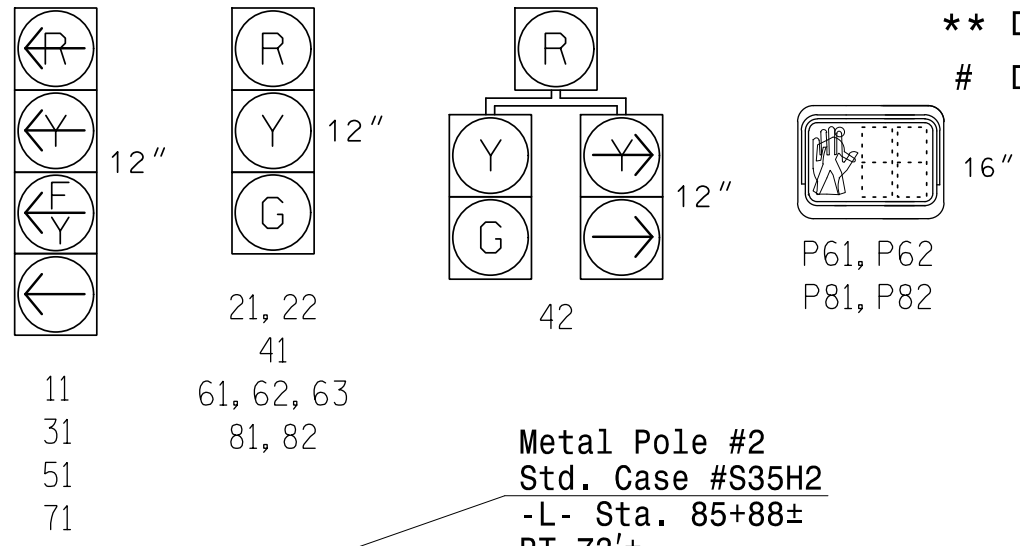
SIGNAL FACE	PHASE							
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3 + 7	Ø 3 + 8	Ø 4 + 7	Ø 4 + 8
11	←	←	←	←	←	←	←	←
21, 22	R	R	G	G	R	R	R	R
31	←	←	←	←	←	←	←	←
41	R	R	R	R	R	R	G	G
42	R	R	R	R	R	R	G	G
51	←	←	←	←	←	←	←	←
61, 62, 63	R	G	R	G	R	R	R	R
71	←	←	←	←	←	←	←	←
81, 82	R	R	R	R	R	G	R	G
P61, P62	DW	W	DW	W	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	DRK

ALTERNATE PHASING
TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3 + 7	Ø 3 + 8	Ø 4 + 7	Ø 4 + 8
11	←	←	←	←	←	←	←	←
21, 22	R	R	G	G	R	R	R	R
31	←	←	←	←	←	←	←	←
41	R	R	R	R	R	R	G	G
42	R	R	R	R	R	R	G	G
51	←	←	←	←	←	←	←	←
61, 62, 63	R	G	R	G	R	R	R	R
71	←	←	←	←	←	←	←	←
81, 82	R	R	R	R	R	G	R	G
P61, P62	DW	W	DW	W	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



- * Multi-zone Microwave Detection Zone
- * Reduce Delay to 3 Seconds During Alternate Phasing
- ** Disable Delay During Alternate Phasing
- # Disable Phase Call for Loop During Alternate Phasing

RADAR DETECTION
SYSTEM

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

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Walk *	-	-	-	-	-	14	-	14
Ped Clear *	-	-	-	-	-	25	-	28
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 *	15	90	20	20	15	90	20	20
Yellow Change	3.0	4.6	3.0	3.8	3.0	4.6	3.0	3.8
Red Clear	2.8	1.6	2.8	2.3	3.1	1.6	3.1	2.3
Added Initial *	-	-	-	-	-	-	-	-
Maximum Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Advance Walk	-	-	-	-	-	7	-	7
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 Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
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| | |

Signal Upgrade - Final Design

stv
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NC License Number F-0991

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

SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6 Robeson County Lumberton
PLAN DATE: Feb 2025 REVIEWED BY: H.M. Surti
PREPARED BY: J.C. Grimm REVIEWED BY: T.M. Woody

REVISIONS	INIT.	DATE

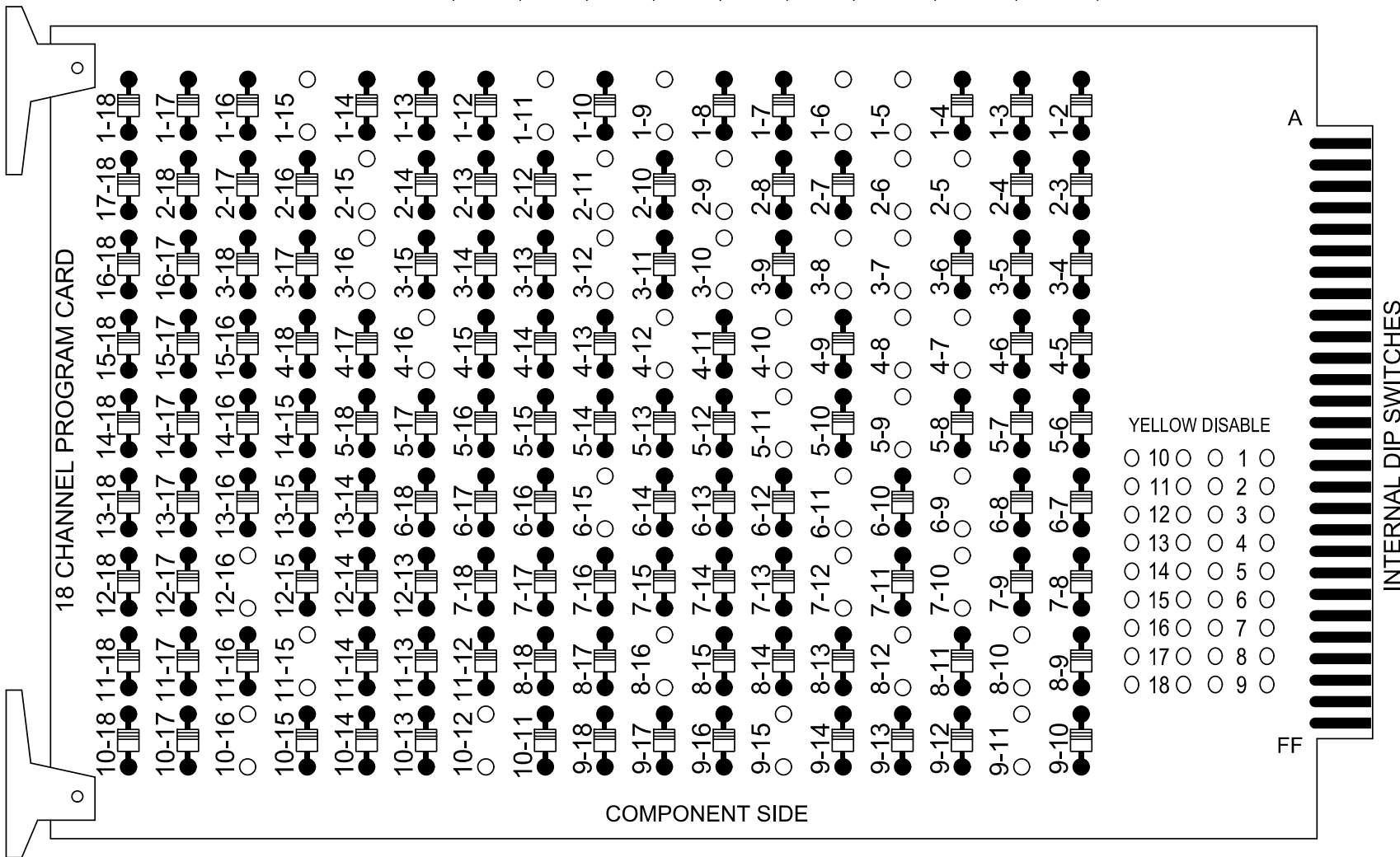
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SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
RENEE M. MOODY
2/10/2025
DATE
SIC. INVENTORY NO. 06-0757

18 CHANNEL IP CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

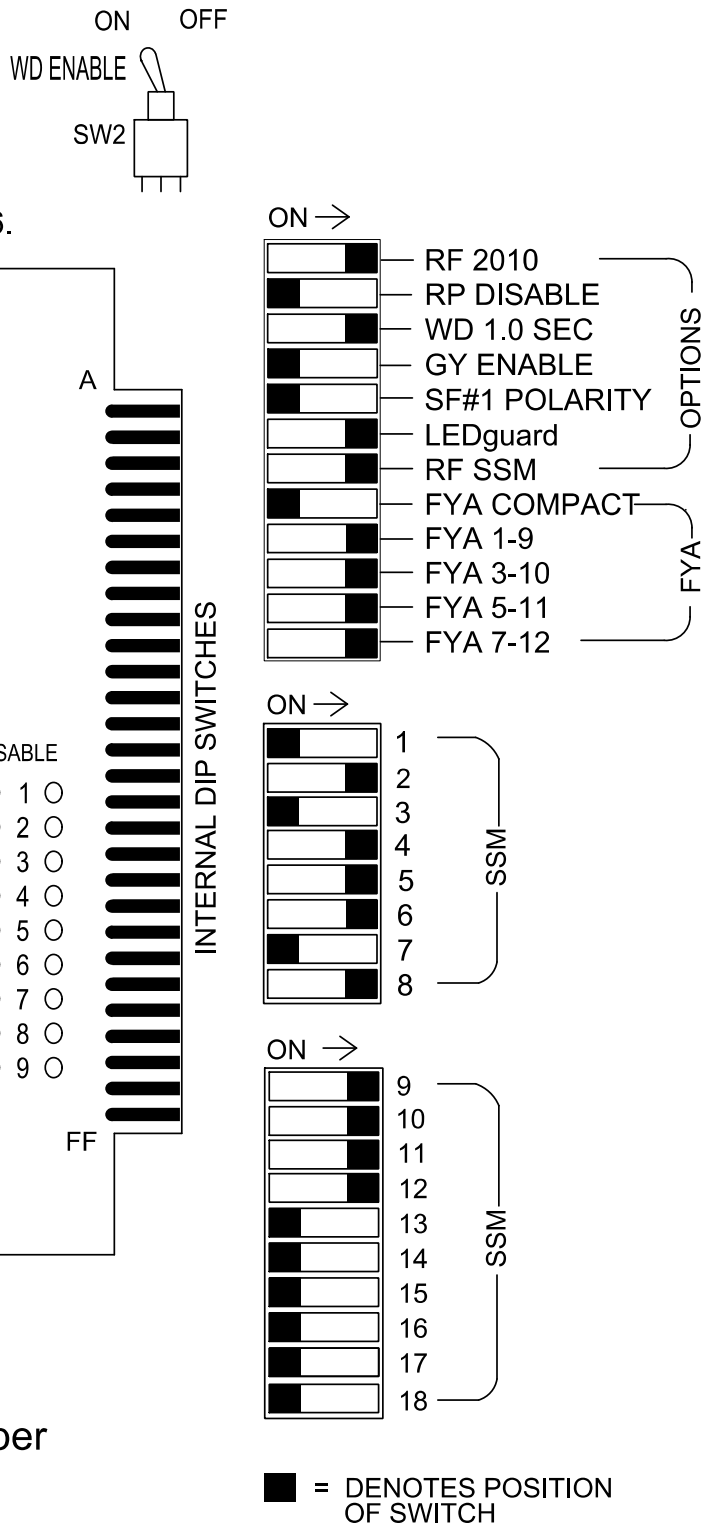
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-16, 5-9, 5-11, 6-9, 6-11, 6-15, 7-10, 7-12, 8-10, 8-12, 8-16, 9-11, 9-15, 10-12, 10-16, 11-15, and 12-16.



REMOVE JUMPERS AS SHOWN

NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Signal System #D06-17 Lumberton.

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, S12, AUX S1, AUX S2, AUX S4, AUX S5
Phases Used.....1, 2, 3, 4, 5, 6, 6PED, 7, 8, 8PED
Overlap "1".....*
Overlap "2".....*
Overlap "3".....*
Overlap "4".....*

*See overlap programming detail on sheet 2

PROJECT REFERENCE NO.	SHEET NO.
U-5797	Sig. 35.1

SIGNAL HEAD HOOK-UP CHART

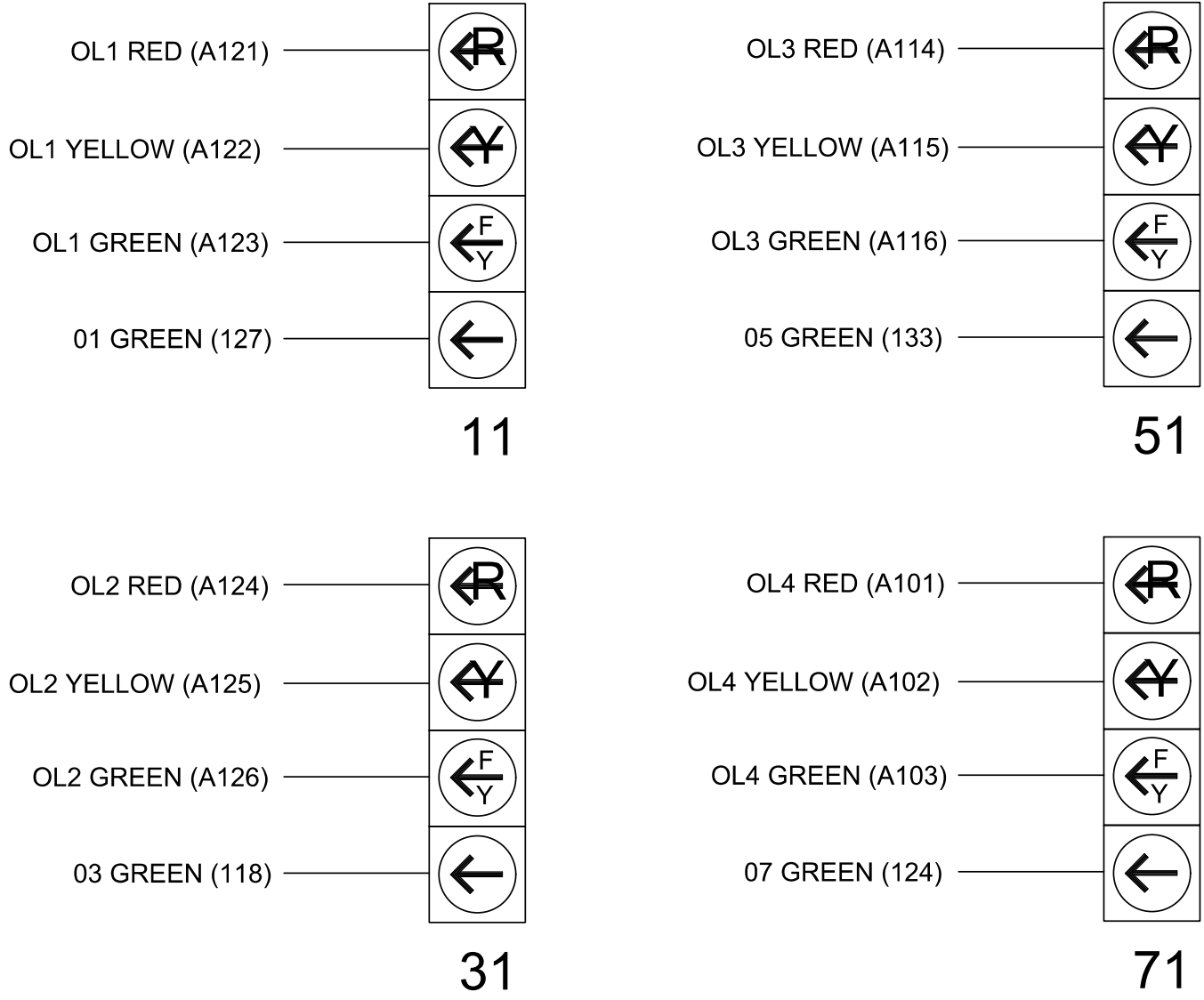
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	11★	21,22	NU	31★	41,42	NU	42	51★	61,62,63	P61,P62	71★	81,82	P81,P82	11★	31★	NU	51★	71★
RED		128			101			★	134			107						
YELLOW	★	129		★	102				135		★	108						
GREEN		130			103				136			109						
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW							132						A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127			118			133	133			124							
Hand icon										119			110					
Walking person icon										121			112					

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"	∅ 1 1A*	S 101S	S 101S	S 101S	∅ 3 3A*	S 101S	S 101S	S 101S	S 101S	S 101S	S 101S	S 101S	∅ 6 PED DC ISOLATOR	FS DC ISOLATOR
	NOT USED	Y 101Y	Y 101Y	Y 101Y	NOT USED	Y 101Y	Y 101Y	Y 101Y	Y 101Y	Y 101Y	Y 101Y	Y 101Y	∅ 8 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J"	∅ 5 5A*	S 101S	S 101S	S 101S	∅ 7 7A*	S 101S	S 101S	S 101S	S 101S	S 101S	S 101S	S 101S	S 101S	S 101S
	NOT USED	Y 101Y	Y 101Y	Y 101Y	NOT USED	Y 101Y	Y 101Y	Y 101Y	Y 101Y	Y 101Y	Y 101Y	Y 101Y	Y 101Y	Y 101Y

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

FS = FLASH SENSE
ST = STOP TIME

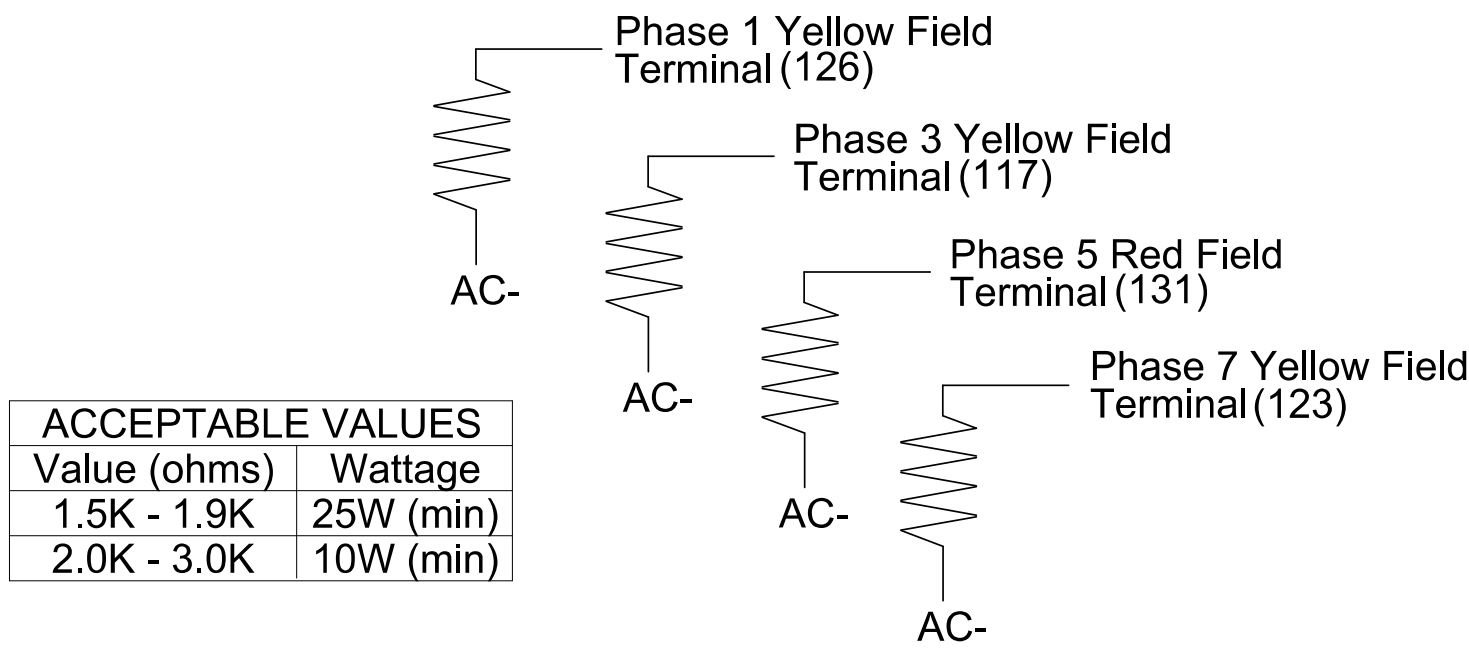
* Reflects the detector utilized in the "MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 3A, 5A & 7A" on Sheet 3.

SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

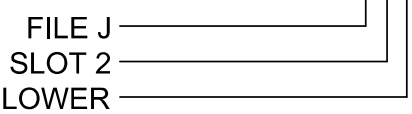


INPUT FILE CONNECTION & PROGRAMMING CHART

	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE
PED PUSH BUTTONS						
P61,P62	TB8-7,9	I13U	68	34	6	PED 6
P81,P82	TB8-8,9	I13L	70	36	8	PED 8

NOTE: INSTALL DC ISOLATOR IN INPUT FILE SLOT I13.

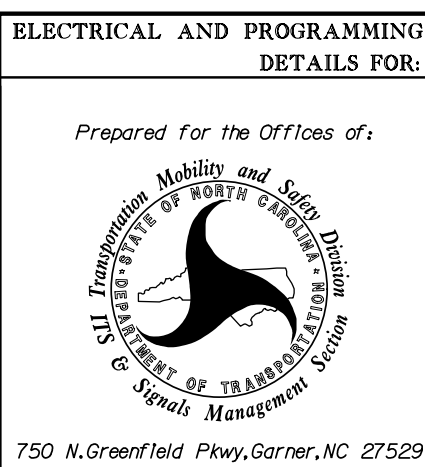
INPUT FILE POSITION LEGEND: J2L



Final Design
Electrical Detail - Sheet 1 of 3

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0757
DESIGNED: Feb 2025
SEALED: 2/10/2025
REVISED:

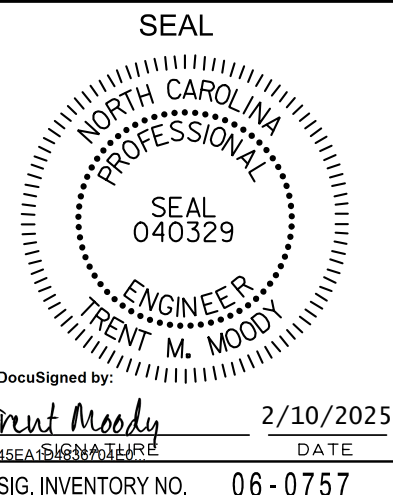
stv
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
(704) 372-1885
NC License Number F-0991



SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6	Robeson County	Lumberton
PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti	
PREPARED BY: J.C. Grimm	REVIEWED BY: T.M. Woody	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



DocuSigned by:
Trent Moody
2/10/2025
DATE
SIG. INVENTORY NO. 06-0757

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

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

↑ ↑
NOTE: ALL RED FLASH

MAXTIME 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
Type	FYA - 4 Section	FYA - 4 Section	FYA - 4 Section	FYA - 4 Section
Included Phases	2	4	6	8
Modifier Phases	1	3	5	7
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 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
Type	FYA - 4 Section	FYA - 4 Section	FYA - 4 Section	FYA - 4 Section
Included Phases	-	-	-	-
Modifier Phases	1	3	5	7
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

← NOTICE INCLUDED PHASE

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

FLASHER CIRCUIT MODIFICATION DETAIL

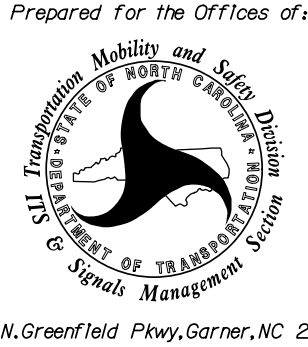
IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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.

Final Design
Electrical Detail - Sheet 2 of 3

ELECTRICAL AND PROGRAMMING
DETAILS FOR:



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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0757
DESIGNED: Feb 2025
SEALED: 2/10/2025
REVISED:

SR 1997 (Fayetteville Road)
at
Farringdom Street

Division 6 Robeson County Lumberton

PLAN DATE:	Feb 2025	REVIEWED BY:	H.M. Surti
PREPARED BY:	J.C. Grimm	REVIEWED BY:	T.M. Woody
REVISIONS		INIT.	DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
040329
ENGINEER
TRENT M. WOODY
DocuSigned by:
Trent M. Woody
2/10/2025
DATE
SIG. INVENTORY NO. 06-0757

MAXTIME DETECTOR PROGRAMMING DETAIL
FOR ALTERNATE PHASING LOOPS 1A, 3A, 5A & 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			
1A	Detector	Call Phase	Delay
	1	1	0
	29	0	0
3A	Detector	Call Phase	Delay
	7	3	0
	30	0	0
5A	Detector	Call Phase	Delay
	15	5	3
	31	0	0
7A	Detector	Call Phase	Delay
	21	7	0
	32	0	0

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 <u>RUN DEFAULT PHASING</u>	1	1
ACTIVE PLAN REQUIRED TO <u>RUN ALTERNATE PHASING</u>	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, 31, 51, and 71 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 8 call on loop 3A and reduces delay time for phase 3 call on loop 3A to 0 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0757
DESIGNED: Feb 2025
SEALED: 2/10/2025
REVISED:

Final Design
Electrical Detail - Sheet 3 of 3

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ELECTRICAL AND PROGRAMMING
DETAILS FOR:

SR 1997 (Fayetteville Road)
at
Farrington Street

Division 6 Robeson County Lumberton

PLAN DATE:	Feb 2025	REVIEWED BY:	H.M. Surti
PREPARED BY:	J.C. Grimm	REVIEWED BY:	T.M. Moody

REVISIONS	INIT.	DATE

SEAL

ENGINEER
TRENT M. MOODY

DocuSigned by:

2/10/2025
DATE

SIG. INVENTORY NO. 06-0757

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

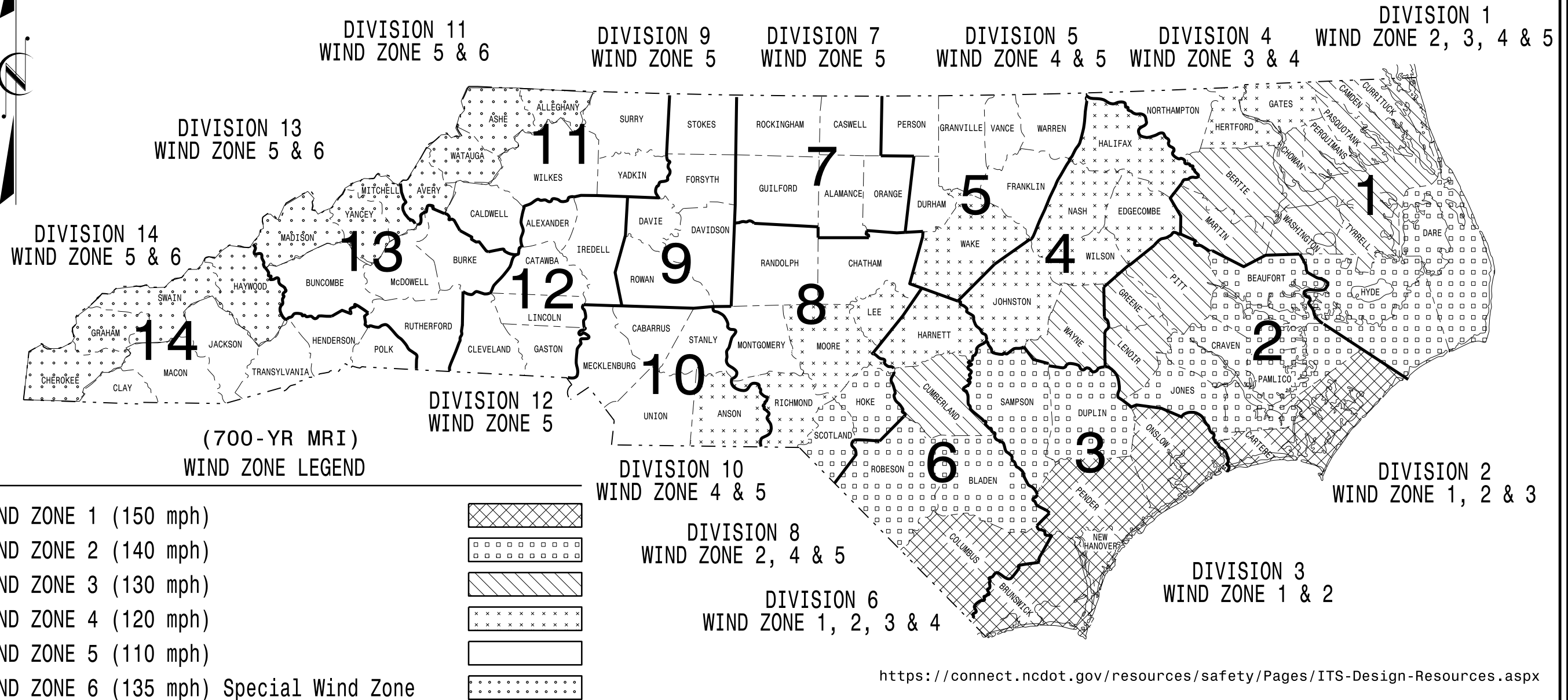
Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

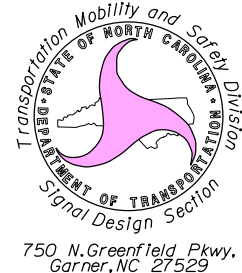
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT I.D. NO. SHEET NO.
Sig.M1A

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



Prepared in the Offices of:



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

**AASHTO
LRFD**

Standard Specifications for
Highway Signs, Luminaires,
and Traffic Signals

DRAWING
NUMBER

INDEX OF PLANS
DESCRIPTION

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

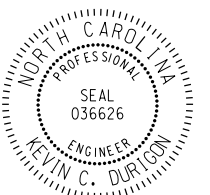
MOBILITY AND SAFETY DIVISION -
TRANSPORTATION SYSTEMS MANAGEMENT
AND OPERATIONS UNIT

D.Y. ISHAK - STATE SIGNALS ENGINEER

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

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

SEAL



DocuSigned by:

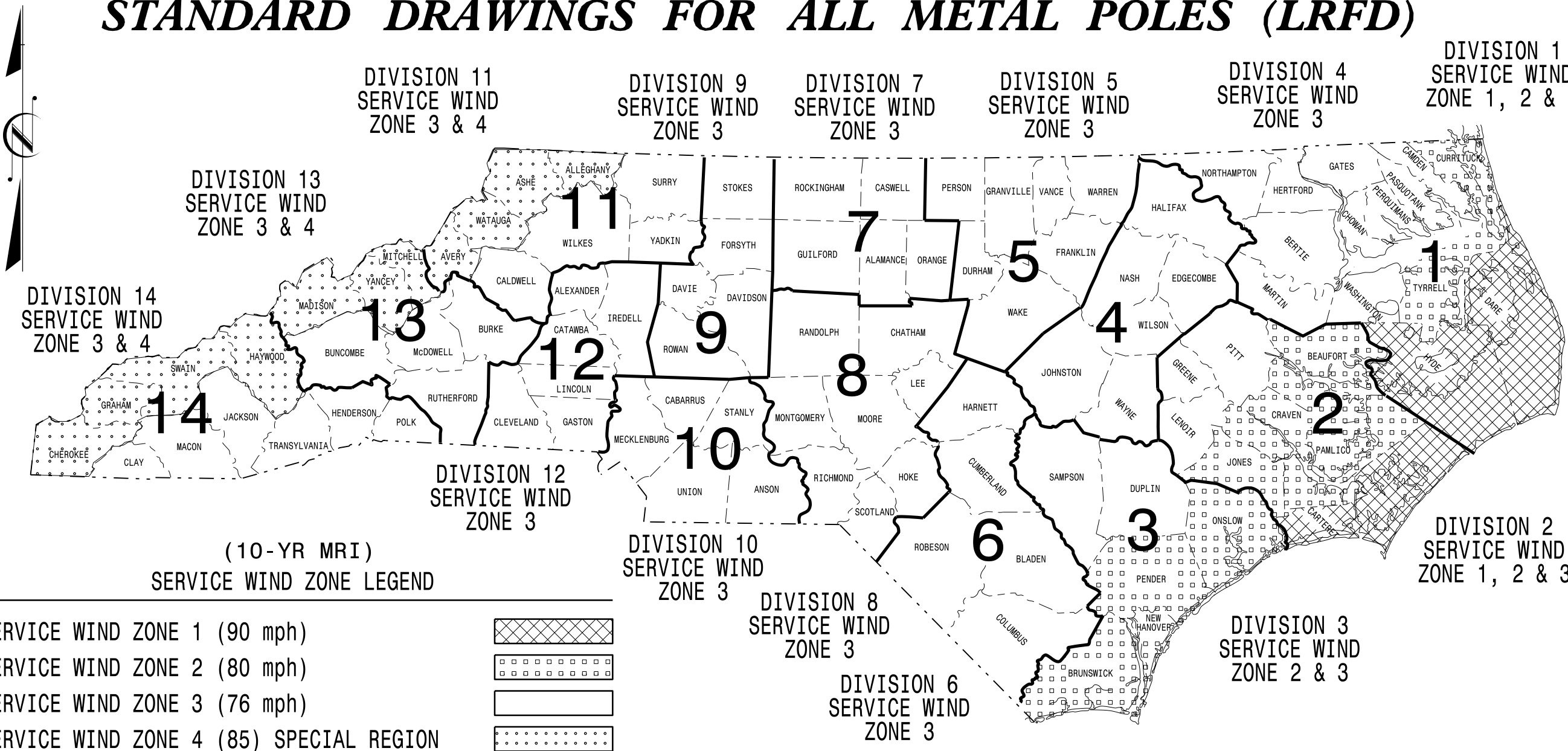
Kevin Durigon
SIGNATURE
4B23DC79B3784DA

09/21/2023
DATE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

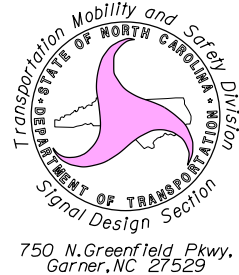
PROJECT I.D. NO.	SHEET NO.
	Sig.M1B

STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



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

Prepared in the Offices of:



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

**AASHTO
LRFD**

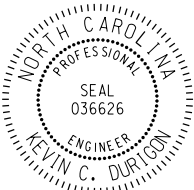
Standard Specifications for
Highway Signs, Luminaires,
and Traffic Signals

DRAWING NUMBER	INDEX OF PLANS DESCRIPTION
Sig. M 1A	Statewide Wind Zone Map (700-yr MRI)
Sig. M 1B	Statewide Wind Zone Map (10-yr MRI)
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Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions
Sig. M 9	Typical Fabrication Details-CCTV Camera Poles

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

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

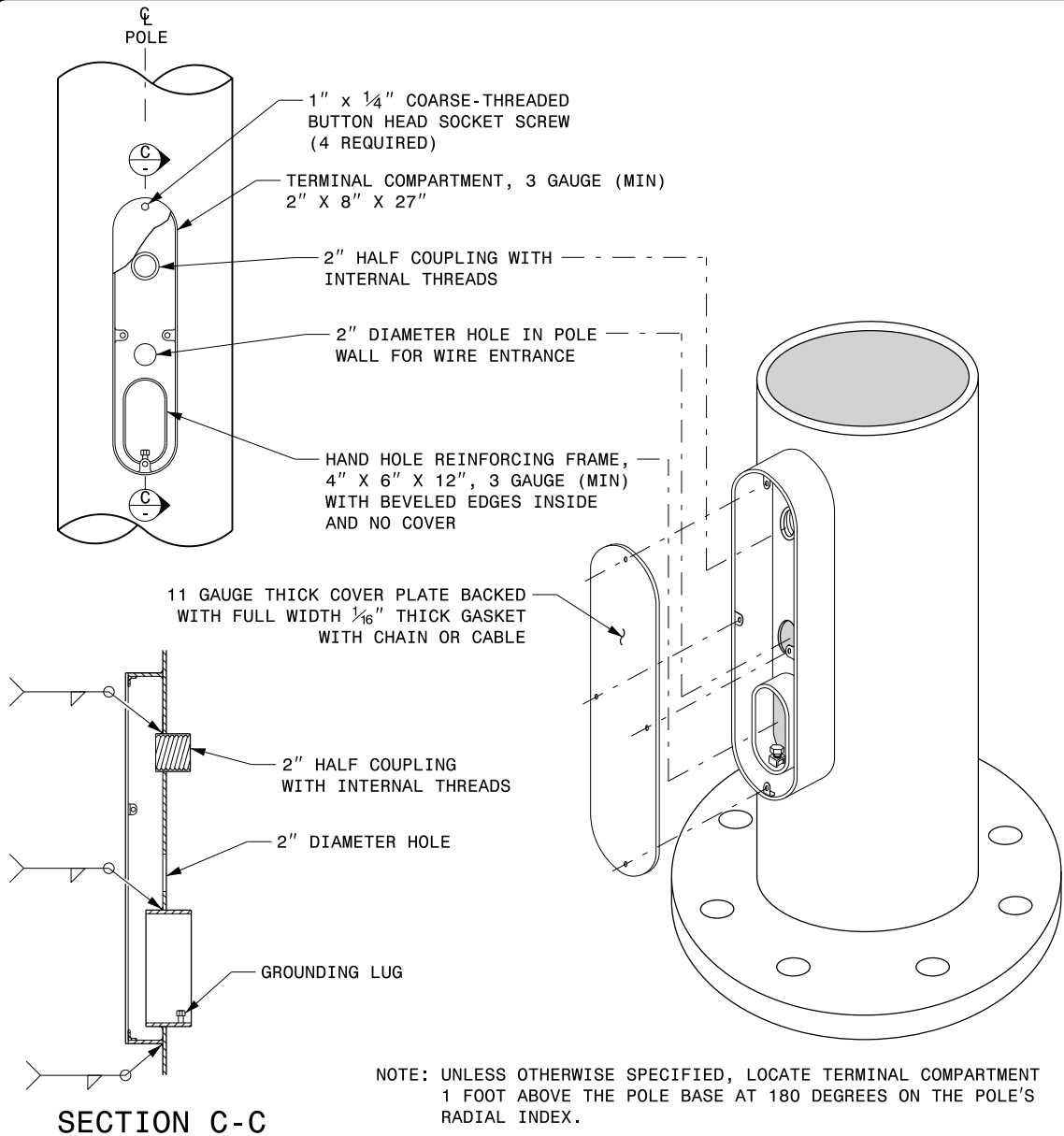
SEAL



DocuSigned by:

Kevin Durigon
SIGNATURE
4B23DC70B378ADA

09/21/2023
DATE



SECTION C-C

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)

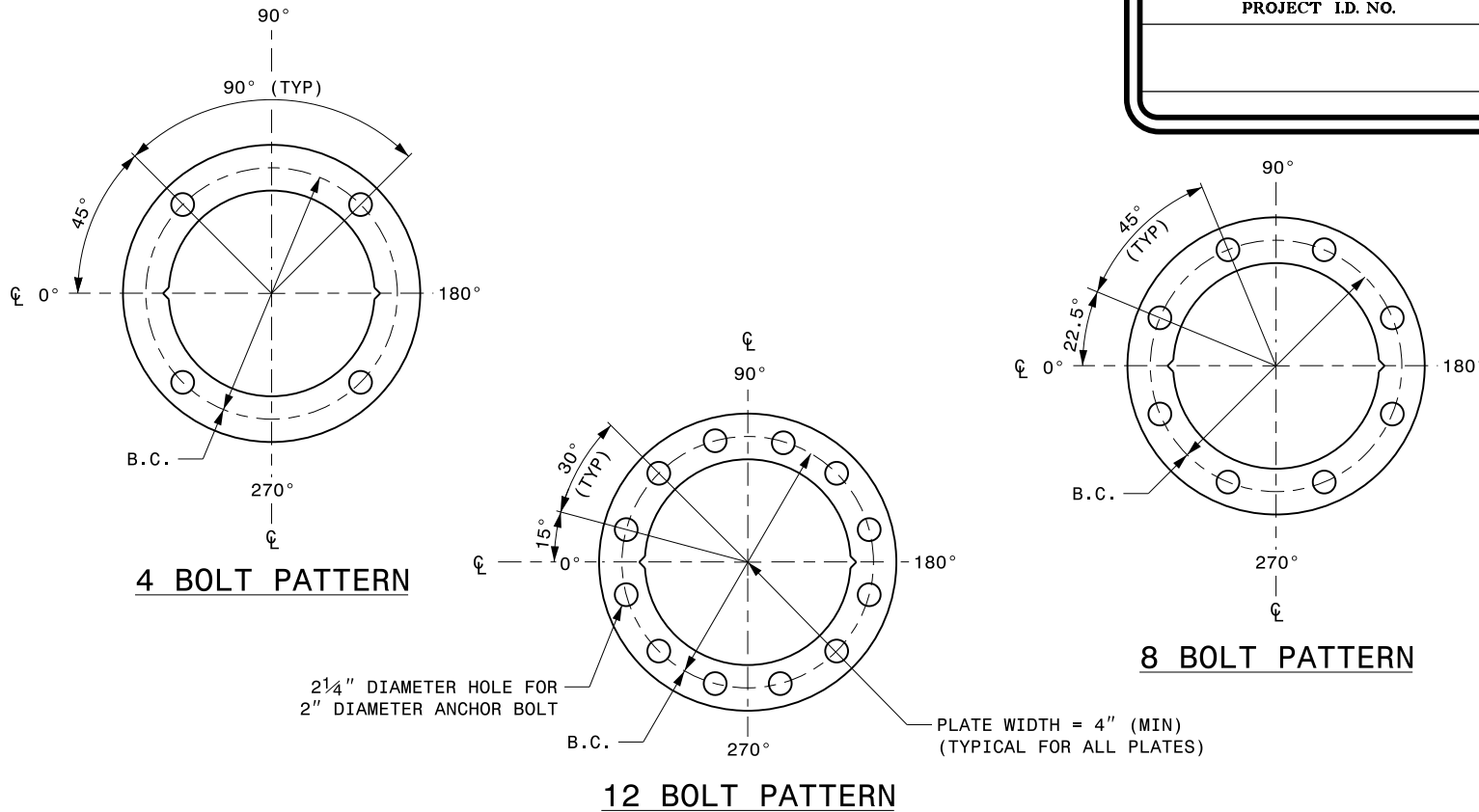
MFG _____	MFG. DATE: MM/YY _____
SECTION D/T/L/Y _____	
NCDOT SIG. INV. NO. _____	
NCDOT POLE NO. _____	

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

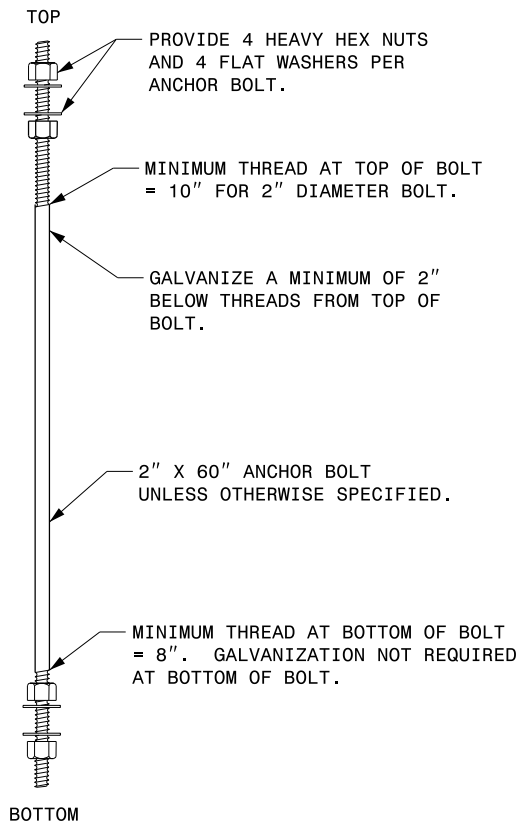
NOTES:

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.

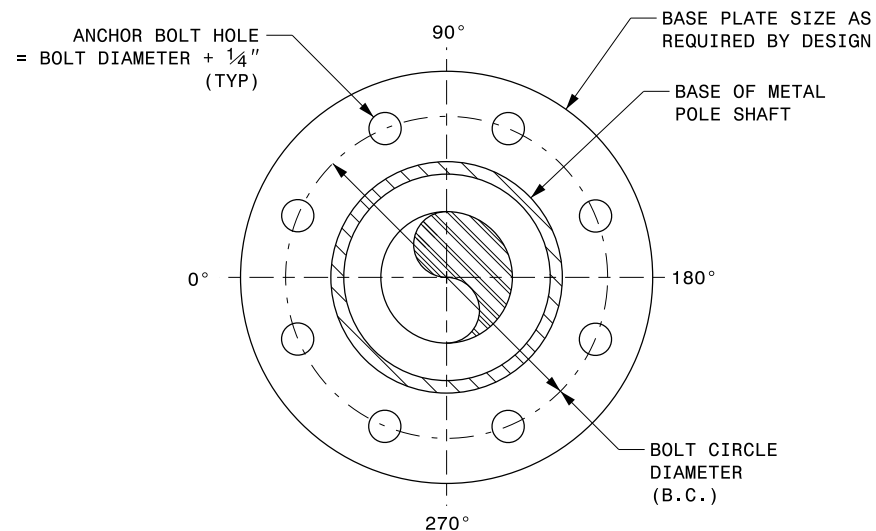
IDENTIFICATION TAG DETAILS



BASE PLATE TEMPLATE AND ANCHOR BOLT LOCK PLATE DETAILS

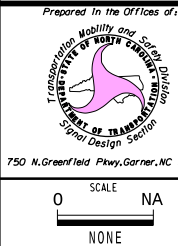


ANCHOR BOLT DETAIL



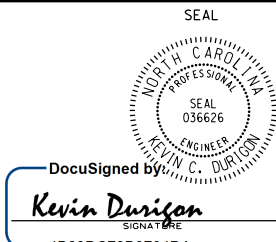
NOTE: BASE PLATE MAY BE CIRCULAR, OCTAGONAL, SQUARE
OR RECTANGULAR IN SHAPE.

TYPICAL BASE PLATE DETAIL



Typical Fabrication Details
For
All Metal Poles

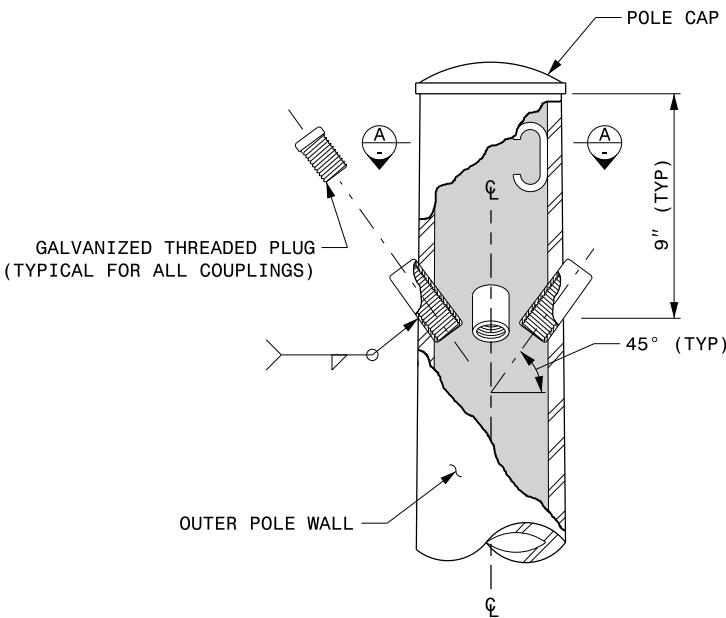
PLAN DATE: SEPTEMBER 2023	DESIGNED BY: C.F. ANDREWS
PREPARED BY: K.C. DURIGON	REVIEWED BY: D.C. SARKAR
REVISIONS	INIT. DATE



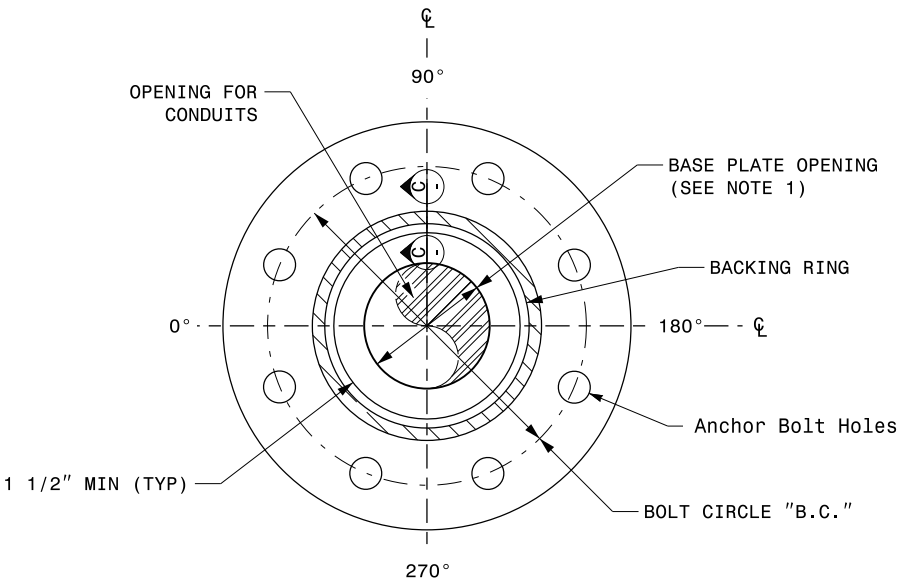
DocuSigned by:
Kevin Durigon

09/21/2023
DATE

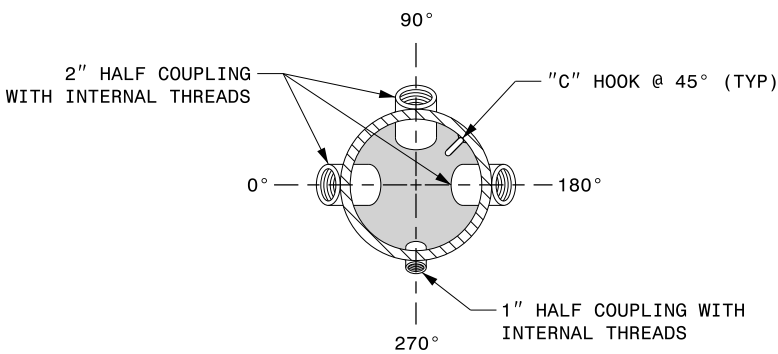
NOTE:
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS 3 1/2" BUT SHALL NOT BE LESS THAN 8 1/2".



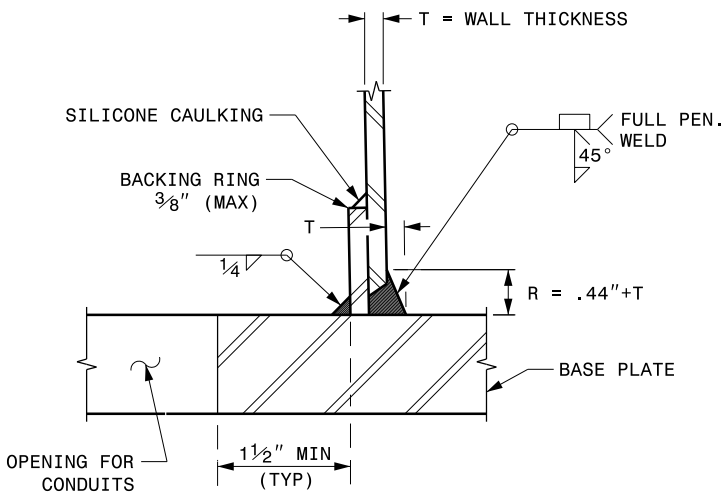
CABLE ENTRANCES AT TOP OF POLE



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

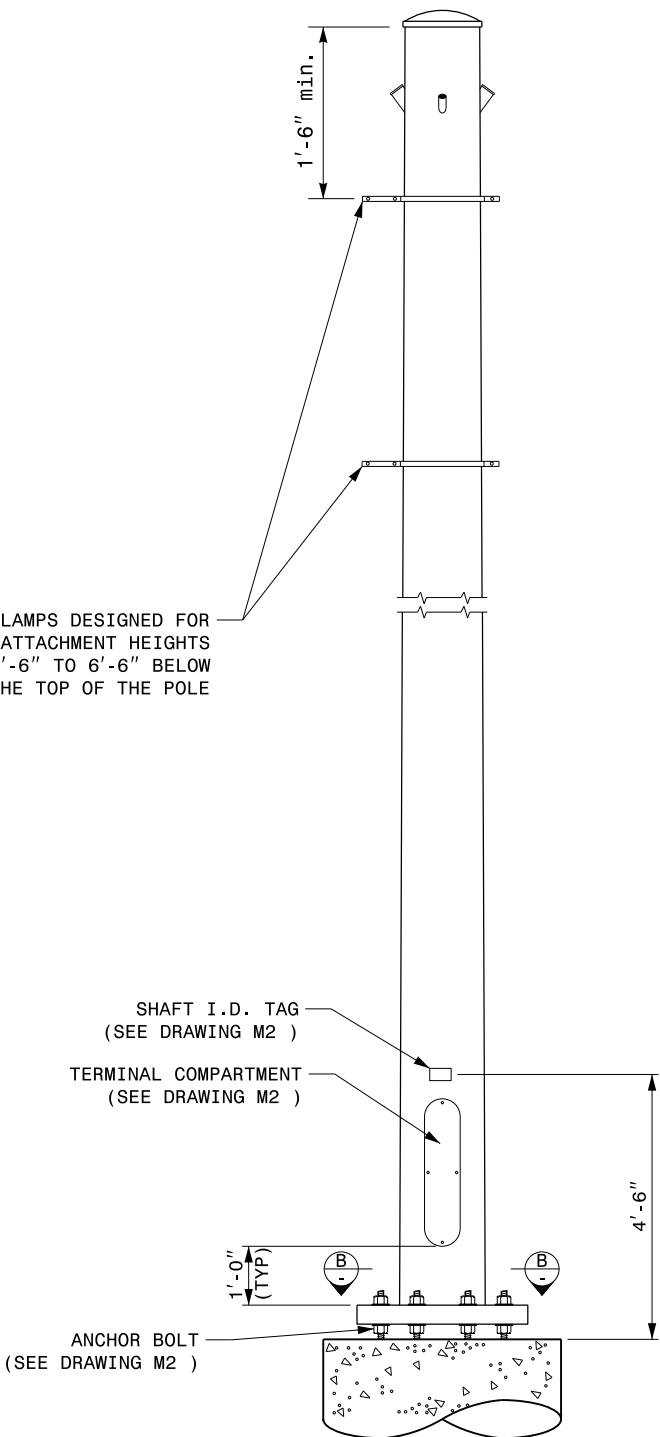


SECTION A-A
RADIAL ORIENTATION OF FACTORY INSTALLED
ACCESSORIES AT TOP OF POLE



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

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

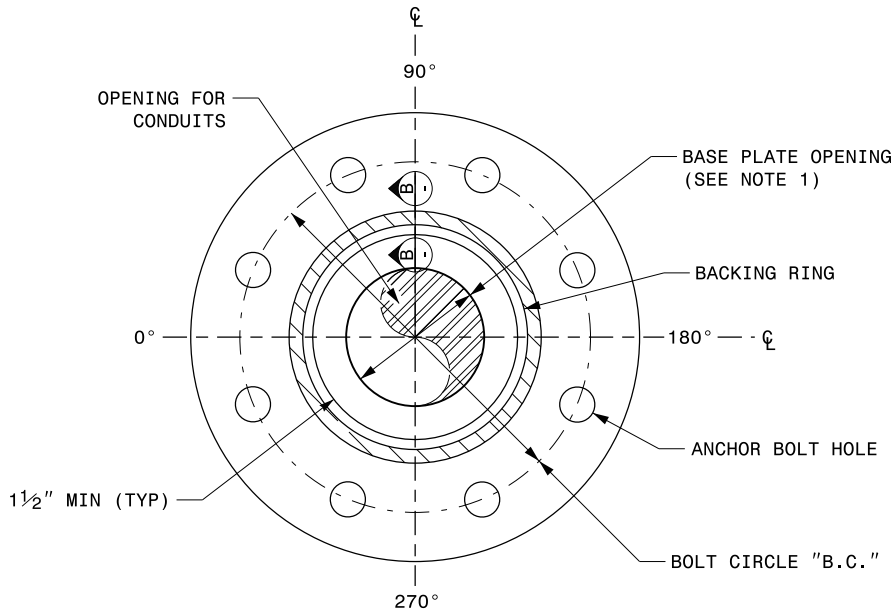


MONOTUBE STRAIN POLE

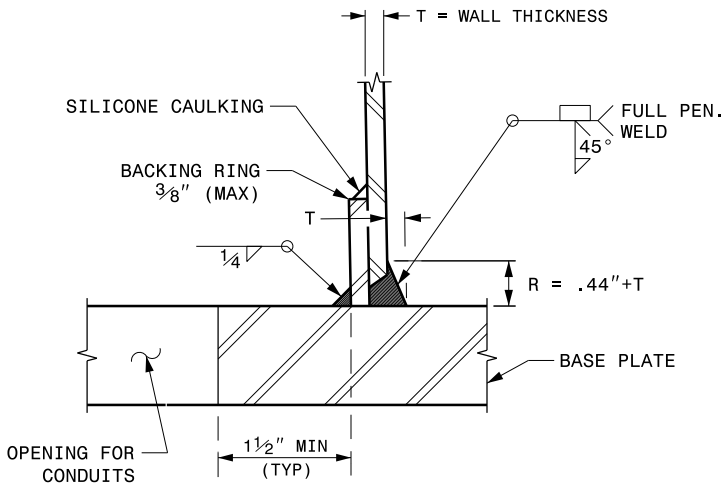
Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	Typical Fabrication Details For Strain Poles		SEAL DocuSigned by: <i>Kevin Durigon</i> 09/21/2023							
	PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR	REVISIONS <table><tr><th>INIT.</th><th>DATE</th></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table>		INIT.	DATE					
INIT.	DATE									

NOTE:

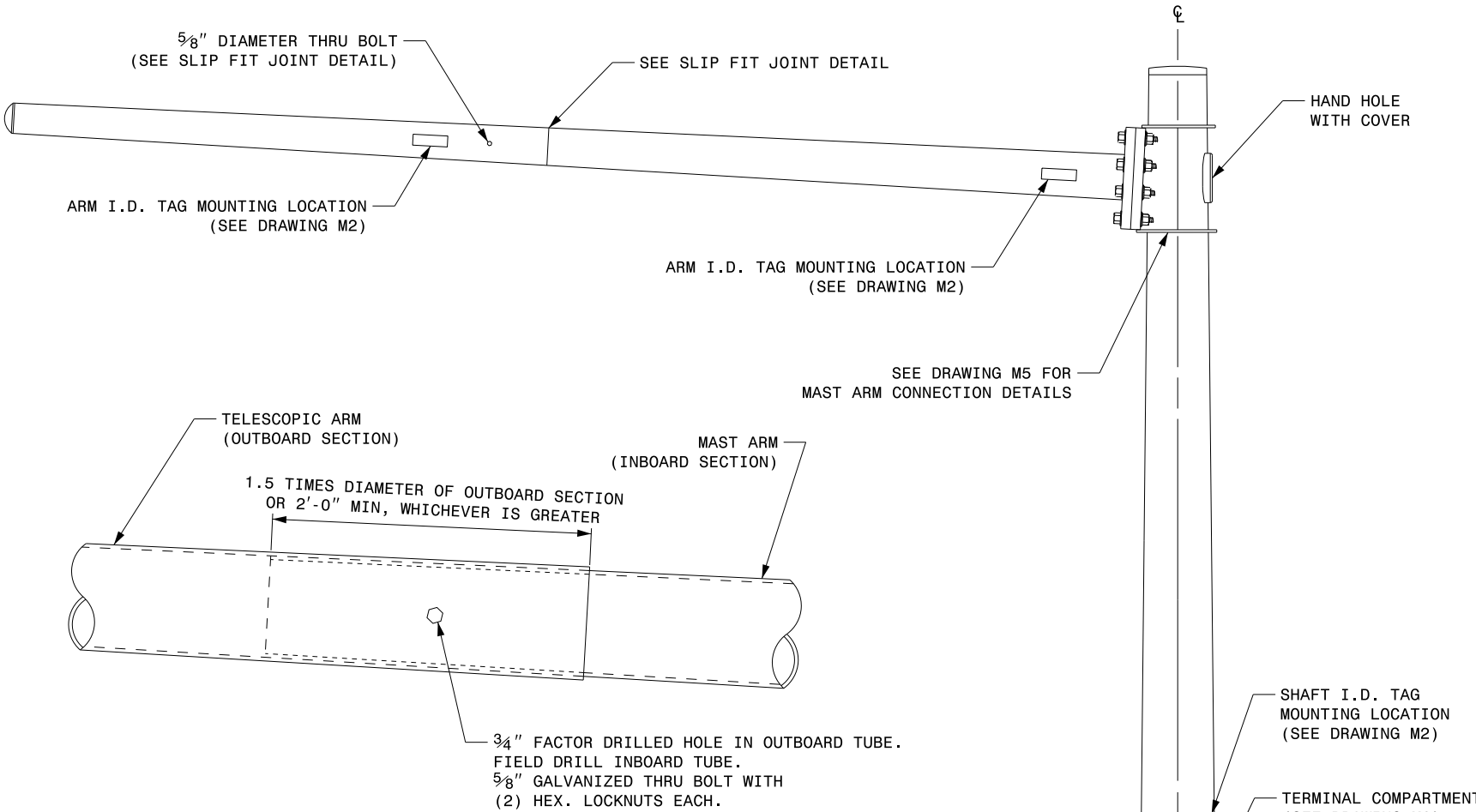
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS $3\frac{1}{2}$ " BUT SHALL NOT BE LESS THAN $8\frac{1}{2}$ ".



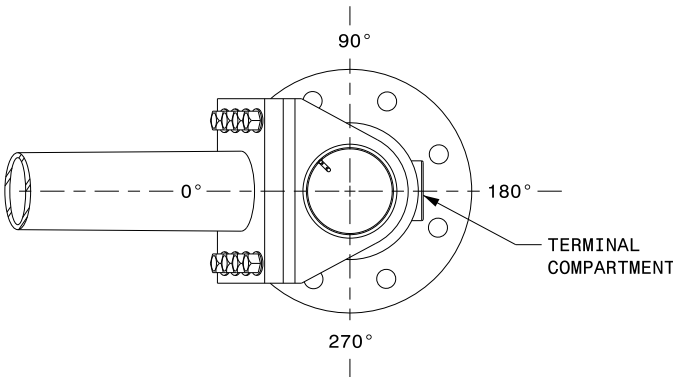
SECTION A-A
POLE BASE PLATE DETAILS



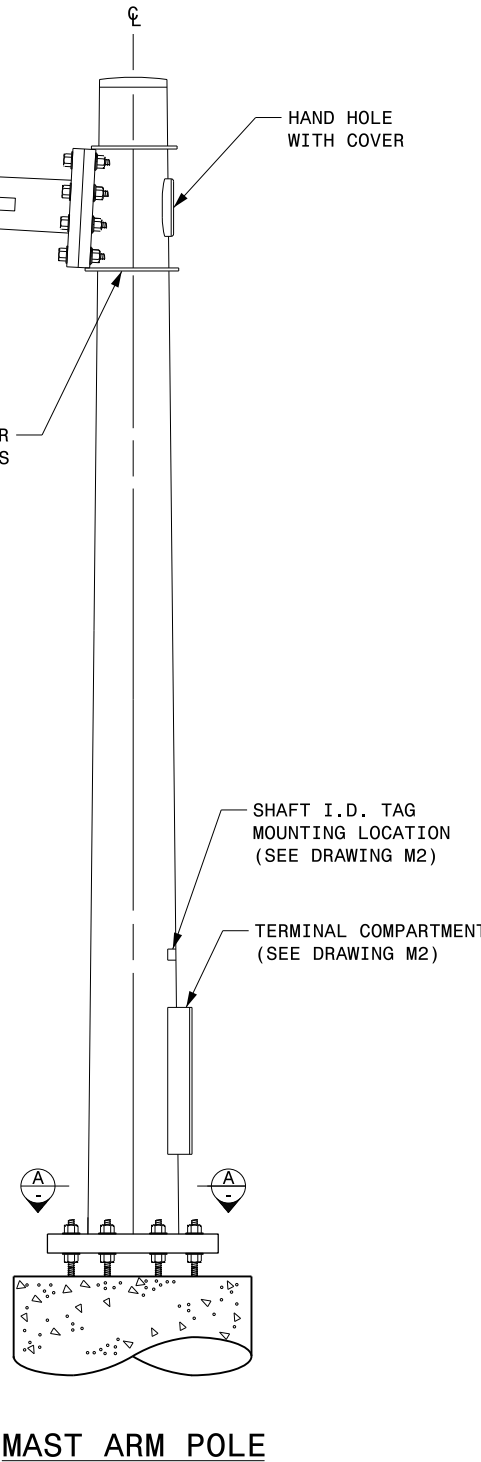
SECTION B-B
(POLE ATTACHMENT TO BASE PLATE)
FULL-PENETRATION
GROOVE WELD DETAIL



SLIP FIT JOINT DETAIL FOR MAST ARM



MAST ARM RADIAL ORIENTATION

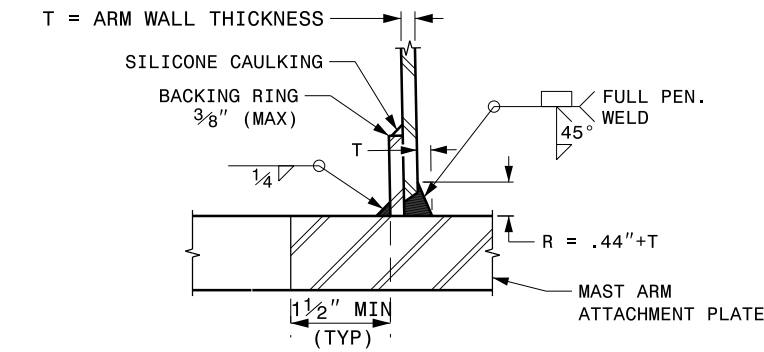


MAST ARM POLE

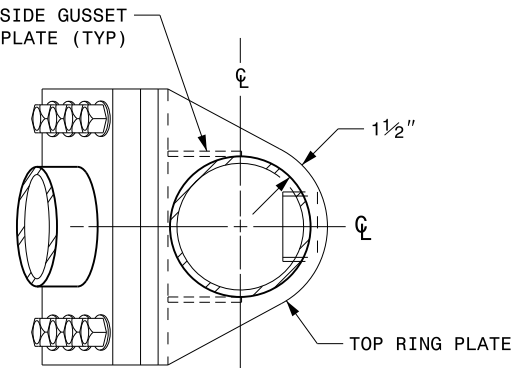
Prepared in the Offices of: TRANSPORTATION MOBILITY AND SAFETY DIVISION NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Design Section 750 N. Greenfield Pkwy, Garner, NC 27529	Typical Fabrication Details For Mast Arm Poles		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER KEVIN C. DURIGON 036626 DocuSigned by: Kevin Durigon 09/21/2023 DATE
	PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR REVISIONS INIT. DATE		

WELDED RING STIFFENED MAST ARM CONNECTION

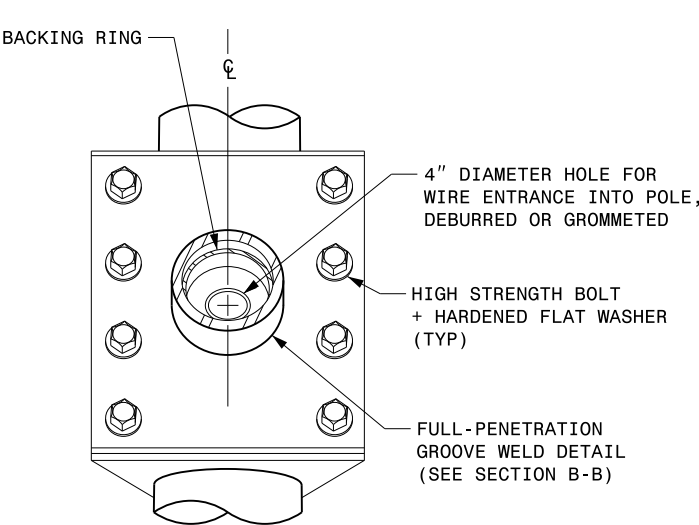
PROJECT I.D. NO.	SHEET NO.
	Sig.M5



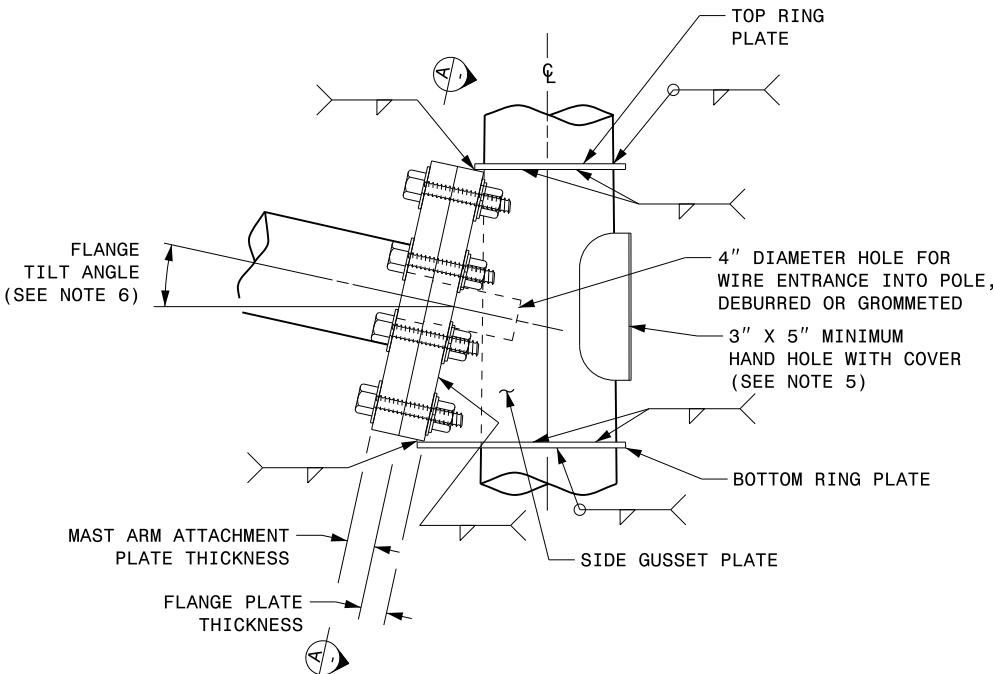
SECTION B-B
FULL-PENETRATION GROOVE WELD DETAIL



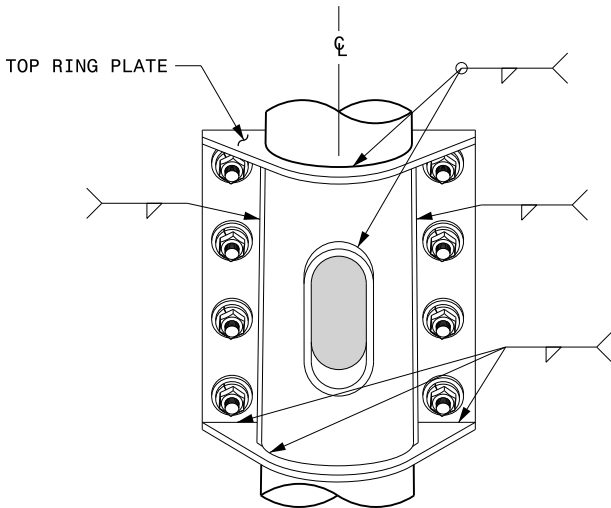
PLAN VIEW



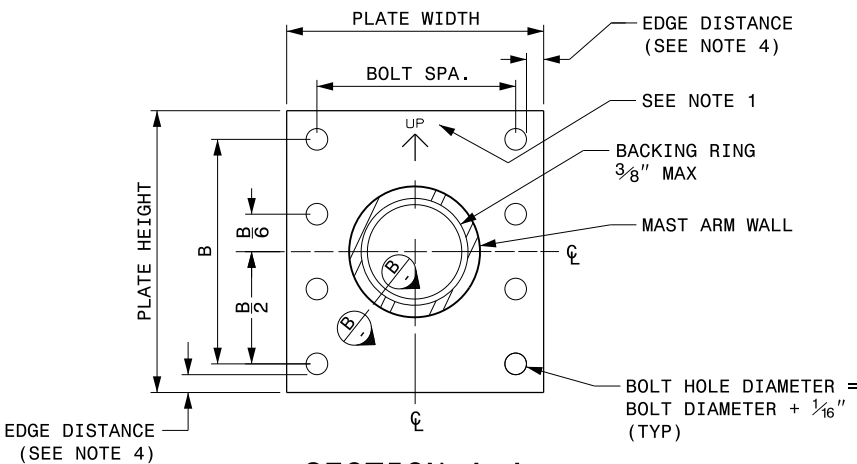
FRONT ELEVATION VIEW



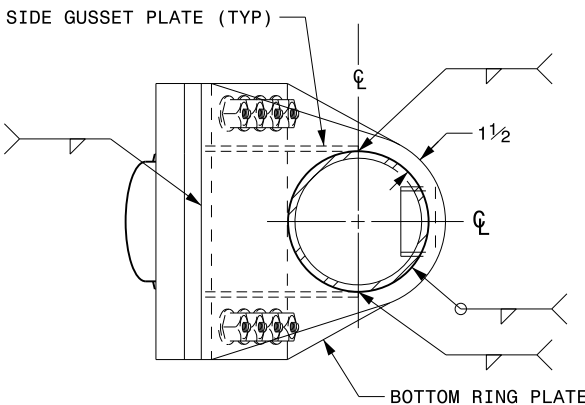
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A
MAST ARM ATTACHMENT PLATE



BOTTOM VIEW

NOTES:

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

21-SEP-2023 08:01
S:\150501\15 Signal\Signal Design Section\Structures\Drawings\2024 Metal Pole Std Drawings for LRFD\2024 Sig.M5 Std. Connection Fabrication Details-Mast Arm Poles.dgn
Kadur Ram

Fabrication Details – Mast Arm Connection

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

0 SCALE NA
NONE

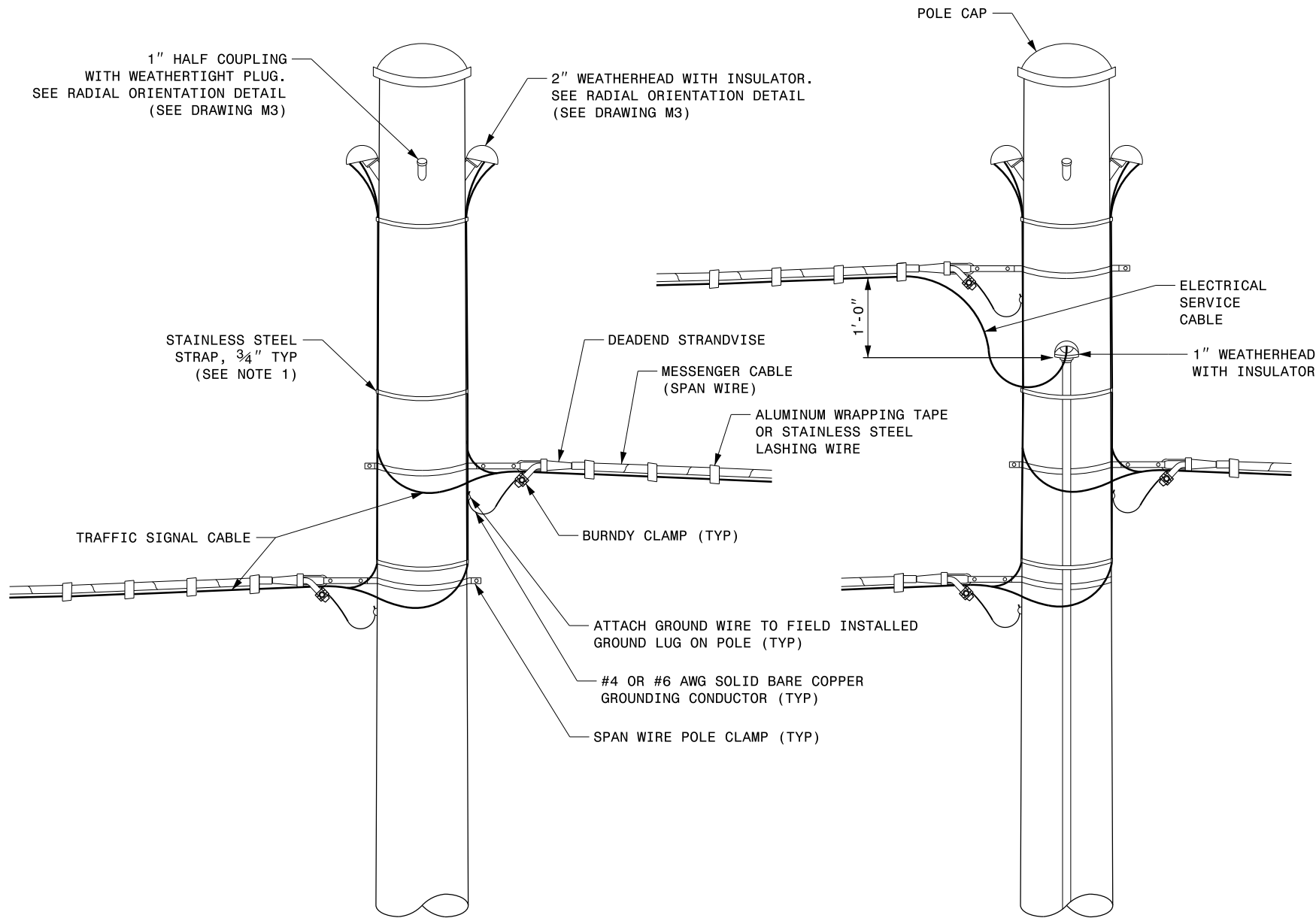
Typical Fabrication Details
For
Mast Arm Connection To Pole

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
ENGINEER
KEVIN C. DURIGON
036626

DocuSigned by:

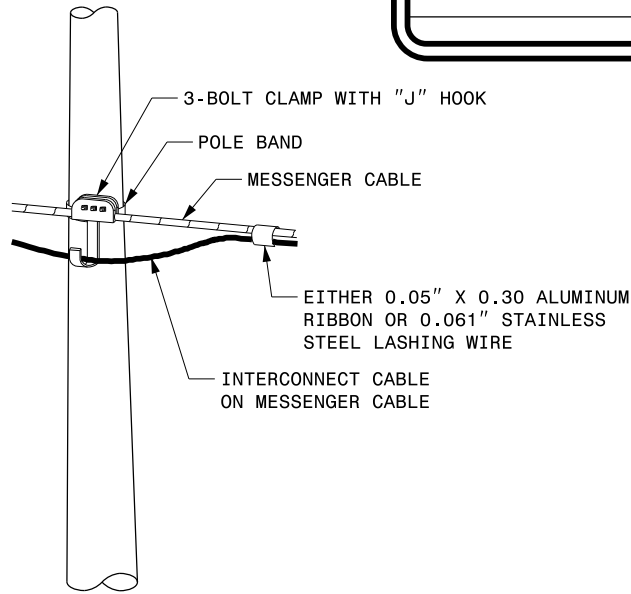
09/21/2023
DATE



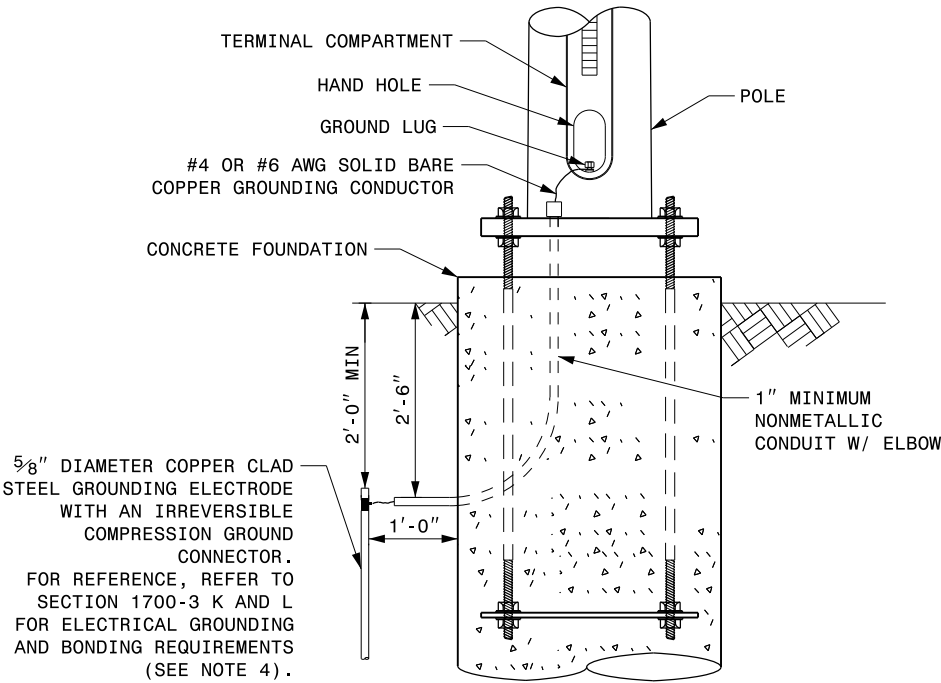
STRAIN POLE ATTACHMENTS

NOTES:

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



ATTACHMENT OF CABLE TO INTERMEDIATE METAL POLE



METAL POLE GROUNDING DETAIL FOR STRAIN POLE AND MAST ARM



750 N. Greenfield Pkwy, Garner, NC 27529

0 SCALE NA
NONE

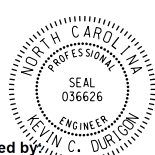
Typical Fabrication Details For Strain Pole Attachments

PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F. ANDREWS

PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR

REVISIONS INIT. DATE

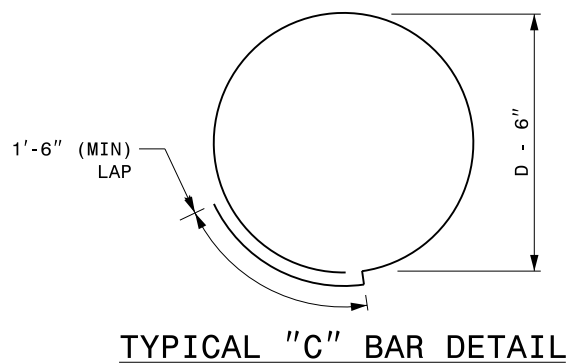
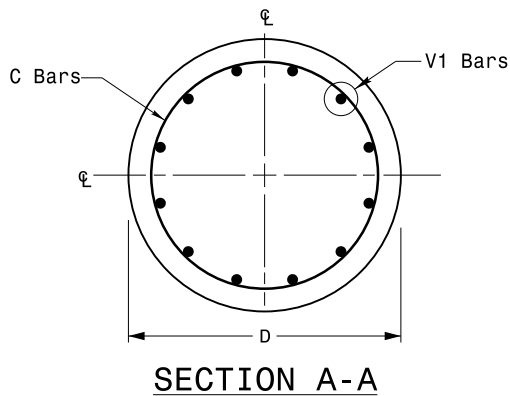
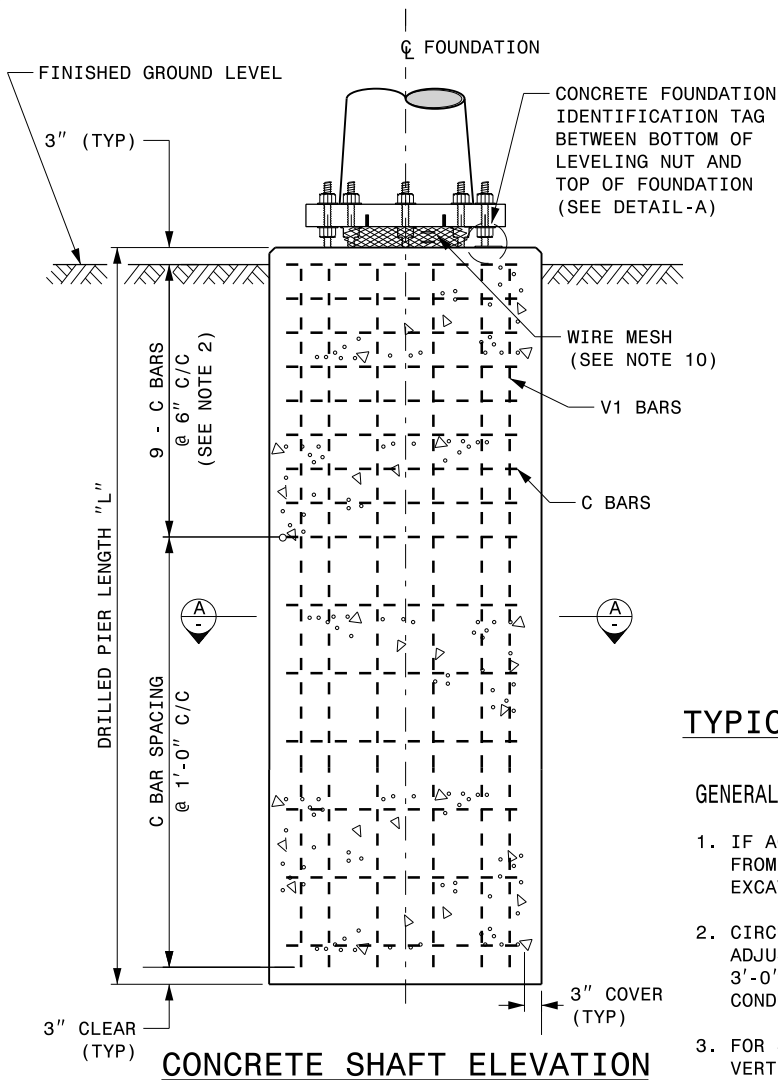
SEAL



DocuSigned by:

Kevin Durigon

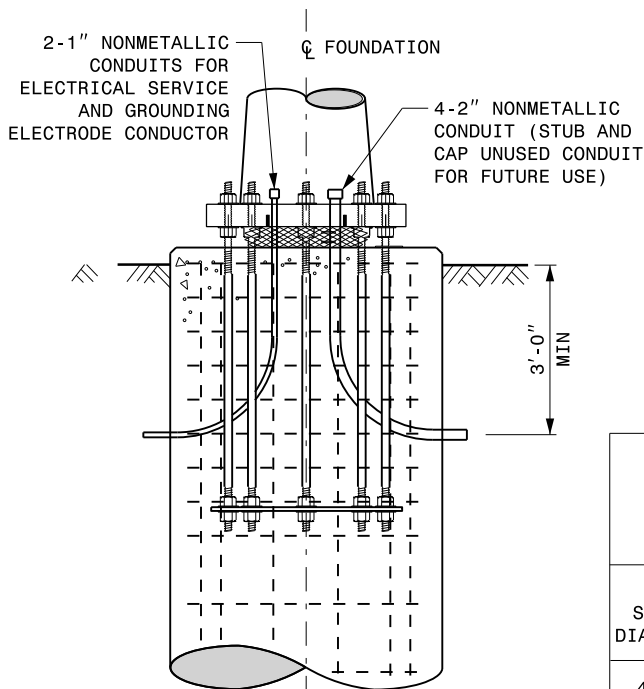
09/21/2023
DATE



TYPICAL FOUNDATION CONDUIT DETAILS

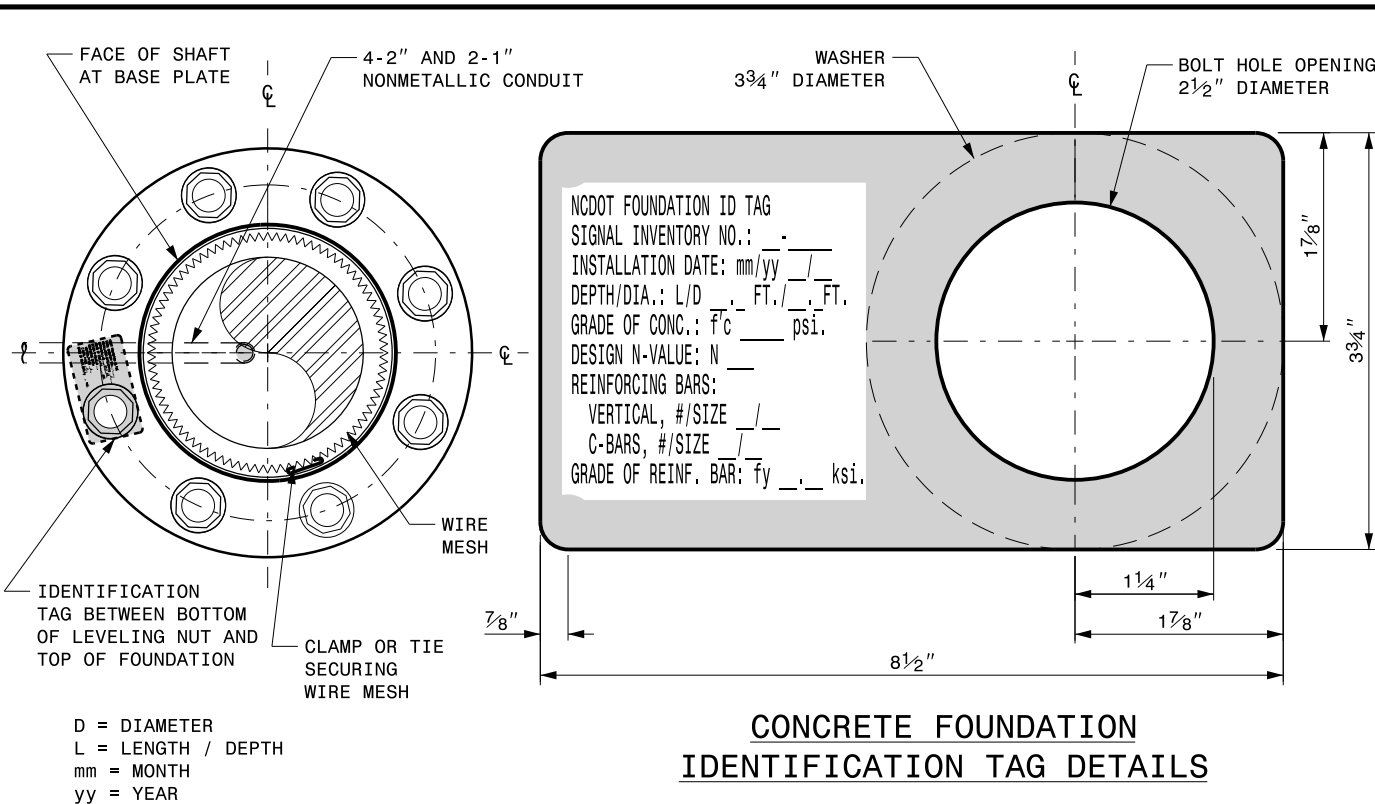
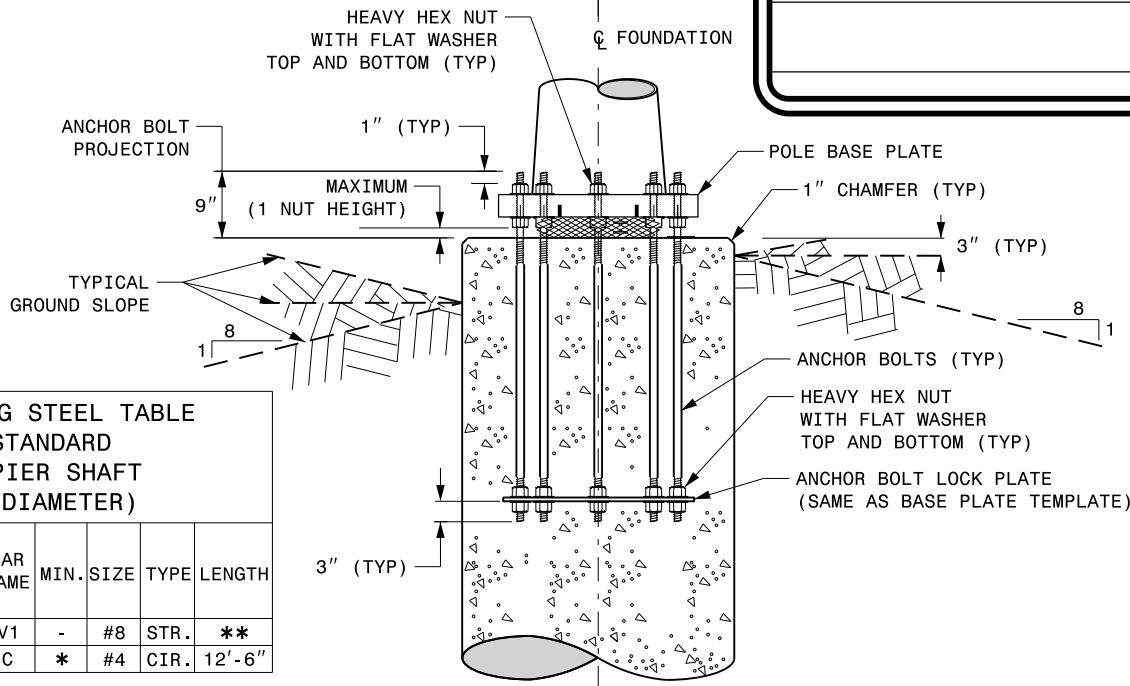
GENERAL NOTES:

- IF ACTUAL SUBSURFACE CONDITIONS DIFFER SIGNIFICANTLY FROM BORING DATA, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
- CIRCULAR TIE REINFORCING RINGS MAY BE VERTICALLY ADJUSTED BY +/-3" AT A DEPTH BETWEEN 2'-0" AND 3'-0" TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING IN THE CAGE.
- FOR STANDARD FOUNDATIONS, SEE SHEET SIG. M8 FOR DETAILS. VERTICAL REINFORCING BARS (V1) MAY BE HORIZONTALLY ADJUSTED BY +/-3" TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING INTO THE CAGE.
- PROVIDE 2" TO 5" FOUNDATION PROJECTION ABOVE GROUND LEVEL, DEPENDING ON THE GROUND SLOPE.
- UNLESS OTHERWISE SHOWN, FOUNDATION DESIGNS ARE BASED ON NON-SLOPING LEVEL GROUND SURFACES WITH SLOPE RATIOS OF 8:1 (H:V) OR FLATTER. IF ACTUAL GROUND LINE SLOPES ARE STEEPER, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
- CONSTRUCT FOUNDATIONS IN ACCORDANCE WITH NCDOT STANDARD PROVISIONS SP09 R005- FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES. ALL APPLICABLE 2024 NCDOT STANDARD SPECIFICATIONS ARE REFERENCED IN THIS PROVISION. REFER TO THE NCDOT RESOURCES/SPECIFICATIONS PAGE LOCATED ON THE CONNECT NCDOT WEBSITE.
[https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx](https://connect.ncdot.gov/resources/Specifications%20and%20Special%20Provisions.aspx)
- USE AIR ENTRAINED AA CONCRETE MIX WITH A COMPRESSION STRENGTH OF $f'c=4500$ psi (MIN) AFTER 28 DAYS.
- USE ASTM A615 GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
- LOCATE IDENTIFICATION TAG ON TOP OF THE FOUNDATION, DIRECTLY ABOVE THE CONDUIT'S ENTRY POINT.
- PROVIDE TWO LAYERS OF 4 MESH GALVANIZED WELDED 23 GAUGE (0.025) 6" WIDE AROUND PIPES UNDER THE BASE PLATE AND SECURE IT WITH TIES IF NECESSARY.
- PREFERRED LOCATION FOR THE I.D. TAG IS AS SHOWN IN DETAIL-A: DIRECTLY ABOVE THE CONDUIT ENTERING THE FOUNDATION.



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

* SEE NOTE 2
** SEE NOTE 3



DETAIL-A

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

Prepared in the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	Construction Details For Foundations		SEAL  Kevin Durigon DATE
	PLAN DATE: SEPTEMBER 2023	DESIGNED BY: K.C. DURIGON	
	PREPARED BY: K.C. DURIGON	REVIEWED BY: D.C. SARKAR	
SCALE: NA	REVISIONS	INIT.	DATE
NONE			

21-SEP-2023 08:08
S:\15850\15 Signal\Signal Design Section\Structures\Drawings\2024 Metal Pole Std Drawings for LRFD\2024 Sig.M8 Std. Strain Pole Found.-Saturated Soil Condition.dgn
Kedar Nandan

SOIL CONDITION

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

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

PROJECT I.D. NO.	SHEET NO.
	Sig.M8

GENERAL NOTES:

- 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.
- USE CHAIRS AND SPACERS TO MAINTAIN PROPER CLEARANCE.
- FOR FOUNDATION, ALWAYS USE AIR-ENTRAINED CONCRETE MIX.

FOUNDATION SELECTION:

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

Standard Strain Pole Foundation – All Soil Conditions

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: NA
NONE

Standard Strain Pole Foundation for All Soil Conditions

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

REVISIONS: INIT.: DATE:

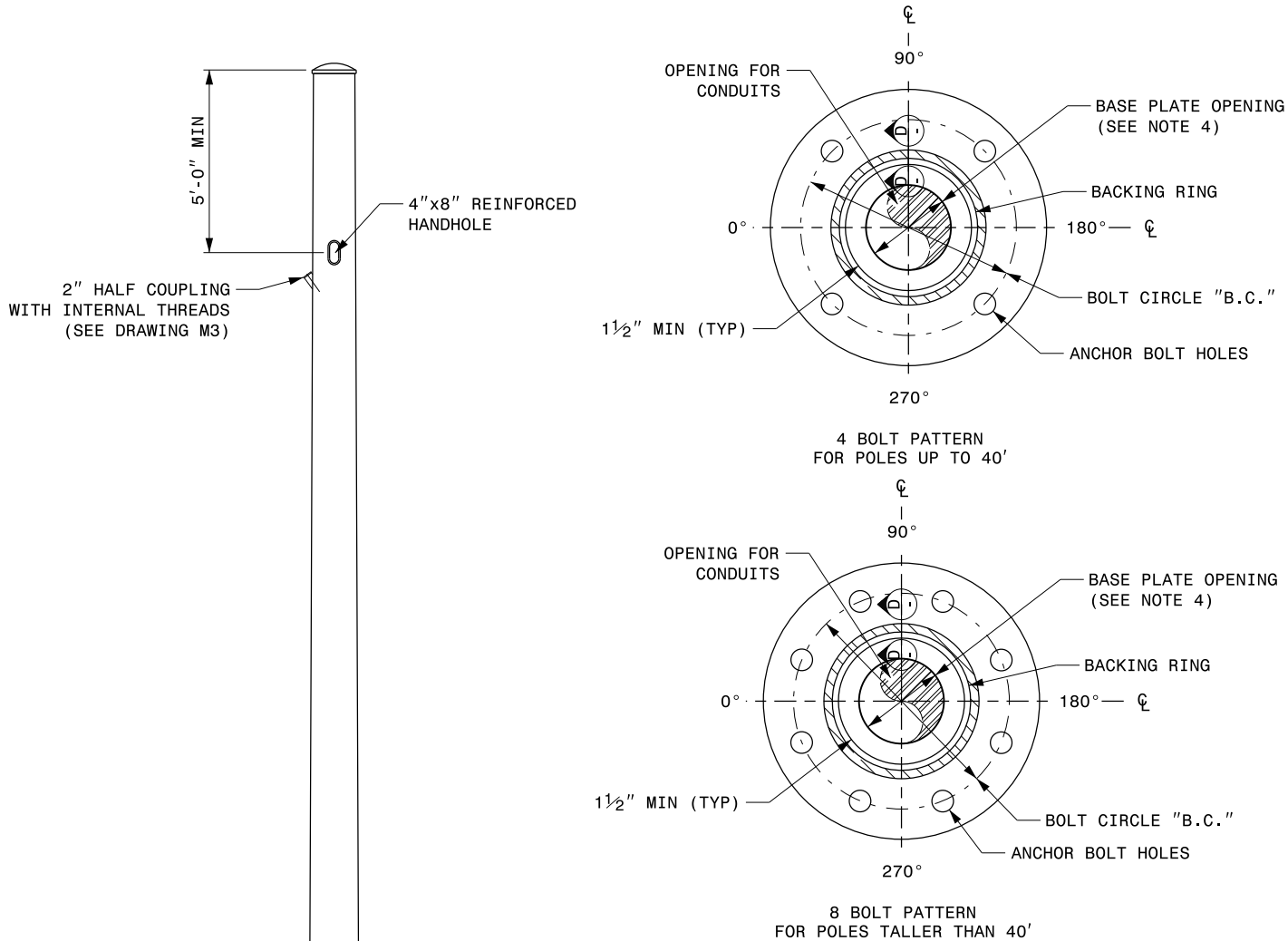
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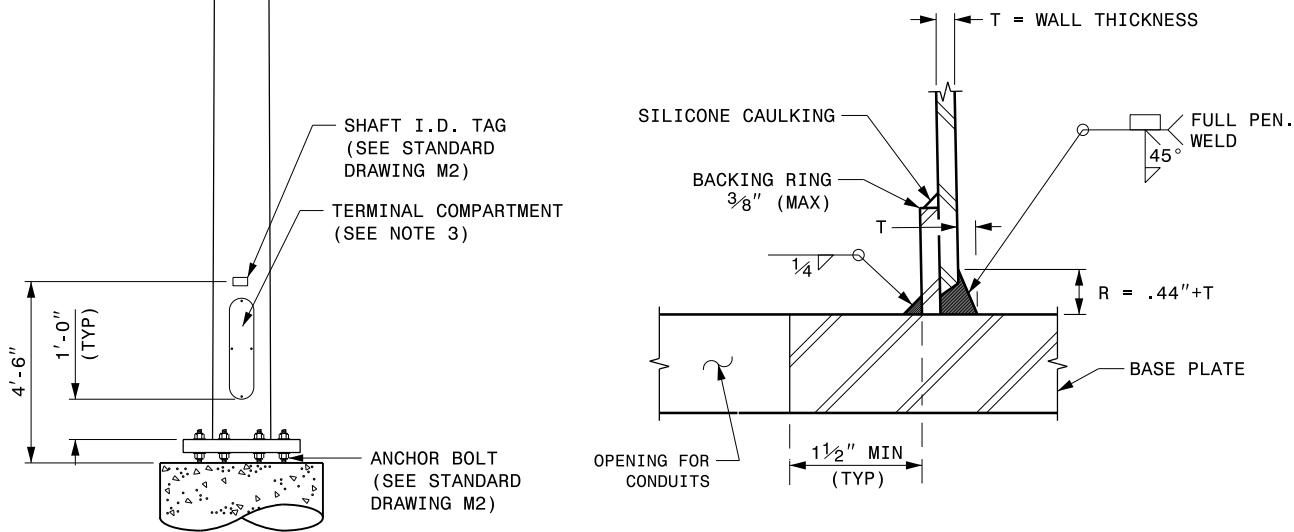
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09/21/2023

DATE



BASE PLATE DETAILS



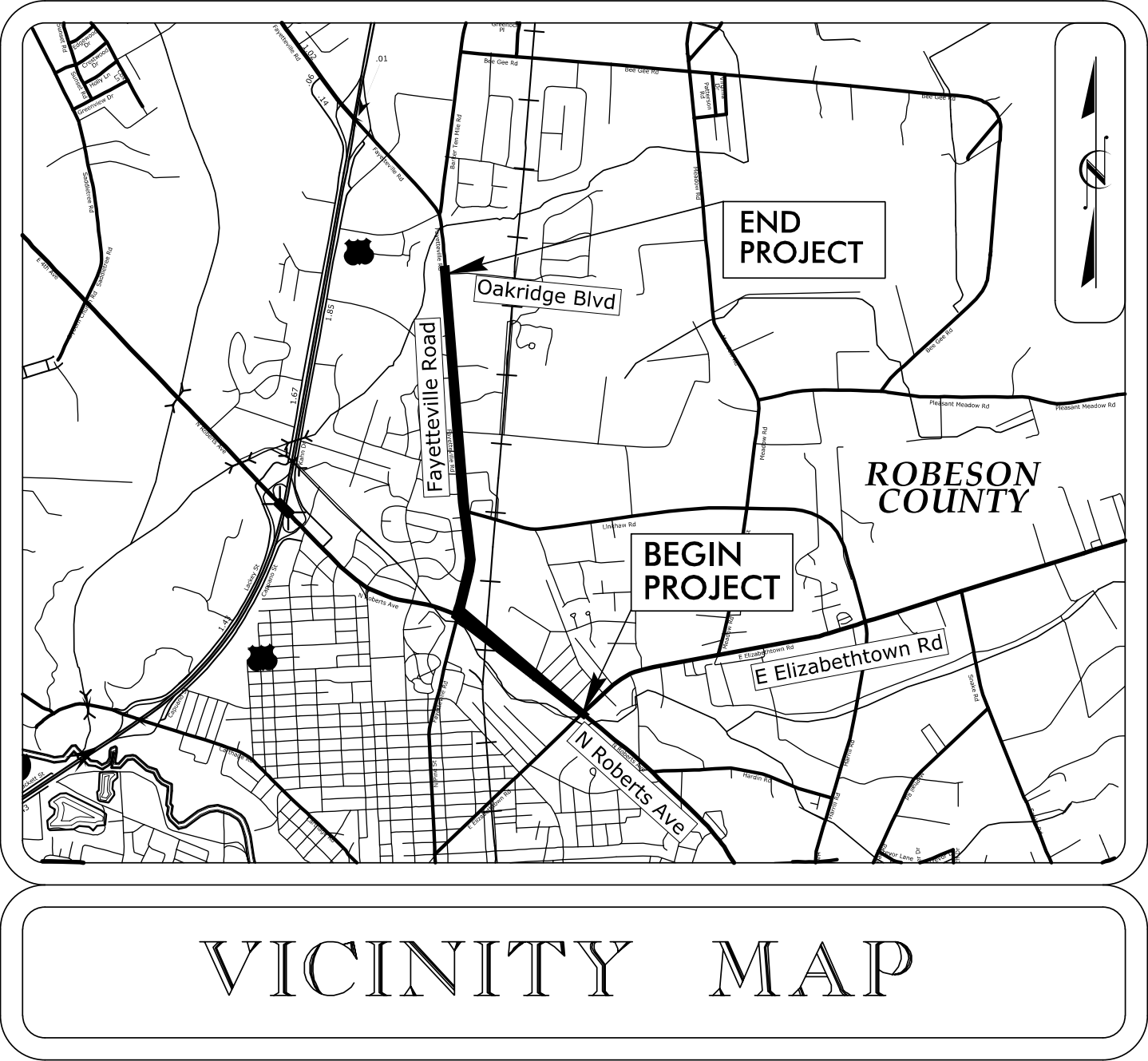
SECTION D-D
(POLE ATTACHMENT TO BASE PLATE)
FULL-PENETRATION
GROOVE WELD DETAIL

NOTES:

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

 750 N. Greenfield Pkwy, Garner, NC 27529	Typical Fabrication Details For CCTV Poles		 DocuSigned by: Kevin Durigon ENGINEER 09/21/2023
	PLAN DATE: SEPTEMBER 2023	DESIGNED BY: K.C. DURIGON	
	PREPARED BY: K.C. DURIGON	REVIEWED BY: C.F. ANDREWS	
0 SCALE NA NONE	REVISIONS	INIT.	DATE

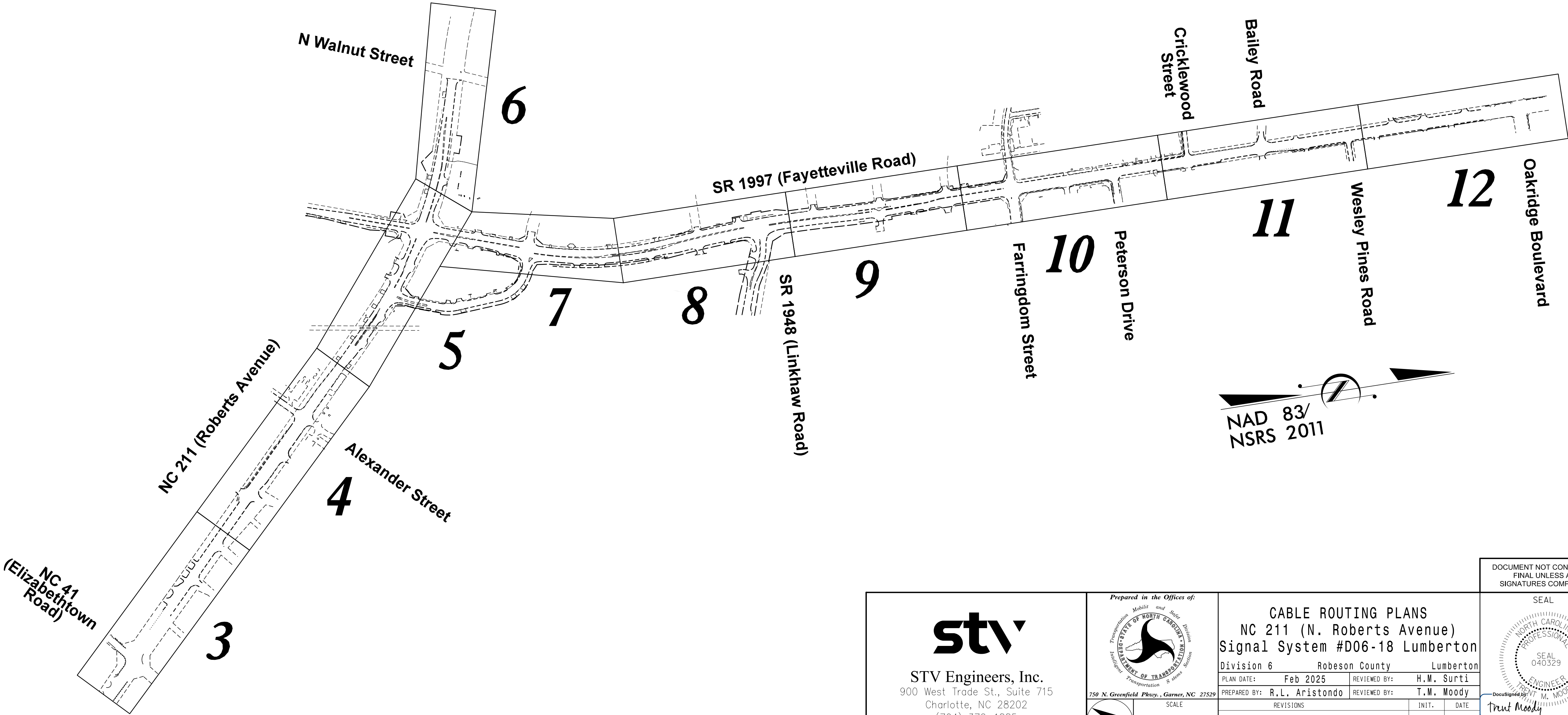
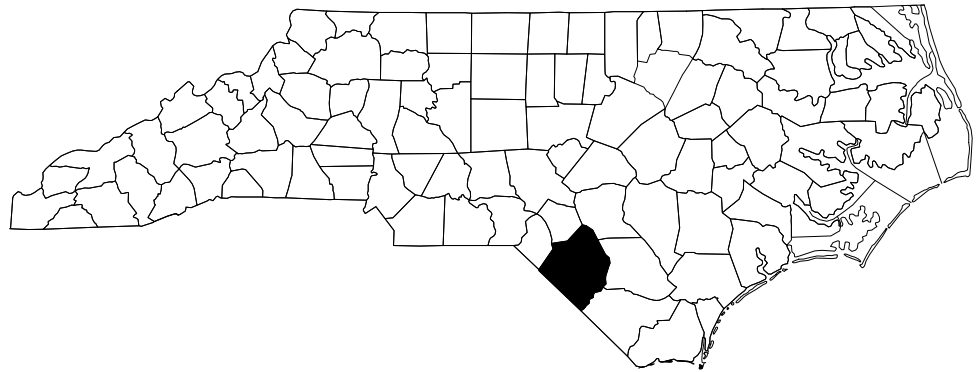
TIP PROJECT: U-5797



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

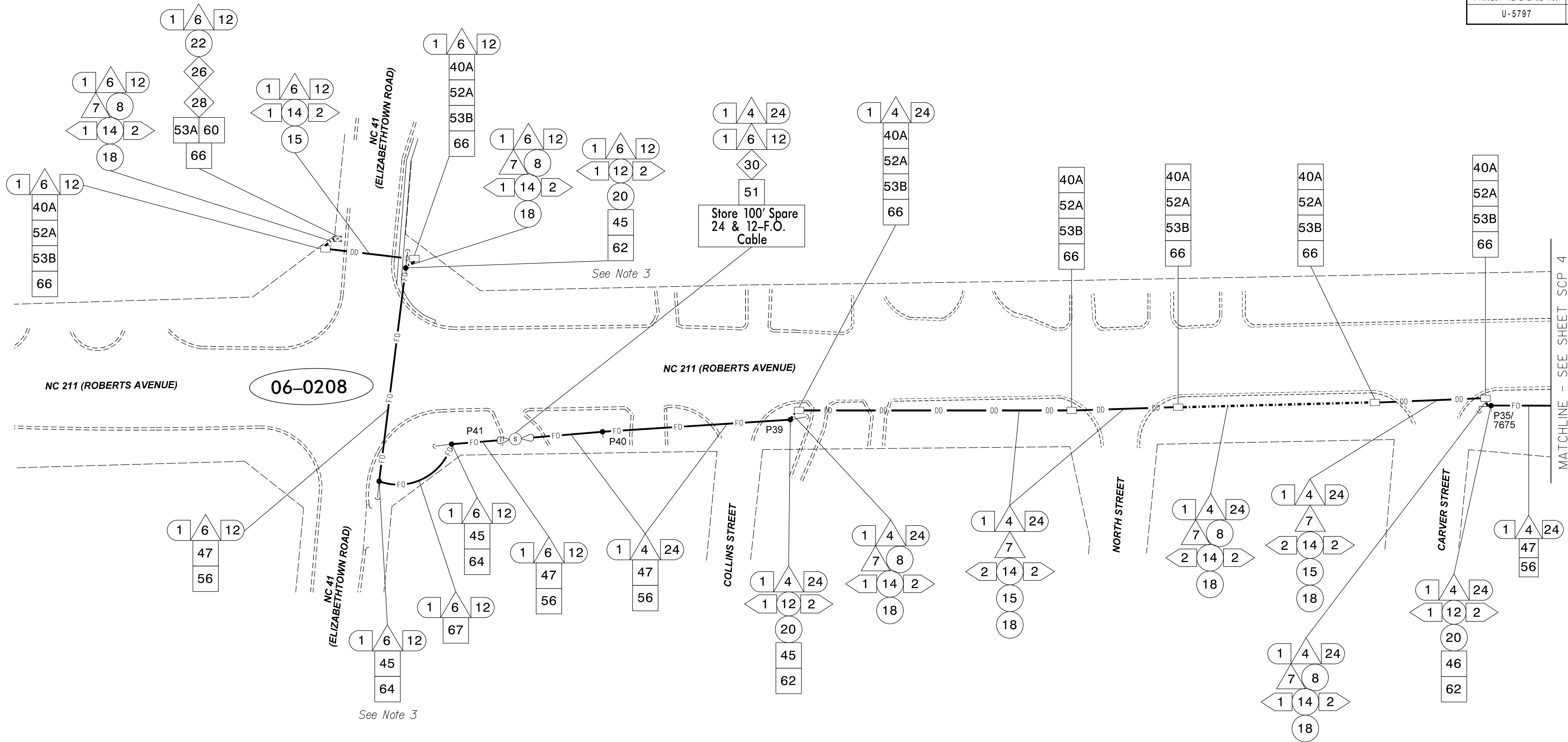
LOCATION: NC 211 (ROBERTS AVENUE) FROM
NC 41 (ELIZABETHTOWN ROAD) TO
SR 1997 (FAYETTEVILLE ROAD)
&
SR 1997 (FAYETTEVILLE ROAD) FROM
FARRINGDOM STREET TO OAKRIDGE BOULEVARD
TYPE OF WORK: SIGNAL COMMUNICATION PLAN



 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 (704) 372-1885 NC License Number F-0991	 750 N. Greenfield Place, Greensboro, NC 27409 SCALE	CABLE ROUTING PLANS NC 211 (N. Roberts Avenue) Signal System #D06-18 Lumberton		 3/19/2025 DATE CADD FILE NAME: U-5797_SCP_01	
		Division 6	Robeson County		Lumberton
		PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti		
		PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Moody		
		REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

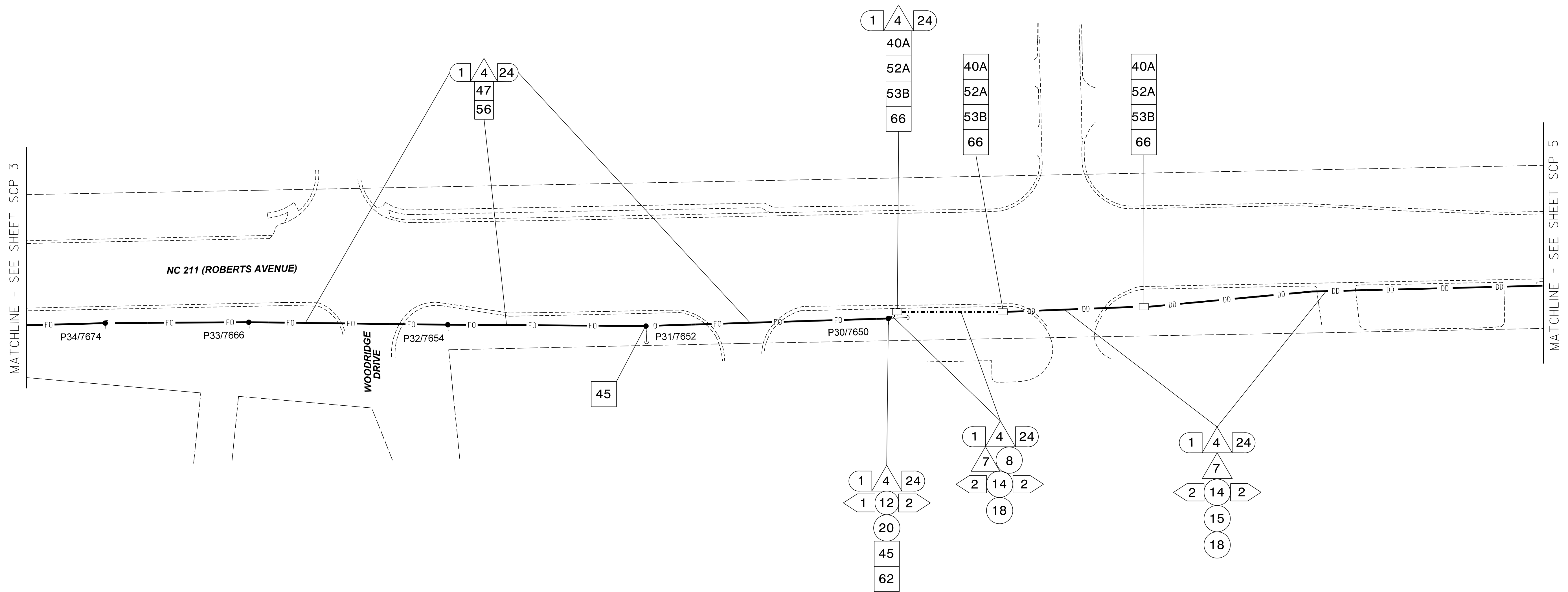
			PROJECT REFERENCE NO.	SHEET NO.
			U-5797	SCP 2



NOTES:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 06 TRAFFIC ENGINEER AT (910) 364-0606 TO ARRANGE FOR THE DIVISION TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DIVISION TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.
2. ATTACH AND LASH NEW 24-FIBER CABLE 40" BELOW POWER.
3. ATTACH AND LASH NEW 12-FIBER DROP CABLE 40" BELOW POWER.
4. ONCE NEW 24-FIBER CABLE HAS BEEN INSTALLED AND OPERATIONAL, PROVIDE A FINAL COMMUNICATION TEST RUN TO ENSURE CONFORMITY PRIOR TO DIVISION 06 TRAFFIC SERVICES APPROVAL.

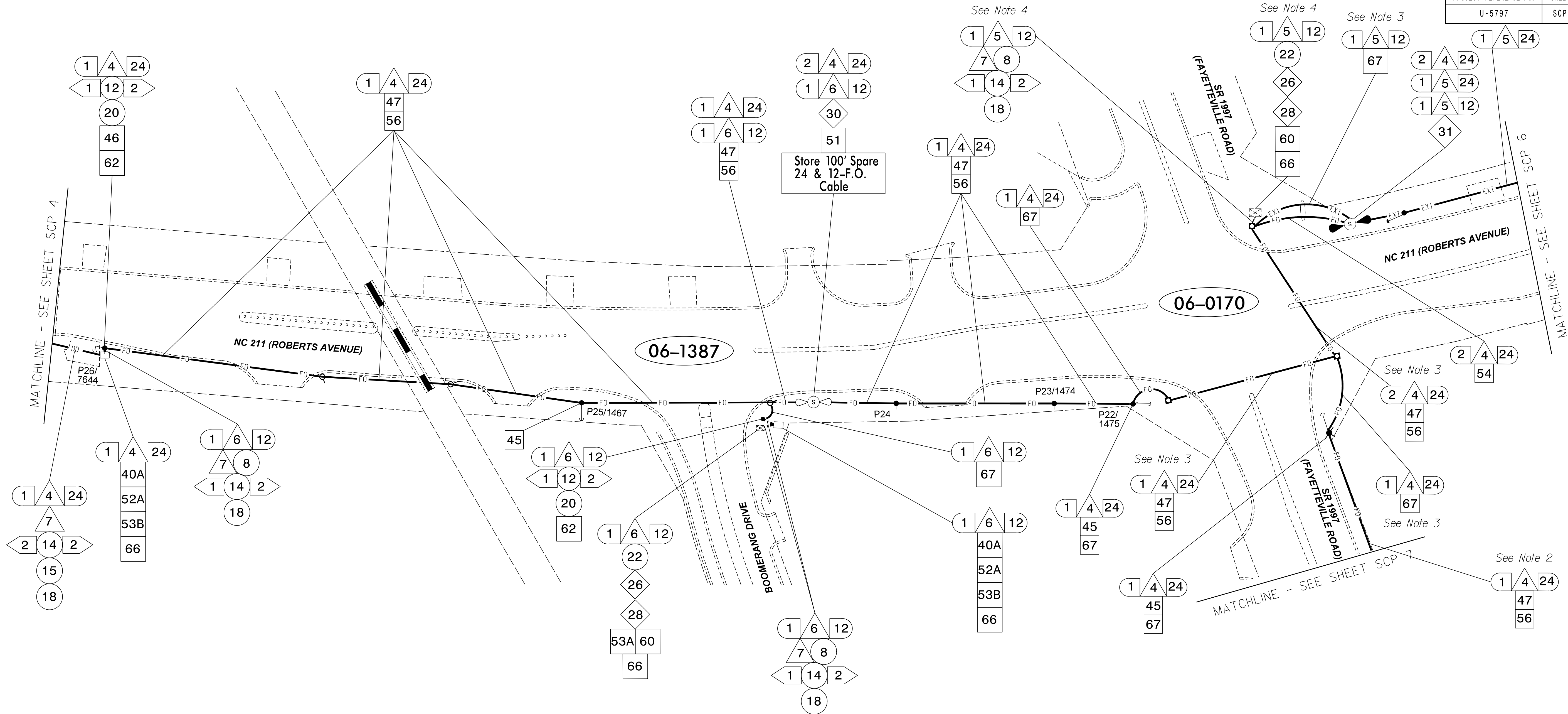
 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 (704) 372-1885 NC License Number F-0991	 750 N. Greenfield Pkwy, Garner, NC 27529 0 SCALE 50 1"=50'	CABLE ROUTING PLANS NC 211 (N. Roberts Avenue) Signal System #D06-18 Lumberton Division 6 Robeson County Lumberton PLAN DATE: Feb 2025 REVIEWED BY: H.M. Surti PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Moody REVISIONS INIT. DATE SIGNATURE DATE CADD FILE NAME: U-5797_SCP_03	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
			SEAL NORTH CAROLINA PROFESSIONAL ENGINEER T.M. MOODY 45EAT04836704ED 3/19/2025



1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 06 TRAFFIC ENGINEER AT (910) 364-0606 TO ARRANGE FOR THE DIVISION TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DIVISION TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.

2. ATTACH AND LASH NEW 24-FIBER CABLE 40" BELOW POWER.
3. ONCE NEW 24-FIBER CABLE HAS BEEN INSTALLED AND OPERATIONAL, PROVIDE A FINAL COMMUNICATION TEST RUN TO ENSURE CONFORMITY PRIOR TO DIVISION 06 TRAFFIC SERVICES APPROVAL.

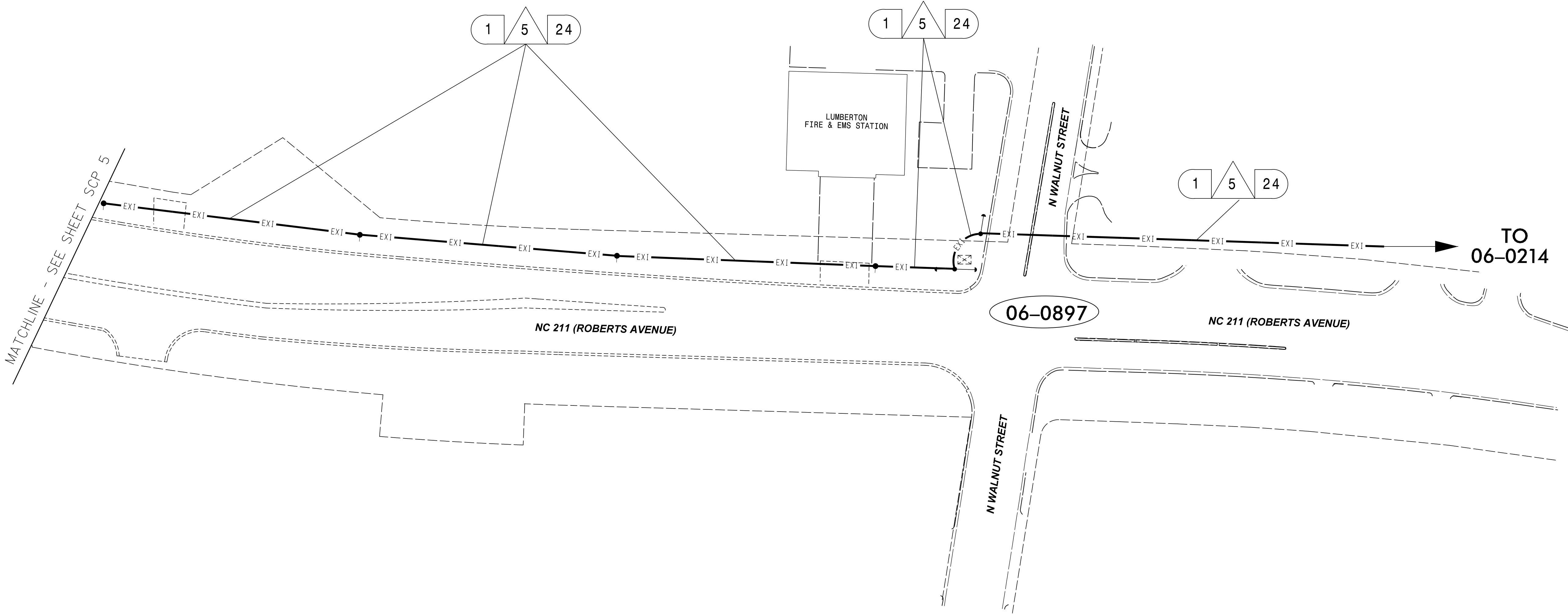
 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 (704) 372-1885 NC License Number F-0991		Prepared For the Offices of: CABLE ROUTING PLANS NC 211 (N. Roberts Avenue) Signal System #D06-18 Lumberton Division 6 Robeson County Lumberton <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">PLAN DATE: Feb 2025</td> <td style="width: 50%;">REVIEWED BY: H.M. Surti</td> </tr> <tr> <td>PREPARED BY: R.L. Aristondo</td> <td>REVIEWED BY: T.M. Moody</td> </tr> </table>	PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti	PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Moody											
PLAN DATE: Feb 2025	REVIEWED BY: H.M. Surti																
PREPARED BY: R.L. Aristondo	REVIEWED BY: T.M. Moody																
750 N. Greenfield Pkwy, Garner, NC 27529 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; text-align: center;">  </td> <td style="width: 70%; text-align: center;"> SCALE 0 50 = 1" = 50' </td> </tr> </table>			SCALE 0 50 = 1" = 50'	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">REVISONS</th> <th style="text-align: center;">INIT.</th> <th style="text-align: center;">DATE</th> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td></td> </tr> </table>		REVISONS		INIT.	DATE								
	SCALE 0 50 = 1" = 50'																
REVISONS		INIT.	DATE														
Do not stamp <u>Trent Moody</u> 45EAT0486307040 SIGNATURE		<u>3/19/2025</u> DATE CADD FILE NAME: U-5797_SCP_04															



NOTES:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 06 TRAFFIC ENGINEER AT (910) 364-0606 TO ARRANGE FOR THE DIVISION TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DIVISION TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.
2. ATTACH AND LASH NEW 24-FIBER CABLE 40" BELOW POWER.
3. ATTACH NEW MESSENGER CABLE AND FIBER OPTIC CABLES 12" ABOVE SIGNAL SPANWIRE.
4. DISCONNECT, BACKPULL, AND DETACH EXISTING 12-FIBER DROP CABLE FROM EXISTING WOOD SIGNAL POLE IN SW QUADRANT AND RE-ATTACH TO METAL STRAIN POLE NEAR CABINET. RUN 12-FIBER CABLE DOWN METAL POLE AND RE-CONNECT TO NEW INTERCONNECT CENTER.
5. ONCE NEW 24-FIBER CABLE HAS BEEN INSTALLED AND OPERATIONAL, PROVIDE A FINAL COMMUNICATION TEST RUN TO ENSURE CONFORMITY PRIOR TO DIVISION 06 TRAFFIC SERVICES APPROVAL. REMOVE AND RETURN TEMPORARY WIRELESS COMMUNICATIONS EQUIPMENT INCLUDING YAGI ANTENNA AND DELIVER TO DIVISION 06 TRAFFIC SERVICES.

 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 (704) 372-1885 NC License Number F-0991	 Prepared for the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	CABLE ROUTING PLANS NC 211 (N. Roberts Avenue) Signal System #D06-18 Lumberton Division 6 Robeson County Lumberton PLAN DATE: Feb 2025 PREPARED BY: R.L. Aristondo REVISIONS REVIEWED BY: H.M. Surti REVIEWED BY: T.M. Moody INIT. DATE DATE	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
			 Trent M. Moody 45EAT04836704ED SIGNATURE DATE CADD FILE NAME: U-5797_SCP_05



NOTES:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 06 DEPUTY TRAFFIC ENGINEER AT (910) 364-0606 TO ARRANGE FOR THE DIVISION TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DIVISION TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.
2. ONCE EXISTING 24-FIBER CABLE HAS BEEN RE-ATTACHED TO RELOCATED UTILITY POLE LINE AND OPERATIONAL, PROVIDE A FINAL COMMUNICATION TEST RUN TO ENSURE CONFORMITY PRIOR TO DIVISION 06 TRAFFIC SERVICES APPROVAL. REMOVE AND RETURN TEMPORARY WIRELESS COMMUNICATIONS EQUIPMENT INCLUDING YAGI ANTENNA AND DELIVER TO DIVISION 06 TRAFFIC SERVICES.

 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 (704) 372-1885 NC License Number F-0991	 750 N. Greenfield Pkwy, Garner, NC 27529	Prepared for the Offices of:		CABLE ROUTING PLANS NC 211 (N. Roberts Avenue) Signal System #D06-18 Lumberton		 SEAL 040329 Trent M. Moody ENGINEER	
		Division 6 Robeson County Lumberton		PLAN DATE: Feb 2025 REVIEWED BY: H.M. Surti			
		PREPARED BY: R.L. Aristondo REVIEWED BY: T.M. Moody		REVISIONS			
		INIT. DATE		SIGNATURE DATE			
CADD FILE NAME: U-5797_SCP_06							



1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 06 TRAFFIC ENGINEER AT (910) 364-0606 TO ARRANGE FOR THE DIVISION TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DIVISION TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND FUNCTIONAL.
2. ATTACH AND LASH NEW 24-FIBER CABLE 40" BELOW POWER.
3. ONCE NEW 24-FIBER CABLE HAS BEEN INSTALLED AND OPERATIONAL, PROVIDE A FINAL COMMUNICATION TEST RUN TO ENSURE CONFORMITY PRIOR TO DIVISION 06 TRAFFIC SERVICES APPROVAL. REMOVE AND RETURN TEMPORARY WIRELESS COMMUNICATIONS EQUIPMENT INCLUDING YAGI ANTENNA AND DELIVER TO DIVISION 06 TRAFFIC SERVICES.

 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 (704) 372-1885 NC License Number F-0991	 Prepared For the Offices of:	CABLE ROUTING PLANS SR 1997 (Fayetteville Road) Signal System #D06-18 Lumberton <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Division 6</td> <td colspan="2">Robeson County</td> <td colspan="2">Lumberton</td> </tr> <tr> <td colspan="2">PLAN DATE: Feb 2025</td> <td colspan="2">REVIEWED BY: H.M. Surti</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">PREPARED BY: R.L. Aristondo</td> <td colspan="2">REVIEWED BY: T.M. Moody</td> <td colspan="2"></td> </tr> </table>	Division 6		Robeson County		Lumberton		PLAN DATE: Feb 2025		REVIEWED BY: H.M. Surti				PREPARED BY: R.L. Aristondo		REVIEWED BY: T.M. Moody				 SEAL NORTH CAROLINA PROFESSIONAL SEAL 040329 ENGINEER TRENT M. MOODY
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