

09.08/99

5/15/2025  
R:\Traffic\Signals\Design\Signals\P5707\_sig\_tsh.dgn  
jruskey

TIP PROJECT: P-5707

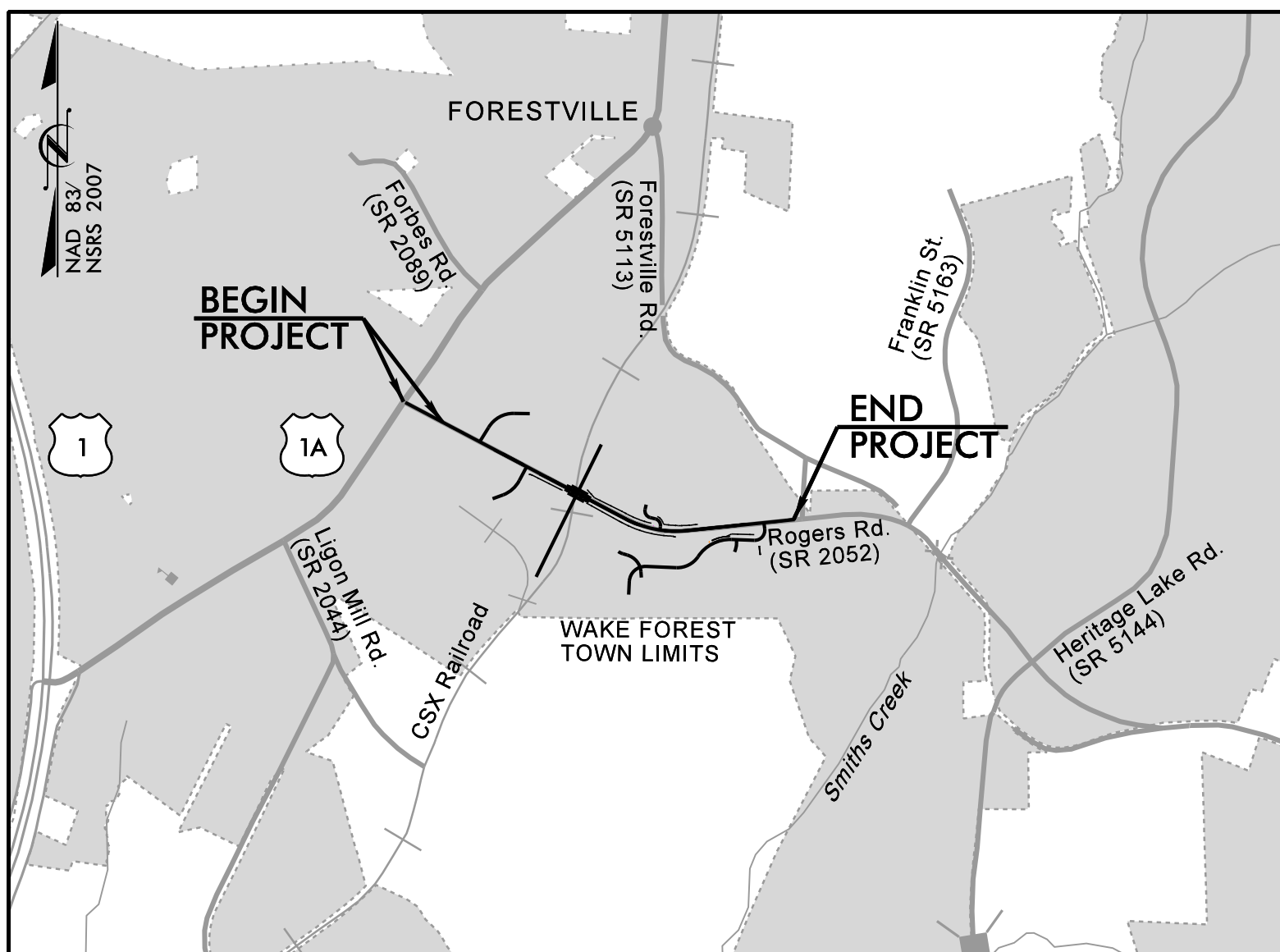
CONTRACT: C204338

STATE OF NORTH CAROLINA  
NCDOT RAIL DIVISION

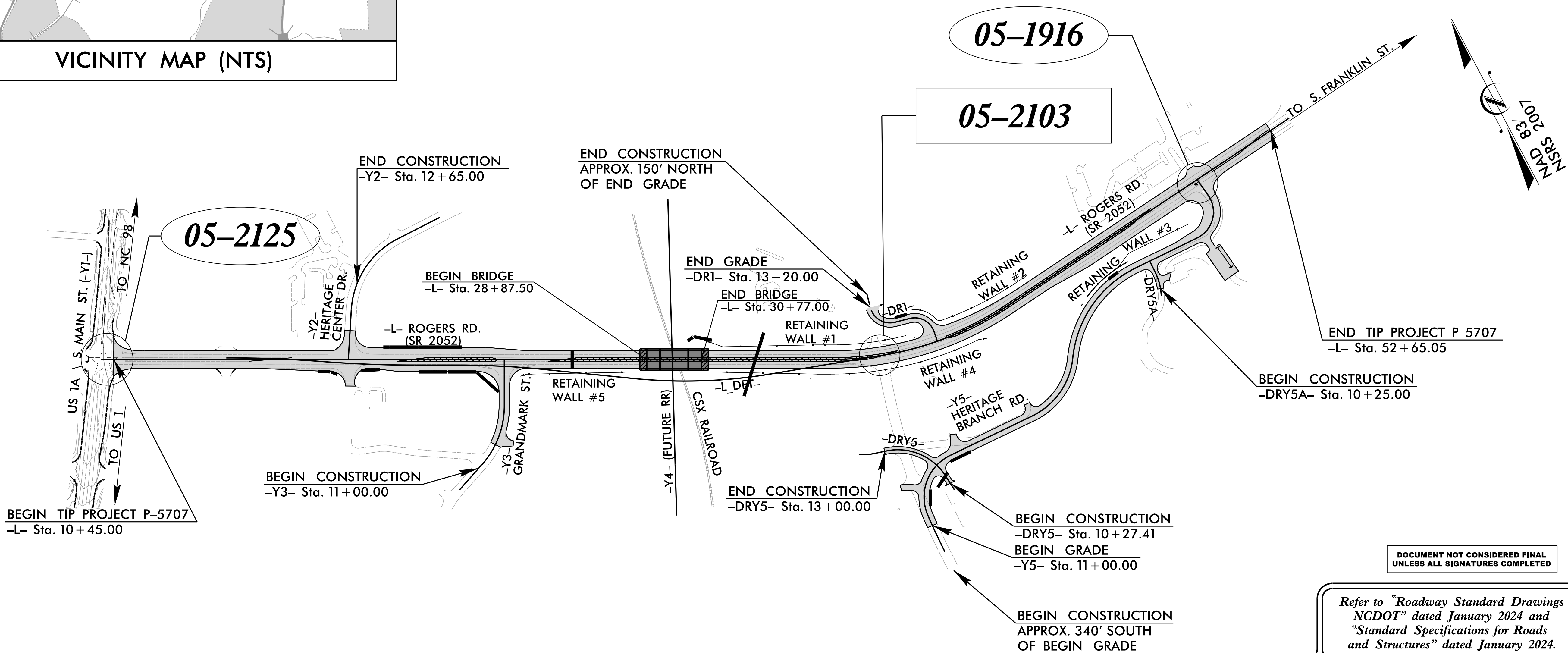
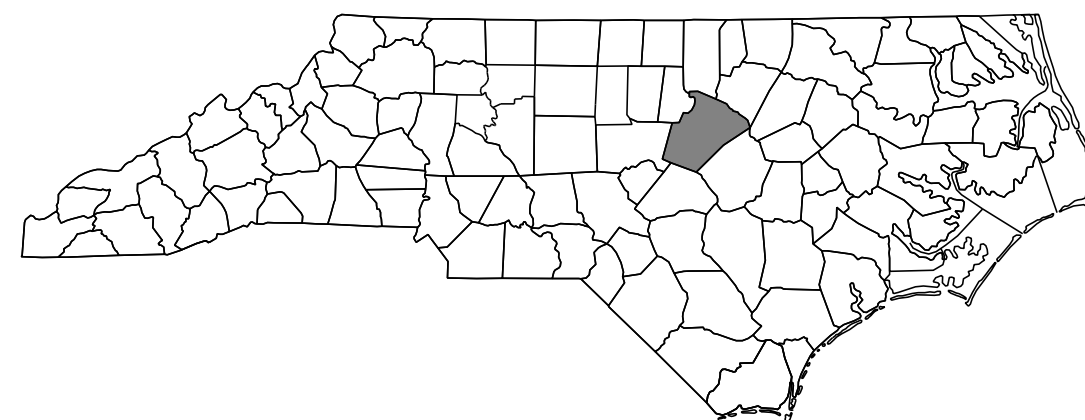
WAKE COUNTY

LOCATION: SR 2052 (ROGERS ROAD) GRADE SEPARATION  
OVER CSX RAILROAD (CROSSING NO. 633 905 Y)  
AT MILE POST S 142.53

TYPE OF WORK: SIGNALS AND SIGNAL COMMUNICATIONS



VICINITY MAP (NTS)



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

| Index of Plans        |             |                                                                               |
|-----------------------|-------------|-------------------------------------------------------------------------------|
| Sheet #               | Reference # | Location/Description                                                          |
| SIG. 1                |             | TITLE SHEET                                                                   |
| SIG. 2.0 - SIG. 5.2   | 05-2103     | SR 2052 (ROGERS RD.) AT<br>HERITAGE BRANCH RD.                                |
| SIG. 6.0 - SIG. 9.2   | 05-1916     | SR 2052 (ROGERS RD.) AT<br>HERITAGE BRANCH RD. AND<br>HERITAGE POINTE SHOPPES |
| SIG. 10.0 - SIG. 10.3 | 05-2125     | US 1A (S. MAIN ST.) AT<br>SR 2052 (ROGERS RD.)/<br>WAKE FOREST MIDDLE SCHOOL  |
| SIG. M1A - SIG. M9    | N/A         | STANDARD DRAWINGS FOR<br>METAL POLES                                          |
| SCP 1-9               | N/A         | SIGNAL COMMUNICATION PLANS                                                    |

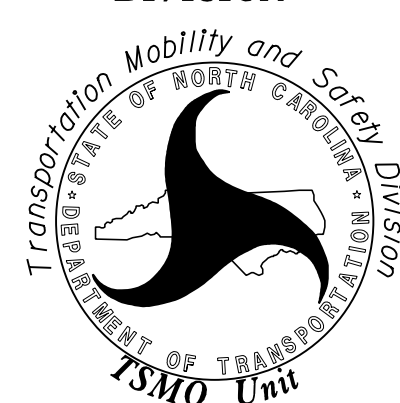
PLANS PREPARED BY:  
**RK&K**  
RUMMEL, KLEPPER & KAHL, LLP  
8601 SIX FORKS ROAD, FORUM 1, SUITE 700  
RALEIGH, NORTH CAROLINA 27615-3960  
NC LICENSE NO. F-0112  
1-888-521-4455 OR 919-878-9560  
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
2024 STANDARD SPECIFICATIONS

LETTING DATE:  
August 19, 2025

D.T. Sears, P.E., P.T.O.E.  
PROJECT ENGINEER

W.P. Jones, P.E.  
PROJECT DESIGN ENGINEER

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



750 N. Greenfield Parkway, Garner, NC 27529

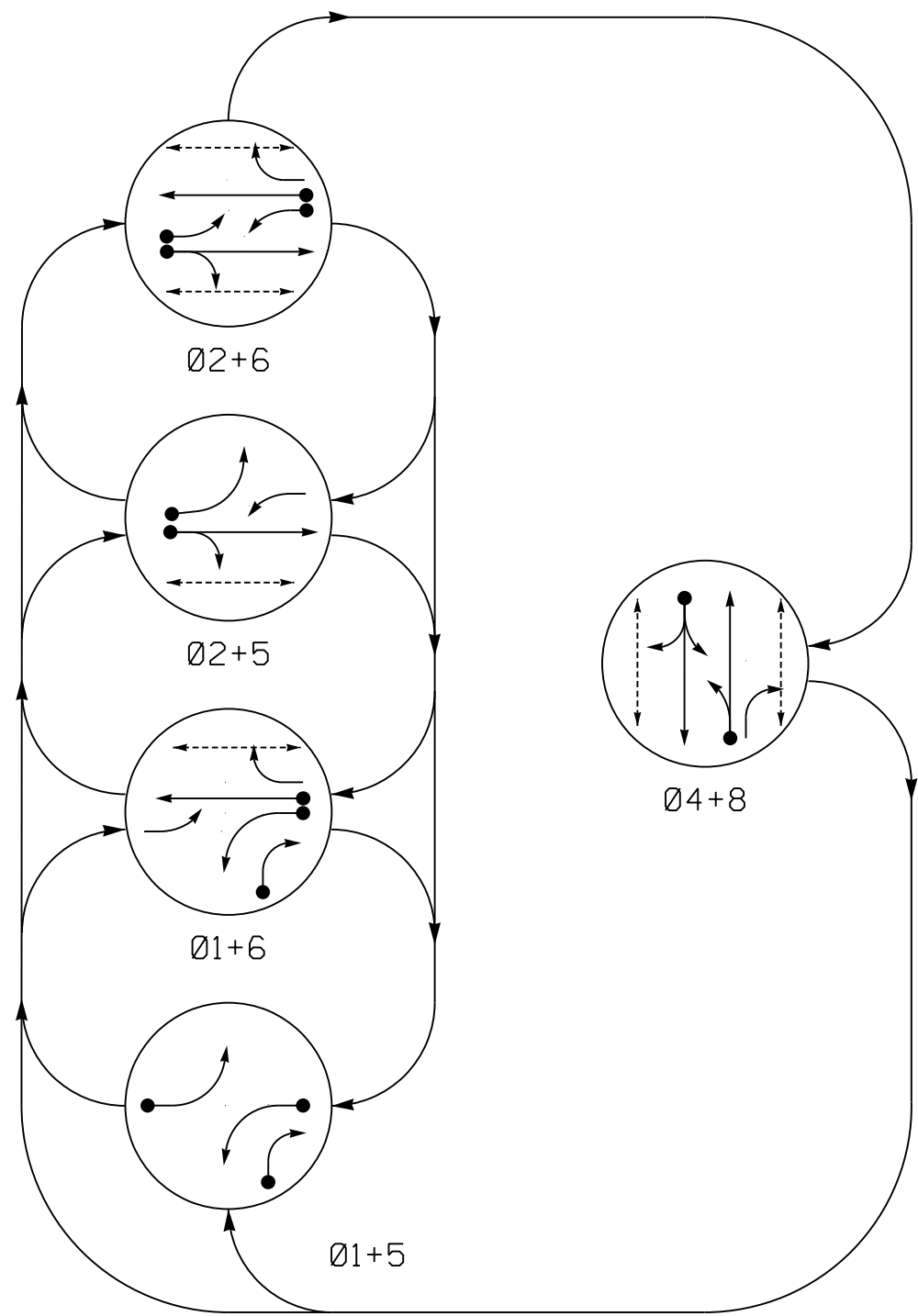
LEGEND

XX-XXX SIGNAL INVENTORY NUMBER  
XX-XXXX SIGNAL TO BE REMOVED

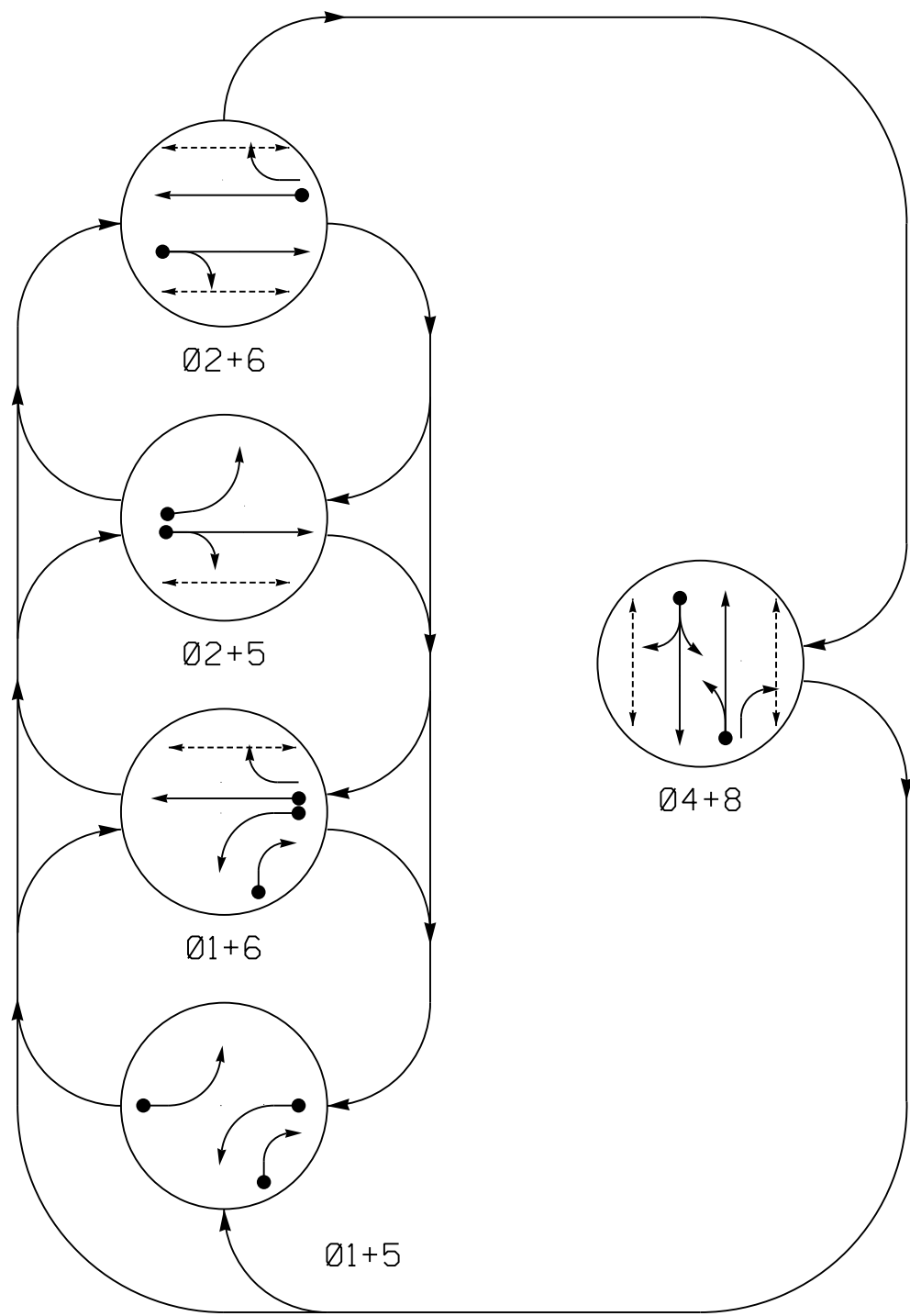
TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS UNIT  
Contacts:

Robert J. Ziemba, PE - Central Region Signals Engineer  
D. Todd Joyce, PE - Signal Equipment Design Engineer  
Gregory A. Green - Signal Communications Project Engineer

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE |      |      |      |      |       |
|-------------|-------|------|------|------|------|-------|
|             | 01+5  | 01+6 | 02+5 | 02+6 | 04+8 | FLASH |
| 11          |       |      |      |      |      |       |
| 21,22       | R     | R    | G    | G    | R    | R     |
| 41,42       | R     | R    | R    | R    | G    | R     |
| 51          |       |      |      |      |      |       |
| 61,62       | R     | G    | R    | G    | R    | R     |
| 63          | R     |      |      |      |      |       |
| 81          | R     | R    | R    | R    | G    | R     |
| 82          | R     | R    | R    | R    | G    | R     |
| P21,P22     | DW    | DW   | W    | W    | DW   | DRK   |
| P41,P42     | DW    | DW   | DW   | DW   | W    | DRK   |
| P61,P62     | DW    | W    | DW   | W    | DW   | DRK   |
| P81,P82     | DW    | DW   | DW   | DW   | W    | DRK   |

ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE |      |      |      |      |       |
|-------------|-------|------|------|------|------|-------|
|             | 01+5  | 01+6 | 02+5 | 02+6 | 04+8 | FLASH |
| 11          |       |      |      |      |      |       |
| 21,22       | R     | R    | G    | G    | R    | R     |
| 41,42       | R     | R    | R    | R    | G    | R     |
| 51          |       |      |      |      |      |       |
| 61,62       | R     | G    | R    | G    | R    | R     |
| 63          | R     |      |      |      |      |       |
| 81          | R     | R    | R    | R    | G    | R     |
| 82          | R     | R    | R    | R    | G    | R     |
| P21,P22     | DW    | DW   | W    | W    | DW   | DRK   |
| P41,P42     | DW    | DW   | DW   | DW   | W    | DRK   |
| P61,P62     | DW    | W    | DW   | W    | DW   | DRK   |
| P81,P82     | DW    | DW   | DW   | DW   | W    | DRK   |

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 |
| 1A*       | 6X40      | 0                          | *        | *           | 1          | 15.0**     | -           | X      | -             | X    | -                  |
| 1B        | 6X40      | 0                          | EXISTING | -           | 6#         | 3.0        | -           | X      | -             | X    | *                  |
| 2A*       | 6X6       | 300                        | *        | *           | 2          | -          | -           | X      | X             | X    | -                  |
| 4A        | 6X40      | 0                          | EXISTING | -           | 4          | 10.0       | -           | X      | -             | X    | -                  |
| 5A*       | 6X40      | 0                          | *        | *           | 5          | 15.0**     | -           | X      | -             | X    | *                  |
| 6A*       | 6X6       | 300                        | *        | *           | 6          | -          | -           | X      | X             | X    | -                  |
| 8A        | 6X40      | 0                          | EXISTING | -           | 8          | 3.0        | -           | X      | -             | X    | -                  |

\* - Video Detection Zone  
\*\* - Reduce delay to 3 seconds during alternate phasing operation.  
# - Disable phase call for loop(s) during alternate phasing operation.

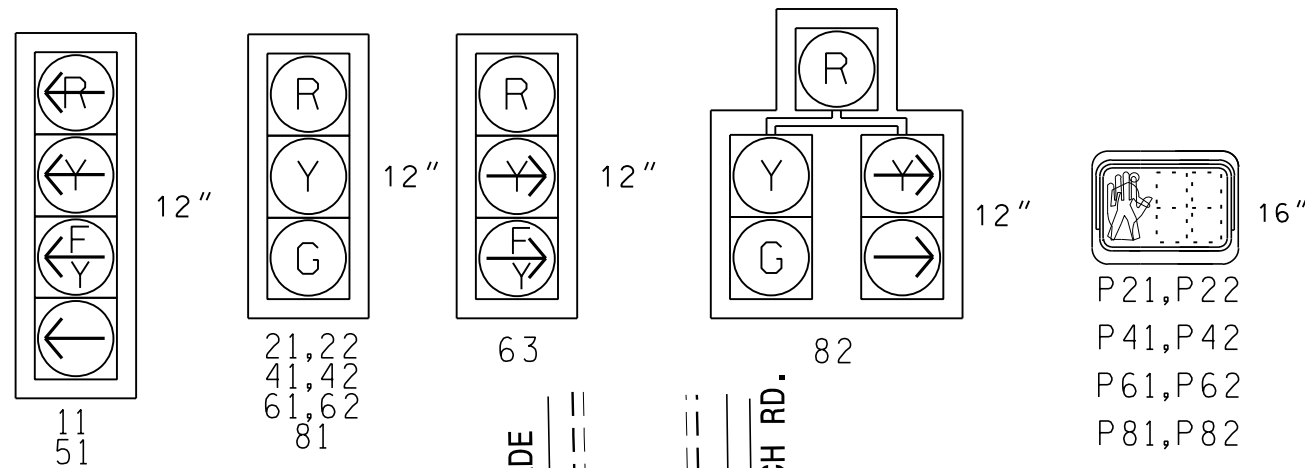
5 PHASE FULLY ACTUATED (ISOLATED)

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.
- REPOSITION EXISTING SIGNAL HEADS NUMBERED 61 AND 62.
- INSTALL BACKPLATES FOR ALL SIGNAL HEADS.
- 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.
- TO PROVIDE A LEADING PEDESTRIAN INTERVAL ON PHASE 6, PROGRAM FYA HEADS NUMBERED 51 AND 63 TO DELAY FOR 5 SECONDS AFTER THE START OF THE PHASE 6 WALK INTERVAL. SEE ELECTRICAL DETAILS FOR PROGRAMMING.
- THE DIVISION TRAFFIC ENGINEER WILL DETERMINE THE HOURS OF USE FOR EACH PHASING PLAN.
- THIS INTERSECTION USES VIDEO DETECTION. INSTALL DETECTORS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS TO ACHIEVE THE DESIRED DETECTION.

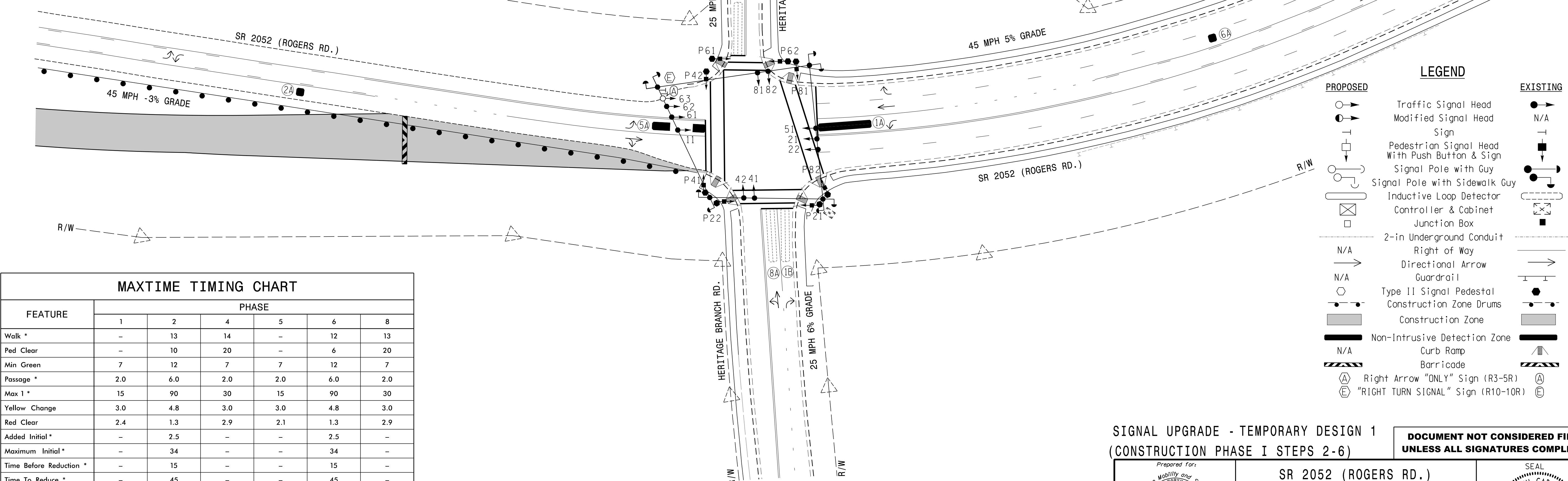
SIGNAL FACE I.D.

All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

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



MAXTIME TIMING CHART

| FEATURE                 | PHASE |            |     |     |            |     |
|-------------------------|-------|------------|-----|-----|------------|-----|
|                         | 1     | 2          | 4   | 5   | 6          | 8   |
| Walk *                  | -     | 13         | 14  | -   | 12         | 13  |
| Ped Clear               | -     | 10         | 20  | -   | 6          | 20  |
| Min Green               | 7     | 12         | 7   | 7   | 12         | 7   |
| Passage *               | 2.0   | 6.0        | 2.0 | 2.0 | 6.0        | 2.0 |
| Max I *                 | 15    | 90         | 30  | 15  | 90         | 30  |
| Yellow Change           | 3.0   | 4.8        | 3.0 | 3.0 | 4.8        | 3.0 |
| Red Clear               | 2.4   | 1.3        | 2.9 | 2.1 | 1.3        | 2.9 |
| 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            | -     | 6          | 7   | -   | **         | 6   |
| Non Lock Detector       | X     | -          | X   | X   | -          | X   |
| Vehicle Recall          | -     | MIN RECALL | -   | -   | MIN RECALL | -   |
| Dual Entry              | -     | -          | X   | -   | -          | X   |

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

\*\* See Note 9

SIGNAL UPGRADE - TEMPORARY DESIGN 1 (CONSTRUCTION PHASE I STEPS 2-6)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Responsive People | Creative Solutions

Prepared for:  
TRANSPORTATION MOBILITY AND SAFETY DIVISION  
UNIVERSITY OF NORTH CAROLINA  
Signal Design Section  
750 N. Greenfield Pkwy, Garner, NC 27529  
SCALE  
0 40  
1"=40'

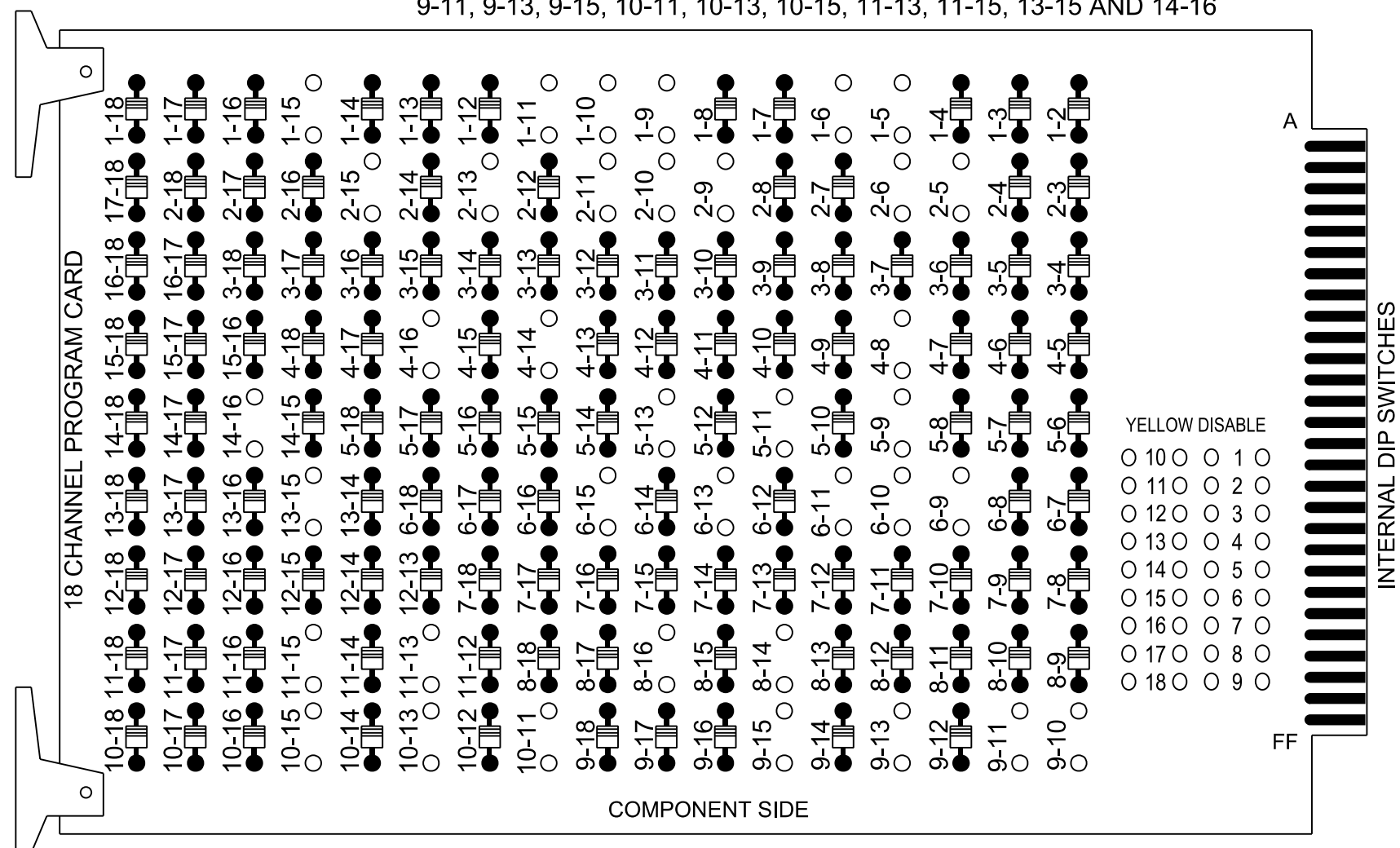
SR 2052 (ROGERS RD.)  
AT  
HERITAGE BRANCH RD.  
DIVISION 5 WAKE COUNTY WAKE FOREST  
PLAN DATE: JUNE 2026 REVIEWED BY: DT SEARS  
PREPARED BY: WP JONES REVIEWED BY:  
REVISIONS  
INIT. DATE  
SIGNATURE DATE  
SIG. INVENTORY NO. 05-210371

SEAL  
NORTH CAROLINA  
PROFESSIONAL  
SEAL  
044558  
DAVID T. SEARS  
6/9/2026  
6/9/2026

## 18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-10, 1-11, 1-15, 2-5, 2-6, 2-9, 2-10, 2-11, 2-13, 2-15, 4-8, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-10, 6-11, 6-13, 6-15, 8-14, 8-16, 9-10, 9-11, 9-13, 9-15, 10-11, 10-13, 10-15, 11-13, 11-15, 13-15 AND 14-16



REMOVE JUMPERS AS SHOWN

NOTES:

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

## NOTES

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

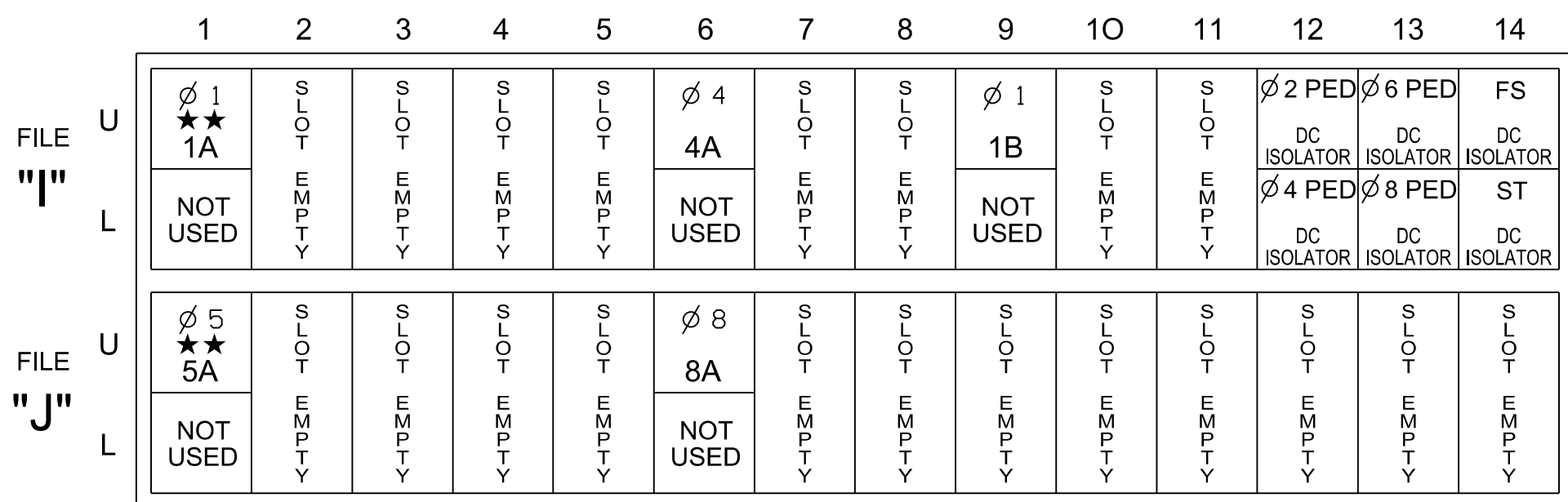
## EQUIPMENT INFORMATION

|                            |                                                                     |
|----------------------------|---------------------------------------------------------------------|
| 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, S3, S5, S6, S7, S8, S9, S11,<br>S12, AUX S1, AUX S2, AUX S4 |
| Phases Used.....           | 1, 2, 2PED, 4, 4PED, 5, 6, 6PED,<br>8, 8PED                         |
| Overlap "1".....           | *                                                                   |
| Overlap "2".....           | *                                                                   |
| Overlap "3".....           | *                                                                   |
| Overlap "4".....           | NOT USED                                                            |

\*See overlap programming detail on sheet 2

## INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE  
ST = STOP TIME

!If present, remove jumpers from I1-W to J4-W and J1-W to I4-W on rear of input file.

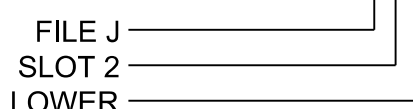
## INPUT FILE CONNECTION & PROGRAMMING CHART

[illegible]

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

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

INPUT FILE POSITION LEGEND: J2L



## COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

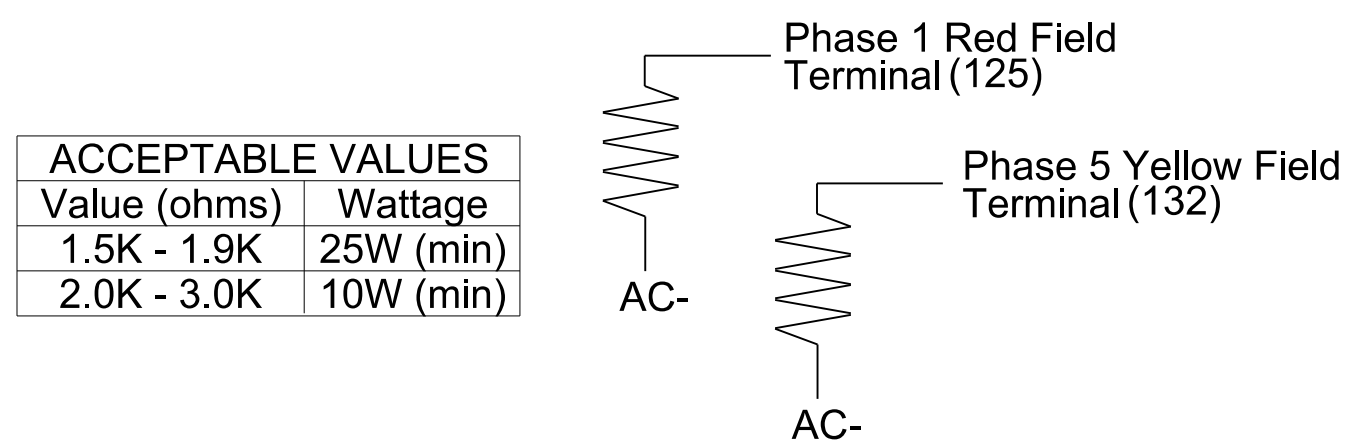
### ★★ SPECIAL DETECTOR NOTE

For zones 1A, 2A, 5A, and 6A 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.

For zones 1A and 5A, inputs associated with the typical slots for a NCDOT installation are compatible with time of day instructions located on sheet 2 of this electrical details.

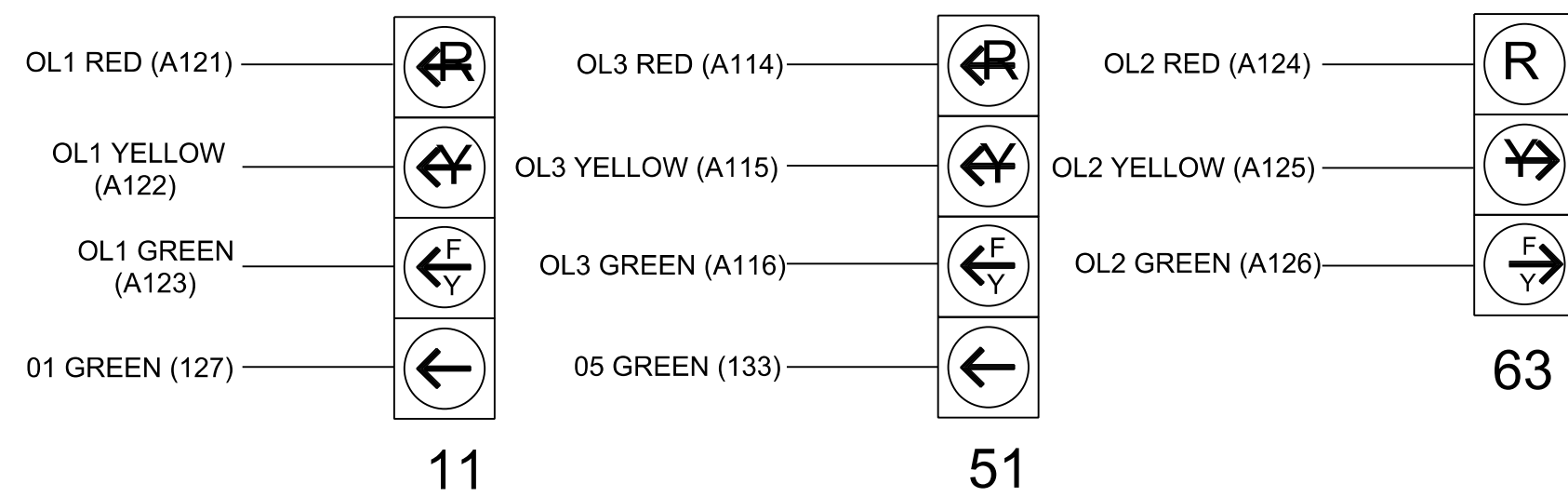
## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown)*



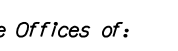
## FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2103T1  
DESIGNED: June 2026  
SEALED: June 9, 2026  
REVISED:

SIGNAL UPGRADE - TEMPORARY DESIGN 1  
(CONSTRUCTION PHASE I STEPS 2 THRU 6)  
ELECTRICAL DETAIL - SHEET 1 OF 2

|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------|-------------|----------------------|---------------------|--|----------------------|--------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------------------------------------------------------|
| ELECTRICAL AND PROGRAMMING<br>DETAILS FOR:                                                                            | SR 2052 (ROGERS RD)<br>AT<br>HERITAGE BRANCH RD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SEAL<br> |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
| Prepared for the Offices of:<br> | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">DIVISION 5</td> <td style="width: 33%;">WAKE COUNTY</td> <td style="width: 33%;">WAKE FOREST</td> </tr> <tr> <td>PLAN DATE: JUNE 2026</td> <td>REVIEWED BY: DSEARS</td> <td></td> </tr> <tr> <td>PREPARED BY: WPJONES</td> <td>REVIEWED BY:</td> <td></td> </tr> </table>                                                                                                                                                                                                  | DIVISION 5                                                                                    | WAKE COUNTY | WAKE FOREST | PLAN DATE: JUNE 2026 | REVIEWED BY: DSEARS |  | PREPARED BY: WPJONES | REVIEWED BY: |  | DocuSigned by<br> <div style="text-align: right;">6/9/2026</div> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
| DIVISION 5                                                                                                            | WAKE COUNTY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | WAKE FOREST                                                                                   |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
| PLAN DATE: JUNE 2026                                                                                                  | REVIEWED BY: DSEARS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
| PREPARED BY: WPJONES                                                                                                  | REVIEWED BY:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
| 750 N. Greenfield Pkwy, Corner, NC 27529                                                                              | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">REVISIONS</td> <td style="width: 20%;">INIT.</td> <td style="width: 30%;">DATE</td> </tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table> | REVISIONS                                                                                     | INIT.       | DATE        |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | ORIGINAL STATE<br>SIGNATURE DATE<br>SIG. INVENTORY NO. 05-2103T |
| REVISIONS                                                                                                             | INIT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DATE                                                                                          |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
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|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |
|                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               |             |             |                      |                     |  |                      |              |  |                                                                                                                                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                                 |

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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               |
|-------------------|-----------------|-----------------|-----------------|
| Type              | FYA 4 - Section | FYA 4 - Section | FYA 4 - Section |
| Included Phases   | 2               | 6               | 6               |
| Modifier Phases   | 1               | -               | 5               |
| Modifier Overlaps | -               | -               | -               |
| Trail Green       | 0               | 0               | 0               |
| Trail Yellow      | 0.0             | 0.0             | 0.0             |
| Trail Red         | 0.0             | 0.0             | 0.0             |
| FYA Ped Delay     | 0.0             | 5.0             | 5.0             |

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               |
|-------------------|-----------------|-----------------|-----------------|
| Type              | FYA 4 - Section | FYA 4 - Section | FYA 4 - Section |
| Included Phases   | -               | 6               | -               |
| Modifier Phases   | 1               | -               | 5               |
| Modifier Overlaps | -               | -               | -               |
| Trail Green       | 0               | 0               | 0               |
| Trail Yellow      | 0.0             | 0.0             | 0.0             |
| Trail Red         | 0.0             | 0.0             | 0.0             |
| FYA Ped Delay     | 0.0             | 5.0             | 5.0             |

← 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                       |

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

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

Web Interface  
Home >Controller >Detector Configuration >Vehicle Detectors

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

Plan 2

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 1        | 1          | 3.0   |
| 29       | 0          | 3.0   |

1A

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 15       | 5          | 3.0   |
| 31       | 0          | 3.0   |

5A

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

OVERLAP PLAN 2: Modifies overlap included phases for heads 11 and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

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

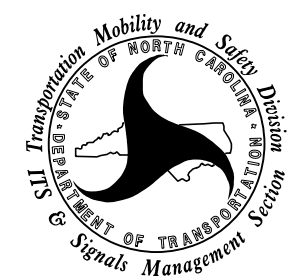
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2103T1  
DESIGNED: June 2026  
SEALED: June 9, 2026  
REVISED:

SIGNAL UPGRADE - TEMPORARY DESIGN 1  
(CONSTRUCTION PHASE 1 STEPS 2 THRU 6)  
ELECTRICAL DETAIL - SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING  
DETAILS FOR:

Prepared for the Offices of:



750 N.Greenfield Pkwy, Garner, NC 27529

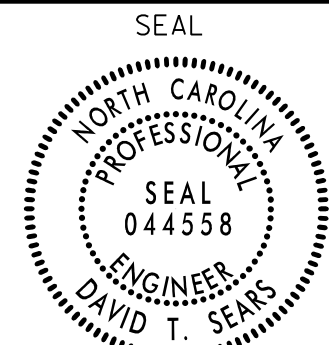
SR 2052 (ROGERS RD)  
AT  
HERITAGE BRANCH RD

DIVISION 5 WAKE COUNTY WAKE FOREST

PLAN DATE: JUNE 2026 REVIEWED BY: DSEARS

PREPARED BY: WPJONES REVIEWED BY:

REVISIONS INIT. DATE



DocuSigned by  
David T. Sears

6/9/2026

SIGNATURE DATE

SIG. INVENTORY NO. 05-2103T1



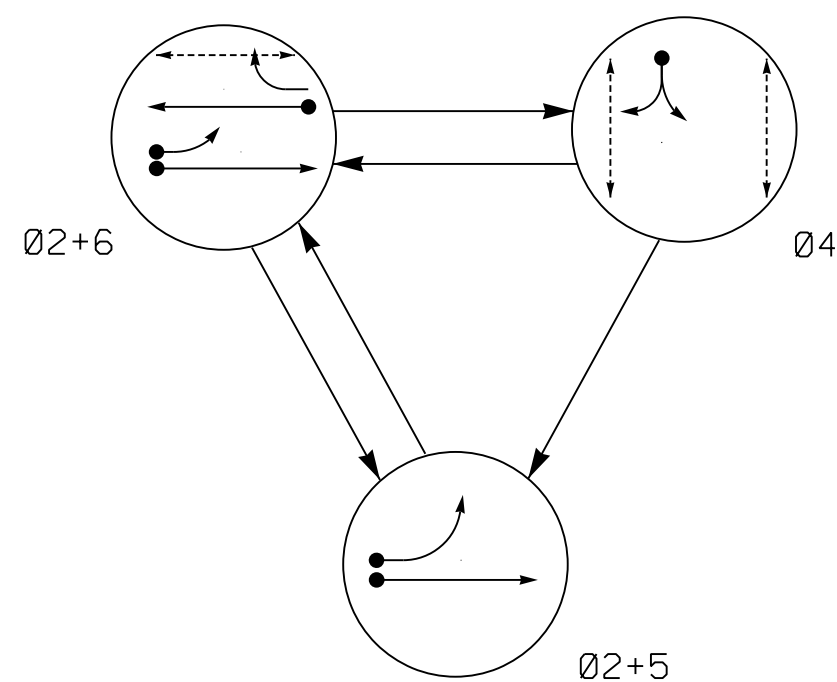
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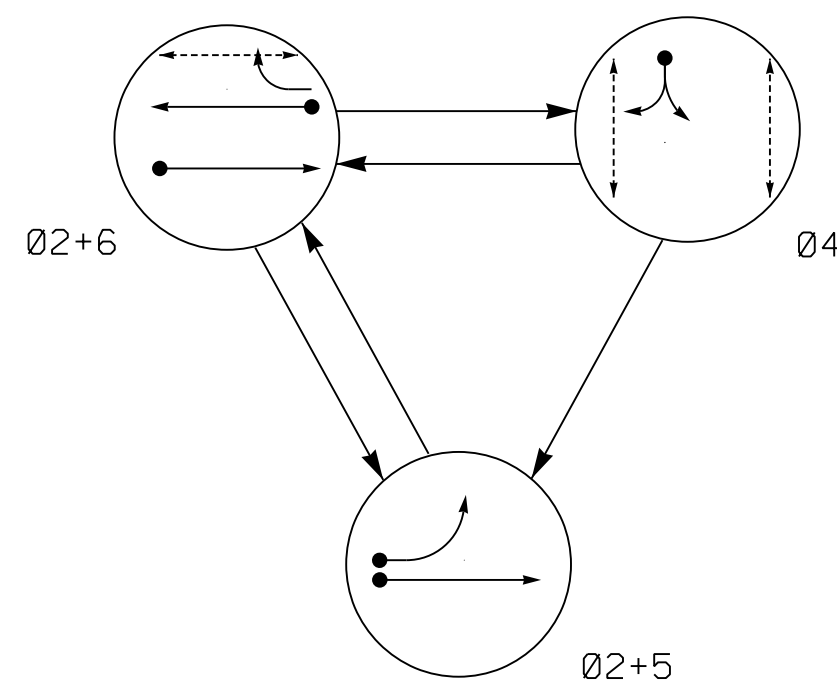
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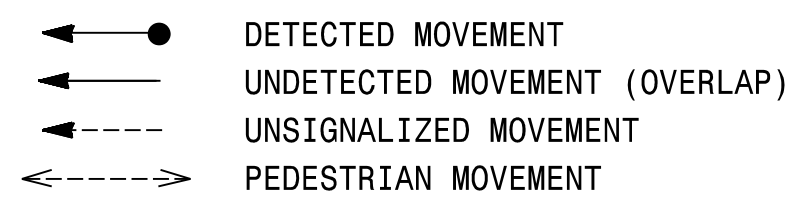
### DEFAULT PHASING DIAGRAM



### ALTERNATE PHASING DIAGRAM



### PHASING DIAGRAM DETECTION LEGEND



|                                               |
|-----------------------------------------------|
| <p>DEFAULT PHASING<br/>TABLE OF OPERATION</p> |
|-----------------------------------------------|

| SIGNAL<br>FACE | PHASE            |                  |        |                       |
|----------------|------------------|------------------|--------|-----------------------|
|                | 0<br>2<br>+<br>5 | 0<br>2<br>+<br>6 | 0<br>4 | F<br>L<br>A<br>S<br>H |
| 21             | G                | G                | R      | R                     |
| 22             | ↑                | ↑                | R      | R                     |
| 41             | R                | R                |        | R                     |
| 42             | R                | R                |        | R                     |
| 51             | ←                |                  |        | →                     |
| 61             | R                | ↑                | R      | R                     |
| 62             | R                | G                | R      | R                     |
| 63             | R                |                  | R      | R                     |
| P41,P42        | DW               | DW               | W      | DRK                   |
| P43,P44        | DW               | DW               | W      | DRK                   |
| P61,P62        | DW               | W                | DW     | DRK                   |

## ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL<br>FACE | PHASE            |                  |        |                       |
|----------------|------------------|------------------|--------|-----------------------|
|                | 0<br>2<br>+<br>5 | 0<br>2<br>+<br>6 | 0<br>4 | F<br>L<br>A<br>S<br>H |
| 21             | G                | G                | R      | R                     |
| 22             | ↑                | ↑                | R      | R                     |
| 41             | R                | R                |        | R                     |
| 42             | R                | R                |        | R                     |
| 51             | ←                |                  |        |                       |
| 61             | R                | ↑                | R      | R                     |
| 62             | R                | G                | R      | R                     |
| 63             | R                |                  | R      | R                     |
| P41,P42        | DW               | DW               | W      | DRK                   |
| P43,P44        | DW               | DW               | W      | DRK                   |
| P61,P62        | DW               | W                | DW     | DRK                   |

## MAYTIME DETECTOR INSTALLATION CHART

| MAXIMIZE DETECTOR INSTALLATION CHART |              |                                     |          |          |               |               |                |        |                  |      |       |          |
|--------------------------------------|--------------|-------------------------------------|----------|----------|---------------|---------------|----------------|--------|------------------|------|-------|----------|
| DETECTOR                             |              |                                     |          |          | PROGRAMMING   |               |                |        |                  |      |       |          |
| LOOP/<br>ZONE                        | SIZE<br>(FT) | DISTANCE<br>FROM<br>STOPBAR<br>(FT) | TURNS    | NEW LOOP | CALL<br>PHASE | DELAY<br>TIME | EXTEND<br>TIME | EXTEND | ADDED<br>INITIAL | CALL | GREEN | NEW CARD |
| 2A*                                  | 6X6          | 300                                 | *        | *        | 2             | -             | -              | X      | X                | X    | -     | *        |
| 4A                                   | 6X40         | 0                                   | EXISTING | -        | 4             | 10.0          | -              | X      | -                | X    | -     | -        |
| 5A*                                  | 6X40         | 0                                   | *        | *        | 5             | 15.0**        | -              | X      | -                | X    | -     | *        |
|                                      |              |                                     |          |          | 2#            | 3.0           | -              | X      | -                | X    | X     | *        |
| 6A*                                  | 6X6          | 300                                 | *        | *        | 6             | -             | -              | X      | X                | X    | -     | *        |

- \* - Video Detection Zone
- \*\* - Disable delay during alternate phasing operation.
- ## - Disable phase call for loop(s) during alternate phasing operation.

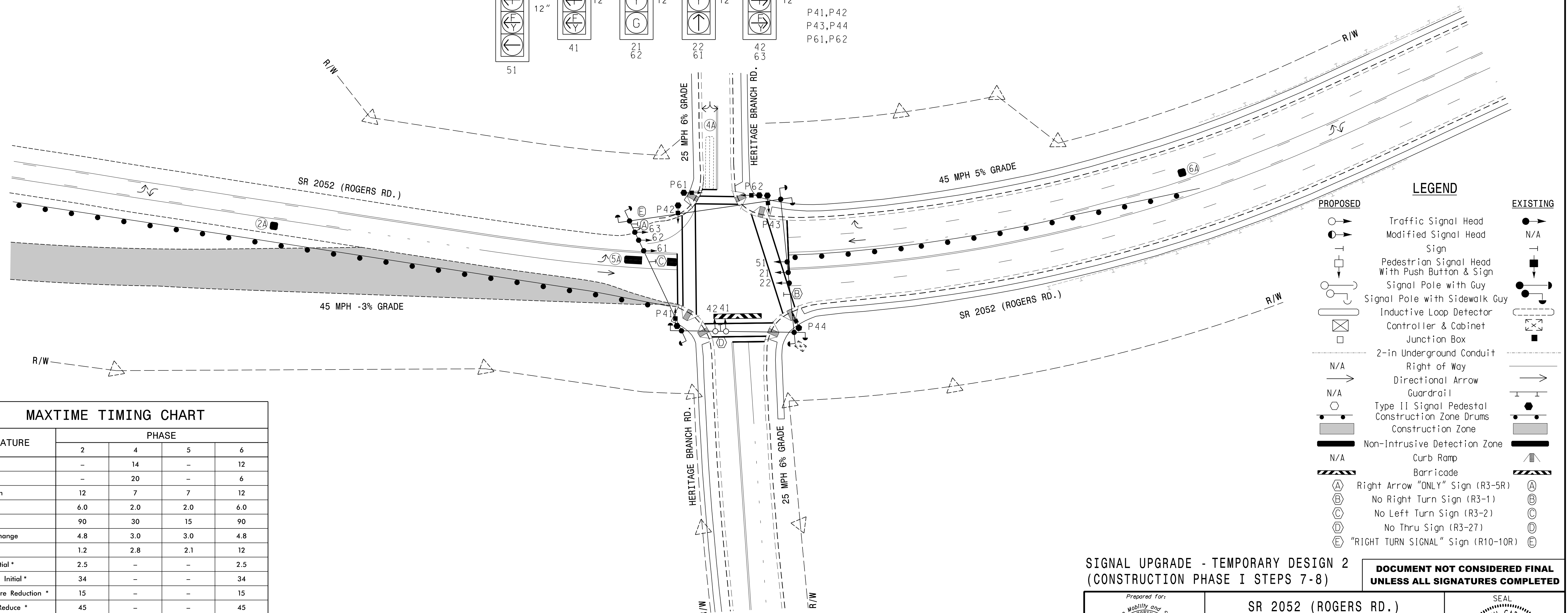
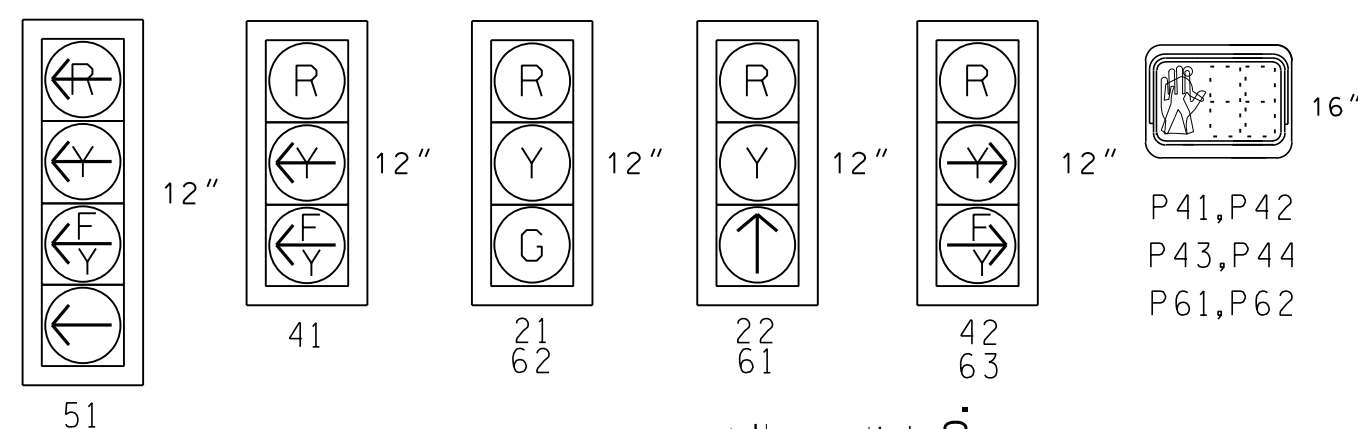
3 PHASE  
FULLY ACTUATED  
(ISOLATED)

## NOTES

1. REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JANUARY 2024 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
2. DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. PHASE 5 MAY BE LAGGED.
4. REMOVE EXISTING SIGNAL HEADS 11, 81, 82, P21, AND P22.
5. EXISTING SIGNAL HEADS 21, 22, 41, 42, 51, 61, 62, AND 63 HAVE BACKPLATES.
6. SET ALL DETECTOR UNITS TO PRESENCE MODE.
7. OMIT "WALK" AND FLASHING "DON'T WALK" WITH NO PEDESTRIAN CALLS.
8. PROGRAM PEDESTRIAN HEADS TO COUNTDOWN THE FLASHING "DON'T WALK" TIME ONLY.
9. TO PROVIDE A LEADING PEDESTRIAN INTERVAL ON PHASE 6, PROGRAM FYA HEADS NUMBERED 51 AND 63 TO DELAY FOR 5 SECONDS AFTER THE START OF THE PHASE 6 WALK INTERVAL. SEE ELECTRICAL DETAILS FOR PROGRAMMING.
10. THE DIVISION TRAFFIC ENGINEER WILL DETERMINE THE HOURS OF USE FOR EACH PHASING PLAN.
11. THIS INTERSECTION USES VIDEO DETECTION. INSTALL DETECTORS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS TO ACHIEVE THE DESIRED DETECTION.

SIGNAL FACE I.D.

All Heads L.E.D.



## MAXTIME TIMING CHART

| FEATURE                 | PHASE      |     |     |            |
|-------------------------|------------|-----|-----|------------|
|                         | 2          | 4   | 5   | 6          |
| Walk *                  | –          | 14  | –   | 12         |
| Ped Clear               | –          | 20  | –   | 6          |
| Min Green               | 12         | 7   | 7   | 12         |
| Passage *               | 6.0        | 2.0 | 2.0 | 6.0        |
| Max 1 *                 | 90         | 30  | 15  | 90         |
| Yellow Change           | 4.8        | 3.0 | 3.0 | 4.8        |
| Red Clear               | 1.2        | 2.8 | 2.1 | 12         |
| 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            | –          | 7   | –   | **         |
| 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.

\*\* See Note 9

SIGNAL UPGRADE - TEMPORARY DESIGN 2  
(CONSTRUCTION PHASE I STEPS 7-8)

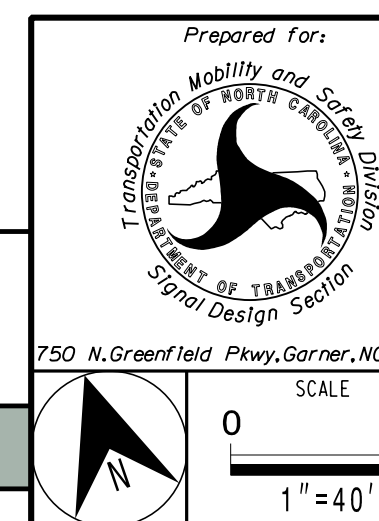
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DIVISION 5                      WAKE COUNTY                      WAKE FOREST

|            |           |              |          |
|------------|-----------|--------------|----------|
| PLAN DATE: | JUNE 2026 | REVIEWED BY: | DT SEARS |
|------------|-----------|--------------|----------|

|    |                       |              |
|----|-----------------------|--------------|
| 29 | PREPARED BY: WP JONES | REVIEWED BY: |
|----|-----------------------|--------------|

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

[illegible][illegible]

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SEAL  
44558



Professional Engineer Seal

DAVID T. SEARS

DocuSigned by:

David J. Sears 6/9/2026

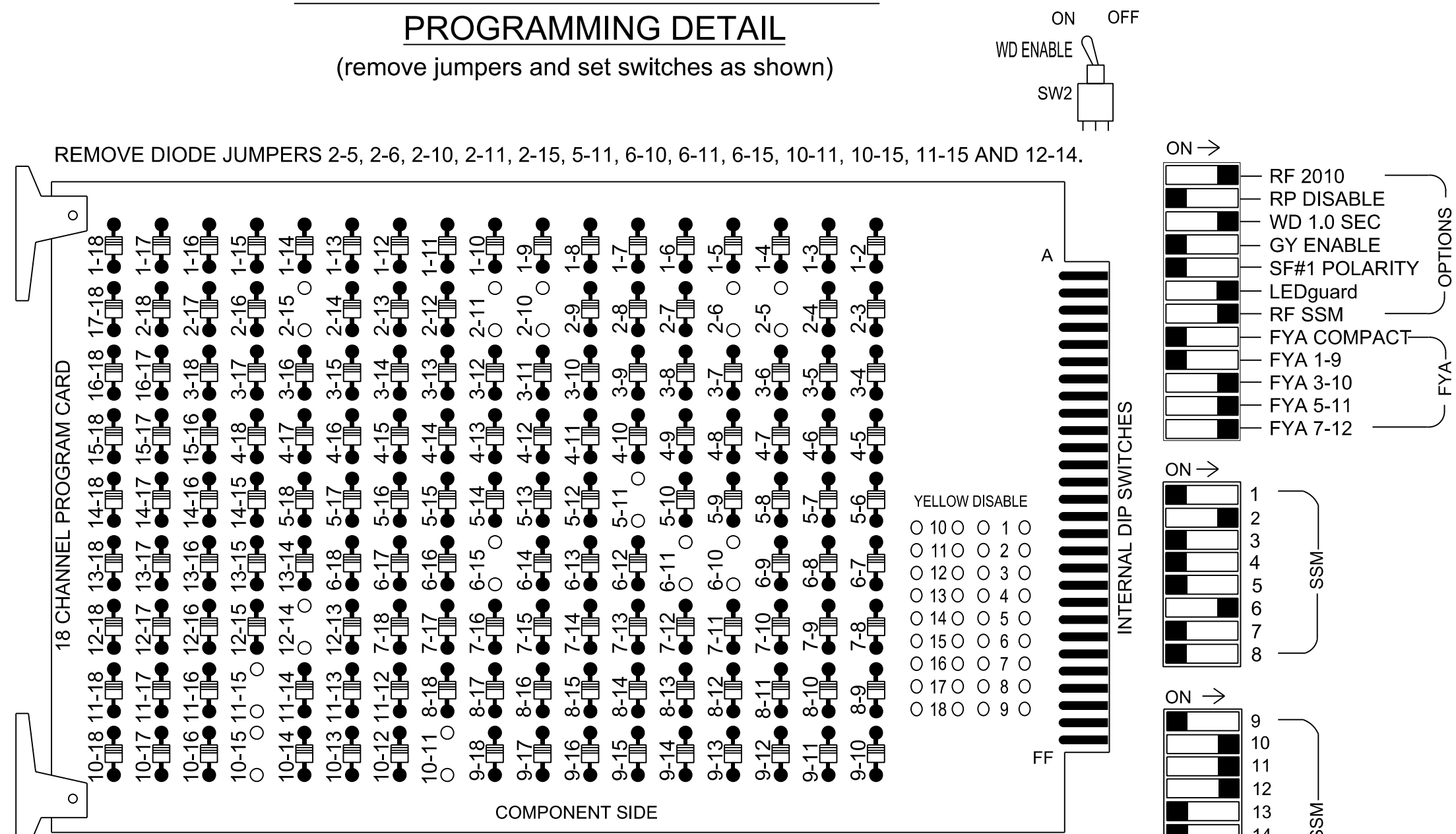
|                 |      |
|-----------------|------|
| 069183E28E5741E |      |
| SIGNATURE       | DATE |

SIG. INVENTORY NO. 05-21031

## 18 CHANNEL IP CONFLICT MONITOR

## PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

## NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all 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.

## 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, S6, S7, S8, S9, AUX S2,<br>AUX S4, AUX S5 |
| Phases Used.....           | 2, 4, 4PED, 5, 6, 6PED                        |
| Overlap "1".....           | NOT USED                                      |
| Overlap "2".....           | *                                             |
| Overlap "3".....           | *                                             |
| Overlap "4".....           | *                                             |

\*See overlap programming detail on sheet 2

## INPUT FILE POSITION LAYOUT

(front view)

[illegible]

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

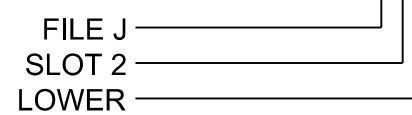
FS = FLASH SENSE  
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

[illegible]

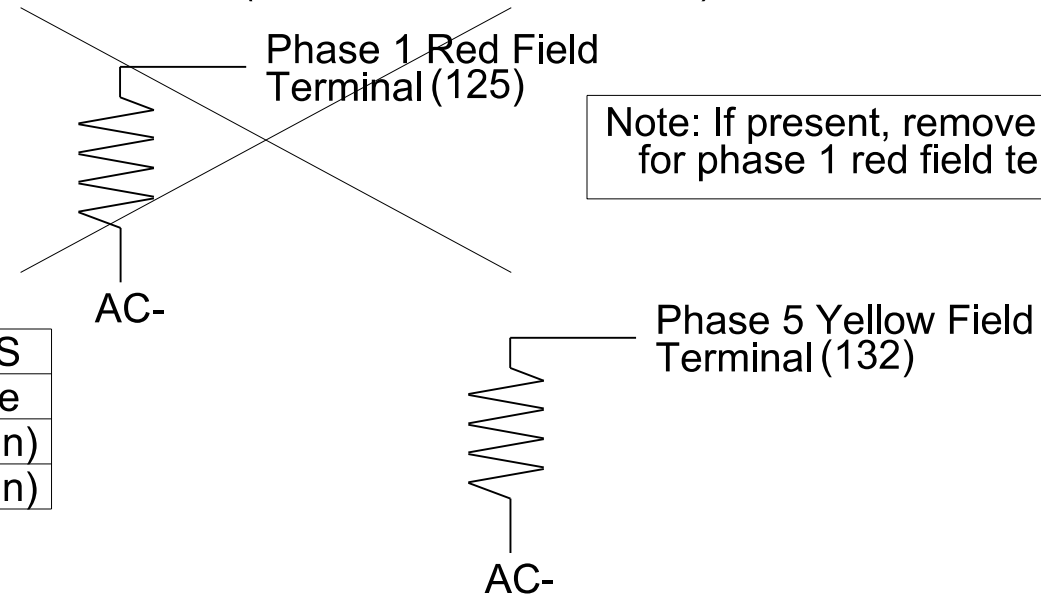
★ For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on Sheet 2.

INPUT FILE POSITION LEGEND: J2L



## 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) |

## COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

### ★★ SPECIAL DETECTOR NOTE

For zones 2A, 5A, and 6A 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.

For zone 5A inputs associated with the typical slots for a NCDOT installation are compatible with time of day instructions located on sheet 2 of this electrical details.



## SIGNAL HEAD HOOK-UP CHART

[illegible]

NU = Not Used

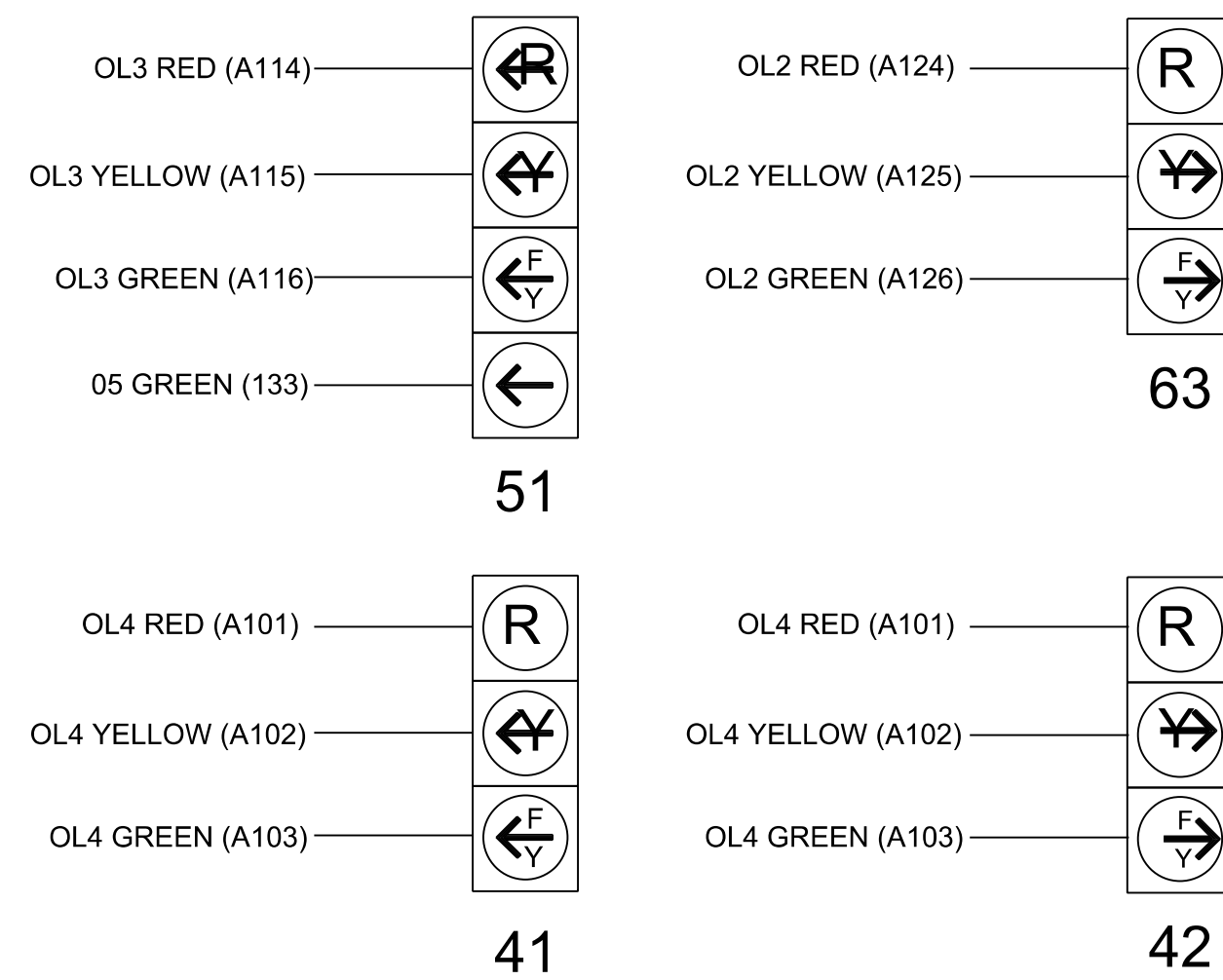
NC = Not Connected

\* 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)



THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2103T2  
DESIGNED: June 2026  
SEALED: June 9, 2026  
REVISED:

SIGNAL UPGRADE - TEMPORARY DESIGN 2  
(CONSTRUCTION PHASE I STEPS 7-8)  
ELECTRICAL DETAIL - SHEET 1 OF 2

[illegible]

6/9/2026  
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jstiff

MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR DEFAULT PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

| Overlap           | 2               | 3               | 4               |
|-------------------|-----------------|-----------------|-----------------|
| Type              | FYA 4 - Section | FYA 4 - Section | FYA 4 - Section |
| Included Phases   | 6               | 6               | 4               |
| Modifier Phases   | -               | 5               | -               |
| Modifier Overlaps | -               | -               | -               |
| Trail Green       | 0               | 0               | 0               |
| Trail Yellow      | 0.0             | 0.0             | 0.0             |
| Trail Red         | 0.0             | 0.0             | 0.0             |
| FYA Ped Delay     | 5.0             | 5.0             | 0.0             |

MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR ALTERNATE PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

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

Overlap Plan 2

| Overlap           | 2               | 3               | 4               |
|-------------------|-----------------|-----------------|-----------------|
| Type              | FYA 4 - Section | FYA 4 - Section | FYA 4 - Section |
| Included Phases   | 6               | -               | 4               |
| Modifier Phases   | -               | 5               | -               |
| Modifier Overlaps | -               | -               | -               |
| Trail Green       | 0               | 0               | 0               |
| Trail Yellow      | 0.0             | 0.0             | 0.0             |
| Trail Red         | 0.0             | 0.0             | 0.0             |
| FYA Ped Delay     | 5.0             | 5.0             | 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                       |

MAXTIME DETECTOR PROGRAMMING DETAIL  
FOR ALTERNATE PHASING LOOP 5A

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

Web Interface  
Home >Controller >Detector Configuration >Vehicle Detectors

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

Plan 2

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 15       | 5          | 0.0   |
| 31       | 0          | 3.0   |

5A

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

OVERLAP PLAN 2: Modifies overlap included phases for head 51 to run protected turns only.

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

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 Town Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2103T2  
DESIGNED: June 2026  
SEALED: June 9, 2026  
REVISED:

SIGNAL UPGRADE - TEMPORARY DESIGN 2  
(CONSTRUCTION PHASE 1 STEPS 7-8)  
ELECTRICAL DETAIL - SHEET 2 OF 2

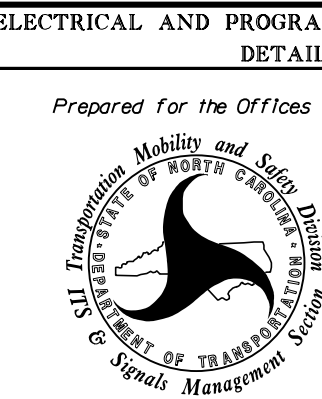
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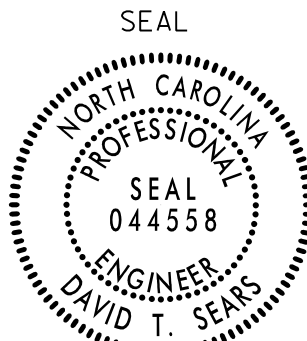
SR 2052 (ROGERS RD)  
AT  
HERITAGE BRANCH RD

DIVISION 5 WAKE COUNTY WAKE FOREST

PLAN DATE: JUNE 2026 REVIEWED BY: DSEARS

PREPARED BY: WPJONES REVIEWED BY:

REVISIONS INIT. DATE

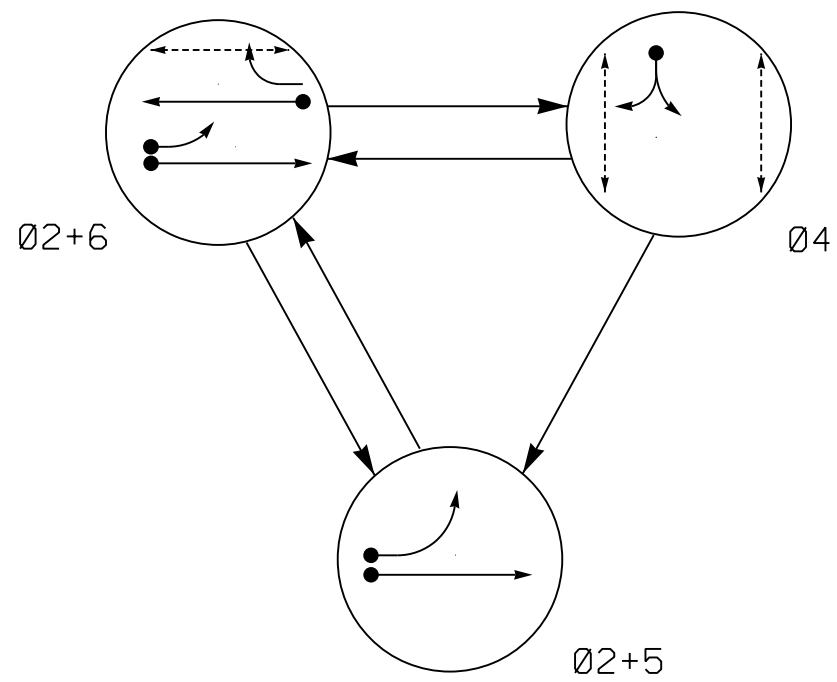


DocuSigned by  
David T. Sears 6/9/2026

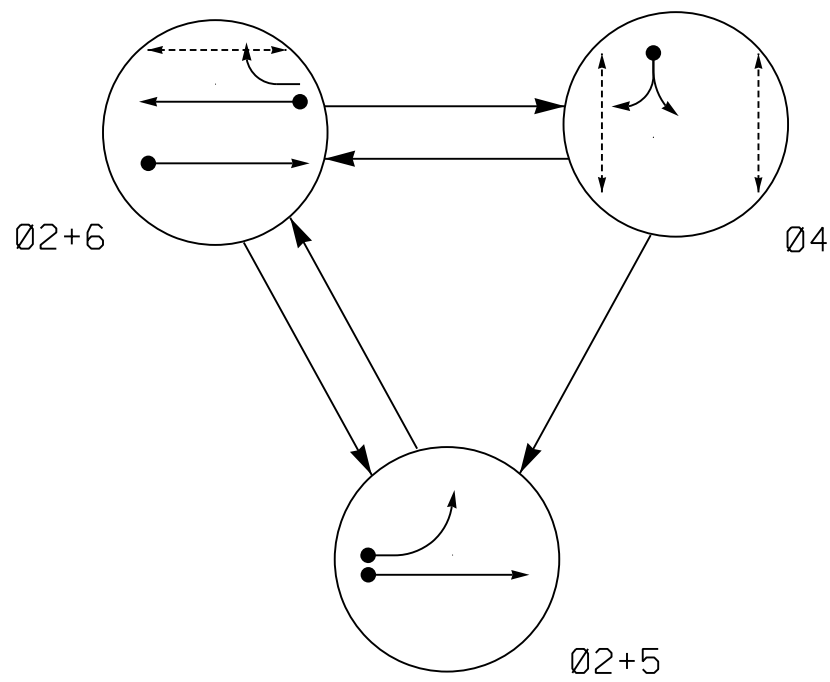
SIGNATURE DATE

SIG. INVENTORY NO. 05-2103T2

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

| DEFAULT PHASING<br>TABLE OF OPERATION |       |      |    |       |
|---------------------------------------|-------|------|----|-------|
| SIGNAL<br>FACE                        | PHASE |      |    |       |
|                                       | 02+5  | 02+6 | 04 | FLASH |
| 21                                    | G     | G    | R  | R     |
| 22                                    | ↑     | ↑    | R  | R     |
| 41                                    | R     | R    | ↓  | R     |
| 42                                    | R     | R    | ↓  | R     |
| 51                                    | ←     | ←    | ↓  | ↓     |
| 61                                    | R     | ↑    | R  | R     |
| 62                                    | R     | G    | R  | R     |
| 63                                    | R     | ↓    | R  | R     |
| P41,P42,<br>P43,P44                   | DW    | DW   | W  | DRK   |
| P61,P62                               | DW    | W    | DW | DRK   |

| ALTERNATE PHASING<br>TABLE OF OPERATION |       |      |    |       |
|-----------------------------------------|-------|------|----|-------|
| SIGNAL<br>FACE                          | PHASE |      |    |       |
|                                         | 02+5  | 02+6 | 04 | FLASH |
| 21                                      | G     | G    | R  | R     |
| 22                                      | ↑     | ↑    | R  | R     |
| 41                                      | R     | R    | ↓  | R     |
| 42                                      | R     | R    | ↓  | R     |
| 51                                      | ←     | ←    | ↓  | ↓     |
| 61                                      | R     | ↑    | R  | R     |
| 62                                      | R     | G    | R  | R     |
| 63                                      | R     | ↓    | R  | R     |
| P41,P42,<br>P43,P44                     | DW    | DW   | W  | DRK   |
| P61,P62                                 | DW    | W    | DW | DRK   |

| MAXTIME DETECTOR INSTALLATION CHART |              |                                     |          |          |               |               |                |        |               |                            |
|-------------------------------------|--------------|-------------------------------------|----------|----------|---------------|---------------|----------------|--------|---------------|----------------------------|
| DETECTOR                            |              |                                     |          |          | PROGRAMMING   |               |                |        |               |                            |
| LOOP/<br>ZONE                       | SIZE<br>(FT) | DISTANCE<br>FROM<br>STOPBAR<br>(FT) | URNS     | NEW LOOP | CALL<br>PHASE | DELAY<br>TIME | EXTEND<br>TIME | EXTEND | ADDED INITIAL | CALL<br>DELAY DURING GREEN |
| 2A*                                 | 6X6          | 300                                 | *        | *        | 2             | -             | -              | X      | X             | X                          |
| 4A                                  | 6X40         | 0                                   | EXISTING | -        | 4             | 10.0          | -              | X      | -             | X                          |
| 5A*                                 | 6X40         | 0                                   | *        | *        | 5             | 15.0**        | -              | X      | -             | X                          |
| 6A*                                 | 6X6          | 300                                 | *        | *        | 2#            | 3.0           | -              | X      | X             | X                          |

\* - Video Detection Zone  
\*\* - Disable delay during alternate phasing operation.  
# - Disable phase call for loop(s) during alternate phasing operation.

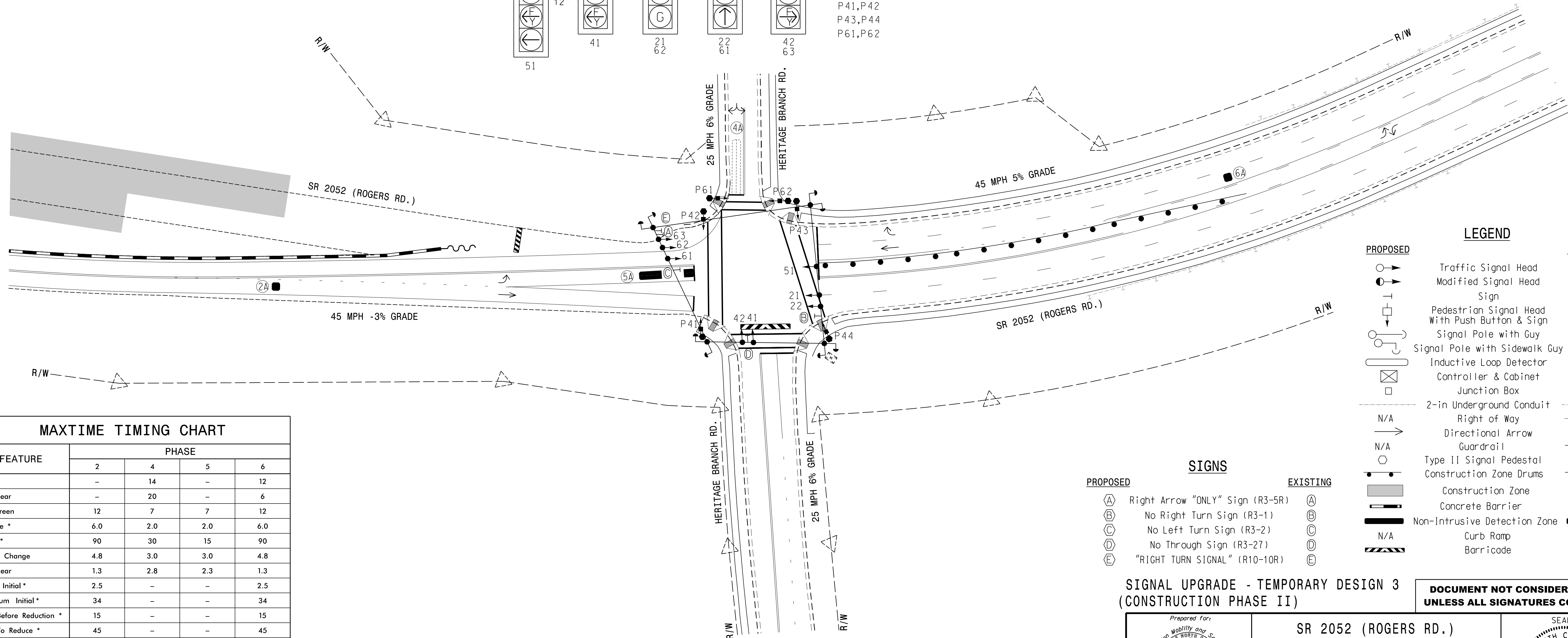
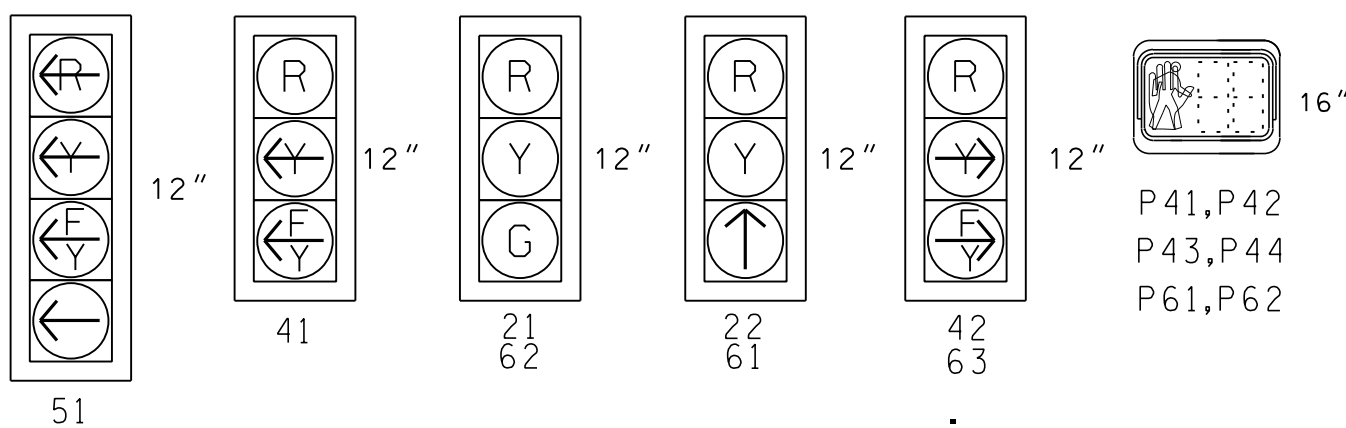
3 PHASE  
FULLY ACTUATED  
(ISOLATED)

NOTES

- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JANUARY 2024 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- PHASE 5 MAY BE LAGGED.
- REPOSITION EXISTING SIGNAL HEADS NUMBERED 21, 22, AND 51.
- EXISTING SIGNAL HEADS 21, 22, 41, 42, 51, 61, 62, AND 63 HAVE BACKPLATES.
- 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.
- TO PROVIDE A LEADING PEDESTRIAN INTERVAL ON PHASE 6, PROGRAM FYA HEADS NUMBERED 51 AND 63 TO DELAY FOR 5 SECONDS AFTER THE START OF THE PHASE 6 WALK INTERVAL. SEE ELECTRICAL DETAILS FOR PROGRAMMING.
- THE DIVISION TRAFFIC ENGINEER WILL DETERMINE THE HOURS FOR USE FOR EACH PHASING PLAN.
- THIS INTERSECTION USES VIDEO DETECTION. INSTALL DETECTORS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS TO ACHIEVE THE DESIRED DETECTION.

SIGNAL FACE I.D.

All Heads L.E.D.



MAXTIME TIMING CHART

| FEATURE                 | PHASE      |     |     |            |
|-------------------------|------------|-----|-----|------------|
|                         | 2          | 4   | 5   | 6          |
| Walk *                  | -          | 14  | -   | 12         |
| Ped Clear               | -          | 20  | -   | 6          |
| Min Green               | 12         | 7   | 7   | 12         |
| Passage *               | 6.0        | 2.0 | 2.0 | 6.0        |
| Max 1 *                 | 90         | 30  | 15  | 90         |
| Yellow Change           | 4.8        | 3.0 | 3.0 | 4.8        |
| Red Clear               | 1.3        | 2.8 | 2.3 | 1.3        |
| 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            | -          | 7   | -   | **         |
| 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.  
\*\* See Note 9

LEGEND

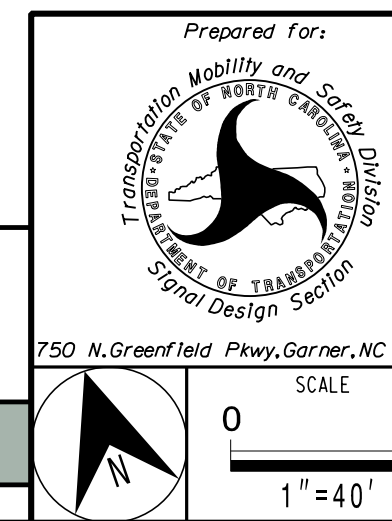
| PROPOSED                                       | EXISTING |
|------------------------------------------------|----------|
| Traffic Signal Head                            | N/A      |
| Modified Signal Head                           | N/A      |
| Sign                                           | N/A      |
| 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      |
| Guardrail                                      | N/A      |
| Type II Signal Pedestal                        | N/A      |
| Construction Zone Drums                        | N/A      |
| Construction Zone                              | N/A      |
| Concrete Barrier                               | N/A      |
| Non-Intrusive Detection Zone                   | N/A      |
| N/A                                            | N/A      |
| Curb Ramp                                      | N/A      |
| Barricade                                      | N/A      |

SIGNS

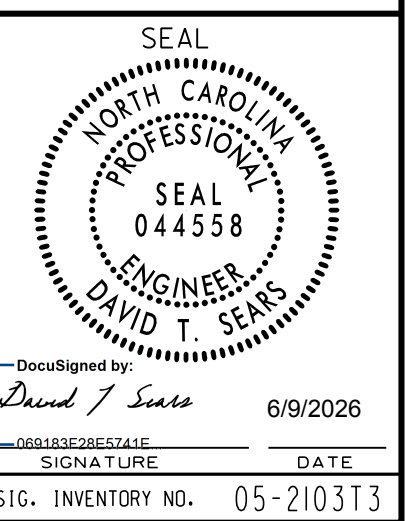
| PROPOSED                            | EXISTING                            |
|-------------------------------------|-------------------------------------|
| (A) Right Arrow "ONLY" Sign (R3-5R) | (A) Right Arrow "ONLY" Sign (R3-5R) |
| (B) No Right Turn Sign (R3-1)       | (B) No Right Turn Sign (R3-1)       |
| (C) No Left Turn Sign (R3-2)        | (C) No Left Turn Sign (R3-2)        |
| (D) No Through Sign (R3-27)         | (D) No Through Sign (R3-27)         |
| (E) "RIGHT TURN SIGNAL" (R10-10R)   | (E) "RIGHT TURN SIGNAL" (R10-10R)   |

SIGNAL UPGRADE - TEMPORARY DESIGN 3  
(CONSTRUCTION PHASE II)

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|                                                   |                       |
|---------------------------------------------------|-----------------------|
| SR 2052 (ROGERS RD.)<br>AT<br>HERITAGE BRANCH RD. |                       |
| DIVISION 5 WAKE COUNTY                            | WAKE FOREST           |
| PLAN DATE: JUNE 2026                              | REVIEWED BY: DT SEARS |
| PREPARED BY: WP JONES                             | REVIEWED BY:          |
| REVISIONS                                         | INIT. DATE            |
|                                                   |                       |
|                                                   |                       |
|                                                   |                       |



(remove jumpers and set switches as shown)

(remove jumpers and set switches as shown)



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MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR DEFAULT PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

| Overlap           | 2               | 3               | 4               |
|-------------------|-----------------|-----------------|-----------------|
| Type              | FYA 4 - Section | FYA 4 - Section | FYA 4 - Section |
| Included Phases   | 6               | 6               | 4               |
| Modifier Phases   | -               | 5               | -               |
| Modifier Overlaps | -               | -               | -               |
| Trail Green       | 0               | 0               | 0               |
| Trail Yellow      | 0.0             | 0.0             | 0.0             |
| Trail Red         | 0.0             | 0.0             | 0.0             |
| Trail Red         | 0.0             | 0.0             | 0.0             |
| FYA Ped Delay     | 5.0             | 5.0             | 0.0             |

MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR ALTERNATE PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

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

Overlap Plan 2

| Overlap           | 2               | 3               | 4               |
|-------------------|-----------------|-----------------|-----------------|
| Type              | FYA 4 - Section | FYA 4 - Section | FYA 4 - Section |
| Included Phases   | 6               | -               | 4               |
| Modifier Phases   | -               | 5               | -               |
| Modifier Overlaps | -               | -               | -               |
| Trail Green       | 0               | 0               | 0               |
| Trail Yellow      | 0.0             | 0.0             | 0.0             |
| Trail Red         | 0.0             | 0.0             | 0.0             |
| Trail Red         | 0.0             | 0.0             | 0.0             |
| FYA Ped Delay     | 5.0             | 5.0             | 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                       |

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

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

PHASING

OVERLAP PLAN

VEH DET PLAN

ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING

1

1

ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING

2

2

ALTERNATE PHASING CHANGE SUMMARY

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

OVERLAP PLAN 2: Modifies overlap included phases for head 51 to run protected turns only.

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

MAXTIME DETECTOR PROGRAMMING DETAIL  
FOR ALTERNATE PHASING LOOP 5A

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

Web Interface  
Home >Controller >Detector Configuration >Vehicle Detectors

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

Plan 2

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 15       | 5          | 0.0   |
| 31       | 0          | 3.0   |

5A

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 Town Traffic Engineer.

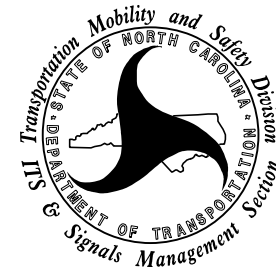
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2103T3  
DESIGNED: June 2026  
SEALED: June 9, 2026  
REVISED:

SIGNAL UPGRADE - TEMPORARY DESIGN 3  
(CONSTRUCTION PHASE II)  
ELECTRICAL DETAIL - SHEET 2 OF 2

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ELECTRICAL AND PROGRAMMING  
DETAILS FOR:

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 2052 (ROGERS RD)  
AT  
HERITAGE BRANCH RD

DIVISION 5 WAKE COUNTY WAKE FOREST

PLAN DATE: JUNE 2026 REVIEWED BY: DT SEARS

PREPARED BY: WP JONES REVIEWED BY:

REVISIONS INIT. DATE



DocuSigned by  
David T. Sears 6/9/2026

SIGNATURE DATE

SIG. INVENTORY NO. 05-2103T3



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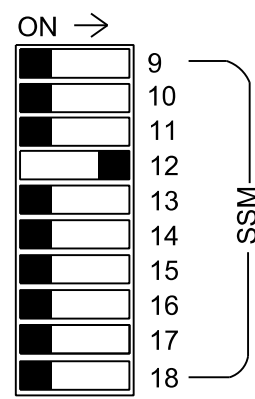
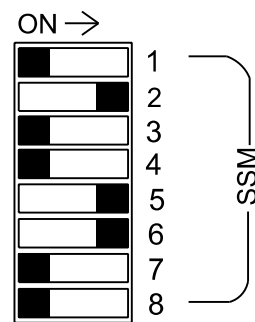
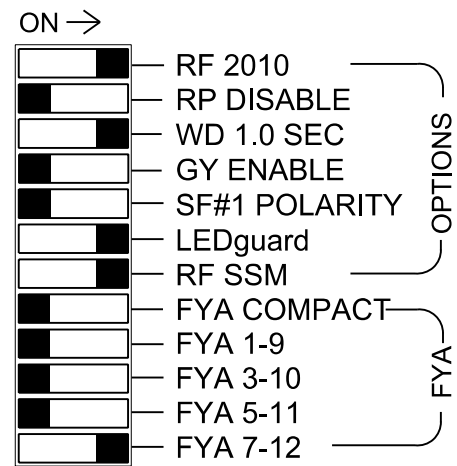
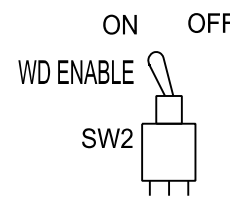
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(remove jumpers and set switches as shown)

(remove jumpers and set switches as shown)



■ = DENOTES POSITION OF SWITCH

## NOTES

4. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

## EQUIPMENT INFORMATION

|                            |                            |
|----------------------------|----------------------------|
| Controller.....            | 2070LX                     |
| Cabinet.....               | 332 w/ Aux                 |
| Software.....              | Q-Free MAXTIME             |
| Cabinet Mount.....         | Base                       |
| Output File Positions..... | 18 With Aux. Output File   |
| Load Switches Used.....    | S2, S6, S7, S8, S9, AUX S5 |
| Phases Used.....           | 2, 4, 4PED, 5, 6, 6PED     |
| Overlap "1".....           | NOT USED                   |
| Overlap "2".....           | NOT USED                   |
| Overlap "3".....           | NOT USED                   |
| Overlap "4".....           | *                          |

\*See overlap programming detail on sheet 2

|                       |           |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| P-5707                | Sig. 5.1  |

## SIGNAL HEAD HOOK-UP CHART

|                                                                                     |    |     |       |    |    |       |                    |     |       |     |             |       |        |        |        |        |        |        |
|-------------------------------------------------------------------------------------|----|-----|-------|----|----|-------|--------------------|-----|-------|-----|-------------|-------|--------|--------|--------|--------|--------|--------|
| LOAD SWITCH NO.                                                                     | S1 | S2  | S3    | S4 | S5 | S6    | S7                 | S8  | S9    | S10 | S11         | S12   | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
| CMU CHANNEL NO.                                                                     | 1  | 2   | 13    | 3  | 4  | 14    | 5                  | 6   | 15    | 7   | 8           | 16    | 9      | 10     | 17     | 11     | 12     | 18     |
| PHASE                                                                               | 1  | 2   | 2 PED | 3  | 4  | 4 PED | 5                  | 6   | 6 PED | 7   | 8           | 8 PED | OL1    | OL2    | SPARE  | OL3    | OL4    | SPARE  |
| SIGNAL HEAD NO.                                                                     | NU | 21  | 22    | NU | NU | NC    | P41,P42<br>P43,P44 | 21  | 61    | 62  | P61,<br>P62 | NU    | NU     | NU     | NU     | NU     | 41,42  | NU     |
| RED                                                                                 |    | 128 | 128   |    |    |       |                    | *   | 134   | 134 |             |       |        |        |        |        | A101   |        |
| YELLOW                                                                              |    | 129 | 129   |    |    |       |                    |     | 135   | 135 |             |       |        |        |        |        |        |        |
| GREEN                                                                               |    | 130 |       |    |    |       |                    |     | 136   |     |             |       |        |        |        |        |        |        |
| RED ARROW                                                                           |    |     |       |    |    |       |                    |     |       |     |             |       |        |        |        |        |        |        |
| YELLOW ARROW                                                                        |    |     |       |    |    |       |                    | 132 |       |     |             |       |        |        |        |        | A102   |        |
| FLASHING YELLOW ARROW                                                               |    |     |       |    |    |       |                    |     |       |     |             |       |        |        |        |        | A103   |        |
| GREEN ARROW                                                                         |    |     | 130   |    |    |       |                    | 133 | 136   |     |             |       |        |        |        |        |        |        |
|  |    |     |       |    |    |       | 104                |     |       | 119 |             |       |        |        |        |        |        |        |
|  |    |     |       |    |    |       | 106                |     |       | 121 |             |       |        |        |        |        |        |        |

NU = Not Used  
 NC = Not Connected  
 \* 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)

[illegible]

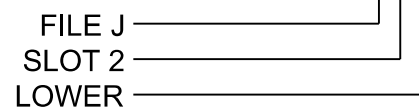
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
ST = STOP TIME

## INPUT FILE CONNECTION & PROGRAMMING CHART

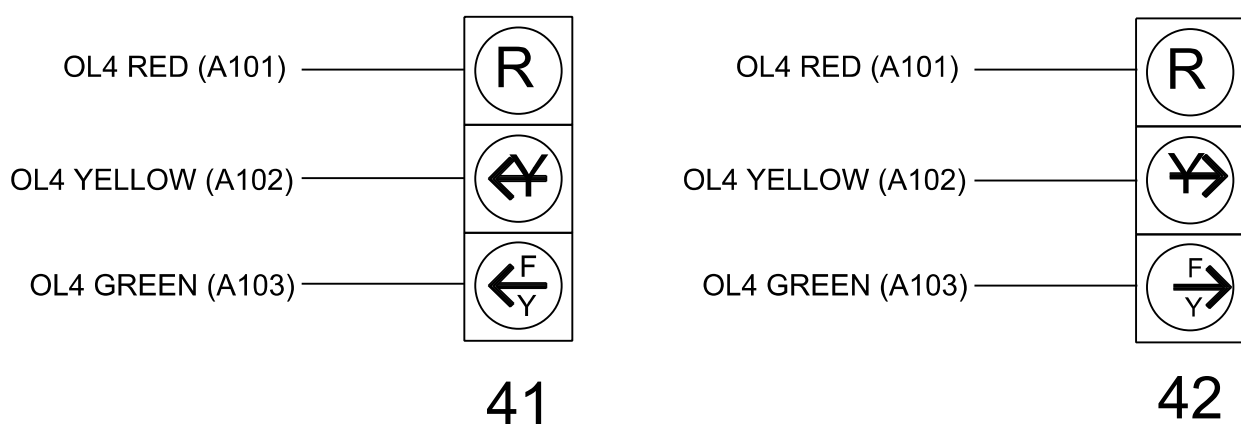
[illegible]

INPUT FILE POSITION LEGEND: J2L



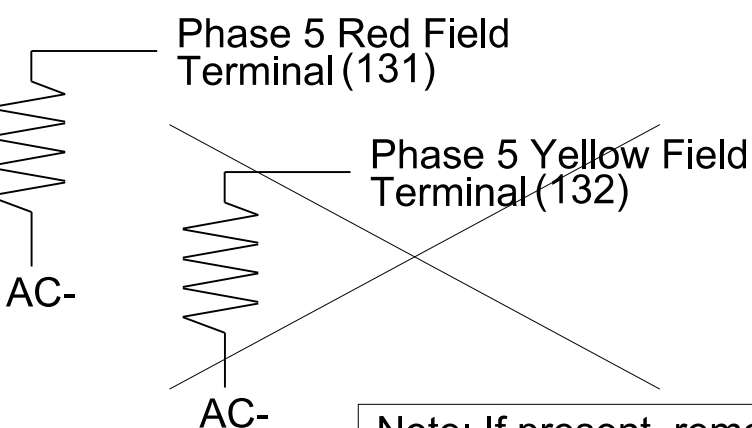
## FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



## LOAD RESISTOR INSTALLATION DETAIL

*(install resistors as shown)*



Note: If present, remove load resistor for phase 5 yellow field terminal 132.

## COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

### SPECIAL DETECTOR NOTE

For zones 2A, 5A and 6A 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.



SIGNAL UPGRADE - TEMPORARY DESIGN 4  
(CONSTRUCTION PHASE III STEPS 1-3)  
ELECTRICAL DETAIL - SHEET 1 OF 2

|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------|-------------|-------------|------------------------------|-----------------------|------|------------------------------|--------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| ELECTRICAL AND PROGRAMMING<br>DETAILS FOR:                                                                                | SR 2052 (ROGERS RD)<br>AT<br>HERITAGE BRANCH RD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SEAL<br><br> |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Prepared for the Offices of:<br><br> | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">DIVISION 5</td> <td style="width: 33%;">WAKE COUNTY</td> <td style="width: 33%;">WAKE FOREST</td> </tr> <tr> <td>PLAN DATE: JUNE 2026</td> <td>REVIEWED BY: DT SEARS</td> <td></td> </tr> <tr> <td>PREPARED BY: WP JONES</td> <td>REVIEWED BY:</td> <td></td> </tr> </table>                                                                                                                                                                                               |                                                                                                   | DIVISION 5            | WAKE COUNTY | WAKE FOREST | PLAN DATE: JUNE 2026         | REVIEWED BY: DT SEARS |      | PREPARED BY: WP JONES        | REVIEWED BY: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DIVISION 5                                                                                                                | WAKE COUNTY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | WAKE FOREST                                                                                       |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PLAN DATE: JUNE 2026                                                                                                      | REVIEWED BY: DT SEARS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PREPARED BY: WP JONES                                                                                                     | REVIEWED BY:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">REVISIONS</td> <td style="width: 20%;">INIT.</td> <td style="width: 20%;">DATE</td> </tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table> |                                                                                                   | REVISIONS             | INIT.       | DATE        |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| REVISIONS                                                                                                                 | INIT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DATE                                                                                              |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 750 N.Greenfield Pkwy,Warner,NC 27529                                                                                     | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="padding: 5px;"> <i>David T. Sears</i> </td> <td style="text-align: right; padding: 5px;">         6/9/2026       </td> </tr> <tr> <td colspan="2" style="text-align: center; padding: 5px;">         SIGNED FOR DATE<br/>SIGNATURE       </td> <td style="text-align: center; padding: 5px;">         DATE       </td> </tr> <tr> <td colspan="2" style="padding: 5px;">         SIG. INVENTORY NO. 05-2103TA       </td> <td></td> </tr> </table>                          |                                                                                                   | <i>David T. Sears</i> |             | 6/9/2026    | SIGNED FOR DATE<br>SIGNATURE |                       | DATE | SIG. INVENTORY NO. 05-2103TA |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <i>David T. Sears</i>                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6/9/2026                                                                                          |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SIGNED FOR DATE<br>SIGNATURE                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DATE                                                                                              |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SIG. INVENTORY NO. 05-2103TA                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                       |             |             |                              |                       |      |                              |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

6/9/2026  
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C:\Users\jstiff\Documents\Projects\2016\16115\_RogersRd\00sig\gn\Traffic\sig\ignol\electr\lco\0e\01\sig\0210314e-20260609.dgn

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           | 4               |
| Type              | FYA 4 - Section |
| Included Phases   | 4               |
| Modifier Phases   | -               |
| Modifier Overlaps | -               |
| Trail Green       | 0               |
| Trail Yellow      | 0.0             |
| Trail Red         | 0.0             |

BACKUP PREVENTION PROGRAMMING

Front Panel  
Main Menu >Controller >Sequence & Phs Config >Backup Prevention >Backup Protection Plan

Web Interface  
Home >Controller> Backup Prevention >Backup Protection Plan

| Sequence 1      |   |   |   |   |   |   |   |   |
|-----------------|---|---|---|---|---|---|---|---|
| No Backup Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Serve Phase 1   | - | - | - | - | - | - | - | - |
| Serve Phase 2   | - | - | - | - | - | - | - | - |
| Serve Phase 3   | - | - | - | - | - | - | - | - |
| Serve Phase 4   | - | - | - | - | - | - | - | - |
| Serve Phase 5   | - | - | - | - | - | X | - | - |
| Serve Phase 6   | - | - | - | - | - | - | - | - |
| Serve Phase 7   | - | - | - | - | - | - | - | - |
| Serve Phase 8   | - | - | - | - | - | - | - | - |

SEQUENCE DETAIL

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

Web Interface  
Home >Controller >Sequence

Sequence 1

|      |               |
|------|---------------|
| Ring | Sequence Data |
| 1    | 2,a,4,b       |
| 2    | 6,5,a,b       |

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                       |

ALL RED BACKUP PROGRAMMING

Front Panel  
Main Menu >Controller >Sequence & Phs Config>Backup Prevention >Backup Through Red

Web Interface  
Home >Controller >Backup Prevention >Backup Calls Phase Plans >(scroll down) to Backup Through Red

Backup Through All Red

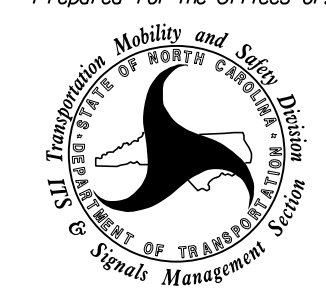
|          |                        |
|----------|------------------------|
| Sequence | Backup Through All Red |
| 1        | YES                    |

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Raleigh, North Carolina 27615-3960  
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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



750 N.Greenfield Pkwy,Garner,NC 27529

SR 2052 (ROGERS RD)  
AT  
HERITAGE BRANCH RD

DIVISION 5

WAKE COUNTY

WAKE FOREST

PLAN DATE: JUNE 2026

REVIEWED BY: DT SEARS

PREPARED BY: WP JONES

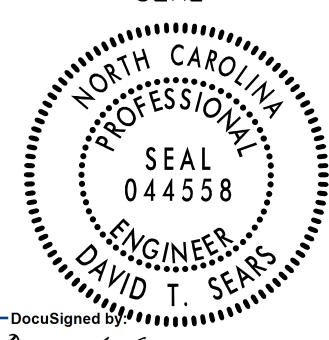
REVIEWED BY:

REVISIONS

INIT.

DATE

SEAL



DAVID T. SEARS

DocuSigned by

*David T. Sears*

6/9/2026

SIGNATURE

DATE

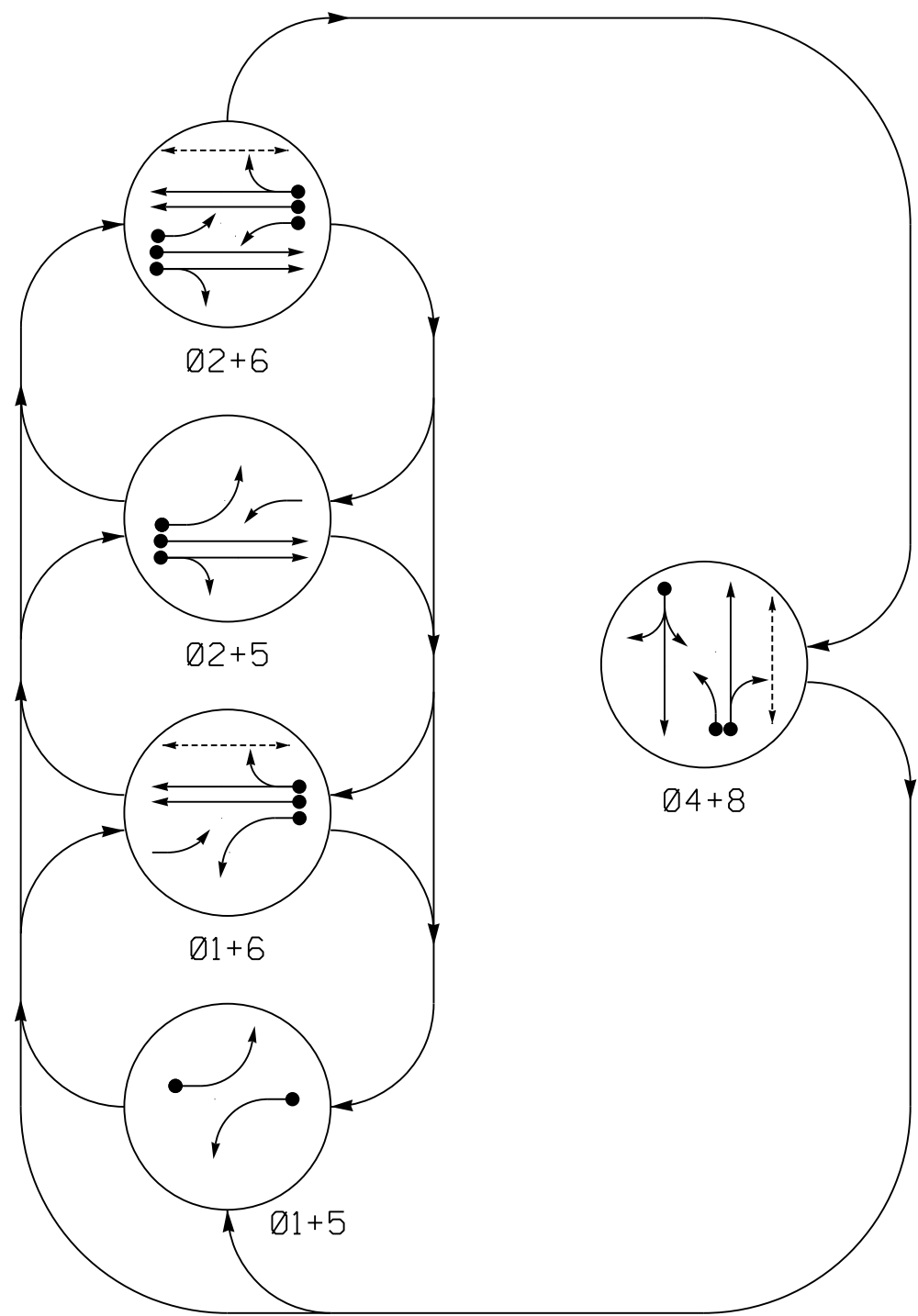
SIG. INVENTORY NO. 05-2103T4

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2103T4  
DESIGNED: June 2026  
SEALED: June 9, 2026  
REVISED:

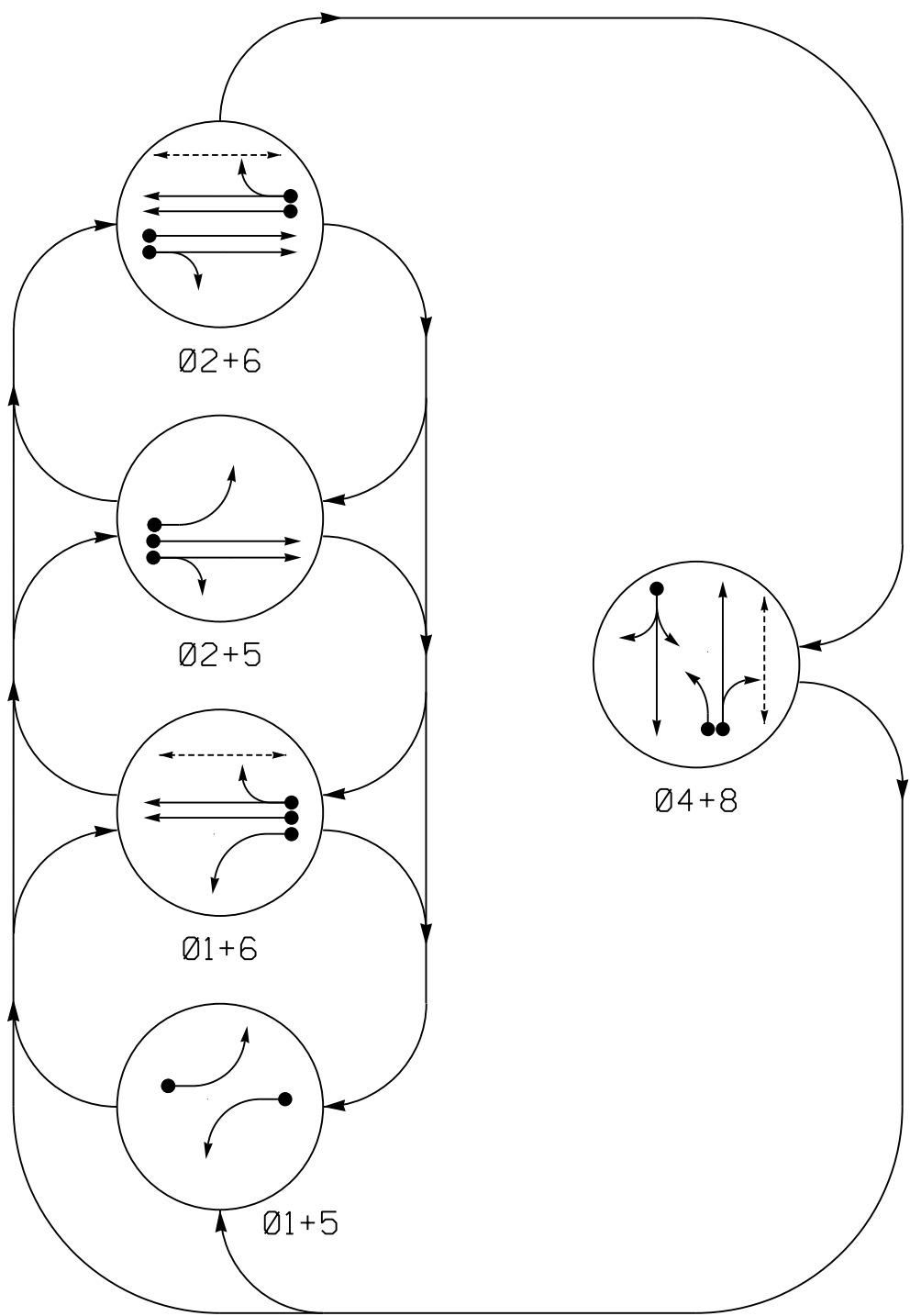
SIGNAL UPGRADE - TEMPORARY DESIGN 4  
(CONSTRUCTION PHASE III STEPS 1-3)  
ELECTRICAL DETAIL - SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



| SIGNAL<br>FACE | PHASE      |            |            |            |            |       |
|----------------|------------|------------|------------|------------|------------|-------|
|                | Ø 1<br>+ 5 | Ø 1<br>+ 6 | Ø 2<br>+ 5 | Ø 2<br>+ 6 | Ø 4<br>+ 8 | FLASH |
| 11             | ←          | ←          | ←          | ←          | ←          | ←     |
| 21,22          | R          | R          | G          | G          | R          | R     |
| 41,42          | R          | R          | R          | R          | G          | R     |
| 51             | ←          | ←          | ←          | ←          | ←          | ←     |
| 61,62          | R          | G          | R          | G          | R          | R     |
| 81             | ←          | ←          | ←          | ←          | ←          | ←     |
| 82,83,84       | R          | R          | R          | R          | G          | R     |
| P61,P62        | DW         | W          | DW         | W          | DW         | DRK   |
| P81,P82        | DW         | DW         | DW         | DW         | W          | DRK   |

| SIGNAL<br>FACE | PHASE      |            |            |            |            |       |
|----------------|------------|------------|------------|------------|------------|-------|
|                | Ø 1<br>+ 5 | Ø 1<br>+ 6 | Ø 2<br>+ 5 | Ø 2<br>+ 6 | Ø 4<br>+ 8 | FLASH |
| 11             | ←          | ←          | ←          | ←          | ←          | ←     |
| 21,22          | R          | R          | G          | G          | R          | R     |
| 41,42          | R          | R          | R          | R          | G          | R     |
| 51             | ←          | ←          | ←          | ←          | ←          | ←     |
| 61,62          | R          | G          | R          | G          | R          | R     |
| 81             | ←          | ←          | ←          | ←          | ←          | ←     |
| 82,83,84       | R          | R          | R          | R          | G          | R     |
| P61,P62        | DW         | W          | DW         | W          | DW         | DRK   |
| P81,P82        | DW         | DW         | DW         | DW         | W          | DRK   |

MAXTIME DETECTOR INSTALLATION CHART

| DETECTOR |              |                                     |       | PROGRAMMING |               |               |                |                   |                      |          |
|----------|--------------|-------------------------------------|-------|-------------|---------------|---------------|----------------|-------------------|----------------------|----------|
| ZONE     | SIZE<br>(FT) | DISTANCE<br>FROM<br>STOPBAR<br>(FT) | TURNS | NEW LOOP    | CALL<br>PHASE | DELAY<br>TIME | EXTEND<br>TIME | EXTEND<br>INITIAL | CALL<br>DURING GREEN | NEW CARD |
| 1A*      | 6X40         | 0                                   | *     | *           | 1             | 15.0**        | -              | X                 | -                    | *        |
| 2A*      | 6X6          | 300                                 | *     | *           | 2             | -             | -              | X                 | X                    | *        |
| 2B*      | 6X6          | 300                                 | *     | *           | 2             | -             | -              | X                 | X                    | *        |
| 4A*      | 6X40         | 0                                   | *     | *           | 4             | 10.0          | -              | X                 | -                    | *        |
| 5A*      | 6X40         | 0                                   | *     | *           | 5             | 15.0**        | -              | X                 | -                    | *        |
| 6A*      | 6X6          | 300                                 | *     | *           | 6             | -             | -              | X                 | X                    | *        |
| 6B*      | 6X6          | 300                                 | *     | *           | 6             | -             | -              | X                 | X                    | *        |
| 8A*      | 6X40         | 0                                   | *     | *           | 8             | 3.0           | -              | X                 | -                    | *        |
| 8B*      | 6X40         | 0                                   | *     | *           | 8             | 10.0          | -              | X                 | -                    | *        |

\* - Video Detection Zone  
\*\* - Reduce delay to 3 seconds during alternate phasing operation.  
# - Disable phase call for loop(s) during alternate phasing operation.

5 PHASE  
FULLY ACTUATED  
(ISLOATED)

NOTES

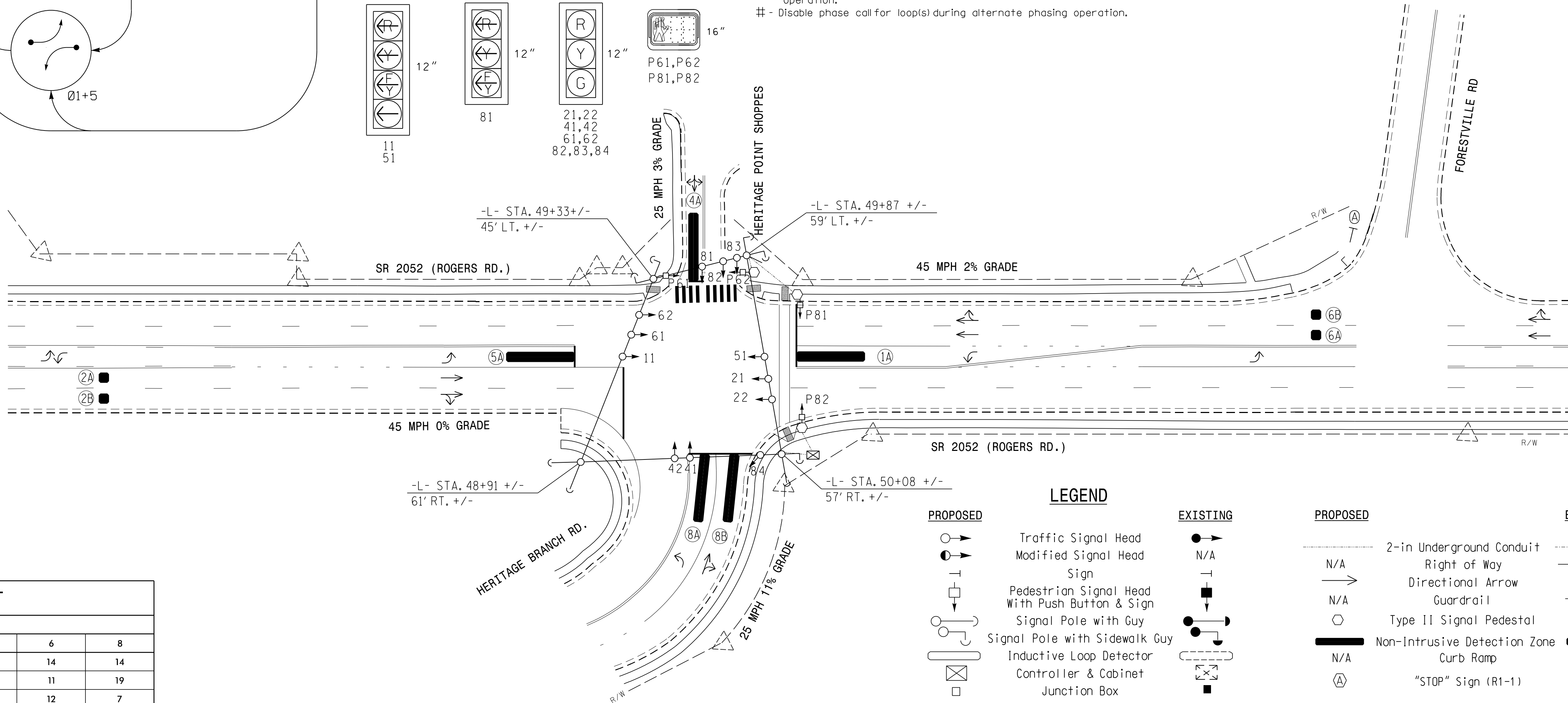
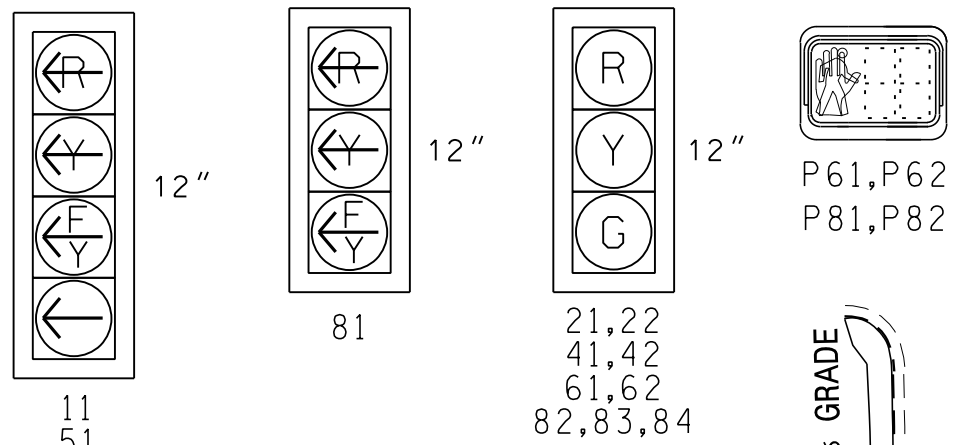
- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JANUARY 2024 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- PHASE 1 AND/OR PHASE 5 MAY BE LAGGED.
- INSTALL BACKPLATES FOR ALL SIGNAL HEADS.
- LOCATE NEW CABINET SO AS NOT TO OBSTRUCT SIGHT DISTANCE OF VEHICLES TURNING RIGHT ON RED.
- 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 VIDEO DETECTION. INSTALL DETECTORS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS TO ACHIEVE THE DESIRED DETECTION.

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

| PROPOSED | EXISTING |
|----------|----------|
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
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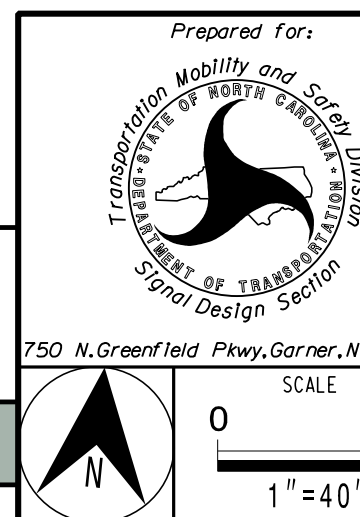
| MAXTIME TIMING CHART    |       |            |     |     |            |     |
|-------------------------|-------|------------|-----|-----|------------|-----|
| FEATURE                 | PHASE |            |     |     |            |     |
|                         | 1     | 2          | 4   | 5   | 6          | 8   |
| Walk *                  | -     | -          | -   | -   | 14         | 14  |
| Ped Clear               | -     | -          | -   | -   | 11         | 19  |
| Min Green               | 7     | 12         | 7   | 7   | 12         | 7   |
| Passage *               | 2.0   | 6.0        | 2.0 | 2.0 | 6.0        | 2.0 |
| Max 1 *                 | 15    | 90         | 25  | 15  | 90         | 25  |
| Yellow Change           | 3.0   | 4.5        | 3.1 | 3.0 | 4.5        | 3.1 |
| Red Clear               | 2.6   | 1.5        | 2.5 | 2.9 | 1.5        | 2.5 |
| Added Initial *         | -     | 1.5        | -   | -   | 1.5        | -   |
| Maximum Initial *       | -     | 34         | -   | -   | 34         | -   |
| Time Before Reduction * | -     | 15         | -   | -   | 15         | -   |
| Time To Reduce *        | -     | 30         | -   | -   | 30         | -   |
| Minimum Gap             | -     | 3.0        | -   | -   | 3.0        | -   |
| Advance Walk            | -     | -          | -   | -   | 7          | 7   |
| Non Lock Detector       | X     | -          | X   | X   | -          | X   |
| Vehicle Recall          | -     | MIN RECALL | -   | -   | MIN RECALL | -   |
| Dual Entry              | -     | -          | X   | -   | -          | X   |

\* These values may be field adjusted. Do not adjust Min Green and 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  
(CONSTRUCTION PHASE I STEP 4 THRU PHASE II)

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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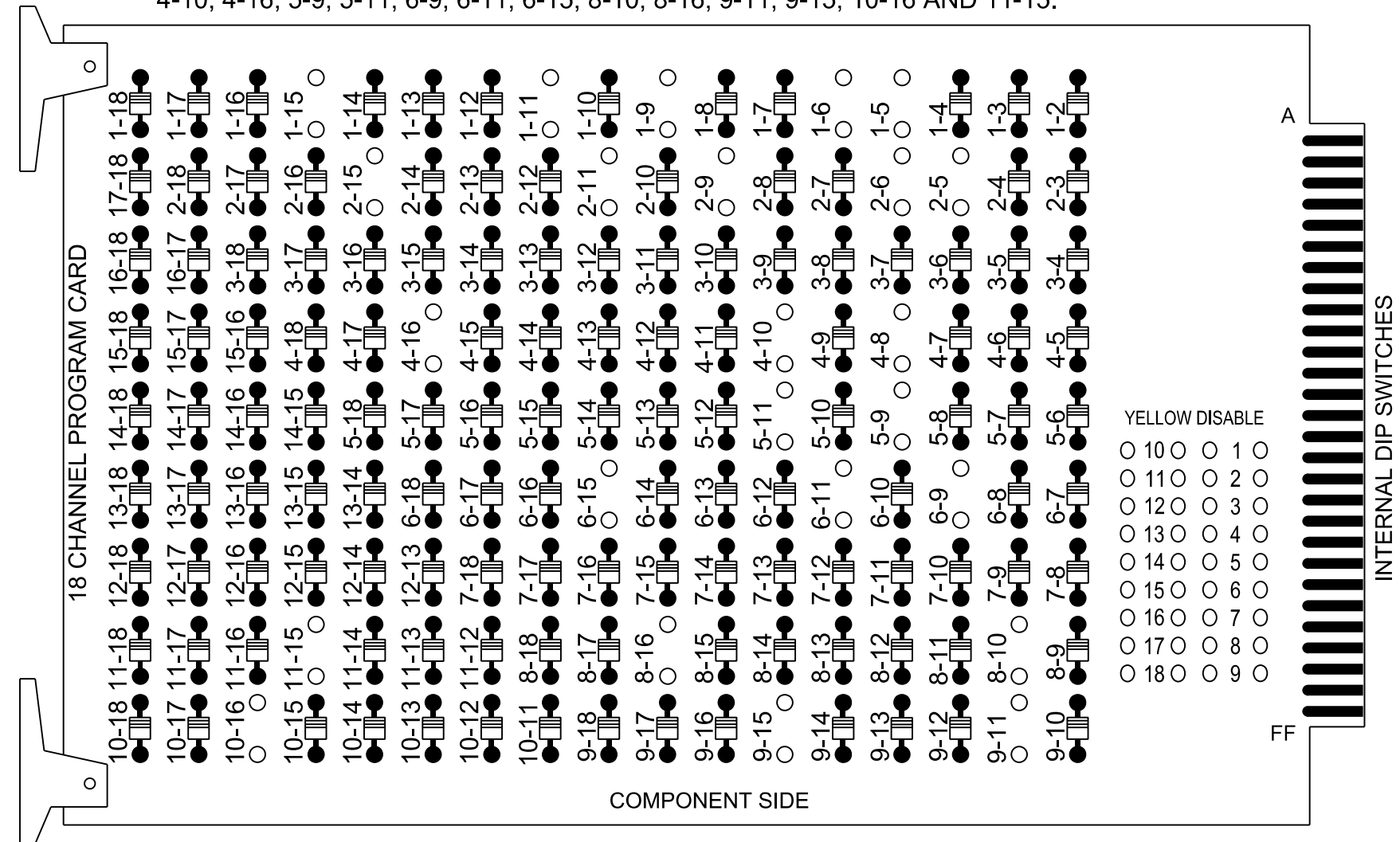
|                                                                                  |                      |
|----------------------------------------------------------------------------------|----------------------|
| SR 2052 (ROGERS RD.)<br>AT<br>HERITAGE BRANCH RD.<br>AND HERITAGE POINT SHOPPPES |                      |
| DIVISION 5 WAKE COUNTY                                                           | WAKE FOREST          |
| PLAN DATE: MARCH 2025                                                            | REVIEWED BY: DTSEARS |
| PREPARED BY: WPJONES                                                             | REVIEWED BY:         |
| REVISIONS                                                                        | INIT. DATE           |
|                                                                                  |                      |
|                                                                                  |                      |
|                                                                                  |                      |
|                                                                                  |                      |

Seal of David J. Seans, Professional Engineer, State of North Carolina, License No. 044558.  
SIGNED: 3/10/2025  
DATE: 3/10/2025  
SIGNATURE: [Signature]  
SIC. INVENTORY NO. 05-1916T1

18 CHANNEL CONFLICT MONITOR  
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

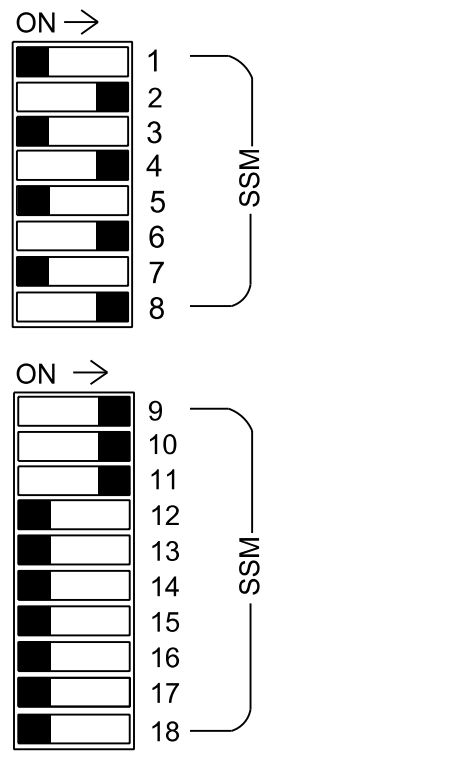
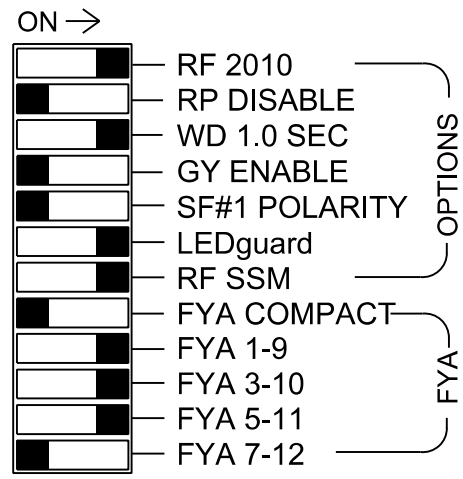
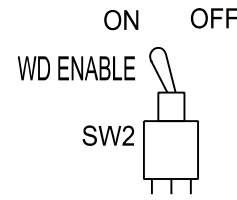
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 4-8, 4-10, 4-16, 5-9, 5-11, 6-9, 6-11, 6-15, 8-10, 8-16, 9-11, 9-15, 10-16 AND 11-15.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that the Red Enable is active at all times during normal operation.
- 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 phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green No Walk and phase 6 Green No Walk.
- Program phases 4 and 8 for Simultaneous Start.
- 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, S5, S7, S8, S9, S11, S12  
AUX S1, AUX S2, AUX S4  
Phases Used.....1, 2, 4, 5, 6, 6PED, 8, 8PED  
Overlap "1".....\*  
Overlap "2".....\*  
Overlap "3".....\*  
Overlap "4".....NOT USED

\*See overlap programming detail on sheet 2

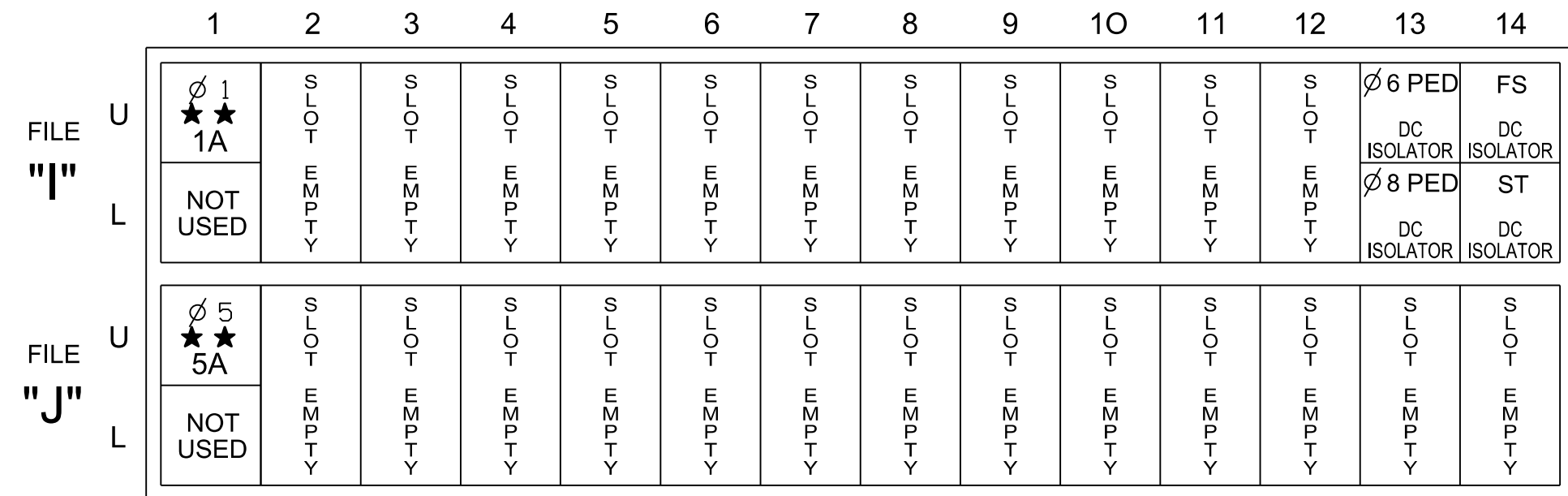
SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO.       | S1  | S2    | S3    | S4 | S5    | S6    | S7  | S8    | S9       | S10 | S11       | S12      | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|-----|-------|-------|----|-------|-------|-----|-------|----------|-----|-----------|----------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO.       | 1   | 2     | 13    | 3  | 4     | 14    | 5   | 6     | 15       | 7   | 8         | 16       | 9      | 10     | 17     | 11     | 12     | 18     |
| PHASE                 | 1   | 2     | 2 PED | 3  | 4     | 4 PED | 5   | 6     | 6 PED    | 7   | 8         | 8 PED    | OL1    | OL2    | SPARE  | OL3    | OL4    | SPARE  |
| SIGNAL HEAD NO.       | 11★ | 21,22 | NU    | NU | 41,42 | NU    | 51★ | 61,62 | P61, P62 | NU  | 82,83, 84 | P81, P82 | 11★    | 81★    | NU     | 51★    | NU     | NU     |
| RED                   |     | 128   |       |    | 101   |       |     | 134   |          |     | 107       |          |        |        |        |        |        |        |
| YELLOW                | ★   | 129   |       |    | 102   |       | ★   | 135   |          |     | 108       |          |        |        |        |        |        |        |
| GREEN                 |     | 130   |       |    | 103   |       |     | 136   |          |     | 109       |          |        |        |        |        |        |        |
| RED ARROW             |     |       |       |    |       |       |     |       |          |     |           |          | A121   | A124   |        | A114   |        |        |
| YELLOW ARROW          |     |       |       |    |       |       |     |       |          |     |           |          | A122   | A125   |        | A115   |        |        |
| FLASHING YELLOW ARROW |     |       |       |    |       |       |     |       |          |     |           |          | A123   | A126   |        | A116   |        |        |
| GREEN ARROW           | 127 |       |       |    |       |       | 133 |       |          |     |           |          |        |        |        |        |        |        |
| Hand                  |     |       |       |    |       |       |     |       | 119      |     | 110       |          |        |        |        |        |        |        |
| Walking               |     |       |       |    |       |       |     |       | 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)



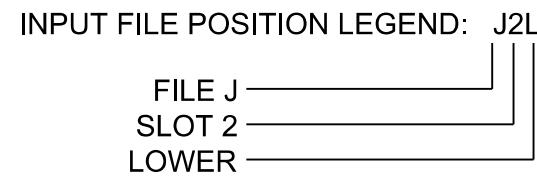
EX. : 1A, 2A, ETC. = LOOP NO.'S

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 | DELAY TIME | EXTEND TIME | EXTEND | ADDED INITIAL | CALL | DELAY DURING GREEN |
|------------------|---------------|-----------------|---------|-------------|--------------|------------|------------|-------------|--------|---------------|------|--------------------|
| 1A               | TB2-1,2       | I1U             | 56      | 18          | 1★           | 1          | 15.0       |             | X      |               | X    |                    |
|                  |               |                 |         | -           | 29★          | 6          | 3.0        |             | X      |               | X    | X                  |
| 5A               | TB3-1,2       | J1U             | 55      | 17          | 15★          | 5          | 15.0       |             | X      |               | X    |                    |
|                  |               |                 |         | -           | 31★          | 2          | 3.0        |             | X      |               | X    | X                  |
| 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      |            |             |        |               |      |                    |

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



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

★★ SPECIAL DETECTOR NOTE

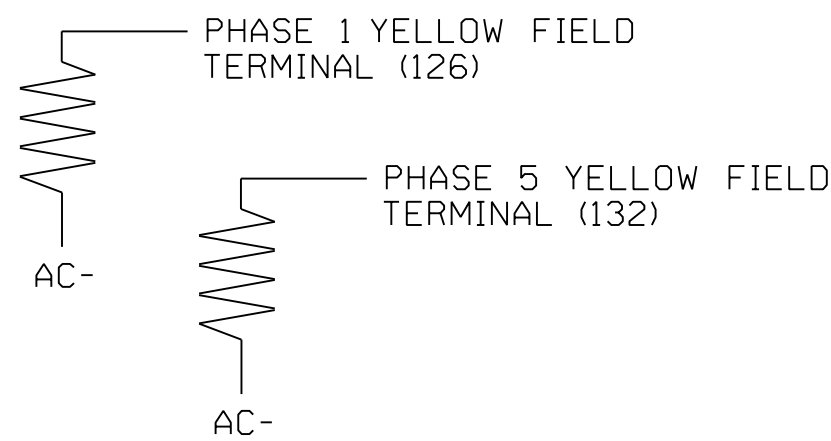
For zones 1A, 2A, 2B, 4A, 5A, 6A, 6B, 8A, and 8B install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

For zones 1A and 5A, inputs associated with the typical slots for a NCDOT installation are compatible with time of day instructions located on sheet 2 of this electrical details.

LOAD RESISTOR INSTALLATION DETAIL

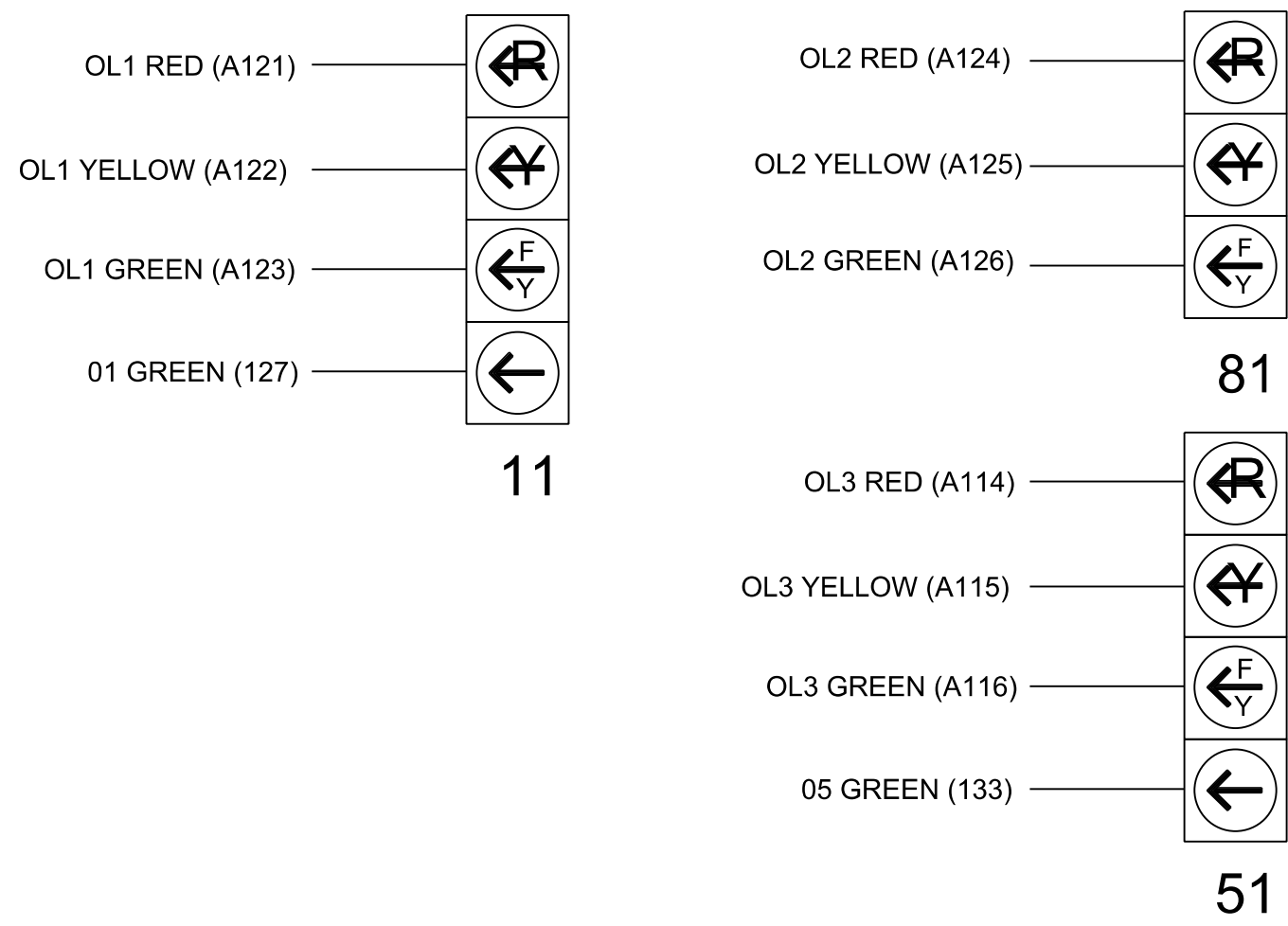
(install resistors as shown)

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



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1916T1  
DESIGNED: March 2025  
SEALED: March 10, 2025  
REVISED:

NEW INSTALLATION - TEMPORARY DESIGN 1  
(CONSTRUCTION PHASE I STEP 4-PHASE II)  
ELECTRICAL DETAIL - SHEET 1 OF 2

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

|                                            |  |                                                                                |  |                                                                      |  |
|--------------------------------------------|--|--------------------------------------------------------------------------------|--|----------------------------------------------------------------------|--|
| ELECTRICAL AND PROGRAMMING<br>DETAILS FOR: |  | SR 2052 (ROGER RD.)<br>AT<br>HERITAGE BRANCH RD<br>AND HERITAGE POINTE SHOPPES |  | SEAL<br>NORTH CAROLINA<br>PROFESSIONAL<br>ENGINEER<br>DAVID T. SEARS |  |
| Prepared For the Offices of:               |  | WAKE COUNTY                                                                    |  | WAKE FOREST                                                          |  |
| DIVISION 5                                 |  | PLAN DATE: MARCH 2025                                                          |  | REVIEWED BY: DSEARS                                                  |  |
| PREPARED BY: WPJONES                       |  | REVIEWED BY:                                                                   |  | DATE                                                                 |  |
| REVISIONS                                  |  | INIT.                                                                          |  | DATE                                                                 |  |
| 750 N.Greenfield Pkwy, Garner, NC 27529    |  |                                                                                |  |                                                                      |  |
| SIC. INVENTORY NO. 05-1916T1               |  |                                                                                |  |                                                                      |  |

3/10/2025  
R:\Traffic\cws\signal\electrical\Detail\se05-1916T1e-00-220.dgn  
wpJones

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

MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR ALTERNATE PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

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

Overlap Plan 2

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

← NOTICE INCLUDED PHASE

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

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

PHASING

OVERLAP PLAN

VEH DET PLAN

ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING

1

1

ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING

2

2

ALTERNATE PHASING CHANGE SUMMARY

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

OVERLAP PLAN 2: Modifies overlap included phases for heads 11 and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

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

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

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

Web Interface  
Home >Controller >Detector Configuration >Vehicle Detectors

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

Plan 2

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 1        | 1          | 3.0   |
| 29       | 0          | 3.0   |

1A

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 15       | 5          | 3.0   |
| 31       | 0          | 3.0   |

5A

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.

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1916T1  
DESIGNED: March 2025  
SEALED: March 10, 2025  
REVISED:

NEW INSTALLATION - TEMPORARY DESIGN 1  
(CONSTRUCTION PHASE I STEP 4-PHASE II)  
ELECTRICAL DETAIL - SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

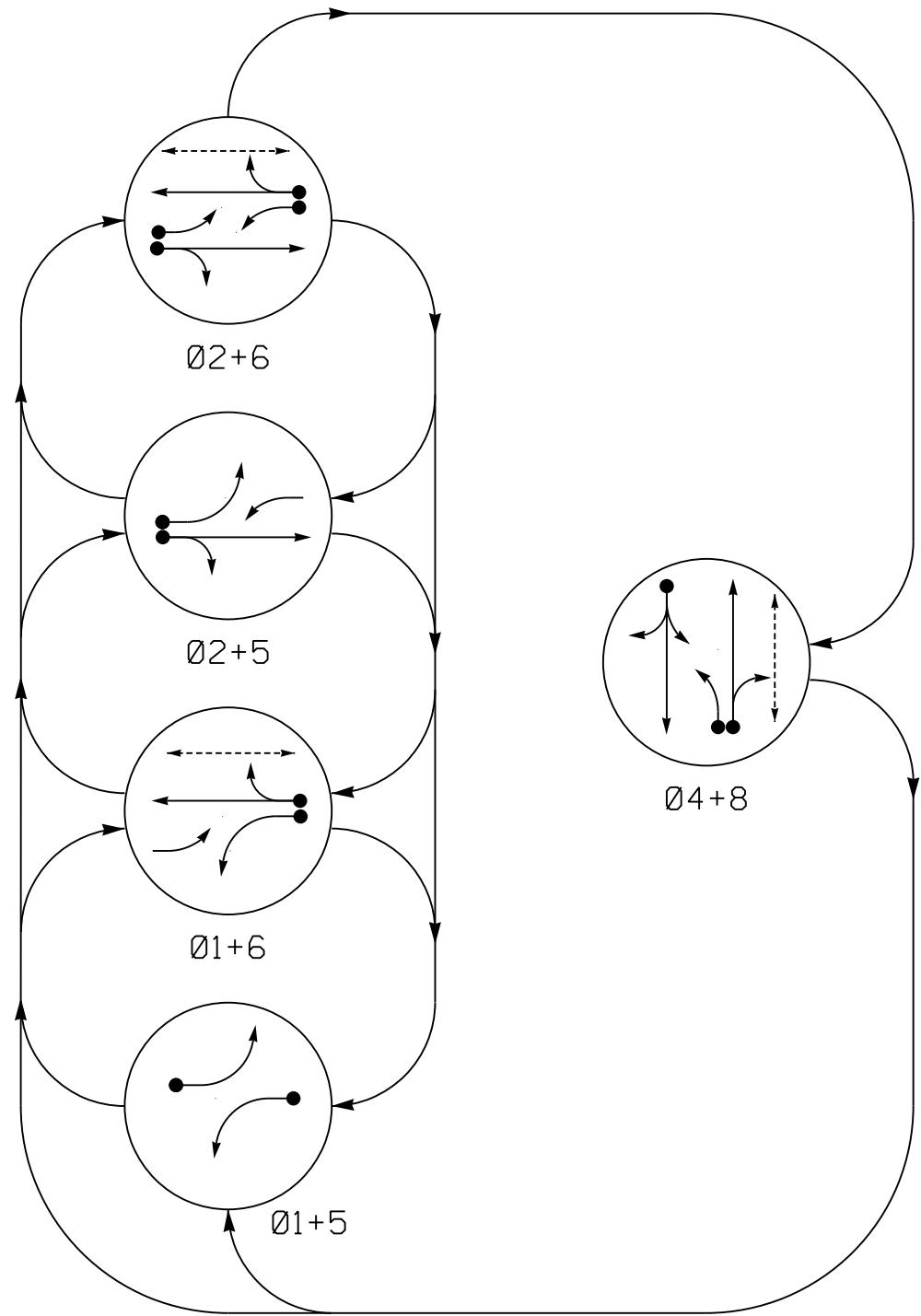
**RK&K**  
P: (919) 878-9560  
8601 Six Forks Road, Forum 1, Suite 700  
Raleigh, North Carolina 27615-3960  
NC License No. F-0112  
Engineers | Construction Managers | Planners | Scientists  
www.rkk.com  
Responsive People | Creative Solutions

ELECTRICAL AND PROGRAMMING  
DETAILS FOR:  
  
Prepared for the Offices of:  
  
  
750 N. Greenfield Pkwy, Garner, NC 27529

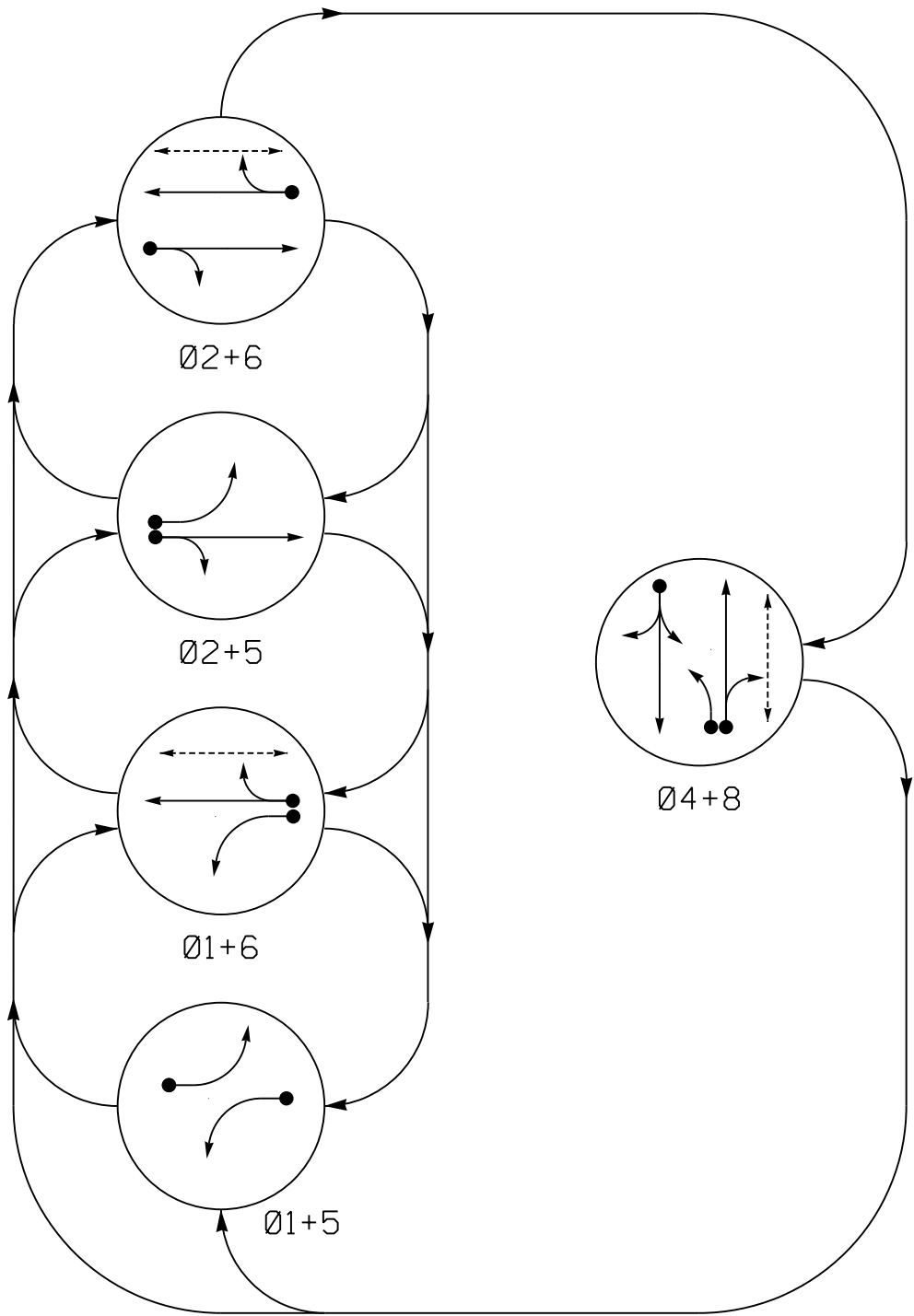
SR 2052 (ROGER RD.)  
AT  
HERITAGE BRANCH RD  
AND HERITAGE POINTE SHOPPES  
DIVISION 5 WAKE COUNTY WAKE FOREST  
PLAN DATE: MARCH 2025 REVIEWED BY: DSEARS  
PREPARED BY: WPJONES REVIEWED BY:  
REVISIONS INIT. DATE  
SIGNATURE DATE  
SIG. INVENTORY NO. 05-1916T1

SEAL  
NORTH CAROLINA  
PROFESSIONAL  
SEAL  
044558  
ENGINEER  
DAVID T. SEARS  
David T. Sears  
3/10/2025

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



| SIGNAL<br>FACE | PHASE      |            |            |            |            |       |
|----------------|------------|------------|------------|------------|------------|-------|
|                | Ø 1<br>+ 5 | Ø 1<br>+ 6 | Ø 2<br>+ 5 | Ø 2<br>+ 6 | Ø 4<br>+ 8 | FLASH |
| 11             | ←          | ←          | ←          | ←          | ←          | ←     |
| 21,22          | R          | R          | G          | G          | R          | R     |
| 41,42          | R          | R          | R          | R          | G          | R     |
| 51             | ←          | ←          | ←          | ←          | ←          | ←     |
| 61,62          | R          | G          | R          | G          | R          | R     |
| 81             | ←          | ←          | ←          | ←          | ←          | ←     |
| 82,83,84       | R          | R          | R          | R          | G          | R     |
| P61,P62        | DW         | W          | DW         | W          | DW         | DRK   |
| P81,P82        | DW         | DW         | DW         | DW         | W          | DRK   |

| SIGNAL<br>FACE | PHASE      |            |            |            |            |       |
|----------------|------------|------------|------------|------------|------------|-------|
|                | Ø 1<br>+ 5 | Ø 1<br>+ 6 | Ø 2<br>+ 5 | Ø 2<br>+ 6 | Ø 4<br>+ 8 | FLASH |
| 11             | ←          | ←          | ←          | ←          | ←          | ←     |
| 21,22          | R          | R          | G          | G          | R          | R     |
| 41,42          | R          | R          | R          | R          | G          | R     |
| 51             | ←          | ←          | ←          | ←          | ←          | ←     |
| 61,62          | R          | G          | R          | G          | R          | R     |
| 81             | ←          | ←          | ←          | ←          | ←          | ←     |
| 82,83,84       | R          | R          | R          | R          | G          | R     |
| P61,P62        | DW         | W          | DW         | W          | DW         | DRK   |
| P81,P82        | DW         | DW         | DW         | DW         | W          | DRK   |

| MAXTIME DETECTOR INSTALLATION CHART |           |                            |       |          |            |             |             |        |         |      |          |
|-------------------------------------|-----------|----------------------------|-------|----------|------------|-------------|-------------|--------|---------|------|----------|
| DETECTOR                            |           |                            |       |          |            | PROGRAMMING |             |        |         |      |          |
| ZONE                                | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | CALL PHASE | DELAY TIME  | EXTEND TIME | EXTEND | INITIAL | CALL | NEW CARD |
| 1A *                                | 6X40      | 0                          | *     | *        | 1          | 15.0**      | -           | X      | -       | X    | -        |
| 2A *                                | 6X6       | 300                        | *     | *        | 2          | 3.0         | -           | X      | X       | X    | -        |
| 4A *                                | 6X40      | 0                          | *     | *        | 4          | 10.0        | -           | X      | -       | X    | -        |
| 5A *                                | 6X40      | 0                          | *     | *        | 5          | 15.0**      | -           | X      | -       | X    | -        |
| 6A *                                | 6X6       | 300                        | *     | *        | 6          | -           | -           | X      | X       | X    | -        |
| 8A *                                | 6X40      | 0                          | *     | *        | 8          | 3.0         | -           | X      | -       | X    | -        |
| 8B *                                | 6X40      | 0                          | *     | *        | 8          | 10.0        | -           | X      | -       | X    | -        |

\* - Video Detection Zone  
\*\* - Reduce delay to 3 seconds during alternate phasing operation.  
# - Disable phase call for loop(s) during alternate phasing operation.

5 PHASE  
FULLY ACTUATED  
(ISOLATED)

NOTES

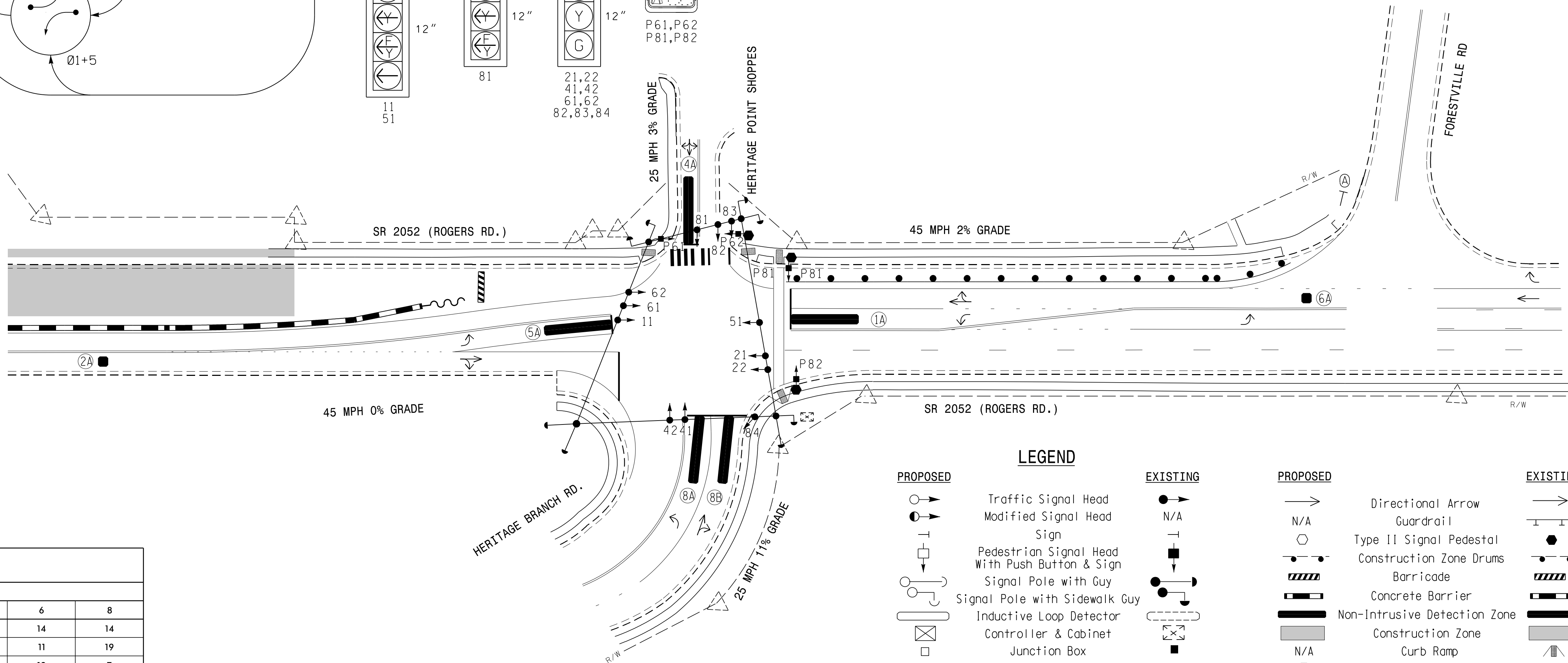
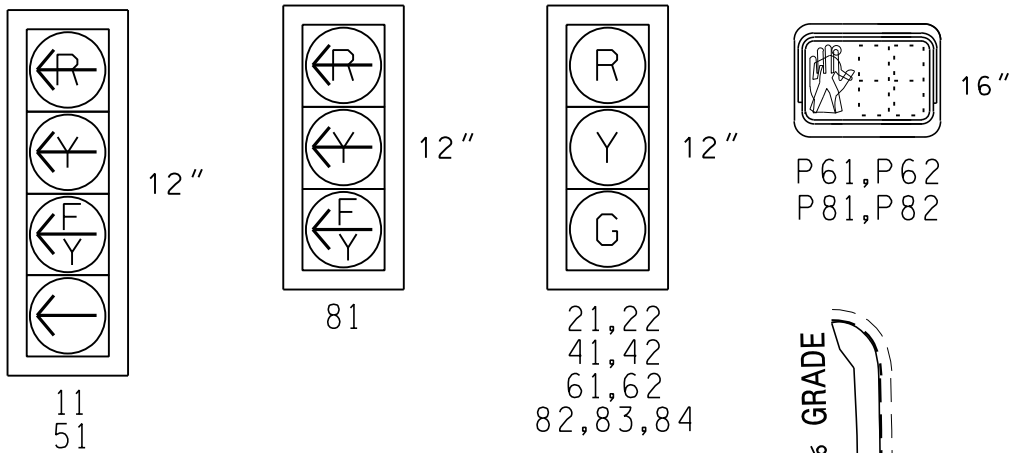
1. REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JANUARY 2024 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
2. DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. PHASE 1 AND/OR PHASE 5 MAY BE LAGGED.
4. REPOSITION EXISTING SIGNAL HEADS NUMBERED 21, 22, 51, 61, AND 62.
5. EXISTING SIGNAL HEADS 11, 21, 22, 41, 42, 51, 61, 62, 81, 82, 83, AND 84 HAVE BACKPLATES.
6. SET ALL DETECTOR UNITS TO PRESENCE MODE.
7. OMIT "WALK" AND FLASHING "DON'T WALK" WITH NO PEDESTRIAN CALLS.
8. PROGRAM PEDESTRIAN HEADS TO COUNTDOWN THE FLASHING "DON'T WALK" TIME ONLY.
9. THE DIVISION TRAFFIC ENGINEER WILL DETERMINE THE HOURS OF USE FOR EACH PHASING PLAN.
10. THIS INTERSECTION USES VIDEO DETECTION. INSTALL DETECTORS ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS TO ACHIEVE THE DESIRED DETECTION.

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

| PROPOSED                                         | EXISTING | PROPOSED            | EXISTING                     |
|--------------------------------------------------|----------|---------------------|------------------------------|
| ○ → Traffic Signal Head                          | ● → N/A  | → Directional Arrow | →                            |
| ● → Modified Signal Head                         | N/A      | N/A                 | Guardrail                    |
| □ Sign                                           | □        | ○                   | Type II Signal Pedestal      |
| □ Pedestrian Signal Head With Push Button & Sign | □        | ●                   | Construction Zone Drums      |
| □ Signal Pole with Guy                           | □        | ▨                   | Barricade                    |
| □ Signal Pole with Sidewalk Guy                  | □        | ▨                   | Concrete Barrier             |
| □ Inductive Loop Detector                        | □        | ▨                   | Non-Intrusive Detection Zone |
| □ Controller & Cabinet                           | □        | ▨                   | Construction Zone            |
| □ Junction Box                                   | □        | N/A                 | Curb Ramp                    |
| □ 2-in Underground Conduit                       | □        | Ⓐ                   | "STOP" Sign (R1-1)           |
| N/A                                              | N/A      | ---                 | Right of Way                 |

MAXTIME TIMING CHART

| FEATURE                 | PHASE |            |     |     |            |     |
|-------------------------|-------|------------|-----|-----|------------|-----|
|                         | 1     | 2          | 4   | 5   | 6          | 8   |
| Walk *                  | -     | -          | -   | -   | 14         | 14  |
| Ped Clear               | -     | -          | -   | -   | 11         | 19  |
| Min Green               | 7     | 12         | 7   | 7   | 12         | 7   |
| Passage *               | 2.0   | 6.0        | 2.0 | 2.0 | 6.0        | 2.0 |
| Max 1 *                 | 15    | 90         | 25  | 15  | 90         | 25  |
| Yellow Change           | 3.0   | 4.5        | 3.1 | 3.0 | 4.5        | 3.1 |
| Red Clear               | 2.6   | 1.5        | 2.5 | 2.3 | 1.5        | 2.5 |
| Added Initial *         | -     | 2.5        | -   | -   | 2.5        | -   |
| Maximum Initial *       | -     | 34         | -   | -   | 34         | -   |
| Time Before Reduction * | -     | 15         | -   | -   | 15         | -   |
| Time To Reduce *        | -     | 30         | -   | -   | 30         | -   |
| Minimum Gap             | -     | 3.0        | -   | -   | 3.0        | -   |
| Advance Walk            | -     | -          | -   | -   | 7          | 7   |
| Non Lock Detector       | X     | -          | X   | X   | -          | X   |
| Vehicle Recall          | -     | MIN RECALL | -   | -   | MIN RECALL | -   |
| Dual Entry              | -     | -          | X   | -   | -          | X   |

\* These values may be field adjusted. Do not adjust Min Green and 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  
(CONSTRUCTION PHASE III STEP 1 -  
PHASE IV STEP 1)

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



Prepared for:  
Transportation Mobility and Safety Division  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

0  
SCALE  
1" = 40'

SR 2052 (ROGERS RD.)  
AT  
HERITAGE BRANCH RD.  
AND HERITAGE POINTE SHOPPES

DIVISION 5 WAKE COUNTY WAKE FOREST

PLAN DATE: MARCH 2025 REVIEWED BY: DTSEARS

PREPARED BY: WPJONES REVIEWED BY:

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

SEAL  
NORTH CAROLINA  
PROFESSIONAL  
ENGINEER  
DAVID T. SEARS

3/10/2025

SIGNATURE DATE

SIG. INVENTORY NO. 05-1916T2

(remove jumpers and set switches as shown)

18 CHANNEL PROGRAM CARD

COMPONENT SIDE

YELLOW DISABLE

FF

A

0 10-18 11-18 12-18 13-18 14-18 15-18 16-18 17-18 18-18

1 10-17 11-17 12-17 13-17 14-17 15-17 16-17 17-17 18-17

2 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16

3 10-15 11-15 12-15 13-15 14-15 15-15 16-15 17-15 18-15

4 10-14 11-14 12-14 13-14 14-14 15-14 16-14 17-14 18-14

5 10-13 11-13 12-13 13-13 14-13 15-13 16-13 17-13 18-13

6 10-12 11-12 12-12 13-12 14-12 15-12 16-12 17-12 18-12

7 10-11 8-18 7-18 6-18 5-18 4-18 3-18 2-18 1-18

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

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

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

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

12 9-14 8-13 7-12 6-11 5-10 4-9 3-8 2-7 1-6

13 9-13 8-12 7-11 6-10 5-9 4-8 3-7 2-6 1-5

14 9-12 8-11 7-10 6-9 5-8 4-7 3-6 2-5 1-4

15 9-11 8-10 7-9 6-8 5-7 4-6 3-5 2-4 1-3

16 9-10 8-9 7-8 6-7 5-6 4-5 3-4 2-3 1-2

17 18 17 16 15 14 13 12 11 10

18 17 16 15 14 13 12 11 10 9

19 16 15 14 13 12 11 10 9 8

20 15 14 13 12 11 10 9 8 7

21 14 13 12 11 10 9 8 7 6

22 13 12 11 10 9 8 7 6 5

23 12 11 10 9 8 7 6 5 4

24 11 10 9 8 7 6 5 4 3

25 10 9 8 7 6 5 4 3 2

26 9 8 7 6 5 4 3 2 1

27 8 7 6 5 4 3 2 1 0

28 7 6 5 4 3 2 1 0 9

29 6 5 4 3 2 1 0 9 8

30 5 4 3 2 1 0 9 8 7

31 4 3 2 1 0 9 8 7 6

32 3 2 1 0 9 8 7 6 5

33 2 1 0 9 8 7 6 5 4

34 1 0 9 8 7 6 5 4 3

35 0 9 8 7 6 5 4 3 2

36 9 8 7 6 5 4 3 2 1

37 8 7 6 5 4 3 2 1 0

38 7 6 5 4 3 2 1 0 9

39 6 5 4 3 2 1 0 9 8

40 5 4 3 2 1 0 9 8 7

41 4 3 2 1 0 9 8 7 6

42 3 2 1 0 9 8 7 6 5

43 2 1 0 9 8 7 6 5 4

44 1 0 9 8 7 6 5 4 3

45 0 9 8 7 6 5 4 3 2

46 9 8 7 6 5 4 3 2 1

47 8 7 6 5 4 3 2 1 0

48 7 6 5 4 3 2 1 0 9

49 6 5 4 3 2 1 0 9 8

50 5 4 3 2 1 0 9 8 7

51 4 3 2 1 0 9 8 7 6

52 3 2 1 0 9 8 7 6 5

53 2 1 0 9 8 7 6 5 4

54 1 0 9 8 7 6 5 4 3

55 0 9 8 7 6 5 4 3 2

56 9 8 7 6 5 4 3 2 1

57 8 7 6 5 4 3 2 1 0

58 7 6 5 4 3 2 1 0 9

59 6 5 4 3 2 1 0 9 8

60 5 4 3 2 1 0 9 8 7

61 4 3 2 1 0 9 8 7 6

62 3 2 1 0 9 8 7 6 5

63 2 1 0 9 8 7 6 5 4

64 1 0 9 8 7 6 5 4 3

65 0 9 8 7 6 5 4 3 2

66 9 8 7 6 5 4 3 2 1

67 8 7 6 5 4 3 2 1 0

68 7 6 5 4 3 2 1 0 9

69 6 5 4 3 2 1 0 9 8

70 5 4 3 2 1 0 9 8 7

71 4 3 2 1 0 9 8 7 6

72 3 2 1 0 9 8 7 6 5

73 2 1 0 9 8 7 6 5 4

74 1 0 9 8 7 6 5 4 3

75 0 9 8 7 6 5 4 3 2

76 9 8 7 6 5 4 3 2 1

77 8 7 6 5 4 3 2 1 0

78 7 6 5 4 3 2 1 0 9

79 6 5 4 3 2 1 0 9 8

80 5 4 3 2 1 0 9 8 7

81 4 3 2 1 0 9 8 7 6

82 3 2 1 0 9 8 7 6 5

83 2 1 0 9 8 7 6 5 4

84 1 0 9 8 7 6 5 4 3

85 0 9 8 7 6 5 4 3 2

86 9 8 7 6 5 4 3 2 1

87 8 7 6 5 4 3 2 1 0

88 7 6 5 4 3 2 1 0 9

89 6 5 4 3 2 1 0 9 8

90 5 4 3 2 1 0 9 8 7

91 4 3 2 1 0 9 8 7 6

92 3 2 1 0 9 8 7 6 5

93 2 1 0 9 8 7 6 5 4

94 1 0 9 8 7 6 5 4 3

95 0 9 8 7 6 5 4 3 2

96 9 8 7 6 5 4 3 2 1

97 8 7 6 5 4 3 2 1 0

98 7 6 5 4 3 2 1 0 9

99 6 5 4 3 2 1 0 9 8

100 5 4 3 2 1 0 9 8 7

101 4 3 2 1 0 9 8 7 6

102 3 2 1 0 9 8 7 6 5

103 2 1 0 9 8 7 6 5 4

104 1 0 9 8 7 6 5 4 3

105 0 9 8 7 6 5 4 3 2

106 9 8 7 6 5 4 3 2 1

107 8 7 6 5 4 3 2 1 0

108 7 6 5 4 3 2 1 0 9

109 6 5 4 3 2 1 0 9 8

110 5 4 3 2 1 0 9 8 7

111 4 3 2 1 0 9 8 7 6

112 3 2 1 0 9 8 7 6 5

113 2 1 0 9 8 7 6 5 4

114 1 0 9 8 7 6 5 4 3

115 0 9 8 7 6 5 4 3 2

116 9 8 7 6 5 4 3 2 1

117 8 7 6 5 4 3 2 1 0

118 7 6 5 4 3 2 1 0 9

119 6 5 4 3 2 1 0 9 8

120 5 4 3 2 1 0 9 8 7

121 4 3 2 1 0 9 8 7 6

122 3 2 1 0 9 8 7 6 5

123 2 1 0 9 8 7 6 5 4

124 1 0 9 8 7 6 5 4 3

125 0 9 8 7 6 5 4 3 2

126 9 8 7 6 5 4 3 2 1

127 8 7 6 5 4 3 2 1 0

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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and phase 6 Green No Walk.
4. Program phase 4 and 8 for Simultaneous Start.
5. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

\*See overlap programming detail on sheet 2

[illegible]

FS = FLASH SENSE  
ST = STOP TIME

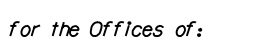
| LOOP NO.         | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT POINT | DETECTOR NO. | CALL PHASE | DELAY TIME                                                 | EXTEND TIME | EXTEND | ADDED INITIAL | CALL   | DELAY DURING GREEN |
|------------------|---------------|-----------------|---------|-------------|--------------|------------|------------------------------------------------------------|-------------|--------|---------------|--------|--------------------|
| 1A               | TB2-1,2       | I1U             | 56      | 18<br>-     | 1★<br>29★    | 1<br>6     | 15.0<br>3.0                                                |             | X<br>X |               | X<br>X | <br>X              |
| 5A               | TB3-1,2       | J1U             | 55      | 17<br>-     | 15★<br>31★   | 5<br>2     | 15.0<br>3.0                                                |             | X<br>X |               | X<br>X | <br>X              |
| PED PUSH BUTTONS |               |                 |         |             |              |            | NOTE:<br>INSTALL DC ISOLATOR<br>IN INPUT FILE SLOT<br>I13. |             |        |               |        |                    |
| P61,P62          | TB8-7,9       | I13U            | 68      | 34          | 6            | PED 6      |                                                            |             |        |               |        |                    |
| P81,P82          | TB8-8,9       | I13L            | 70      | 36          | 8            | PED 8      |                                                            |             |        |               |        |                    |

INPUT FILE POSITION LEGEND: J2L

|        |       |  |
|--------|-------|--|
| FILE J | _____ |  |
| SLOT 2 | _____ |  |
| LOWER  | _____ |  |

For zones 1A and 5A, inputs associated with the typical slots for a NCDOT installation are compatible with time of day instructions located on sheet 2 of this electrical details.

Diagram illustrating the traffic light configuration for a 4-way intersection. The lights are arranged in a 4x4 grid. The vertical road (left) has four lights: OL1 RED (A121), OL1 YELLOW (A122), OL1 GREEN (A123), and 01 GREEN (127). The horizontal road (top) has four lights: OL2 RED (A124), OL2 YELLOW (A125), OL2 GREEN (A126), and 81. The vertical road (right) has four lights: OL3 RED (A114), OL3 YELLOW (A115), OL3 GREEN (A116), and 05 GREEN (133). The horizontal road (bottom) has four lights: OL4 RED (A128), OL4 YELLOW (A129), OL4 GREEN (A130), and 51. Each light is a circle with a black border and a black arrow. The arrows for the vertical road lights point left, and the arrows for the horizontal road lights point right. The letters 'F' and 'Y' are present on some lights, indicating full and yellow phases respectively.

| ELECTRICAL AND PROGRAMMING<br>DETAILS FOR:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | SR 2052 (ROGER RD.)<br>AT<br>HERITAGE BRANCH RD<br>AND HERITAGE POINTE SHOPPES | SEAL<br>                                                                                                       |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Prepared for the Offices of:<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DIVISION 5      WAKE COUNTY      WAKE FOREST                                   |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PLAN DATE:      MARCH 2025      REVIEWED BY:      DSEARS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                | -Declassified by<br> <div style="text-align: right;">3/10/202</div> <div style="text-align: right;">DATE</div> |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PREPARED BY:      WPJONES      REVIEWED BY:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">REVISIONS</th> <th style="width: 20%;">INIT.</th> <th style="width: 20%;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> |                                                                                |                                                                                                                                                                                                     | REVISIONS | INIT. | DATE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| REVISIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | INIT.                                                                          | DATE                                                                                                                                                                                                |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                |                                                                                                                                                                                                     |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 750 N.Greenfield Pkwy.Garner,NC 27529                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                | SIG. INVENTORY NO. 05-1916T2                                                                                                                                                                        |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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

MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR ALTERNATE PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

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

Overlap Plan 2

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

← NOTICE INCLUDED PHASE

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

OVERLAP PLAN 2: Modifies overlap included phases for heads 11 and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-1916T2  
DESIGNED: March 2025  
SEALED: March 10, 2025  
REVISED:

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

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

Web Interface  
Home >Controller >Detector Configuration >Vehicle Detectors

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

Plan 2

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 1        | 1          | 3.0   |
| 29       | 0          | 3.0   |

5A

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 15       | 5          | 3.0   |
| 31       | 0          | 3.0   |

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

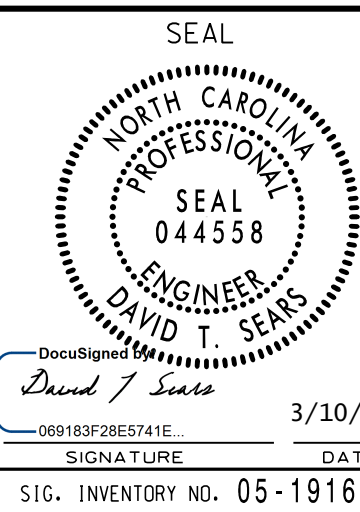
| All Red Flash Exit Time |
|-------------------------|
| 6                       |

SIGNAL UPGRADE - TEMPORARY DESIGN 2  
(CONSTRUCTION PHASE III STEP 1 - PHASE IV STEP 1)  
ELECTRICAL DETAIL - SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



| SR 2052 (ROGER RD.)<br>AT<br>HERITAGE BRANCH RD<br>AND HERITAGE POINTE SHOPPES |                     |             |      |
|--------------------------------------------------------------------------------|---------------------|-------------|------|
| DIVISION 5                                                                     | WAKE COUNTY         | WAKE FOREST |      |
| PLAN DATE: MARCH 2025                                                          | REVIEWED BY: DSEARS |             |      |
| PREPARED BY: WPJONES                                                           | REVIEWED BY:        |             |      |
| REVISIONS                                                                      |                     | INIT.       | DATE |
|                                                                                |                     |             |      |
|                                                                                |                     |             |      |
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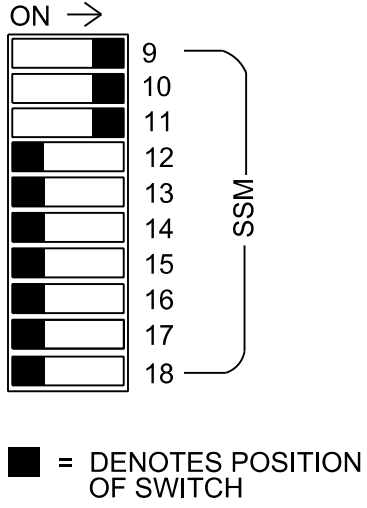
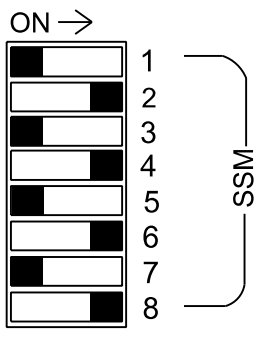
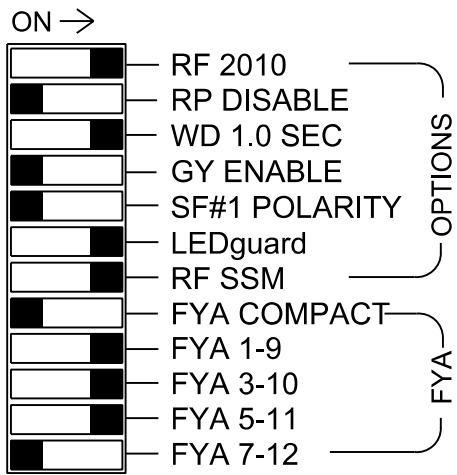
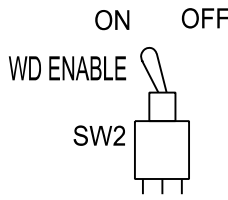




(remove jumpers and set switches as shown)

18 CHANNEL PROGRAM CARD

| Channel | Header                                    | Component Side Data (Black Squares)                        | Component Side Data (White Circles)                        | Yellow Disable Data (White Circles)                        |
|---------|-------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|
| 10-18   | 12-18 13-18 14-18 15-18 16-18 17-18 18-18 | 10-18 11-18 12-18 13-18 14-18 15-18 16-18 17-18 18-18      | 10-18 11-18 12-18 13-18 14-18 15-18 16-18 17-18 18-18      | 10-18 11-18 12-18 13-18 14-18 15-18 16-18 17-18 18-18      |
| 10-17   | 12-17 13-17 14-17 15-17 16-17 17-17 18-17 | 10-17 11-17 12-17 13-17 14-17 15-17 16-17 17-17 18-17      | 10-17 11-17 12-17 13-17 14-17 15-17 16-17 17-17 18-17      | 10-17 11-17 12-17 13-17 14-17 15-17 16-17 17-17 18-17      |
| 10-16   | 12-16 13-16 14-16 15-16 16-16 17-16 18-16 | 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16      | 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16      | 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16      |
| 10-15   | 12-15 13-15 14-15 15-15 16-15 17-15 18-15 | 10-15 11-15 12-15 13-15 14-15 15-15 16-15 17-15 18-15      | 10-15 11-15 12-15 13-15 14-15 15-15 16-15 17-15 18-15      | 10-15 11-15 12-15 13-15 14-15 15-15 16-15 17-15 18-15      |
| 10-14   | 12-14 13-14 14-14 15-14 16-14 17-14 18-14 | 10-14 11-14 12-14 13-14 14-14 15-14 16-14 17-14 18-14      | 10-14 11-14 12-14 13-14 14-14 15-14 16-14 17-14 18-14      | 10-14 11-14 12-14 13-14 14-14 15-14 16-14 17-14 18-14      |
| 10-13   | 12-13 13-13 14-13 15-13 16-13 17-13 18-13 | 10-13 11-13 12-13 13-13 14-13 15-13 16-13 17-13 18-13      | 10-13 11-13 12-13 13-13 14-13 15-13 16-13 17-13 18-13      | 10-13 11-13 12-13 13-13 14-13 15-13 16-13 17-13 18-13      |
| 10-12   | 12-12 13-12 14-12 15-12 16-12 17-12 18-12 | 10-12 11-12 12-12 13-12 14-12 15-12 16-12 17-12 18-12      | 10-12 11-12 12-12 13-12 14-12 15-12 16-12 17-12 18-12      | 10-12 11-12 12-12 13-12 14-12 15-12 16-12 17-12 18-12      |
| 10-11   | 12-11 13-11 14-11 15-11 16-11 17-11 18-11 | 10-11 11-11 12-11 13-11 14-11 15-11 16-11 17-11 18-11      | 10-11 11-11 12-11 13-11 14-11 15-11 16-11 17-11 18-11      | 10-11 11-11 12-11 13-11 14-11 15-11 16-11 17-11 18-11      |
| 9-18    | 12-18 13-18 14-18 15-18 16-18 17-18 18-18 | 9-18 10-18 11-18 12-18 13-18 14-18 15-18 16-18 17-18 18-18 | 9-18 10-18 11-18 12-18 13-18 14-18 15-18 16-18 17-18 18-18 | 9-18 10-18 11-18 12-18 13-18 14-18 15-18 16-18 17-18 18-18 |
| 9-17    | 12-17 13-17 14-17 15-17 16-17 17-17 18-17 | 9-17 10-17 11-17 12-17 13-17 14-17 15-17 16-17 17-17 18-17 | 9-17 10-17 11-17 12-17 13-17 14-17 15-17 16-17 17-17 18-17 | 9-17 10-17 11-17 12-17 13-17 14-17 15-17 16-17 17-17 18-17 |
| 9-16    | 12-16 13-16 14-16 15-16 16-16 17-16 18-16 | 9-16 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16 | 9-16 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16 | 9-16 10-16 11-16 12-16 13-16 14-16 15-16 16-16 17-16 18-16 |
| 9-15    | 12-15 13-15 14-15 15-15 16-15 17-15 18-15 | 9-15 10-15 11-15 12-15 13-15 14-15 15-15 16-15 17-15 18-15 | 9-15 10-15 11-15 12-15 13-15 14-15 15-15 16-15 17-15 18-15 | 9-15 10-15 11-15 12-15 13-15 14-15 15-15 16-15 17-15 18-15 |
| 9-14    | 12-14 13-14 14-14 15-14 16-14 17-14 18-14 | 9-14 10-14 11-14 12-14 13-14 14-14 15-14 16-14 17-14 18-14 | 9-14 10-14 11-14 12-14 13-14 14-14 15-14 16-14 17-14 18-14 | 9-14 10-14 11-14 12-14 13-14 14-14 15-14 16-14 17-14 18-14 |
| 9-13    | 12-13 13-13 14-13 15-13 16-13 17-13 18-13 | 9-13 10-13 11-13 12-13 13-13 14-13 15-13 16-13 17-13 18-13 | 9-13 10-13 11-13 12-13 13-13 14-13 15-13 16-13 17-13 18-13 | 9-13 10-13 11-13 12-13 13-13 14-13 15-13 16-13 17-13 18-13 |
| 9-12    | 12-12 13-12 14-12 15-12 16-12 17-12 18-12 | 9-12 10-12 11-12 12-12 13-12 14-12 15-12 16-12 17-12 18-12 | 9-12 10-12 11-12 12-12 13-12 14-12 15-12 16-12 17-12 18-12 | 9-12 10-12 11-12 12-12 13-12 14-12 15-12 16-12 17-12 18-12 |
| 9-11    | 12-11 13-11 14-11                         |                                                            |                                                            |                                                            |



NOTES:

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

(front view)

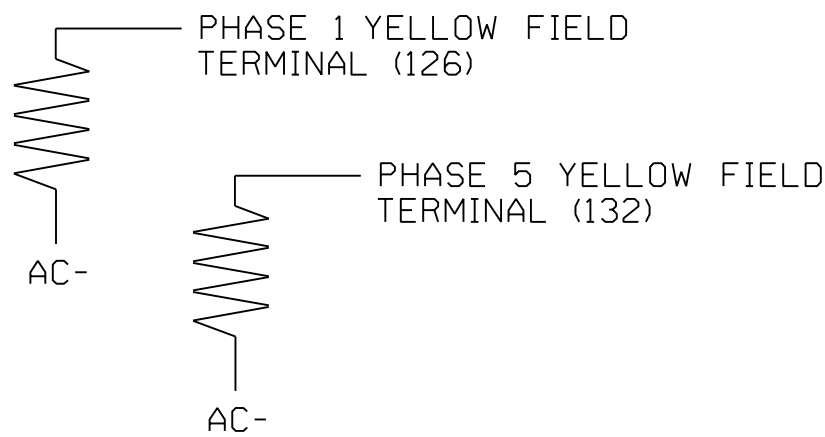
[illegible]

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

FS = FLASH SENSE  
ST = STOP TIME

*(install resistors as shown)*

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



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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and phase 6 Green No Walk.
4. Program phases 4 and 8 for Simultaneous Start.
5. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

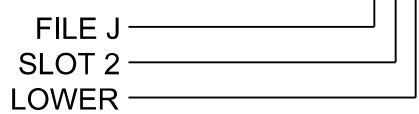
|                            |                                                            |
|----------------------------|------------------------------------------------------------|
| Controller.....            | 2070LX                                                     |
| Cabinet.....               | 332 w/ Aux                                                 |
| Software.....              | Q-Free MAXTIME                                             |
| Cabinet Mount.....         | Base                                                       |
| Output File Positions..... | 18 With Aux. Output File                                   |
| Load Switches Used.....    | S1, S2, S5, S7, S8, S9, S11, S12<br>AUX S1, AUX S2, AUX S4 |
| Phases Used.....           | 1, 2, 4, 5, 6, 8PED, 8, 8PED                               |
| Overlap "1".....           | *                                                          |
| Overlap "2".....           | *                                                          |
| Overlap "3".....           | *                                                          |
| Overlap "4".....           | NOT USED                                                   |

\*See overlap programming detail on sheet 2

[illegible]

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

INPUT FILE POSITION LEGEND: J2L



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

For zones 1A, 2A, 4A, 5A, 6A, 8A, and 8B 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.

For zones 1A and 5A, inputs associated with the typical slots for a NCDOT installation are compatible with time of day instructions located on sheet 2 of this electrical details.



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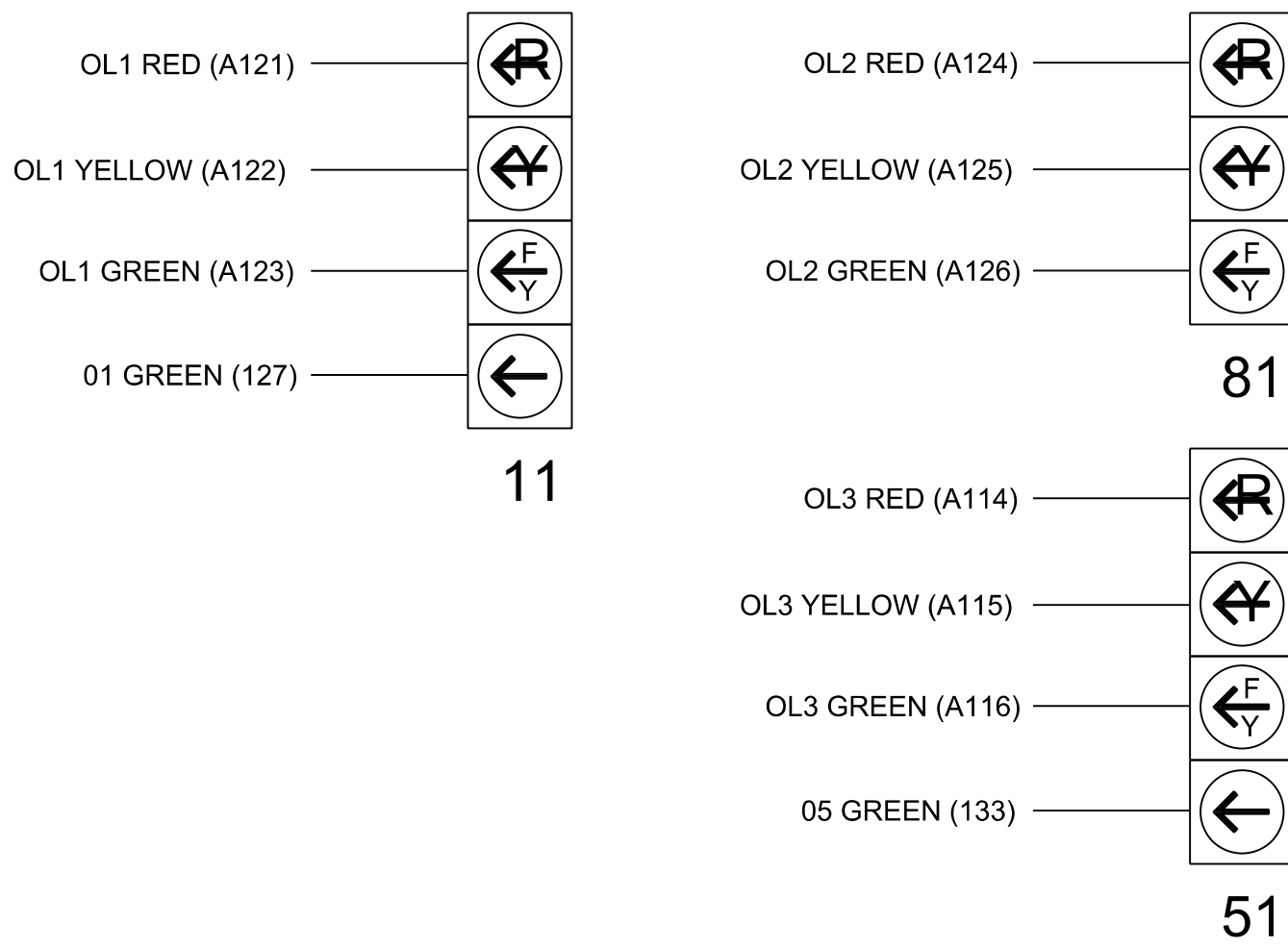
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| LOAD SWITCH NO.                                                                     | S1  | S2    | S3    | S4 | S5    | S6    | S7  | S8    | S9       | S10 | S11       | S12      | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-------------------------------------------------------------------------------------|-----|-------|-------|----|-------|-------|-----|-------|----------|-----|-----------|----------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO.                                                                     | 1   | 2     | 13    | 3  | 4     | 14    | 5   | 6     | 15       | 7   | 8         | 16       | 9      | 10     | 17     | 11     | 12     | 18     |
| PHASE                                                                               | 1   | 2     | 2 PED | 3  | 4     | 4 PED | 5   | 6     | 6 PED    | 7   | 8         | 8 PED    | OL1    | OL2    | SPARE  | OL3    | OL4    | SPARE  |
| SIGNAL HEAD NO.                                                                     | 11★ | 21,22 | NU    | NU | 41,42 | NU    | 51★ | 61,62 | P61, P62 | NU  | 82,83, 84 | P81, P82 | 11★    | 81★    | NU     | 51★    | NU     | NU     |
| RED                                                                                 |     | 128   |       |    | 101   |       |     | 134   |          |     | 107       |          |        |        |        |        |        |        |
| YELLOW                                                                              | ★   | 129   |       |    | 102   |       | ★   | 135   |          |     | 108       |          |        |        |        |        |        |        |
| GREEN                                                                               |     | 130   |       |    | 103   |       |     | 136   |          |     | 109       |          |        |        |        |        |        |        |
| RED ARROW                                                                           |     |       |       |    |       |       |     |       |          |     |           |          | A121   | A124   |        | A114   |        |        |
| YELLOW ARROW                                                                        |     |       |       |    |       |       |     |       |          |     |           |          | A122   | A125   |        | A115   |        |        |
| FLASHING YELLOW ARROW                                                               |     |       |       |    |       |       |     |       |          |     |           |          | A123   | A126   |        | A116   |        |        |
| GREEN ARROW                                                                         | 127 |       |       |    |       |       | 133 |       |          |     |           |          |        |        |        |        |        |        |
|  |     |       |       |    |       |       |     |       | 119      |     |           | 110      |        |        |        |        |        |        |
|  |     |       |       |    |       |       |     |       | 121      |     |           | 112      |        |        |        |        |        |        |

NU = Not Used  
NC = Not Connected

\* Denotes install load resistor. See load resistor installation detail this sheet.  
★ See pictorial of head wiring in detail this sheet.

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1916T3  
DESIGNED: March 2025  
SEALED: March 10, 2025  
REVISED:

SIGNAL UPGRADE - TEMPORARY DESIGN 3  
(CONSTRUCTION PHASE IV STEP 2 THRU STEP 3)  
ELECTRICAL DETAIL - SHEET 1 OF 2

</

3/10/2025  
R:\Traffic\cws\signal\electrical\Detail\sew05-1916T3e-00-220.dgn  
wpjones

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

MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR ALTERNATE PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

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

Overlap Plan 2

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

← NOTICE INCLUDED PHASE

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

MAXTIME STARTUP AND SOFTWARE FLASH  
PROGRAMMING DETAIL

Front Panel  
Main Menu >Controller >Unit

Web Interface  
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

|                        |
|------------------------|
| StartUp Clearance Hold |
| 6                      |

Unit Flash Parameters

|                         |
|-------------------------|
| All Red Flash Exit Time |
| 6                       |

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

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

Web Interface  
Home >Controller >Detector Configuration >Vehicle Detectors

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

1A

| Plan 2   |            |       |
|----------|------------|-------|
| Detector | Call Phase | Delay |
| 1        | 1          | 3.0   |
| 29       | 0          | 3.0   |

5A

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 15       | 5          | 3.0   |
| 31       | 0          | 3.0   |

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 RUN DEFAULT PHASING   | 1            | 1            |
| ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING | 2            | 2            |

ALTERNATE PHASING CHANGE SUMMARY

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

OVERLAP PLAN 2: Modifies overlap included phases for heads 11 and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

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

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1916T3  
DESIGNED: March 2025  
SEALED: March 10, 2025  
REVISED:

SIGNAL UPGRADE - TEMPORARY DESIGN 3  
(CONSTRUCTION PHASE IV STEP 2 THRU STEP 3)  
ELECTRICAL DETAIL - SHEET 2 OF 2

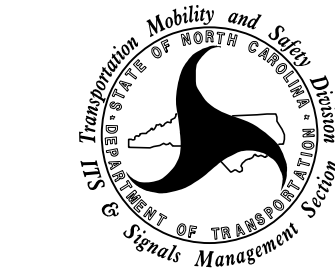
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



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SR 2052 (ROGER RD.)  
AT  
HERITAGE BRANCH RD  
AND HERITAGE POINTE SHOPPES

DIVISION 5 WAKE COUNTY WAKE FOREST

PLAN DATE: MARCH 2025 REVIEWED BY: DSEARS

PREPARED BY: WPJONES REVIEWED BY:

REVISIONS INIT. DATE



DocuSigned by

David T. Sears

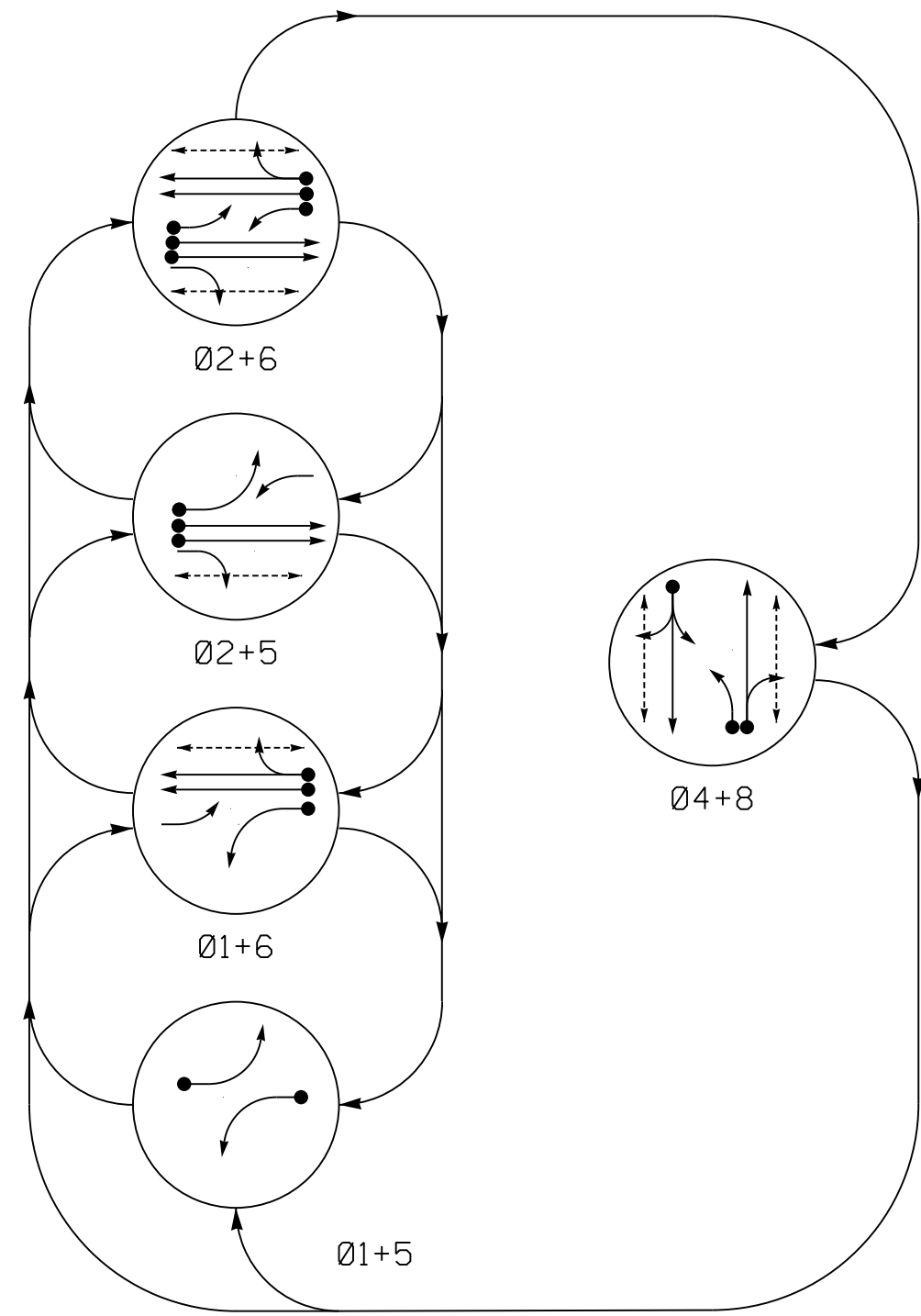
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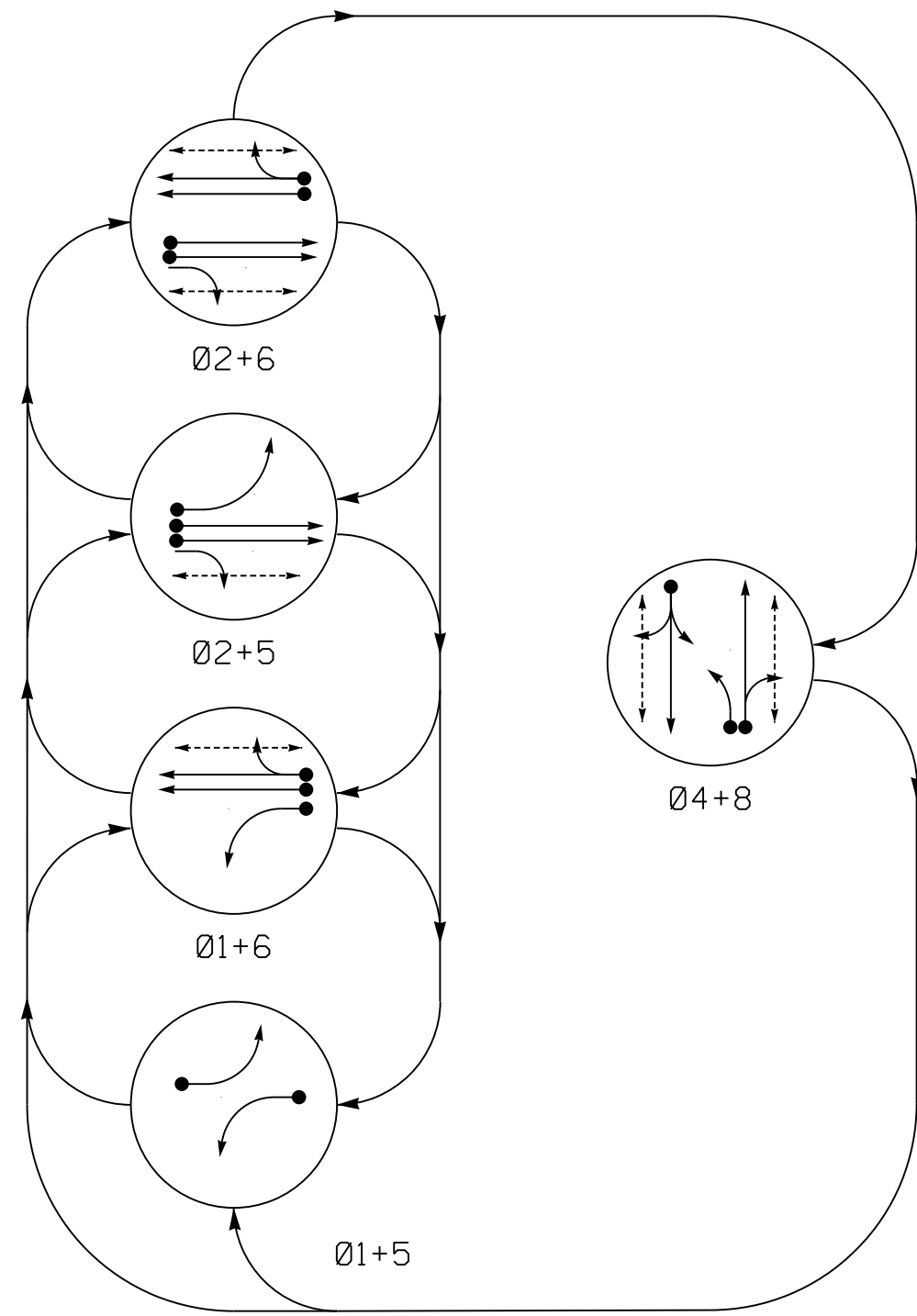
DATE 3/10/2025

SIG. INVENTORY NO. 05-1916T3

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 |      |      |      |      |       |
|-------------|-------|------|------|------|------|-------|
|             | 01+5  | 01+6 | 02+5 | 02+6 | 04+8 | FLASH |
| 11          | ←     | ←    | ←    | ←    | ←    | ←     |
| 21,22       | R     | R    | G    | G    | R    | R     |
| 23          | R     | R    | ←    | ←    | R    | R     |
| 41,42       | R     | R    | R    | R    | G    | R     |
| 51          | ←     | ←    | ←    | ←    | ←    | ←     |
| 61,62       | R     | G    | R    | G    | R    | R     |
| 81          | ←     | ←    | ←    | ←    | ←    | ←     |
| 82,83,84    | R     | R    | R    | R    | G    | R     |
| P21,P22     | DW    | DW   | W    | W    | DW   | DRK   |
| P41,P42     | DW    | DW   | DW   | DW   | DW   | DRK   |
| P61,P62     | DW    | W    | DW   | W    | DW   | DRK   |
| P81,P82     | DW    | DW   | DW   | DW   | W    | DRK   |

ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE |      |      |      |      |       |
|-------------|-------|------|------|------|------|-------|
|             | 01+5  | 01+6 | 02+5 | 02+6 | 04+8 | FLASH |
| 11          | ←     | ←    | ←    | ←    | ←    | ←     |
| 21,22       | R     | R    | G    | G    | R    | R     |
| 23          | R     | R    | ←    | ←    | R    | R     |
| 41,42       | R     | R    | R    | R    | G    | R     |
| 51          | ←     | ←    | ←    | ←    | ←    | ←     |
| 61,62       | R     | G    | R    | G    | R    | R     |
| 81          | ←     | ←    | ←    | ←    | ←    | ←     |
| 82,83,84    | R     | R    | R    | R    | G    | R     |
| P21,P22     | DW    | DW   | W    | W    | DW   | DRK   |
| P41,P42     | DW    | DW   | DW   | DW   | DW   | DRK   |
| P61,P62     | DW    | W    | DW   | W    | DW   | DRK   |
| P81,P82     | DW    | DW   | DW   | DW   | W    | DRK   |

MAXTIME DETECTOR INSTALLATION CHART

| DETECTOR |           |                            |       |          | PROGRAMMING |            |             |        |               |      |                    |
|----------|-----------|----------------------------|-------|----------|-------------|------------|-------------|--------|---------------|------|--------------------|
| LOOP     | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | CALL PHASE  | DELAY TIME | EXTEND TIME | EXTEND | ADDED INITIAL | CALL | DELAY DURING GREEN |
| 1A       | 6X40      | 0                          | 2-4-2 | X        | 1           | 15.0*      | -           | X      | -             | X    | -                  |
| 2A       | 6X6       | 300                        | 5     | X        | 2           | -          | -           | X      | X             | X    | -                  |
| 2B       | 6X6       | 300                        | 5     | X        | 2           | -          | -           | X      | X             | X    | -                  |
| 4A       | 6X40      | 0                          | 2-4-2 | X        | 4           | 10.0       | -           | X      | -             | X    | -                  |
| 5A       | 6X40      | 0                          | 2-4-2 | X        | 5           | 15.0*      | -           | X      | -             | X    | -                  |
| 6A       | 6X6       | 300                        | 5     | X        | 6           | -          | -           | X      | X             | X    | -                  |
| 6B       | 6X6       | 300                        | 5     | X        | 6           | -          | -           | X      | X             | X    | -                  |
| 8A       | 6X40      | 0                          | 2-4-2 | X        | 8           | 3.0        | -           | X      | -             | X    | -                  |
| 8B       | 6X40      | 0                          | 2-4-2 | X        | 8           | 10.0       | -           | X      | -             | X    | -                  |

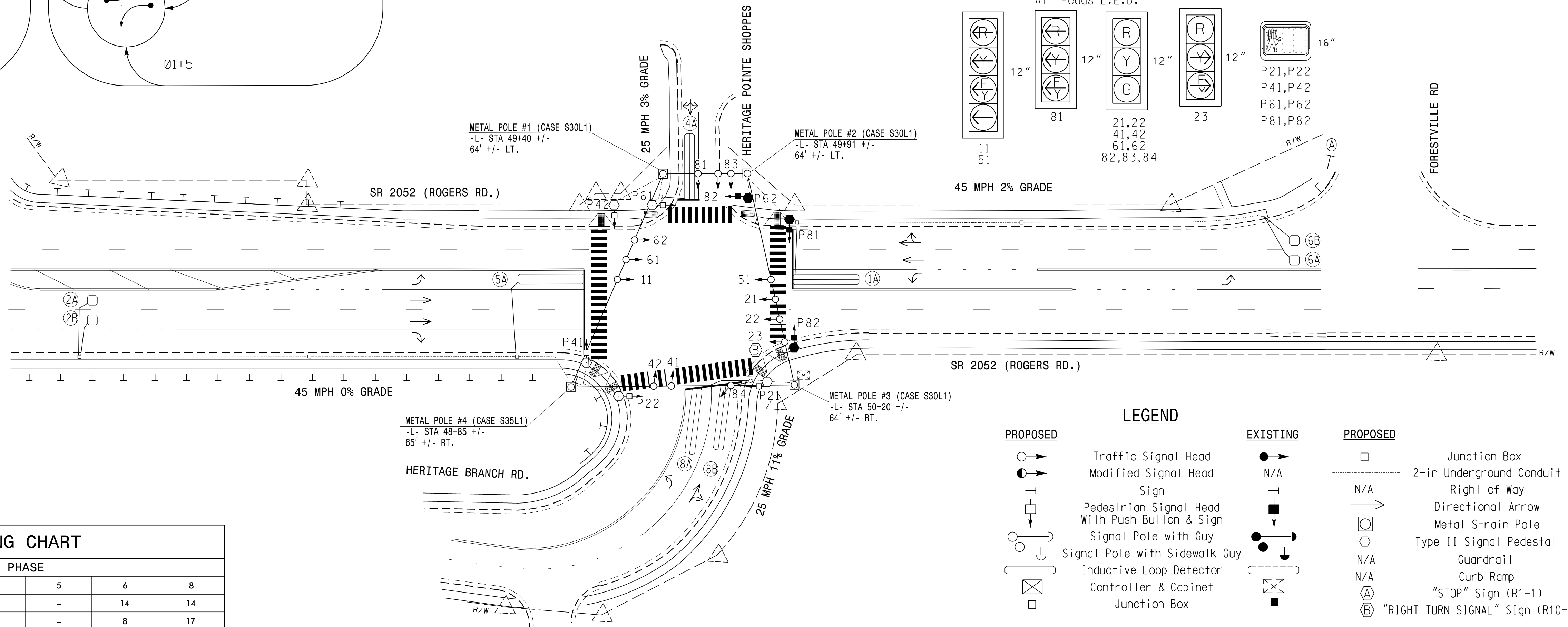
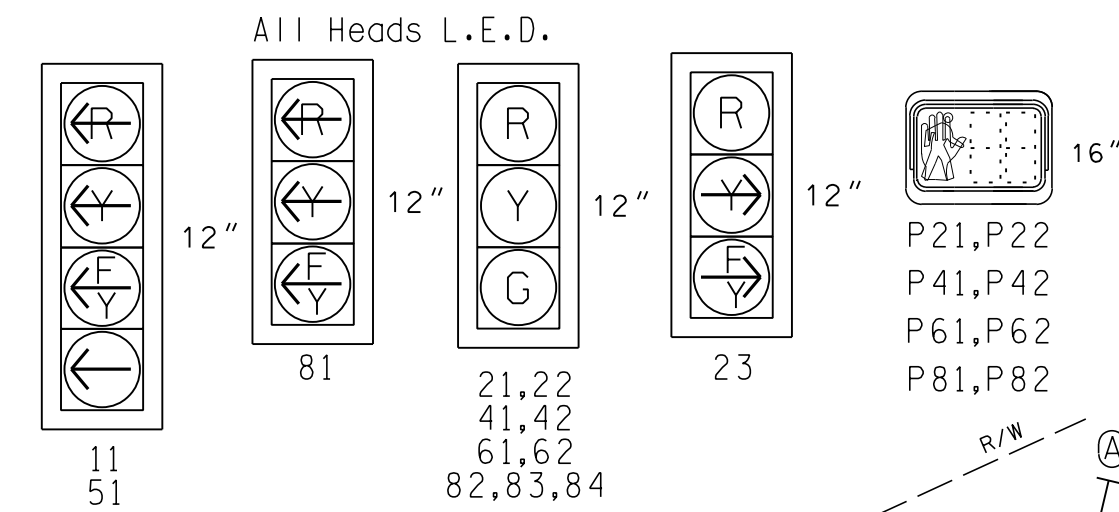
## - Do not call during alternate phasing operation.  
\* - Reduce delay to 3 seconds during alternate phasing operation.

5 PHASE FULLY ACTUATED (WAKE FOREST SIGNAL SYSTEM)

NOTES

- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JANUARY 2024 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- PHASE 1 AND/OR PHASE 5 MAY BE LAGGED.
- SET ALL DETECTOR UNITS TO PRESENCE MODE.
- INSTALL BACKPLATES FOR ALL SIGNAL HEADS.
- OMIT "WALK" AND FLASHING "DON'T WALK" WITH NO PEDESTRIAN CALLS.
- PROGRAM PEDESTRIAN HEADS TO COUNTDOWN THE FLASHING "DON'T WALK" TIME ONLY.
- TO PROVIDE A LEADING PEDESTRIAN INTERVAL ON PHASE 2, PROGRAM FYA HEADS NUMBERED 11 AND 23 TO DELAY FOR 7 SECONDS AFTER THE START OF THE PHASE 2 WALK INTERVAL. SEE ELECTRICAL DETAILS FOR PROGRAMMING.
- 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.

SIGNAL FACE I.D.



LEGEND

| PROPOSED                                       | EXISTING | PROPOSED                           | EXISTING |
|------------------------------------------------|----------|------------------------------------|----------|
| Traffic Signal Head                            | N/A      | Junction Box                       | ■        |
| Modified Signal Head                           | N/A      | 2-in Underground Conduit           | ---      |
| Sign                                           | N/A      | Right of Way                       | ---      |
| Pedestrian Signal Head With Push Button & Sign | N/A      | Directional Arrow                  | →        |
| Signal Pole with Guy                           | N/A      | Metal Strain Pole                  | □        |
| Signal Pole with Sidewalk Guy                  | N/A      | Type II Signal Pedestal            | ●        |
| Inductive Loop Detector                        | N/A      | Guardrail                          | ---      |
| Controller & Cabinet                           | N/A      | Curb Ramp                          | ---      |
| Junction Box                                   | N/A      | "STOP" Sign (R1-1)                 | Ⓐ        |
|                                                |          | "RIGHT TURN SIGNAL" Sign (R10-10R) | Ⓑ        |

MAXTIME TIMING CHART

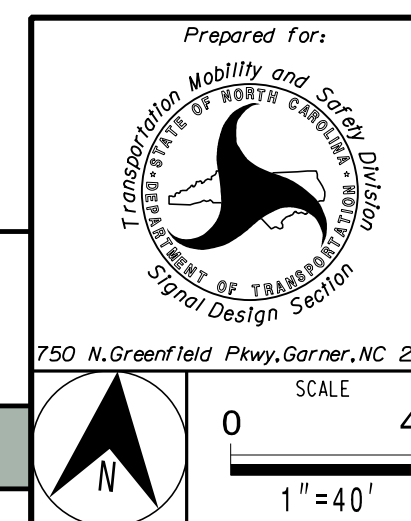
| FEATURE                 | PHASE |            |     |     |            |     |
|-------------------------|-------|------------|-----|-----|------------|-----|
|                         | 1     | 2          | 4   | 5   | 6          | 8   |
| Walk *                  | -     | 14         | 13  | -   | 14         | 14  |
| Ped Clear               | -     | 19         | 20  | -   | 8          | 17  |
| Min Green               | 7     | 12         | 7   | 7   | 12         | 7   |
| Passage *               | 2.0   | 6.0        | 2.0 | 2.0 | 6.0        | 2.0 |
| Max I *                 | 15    | 90         | 30  | 15  | 90         | 30  |
| Yellow Change           | 3.0   | 4.5        | 3.1 | 3.0 | 4.5        | 3.1 |
| Red Clear               | 3.1   | 1.8        | 3.2 | 2.9 | 1.8        | 3.2 |
| Added Initial *         | -     | 1.5        | -   | -   | 1.5        | -   |
| Maximum Initial *       | -     | 34         | -   | -   | 34         | -   |
| Time Before Reduction * | -     | 15         | -   | -   | 15         | -   |
| Time To Reduce *        | -     | 30         | -   | -   | 30         | -   |
| Minimum Gap             | -     | 3.0        | -   | -   | 3.0        | -   |
| Advance Walk            | -     | **         | 6   | -   | 7          | 7   |
| Non Lock Detector       | X     | -          | X   | X   | -          | X   |
| Vehicle Recall          | -     | MIN RECALL | -   | -   | MIN RECALL | -   |
| Dual Entry              | -     | -          | X   | -   | -          | X   |

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

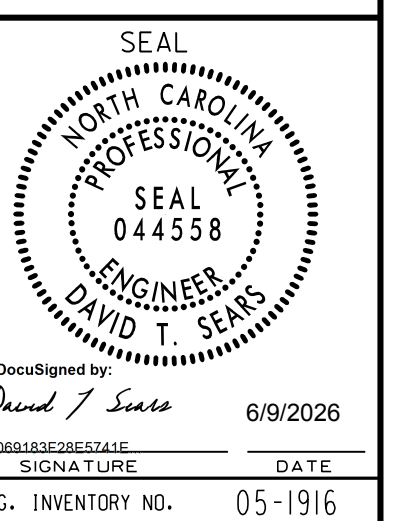
\*\* See Note 8

SIGNAL UPGRADE - FINAL DESIGN

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



|                                                                         |                      |                         |  |
|-------------------------------------------------------------------------|----------------------|-------------------------|--|
| SR 2052 (ROGERS RD.) AT HERITAGE BRANCH RD. AND HERITAGE POINTE SHOPPES |                      | WAKE COUNTY WAKE FOREST |  |
| DIVISION 5                                                              | PLAN DATE: JUNE 2026 | REVIEWED BY: DT SEARS   |  |
| PREPARED BY: WP JONES                                                   | REVIEWED BY:         |                         |  |
| REVISIONS                                                               | INIT.                | DATE                    |  |
|                                                                         |                      |                         |  |
|                                                                         |                      |                         |  |
|                                                                         |                      |                         |  |



(remove jumpers and set switches as shown)

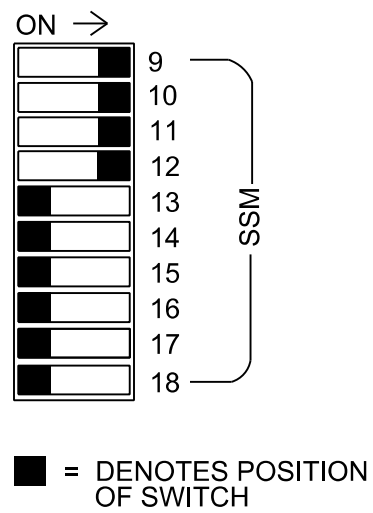
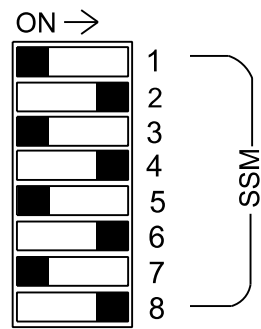
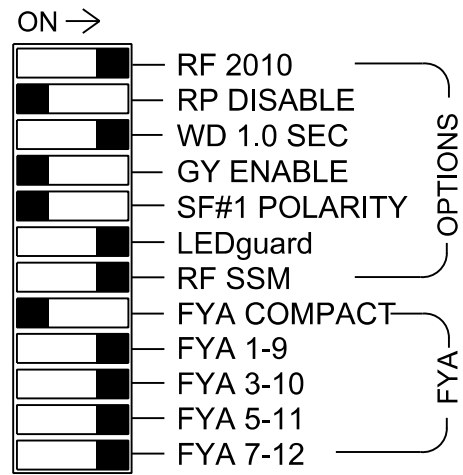
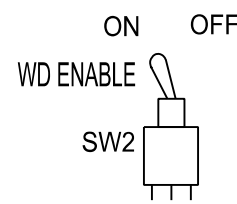
18 CHANNEL PROGRAM CARD

FRONT SIDE

COMPONENT SIDE

YELLOW DISABLE

0 100 ○ ○ 1 ○  
 1 110 ○ ○ 2 ○ ○  
 2 120 ○ ○ 3 ○ ○  
 3 130 ○ ○ 4 ○ ○  
 4 140 ○ ○ 5 ○ ○  
 5 150 ○ ○ 6 ○ ○  
 6 160 ○ ○ 7 ○ ○  
 7 170 ○ ○ 8 ○ ○  
 8 180 ○ ○ 9 ○ ○



NOTES:

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.

(front view)

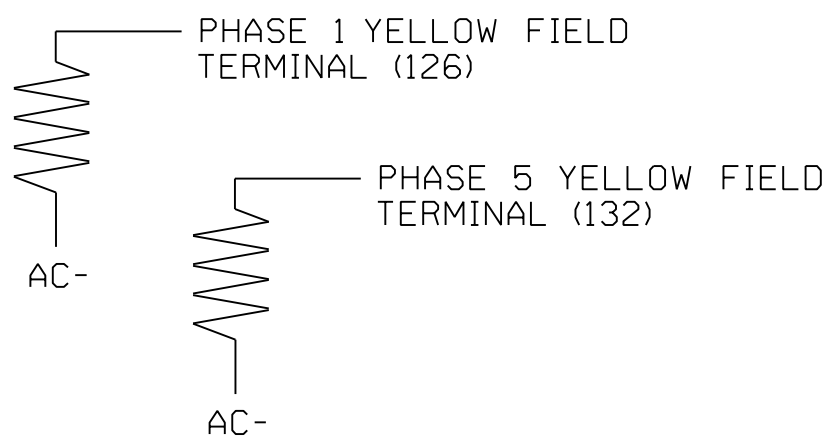
[illegible]

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

FS = FLASH SENSE  
ST = STOP TIME

*(install resistors as shown)*

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



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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. Program phases 4 and 8 for Simultaneous Start.
5. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
6. The cabinet and controller are part of the Wake Forest Signal System.

|                            |                                                                            |
|----------------------------|----------------------------------------------------------------------------|
| 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, S3, S5, S6, S7, S8, S9, S11<br>S12, AUX S1, AUX S2, AUX S4, AUX S5 |
| Phases Used.....           | 1, 2, 2PED, 4, 4PED, 5, 6, 6PED, 8, 8PED                                   |
| Overlap "1".....           | *                                                                          |
| Overlap "2".....           | *                                                                          |
| Overlap "3".....           | *                                                                          |
| Overlap "4".....           | *                                                                          |

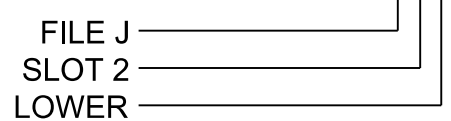
\*See overlap programming detail on sheet 2

## INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO.         | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT POINT | DETECTOR NO. | CALL PHASE | DELAY TIME                                                           | EXTEND TIME | EXTEND | ADDED INITIAL | CALL | DELAY DURING GREEN |
|------------------|---------------|-----------------|---------|-------------|--------------|------------|----------------------------------------------------------------------|-------------|--------|---------------|------|--------------------|
| 1A               | TB2-1,2       | I1U             | 56      | 18          | 1 ★          | 1          | 15.0                                                                 |             | X      |               | X    |                    |
|                  |               |                 |         | -           | 29 ★         | 6          | 3.0                                                                  |             | X      |               | X    | X                  |
| 2A               | TB2-5,6       | I2U             | 39      | 1           | 2            | 2          |                                                                      |             | X      | X             | X    |                    |
| 2B               | TB2-7,8       | I2L             | 43      | 5           | 3            | 2          |                                                                      |             | X      | X             | X    |                    |
| 4A               | TB4-9,10      | I6U             | 41      | 3           | 8            | 4          | 10.0                                                                 |             | X      |               | X    |                    |
|                  |               |                 |         | 17          | 15 ★         | 5          | 15.0                                                                 |             | X      |               | X    |                    |
|                  |               |                 |         | -           | 31 ★         | 2          | 3.0                                                                  |             | X      |               | X    | X                  |
| 6A               | TB3-5,6       | J2U             | 40      | 2           | 16           | 6          |                                                                      |             | X      | X             | X    |                    |
| 6B               | TB3-7,8       | J2L             | 44      | 6           | 17           | 6          |                                                                      |             | X      | X             | X    |                    |
| 8A               | TB5-9,10      | J6U             | 42      | 4           | 22           | 8          | 3.0                                                                  |             | X      |               | X    |                    |
| 8B               | TB5-11,12     | J6L             | 46      | 8           | 23           | 8          | 10.0                                                                 |             | X      |               | X    |                    |
| PED PUSH BUTTONS |               |                 |         |             |              |            |                                                                      |             |        |               |      |                    |
| P21,P22          | TB8-4,6       | I12U            | 67      | 33          | 2            | PED 2      | NOTE:<br>INSTALL DC ISOLATORS<br>IN INPUT FILE SLOTS<br>I12 AND I13. |             |        |               |      |                    |
| P41,P42          | TB8-5,6       | I12L            | 69      | 35          | 4            | PED 4      |                                                                      |             |        |               |      |                    |
| P61,P62          | TB8-7,9       | I13U            | 68      | 34          | 6            | PED 6      |                                                                      |             |        |               |      |                    |
| P81,P82          | TB8-8,9       | I13L            | 70      | 36          | 8            | PED 8      |                                                                      |             |        |               |      |                    |

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

INPUT FILE POSITION LEGEND: J2L



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



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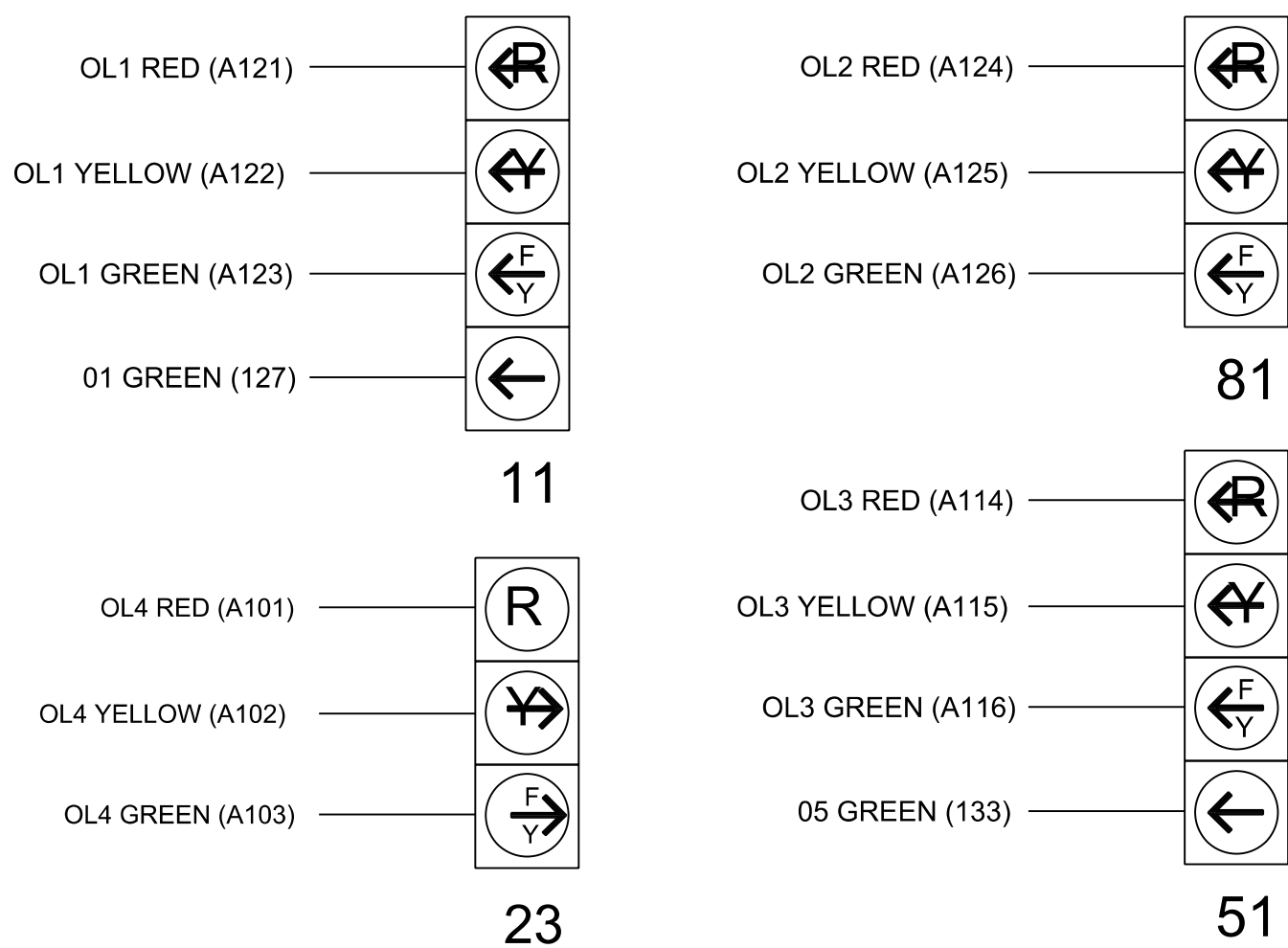
| LOAD SWITCH NO.                                                                     | S1  | S2    | S3       | S4 | S5    | S6       | S7  | S8    | S9       | S10 | S11       | S12      | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-------------------------------------------------------------------------------------|-----|-------|----------|----|-------|----------|-----|-------|----------|-----|-----------|----------|--------|--------|--------|--------|--------|--------|
| 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 | P21, P22 | NU | 41,42 | P41, P42 | 51★ | 61,62 | P61, P62 | NU  | 82,83, 84 | P81, P82 | 11★    | 81★    | NU     | 51★    | 23★    | NU     |
| RED                                                                                 | -   | 128   | -        | -  | 101   | -        | -   | 134   | -        | -   | 107       | -        | -      | -      | -      | -      | A101   | -      |
| YELLOW                                                                              | ★   | 129   | -        | -  | 102   | -        | ★   | 135   | -        | -   | 108       | -        | -      | -      | -      | -      | -      | -      |
| GREEN                                                                               | -   | 130   | -        | -  | 103   | -        | -   | 136   | -        | -   | 109       | -        | -      | -      | -      | -      | -      | -      |
| RED ARROW                                                                           | -   | -     | -        | -  | -     | -        | -   | -     | -        | -   | -         | -        | A121   | A124   | -      | A114   | -      | -      |
| YELLOW ARROW                                                                        | -   | -     | -        | -  | -     | -        | -   | -     | -        | -   | -         | -        | A122   | A125   | -      | A115   | A102   | -      |
| FLASHING YELLOW ARROW                                                               | -   | -     | -        | -  | -     | -        | -   | -     | -        | -   | -         | -        | A123   | A126   | -      | A116   | A103   | -      |
| GREEN ARROW                                                                         | 127 | -     | -        | -  | -     | -        | 133 | -     | -        | -   | -         | -        | -      | -      | -      | -      | -      | -      |
|  | -   | -     | 113      | -  | -     | 104      | -   | -     | 119      | -   | -         | 110      | -      | -      | -      | -      | -      | -      |
|  | -   | -     | 115      | -  | -     | 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.

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1916  
DESIGNED: June 2026  
SEALED: June 9, 2026  
REVISED:

SIGNAL UPGRADE - FINAL DESIGN  
ELECTRICAL DETAIL - SHEET 1 OF 2

**DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED**

SEAL

and 7 years 6/9/2026

SIG. INVENTORY NO. 05-1916

6/9/2026  
R:\Projects\Signal\Electrical\Detail\se05-1916e-00-220.dgn  
jst:iff

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               | 2               |
| Modifier Phases   | 1               | -               | 5               | -               |
| 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             |
| FYA Ped Delay     | 7.0             | 0.0             | 0.0             | 7.0             |

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   | -               | 4               | -               | 2               |
| Modifier Phases   | 1               | -               | 5               | -               |
| 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             |
| FYA Ped Delay     | 7.0             | 0.0             | 0.0             | 7.0             |

← NOTICE INCLUDED PHASE

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

MAXTIME STARTUP AND SOFTWARE FLASH  
PROGRAMMING DETAIL

Front Panel  
Main Menu >Controller >Unit

Web Interface  
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

|                        |
|------------------------|
| StartUp Clearance Hold |
| 6                      |

Unit Flash Parameters

|                         |
|-------------------------|
| All Red Flash Exit Time |
| 6                       |

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

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

Web Interface  
Home >Controller >Detector Configuration >Vehicle Detectors

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

Plan 2

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 1        | 1          | 3.0   |
| 29       | 0          | 3.0   |

1A

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 15       | 5          | 3.0   |
| 31       | 0          | 3.0   |

5A

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

ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING

OVERLAP PLAN

1

VEH DET PLAN

1

ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING

2

2

ALTERNATE PHASING CHANGE SUMMARY

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

OVERLAP PLAN 2: Modifies overlap included phases for heads 11 and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

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

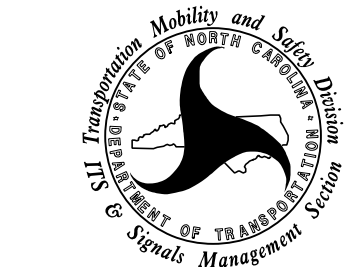
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1916  
DESIGNED: June 2026  
SEALED: June 9, 2026  
REVISED:

SIGNAL UPGRADE - FINAL DESIGN  
ELECTRICAL DETAIL - SHEET 2 OF 2

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING  
DETAILS FOR:

Prepared for the Offices of:



750 N.Greenfield Pkwy, Garner, NC 27529

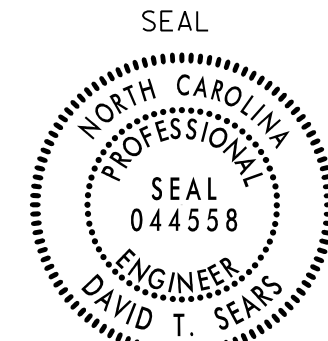
SR 2052 (ROGER RD.)  
AT  
HERITAGE BRANCH RD  
AND HERITAGE POINTE SHOPPES

DIVISION 5 WAKE COUNTY WAKE FOREST

PLAN DATE: JUNE 2026 REVIEWED BY: DT SEARS

PREPARED BY: WP JONES REVIEWED BY:

REVISIONS INIT. DATE



DocuSigned by  
David T. Sears 6/9/2026

DATE

SIG. INVENTORY NO. 05-1916

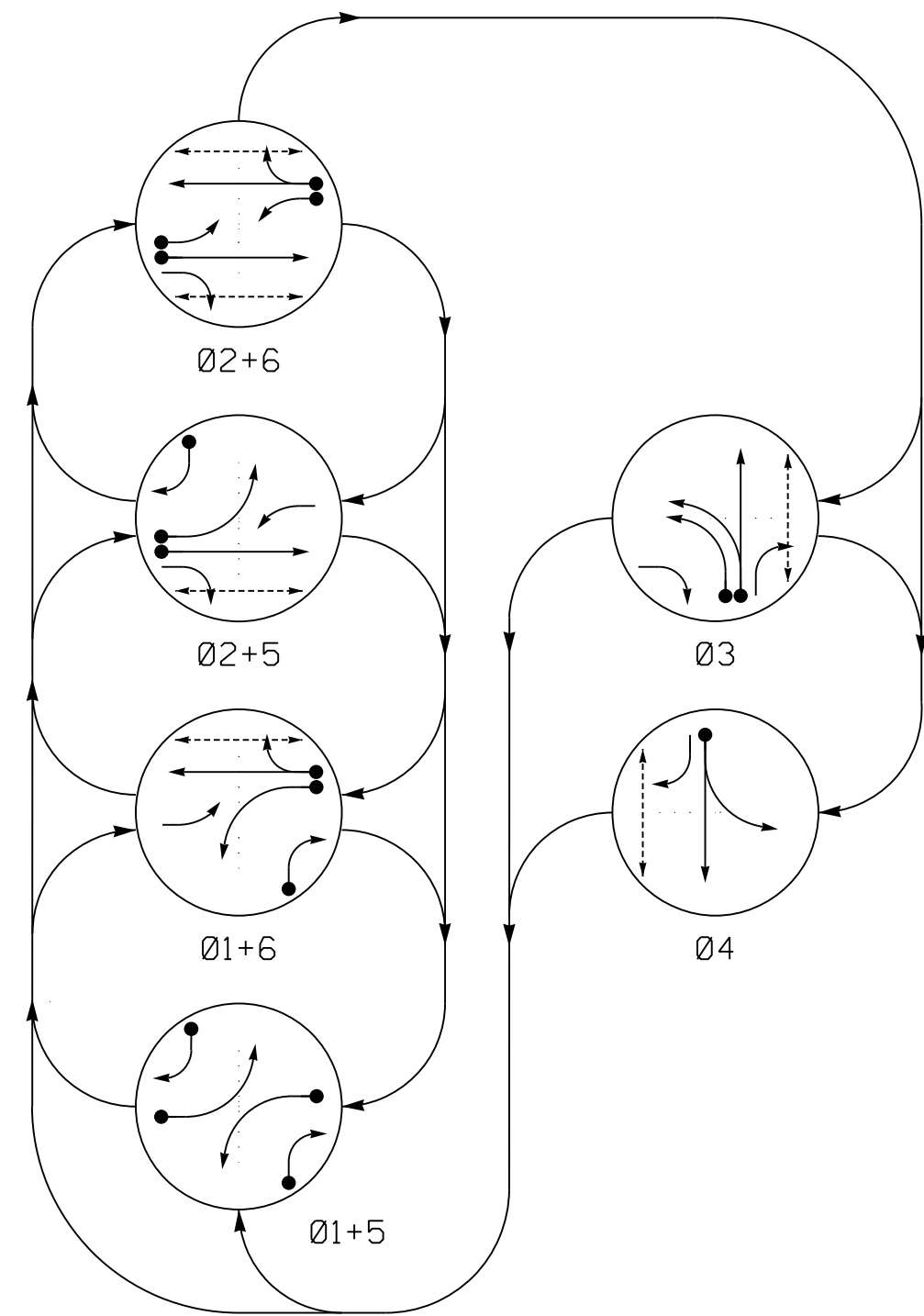


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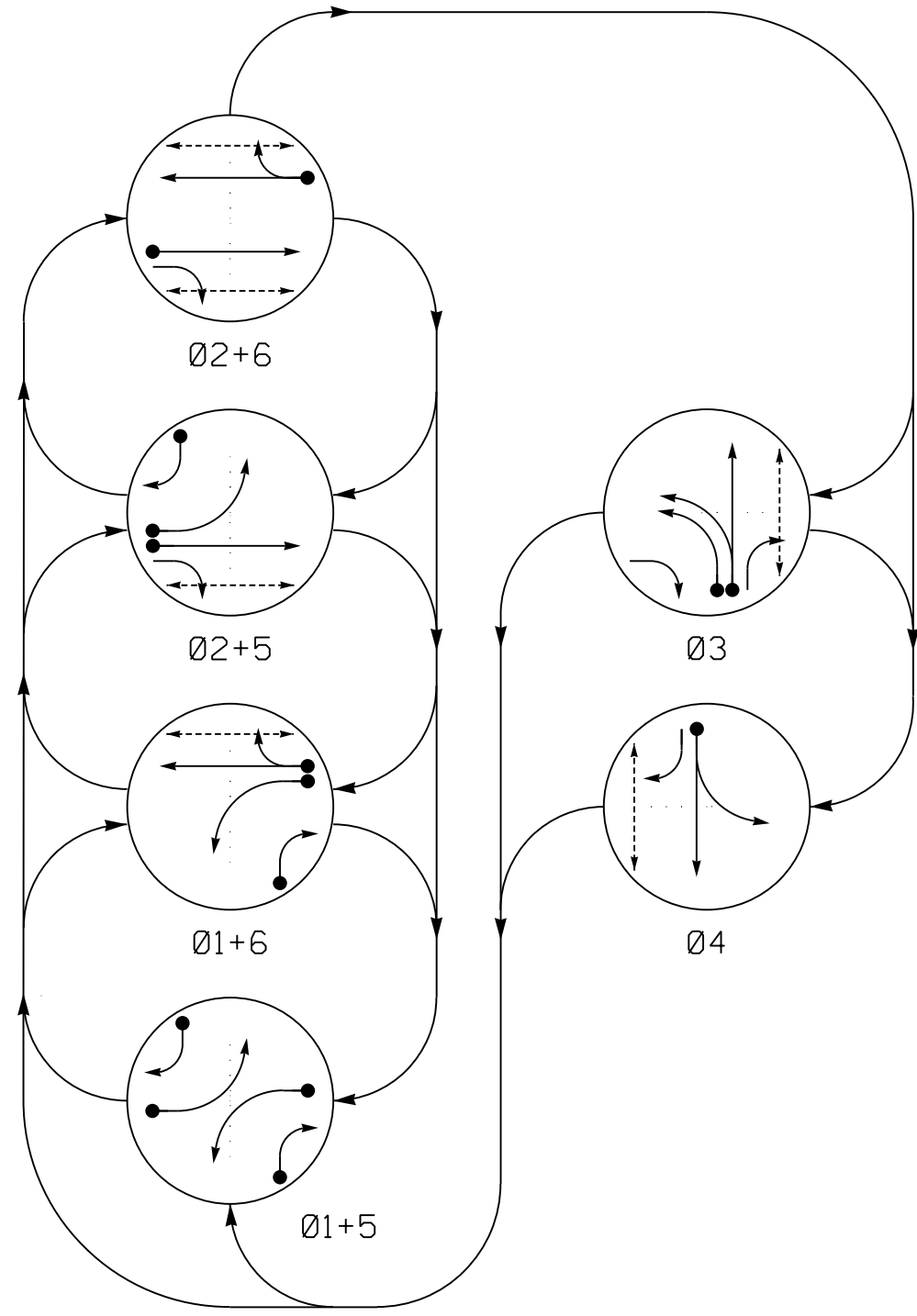
### DEFAULT PHASING DIAGRAM



## DEFAULT PHASING TABLE OF OPERATION

| SIGNAL<br>FACE | PHASE         |               |               |               |               |        |                       |
|----------------|---------------|---------------|---------------|---------------|---------------|--------|-----------------------|
|                | 0<br>1<br>+5  | 0<br>1<br>+6  | 0<br>2<br>+5  | 0<br>2<br>+6  | 0<br>3        | 0<br>4 | F<br>L<br>A<br>S<br>H |
| 11             | ←             | ←             | $\frac{F}{V}$ | $\frac{F}{V}$ | →             | →      | →                     |
| 21             | R             | R             | G             | G             | R             | R      | R                     |
| 22             | R             | R             | G             | G             | $\frac{R}{G}$ | R      | R                     |
| 31             | R             | R             | R             | R             | $\frac{G}{R}$ | R      | R                     |
| 32             | $\frac{R}{G}$ | $\frac{R}{G}$ | R             | R             | G             | R      | R                     |
| 33             | →             | →             | →             | →             | ←             | →      | →                     |
| 41             | R             | R             | R             | R             | $\frac{G}{R}$ | R      | R                     |
| 42             | $\frac{R}{G}$ | $\frac{R}{G}$ | R             | R             | R             | G      | R                     |
| 51             | ←             | $\frac{F}{V}$ | ←             | $\frac{F}{V}$ | →             | →      | →                     |
| 61,62          | R             | G             | R             | G             | R             | R      | R                     |
| P21,P22        | DW            | DW            | W             | W             | DW            | DW     | DRK                   |
| P31,P32        | DW            | DW            | DW            | DW            | W             | DW     | DRK                   |
| P41,P42        | DW            | DW            | DW            | DW            | DW            | W      | DRK                   |
| P61,P62        | DW            | W             | DW            | W             | DW            | DW     | DRK                   |

### ALTERNATE PHASING DIAGRAM



### ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL<br>FACE | PHASE         |               |               |               |        |        |                       |
|----------------|---------------|---------------|---------------|---------------|--------|--------|-----------------------|
|                | 0<br>1<br>+ 5 | 0<br>1<br>+ 6 | 0<br>2<br>+ 5 | 0<br>2<br>+ 6 | 0<br>3 | 0<br>4 | F<br>L<br>A<br>S<br>H |
| 11             | ←             | ←             | ←             | ←             | ←      | ←      | ←                     |
| 21             | R             | R             | G             | G             | R      | R      | R                     |
| 22             | R             | R             | G             | G             | R      | R      | R                     |
| 31             | R             | R             | R             | R             | G      | R      | R                     |
| 32             | R             | R             | R             | R             | G      | R      | R                     |
| 33             | ←             | ←             | ←             | ←             | ←      | ←      | ←                     |
| 41             | R             | R             | R             | R             | G      | R      | R                     |
| 42             | R             | R             | R             | R             | G      | R      | R                     |
| 51             | ←             | ←             | ←             | ←             | ←      | ←      | ←                     |
| 61,62          | R             | G             | R             | G             | R      | R      | R                     |
| P21,P22        | DW            | DW            | W             | W             | DW     | DW     | DR                    |
| P31,P32        | DW            | DW            | DW            | DW            | W      | DW     | DR                    |
| P41,P42        | DW            | DW            | DW            | DW            | DW     | W      | DR                    |
| P61,P62        | DW            | W             | DW            | W             | DW     | DW     | DR                    |

## MAXTIME DETECTOR INSTALLATION CHART

[illegible]

```
* Disable Delay during Alternate Phasing operation.
@ Reduce Delay to 3 seconds during Alternate Phasing operation.
# Disable Phase call for loop during Alternate Phasing operation.
```

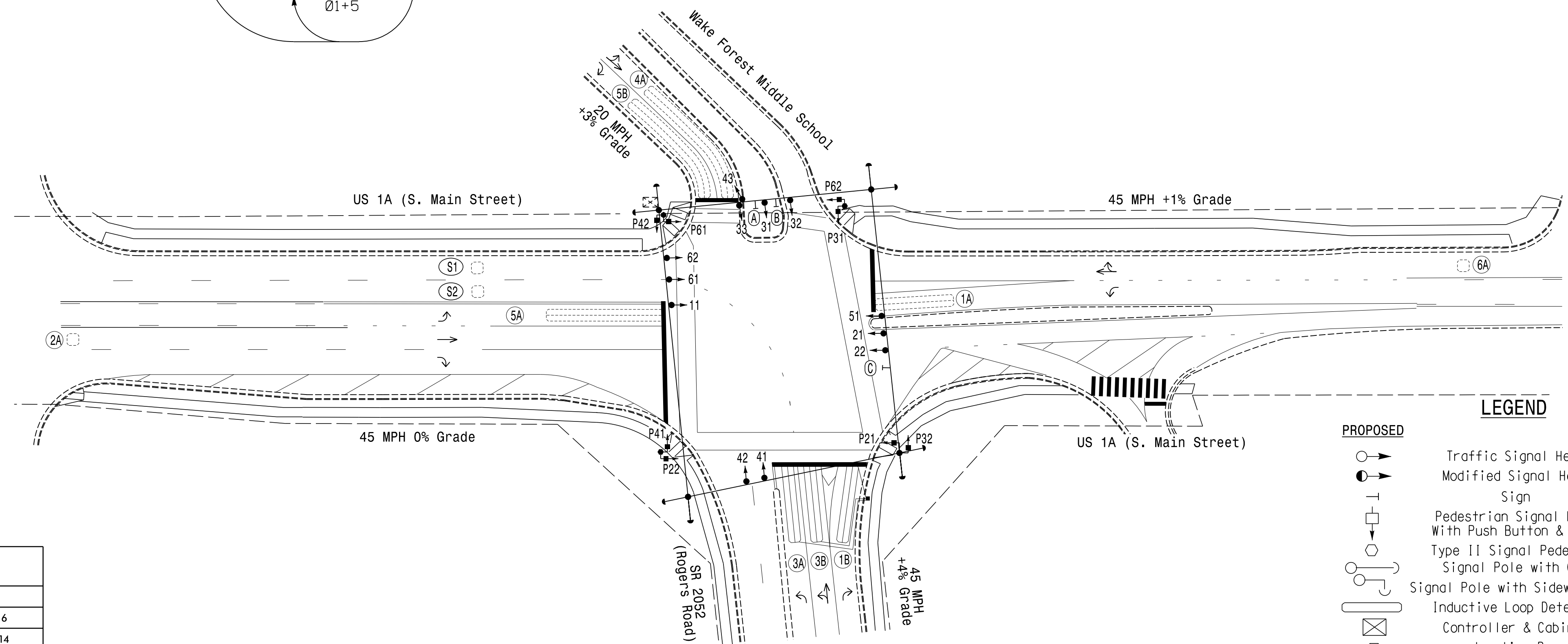
6 PHASE  
FULLY ACTUATED  
(WAKE FOREST SIGNAL SYSTEM)

## NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. The Division (Town) Traffic Engineer will determine the hours of use for each phasing plan.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.

PHASING DIAGRAM DETECTION LEGEND

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



## MAXTIME TIMING CHART

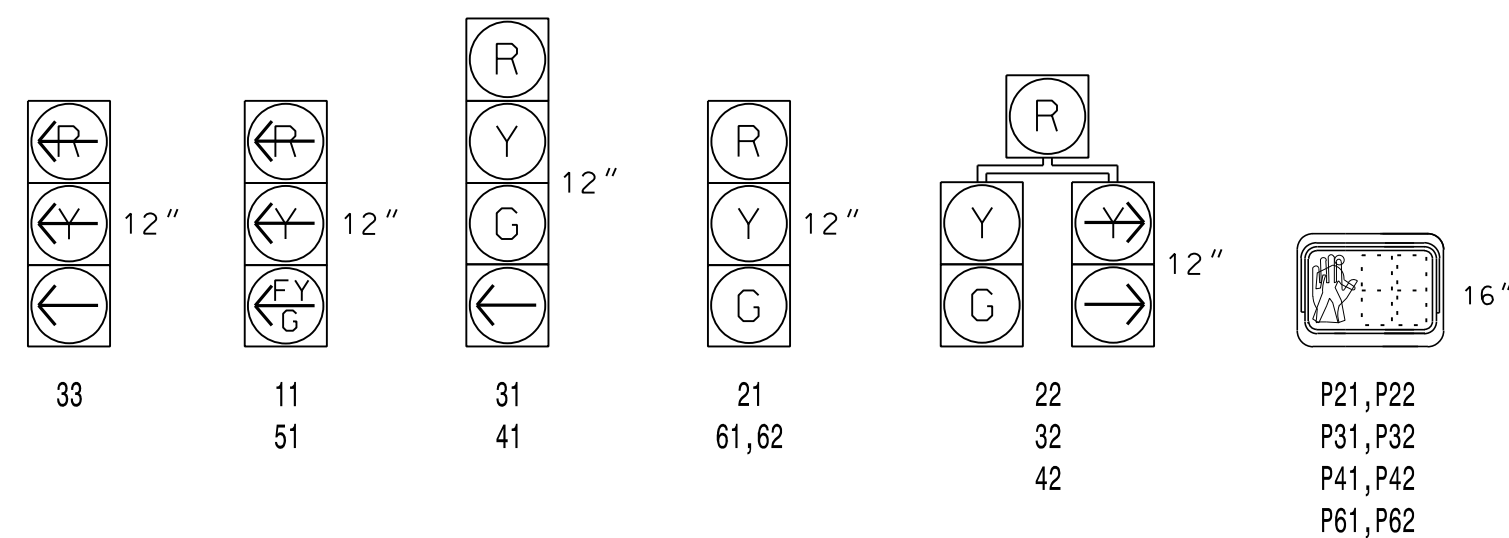
| FEATURE                 | PHASE |            |     |     |     |            |
|-------------------------|-------|------------|-----|-----|-----|------------|
|                         | 1     | 2          | 3   | 4   | 5   | 6          |
| Walk *                  | –     | 14         | 14  | 14  | –   | 14         |
| Ped Clear               | –     | 32         | 36  | 36  | –   | 26         |
| Min Green               | 7     | 12         | 7   | 7   | 7   | 12         |
| Passage *               | 2.0   | 6.0        | 2.0 | 1.0 | 1.0 | 6.0        |
| Max 1 *                 | 30    | 90         | 40  | 30  | 20  | 90         |
| Yellow Change           | 3.0   | 4.5        | 4.2 | 3.0 | 3.0 | 4.5        |
| Red Clear               | 3.1   | 1.7        | 2.4 | 3.7 | 3.2 | 1.7        |
| 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            | –     | 7          | 7   | 7   | –   | 7          |
| Non Lock Defector       | X     | –          | X   | X   | X   | –          |
| Vehicle Recall          | –     | MIN RECALL | –   | –   | –   | MIN RECALL |
| Dual Entry              | –     | –          | –   | –   | –   | –          |

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

SIGNAL FACE I.D.

All Heads L.E.D.

$\left( \frac{F_Y}{G} \right) = \text{Bimodal Section}$

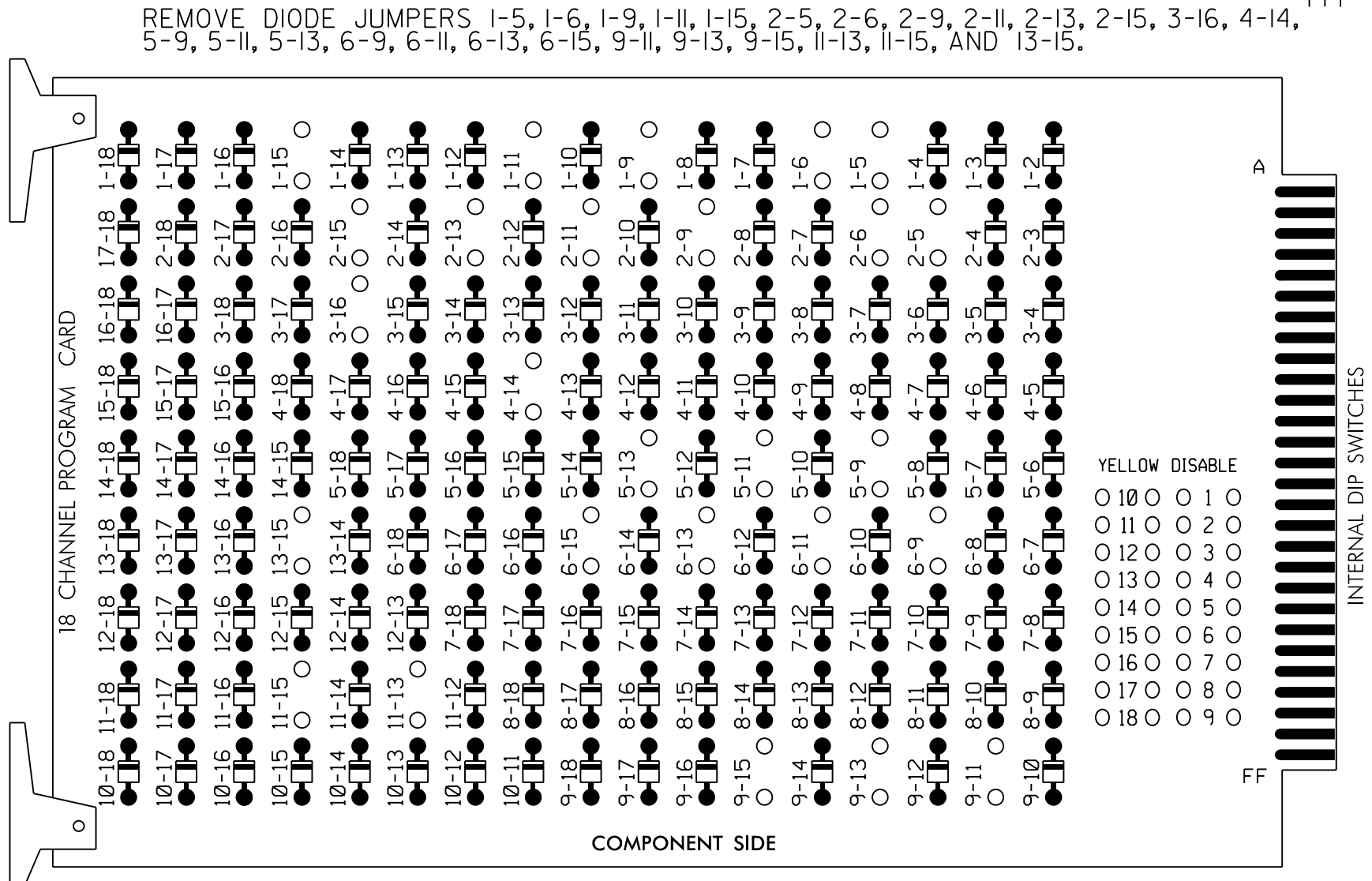


## Signal Upgrade

|                                                                                                                                                                                         |                                                                              |                         |                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------------------|
| Prepared For:<br><br>TRANSPORTATION<br>DEPARTMENT OF TRANSPORTATION<br>SIGNAL DESIGN SECTION       | US 1A (S. MAIN ST)<br>AT<br>SR 2052 (ROGERS RD)/WAKE FOREST<br>MIDDLE SCHOOL |                         | SEAL<br>NORTH CAROLINA<br>PROFESSIONAL<br>SEAL<br>044558<br>ENGINEER<br>DAVID T. SEARS |
|                                                                                                                                                                                         | DIVISION 5      WAKE COUNTY      WAKE FOREST                                 |                         |                                                                                        |
|                                                                                                                                                                                         | PLAN DATE:    MARCH 2025                                                     | REVIEWED BY:    DTSEARS |                                                                                        |
|                                                                                                                                                                                         | PREPARED BY:    WPJONES                                                      | REVIEWED BY:            |                                                                                        |
| 750 N. Greenfield Pkwy, Garner, NC 27529                                                                                                                                                |                                                                              |                         |                                                                                        |
| <br>SCALE<br> | REVISIONS                                                                    |                         | INIT.      DATE                                                                        |
|                                                                                                                                                                                         |                                                                              |                         |                                                                                        |
|                                                                                                                                                                                         |                                                                              |                         |                                                                                        |
|                                                                                                                                                                                         |                                                                              |                         |                                                                                        |
| 000183F28E5741E                                                                                                                                                                         |                                                                              | 3/10/2025               |                                                                                        |
| SIGNATURE                                                                                                                                                                               |                                                                              | DATE                    |                                                                                        |
| SIG. INVENTORY NO.                                                                                                                                                                      |                                                                              | 05-2125                 |                                                                                        |

### 18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

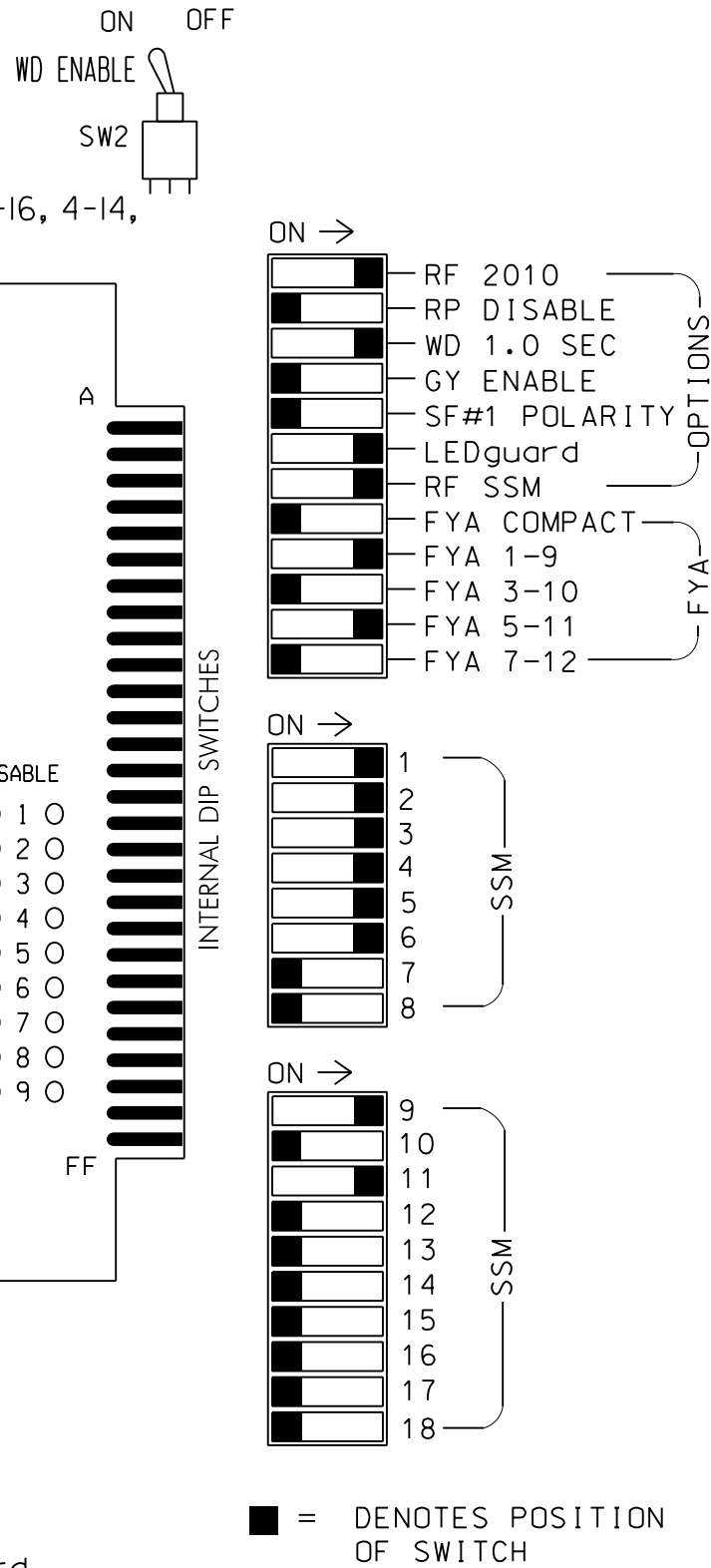
(remove jumpers and set switches as shown)



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 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 Plans.
- Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
- The cabinet and controller are part of the Wake Forest Signal System.

### 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        | 3 PED | OL1    | OL2    | SPARE    | OL3    | OL4    | SPARE    |
| SIGNAL HEAD NO.       | 11★ | 32  | 21,22 | P21, P22 | 22  | 31    | 32  | 33  | 41    | 42  | P41, P42 | 42    | 51★    | 61,62  | P61, P62 | NU     | NU     | P31, P32 |
| RED                   |     | *   | 128   |          | 116 | 116   |     | 101 | 101   |     | *        |       | 134    |        |          |        |        |          |
| YELLOW                |     |     | 129   |          | 117 | 117   |     | 102 | 102   |     |          |       | 135    |        |          |        |        |          |
| GREEN                 |     |     | 130   |          | 118 | 118   |     | 103 | 103   |     |          |       | 136    |        |          |        |        |          |
| RED ARROW             |     |     |       |          |     | 116   |     |     |       |     |          |       |        |        | A121     |        | A114   |          |
| YELLOW ARROW          |     | 126 |       | 117      |     | 117   |     |     |       | 132 |          |       |        |        | A122     |        | A115   |          |
| FLASHING YELLOW ARROW |     |     |       |          |     |       |     |     |       |     |          |       |        |        | A123     |        | A116   |          |
| GREEN ARROW           | 127 | 127 |       | 118      | 118 |       | 118 | 103 |       |     | 133      | 133   |        |        |          |        |        |          |
| Hand icon             |     |     |       | 113      |     |       |     |     |       | 104 |          |       | 119    |        | 110      |        |        |          |
| Walking person icon   |     |     |       | 115      |     |       |     |     |       | 106 |          |       | 121    |        | 112      |        |        |          |

### COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

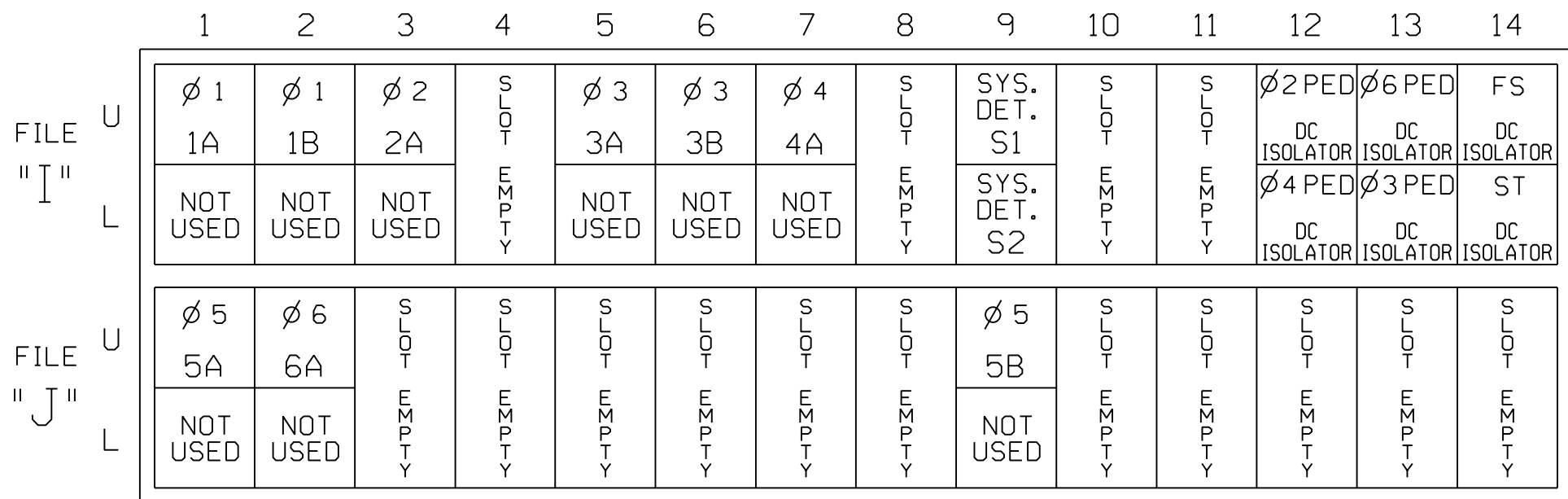
### EQUIPMENT INFORMATION

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,S3,S4,S5,S6,S7,S8,S9,S12  
AUX S1,AUX S4  
PHASES USED.....1,2,2PED,3,3PED,4,4PED,5,6,6PED  
OVERLAP "1".....\*  
OVERLAP "2".....NOT USED  
OVERLAP "3".....\*  
OVERLAP "4".....NOT USED

\* See overlap programming detail on sheet 2

### INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE  
ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

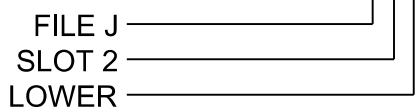
| LOOP NO.         | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT POINT | DETECTOR NO. | CALL PHASE | DELAY TIME | EXTEND TIME | EXTEND | ADDED INITIAL | QUEUE | CALL | DELAY DURING GREEN |
|------------------|---------------|-----------------|---------|-------------|--------------|------------|------------|-------------|--------|---------------|-------|------|--------------------|
| 1A               | TB2-1,2       | I1U             | 56      | 18          | 1★           | 1          | 15         | ---         | X      | -             | -     | X    | -                  |
| 1B               | TB2-5,6       | I2U             | 39      | 1           | 2            | 1          | 15         | ---         | X      | -             | -     | X    | -                  |
| 2A               | TB2-9,10      | I3U             | 63      | 29          | 4            | 2          | ---        | ---         | X      | X             | -     | X    | -                  |
| 3A               | TB4-5,6       | I5U             | 58      | 20          | 7            | 3          | 3          | ---         | X      | -             | -     | X    | -                  |
| 3B               | TB4-9,10      | I6U             | 41      | 3           | 8            | 3          | ---        | ---         | X      | -             | -     | X    | -                  |
| 4A               | TB6-1,2       | I7U             | 65      | 31          | 10           | 4          | ---        | ---         | X      | -             | -     | X    | -                  |
| 5A               | TB3-1,2       | J1U             | 55      | 17          | 15★          | 5          | 15         | ---         | X      | -             | -     | X    | -                  |
| 5B               | TB7-9,10      | J9U             | 59      | 21          | 27           | 5          | 15         | ---         | X      | -             | -     | X    | -                  |
| 6A               | TB3-5,6       | J2U             | 40      | 2           | 16           | 6          | ---        | ---         | X      | X             | -     | X    | -                  |
| *S1              | TB6-9,10      | I9U             | 60      | 22          | 13           | -          | ---        | ---         | -      | -             | -     | -    | -                  |
| *S2              | TB6-11,12     | I9L             | 62      | 24          | 14           | -          | ---        | ---         | -      | -             | -     | -    | -                  |
| PED PUSH BUTTONS |               |                 |         |             |              |            |            |             |        |               |       |      |                    |
| P21,P22          | TB8-4,6       | I12U            | 67      | 33          | 2            | PED 2      |            |             |        |               |       |      |                    |
| 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  
112 AND 113.

★ System detector only. Remove any assigned vehicle phase.

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

INPUT FILE POSITION LEGEND: J2L

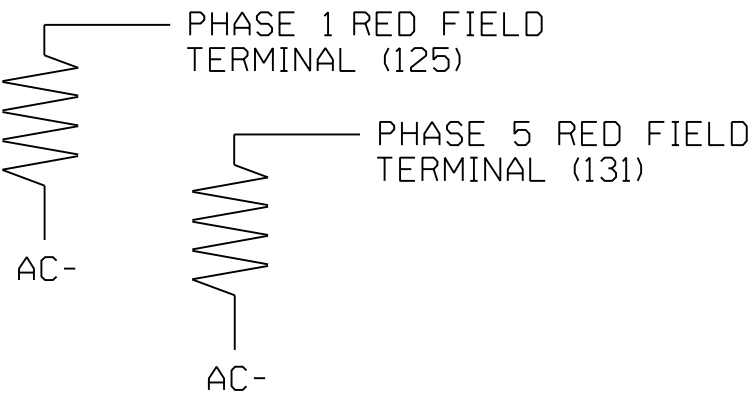


THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2125  
DESIGNED: March 2025  
SEALED: March 10, 2025  
REVISED: N/A

### LOAD RESISTOR INSTALLATION DETAIL

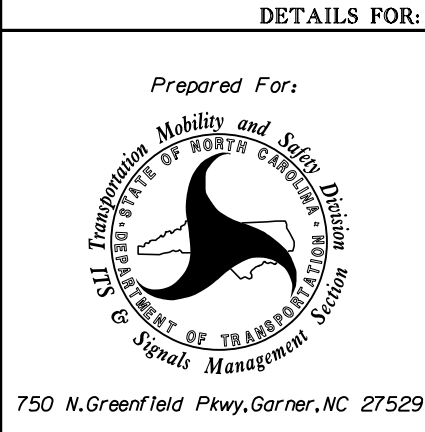
(install resistors as shown)

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



### SIGNAL UPGRADE - ELECTRICAL DETAIL - SHEET 1 OF 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

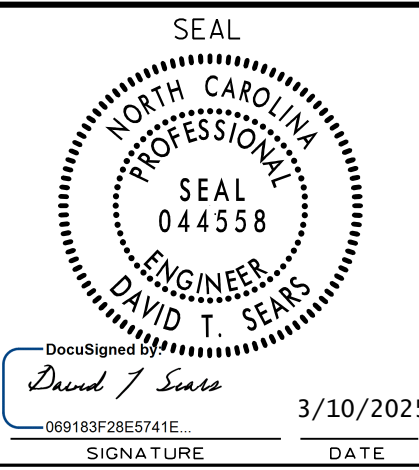


US 1A (S. MAIN ST)  
AT  
SR 2052 (ROGERS RD)/WAKE FOREST  
MIDDLE SCHOOL

| DIVISION 5            | WAKE COUNTY          | WAKE FOREST |
|-----------------------|----------------------|-------------|
| PLAN DATE: MARCH 2025 | REVIEWED BY: DTSEARS |             |
| PREPARED BY: WPJONES  | REVIEWED BY:         |             |

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

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED



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

MAXTIME 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        | -           | 4          | 0            |
| 6        | -           | 6          | 0            |
| 8        | -           | 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       | 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     | 3              | -            | -         | -         | 16          |
| 17      | Overlap       | 5              | -            | X         | X         | 17          |
| 18      | Overlap       | 6              | -            | X         | -         | 18          |

NOTICE PHASE 3 PED  
ASSIGNED TO CHANNEL 16 →

↑  
NOTICE ALL PHASES SET TO FLASH RED

MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR ALTERNATE PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

Copy all data in Overlap Plan 1 to Overlap Plan 2 and under Plan 2, update the Included Phases for the Overlaps shown below.

Overlap Plan 2

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

← Notice Remove Included  
Phases for OL1 & OL3

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

Front Panel  
Main Menu >Controller >Detector >Veh Det Plans >Plan [2]

Web Interface  
Home >Controller >Detector Configuration >Vehicle Detectors

Copy all data in Detector Plan 1 to Detector Plan 2 and under Plan 2, update the Delay and Call Phase for the Detectors shown below.

Detector Plan 2

| Detector | Description   | Call Phase | Call Overlap | Delay | Extend |
|----------|---------------|------------|--------------|-------|--------|
| 1        | Loop 1A       | 1          | -            | 0     |        |
| 15       | Loop 5A       | 5          | -            | 3     |        |
| 29       | Adjacent Thru | 0          | -            | 3     |        |
| 31       | Adjacent Thru | 0          | -            | 3     |        |

Set Call Phase →  
to '0' →

← Set Delay to '0'  
← Set Delay to '3'

3/10/2025  
R:\Traffic\cns\signal\electrical\Detail1a\052125e-00-220.dgn  
wpjones

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2125  
DESIGNED: March 2025  
SEALED: March 10, 2025  
REVISED: N/A

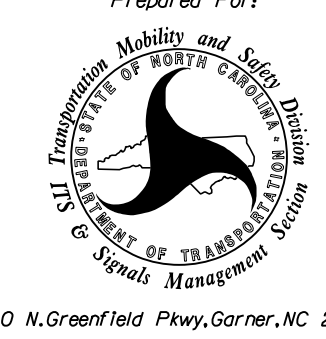
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SIGNAL UPGRADE - ELECTRICAL DETAIL - SHEET 2 OF 3

ELECTRICAL AND PROGRAMMING  
DETAILS FOR:

Prepared For:



750 N. Greenfield Pkwy, Garner, NC 27529

US 1A (S. MAIN ST)  
AT  
SR 2052 (ROGERS RD)/WAKE FOREST  
MIDDLE SCHOOL

DIVISION 5

WAKE COUNTY

WAKE FOREST

PLAN DATE: MARCH 2025

REVIEWED BY: DTSEARS

PREPARED BY: WPJONES

REVIEWED BY:

REVISIONS

INIT.

DATE

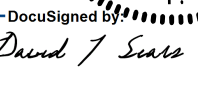
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SIGNATURES COMPLETED

SEAL



DAVID T. SEARS  
ENGINEER

DocuSigned by



3/10/2025

SIGNATURE

DATE

SIG. INVENTORY NO.

05-2125

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED PATTERN.  
SCHEDULE A DAY PLAN THAT INCLUDES THE PATTERN PROGRAMMED  
TO SELECT OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED PATTERN THAT IS PROGRAMMED  
TO SELECT OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2.

| PHASING                                          | OVERLAP PLAN | VEH DET PLAN |
|--------------------------------------------------|--------------|--------------|
| ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>   | 1            | 1            |
| ACTIONS REQUIRED TO RUN <u>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 and 51 to run protected turns only.

VEH DET PLAN 2:

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

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

MAXTIME ALTERNATE PHASING PATTERN  
PROGRAMMING DETAILS

Front Panel  
Main Menu >Controller >Coordination>Patterns

Web Interface  
Home >Controller >Coordination>Patterns

Change the Vehicle Detector Plan and Overlap Plan field to [2].

| Pattern Number | Veh Det Plan | Overlap Plan | Description           |
|----------------|--------------|--------------|-----------------------|
| *              | 2            | 2            | Alt Phasing Operation |

\* The Pattern number(s) are to be determined by the Division (Town) Traffic Engineer.

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-2125  
DESIGNED: March 2025  
SEALED: March 10, 2025  
REVISED: N/A

SIGNAL UPGRADE - ELECTRICAL DETAIL - SHEET 3 OF 3

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SIGNATURES COMPLETED

  
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ELECTRICAL AND PROGRAMMING  
DETAILS FOR:

Prepared For:

  
750 N. Greenfield Pkwy, Garner, NC 27529

US 1A (S. MAIN ST)  
AT  
SR 2052 (ROGERS RD)/WAKE FOREST  
MIDDLE SCHOOL

DIVISION 5      WAKE COUNTY      WAKE FOREST

PLAN DATE:    MARCH 2025      REVIEWED BY:    DTSEARS

PREPARED BY:    WPJONES      REVIEWED BY:

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

SEAL  
NORTH CAROLINA  
PROFESSIONAL  
SEAL  
044558  
ENGINEER  
DAVID T. SEARS

Document Signed By: *David T. Sears*      3/10/2025

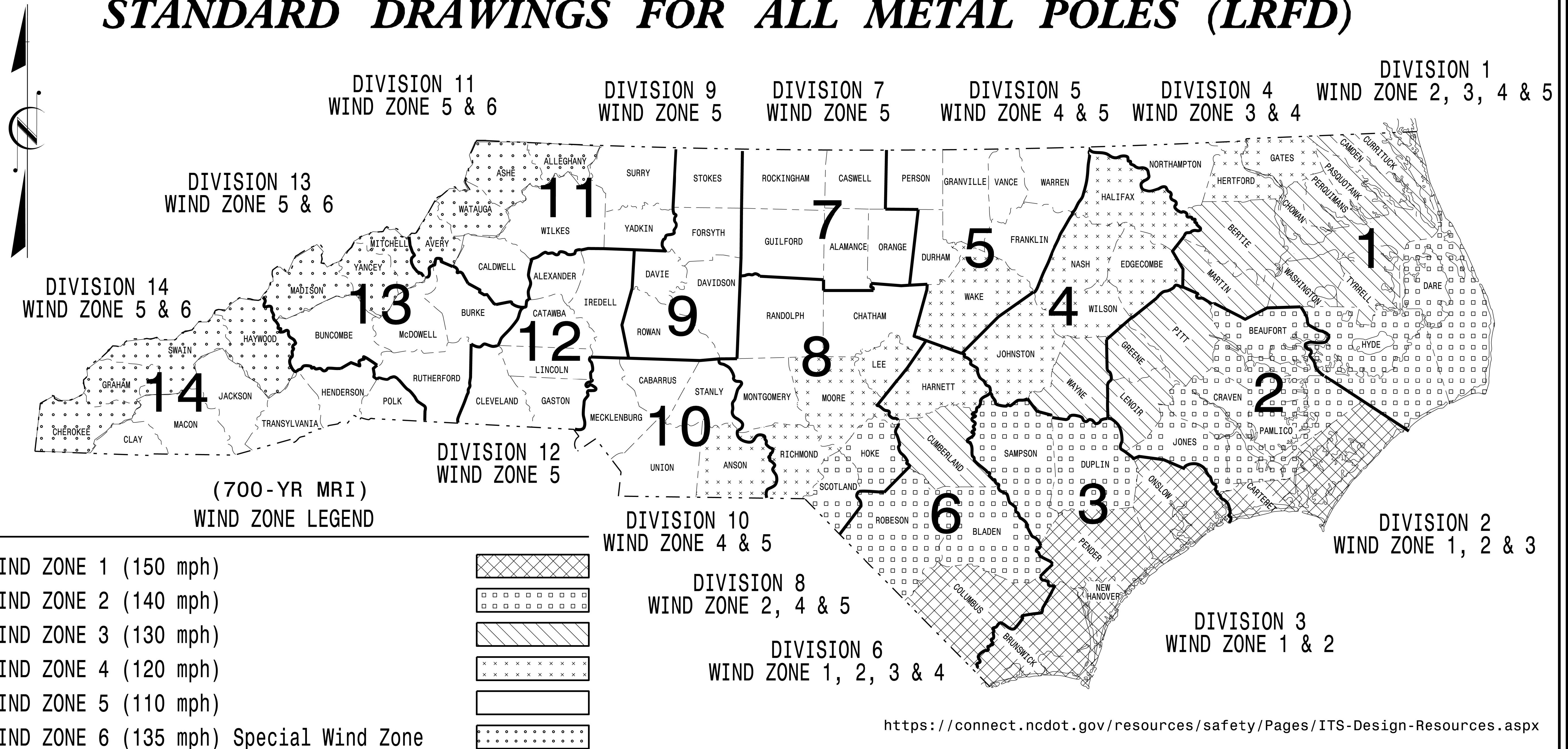
089183F28E5741E      SIGNATURE      DATE

SIG. INVENTORY NO.      05-2125

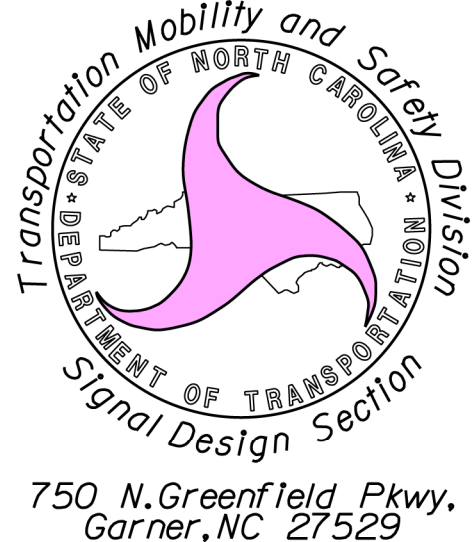
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT I.D.NO. P - 5707  
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<br>NUMBER | INDEX OF PLANS<br>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       |

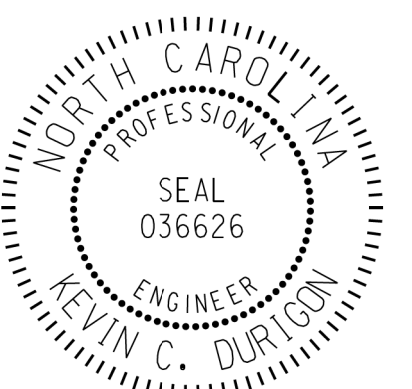
MOBILITY AND SAFETY DIVISION -  
TRANSPORTATION SYSTEMS MANAGEMENT  
AND OPERATIONS UNIT

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:

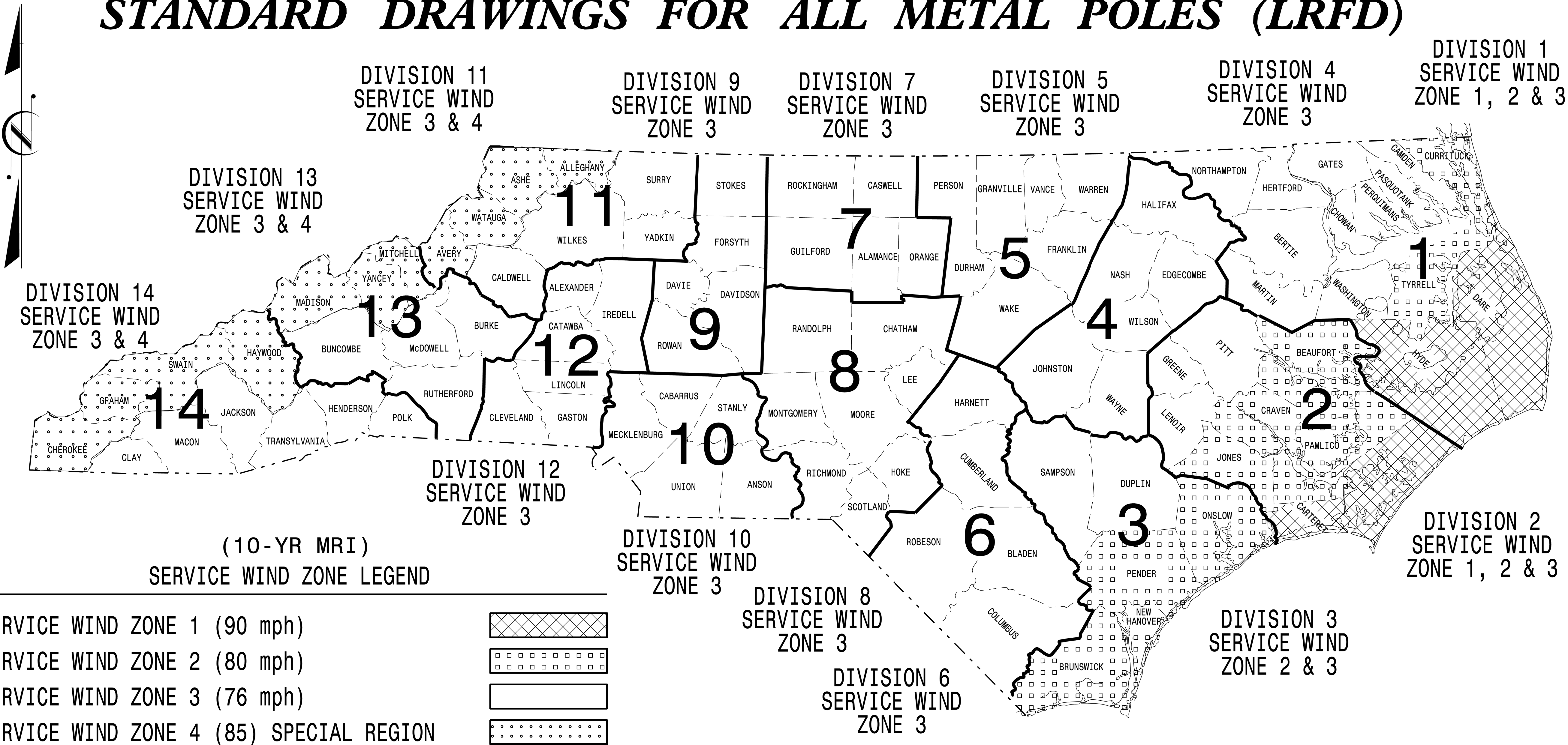
Kevin Durigon  
SIGNATURE  
4B23DC79B3784DA

09/21/2023  
DATE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

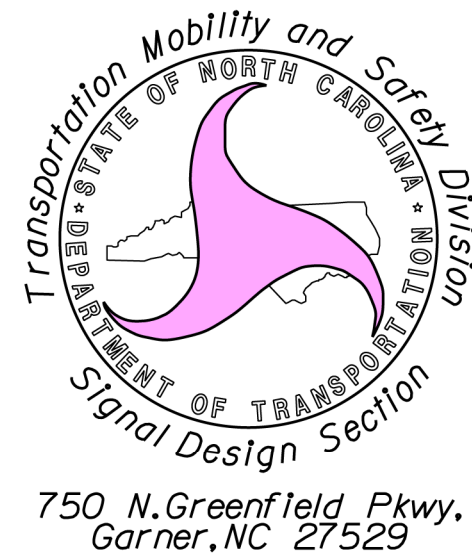
|                  |           |
|------------------|-----------|
| PROJECT I.D. NO. | SHEET NO. |
| P - 5707         | Sig.M1B   |

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

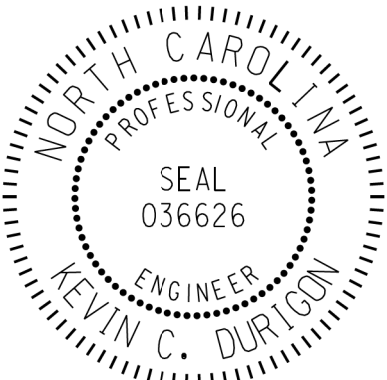
Standard Specifications for  
Highway Signs, Luminaires,  
and Traffic Signals

| DRAWING<br>NUMBER | INDEX OF PLANS<br>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         |
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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

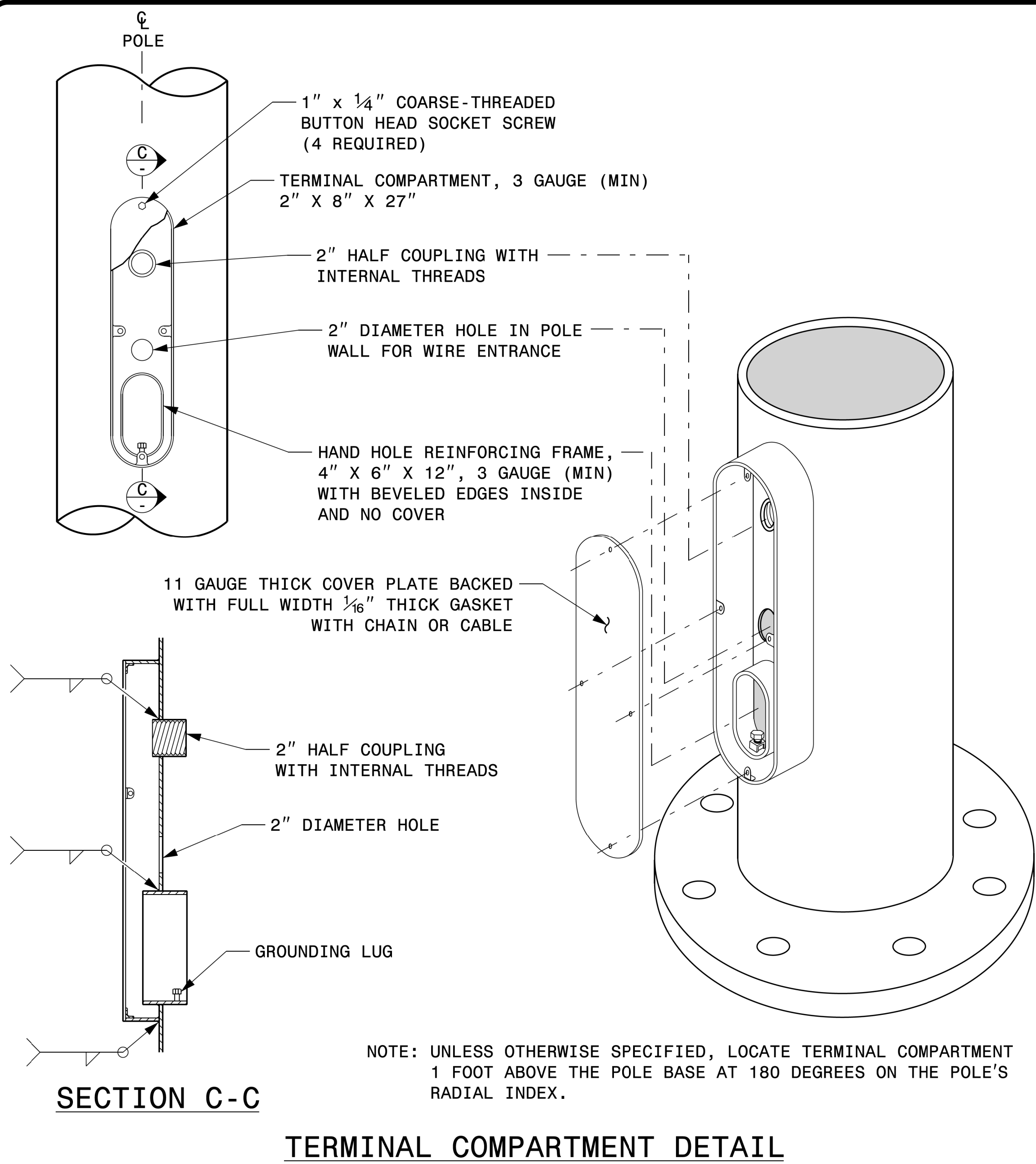
SEAL



DocuSigned by:

Kevin Durigon  
SIGNATURE

09/21/2023  
DATE



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

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

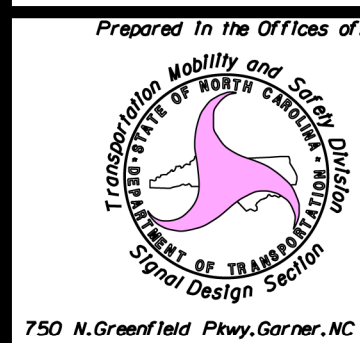
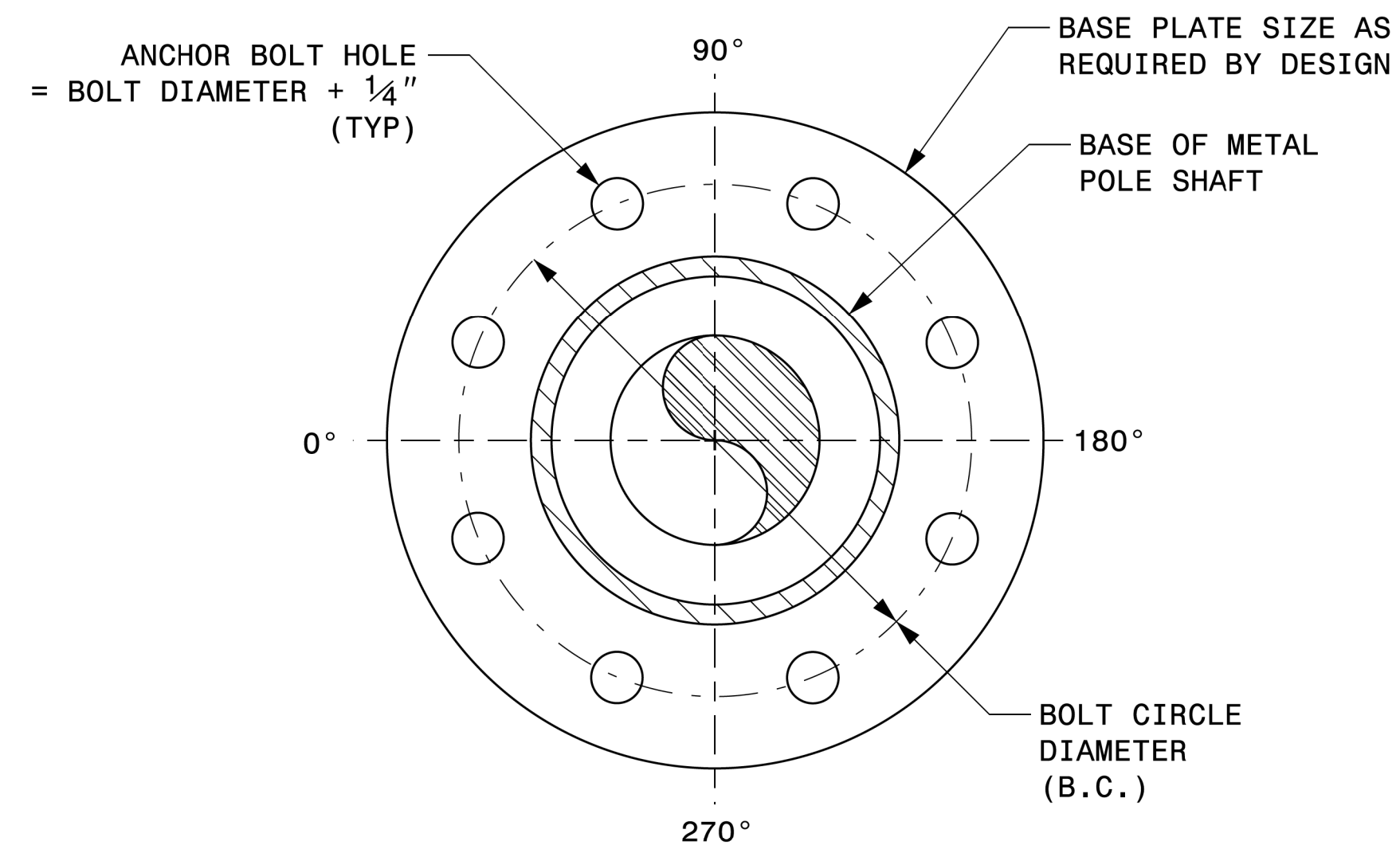
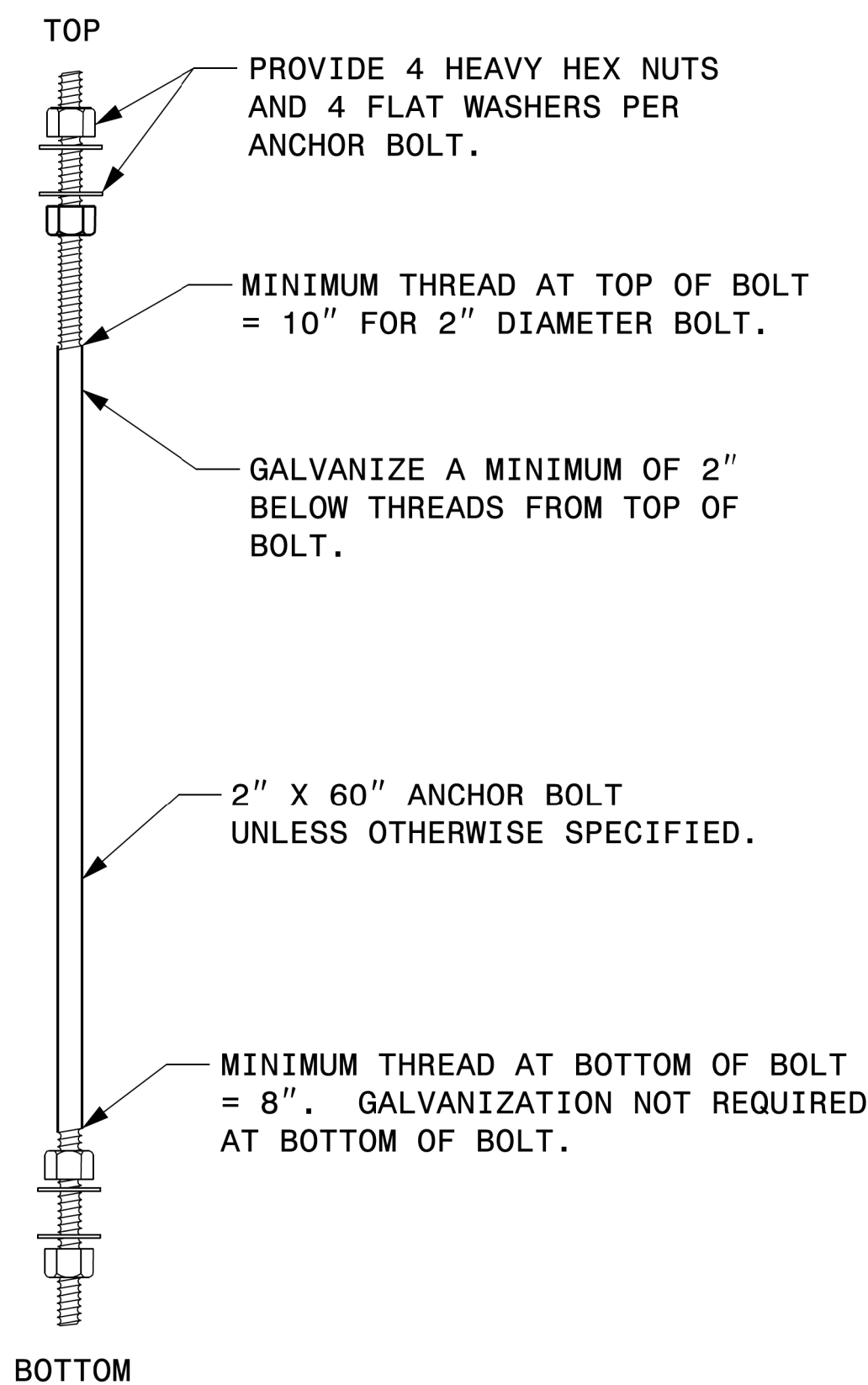
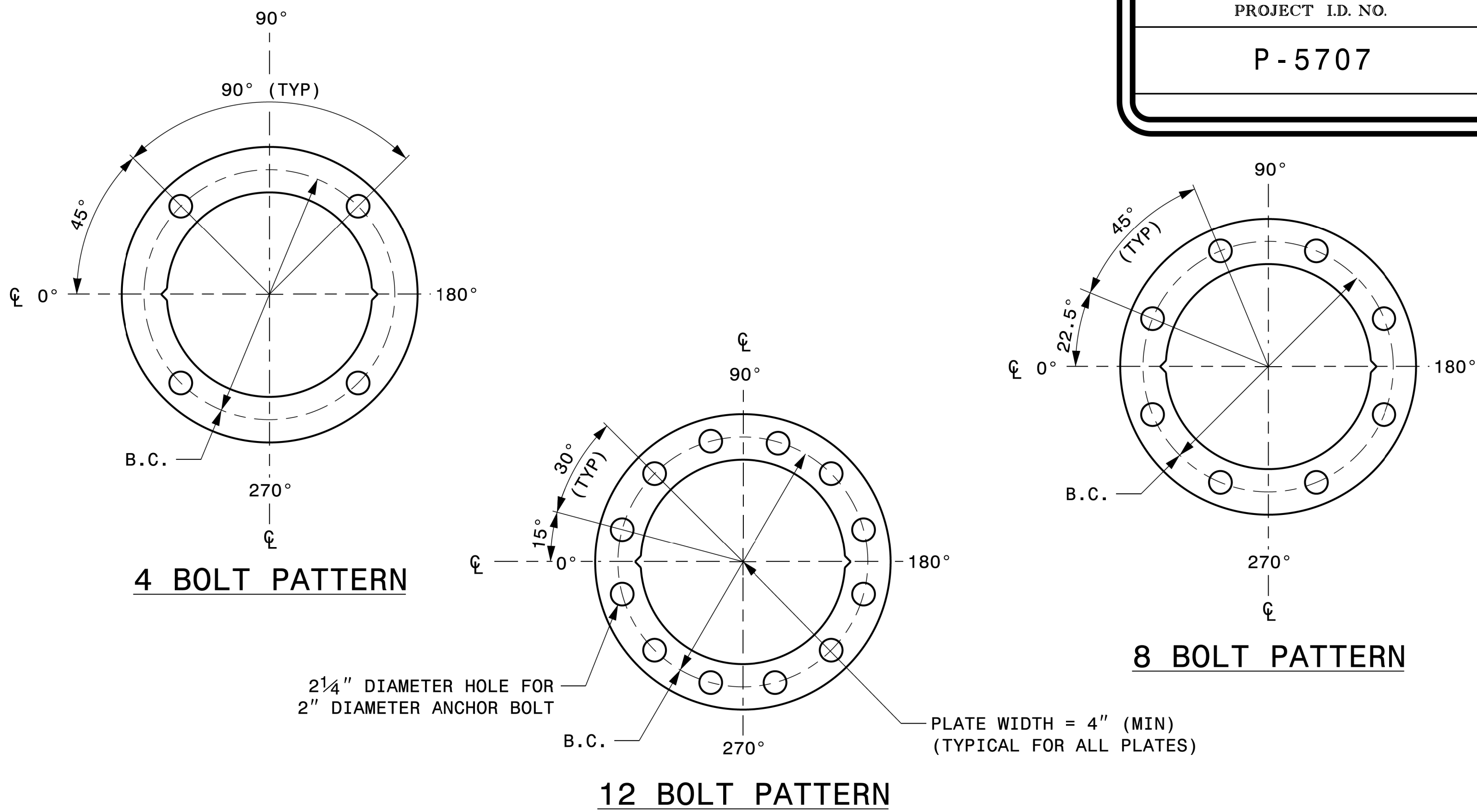
ARM I.D. TAG  
(PROVIDE ON EACH SECTION OF  
A MULTI-SECTION MAST ARM)

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

NOTES:

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

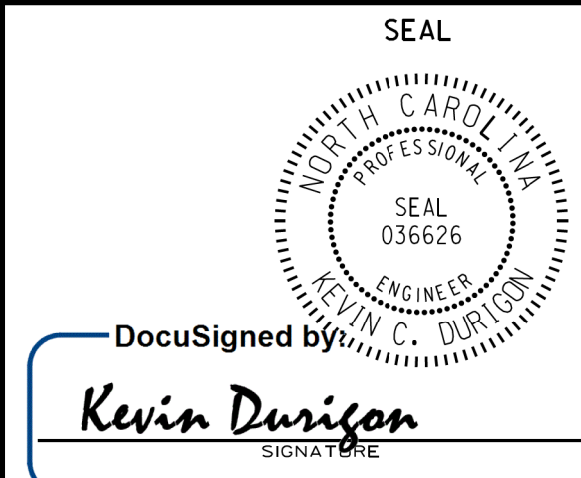
IDENTIFICATION TAG DETAILS



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 |
|-----------|-------|------|
|           |       |      |
|           |       |      |
|           |       |      |

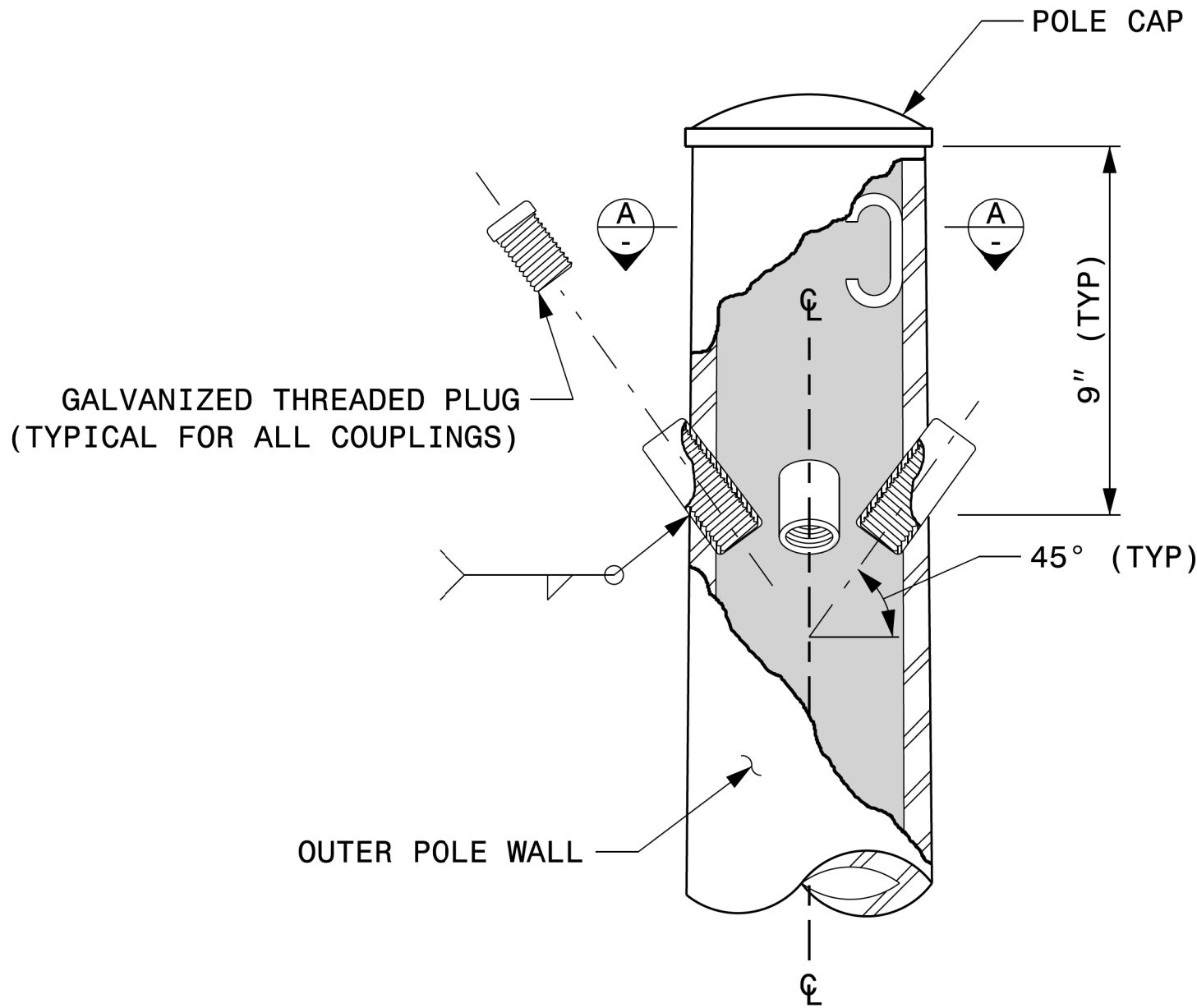


DocuSigned by  
Kevin Durigon

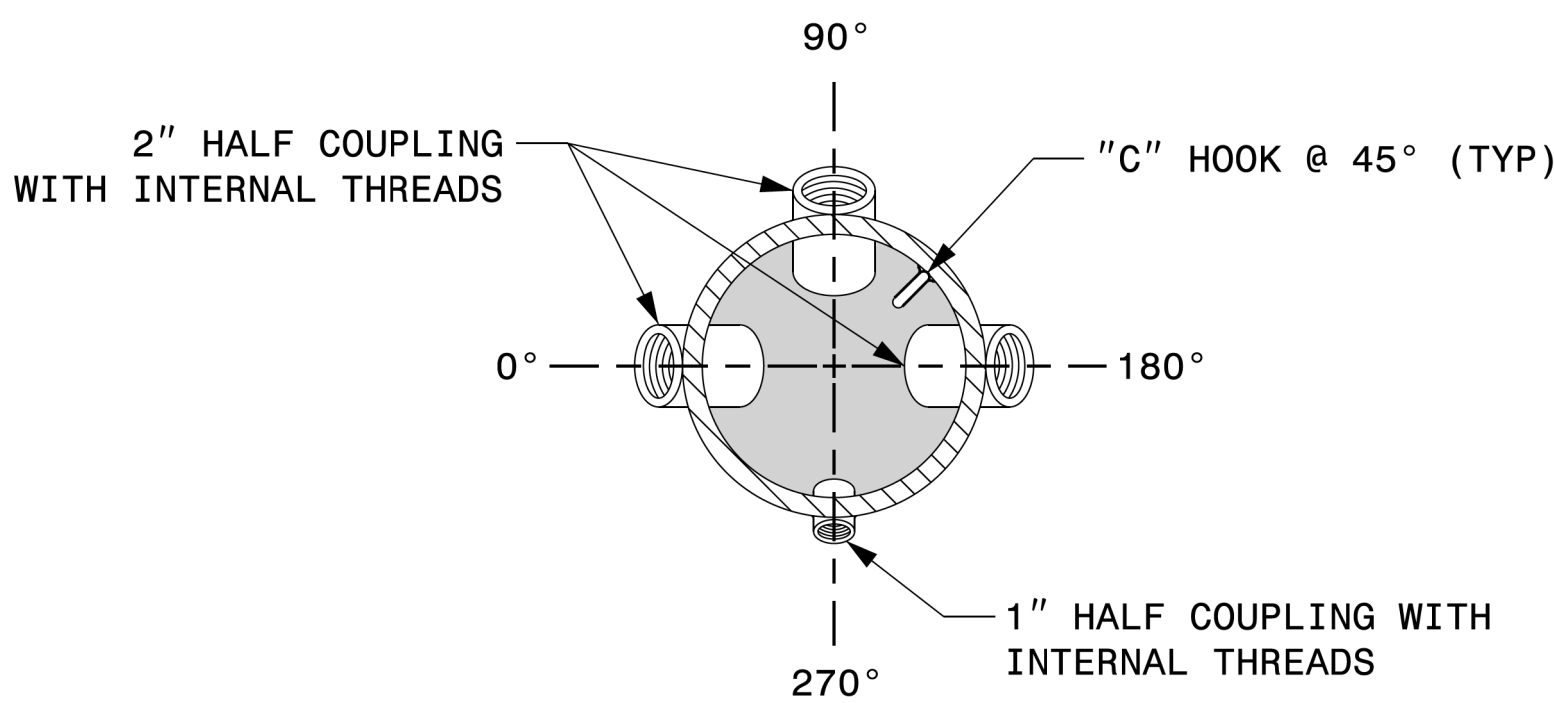
09/21/2023  
DATE

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".

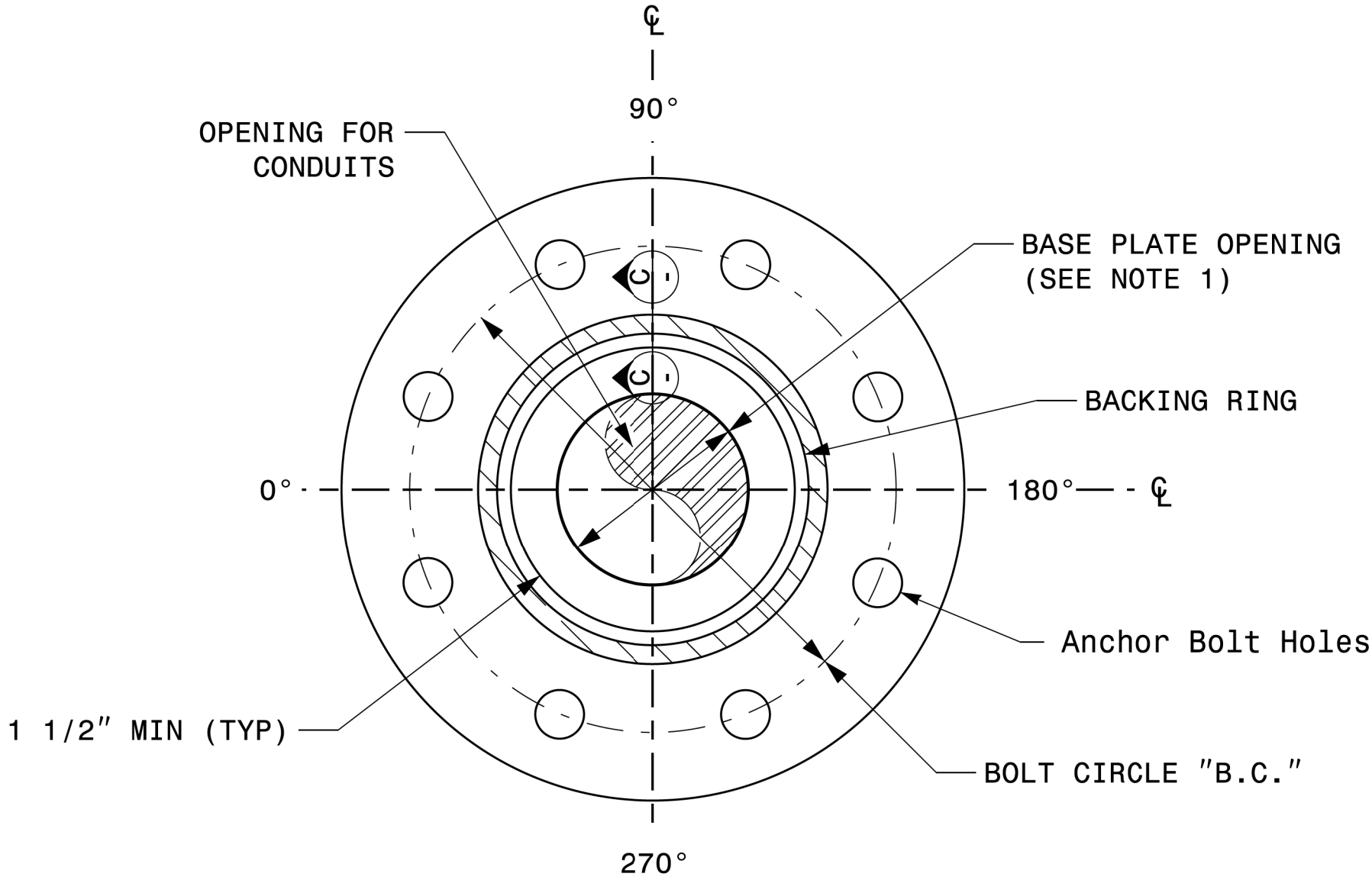


CABLE ENTRANCES AT TOP OF POLE

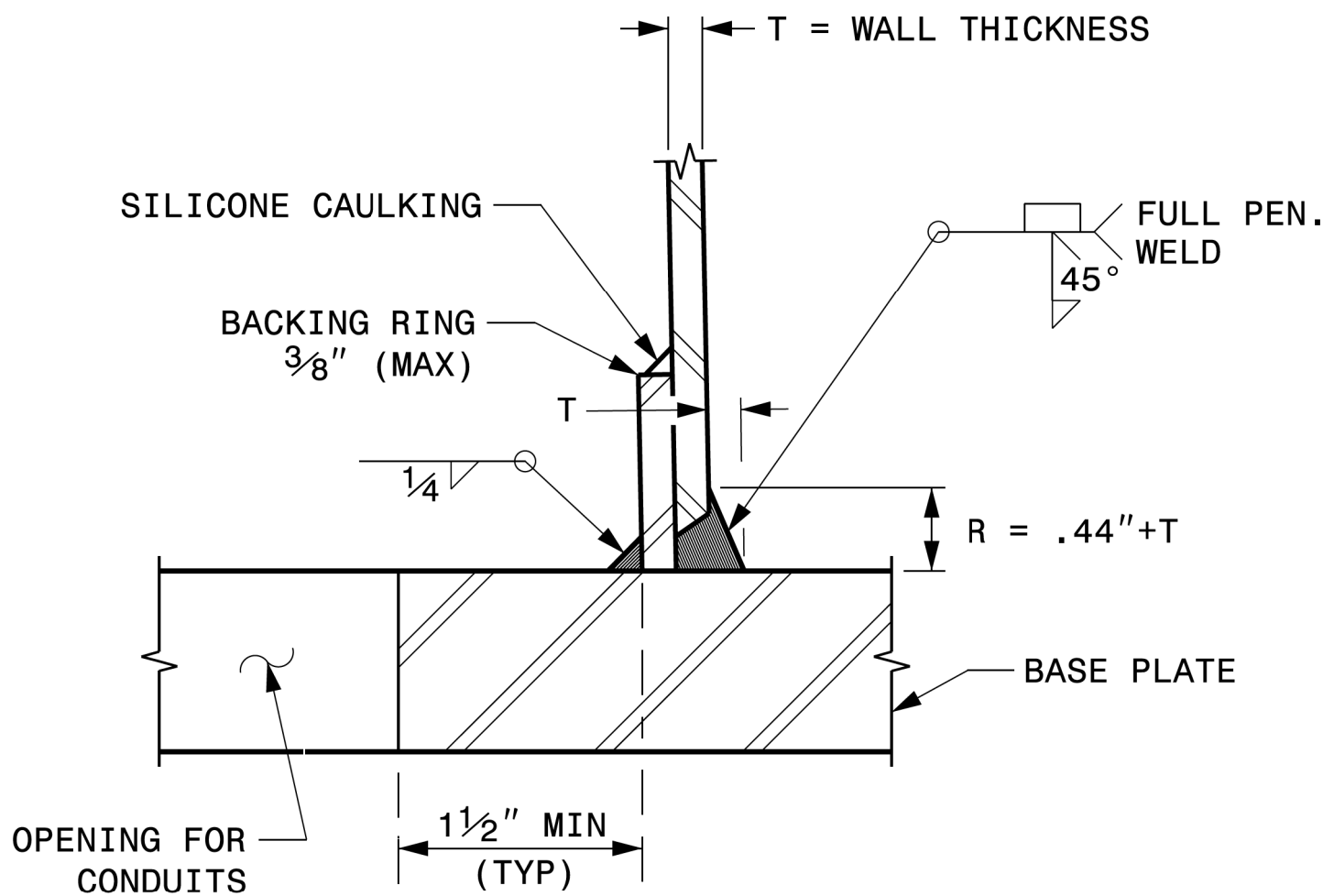


SECTION A-A

RADIAL ORIENTATION OF FACTORY INSTALLED ACCESSORIES AT TOP OF POLE

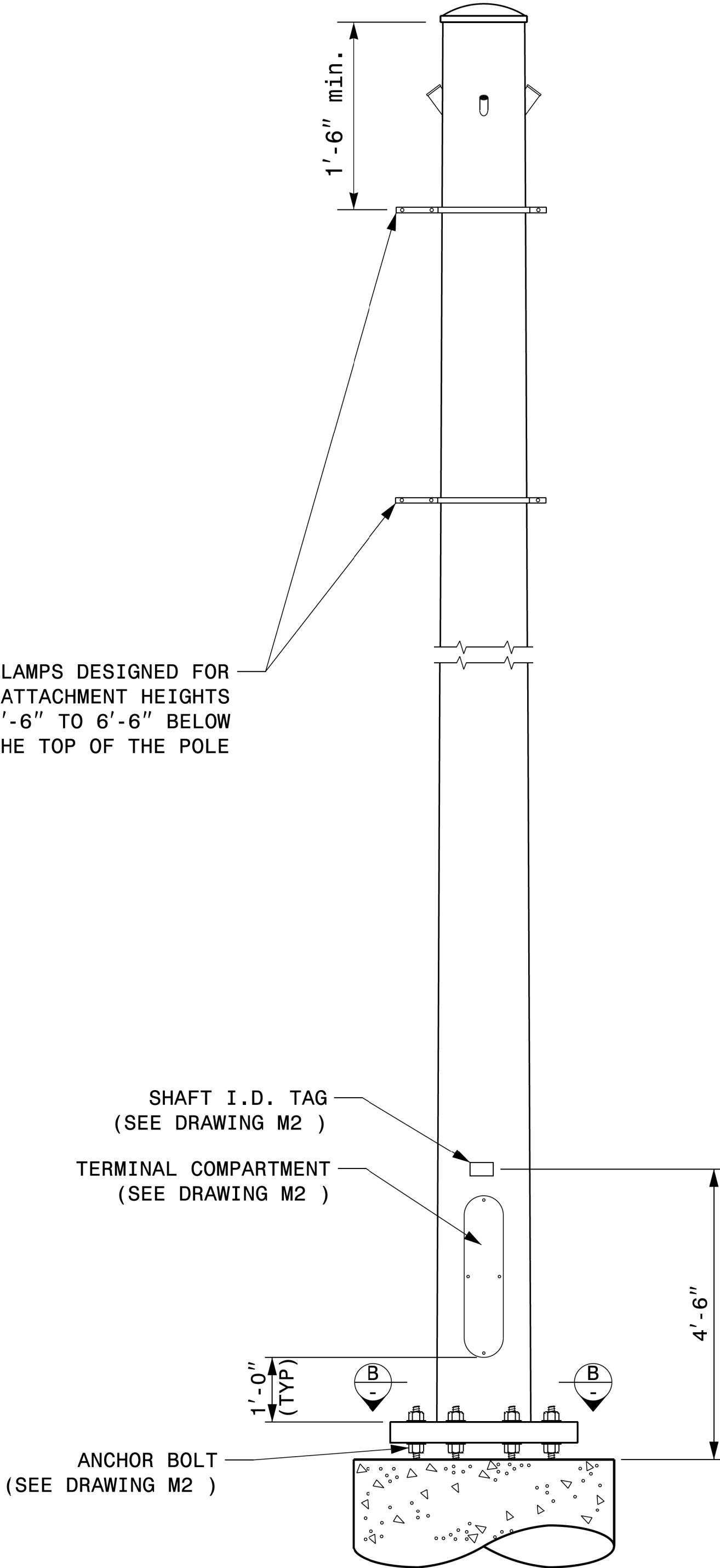


SECTION B-B  
POLE BASE PLATE DETAILS  
(8 AND 12 BOLT PATTERN)



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

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

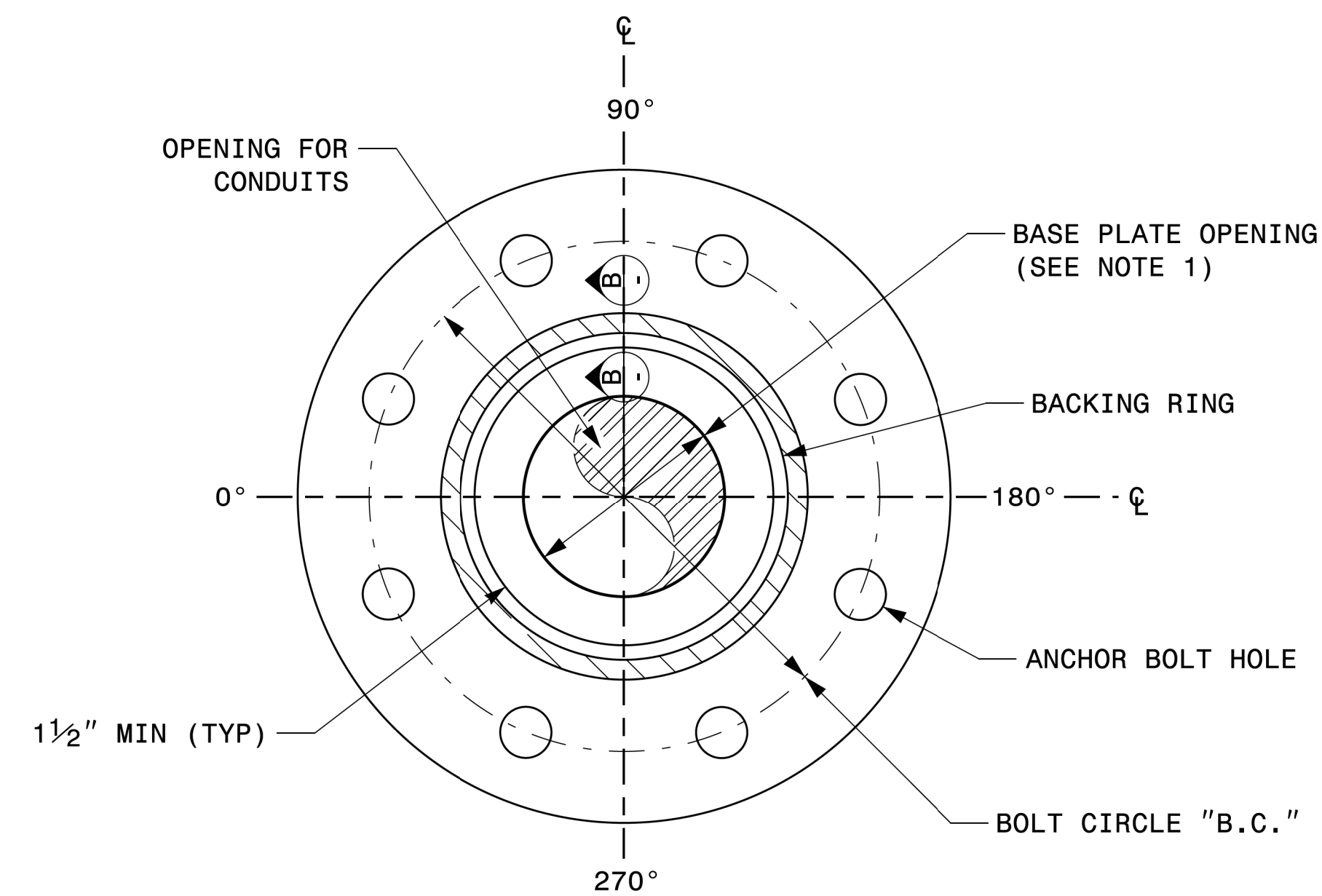


MONOTUBE STRAIN POLE

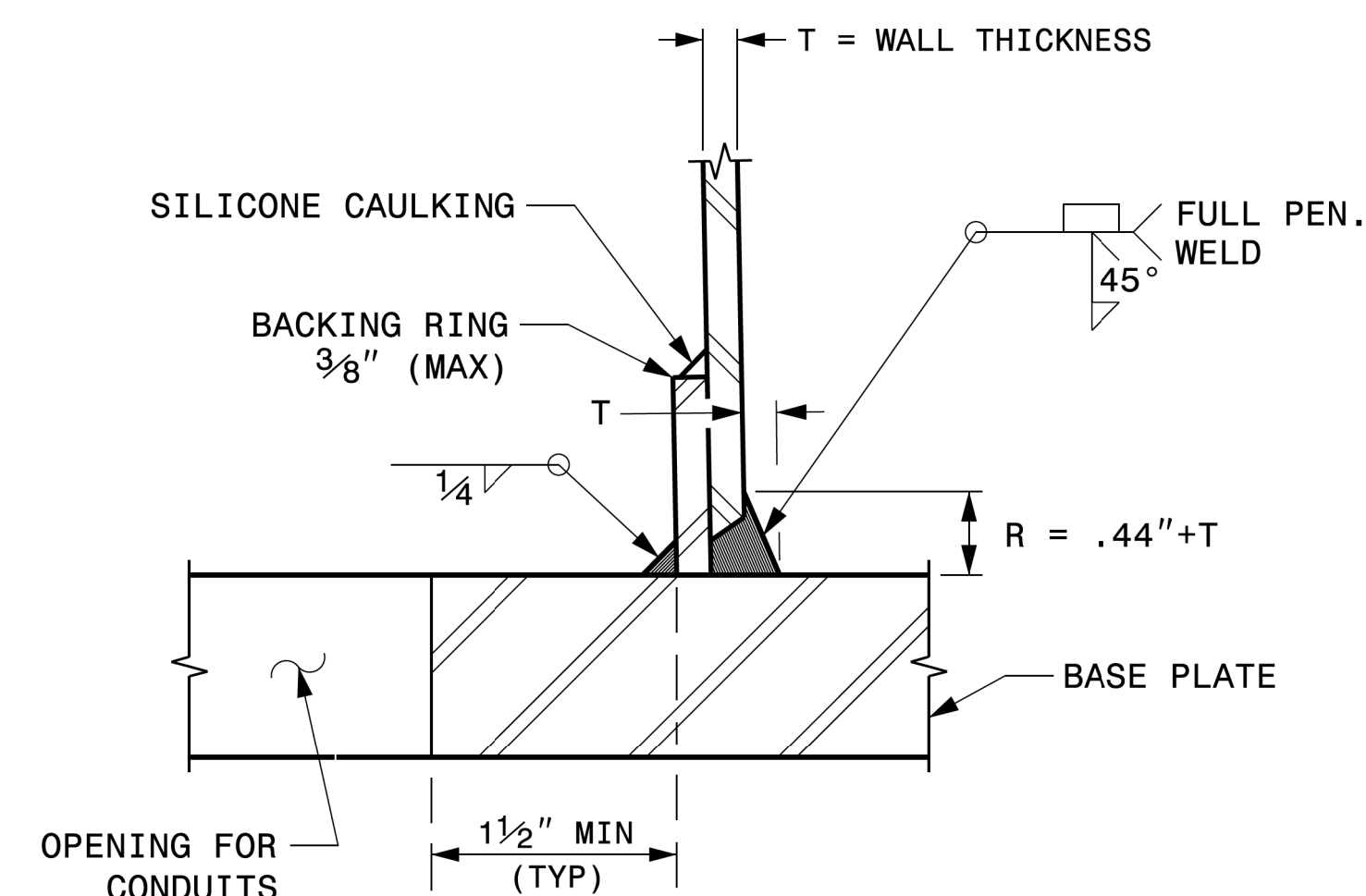
|                                          |                                              |                           |                              |
|------------------------------------------|----------------------------------------------|---------------------------|------------------------------|
|                                          | Typical Fabrication Details For Strain Poles |                           |                              |
|                                          | PLAN DATE: SEPTEMBER 2023                    | DESIGNED BY: K.C. DURIGON |                              |
| 750 N. Greenfield Pkwy, Garner, NC 27529 | PREPARED BY: K.C. DURIGON                    | REVIEWED BY: D.C. SARKAR  | DocuSigned by: Kevin Durigon |
| SCALE: NA                                | REVISIONS                                    | INIT. DATE                |                              |
| NONE                                     |                                              |                           | 09/21/2023                   |

NOTE:

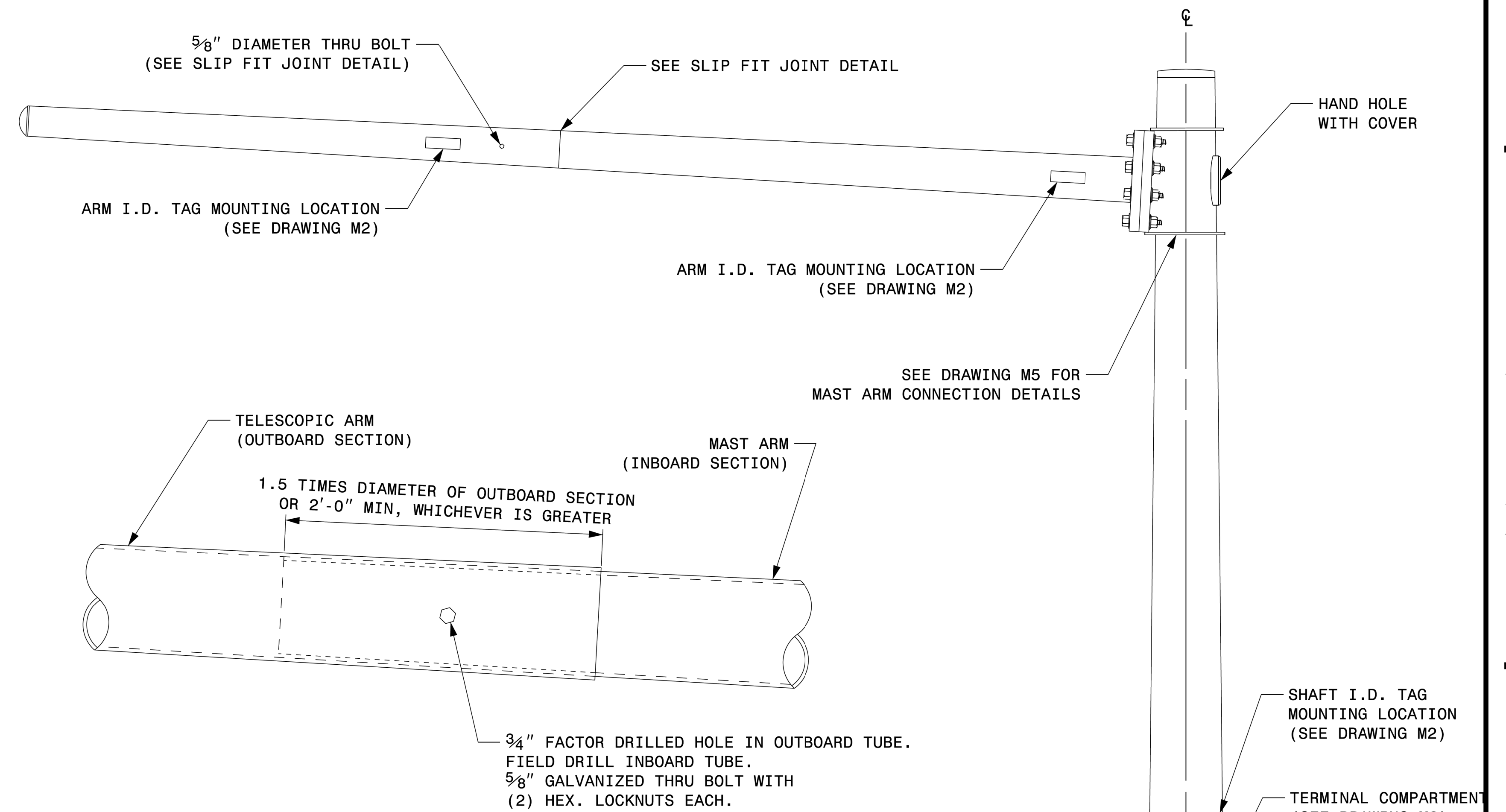
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS  $3\frac{1}{2}$ " BUT SHALL NOT BE LESS THAN  $8\frac{1}{2}$ ".



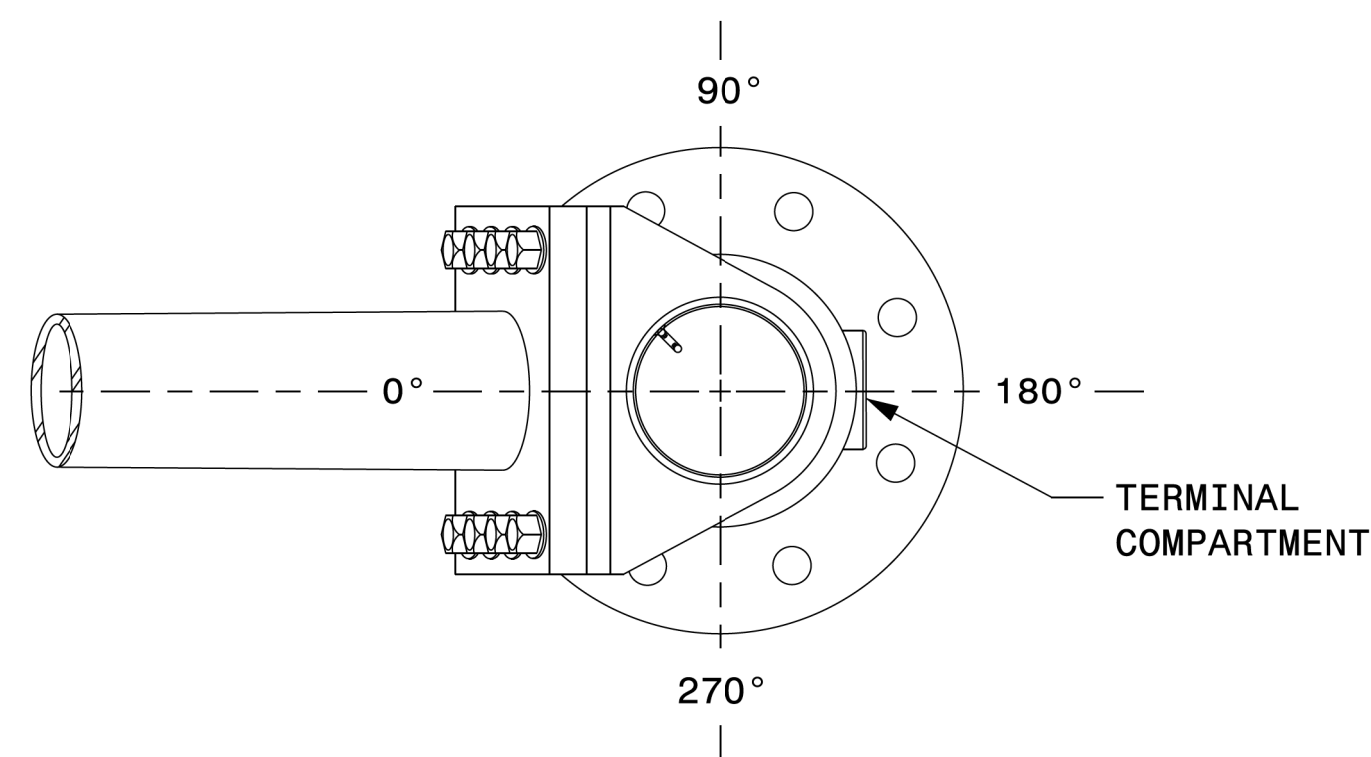
SECTION A-A  
POLE BASE PLATE DETAILS



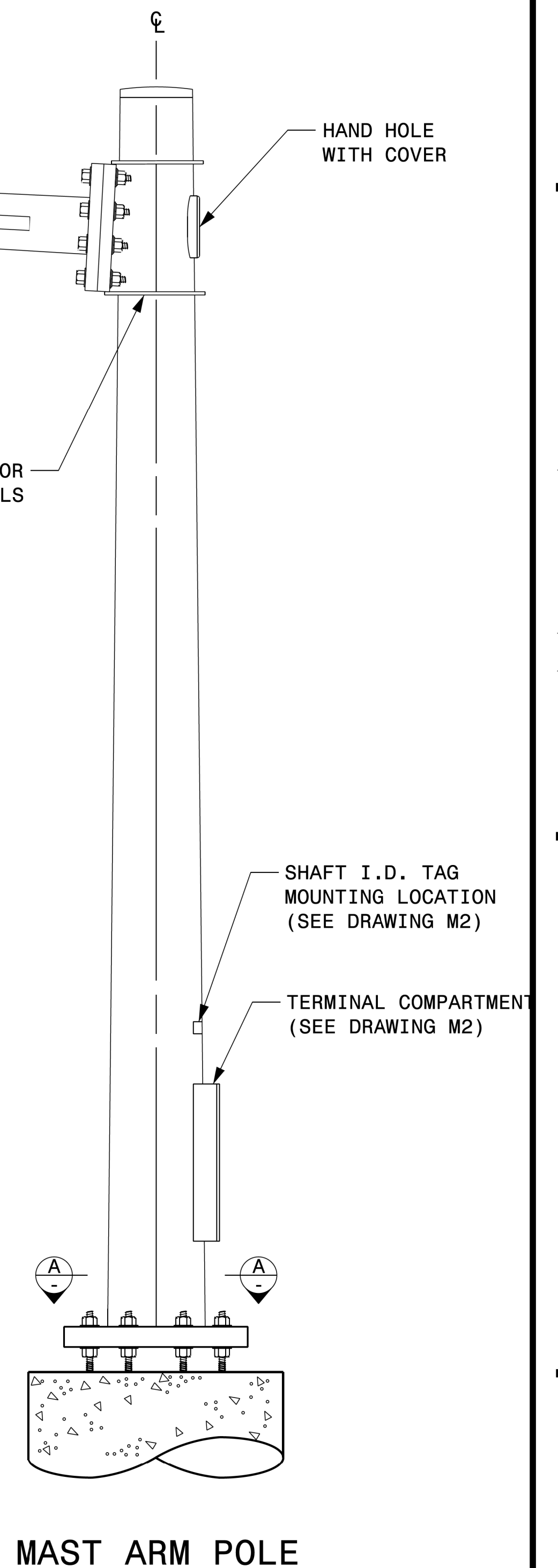
**SECTION B-B**  
(POLE ATTACHMENT TO BASE PLATE)  
**FULL - PENETRATION**  
**GROOVE WELD DETAIL**



### SLIP FIT JOINT DETAIL FOR MAST ARM



### MAST ARM RADIAL ORIENTATION



MAST ARM POLE

