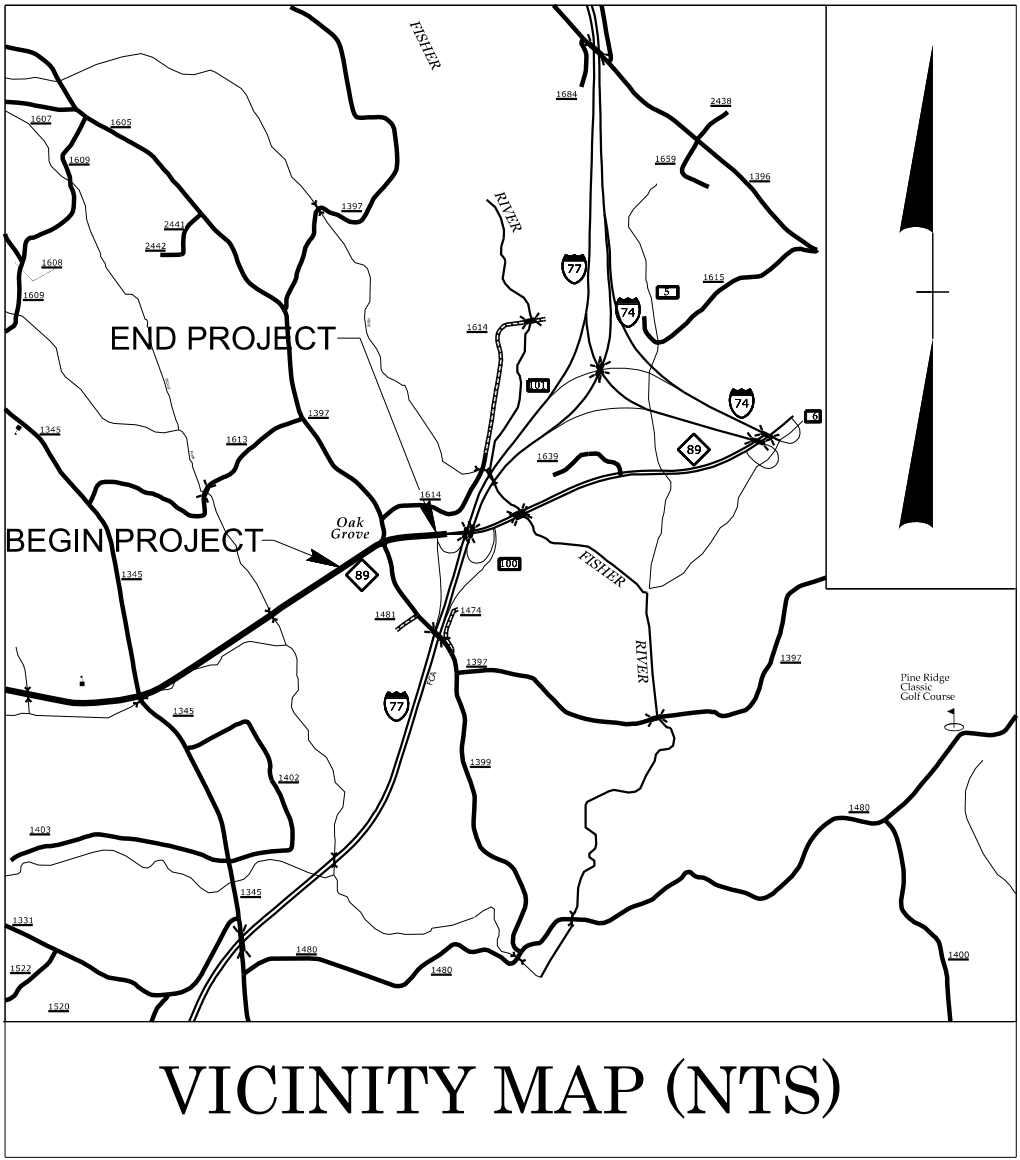


TIP PROJECT: R-5901

CONTRACT: C205099



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURRY COUNTY

LOCATION: *INTERSECTION IMPROVEMENTS AT NC 89
(W. PINE ST) AND SR 1397 (ROUND PEAK
CHURCH RD/OAK GROVE CHURCH RD)*

TYPE OF WORK: *TRAFFIC SIGNALS*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	R-5901	Sig. 1.0

BEGIN PROJECT R-5901
-L1- POT STA 12+00.00

BEGIN CONSTRUCTION
-L1- PC STA 10+00.00

BEGIN CONSTRUCTION
-Y1- POT STA 12+30.00

-L1- PT STA 18+78.14
= -L2- PC STA 10+00.00

END PROJECT R-5901
-L2- POT STA 20+10.00

END CONSTRUCTION
-L2- POT STA 24+05.00

TO MOUNT AIRY

END CONSTRUCTION
-Y2- POC STA 18+15.00

NAD 83/ 2011

TRANSPORTATION SYSTEMS
MANAGEMENT & OPERATIONS UNIT

Contacts:

Richard Zinser, P.E. - Western Region Signals Engineer
Matthew Cowhig, P.E. - Signal Equipment Design
Review Engineer

INDEX OF PLANS

Sheet Number	SIN	Location/Description
Sig. 1.0	-	Signals Title Sheet
Sig. 2.0-2.1	11-1474T1	NC 89 (W Pine Street) at SR 1397 (Oak Grove Church Road)

LEGEND

XX-XXXX

TRAFFIC SIGNAL



Prepared in the Office of:

DRMP, INC.
8210 UNIVERSITY EXECUTIVE PARK DR., SUITE 220
CHARLOTTE, NC 28262
PHONE: 704-545-4260
NC LICENSE NO. F-1524
www.drmp.com

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 22, 2024

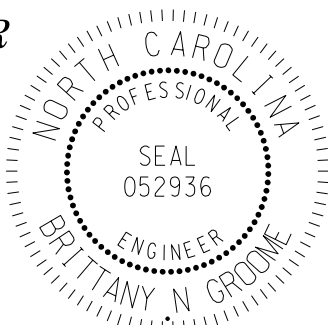
LETTING DATE:
SEPTEMBER 16, 2025

BRITTANY N. GROOME, PE
PROJECT ENGINEER

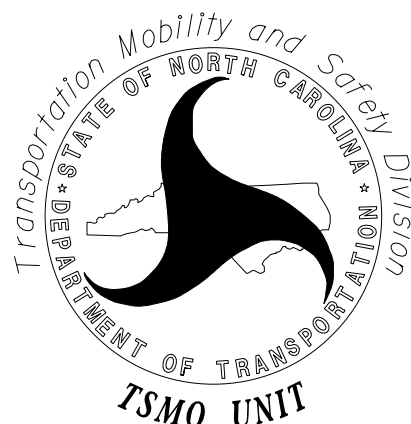
ANDREW POOLE, EI
PROJECT DESIGN ENGINEER

TRAFFIC OPERATIONS ENGINEER

Signed by: *Brittany Groome* 6/26/2025
1E0934DE1D04484...
SIGNATURE: P.E.



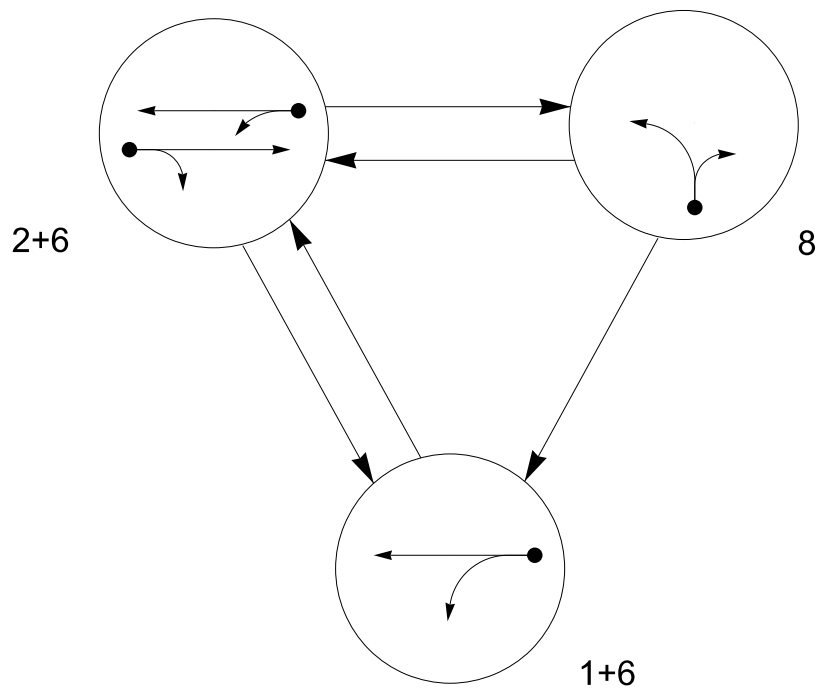
Prepared for the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY DIVISION



750 N. Greenfield Parkway, Garner, NC 27529

PROJECT REFERENCE NO.	SHEET NO.
R-5901	Sig 2.0

PHASING DIAGRAM

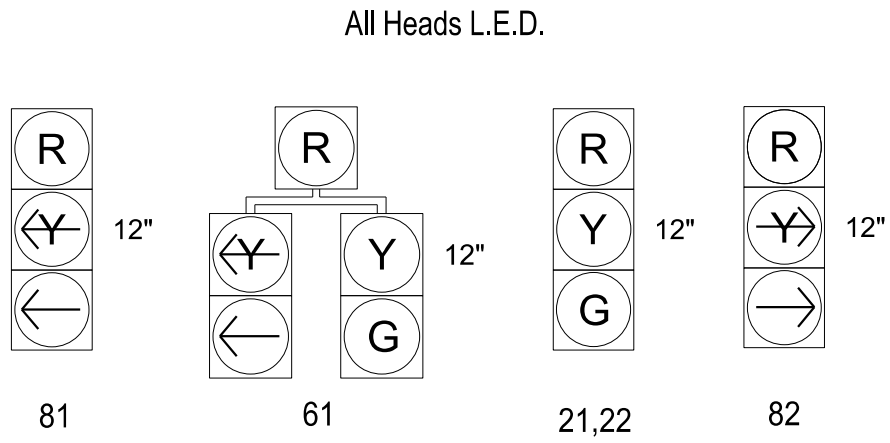


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE			
	1 + 6	2 + 6	8	F L A S H
21, 22	R	G	R	R
61	G	G	R	R
62, 63	G	G	R	R
81	R	R	←	R
82	R	R	→	R

SIGNAL FACE I.D.



MAXTIME DETECTOR INSTALLATION CHART

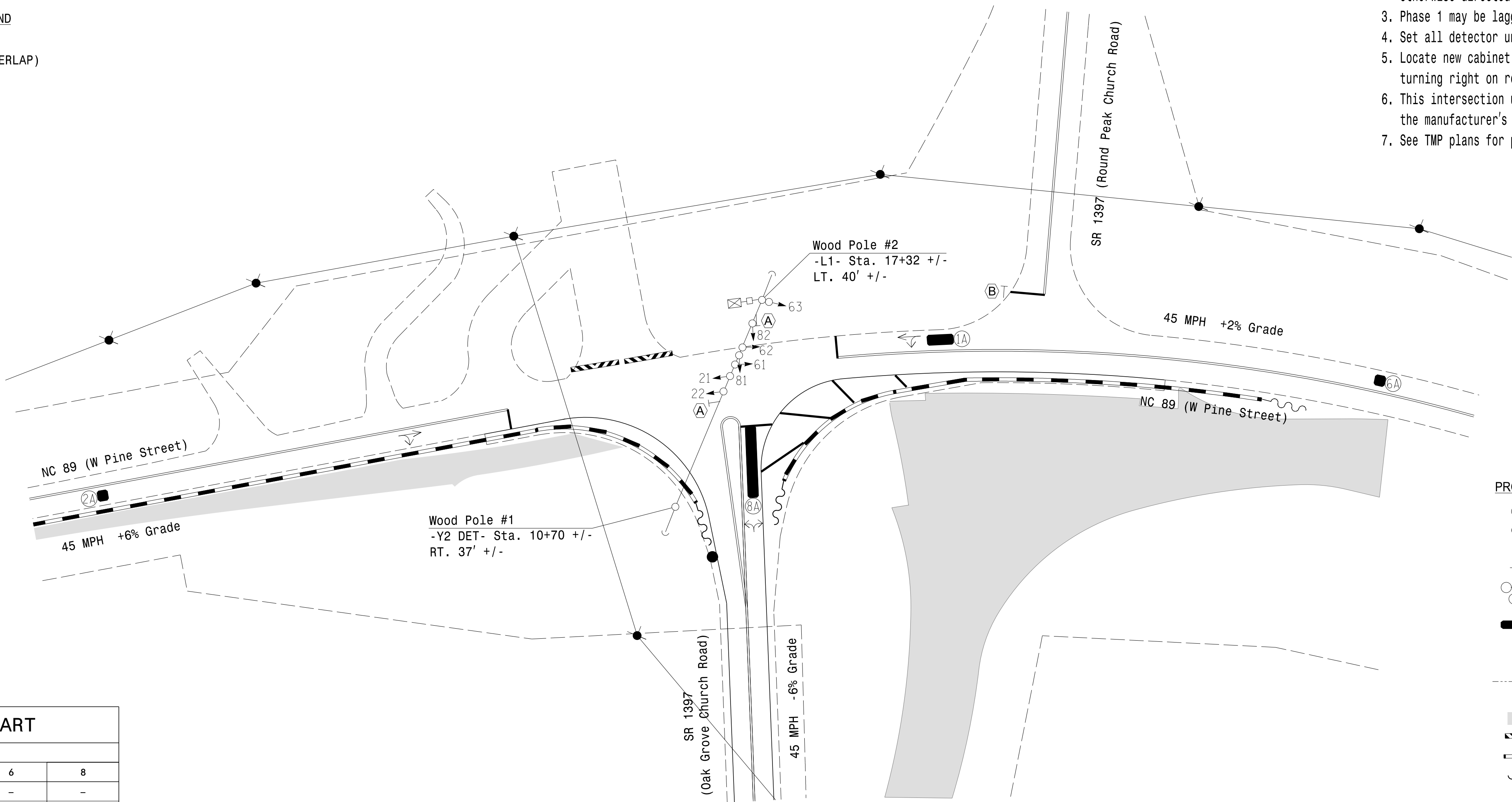
DETECTOR					PROGRAMMING					
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL
1A	6X15	50	@	@	1	15.0	-	X	-	X
2A	6X6	300	@	@	2	-	-	X	X	X
6A	6X6	300	@	@	6	-	-	X	X	X
8A	6X40	0	@	@	8	3.0	-	X	-	X

@ Video Detection Zone

3 Phase
Fully Actuated
(Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <https://connect.ncdot.gov/resources/safety/pages/its-and-signals.aspx>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- See TMP plans for pavement marking locations.



MAXTIME TIMING CHART

FEATURE	PHASE			
	1	2	6	8
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Min Green*	7	12	12	7
Passage *	2.0	6.0	2.0	6.0
Max I *	20	45	45	25
Yellow Change	3.0	4.3	4.3	3.1
Red Clear	2.3	2.2	2.2	1.8
Added Initial *	-	2.5	2.5	-
Maximum Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	45	45	-
Minimum Gap	-	3.0	3.0	-
Advance Walk	-	-	-	-
Non Lock Detector	X	-	-	X
Vehicle Recall	-	MIN RECALL	MIN RECALL	-
Dual Entry	-	-	-	-

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

LEGEND

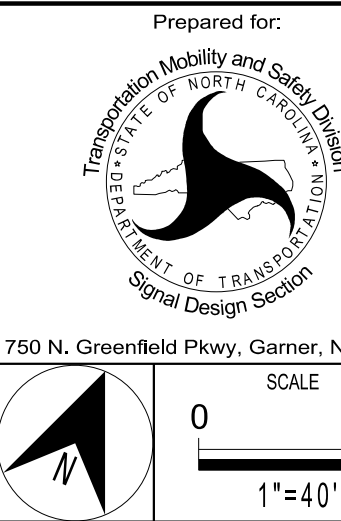
PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Non-Intrusive Detection Zone	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
	Right of Way	
	Construction Zone	
	Type 3 Barricade	
	Portable Concrete Barrier	
	Temporary Crash Cushion	
	Overhead Power	
	Directional Arrow	
	"NO TURN ON RED" Sign (R10-11)	
	"STOP" Sign (R1-1)	

New Installation
Temporary Design 1 - (TMP Phase III)



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NC 89 (W Pine Street) at SR 1397 (Oak Grove Church Road)			
Divison 11	Surry County	Round Peak	
PLAN DATE: July 2025	REVIEWED BY: BN Groome		
PREPARED BY: AW Poole	DRMP Proj. No.: 241175 (001)		
REVISIONS	INIT.	DATE	

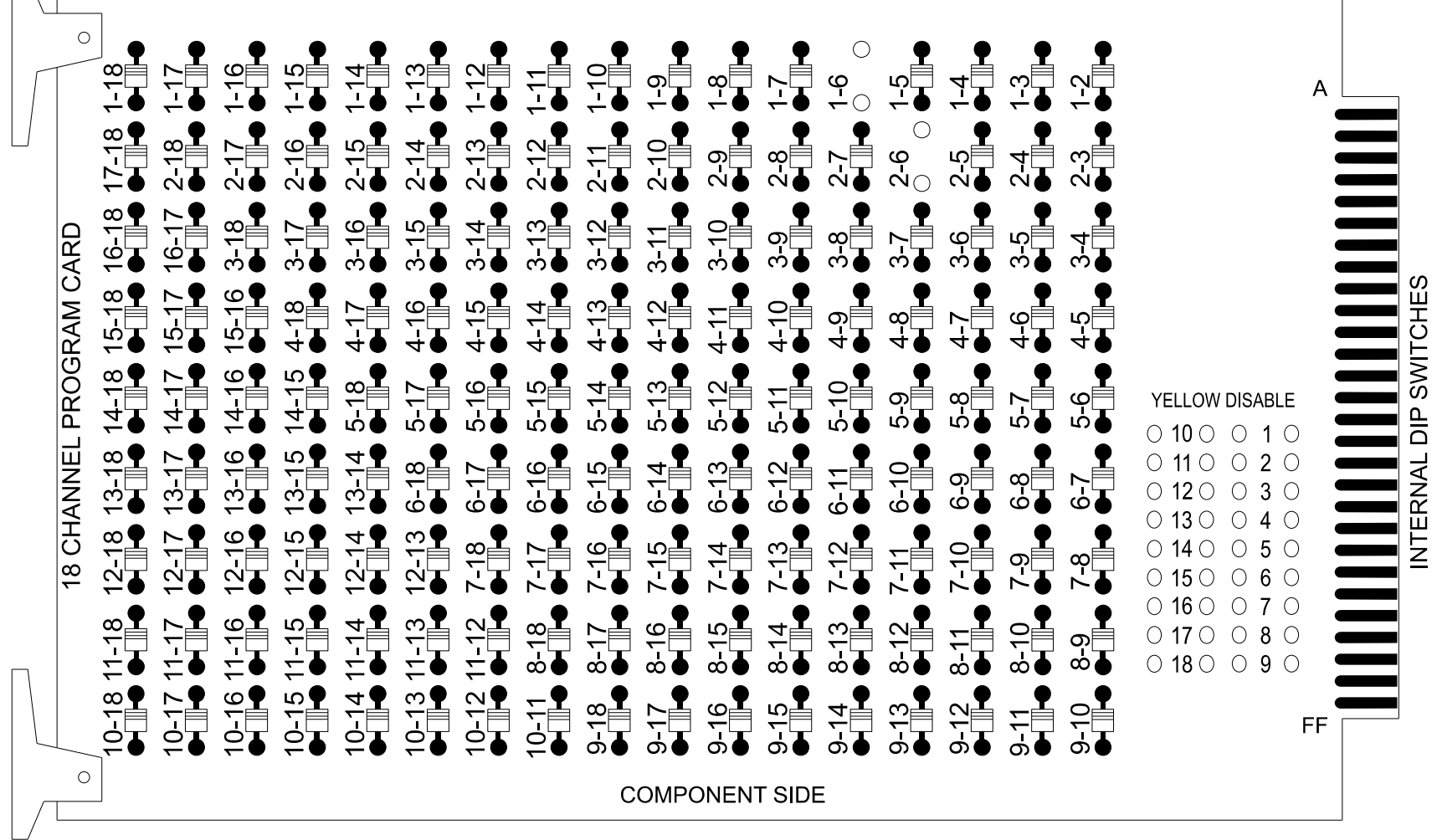
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL	
SEAL 052936	
ENGINEER BRITANY N. GROOM	
Signed By: Brittany Groom	7/17/2025
1E09340E1594484	DATE
SIG. INVENTORY NO.	11-147411

18 CHANNEL CONFLICT MONITOR
PROGRAMMING DETAIL

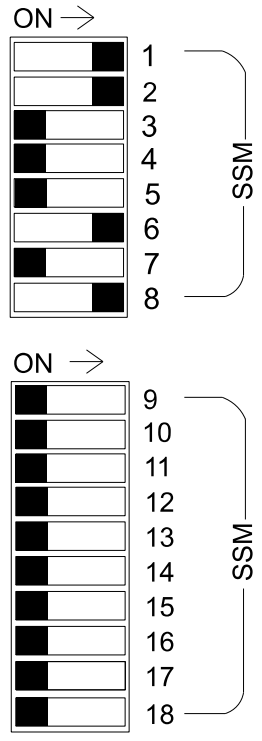
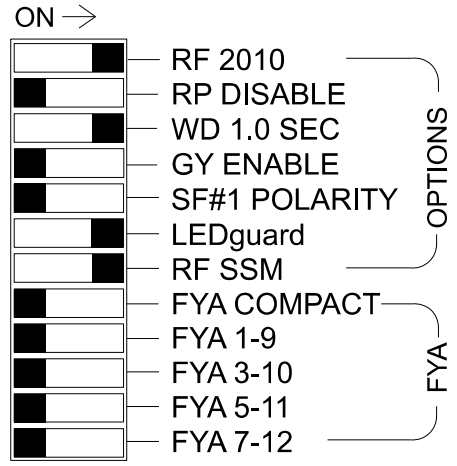
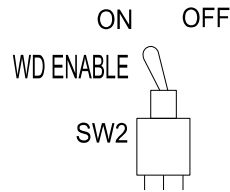
(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS: 1-6 AND 2-6



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 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.

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, S8, S11
Phases Used.....1, 2, 6, 8
Overlap "1".....NOT USED
Overlap "2".....NOT USED
Overlap "3".....NOT USED
Overlap "4".....NOT USED

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.	61	21,22	NU	NU	NU	NU	NU	61,62,63	NU	NU	81	82	NU	NU	NU	NU	NU	NU
RED	★	128						134			107	107						
YELLOW		129						135										
GREEN		130						136										
RED ARROW																		
YELLOW ARROW	126										108	108						
FLASHING YELLOW ARROW																		
GREEN ARROW	127										109	109						

NU = Not Used

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

MAXTIME STARTUP AND SOFTWARE FLASH
PROGRAMMING DETAIL

Front Panel
Main Menu>Controller>Unit

Web Interface
Home>Controller>Unit

Start Up Parameters

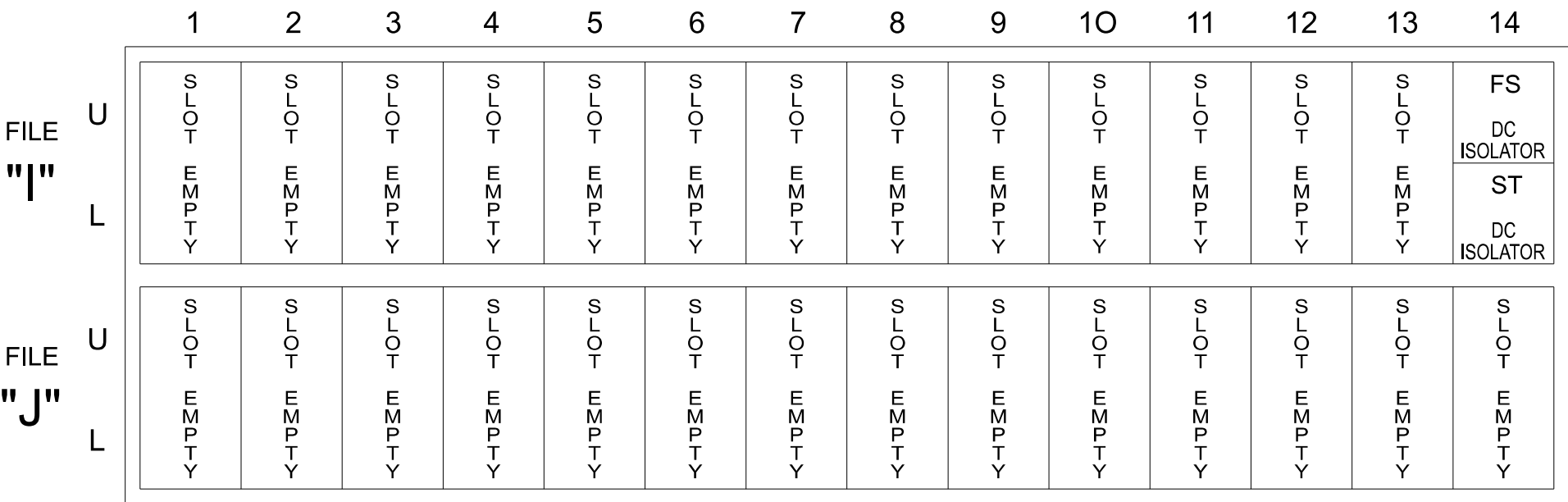
Startup Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

INPUT FILE POSITION LAYOUT

(front view)



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

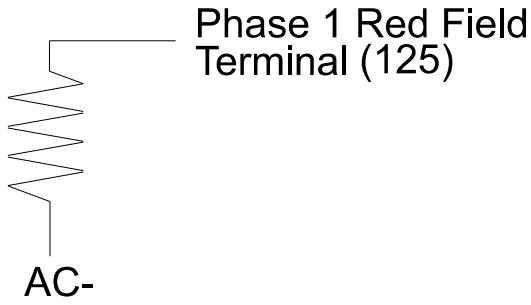
FS = FLASH SENSE
ST = STOP TIME

INPUT FILE IS TO REMAIN EMPTY

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

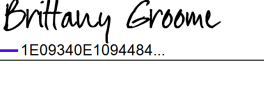
Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	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

SPECIAL DETECTOR NOTE

Install a video 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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 11-1474T1
DESIGNED: Jul 2025
SEALED: 7/17/2025
REVISED: N/A

Electrical Detail

Electrical and Programming Details For:	NC 89 (W Pine Street) at SR 1397 (Oak Grove Church Road)	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
	Divison 11 PLAN DATE: July 2025 PREPARED BY: AW Poole REVISIONS: _____ INIT: _____ DATE: _____	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER BRITTANY N. GROOME SEAL 052936 Signed by:  1E09340E1504484 7/17/2025 DATE: _____ SIG. INVENTORY NO. 11-1474T1

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