

6-AUG-2025 13:31 \\p01ncdot\proj\01\Documents\NCDOT\_TSM0\Signal Design Section\Division\_05\05-1662\Signal Design\2024-07\_HL-00081\TSH\_sug\_dsn\_20250715.dgn

Project: HL-00081

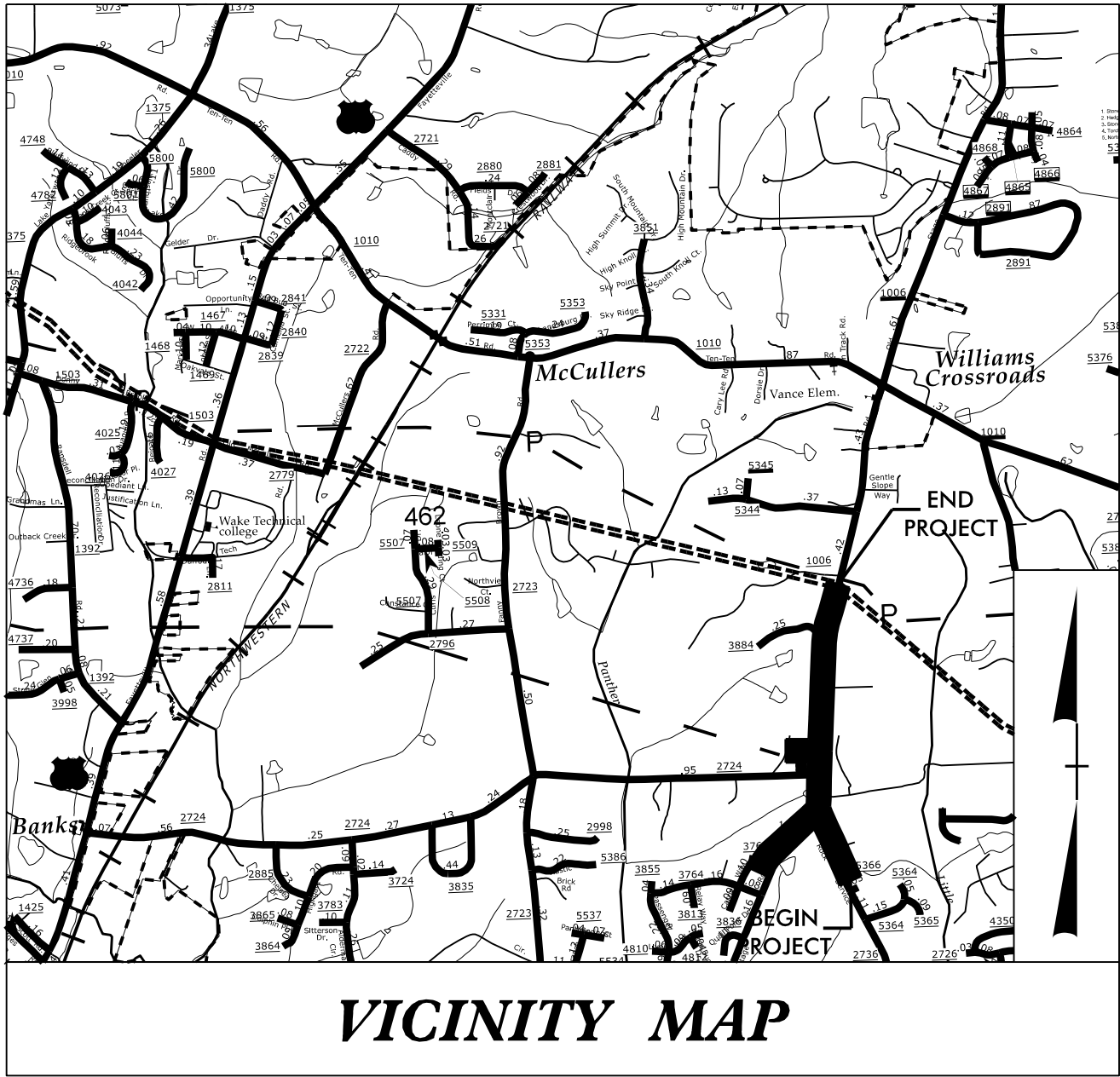
CONTRACT: C205038

|             |           |
|-------------|-----------|
| Project No. | Sheet No. |
| HL-00081    | Sig. 1.0  |

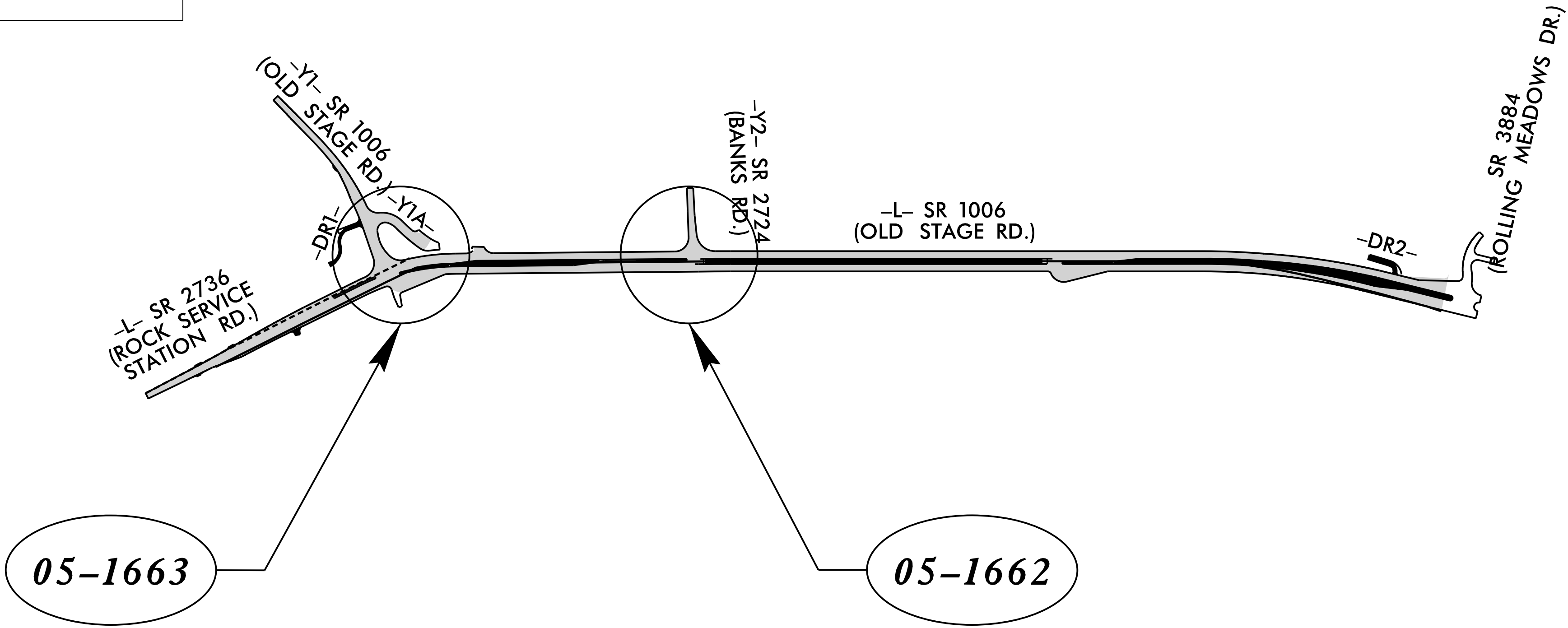
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: SR 1006 (OLD STAGE ROAD) FROM  
SR 2736 (ROCK SERVICE STATION ROAD) TO  
SR 3884 (ROLLING MEADOWS DRIVE)  
TYPE OF WORK: SIGNALS AND SIGNAL COMMUNICATIONS



VICINITY MAP



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

Index of Plans  
Location/Description

| Sheet #        | Reference # |
|----------------|-------------|
| Sig. 1.0       | N/A         |
| Sig. 2.0 - 4.3 | 05-1663     |
| Sig. 5.0 - 5.4 | 05-1662     |
| MIA-M9         | -----       |
| SCP 1 - 8      | -----       |

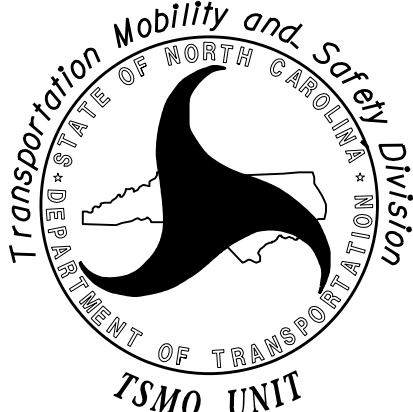
Title Sheet  
SR 1006 (Old-Stage Road) at SR 2736 (Rock Service Station Road) And Back Field Road  
SR 1006 (Old-Stage Road) at SR 2724 (Banks Road)  
Standard Metal Pole Sheets  
Signal Communication Plans

TRANSPORTATION SYSTEMS  
MANAGEMENT & OPERATIONS UNIT

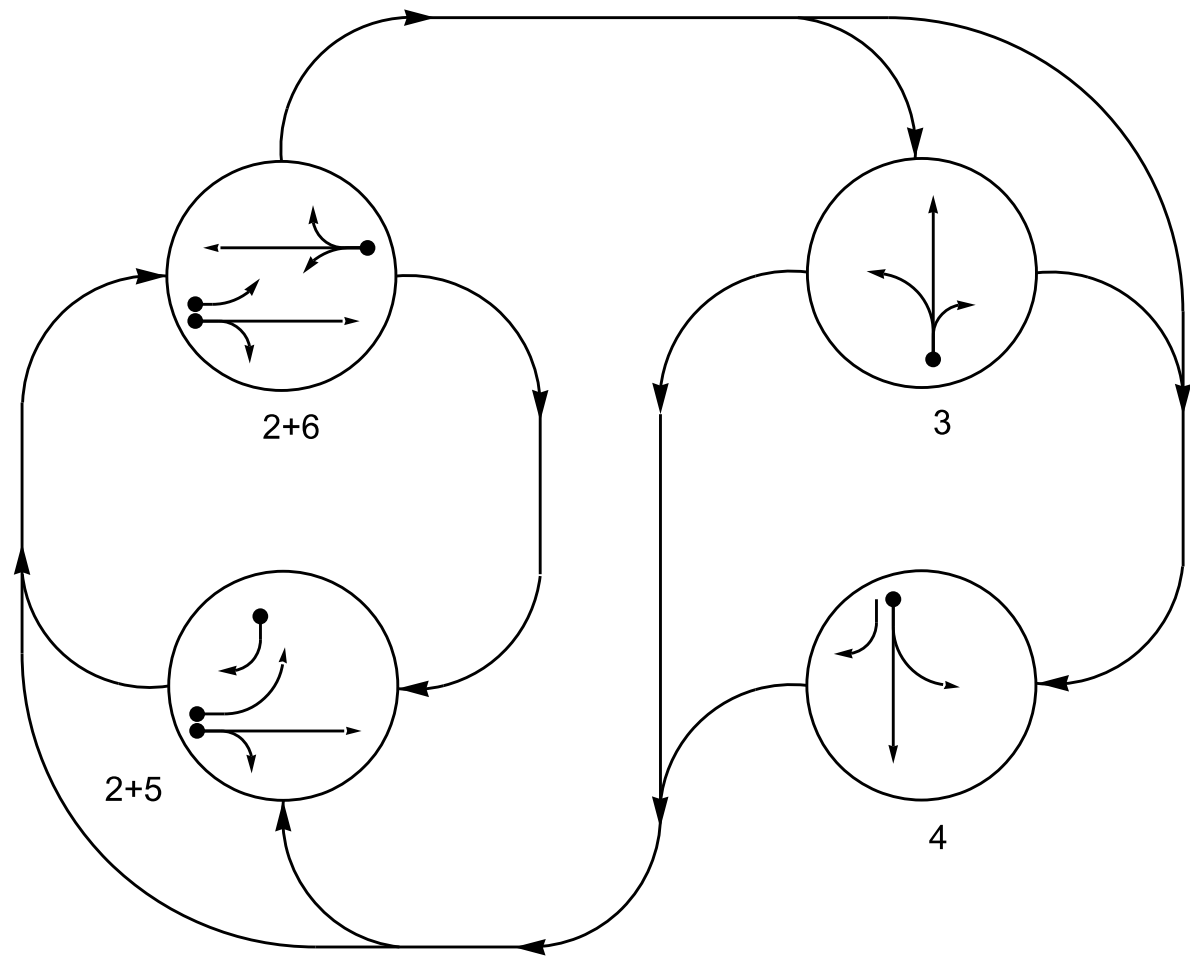
Contacts:

Robert J. Ziemba, PE, CPM - Central Region Signals Engineer  
Ryan W. Hough, PE - Signal Equipment Design Engineer  
Gregory A. Green - Signal Communication Project Engineer

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

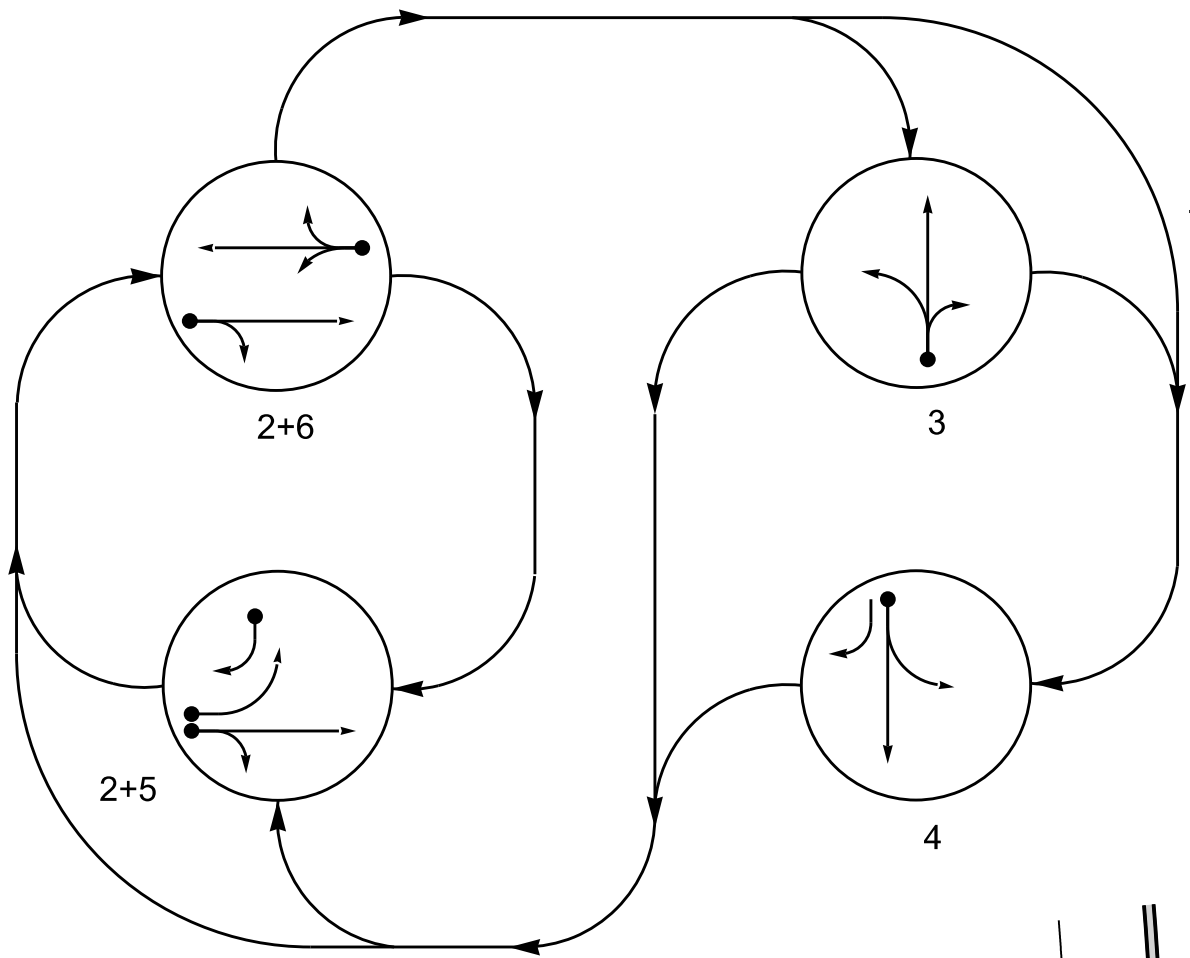


DEFAULT PHASING DIAGRAM



| SIGNAL FACE | PHASE |     |   |   |           |
|-------------|-------|-----|---|---|-----------|
|             | 2+5   | 2+6 | 3 | 4 | Left Turn |
| 21, 22      | G     | G   | R | R | R         |
| 31          | R     | R   | G | R | R         |
| 32          | R     | R   | G | R | R         |
| 41          | R     | R   | R | G | R         |
| 42          | R     | R   | R | G | R         |
| 51          | ←     | ←   | ← | ← | ←         |
| 61, 62      | R     | G   | R | R | R         |

ALTERNATE PHASING DIAGRAM



| SIGNAL FACE | PHASE |     |   |   |           |
|-------------|-------|-----|---|---|-----------|
|             | 2+5   | 2+6 | 3 | 4 | Left Turn |
| 21, 22      | G     | G   | R | R | R         |
| 31          | R     | R   | G | R | R         |
| 32          | R     | R   | G | R | R         |
| 41          | R     | R   | R | G | R         |
| 42          | R     | R   | R | G | R         |
| 51          | ←     | ←   | ← | ← | ←         |
| 61, 62      | R     | G   | R | R | R         |

PHASING DIAGRAM DETECTION LEGEND

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

MAXTIME DETECTOR INSTALLATION CHART

| DETECTOR |           |                              |      |          | PROGRAMMING |            |             |        |               |                         |          |
|----------|-----------|------------------------------|------|----------|-------------|------------|-------------|--------|---------------|-------------------------|----------|
| ZONE     | SIZE (FT) | DISTANCE FROM STOP LINE (FT) | TURN | NEW LOOP | CALL PHASE  | DELAY TIME | EXTEND TIME | EXTEND | ADDED INITIAL | CALL DELAY DURING GREEN | NEW CARD |
| 2A*      | 6X6       | 300                          | *    | *        | 2           | -          | -           | X      | X             | X                       | *        |
| 3A*      | 6X40      | 0                            | *    | *        | 3           | 10.0       | -           | X      | -             | X                       | *        |
| 4A*      | 6X40      | 0                            | *    | *        | 4           | 3.0        | -           | X      | -             | X                       | *        |
| 5A*      | 6X40      | 0                            | *    | *        | 5           | 15.0**     | -           | X      | -             | X                       | *        |
| 5B*      | 6X40      | 0                            | *    | *        | 2#          | 3.0        | -           | X      | -             | X                       | *        |
| 6A*      | 6X6       | 300                          | *    | *        | 6           | -          | -           | X      | X             | X                       | *        |

\*\* Disable Delay During Alternate Phasing Operation.  
# Disable Phase Call for Loop during Alternate Phasing Operation.  
\* Non Intrusive Detection Zone.

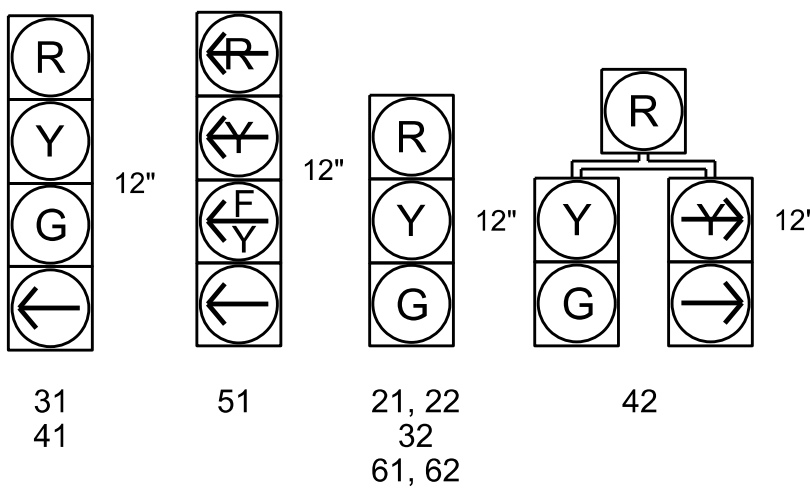
4 Phase  
Fully Actuated  
(Isolated)

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.
- Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

| PROPOSED                     | EXISTING                      |
|------------------------------|-------------------------------|
| Traffic Signal Head          | Modified Signal Head          |
| Sign                         | Sign                          |
| Pedestrian Signal Head       | Signal Pole with Guy          |
| Signal Pole with Guy         | Signal Pole with Sidewalk Guy |
| Inductive Loop Detector      | Controller & Cabinet          |
| Controller & Cabinet         | Junction Box                  |
| Junction Box                 | 2-in Underground Conduit      |
| 2-in Underground Conduit     | Right of Way                  |
| Directional Arrow            | Non-Intrusive Detection Zone  |
| Non-Intrusive Detection Zone | Construction Zone             |
| Construction Zone            | Construction Zone Drums       |
| Construction Zone Drums      | No U-Turn Sign (R3-4)         |

| FEATURE                 | PHASE      |     |     |     |            |
|-------------------------|------------|-----|-----|-----|------------|
|                         | 2          | 3   | 4   | 5   | 6          |
| Walk *                  | -          | -   | -   | -   | -          |
| Ped Clear               | -          | -   | -   | -   | -          |
| Min Green *             | 12         | 7   | 7   | 7   | 12         |
| Passage *               | 6.0        | 2.0 | 2.0 | 2.0 | 6.0        |
| Max 1 *                 | 100        | 15  | 30  | 15  | 100        |
| Yellow Change           | 4.7        | 3.0 | 4.7 | 3.0 | 4.7        |
| Red Clear               | 1.3        | 2.9 | 1.7 | 2.1 | 1.3        |
| Red Revert              | 5.0        | 2.0 | 2.0 | 2.0 | 2.0        |
| 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            | -          | -   | -   | -   | -          |
| Non Lock Detector       | -          | X   | X   | X   | -          |
| Vehicle Recall          | MIN RECALL | -   | -   | -   | MIN RECALL |
| Dual Entry              | -          | -   | -   | -   | -          |

\* These values may be field adjusted. Do not adjust Min Green and 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.

New Installation - Temporary. Design 1 (TMP Phase II)

Prepared in the Offices of:  
Wake County  
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1006 (Old Stage Road)  
at  
SR 2736 (Rock Service Station Road)  
and Back Field Road

Division 5  
Wake County  
Fuquay-Varina

PLAN DATE: May 2025  
PREPARED BY: I.O. Umozurike  
REVIEWED BY: [Signature]

REVISIONS  
INIT. DATE

SCALE  
0 40  
1"=40'

DATE  
07/15/2025

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

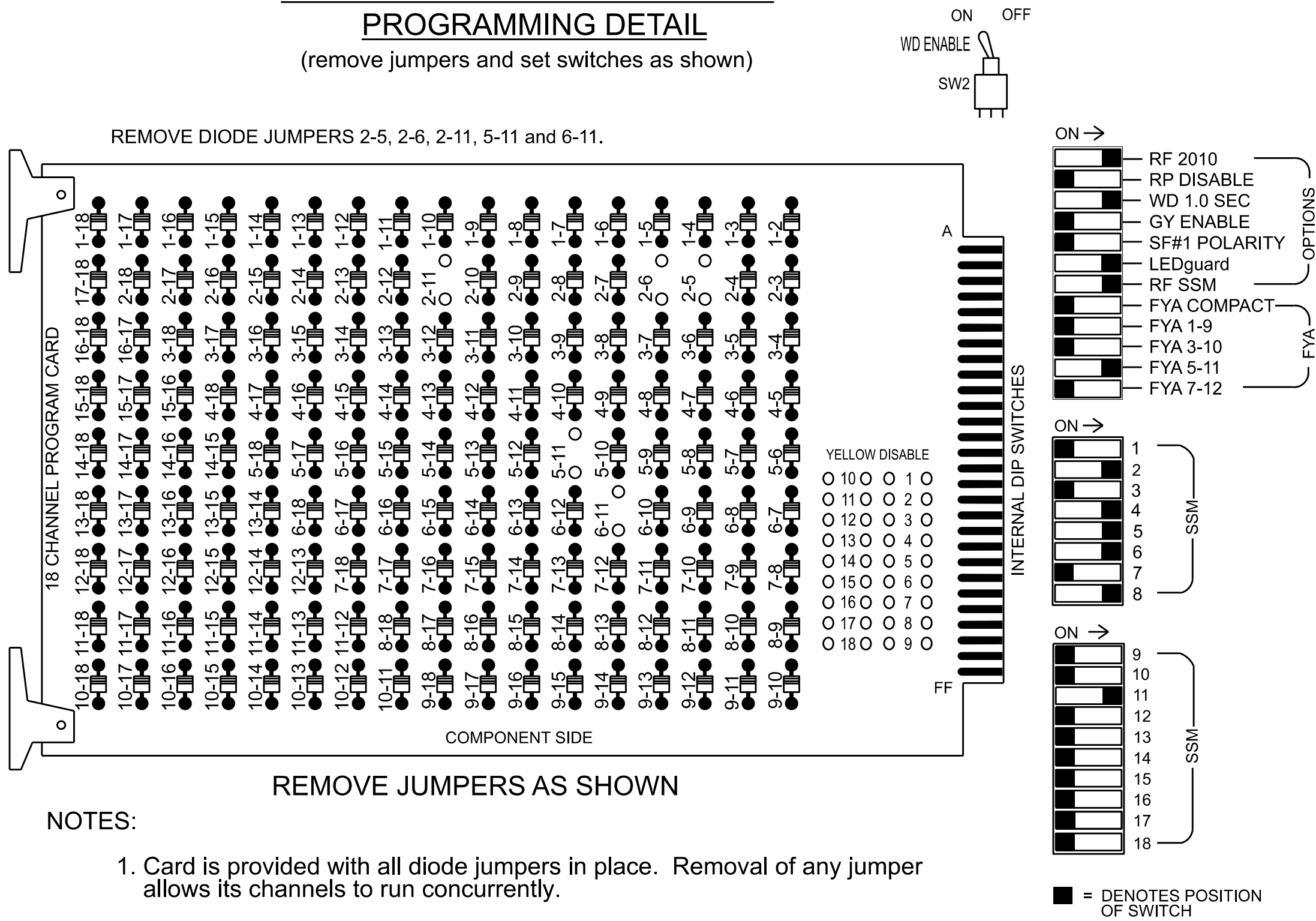
SEAL  
NORTH CAROLINA  
PROFESSIONAL ENGINEER  
ROBERT J. ZIEMBA  
026486

DATE  
07/15/2025  
SIG. INVENTORY NO.  
05-1663T1

17-JUL-2025 11:07  
D:\p\ncdot-pw\01\Documents\NCDOT TSMO\SIGNAL Design Sect1\conv01\vision\_05\05-1663\SIGNAL Management\051663\_sm\_e\_2025mdd.dgn  
ZZZfor

18 CHANNEL CONFLICT MONITOR  
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

Controller.....2070LX  
Cabinet.....332 w/ Aux  
Software.....Q-Free MAXTIME  
Cabinet Mount.....Base  
Output File Positions.....18 With Aux. Output File  
Load Switches Used.....S2, S5, S7, S8, S11, AUX S4  
Phases Used.....2, \*\*3, 4, 5, 6  
Overlap "1".....Not Used  
Overlap "2".....Not Used  
Overlap "3".....\*  
Overlap "4".....Not Used  
Overlap "8".....\*

\*See overlap programming detail on sheet 2  
\*\* Used for timing purposes only

| PROJECT REFERENCE NO. | SHEET NO. |
|-----------------------|-----------|
| HL-00081              | Sig. 2.1  |

SIGNAL HEAD HOOK-UP CHART

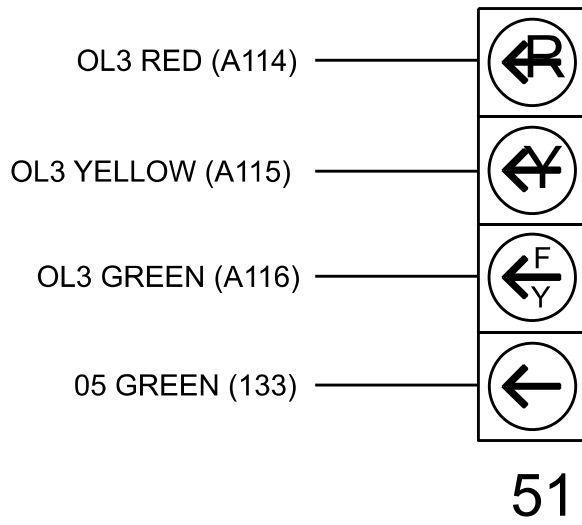
| LOAD SWITCH NO.       | S1 | S2    | S3    | S4 | S5  | S6    | S7  | S8  | S9    | S10   | S11 | S12   | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|----|-------|-------|----|-----|-------|-----|-----|-------|-------|-----|-------|--------|--------|--------|--------|--------|--------|
| 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     | OL8 | 8 PED | OL1    | OL2    | SPARE  | OL3    | OL4    | SPARE  |
| SIGNAL HEAD NO.       | NU | 21.22 | NU    | NC | 41  | 42    | NU  | 42  | 51★   | 61.62 | NU  | NU    | 31     | 32     | NU     | NU     | 51★    | NU     |
| RED                   |    | 128   |       |    | 101 | 101   |     |     | ★     | 134   |     |       | 107    | 107    |        |        |        |        |
| YELLOW                |    | 129   |       |    | 102 | 102   |     |     |       | 135   |     |       | 108    | 108    |        |        |        |        |
| GREEN                 |    | 130   |       |    | 103 | 103   |     |     |       | 136   |     |       | 109    | 109    |        |        |        |        |
| RED ARROW             |    |       |       |    |     |       |     |     |       |       |     |       |        |        |        | A114   |        |        |
| YELLOW ARROW          |    |       |       |    |     |       | 132 |     |       |       |     |       |        |        |        | A115   |        |        |
| FLASHING YELLOW ARROW |    |       |       |    |     |       |     |     |       |       |     |       |        |        |        | A116   |        |        |
| GREEN ARROW           |    |       |       |    | 103 |       | 133 | 133 |       |       | 109 |       |        |        |        |        |        |        |
| HAND                  |    |       |       |    |     |       |     |     |       |       |     |       |        |        |        |        |        |        |
| WALK                  |    |       |       |    |     |       |     |     |       |       |     |       |        |        |        |        |        |        |

NU = Not Used  
NC = No Connection

\* 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 head as shown)



INPUT FILE POSITION LAYOUT

(front view)

|          | 1                             | 2                             | 3                             | 4                             | 5                             | 6                             | 7                             | 8                             | 9                             | 10                            | 11                            | 12                            | 13                            | 14                                           |
|----------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|----------------------------------------------|
| FILE "I" | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | FS<br>DC<br>ISOLATOR<br>ST<br>DC<br>ISOLATOR |
| FILE "J" | Ø 5<br>5A<br>NOT USED         | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z- | S<br>-O-<br>-I-<br>-V-<br>-Z-                |

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

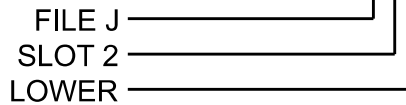
FS = FLASH SENSE  
ST = STOP TIME

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 |
|----------|---------------|-----------------|---------|-------------|--------------|------------|------------|-------------|--------|---------------|--------|--------------------|
| 5A       | TB3-1,2       | J1U             | 55      | 17<br>-     | 15★<br>31★   | 5<br>2     | 15<br>3    |             | X<br>X |               | X<br>X | X<br>X             |

\* For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

INPUT FILE POSITION LEGEND: J2L



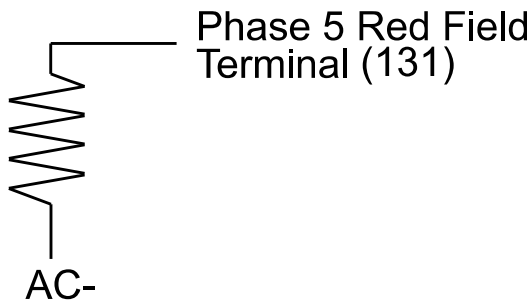
DETECTOR NOTES

- For all loops 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 loop 5A, detector card placement is typical for a NCDOT installation. Detectors associated with these slots are compatible with the Vehicle Detector Programming Detail located on sheet 2 of this electrical detail.

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



Electrical Detail - Sheet 1 of 3

|                                          |                                                                                              |                                                                                       |
|------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Electrical and Programming Details For:  | SR 1006 (Old Stage Road)<br>at<br>SR 2736 (Rock Service Station Road)<br>and Back Field Road | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED                         |
| Prepared in the Offices of:              | Division 5<br>Wake County<br>Fuquay-Varina                                                   | SEAL<br>NORTH CAROLINA<br>PROFESSIONAL<br>SEAL<br>031001<br>ENGINEER<br>TODD JOYCE    |
| 750 N. Greenfield Pkwy, Garner, NC 27529 | PLAN DATE: June 2025<br>REVIEWED BY:<br>PREPARED BY: Zarrar Zafar<br>REVIEWED BY:            | DocuSigned by:<br>D. Todd Joyce<br>07/18/2025<br>DATE<br>SIG. INVENTORY NO. 05-1663T1 |



## 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                    |

## 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   | - | - | - | - | - | - | - | - |
| Serve Phase 6   | - | - | - | - | X | - | - | - |
| Serve Phase 7   | - | - | - | - | - | - | - | - |
| Serve Phase 8   | - | - | - | - | - | - | - | - |

## OUTPUT CHANNEL CONFIGURATION

### Front Panel

Main Menu >Controller >More>Channels>Channels Config

## Web Interface

Home >Controller >Advanced IO>Channels>Channel Configuration

## Channel Configuration

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

NOTE CONTROL TYPE  
AND CONTROL SOURCE →

## MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

### Front Panel

Main Menu >Controller >Unit

## Web Interface

Home >Controller >Unit

Modify parameters as shown below and save changes.

## Start Up Parameters

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

## Unit Flash Parameters

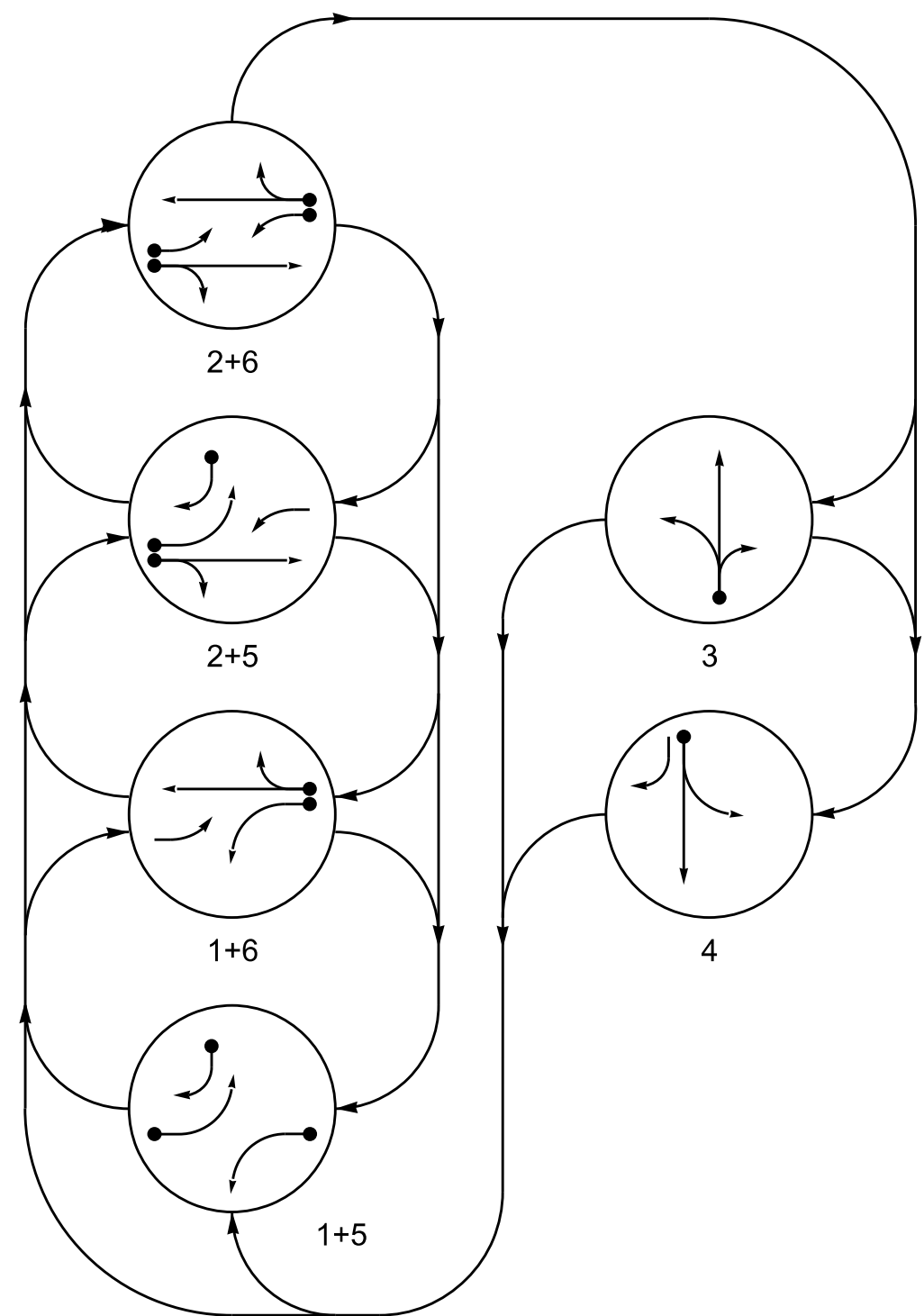
|                         |
|-------------------------|
| All Red Flash Exit Time |
| 6                       |

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1663T1  
DESIGNED: May 2025  
SEALED: 7/15/2025  
REVISED: N/A

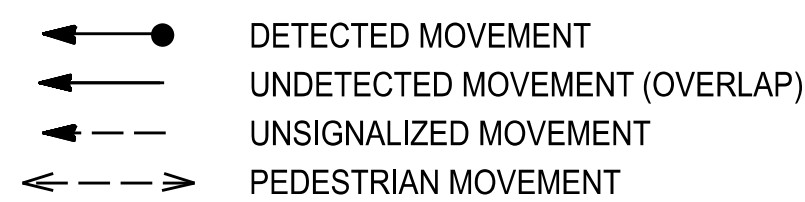
Electrical Detail - Sheet 3 of 3

| Electrical and Programming<br>Details For:                                            | SR 1006 (Old Stage Road)<br>at<br>SR 2736 (Rock Service Station Road)<br>and Back Field Road                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SIGNATURES COMPLETED<br>SEAL                                                                                                                 |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Prepared in the Offices of:                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                         |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Division 5      Wake County      Fuquay-Varina                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                              |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                       | PLAN DATE:      June 2025      REVIEWED BY:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                              |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                       | PREPARED BY:      Zarrar Zafar      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                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DocsSigned by: <u>D. Todd Joyce</u> 07/18/2025<br><small>STATE OF NORTH CAROLINA</small><br>DATE: _____<br>SIG. INVENTORY NO.      05-1663T1 |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

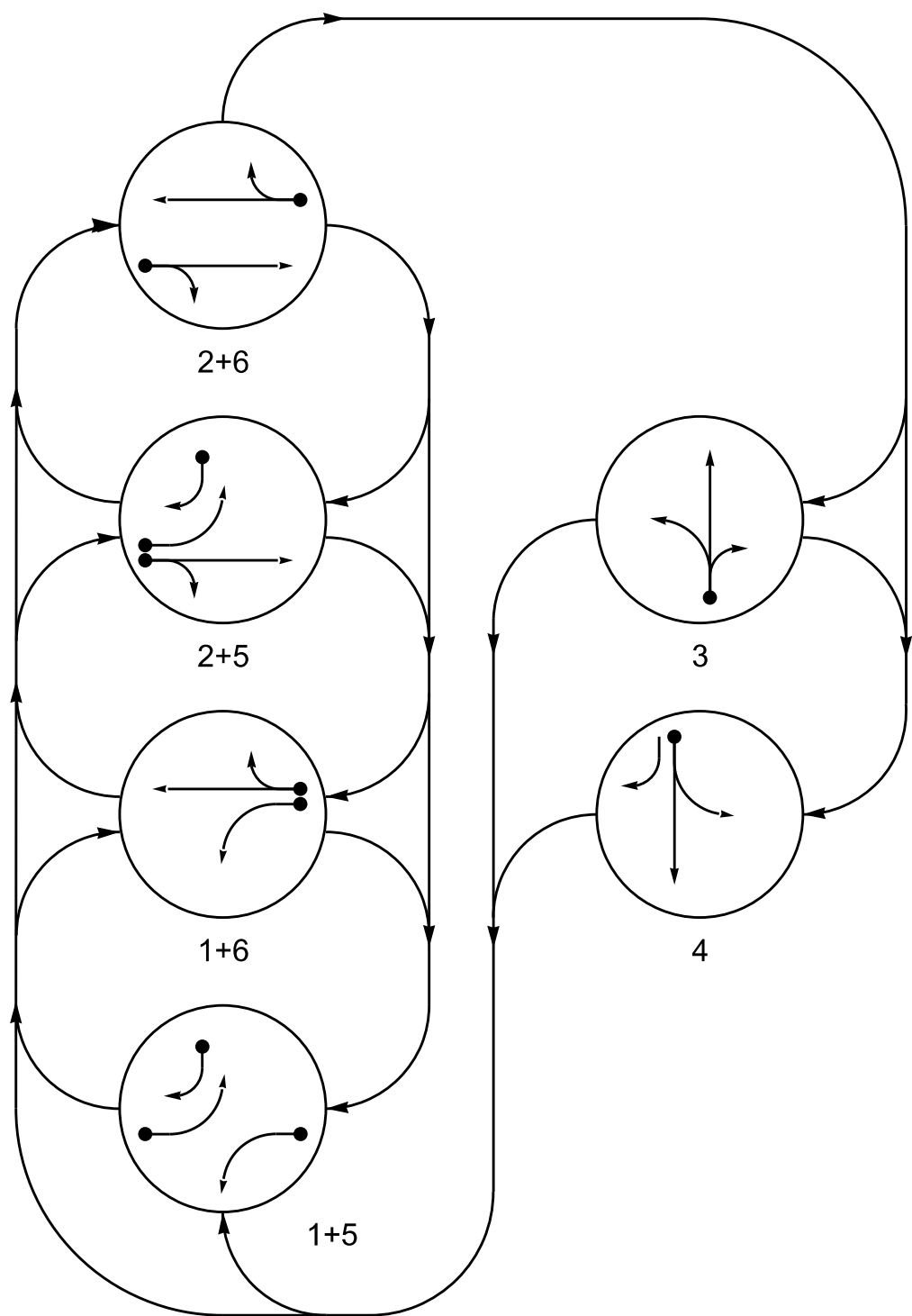
## DEFAULT PHASING DIAGRAM



## PHASING DIAGRAM DETECTION LEGEND



## ALTERNATE PHASING DIAGRAM

DEFAULT PHASING  
TABLE OF OPERATION

| SIGNAL<br>FACE | PHASE       |             |             |             |   |   |
|----------------|-------------|-------------|-------------|-------------|---|---|
|                | 1<br>+<br>5 | 1<br>+<br>6 | 2<br>+<br>5 | 2<br>+<br>6 | 3 | 4 |
| 11             | ←           | ←           | ↘           | ↘           | ↗ | ↗ |
| 21, 22         | R           | R           | G           | G           | R | R |
| 31             | R           | R           | R           | G           | R | R |
| 32             | R           | R           | R           | R           | G | R |
| 41             | R           | R           | R           | R           | R | G |
| 42             | R           | R           | R           | R           | R | G |
| 51             | ←           | ←           | ↘           | ↘           | ↗ | ↗ |
| 61, 62         | R           | G           | R           | G           | R | R |

ALTERNATE PHASING  
TABLE OF OPERATION

| SIGNAL<br>FACE | PHASE       |             |             |             |   |   |
|----------------|-------------|-------------|-------------|-------------|---|---|
|                | 1<br>+<br>5 | 1<br>+<br>6 | 2<br>+<br>5 | 2<br>+<br>6 | 3 | 4 |
| 11             | ←           | ←           | ↗           | ↗           | ↘ | ↘ |
| 21, 22         | R           | R           | G           | G           | R | R |
| 31             | R           | R           | R           | R           | G | R |
| 32             | R           | R           | R           | R           | G | R |
| 41             | R           | R           | R           | R           | R | G |
| 42             | R           | R           | R           | R           | R | G |
| 51             | ←           | ←           | ↗           | ↗           | ↘ | ↘ |
| 61, 62         | R           | G           | R           | G           | R | R |

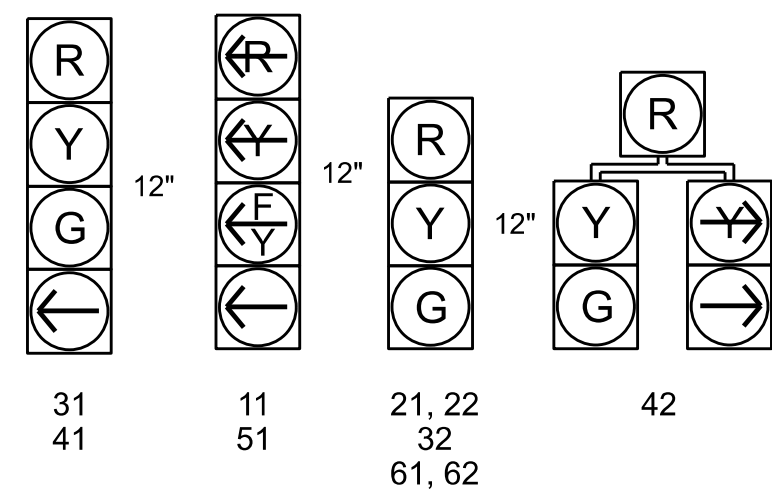
## MAXTIME DETECTOR INSTALLATION CHART

| DETECTOR |              |                                          |       | PROGRAMMING |               |               |                |        |               |                               |          |
|----------|--------------|------------------------------------------|-------|-------------|---------------|---------------|----------------|--------|---------------|-------------------------------|----------|
| ZONE     | SIZE<br>(FT) | DISTANCE<br>FROM<br>STOP<br>LINE<br>(FT) | TURNS | NEW LOOP    | CALL<br>PHASE | DELAY<br>TIME | EXTEND<br>TIME | EXTEND | ADDED INITIAL | CALL<br>DELAY DURING<br>GREEN | NEW CARD |
| 1A*      | 6X40         | 0                                        | *     | *           | 1             | 15.0**        | -              | X      | -             | X                             | *        |
|          |              |                                          |       |             | 6#            | 3.0           | -              | X      | -             | X                             | *        |
| 2A*      | 6X6          | 300                                      | *     | *           | 2             | -             | -              | X      | X             | X                             | *        |
| 3A*      | 6X40         | 0                                        | *     | *           | 3             | 3.0           | -              | X      | -             | X                             | *        |
| 4A*      | 6X40         | 0                                        | *     | *           | 4             | 3.0           | -              | X      | -             | X                             | *        |
| 5A*      | 6X40         | 0                                        | *     | *           | 5             | 15.0**        | -              | X      | -             | X                             | *        |
|          |              |                                          |       |             | 2#            | 3.0           | -              | X      | -             | X                             | *        |
| 5B*      | 6X40         | 0                                        | *     | *           | 5             | 15.0          | -              | X      | -             | X                             | *        |
| 6A*      | 6X6          | 300                                      | *     | *           | 6             | -             | -              | X      | X             | X                             | *        |

\*\* Disable Delay During Alternate Phasing Operation.  
# Disable Phase Call for Loop during Alternate Phasing Operation.  
\* Non Intrusive Detection Zone.

## SIGNAL FACE I.D.

All Heads L.E.D.

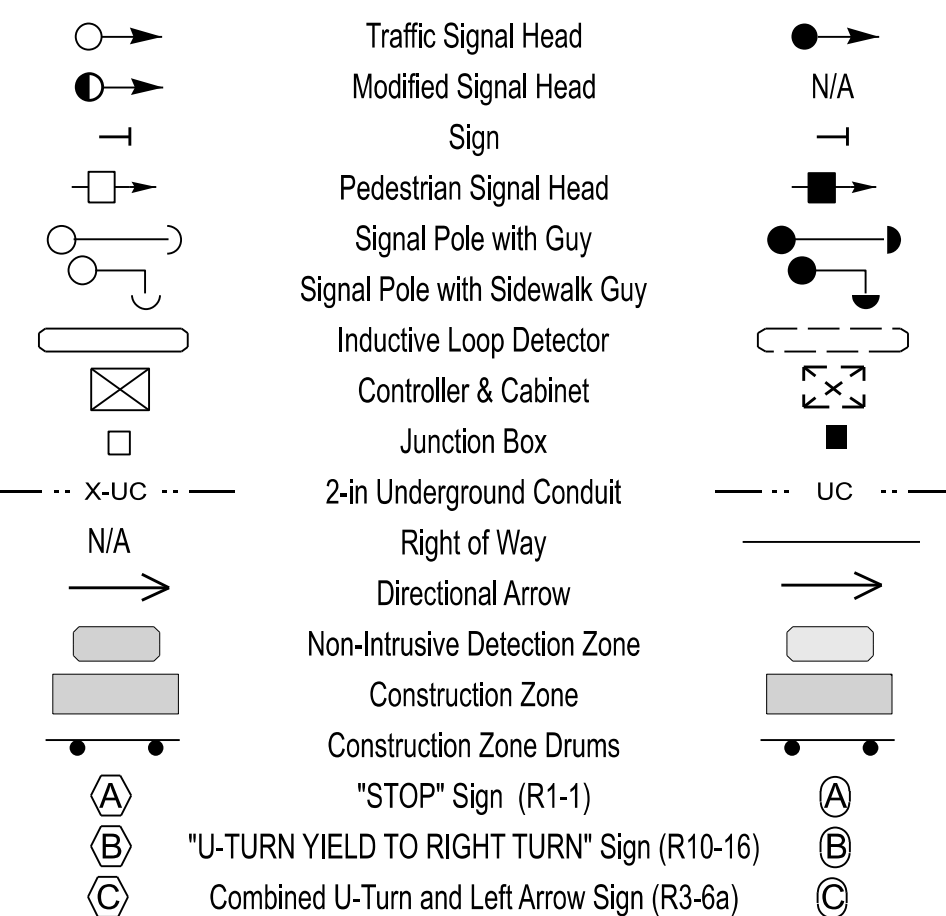
6 Phase  
Fully Actuated  
(Isolated)

## 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.
- The order of phase 3 and phase 4 may be reversed.
- Reposition existing signal heads numbered 21, 22, 51, 61 and 62.
- Set all detector units to presence mode.
- Pavement markings are existing unless otherwise shown/noted.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.

## LEGEND

## PROPOSED



## MAXTIME TIMING CHART

| FEATURE                 | PHASE |            |     |     |     |            |
|-------------------------|-------|------------|-----|-----|-----|------------|
|                         | 1     | 2          | 3   | 4   | 5   | 6          |
| Walk *                  | -     | -          | -   | -   | -   | -          |
| Ped Clear               | -     | -          | -   | -   | -   | -          |
| Min Green *             | 7     | 12         | 7   | 7   | 7   | 12         |
| Passage *               | 2.0   | 6.0        | 2.0 | 2.0 | 2.0 | 6.0        |
| Max 1 *                 | 20    | 100        | 15  | 30  | 15  | 100        |
| Yellow Change           | 3.0   | 4.7        | 3.0 | 4.7 | 3.0 | 4.7        |
| Red Clear               | 2.6   | 1.6        | 3.4 | 1.7 | 2.6 | 1.6        |
| Red Revert              | 2.0   | 5.0        | 2.0 | 2.0 | 2.0 | 2.0        |
| 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            | -     | -          | -   | -   | -   | -          |
| Non Lock Detector       | X     | -          | X   | X   | X   | -          |
| Vehicle Recall          | -     | MIN RECALL | -   | -   | -   | MIN RECALL |
| Dual Entry              | -     | -          | -   | -   | -   | -          |

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

## Signal Upgrade - Temporary, Design 2 (TMP Phase III)

|                                                                             |  |                                                                                              |  |                                                                     |  |
|-----------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------|--|
| Prepared in the Offices of:<br><br>750 N. Greenfield Pkwy, Garner, NC 27529 |  | SR 1006 (Old Stage Road)<br>at<br>SR 2736 (Rock Service Station Road)<br>and Back Field Road |  | DOCUMENT NOT CONSIDERED<br>FINAL UNLESS ALL<br>SIGNATURES COMPLETED |  |
| Division 5                                                                  |  | Wake County                                                                                  |  | Fuquay-Varina                                                       |  |
| PLAN DATE: May 2025                                                         |  | REVIEWED BY:                                                                                 |  | DATE: 07/15/2025                                                    |  |
| PREPARED BY: I.O. Umozurike                                                 |  | REVIEWED BY:                                                                                 |  | DATE:                                                               |  |
| REVISIONS                                                                   |  | INIT.                                                                                        |  | DATE                                                                |  |
| 0                                                                           |  | 1"=40'                                                                                       |  | 1884186272A450                                                      |  |
| SIG. INVENTORY NO.                                                          |  | 05-166372                                                                                    |  | 05-166372                                                           |  |





## OUTPUT CHANNEL CONFIGURATION

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

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

## Channel Configuration

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

NOTE CONTROL TYPE  
AND CONTROL SOURCE →

## MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel  
Main Menu >Controller >Unit

Web Interface  
Home >Controller >Unit

Modify parameters as shown below and save changes.

## Start Up Parameters

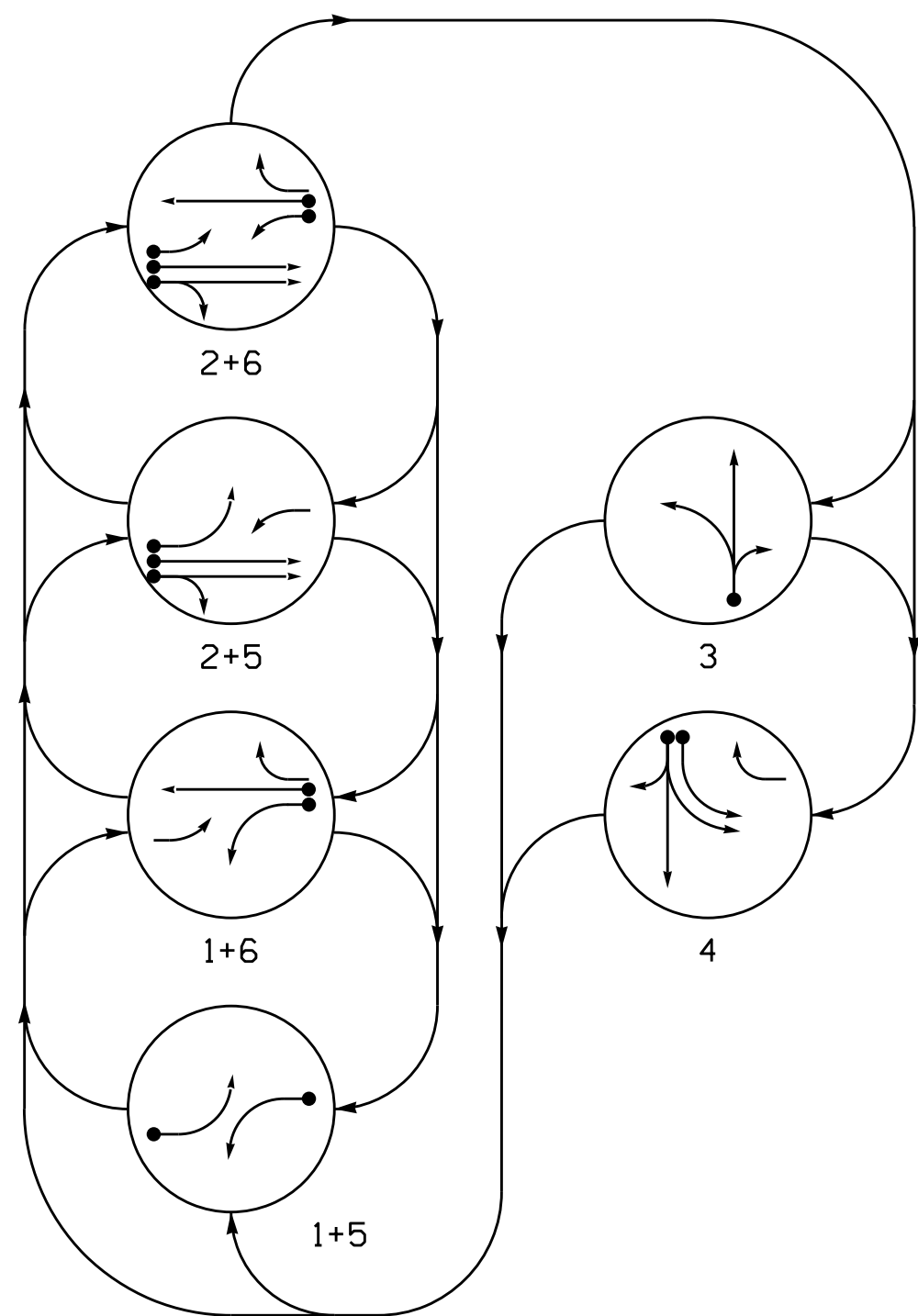
|                        |
|------------------------|
| StartUp Clearance Hold |
| 6                      |

## Unit Flash Parameters

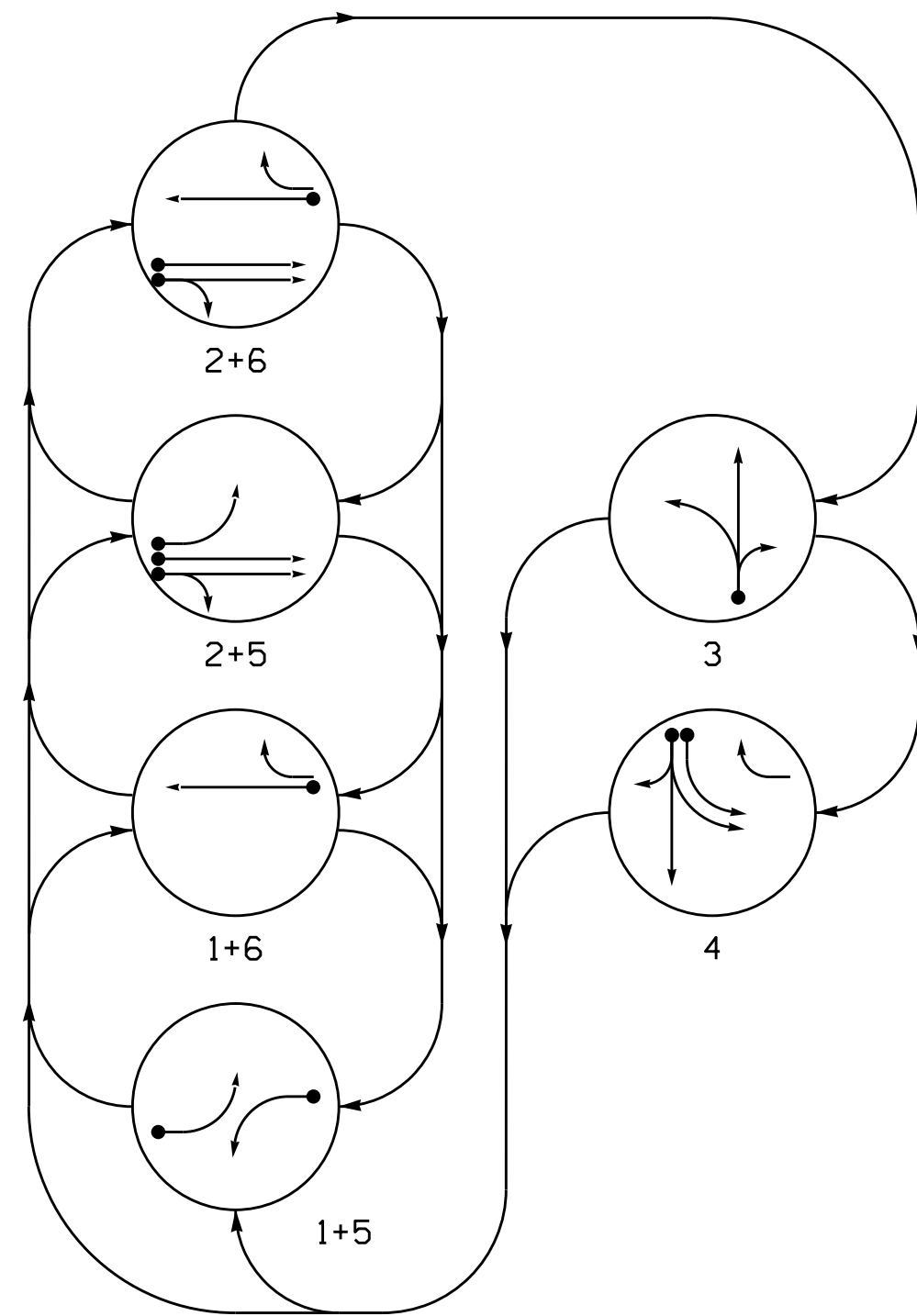
|                         |
|-------------------------|
| All Red Flash Exit Time |
| 6                       |

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1663T2  
DESIGNED: May 2025  
SEALED: 7/15/2025  
REVISED: N/A

## 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 |   |   |   |   |   |   |
|-------------|-------|---|---|---|---|---|---|
|             | 1     | 2 | 3 | 4 | 5 | 6 | 7 |
| 11          |       |   |   |   |   |   |   |
| 21, 22      | R     | R | G | G | R | R | R |
| 31          | R     | R | R | R | R | G | R |
| 32          | R     | R | R | R | R | R | R |
| 41          | R     | R | R | R | R | R | R |
| 42          | R     | R | R | R | G | R | R |
| 43          | R     | R | R | R | G | R | R |
| 51          |       |   |   |   |   |   |   |
| 61, 62      | R     | G | R | G | R | R | R |
| 63          | R     | R | R | R | R | R | R |

## ALTERNATE PHASING TABLE OF OPERATION

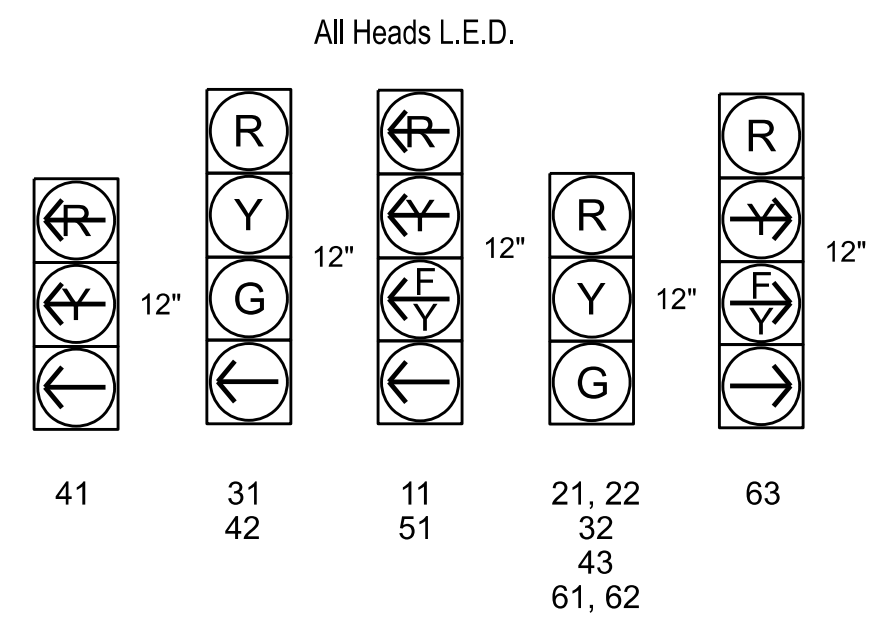
| SIGNAL FACE | PHASE |   |   |   |   |   |   |
|-------------|-------|---|---|---|---|---|---|
|             | 1     | 2 | 3 | 4 | 5 | 6 | 7 |
| 11          |       |   |   |   |   |   |   |
| 21, 22      | R     | R | G | G | R | R | R |
| 31          | R     | R | R | R | R | G | R |
| 32          | R     | R | R | R | R | R | R |
| 41          | R     | R | R | R | R | R | R |
| 42          | R     | R | R | R | G | R | R |
| 43          | R     | R | R | R | G | R | R |
| 51          |       |   |   |   |   |   |   |
| 61, 62      | R     | G | R | G | R | R | R |
| 63          | R     | R | R | R | R | R | R |

## MAXTIME DETECTOR INSTALLATION CHART

| DETECTOR |           |                              |       | PROGRAMMING |            |            |             |        |               |                         |
|----------|-----------|------------------------------|-------|-------------|------------|------------|-------------|--------|---------------|-------------------------|
| LOOP     | SIZE (FT) | DISTANCE FROM STOP LINE (FT) | TURN  | 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                          | 4     | X           | 2          | -          | -           | X      | X             | X                       |
| 2B       | 6X6       | 300                          | 4     | X           | 2          | -          | -           | X      | X             | X                       |
| 3A       | 6X20      | +8                           | 2-4-2 | X           | 3          | 5.0        | -           | X      | -             | X                       |
| 4A       | 6X40      | 0                            | 2-4-2 | X           | 4          | 3.0        | -           | X      | -             | X                       |
| 4B       | 6X40      | 0                            | 2-4-2 | X           | 4          | 5.0        | -           | X      | -             | X                       |
| 5A       | 6X40      | 0                            | 2-4-2 | X           | 5          | 15.0**     | -           | X      | -             | X                       |
| 6A       | 6X6       | 300                          | 5     | X           | 6          | -          | -           | X      | X             | X                       |

\*\* Disable Delay During Alternate Phasing Operation.  
# Disable Phase Call for Loop during Alternate Phasing Operation.

## SIGNAL FACE I.D.



6 Phase  
Fully Actuated  
SR 1006 (Old Stage Road) @ 540  
Signal System #: D05-17\_Fuquay-Varina

## NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Pavement markings are existing unless otherwise shown/noted.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

## LEGEND

| PROPOSED                                    | EXISTING |
|---------------------------------------------|----------|
| Traffic Signal Head                         | N/A      |
| Modified Signal Head                        | N/A      |
| Sign                                        | N/A      |
| Pedestrian Signal Head                      | N/A      |
| Signal Pole with Guy                        | N/A      |
| Signal Pole with Sidewalk Guy               | N/A      |
| Inductive Loop Detector                     | N/A      |
| Controller & Cabinet                        | N/A      |
| Junction Box                                | N/A      |
| 2-in Underground Conduit                    | N/A      |
| Right of Way                                | N/A      |
| Directional Arrow                           | N/A      |
| Metal Strain Pole                           | N/A      |
| Guardrail                                   | N/A      |
| "STOP" Sign (R1-1)                          | N/A      |
| Right Arrow "ONLY" Sign (R3-5R)             | N/A      |
| Combined U-Turn and Left Arrow Sign (R3-6a) | N/A      |
| No U-Turn Sign (R3-4)                       | N/A      |

## MAXTIME TIMING CHART

| FEATURE                 | PHASE |            |     |     |     |            |
|-------------------------|-------|------------|-----|-----|-----|------------|
|                         | 1     | 2          | 3   | 4   | 5   | 6          |
| Walk *                  | -     | -          | -   | -   | -   | -          |
| Ped Clear               | -     | -          | -   | -   | -   | -          |
| Min Green *             | 7     | 12         | 7   | 7   | 7   | 12         |
| Passage *               | 2.0   | 6.0        | 3.0 | 2.0 | 2.0 | 6.0        |
| Max 1 *                 | 20    | 100        | 15  | 30  | 15  | 100        |
| Yellow Change           | 3.0   | 4.7        | 3.2 | 4.7 | 3.0 | 4.7        |
| Red Clear               | 2.8   | 1.3        | 3.3 | 1.7 | 1.8 | 1.3        |
| Red Revert              | 2.0   | 5.0        | 2.0 | 2.0 | 2.0 | 2.0        |
| 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            | -     | -          | -   | -   | -   | -          |
| Non Lock Detector       | X     | -          | X   | X   | X   | -          |
| Vehicle Recall          | -     | MIN RECALL | -   | -   | -   | MIN RECALL |
| Dual Entry              | -     | -          | -   | -   | -   | -          |

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

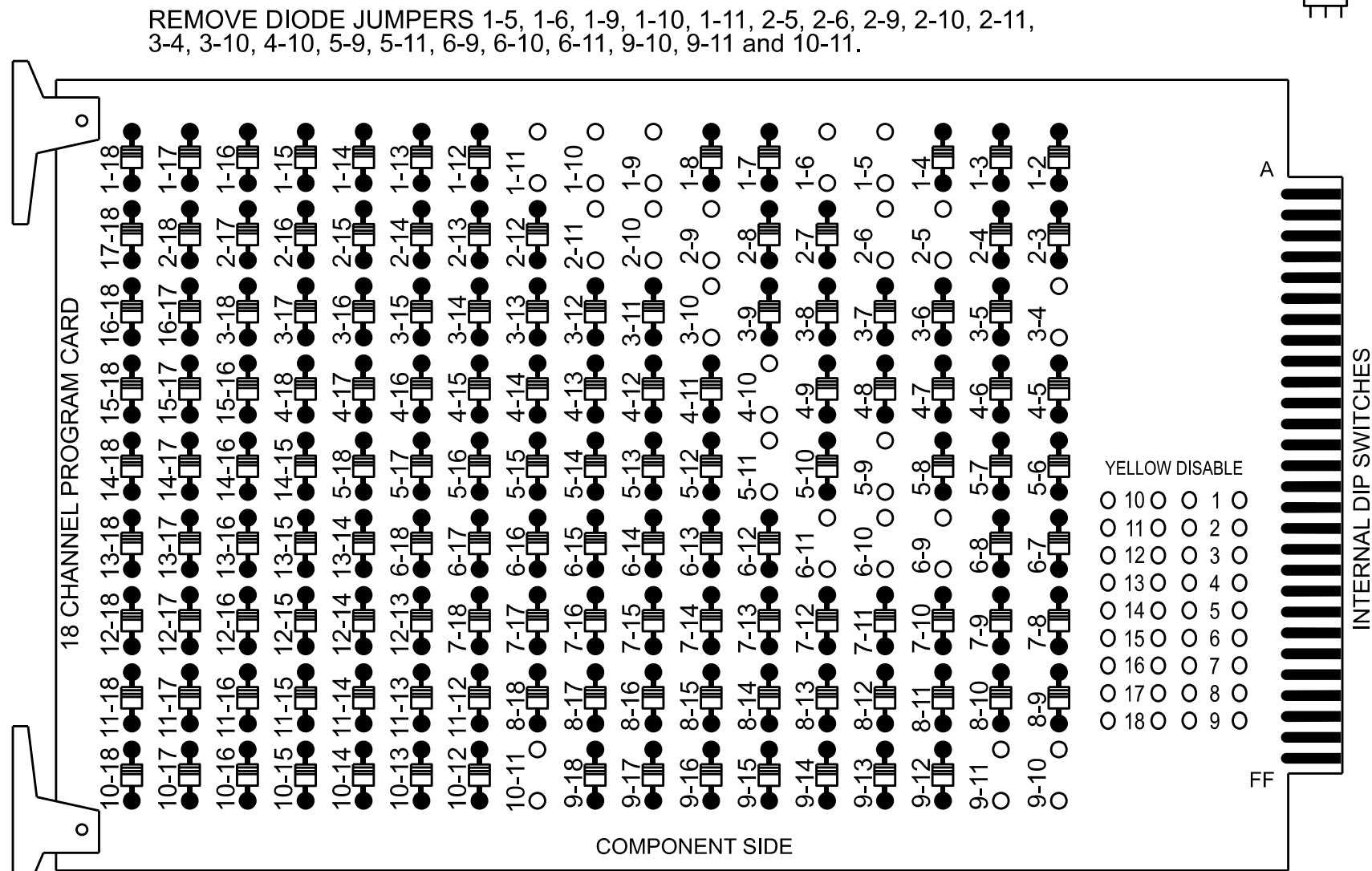
## Signal Upgrade - Final Design

|                                                                             |                                                                                                                                                                                                                                             |                                                                                                                                                                                           |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prepared in the Offices of:<br><br>750 N. Greenfield Pkwy, Garner, NC 27529 | SR 1006 (Old Stage Road)<br>at<br>SR 2736 (Rock Service Station Road)<br>and Back Field Road<br>Fuquay-Varina<br>Division 5<br>Wake County<br>PLAN DATE: May 2025<br>PREPARED BY: I.O. Umozurike<br>REVIEWED BY:<br>REVISIONS<br>INIT. DATE | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED<br>SEAL<br>NORTH CAROLINA<br>PROFESSIONAL ENGINEER<br>ROBERT J. ZEMBA<br>026486<br>07/15/2025<br>SIG. INVENTORY NO. 05-1663 |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

17-JUL-2025 11:09  
D:\p\modot-pw\01\Documents\NCDOT TSMO\Signal Design\Section05\05-1663\Signal Management\051663\_sm\_e\_2025mdd.dgn  
ZZCfor

18 CHANNEL CONFLICT MONITOR  
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the SR 1006 (Old Stage Road) @ 540 CLS Signal System #: D05-17\_Fuquay-Varina.

EQUIPMENT INFORMATION

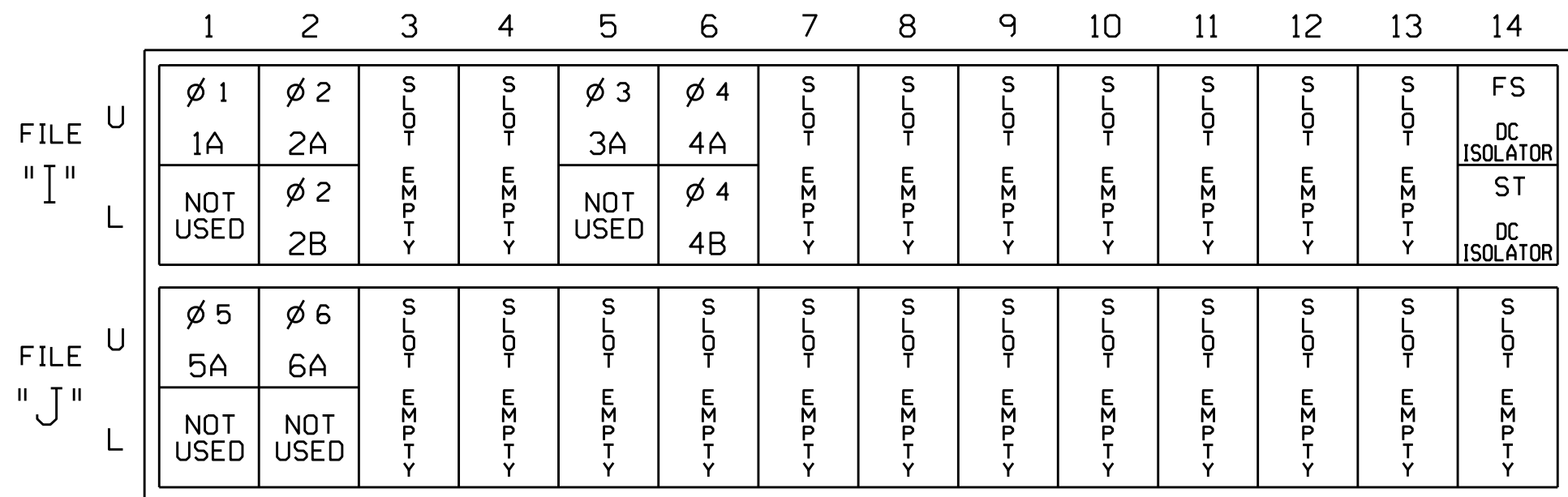
Controller.....2070LX  
Cabinet.....332 w/ Aux  
Software.....Q-Free MAXTIME  
Cabinet Mount.....Base  
Output File Positions.....18 With Aux. Output File  
Load Switches Used.....S1, S2, S4, S5, S7, S8, S11, AUX S1, AUX S2, AUX S4

Phases Used.....1, 2, 3, 4, 5, 6  
Overlap "1".....\*  
Overlap "2".....\*  
Overlap "3".....\*  
Overlap "4".....Not Used  
Overlap "7".....\*  
Overlap "8".....\*

\*See overlap programming detail on sheet 2

INPUT FILE POSITION LAYOUT

(front view)



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

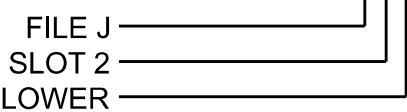
FS = FLASH SENSE  
ST = STOP TIME

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 | CALL | DELAY DURING GREEN |
|----------|---------------|-----------------|---------|-------------|--------------|------------|------------|-------------|--------|---------------|------|--------------------|
| 1A       | TB2-1,2       | I1U             | 56      | 18          | 1*           | 1          | 15         |             | X      |               | X    |                    |
|          |               |                 |         | -           | 29*          | 6          | 3          |             | 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    |                    |
| 3A       | TB4-5,6       | I6U             | 58      | 20          | 7            | 3          | 5          |             | X      |               | X    |                    |
| 4A       | TB4-9,10      | I6U             | 41      | 3           | 8            | 4          | 3          |             | X      |               | X    |                    |
| 4B       | TB4-11,12     | I6L             | 45      | 7           | 9            | 4          | 5          |             | X      |               | X    |                    |
| 5A       | TB3-1,2       | J1U             | 55      | 17          | 15*          | 5          | 15         |             | X      |               | X    |                    |
|          |               |                 |         | -           | 31*          | 2          | 3          |             | X      |               | X    | X                  |
| 6A       | TB3-5,6       | J2U             | 40      | 2           | 16           | 6          |            |             | X      | X             | X    |                    |

\* For the detectors to work as shown on the signal plan see the Detector Programming Detail for Alternate Phasing on Sheet 2 of this plan.

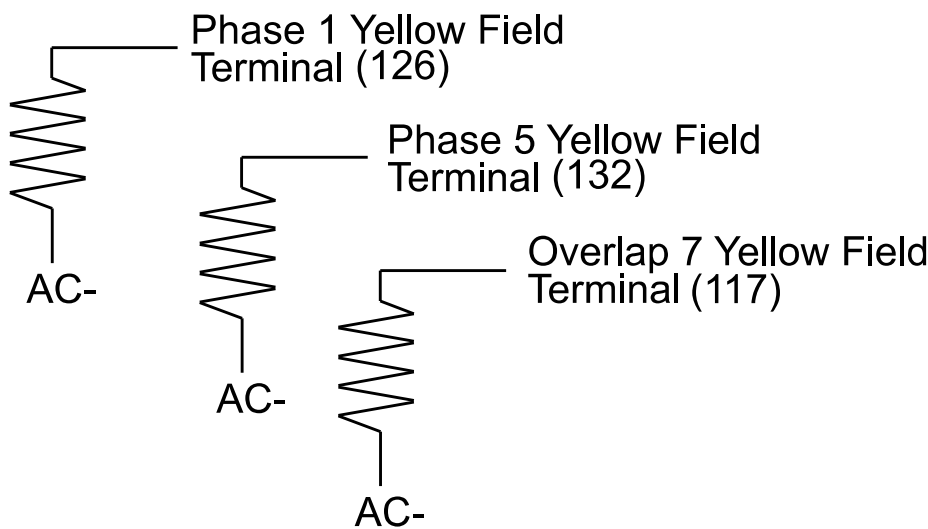
INPUT FILE POSITION LEGEND: J2L



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) |



THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1663  
DESIGNED: May 2025  
SEALED: 7/15/2025  
REVISED: N/A

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 | OL7 | 4   |     |     | 4 PED | 5   | 6     | 6 PED | 7   | OL8 |     | 8 PED | OL1    | OL2    | SPARE  | OL3    | OL4    | SPARE  |
| SIGNAL HEAD NO.                                                                     | 11★ | 21,22 | NU    | 63★ | 41  | 42  | 43  | NU    | 51★ | 61,62 | NU    | NU  | 31  | 32  | NU    | 11★    | 63★    | NU     | 51★    | NU     | NU     |
| RED                                                                                 |     | 128   |       |     |     | 101 | 101 |       |     | 134   |       |     | 107 | 107 |       |        | A124   |        |        |        |        |
| YELLOW                                                                              | ★   | 129   |       | ★   |     | 102 | 102 |       | ★   | 135   |       |     | 108 | 108 |       |        |        |        |        |        |        |
| GREEN                                                                               |     | 130   |       |     |     | 103 | 103 |       |     | 136   |       |     | 109 | 109 |       |        |        |        |        |        |        |
| RED ARROW                                                                           |     |       |       |     | 101 |     |     |       |     |       |       |     |     |     |       | A121   |        |        | A114   |        |        |
| YELLOW ARROW                                                                        |     |       |       |     | 102 |     |     |       |     |       |       |     |     |     |       | A122   | A125   |        | A115   |        |        |
| FLASHING YELLOW ARROW                                                               |     |       |       |     |     |     |     |       |     |       |       |     |     |     |       | A123   | A126   |        | A116   |        |        |
| GREEN ARROW                                                                         | 127 |       |       | 118 | 103 | 103 |     |       | 133 |       |       |     | 109 |     |       |        |        |        |        |        |        |
|  |     |       |       |     |     |     |     |       |     |       |       |     |     |     |       |        |        |        |        |        |        |
|  |     |       |       |     |     |     |     |       |     |       |       |     |     |     |       |        |        |        |        |        |        |

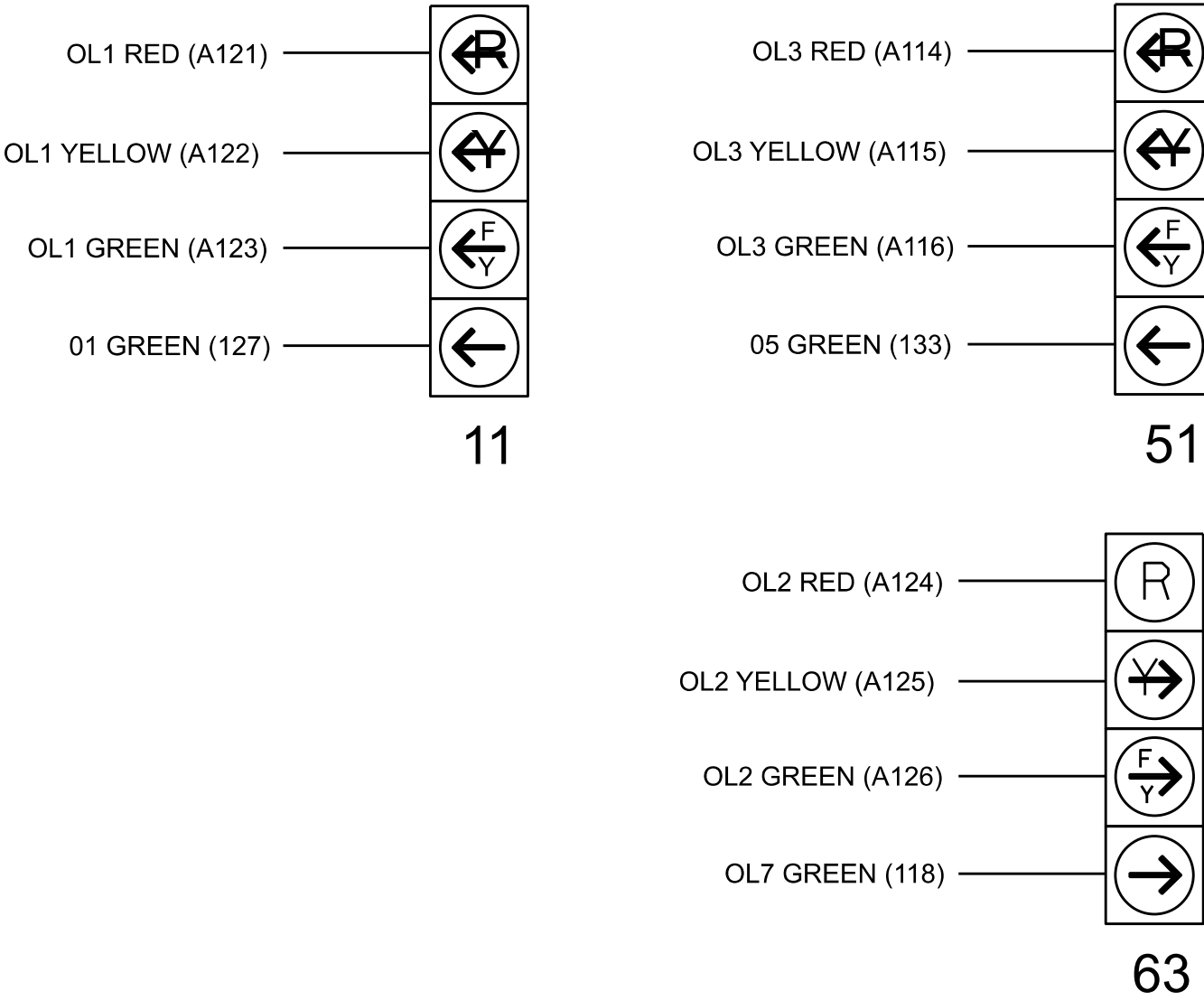
NU = Not Used

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

\* See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



Electrical Detail - Sheet 1 of 3

|                                          |                                                                                     |                                                               |
|------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Electrical and Programming Details For:  | SR 1006 (Old Stage Road) at SR 2736 (Rock Service Station Road) and Back Field Road | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED |
| Prepared in the Offices of:              | Division 5 Wake County Fuquay-Varina                                                | SEAL                                                          |
| PLAN DATE: June 2025                     | REVIEWED BY:                                                                        | SEAL                                                          |
| PREPARED BY: Zarrar Zafar                | REVIEWED BY:                                                                        | ENGINEER                                                      |
| REVISIONS                                | INIT.                                                                               | DATE                                                          |
|                                          |                                                                                     |                                                               |
| 750 N. Greenfield Pkwy, Garner, NC 27529 |                                                                                     | DocuSigned by: 07/23/2025                                     |
|                                          |                                                                                     | DATE                                                          |
|                                          |                                                                                     | SIG. INVENTORY NO. 05-1663                                    |

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

MAXTIME 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          | 0     |
| 29       | 0          | 0     |

1A

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 15       | 5          | 0     |
| 31       | 0          | 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 City Traffic Engineer.

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

NOTICE INCLUDED PHASE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1663  
DESIGNED: May 2025  
SEALED: 7/15/2025  
REVISED: N/A

Electrical Detail - Sheet 2 of 3

Electrical and Programming  
Details For:

Prepared in the Offices of:

Seal of the State of North Carolina  
Department of Transportation  
Division of Traffic Management

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1006 (Old Stage Road)  
at  
SR 2736 (Rock Service Station Road)  
and Back Field Road

Division 5

Wake County

Fuquay-Varina

PLAN DATE: June 2025

REVIEWED BY:

PREPARED BY: Zarrar Zafar

REVIEWED BY:

REVISIONS

INIT.

DATE

Seal of the State of North Carolina  
Professional Engineer  
Seal 031001  
TODD JOYCE

DocuSigned by:  
D. Todd Joyce

07/23/2025

SIG. INVENTORY NO.

05-1663

### 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.

| <u>PHASING</u>                                       | <u>OVERLAP PLAN</u> | <u>VEH DET PLAN</u> |
|------------------------------------------------------|---------------------|---------------------|
| ACTIVE PLAN REQUIRED TO <u>RUN DEFAULT PHASING</u>   | 1                   | 1                   |
| ACTIVE PLAN REQUIRED TO <u>RUN ALTERNATE PHASING</u> | 2                   | 2                   |

### ALTERNATE PHASING CHANGE SUMMARY

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

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

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

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

## MAXTIME 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                       |

## OUTPUT CHANNEL CONFIGURATION

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

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

## Channel Configuration

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

NOTE: Control Type  
and Control Source

NOTE: Control Type  
and Control Source

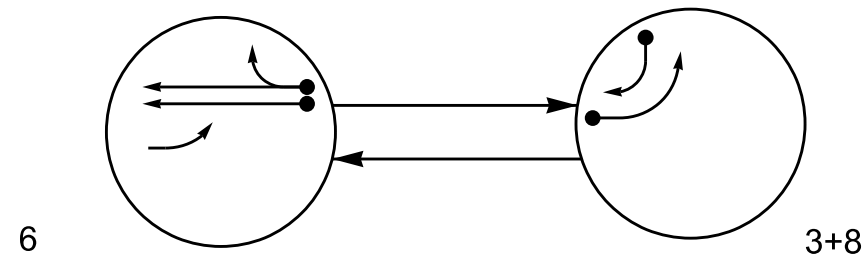
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1663  
DESIGNED: May 2025  
SEALED: 7/15/2025  
REVISED: N/A

Electrical Detail - Sheet 3 of 3

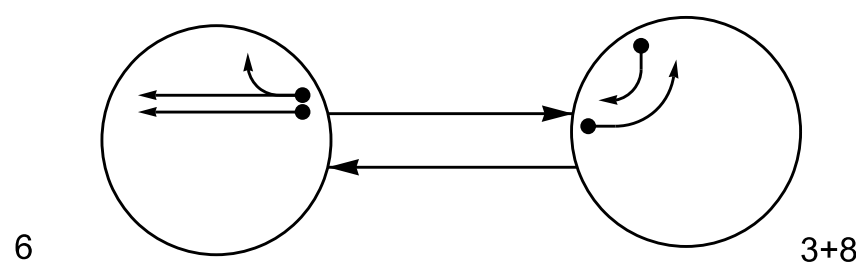
DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

| Electrical and Programming<br>Details For:                                                                                     | <h2 style="margin: 0;">SR 1006 (Old Stage Road)</h2> <p style="font-size: 24px; margin: 0;">at</p> <h2 style="margin: 0;">SR 2736 (Rock Service Station Road)</h2> <h2 style="margin: 0;">and Back Field Road</h2>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SIGNATURES COMPLETED<br><br><div style="text-align: center;">  </div> |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Prepared in the Offices of:                                                                                                    | <div style="display: flex; justify-content: space-between;"> <div>             Division 5<br/>             PLAN DATE: <u>June 2025</u><br/>             PREPARED BY: <u>Zarrar Zafar</u> </div> <div>             Wake County<br/>             REVIEWED BY:<br/>             REVIEWED BY:           </div> <div>             Fuquay-Varina<br/>             REVIEWED BY:           </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <div style="text-align: center;">  </div> | <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 style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> <tr><td style="height: 20px;"> </td><td> </td><td> </td></tr> </tbody> </table> |                                                                                                                                                            | REVISIONS | INIT. | DATE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| REVISIONS                                                                                                                      | INIT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DATE                                                                                                                                                       |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 750 N. Greenfield Pkwy, Garner, NC 27529                                                                                       | <div style="display: flex; justify-content: space-between;"> <div>             DocuSigned by:<br/> <u>D. Todd Joyce</u><br/> <small>160024002002402402</small> </div> <div>             07/23/2025<br/>             DATE           </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>SIG. INVENTORY NO. <u>05-1663</u></div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                            |           |       |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ←●→ DETECTED MOVEMENT
- ←→ UNDETECTED MOVEMENT (OVERLAP)
- ←- - - UN SIGNALIZED MOVEMENT
- ←- - -> PEDESTRIAN MOVEMENT

DEFAULT PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE |     |   |
|-------------|-------|-----|---|
|             | 6     | 3+8 | F |
| 31, 32      | ←     | ←   | ← |
| 61          | ↑     | R   | R |
| 62          | G     | R   | R |
| 81, 82      | R     | ←   | R |

ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE |     |   |
|-------------|-------|-----|---|
|             | 6     | 3+8 | F |
| 31, 32      | ←     | ←   | ← |
| 61          | ↑     | R   | R |
| 62          | G     | R   | R |
| 81, 82      | R     | ←   | R |

MAXTIME DETECTOR INSTALLATION CHART

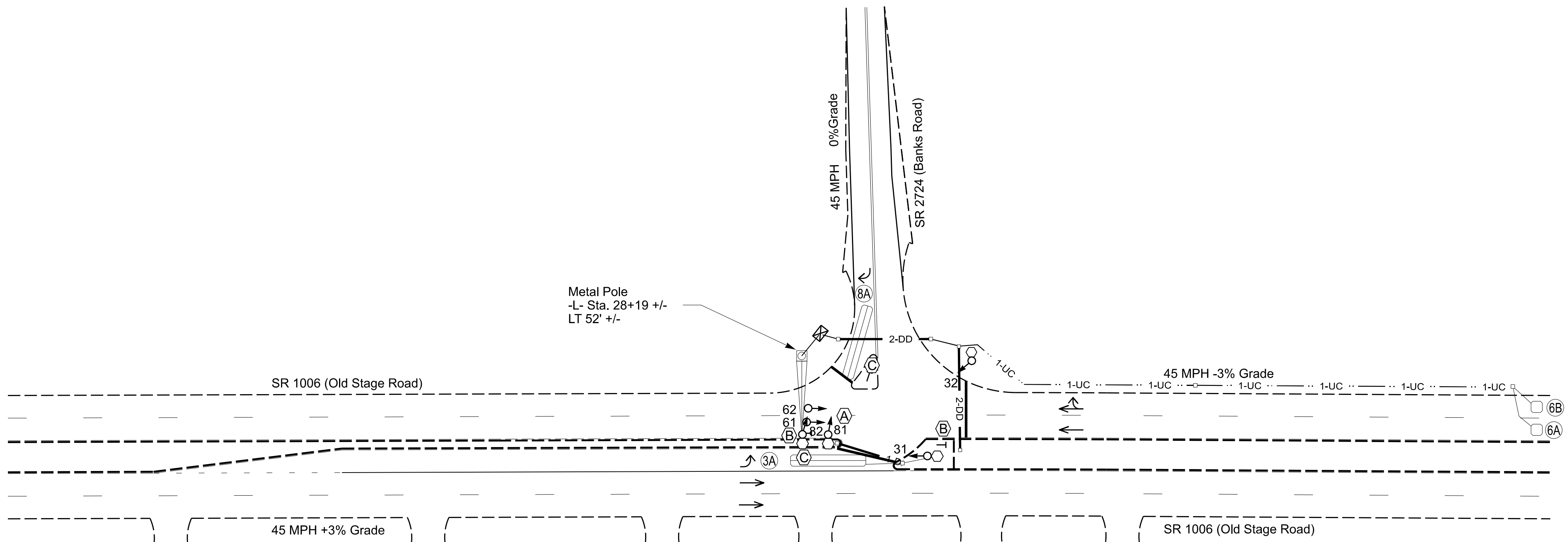
| DETECTOR |           |                              |       |          | PROGRAMMING |            |             |        |               |                         |          |
|----------|-----------|------------------------------|-------|----------|-------------|------------|-------------|--------|---------------|-------------------------|----------|
| LOOP     | SIZE (FT) | DISTANCE FROM STOP LINE (FT) | URNS  | NEW LOOP | CALL PHASE  | DELAY TIME | EXTEND TIME | EXTEND | ADDED INITIAL | CALL DELAY DURING GREEN | NEW CARD |
| 3A       | 6X40      | 0                            | 2-4-2 | X        | 3           | 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           | 15.0       | -           | X      | -             | X                       | -        |

\* Disable Delay During Alternate Phasing Operation.

2 Phase  
Fully Actuated  
SR 1006 (Old Stage Road) @ 540  
Signal System #: D05-17\_Fuquay-Varina

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.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- 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.



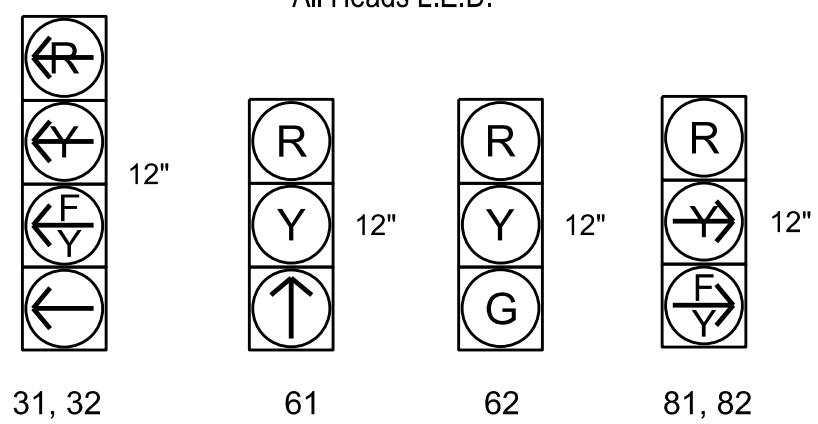
MAXTIME TIMING CHART

| FEATURE                 | PHASE |            |     |
|-------------------------|-------|------------|-----|
|                         | 3     | 6          | 8   |
| Walk *                  | -     | -          | -   |
| Ped Clear               | -     | -          | -   |
| Min Green *             | 7     | 12         | 7   |
| Passage *               | 2.0   | 6.0        | 2.0 |
| Max 1 *                 | 15    | 100        | 15  |
| Yellow Change           | 3.0   | 4.8        | 3.0 |
| Red Clear               | 1.8   | 1.2        | 1.8 |
| Added Initial *         | -     | 1.5        | -   |
| Maximum Initial *       | -     | 34         | -   |
| Time Before Reduction * | -     | 15         | -   |
| Time To Reduce *        | -     | 30         | -   |
| Minimum Gap             | -     | 3.0        | -   |
| Advance Walk            | -     | 7          | -   |
| Non Lock Detector       | -     | -          | -   |
| Vehicle Recall          | -     | MIN RECALL | -   |
| Dual Entry              | X     | -          | X   |

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

SIGNAL FACE I.D.

All Heads L.E.D.



LEGEND

| PROPOSED     |                                      | EXISTING   |
|--------------|--------------------------------------|------------|
| ○→           | Traffic Signal Head                  | ●→         |
| ○→           | Modified Signal Head                 | N/A        |
| ↑            | Sign                                 | ↑          |
| □            | Pedestrian Signal Head               | □          |
| ○→           | Signal Pole with Guy                 | ○→         |
| ○→           | Signal Pole with Sidewalk Guy        | ○→         |
| □            | Inductive Loop Detector              | □          |
| □            | Controller & Cabinet                 | □          |
| □            | Junction Box                         | □          |
| --- X-UC --- | 2-in Underground Conduit             | --- UC --- |
| N/A          | Right of Way                         | ---        |
| →            | Directional Arrow                    | →          |
| ○→           | Metal Pole with Mastarm              | ○→         |
| ○→           | Directional Drill                    | N/A        |
| ○            | Type II Signal Pedestal              | ●          |
| (A)          | "RIGHT TURN YIELD TO U-TURN" Sign    | (A)        |
| (B)          | No U-Turn/ No Left Turn Sign (R3-18) | (B)        |
| (C)          | Right Arrow "ONLY" Sign (R3-5R)      | (C)        |

New Installation

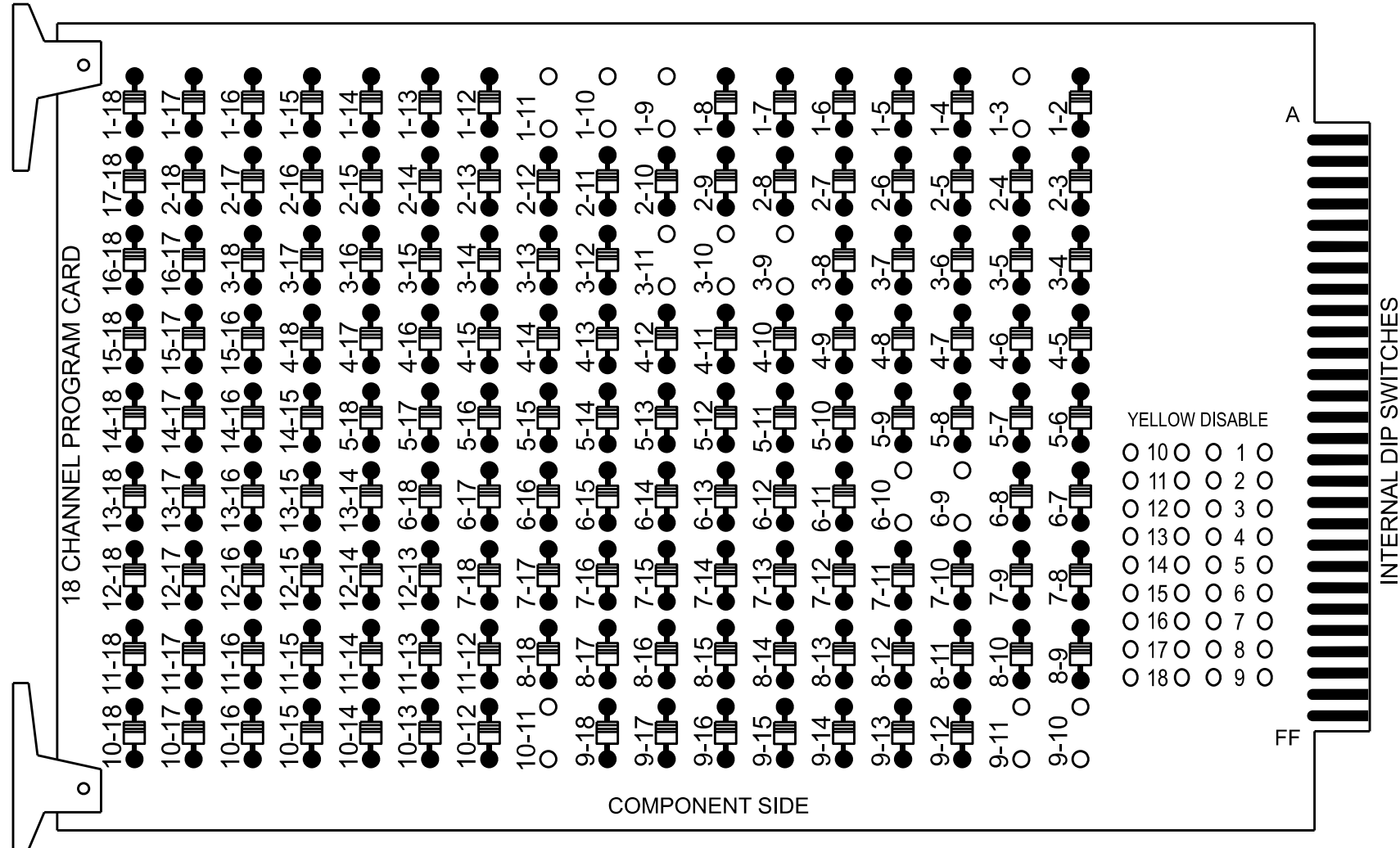
|                                                                             |                                                                                                                                                                                                                                 |                                                                                                                                                                                         |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Prepared in the Offices of:<br><br>750 N. Greenfield Pkwy, Garner, NC 27529 | SR 1006 (Old Stage Road)<br>at<br>SR 2724 (Banks Road)<br>Division 5 Wake County Fuquay-Varina<br>PLAN DATE: May 2025<br>PREPARED BY: I.O. Umozurike<br>REVIEWED BY: [Signature]<br>REVISIONS: [Table]<br>SCALE: 0 40<br>1"=40' | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED<br>SEAL<br>NORTH CAROLINA PROFESSIONAL ENGINEER<br>ROBERT J. ZIEMBA<br>026486<br>08/28/2025<br>SIG. INVENTORY NO. 05-1662 |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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ZZZfor

18 CHANNEL CONFLICT MONITOR  
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

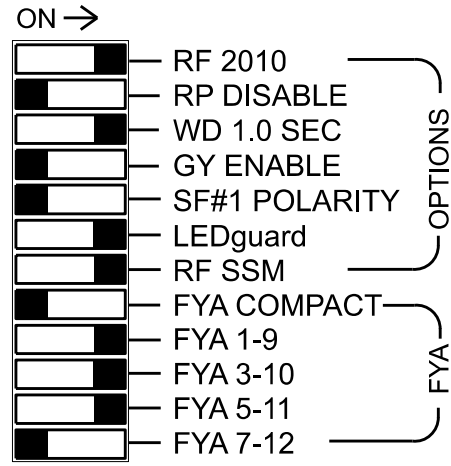
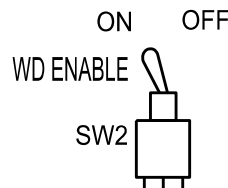
REMOVE DIODE JUMPERS 1-3, 1-9, 1-10, 1-11, 3-9, 3-10, 3-11, 6-9, 6-10, 9-10,  
9-11 and 10-11.



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 vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
- Program phases 3 and 8 for Dual Entry.
- Program controller to start up in phase 2 Phase Not On and phase 6 Green No Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the SR 1006 (Old Stage Road) @ 540 CLS Signal System #: D05-17\_Fuquay-Varina .

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, S4, S8, AUX S1,  
AUX S2, AUX S4  
Phases Used.....3, 6, 8\*\*  
Overlap "1".....\*  
Overlap "2".....\*  
Overlap "3".....\*  
Overlap "4".....Not Used  
Overlap "7".....\*

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

SIGNAL HEAD HOOK-UP CHART

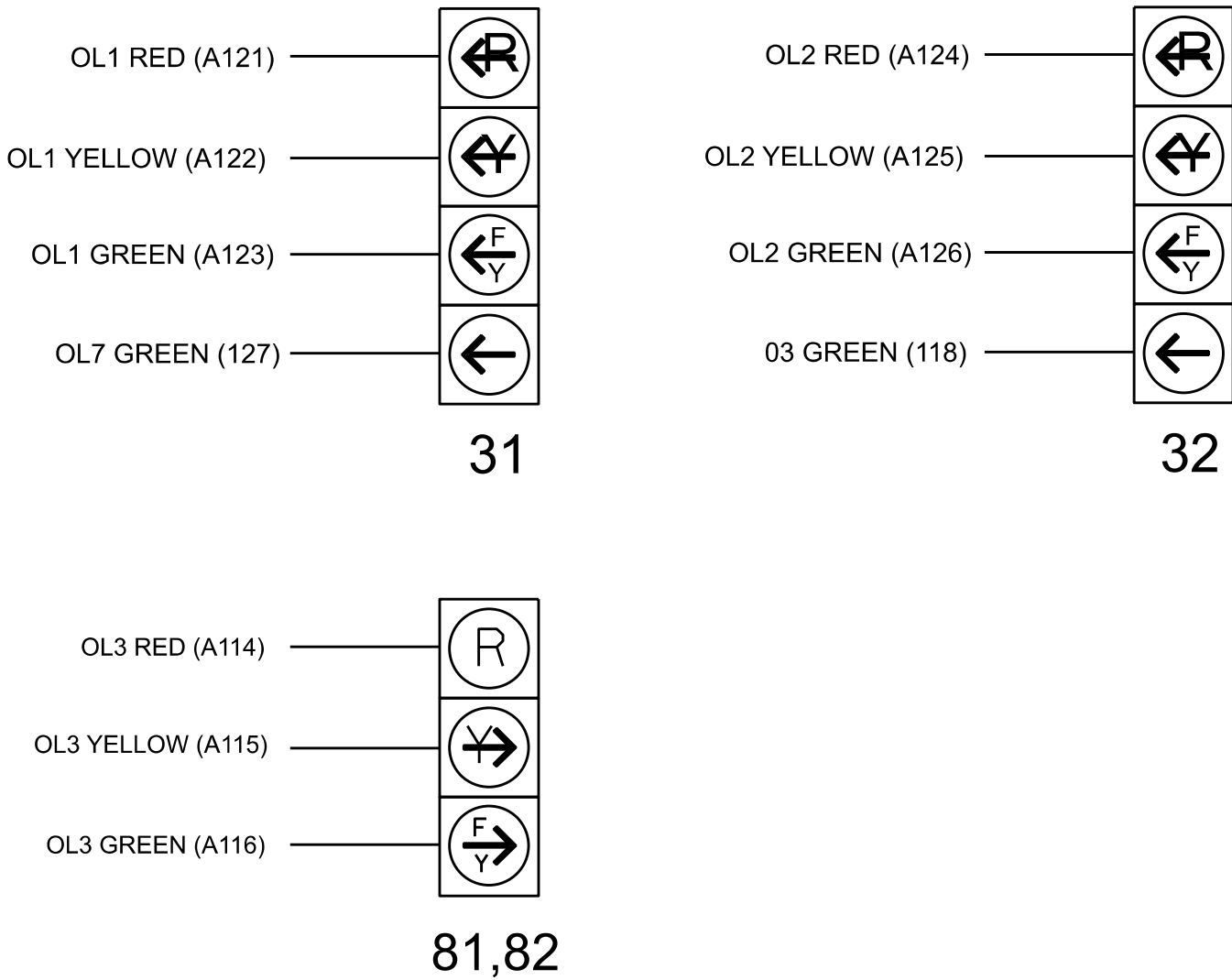
| LOAD SWITCH NO.       | S1  | S2 | S3    | S4  | S5 | S6    | S7 | S8  | S9    | S10 | S11 | S12   | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|-----|----|-------|-----|----|-------|----|-----|-------|-----|-----|-------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO.       | 1   | 2  | 13    | 3   | 4  | 14    | 5  | 6   | 15    | 7   | 8   | 16    | 9      | 10     | 17     | 11     | 12     | 18     |
| PHASE                 | OL7 | 2  | 2 PED | 3   | 4  | 4 PED | 5  | 6   | 6 PED | 7   | 8   | 8 PED | OL1    | OL2    | SPARE  | OL3    | OL4    | SPARE  |
| SIGNAL HEAD NO.       | 31★ | NU | NU    | 32★ | NU | NU    | NU | 61  | 62    | NU  | NU  | NC    | NU     | 31★    | 32★    | NU     | 81,82★ | NU     |
| RED                   |     |    |       |     |    |       |    | 134 | 134   |     |     |       |        |        |        |        | A114   |        |
| YELLOW                | ★   |    |       | ★   |    |       |    | 135 | 135   |     |     |       |        |        |        |        |        |        |
| GREEN                 |     |    |       |     |    |       |    | 136 |       |     |     |       |        |        |        |        |        |        |
| RED ARROW             |     |    |       |     |    |       |    |     |       |     |     |       | A121   | A124   |        |        |        |        |
| YELLOW ARROW          |     |    |       |     |    |       |    |     |       |     |     |       | A122   | A125   |        | A115   |        |        |
| FLASHING YELLOW ARROW |     |    |       |     |    |       |    |     |       |     |     |       | A123   | A126   |        | A116   |        |        |
| GREEN ARROW           | 127 |    |       | 118 |    |       |    | 136 |       |     |     |       |        |        |        |        |        |        |
| Hand icon             |     |    |       |     |    |       |    |     |       |     |     |       |        |        |        |        |        |        |
| Walking person icon   |     |    |       |     |    |       |    |     |       |     |     |       |        |        |        |        |        |        |

NU = Not Used  
NC = No Connection

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

| FILE | U | 1        | 2 | 3 | 4 | 5        | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14          |
|------|---|----------|---|---|---|----------|---|---|---|---|----|----|----|----|-------------|
| "I"  |   | S        | S | S | S | Ø 3      | S | S | S | S | S  | S  | S  | S  | FS          |
|      |   | 3A       |   |   |   | 3A       |   |   |   |   |    |    |    |    | DC ISOLATOR |
|      |   | NOT USED |   |   |   | NOT USED |   |   |   |   |    |    |    |    | ST          |
|      |   |          |   |   |   |          |   |   |   |   |    |    |    |    | DC ISOLATOR |
| "J"  |   | S        | S | S | S | S        | S | S | S | S | S  | S  | S  | S  | S           |
|      |   | 6A       |   |   |   | 6A       |   |   |   |   |    |    |    |    | FS          |
|      |   | 6B       |   |   |   | 6B       |   |   |   |   |    |    |    |    | ST          |

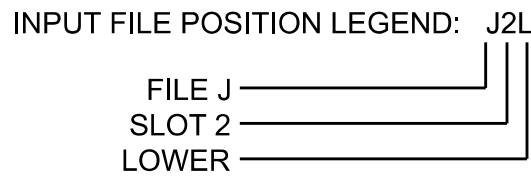
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE  
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT POINT | DETECTOR NO. | CALL PHASE | DELAY TIME | EXTEND TIME | EXTEND | ADDED INITIAL | CALL | DELAY DURING GREEN |
|----------|---------------|-----------------|---------|-------------|--------------|------------|------------|-------------|--------|---------------|------|--------------------|
| 3A       | TB4-5,6       | ISU             | 58      | 20          | 7 ★          | 3          | 15         |             |        | X             |      |                    |
| 6A       | TB3-5,6       | J2U             | 40      | 2           | 16           | 6          |            |             |        | X             | X    |                    |
| 6B       | TB3-7,8       | J2L             | 44      | 6           | 17           | 6          |            |             |        | X             | X    |                    |
| 8A       | TB5-9,10      | J6U             | 42      | 4           | 22           | 8          | 15         |             |        | X             |      |                    |

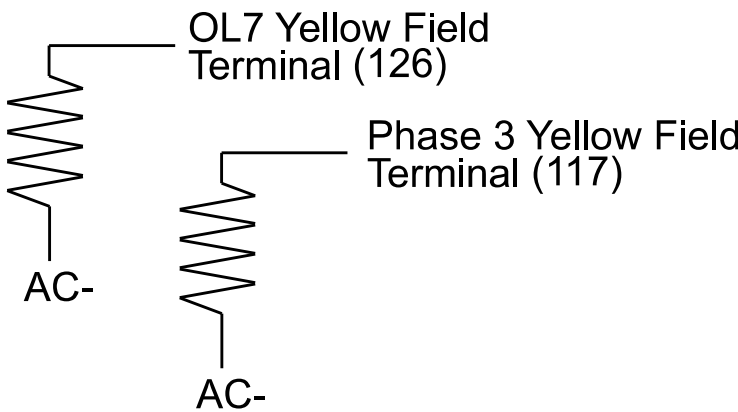
★ For the detectors to work as shown on the signal design plan, see the Detector Programming Detail for Alternate Phasing on sheet 2.



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) |



Electrical Detail - Sheet 1 of 3

Electrical and Programming Details For:  
Prepared in the Offices of:  
  
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1006 (Old Stage Road)  
at  
SR 2724 (Banks Road)  
Division 5 Wake County Fuquay-Varina  
PLAN DATE: August 2025 REVIEWED BY:  
PREPARED BY: Zarrar Zafar REVIEWED BY:  
REVISIONS  
INIT. DATE  
DocuSigned by:  
D. Todd Joyce  
08/29/2025  
DATE  
SIC INVENTORY NO. 05-1662

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
SEAL  
NORTH CAROLINA  
PROFESSIONAL ENGINEER  
SEAL 031001  
TODD JOYCE  
08/29/2025  
DATE  
SIC INVENTORY NO. 05-1662

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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               | 7      |
|-------------------|-----------------|-----------------|-----------------|--------|
| Type              | FYA 4 - Section | FYA 4 - Section | FYA 4 - Section | Normal |
| Included Phases   | 6               | 6               | 8               | 3      |
| Modifier Phases   | 3               | 3               | -               | -      |
| Modifier Overlaps | -               | -               | -               | -      |
| Trail Green       | 0               | 0               | 0               | 0      |
| Trail Yellow      | 0.0             | 0.0             | 0.0             | 0.0    |
| Trail Red         | 0.0             | 0.0             | 0.0             | 0.0    |

MAXTIME OVERLAP PROGRAMMING DETAIL  
FOR ALTERNATE PHASING

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

Web Interface  
Home >Controller >Overlap Configuration >Overlaps

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

Overlap Plan 2

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

← NOTICE INCLUDED PHASE

MAXTIME DETECTOR PROGRAMMING DETAIL  
FOR ALTERNATE PHASING LOOP 3A

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.

3A

| Detector | Call Phase | Delay |
|----------|------------|-------|
| 7        | 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 <u>RUN DEFAULT PHASING</u>   | 1            | 1            |
| ACTIVE PLAN REQUIRED TO <u>RUN ALTERNATE PHASING</u> | 2            | 2            |

ALTERNATE PHASING CHANGE SUMMARY

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

OVERLAP PLAN 2: Modifies overlap included phases for heads 31 and 32 to run protected turns only.

VEH DET PLAN 2: Reduces delay time for phase 3 all on loop 3A to 0 seconds.

MAXTIME ALTERNATE PHASING PATTERN  
PROGRAMMING DETAIL

Front Panel  
Main Menu >Controller >Coordination >Patterns

Web Interface  
Home >Controller >Coordination >Patterns

Pattern Parameters

| Pattern | Veh Det Plan | Overlap Plan |
|---------|--------------|--------------|
| *       | 2            | 2            |

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

Electrical Detail - Sheet 2 of 3

Electrical and Programming  
Details For:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1006 (Old Stage Road)  
at  
SR 2724 (Banks Road)

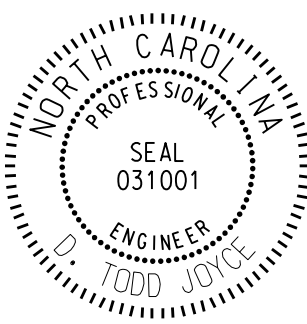
Division 5 Wake County Fuquay-Varina

PLAN DATE: August 2025 REVIEWED BY:  
PREPARED BY: Zarrar Zafar REVIEWED BY:

REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

SEAL



DocuSigned by:  
D. Todd Joyce 08/29/2025

DATE

SIG. INVENTORY NO. 05-1662

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1662  
DESIGNED: May 2025  
SEALED: 8/28/2025  
REVISED: N/A

MAXTIME STARTUP AND SOFTWARE FLASH  
PROGRAMMING DETAIL

Front Panel  
Main Menu >Controller >Unit

Web Interface  
Home >Controller >Unit

Modify parameters as shown below and save changes.

| Start Up Parameters         | Unit Flash Parameters        |
|-----------------------------|------------------------------|
| StartUp Clearance Hold<br>6 | All Red Flash Exit Time<br>6 |

OUTPUT CHANNEL CONFIGURATION

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

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

Channel Configuration

NOTE: Control Type  
and Control Source

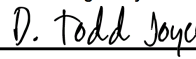


| Channel | Control Type  | Control Source | Flash Yellow | Flash Red | Flash Alt | MMU Channel |
|---------|---------------|----------------|--------------|-----------|-----------|-------------|
| 1       | Overlap       | 7              |              | X         | X         | 1           |
| 2   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

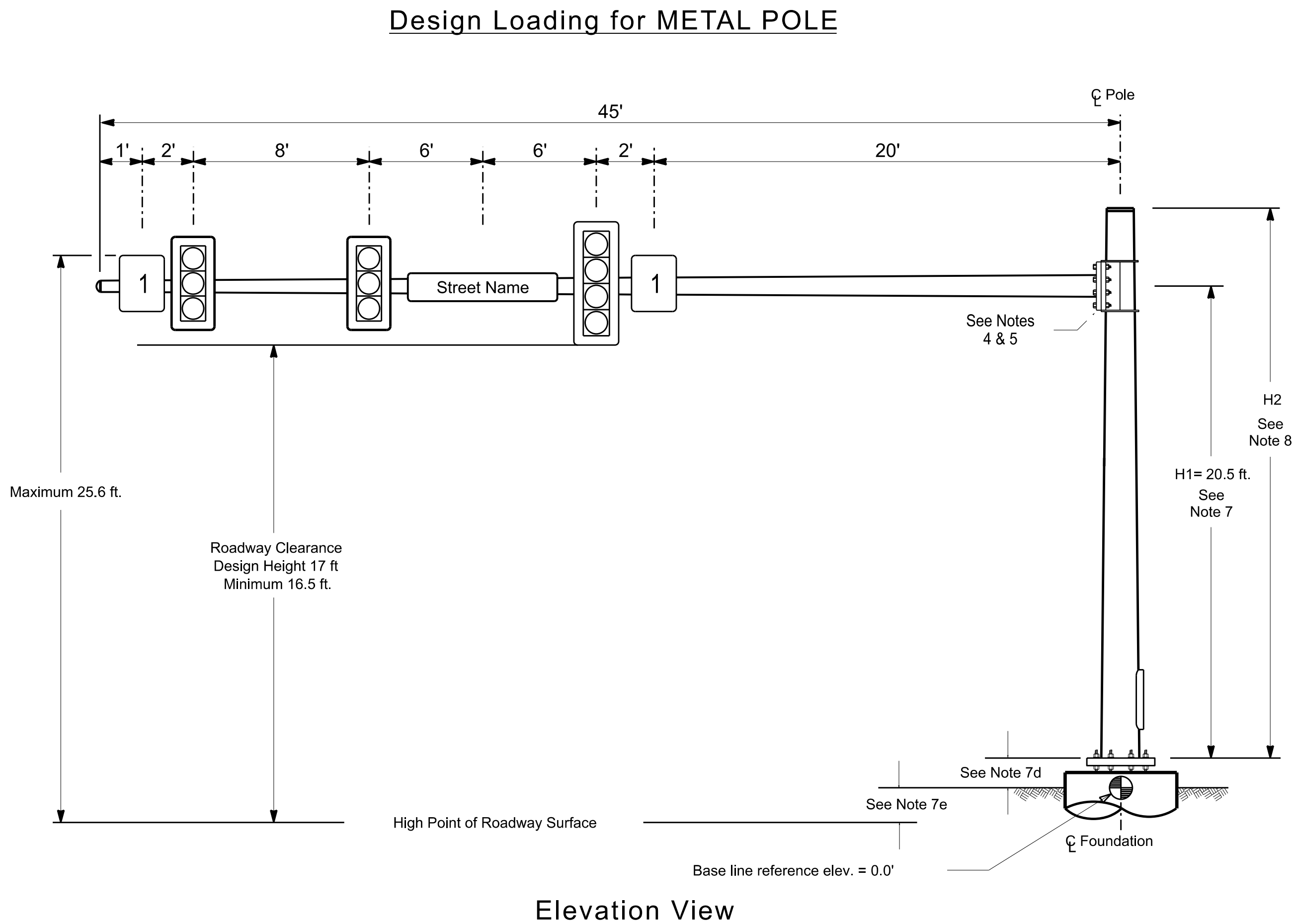
THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 05-1662  
DESIGNED: May 2025  
SEALED: 8/28/2025  
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL  
SIGNATURES COMPLETED

|                                                                                                                                                                                                                                             |                                                        |              |                                                                                                                                                                                                                                                                                          |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <div>Electrical and Programming<br/>Details For:</div> <div>Prepared in the Offices of:</div> <div><br/>750 N. Greenfield Pkwy, Garner, NC 27529</div> | SR 1006 (Old Stage Road)<br>at<br>SR 2724 (Banks Road) |              | <div>SEAL<br/>NORTH CAROLINA<br/>PROFESSIONAL<br/>SEAL<br/>031001<br/>ENGINEER<br/>D. TODD JOYCE</div> <div>DocuSigned by:<br/><br/>08/29/2025<br/>DATE</div> <div>SIG. INVENTORY NO. 05-1662</div> |               |
|                                                                                                                                                                                                                                             | Division 5                                             | Wake County  |                                                                                                                                                                                                                                                                                          | Fuquay-Varina |
|                                                                                                                                                                                                                                             | PLAN DATE: August 2025                                 | REVIEWED BY: |                                                                                                                                                                                                                                                                                          |               |
|                                                                                                                                                                                                                                             | PREPARED BY: Zarrar Zafar                              | REVIEWED BY: |                                                                                                                                                                                                                                                                                          |               |
|                                                                                                                                                                                                                                             | REVISIONS                                              |              |                                                                                                                                                                                                                                                                                          | INIT.         |

24 JUL 2025 16:21  
pw:\ncdot\pw\central\comm\ncdot\pw-01\Documents\NCDOT TSMO\Signal Design Section\Division\_0505-1662\Signal Design\2024-07\_HL-00081\051662\_sig\_dgn\_2025modd.dgn  
burmazzioke

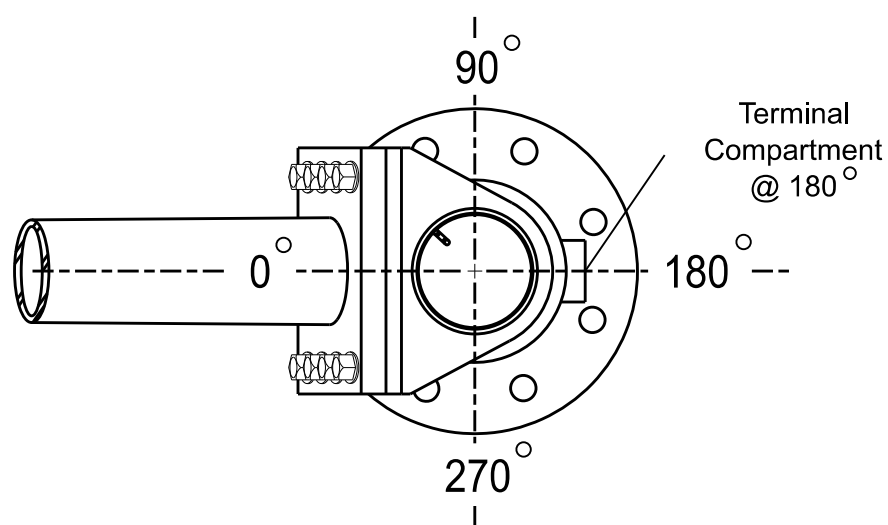


### SPECIAL NOTE

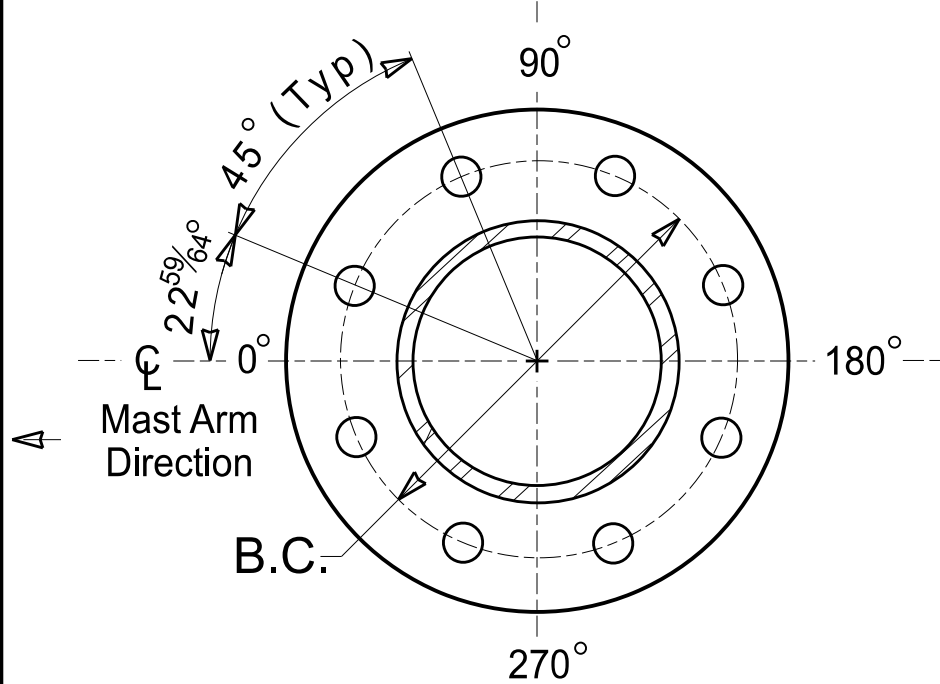
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

#### Elevation Data for Mast Arm Attachment (H1)

| Elevation Differences for:                                   | Pole     |
|--------------------------------------------------------------|----------|
| Baseline reference point at<br>C Foundation @ ground level   | 0.0 ft.  |
| Elevation difference at<br>High point of roadway surface     | +1.5 ft. |
| Elevation difference at<br>Edge of travelway or face of curb | N/A      |

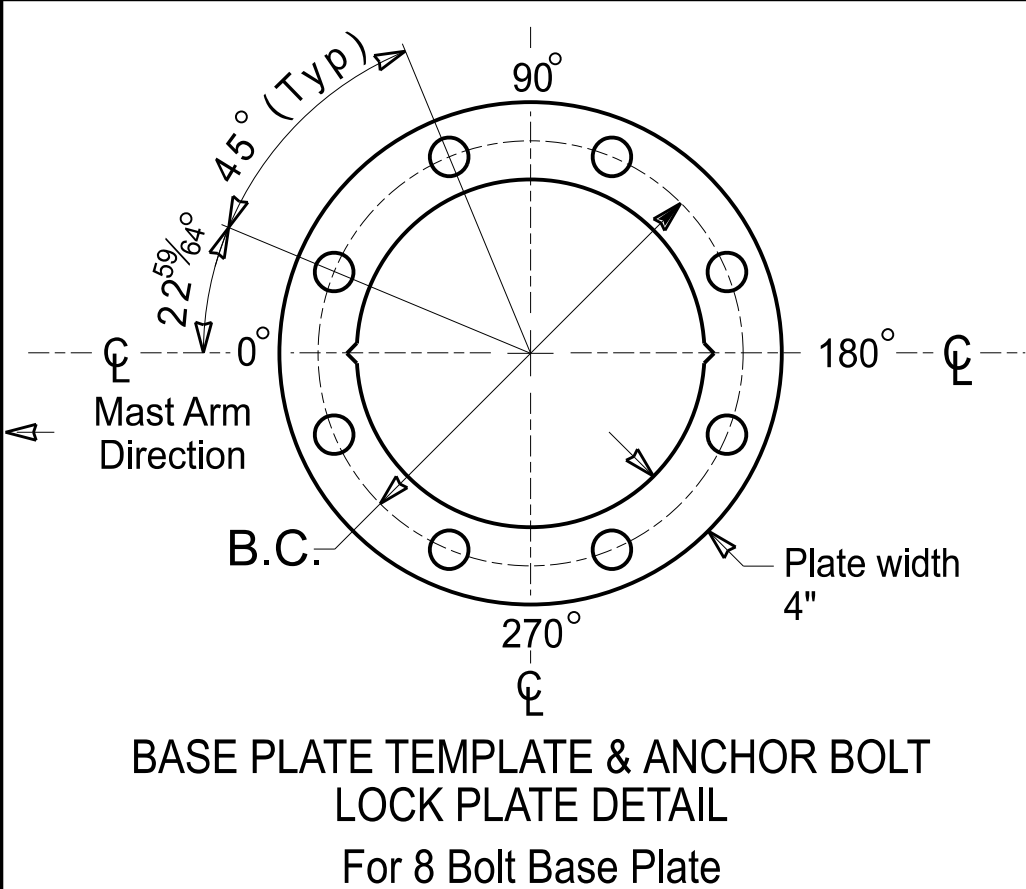


### POLE RADIAL ORIENTATION



### 8 BOLT BASE PLATE DETAIL

See Note 6



### METAL POLE

| PROJECT REFERENCE NO. | SHEET NO. |
|-----------------------|-----------|
| HL-00081              | Sig.5.4   |

### MAST ARM LOADING SCHEDULE

| LOADING SYMBOL | DESCRIPTION                                               | AREA      | SIZE                    | WEIGHT |
|----------------|-----------------------------------------------------------|-----------|-------------------------|--------|
|                | RIGID MOUNTED SIGNAL HEAD<br>12"-4 SECTION-WITH BACKPLATE | 11.5 S.F. | 25.5" W<br>X<br>66.0" L | 74 LBS |
|                | RIGID MOUNTED SIGNAL HEAD<br>12"-3 SECTION-WITH BACKPLATE | 9.3 S.F.  | 25.5" W<br>X<br>52.5" L | 60 LBS |
|                | SIGN<br>RIGID MOUNTED                                     | 5.0 S.F.  | 24.0" W<br>X<br>30.0" L | 11 LBS |
|                | STREET NAME SIGN<br>RIGID MOUNTED                         | 16.0 S.F. | 24.0" W<br>X<br>96.0" L | 36 LBS |

### NOTES

#### DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
  - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
  - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
  - The 2018 NCDOT Roadway Standard Drawings.
  - The traffic signal project plans and special provisions.
  - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

#### DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate connection points.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
  - Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
  - Signal heads are rigidly mounted and vertically centered on the mast arm.
  - The roadway clearance height for design is as shown in the elevation views.
  - The top of the pole base plate is 0.75 feet above the ground elevation.
  - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
  - Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
  - Mast arm attachment height (H1) plus 2 feet, or
  - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

### NCDOT Wind Zone 4 (120 mph)

|                                                                                                                                |                                                                                                                                                                                                                                                                |  |                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------|
| <div>Prepared in the Offices of:</div> <div></div> <div>750 N. Greenfield Pkwy, Garner, NC 27629</div> <div>SCALE: 0 N/A</div> | <div>SR 1006 (Old Stage Road)<br/>at<br/>SR 2724 (Banks Road)</div> <div>Division 5 Wake County Fuquay-Varina</div> <div>PLAN DATE: June 2025 REVIEWED BY:</div> <div>PREPARED BY: I.O. Umozutike REVIEWED BY:</div> <div>REVISIONS</div> <div>INT. DATE</div> |  | <div>SEAL</div> <div></div> <div>07/28/2025</div> <div>SIG. INVENTORY NO. 05-1662</div> |
|                                                                                                                                |                                                                                                                                                                                                                                                                |  |                                                                                         |
|                                                                                                                                |                                                                                                                                                                                                                                                                |  |                                                                                         |
|                                                                                                                                |                                                                                                                                                                                                                                                                |  |                                                                                         |

03-01-2023 12:07 S:\ITS\ASU\115\Signal\Signal Design\Sections\Structures\Drawings\2024 Metal Pole Standards\2024 Sig. M1A Standard 411 Metal Pole (700-yr MRI).dgn kdurigon

# NCDOT METAL POLE STANDARDS

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

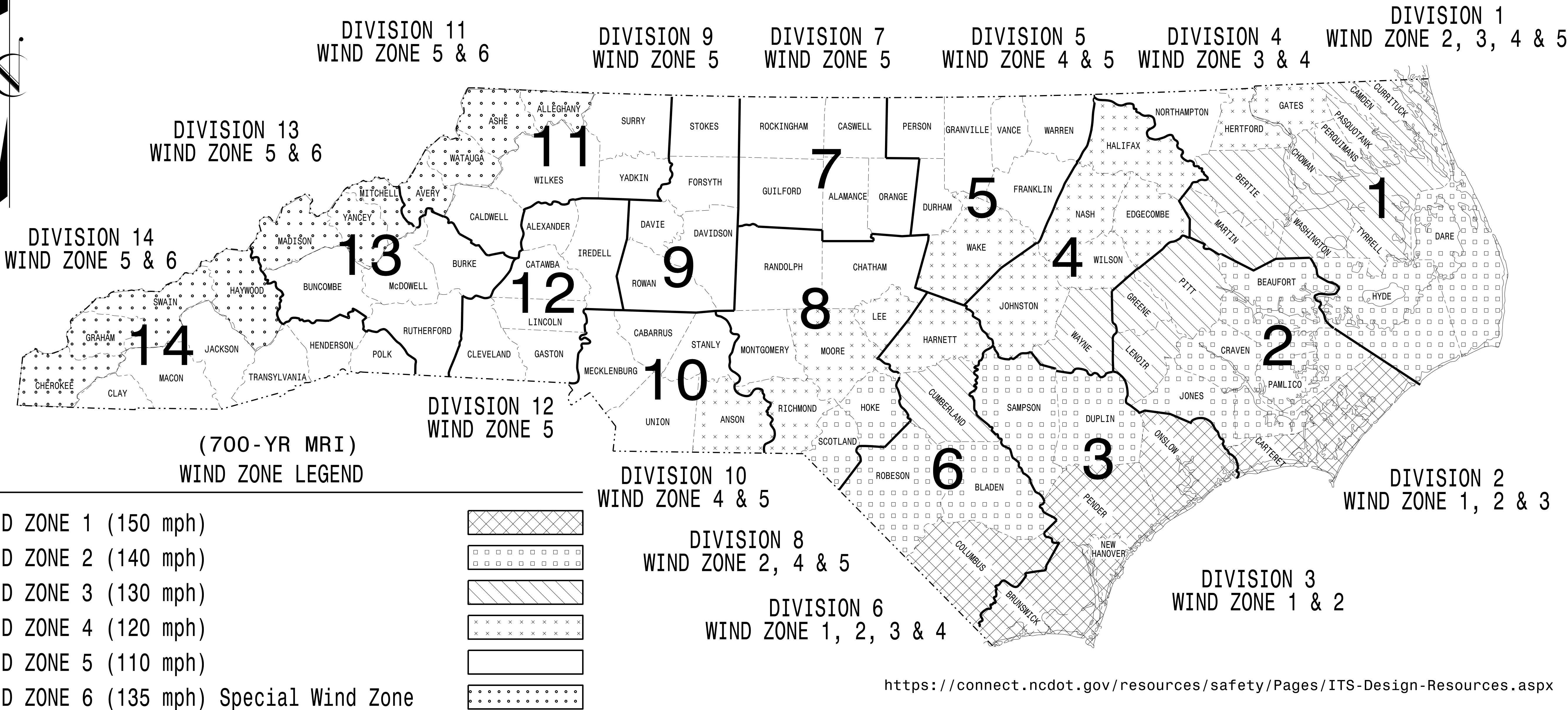
PROJECT I.D. NO.

SHEET NO.

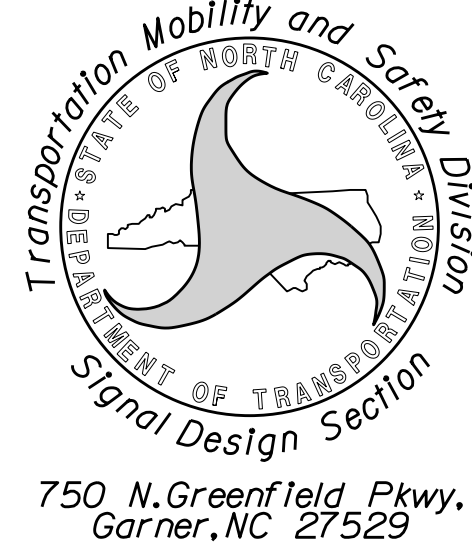
HL-00081

Sig.M1A

### STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



Prepared in the Offices of:



750 N. Greenfield Pkwy.  
Garner, NC 27529

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

**AASHTO  
LRFD**

Standard Specifications for  
Highway Signs, Luminaires,  
and Traffic Signals

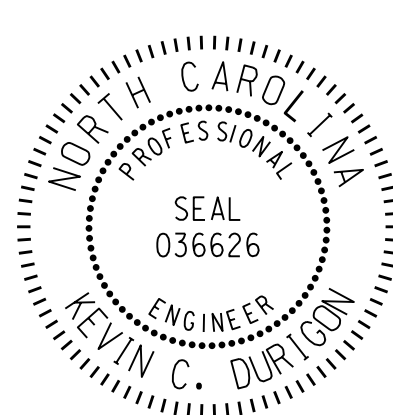
**DRAWING  
NUMBER**

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

MOBILITY AND SAFETY DIVISION -  
TRANSPORTATION SYSTEMS MANAGEMENT  
AND OPERATIONS UNIT

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

SEAL



DocuSigned by:

Kevin Durigon  
SIGNATURE  
4B23DC79B3764DA

09/21/2023  
DATE

09-01-2023 12:21 S:\ITS\SSM\115\Signal\Structures\Drawings\2024 Metal Pole (10-yr MRI).dgn kdurigon

# NCDOT METAL POLE STANDARDS

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

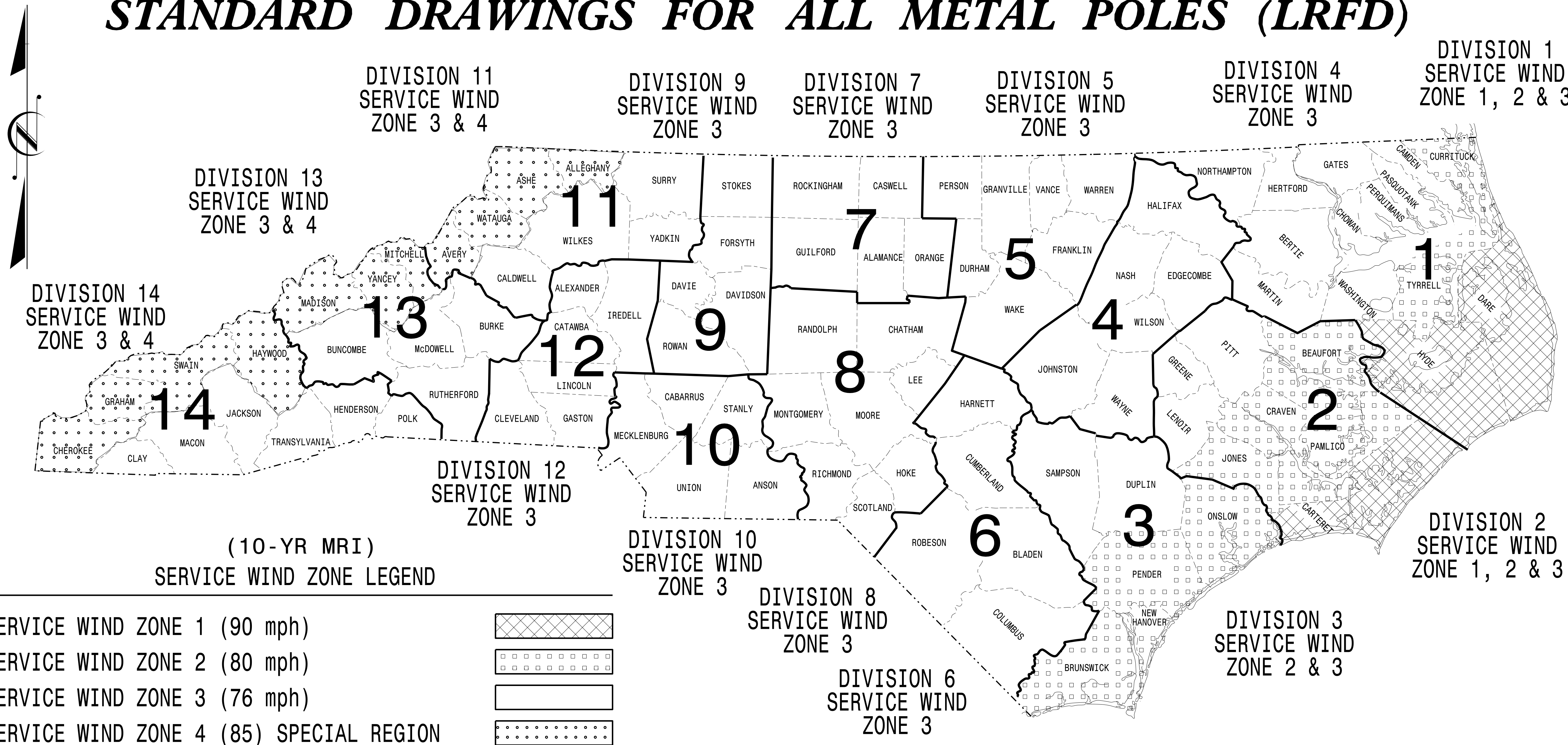
PROJECT I.D.NO.

SHEET NO.

HL-00081

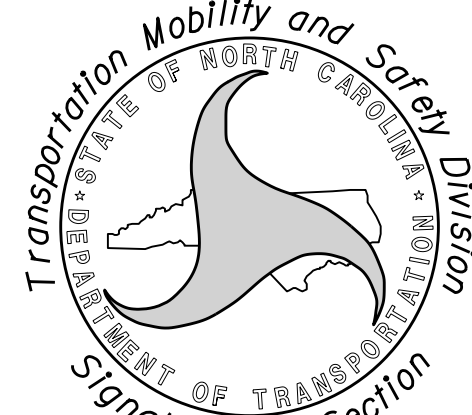
Sig.M1B

### STANDARD DRAWINGS FOR ALL METAL POLES (LRFD)



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

Prepared In the Offices of:



750 N. Greenfield Pkwy.  
Garner, NC 27529

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

**AASHTO  
LRFD**

Standard Specifications for  
Highway Signs, Luminaires,  
and Traffic Signals

DRAWING  
NUMBER

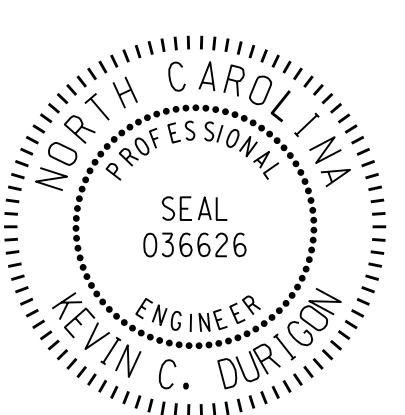
INDEX OF PLANS  
DESCRIPTION

|           |                                                     |
|-----------|-----------------------------------------------------|
| Sig. M 1A | Statewide Wind Zone Map (700-yr MRI)                |
| Sig. M 1B | Statewide Wind Zone Map (10-yr MRI)                 |
| Sig. M 2  | Typical Fabrication Details-All Metal Poles         |
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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



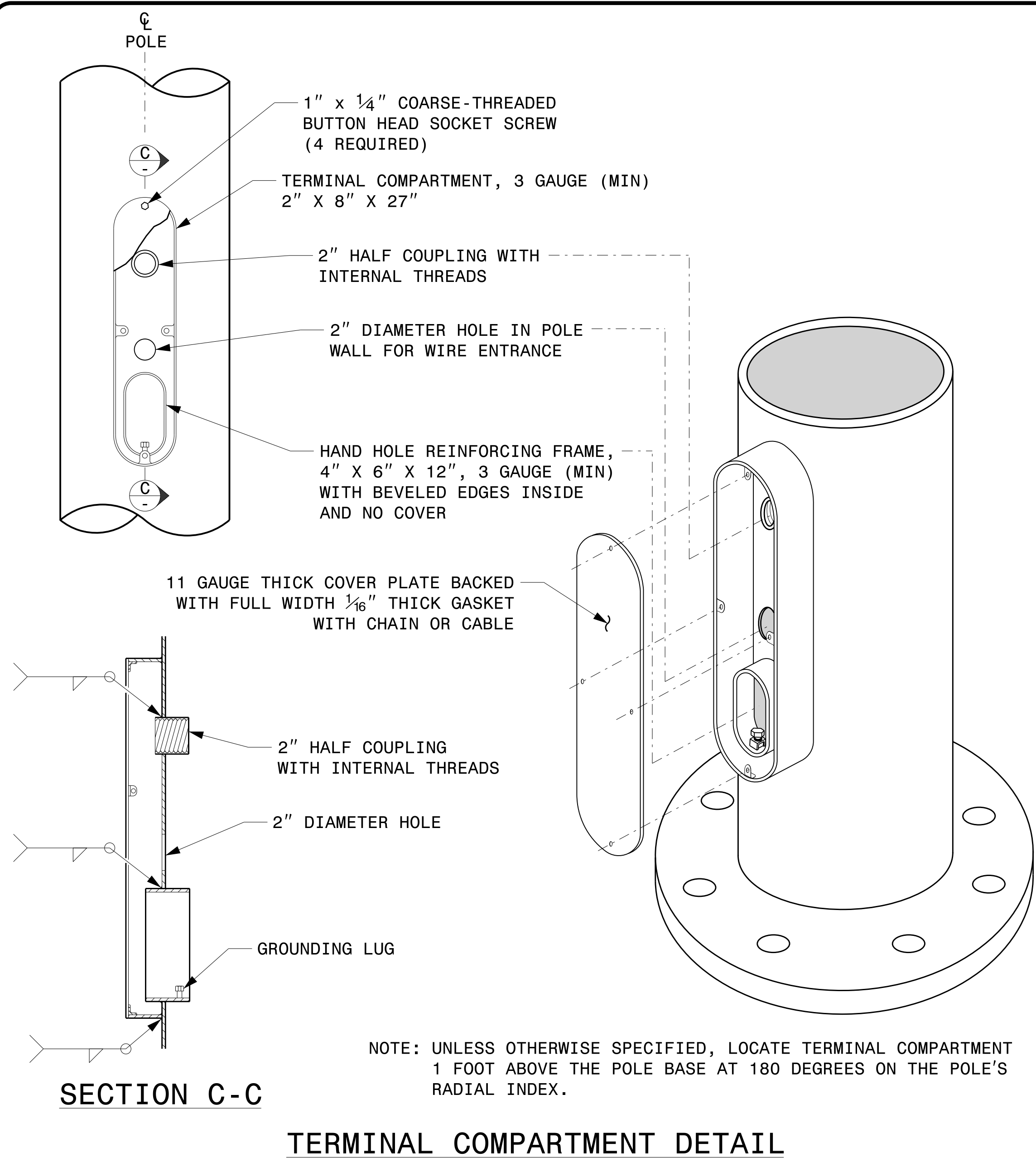
DocuSigned by:

Kevin Durigon

4B23DC79B3784DA

09/21/2023

DATE

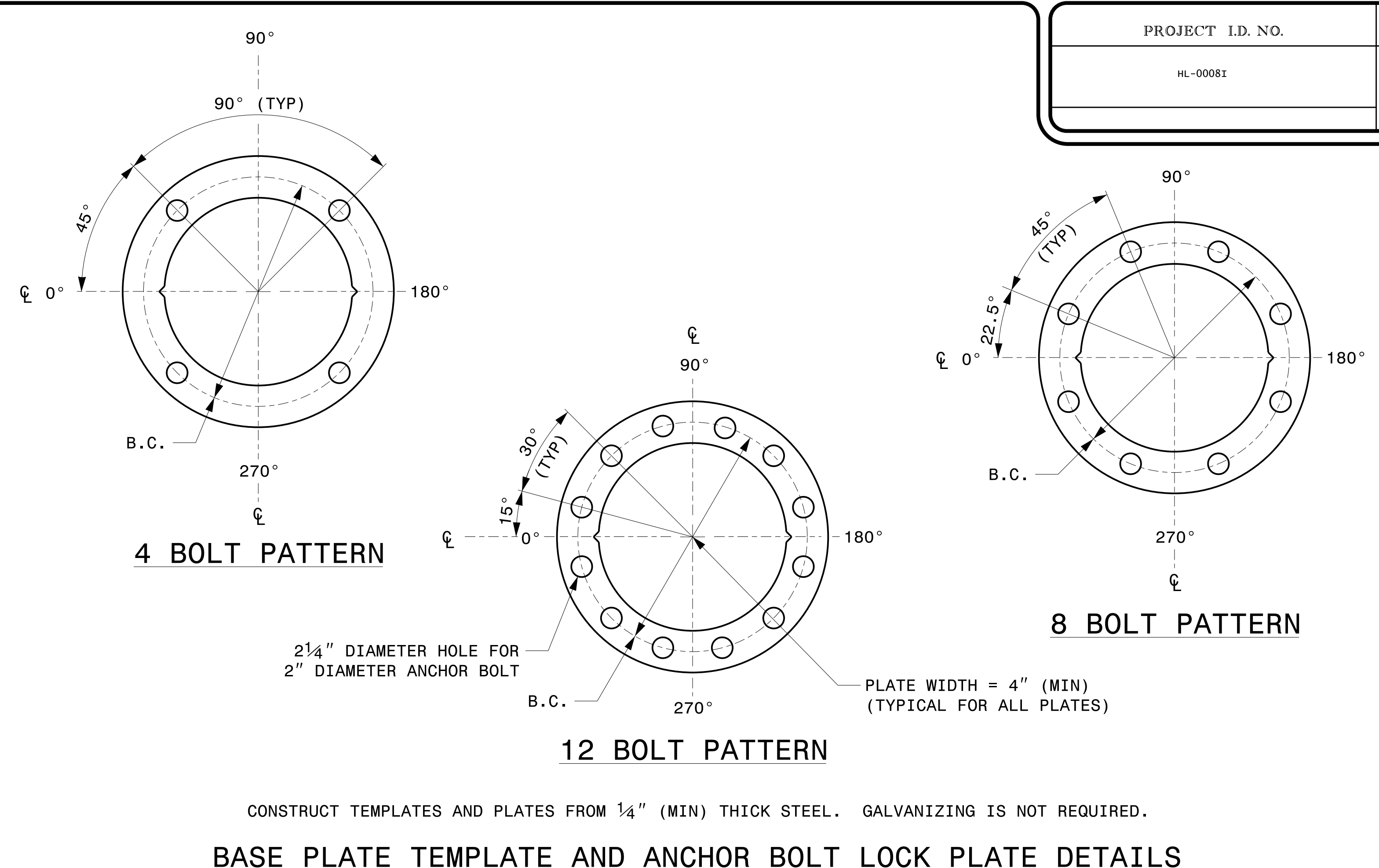


|                            |                                                                          |
|----------------------------|--------------------------------------------------------------------------|
| MFG _____ MFG. DATE: MM/YY | MFG _____ MFG. DATE: MM/YY                                               |
| SHAFT D/T/L/Y _____        | SECTION D/T/L/Y _____                                                    |
| ARM-A D/T/L/Y _____        | NCDOT SIG. INV. NO. _____                                                |
| ARM-B D/T/L/Y _____        | NCDOT POLE NO. _____                                                     |
| A.B. DIA./B.C./L/Y _____   | ARM I.D. TAG<br>(PROVIDE ON EACH SECTION OF<br>A MULTI-SECTION MAST ARM) |
| NCDOT SIG. INV. NO. _____  |                                                                          |
| NCDOT POLE NO. _____       |                                                                          |

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

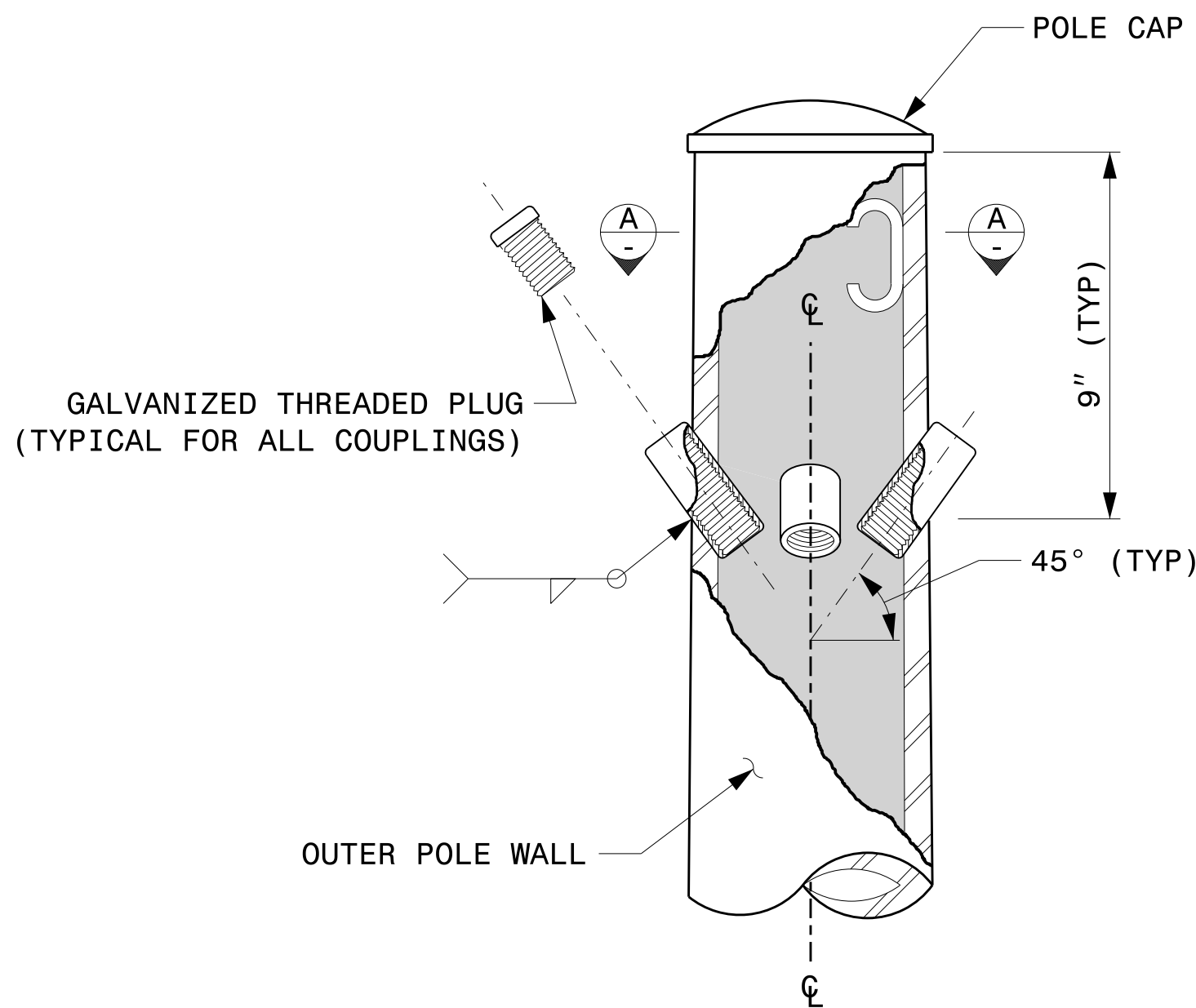
- NOTES:
- D = DIAMETER, T = THICKNESS, L = LENGTH, Y = YIELD STRENGTH
  - A.B. = ANCHOR BOLT
  - B.C. = BOLT CIRCLE OF ANCHOR BOLTS
  - IF STANDARD DESIGN, INCLUDE CASE NUMBER IN ADDITION TO POLE NUMBER ON "NCDOT POLE NO." LINE.
  - SIGNAL INV. NUMBER AND POLE I.D. NUMBER.  
SEE DRAWING M3 AND M4 FOR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

**IDENTIFICATION TAG DETAILS**

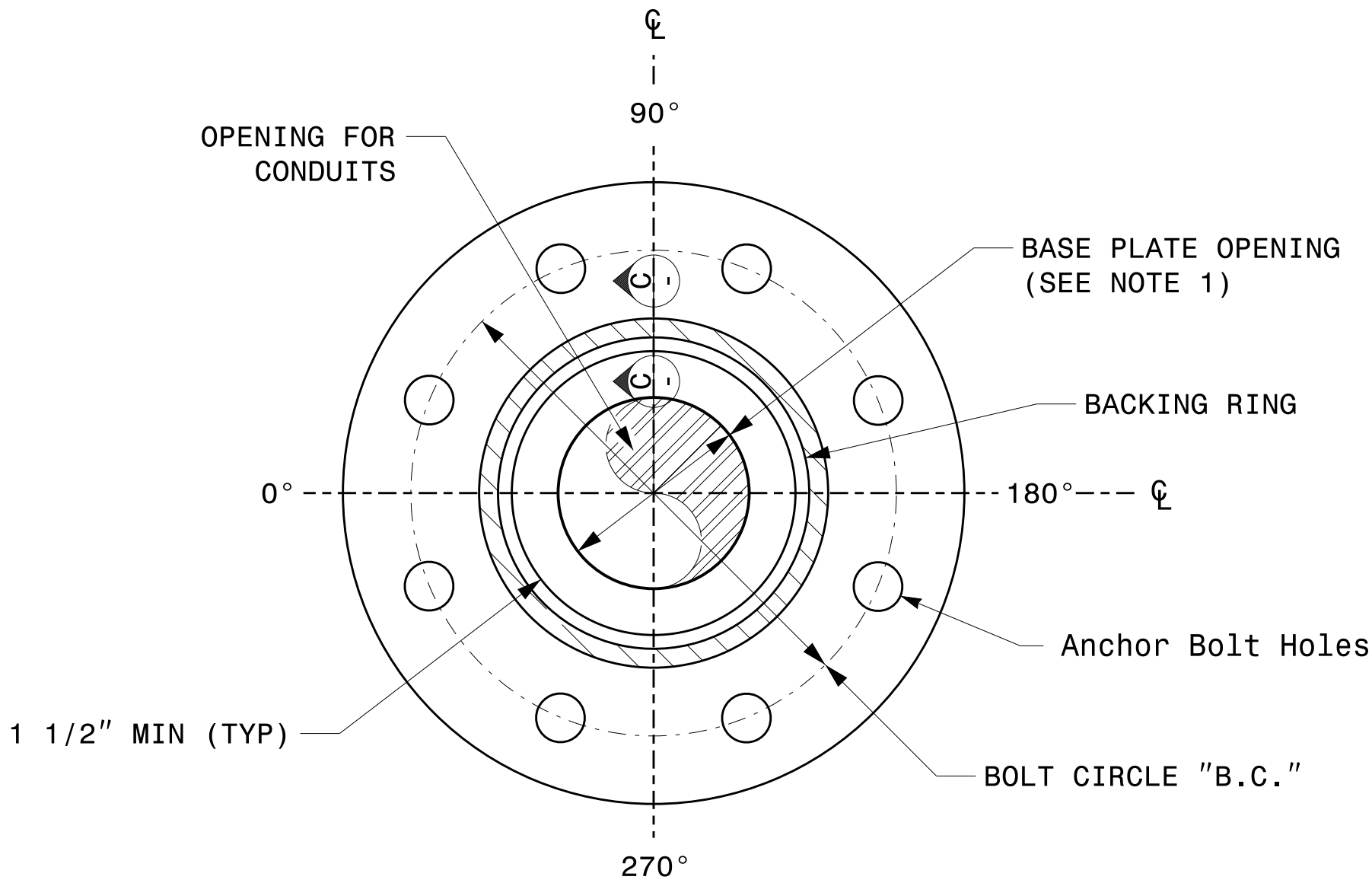


NOTE:

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  $8\frac{1}{2}$ ".

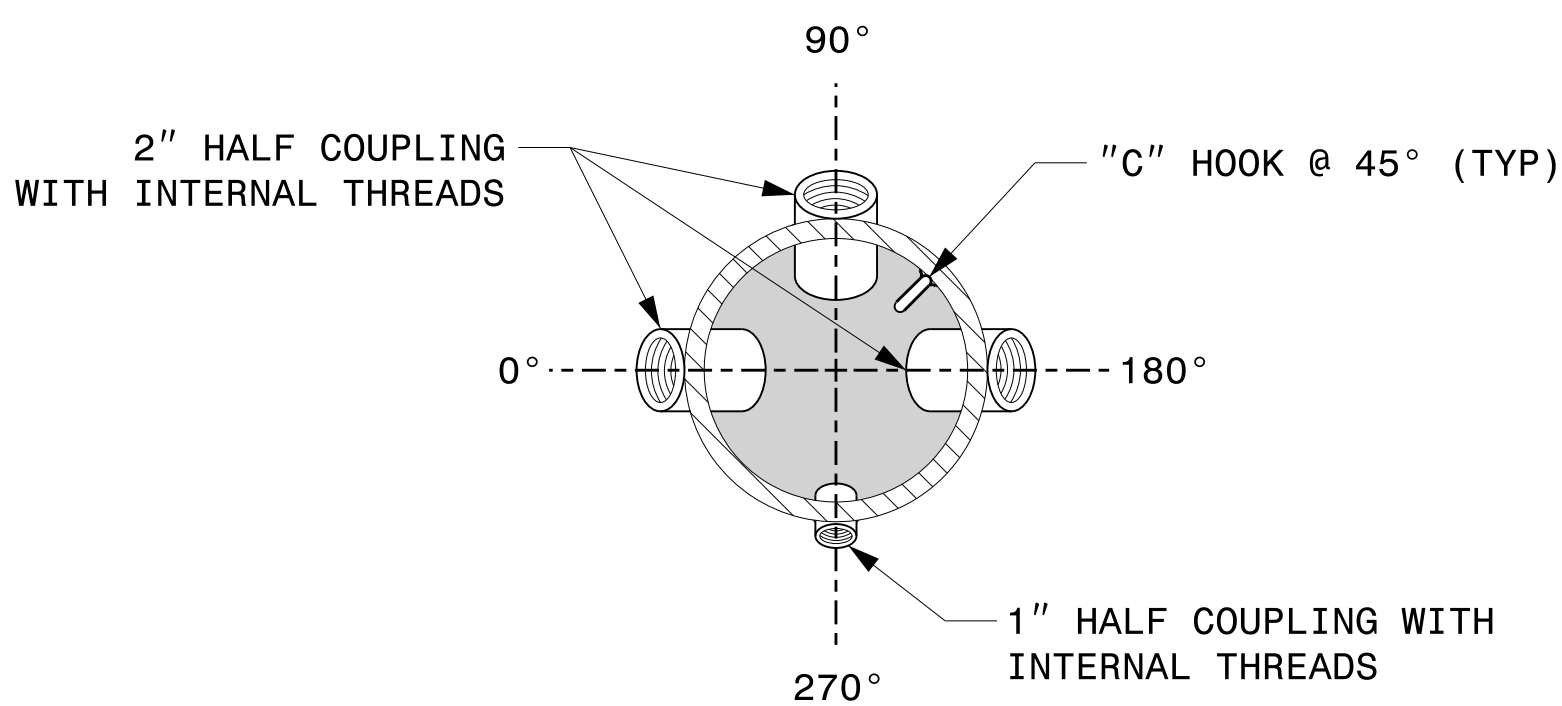


CABLE ENTRANCES AT TOP OF POLE



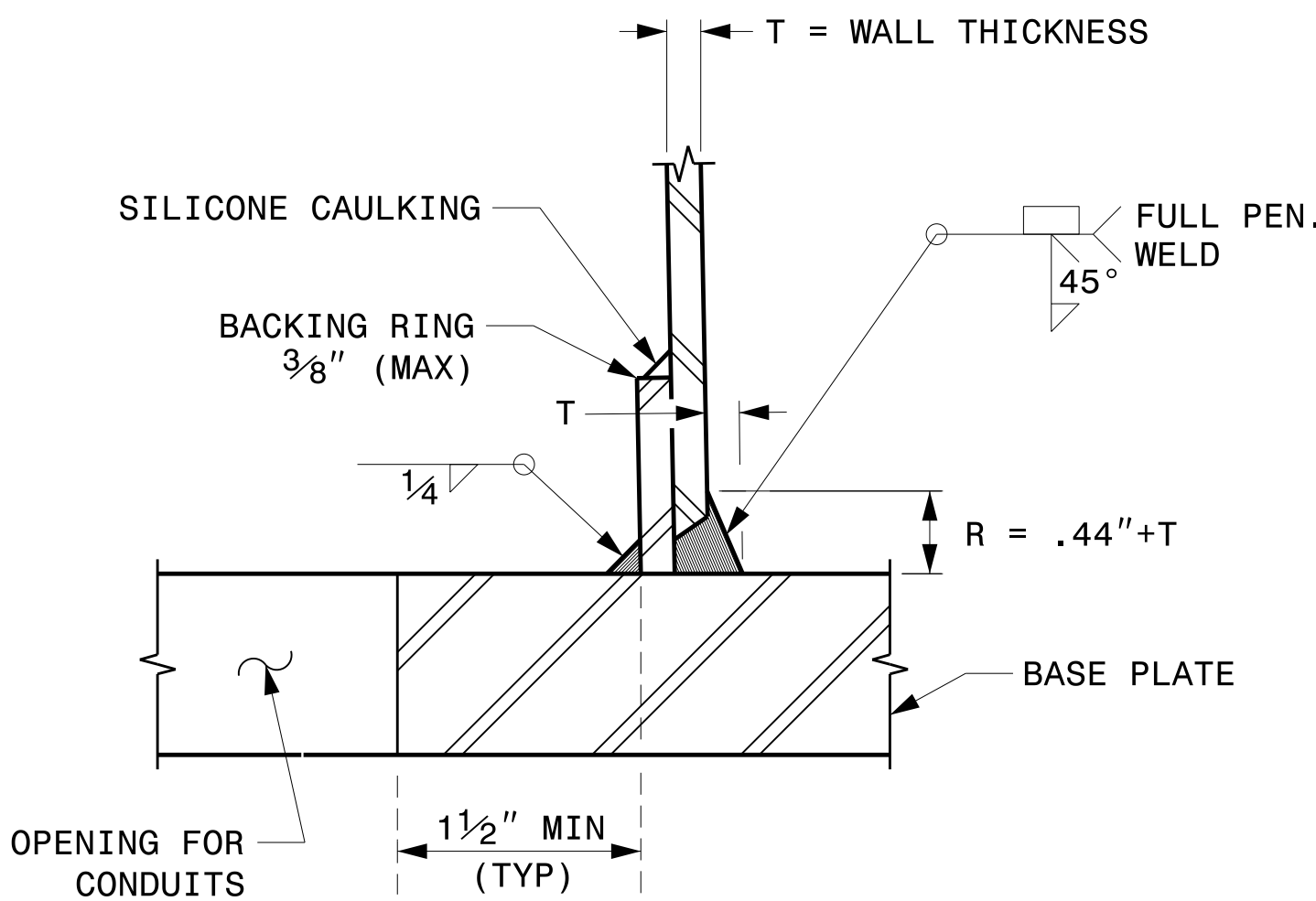
SECTION B-B

POLE BASE PLATE DETAILS  
(8 AND 12 BOLT PATTERN)



SECTION A-A

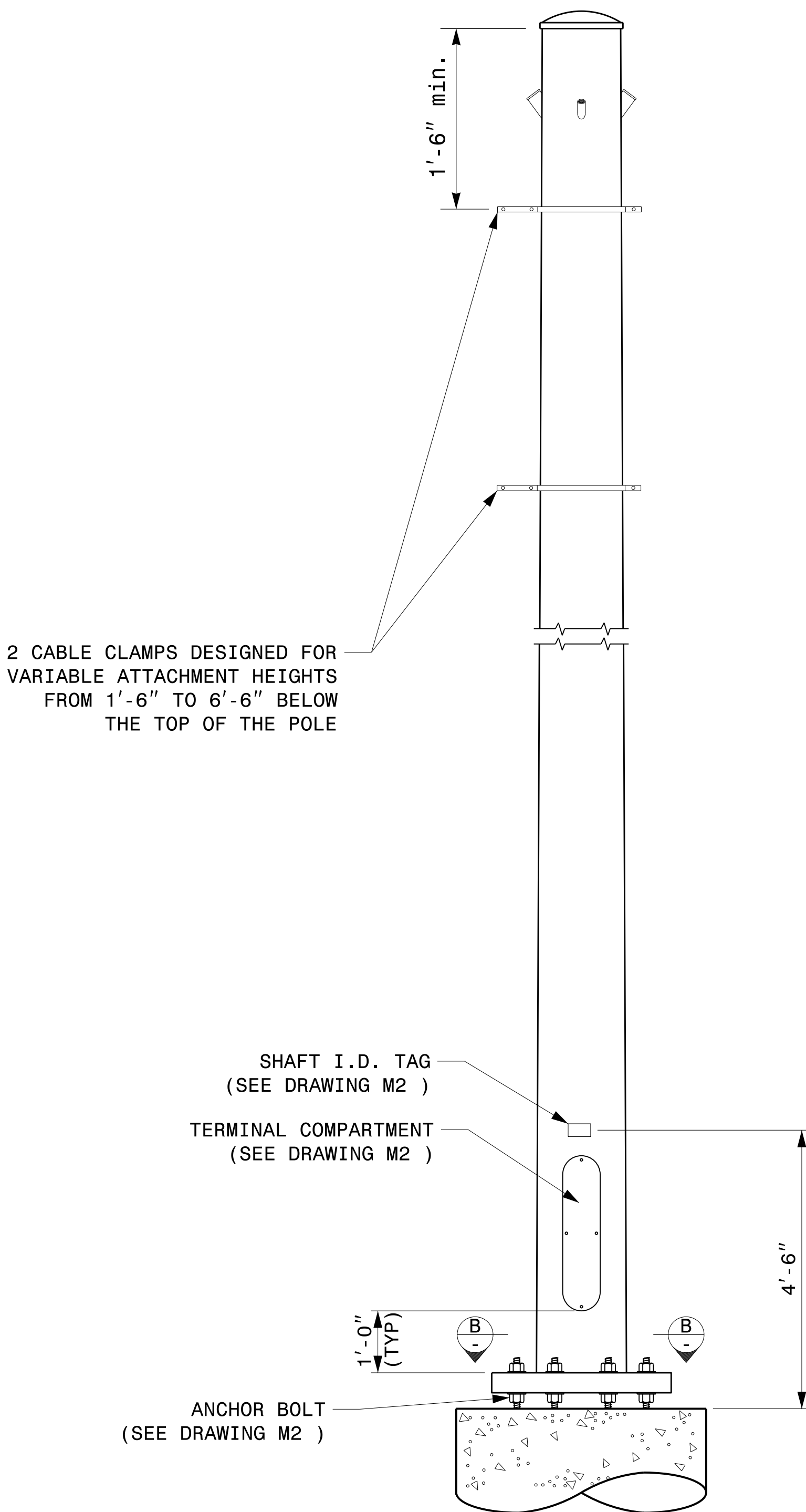
RADIAL ORIENTATION OF FACTORY INSTALLED  
ACCESSORIES AT TOP OF POLE



SECTION C-C

(POLE ATTACHMENT TO BASE PLATE)

FULL-PENETRATION  
GROOVE WELD DETAIL

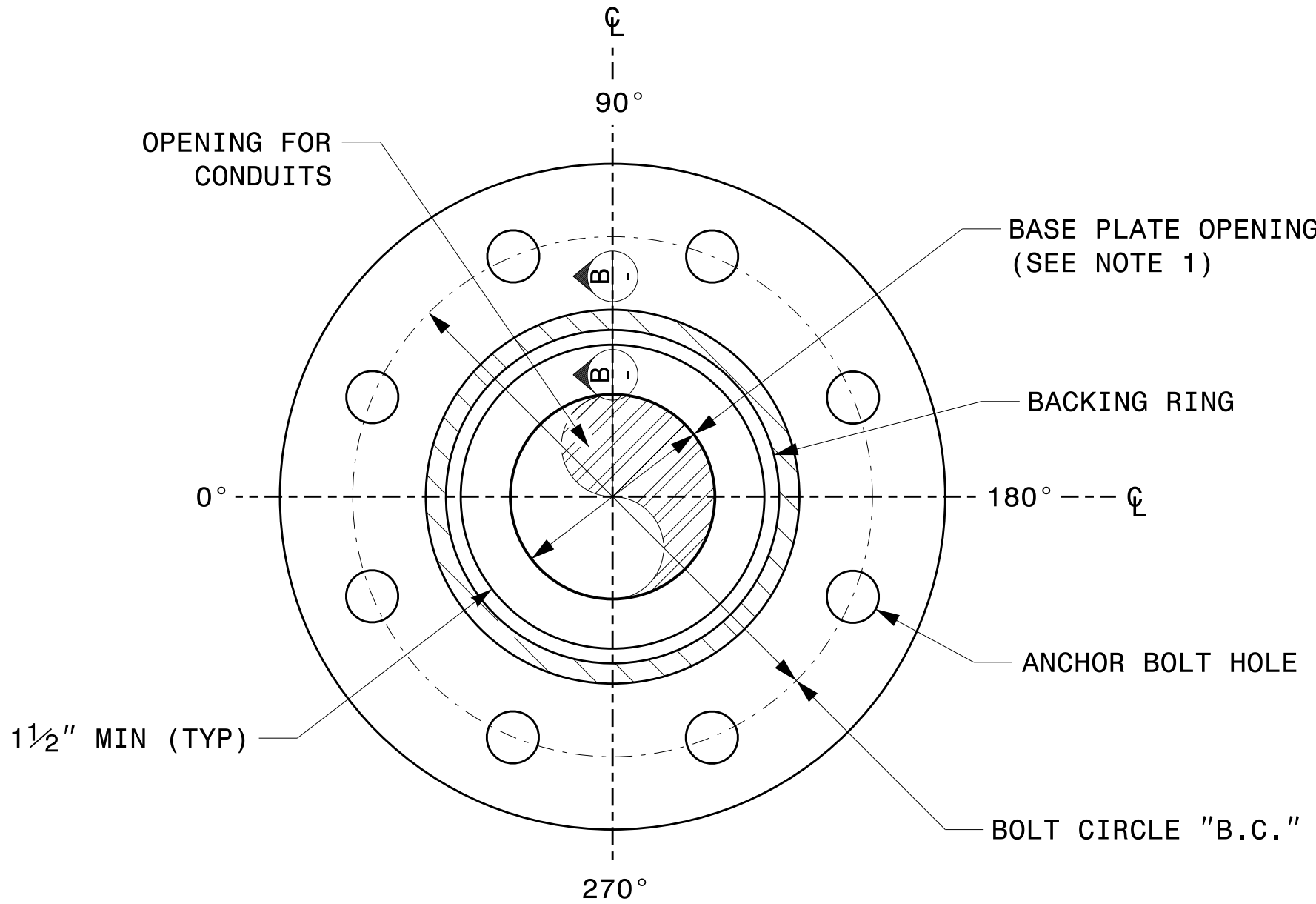


MONOTUBE STRAIN POLE

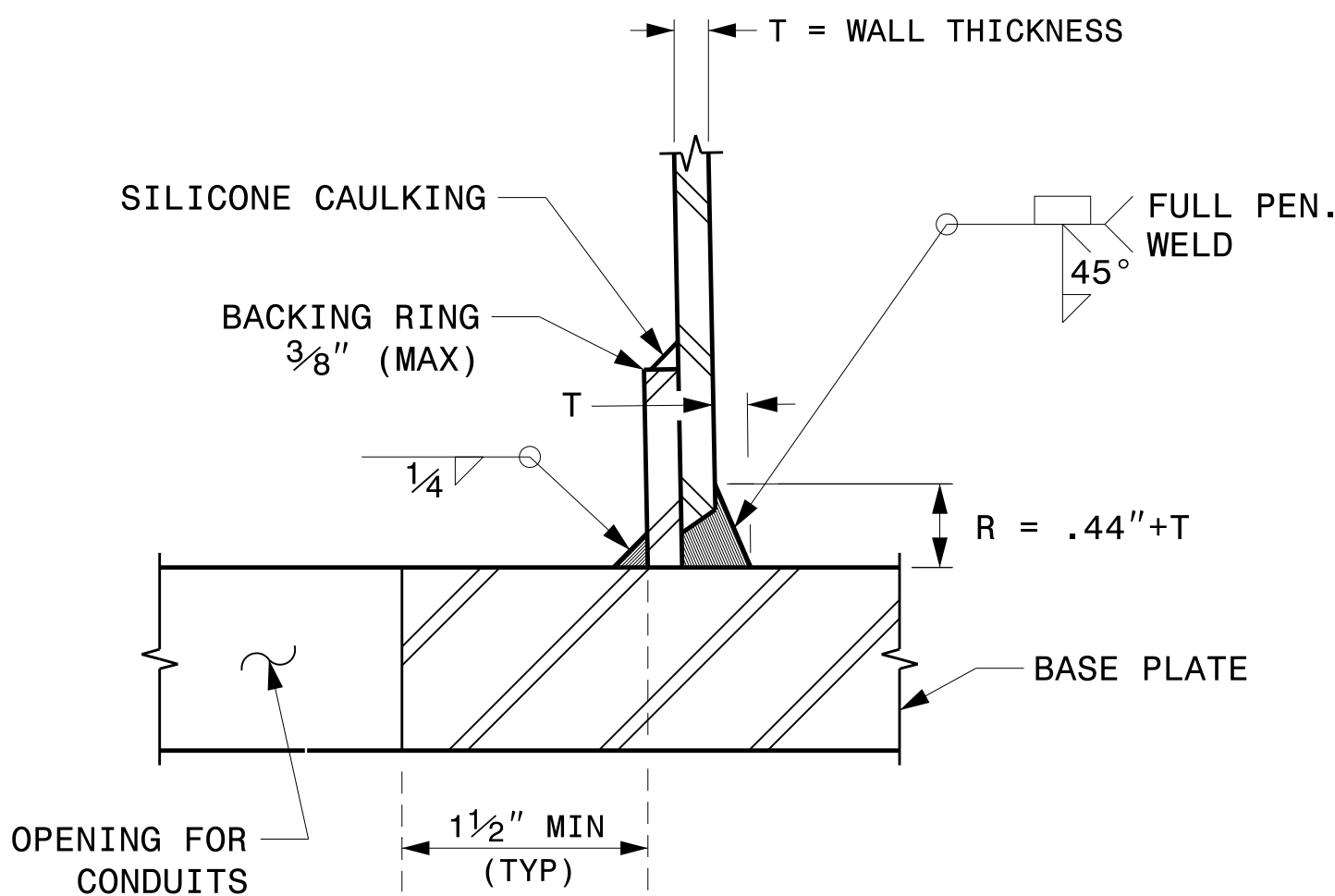
|                       |                                                                                                                 |                                                       |      |                                                                      |
|-----------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------|----------------------------------------------------------------------|
|                       | Typical Fabrication Details<br>For<br>Strain Poles                                                              |                                                       |      |                                                                      |
|                       | PLAN DATE: SEPTEMBER 2023<br>DESIGNED BY: K.C. DURIGON<br>PREPARED BY: K.C. DURIGON<br>REVIEWED BY: D.C. SARKAR | DESIGNED BY: K.C. DURIGON<br>REVIEWED BY: D.C. SARKAR |      | DocuSigned by:<br><br>SEAL<br>036626<br>ENGINEER<br>KEVIN C. DURIGON |
| SCALE<br>0 NA<br>NONE | REVISIONS                                                                                                       | INIT.                                                 | DATE | 09/21/2023<br>DATE                                                   |

NOTE:

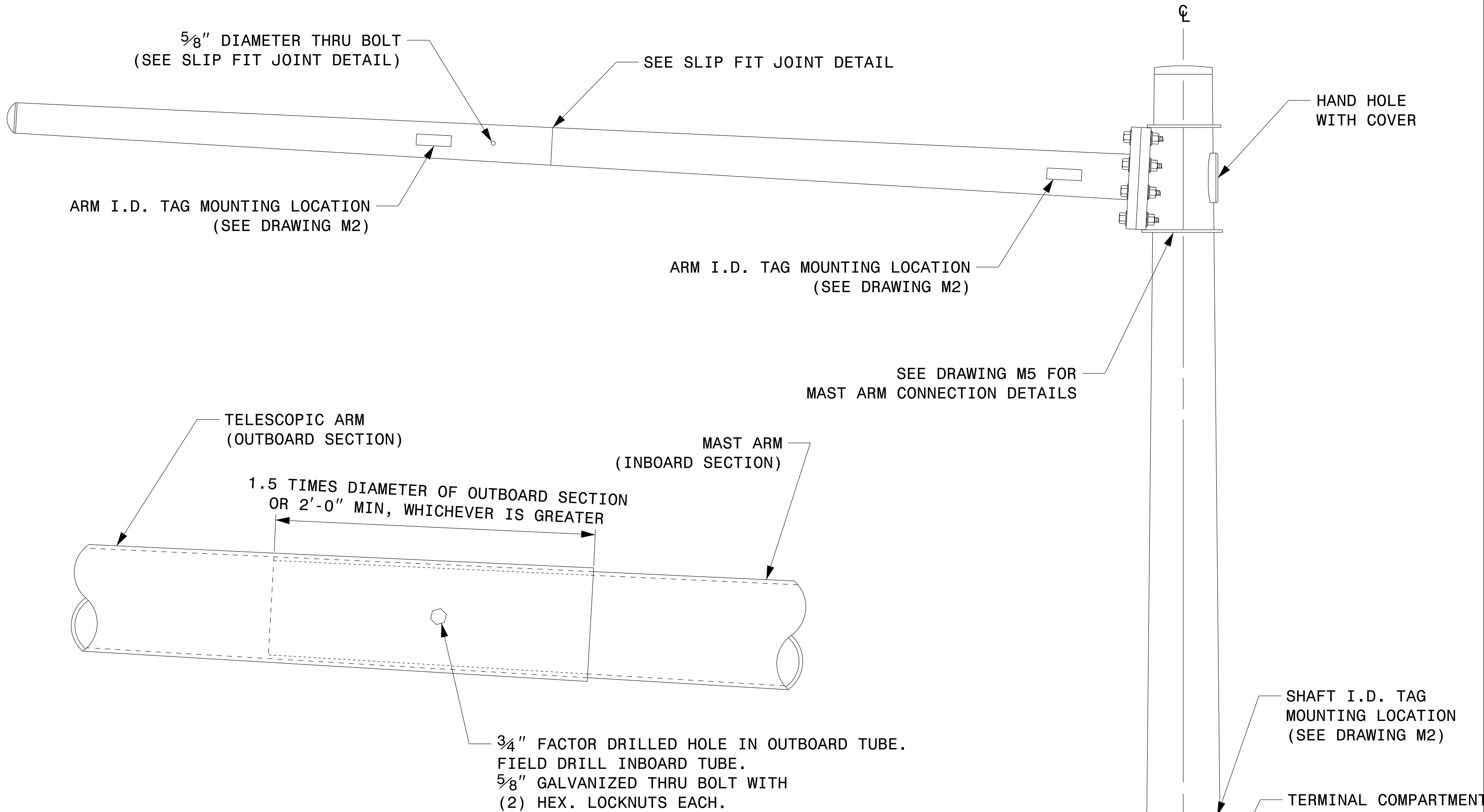
1. OPENING IN POLE BASE PLATE SHALL BE EQUAL TO POLE BASE INSIDE DIAMETER MINUS  $3\frac{1}{2}$ " BUT SHALL NOT BE LESS THAN  $8\frac{1}{2}$ ".



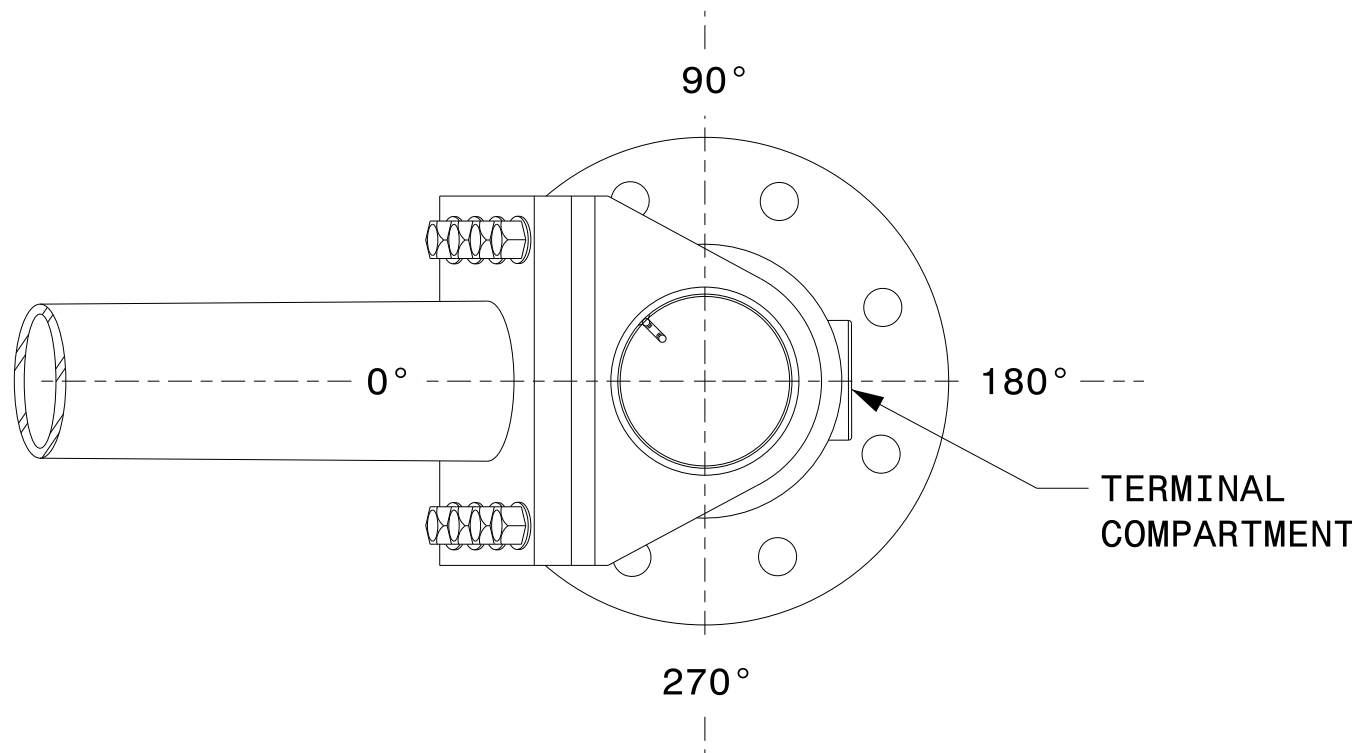
SECTION A-A  
POLE BASE PLATE DETAILS



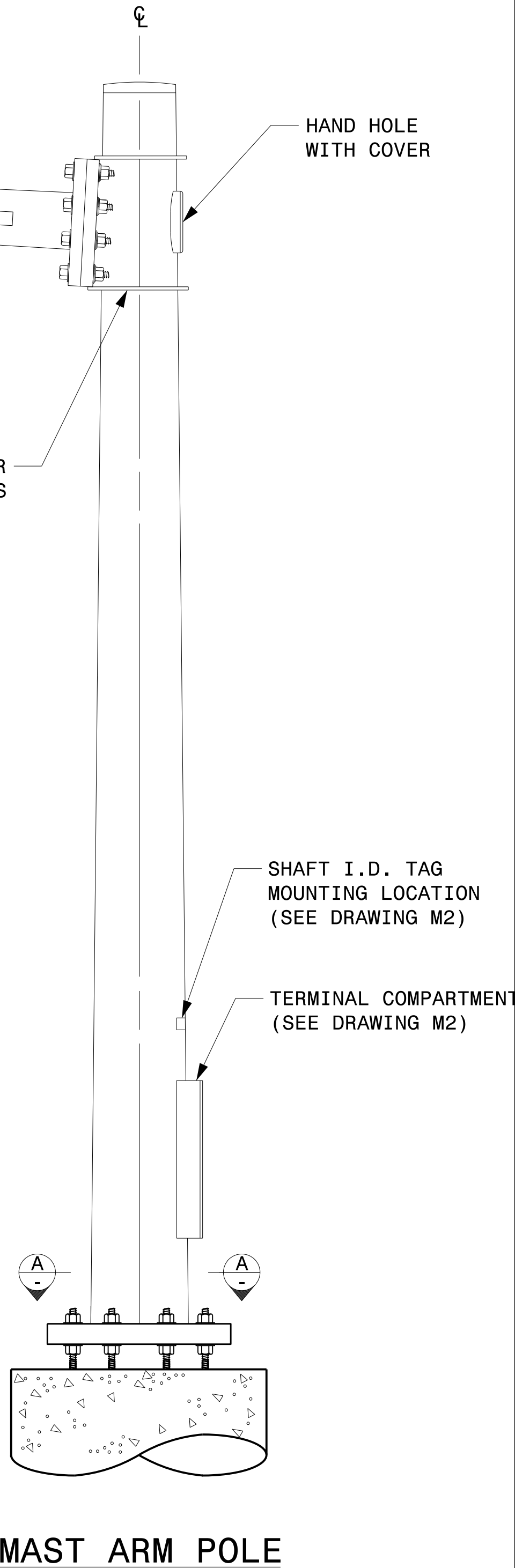
SECTION B-B  
(POLE ATTACHMENT TO BASE PLATE)  
FULL-PENETRATION  
GROOVE WELD DETAIL



SLIP FIT JOINT DETAIL FOR MAST ARM



MAST ARM RADIAL ORIENTATION



MAST ARM POLE

|                            |                                                                                                           |                         |                                                                                                      |
|----------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------|
| <p>0 SCALE NA<br/>NONE</p> | Typical Fabrication Details<br>For<br>Mast Arm Poles                                                      |                         | <p>DocuSigned by:<br/><i>Kevin Durigon</i><br/>SEAL<br/>036626<br/>ENGINEER<br/>KEVIN C. DURIGON</p> |
|                            | PLAN DATE: SEPTEMBER 2023 DESIGNED BY: K.C. DURIGON<br>PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR | REVISIONS<br>INIT. DATE |                                                                                                      |

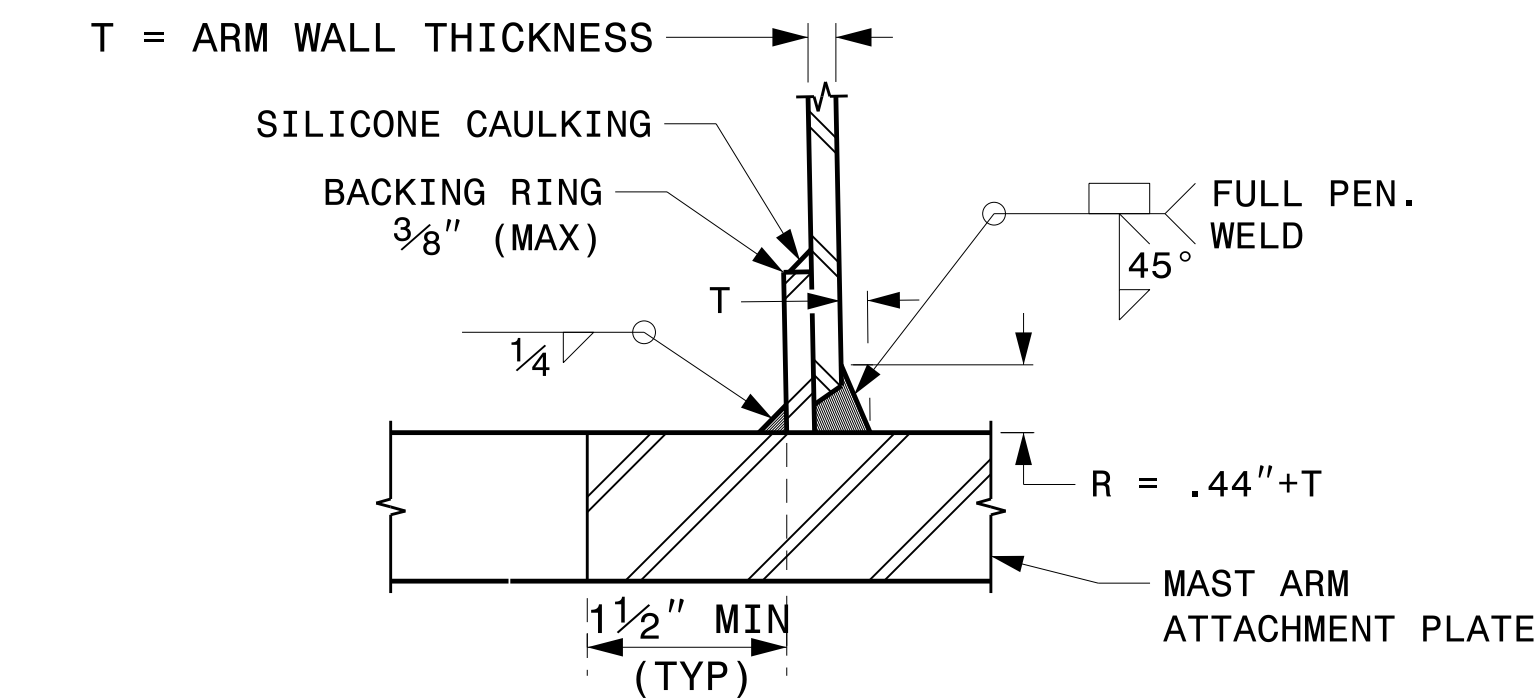
WELDED RING STIFFENED MAST ARM CONNECTION

PROJECT I.D. NO.

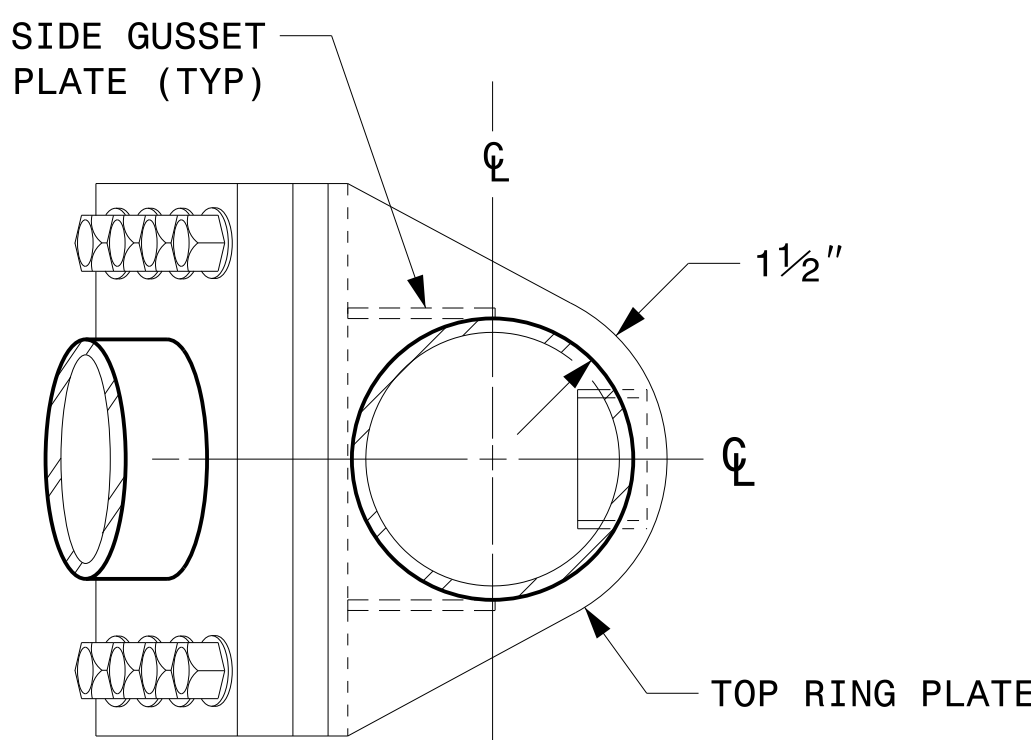
SHEET NO.

HL-00081

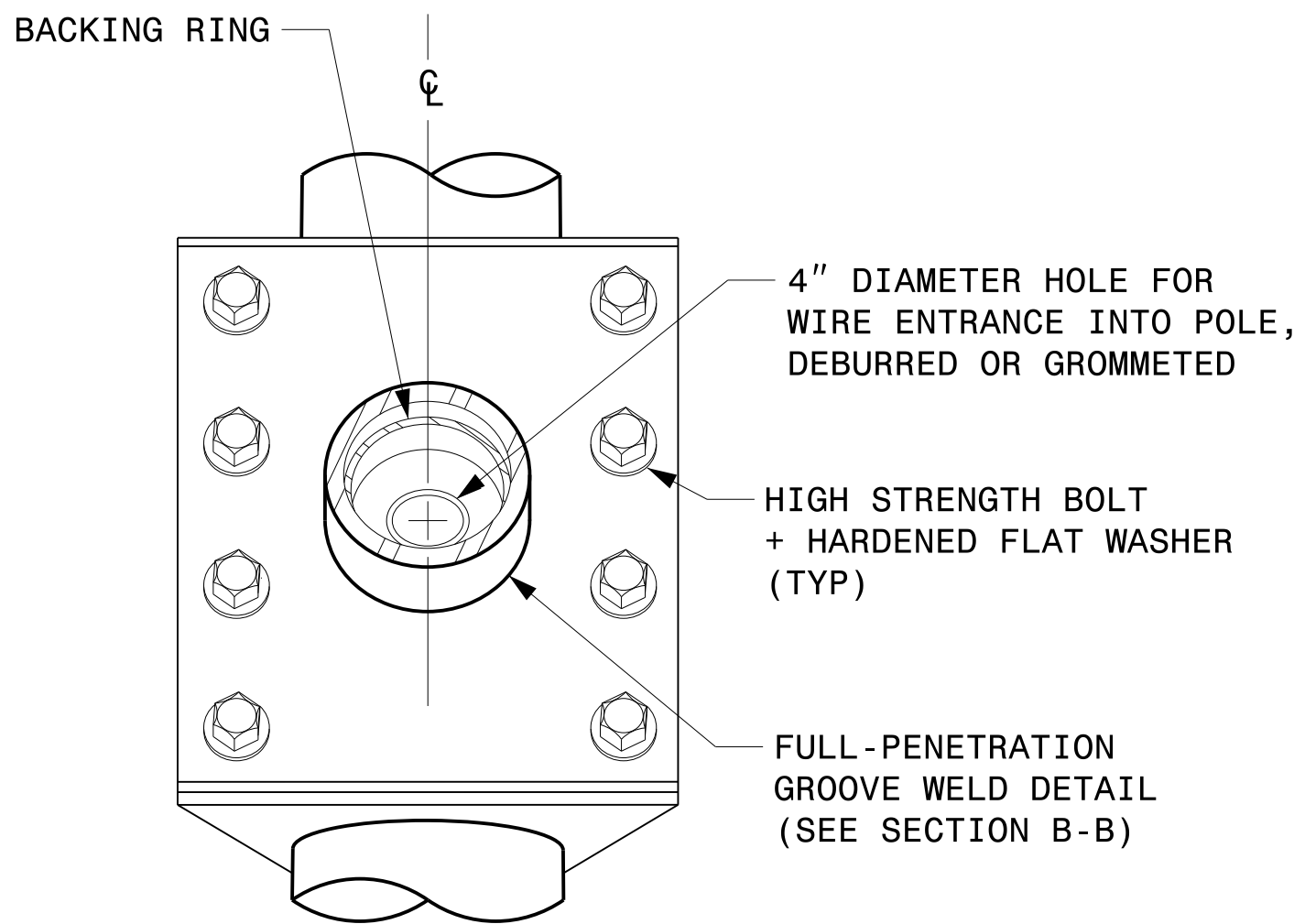
Sig.M5



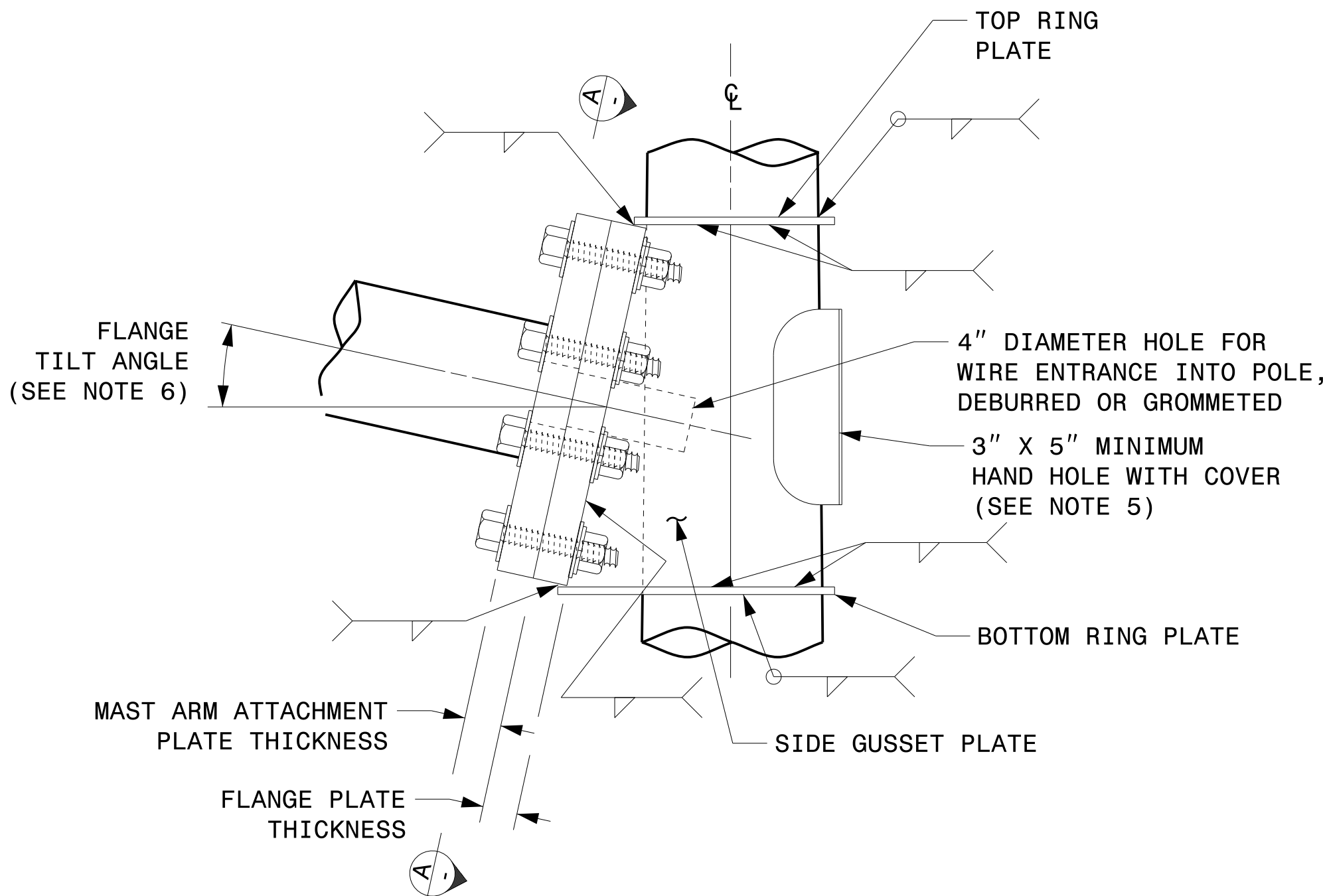
SECTION B-B  
FULL-PENETRATION GROOVE WELD DETAIL



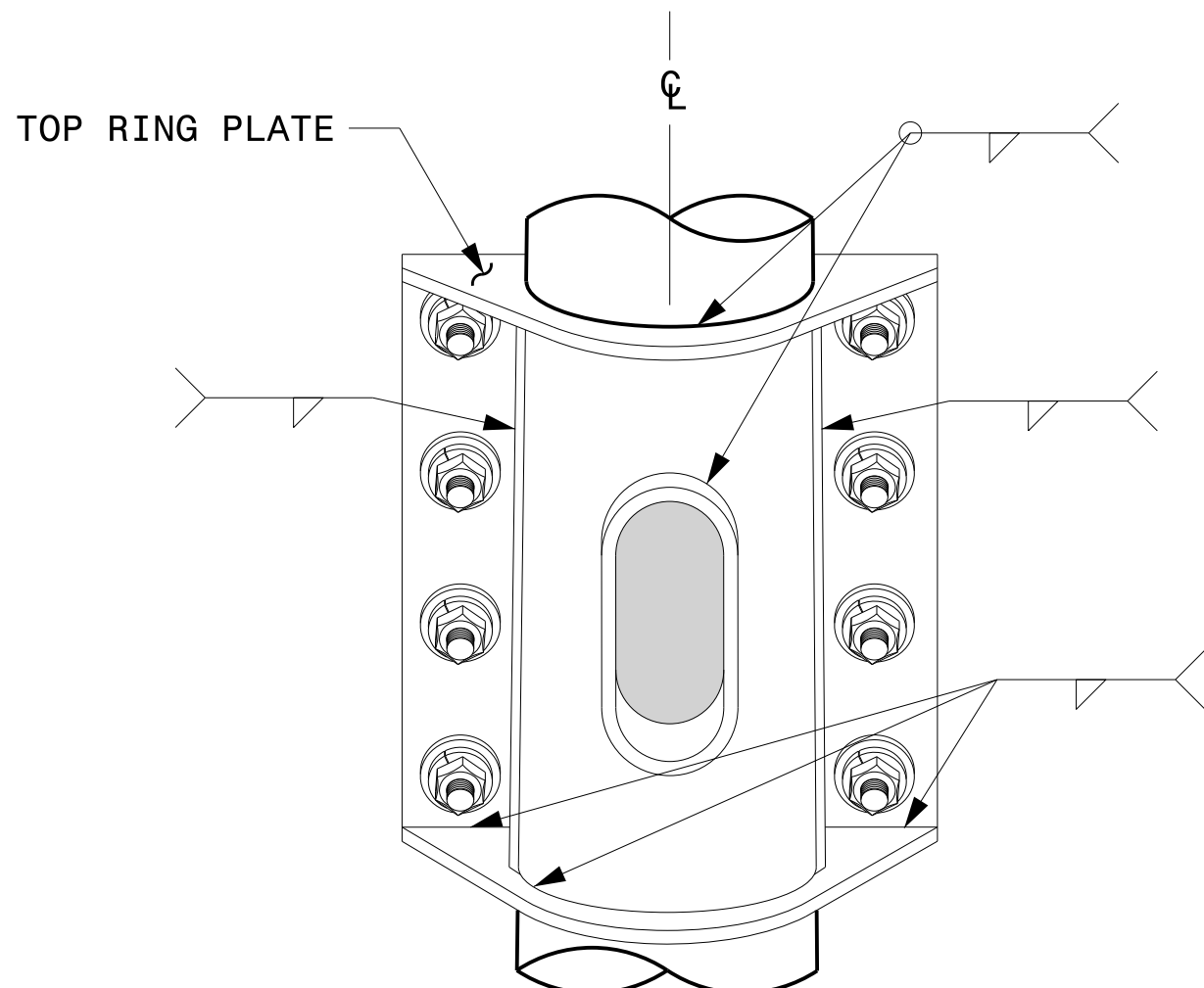
PLAN VIEW



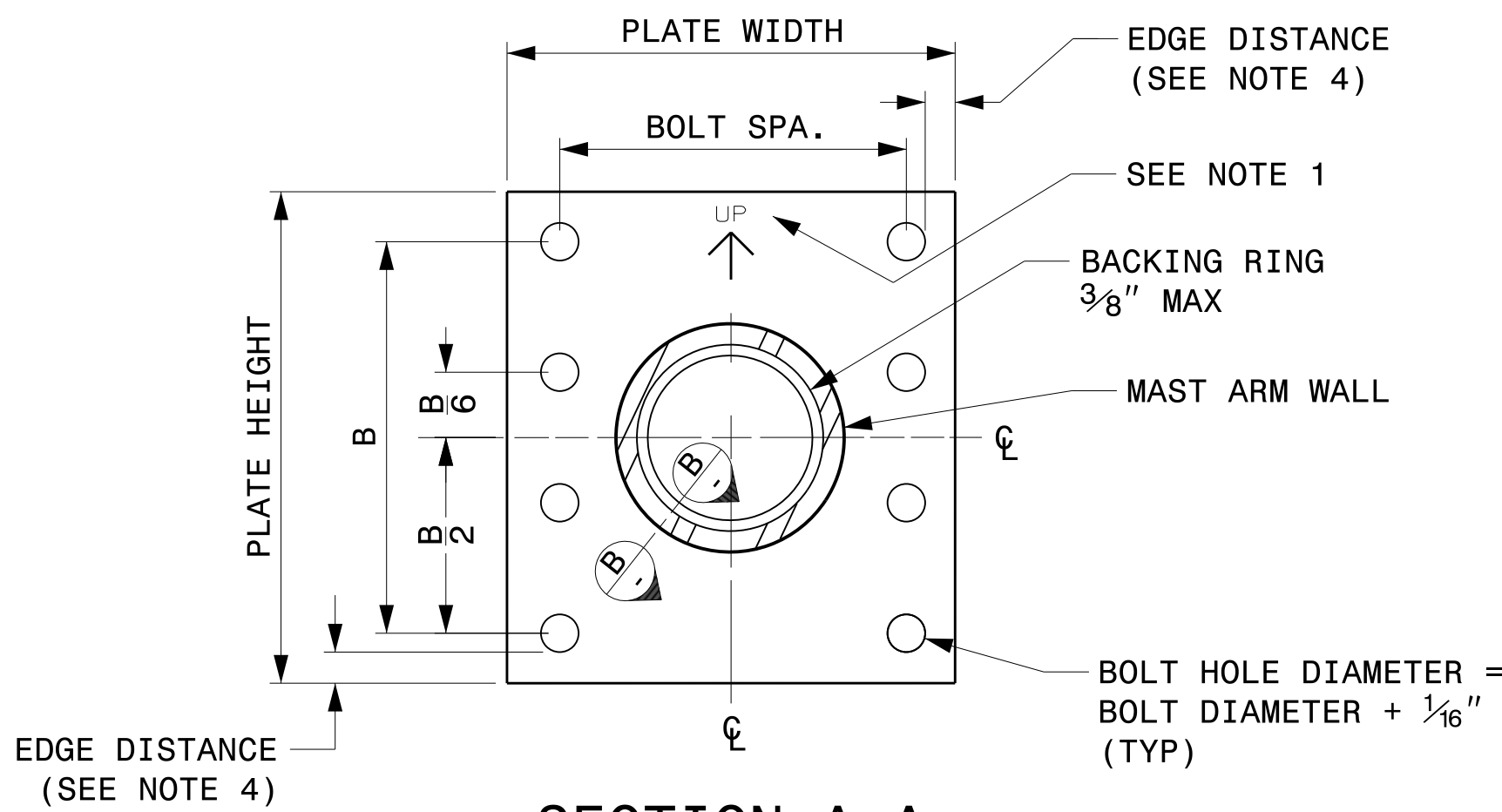
FRONT ELEVATION VIEW



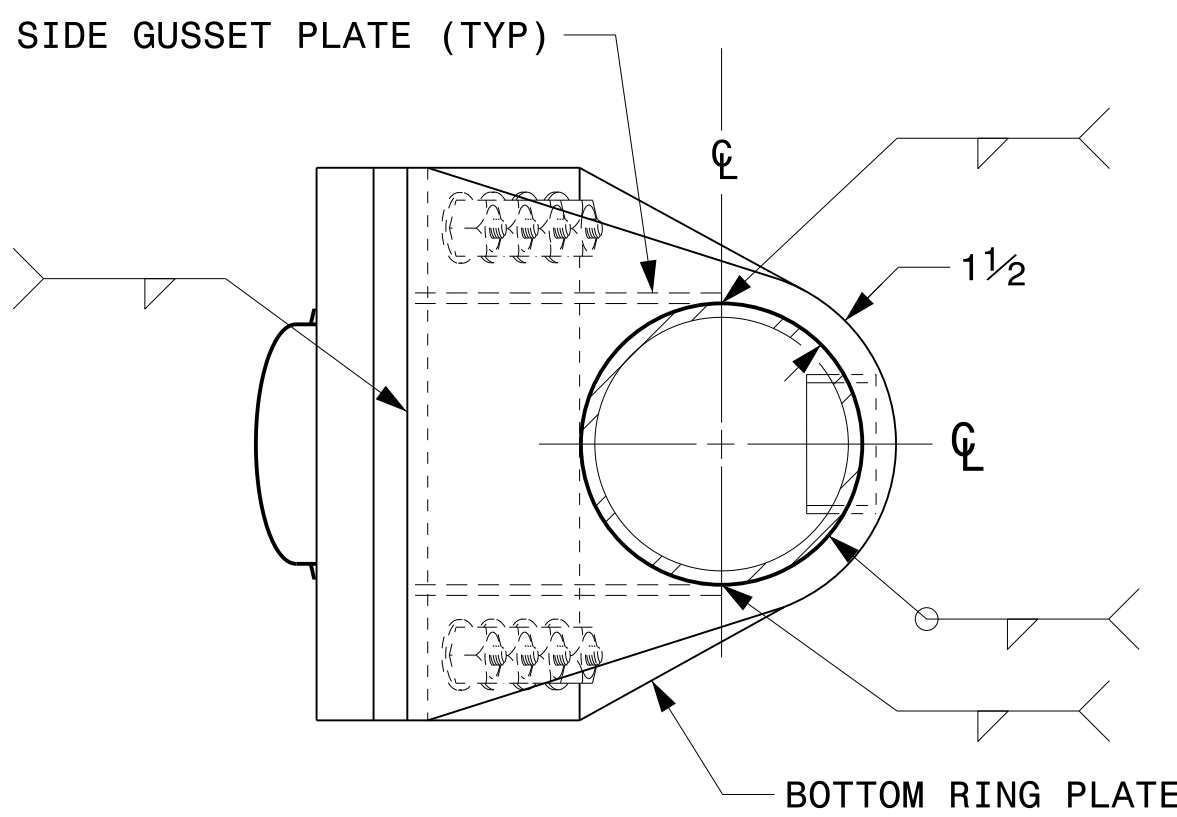
SIDE ELEVATION VIEW



BACK ELEVATION VIEW



SECTION A-A  
MAST ARM ATTACHMENT PLATE

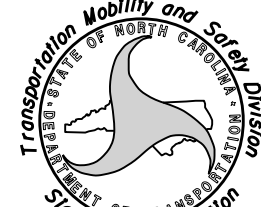
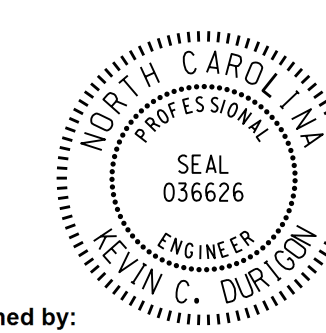


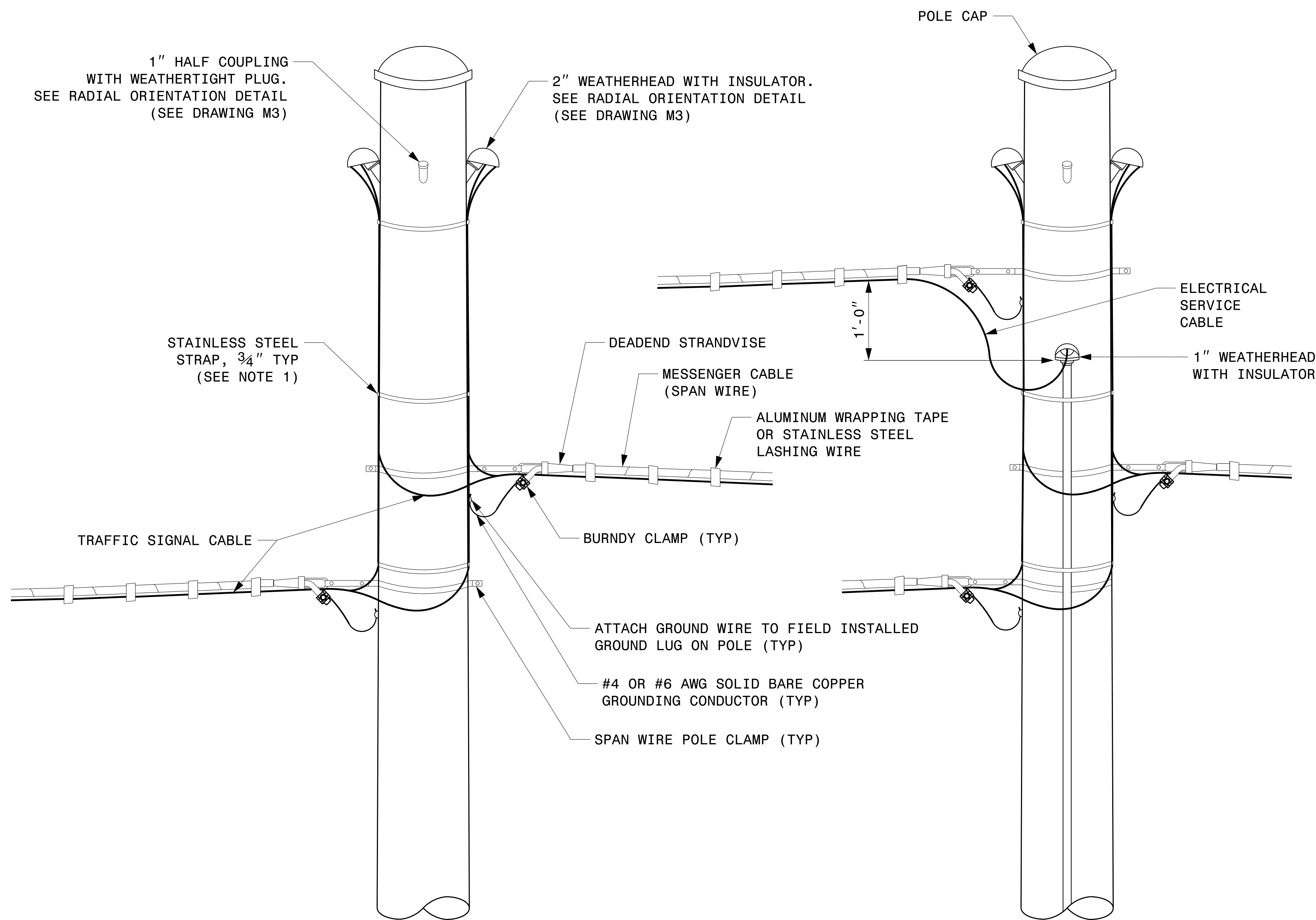
BOTTOM VIEW

NOTES:

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

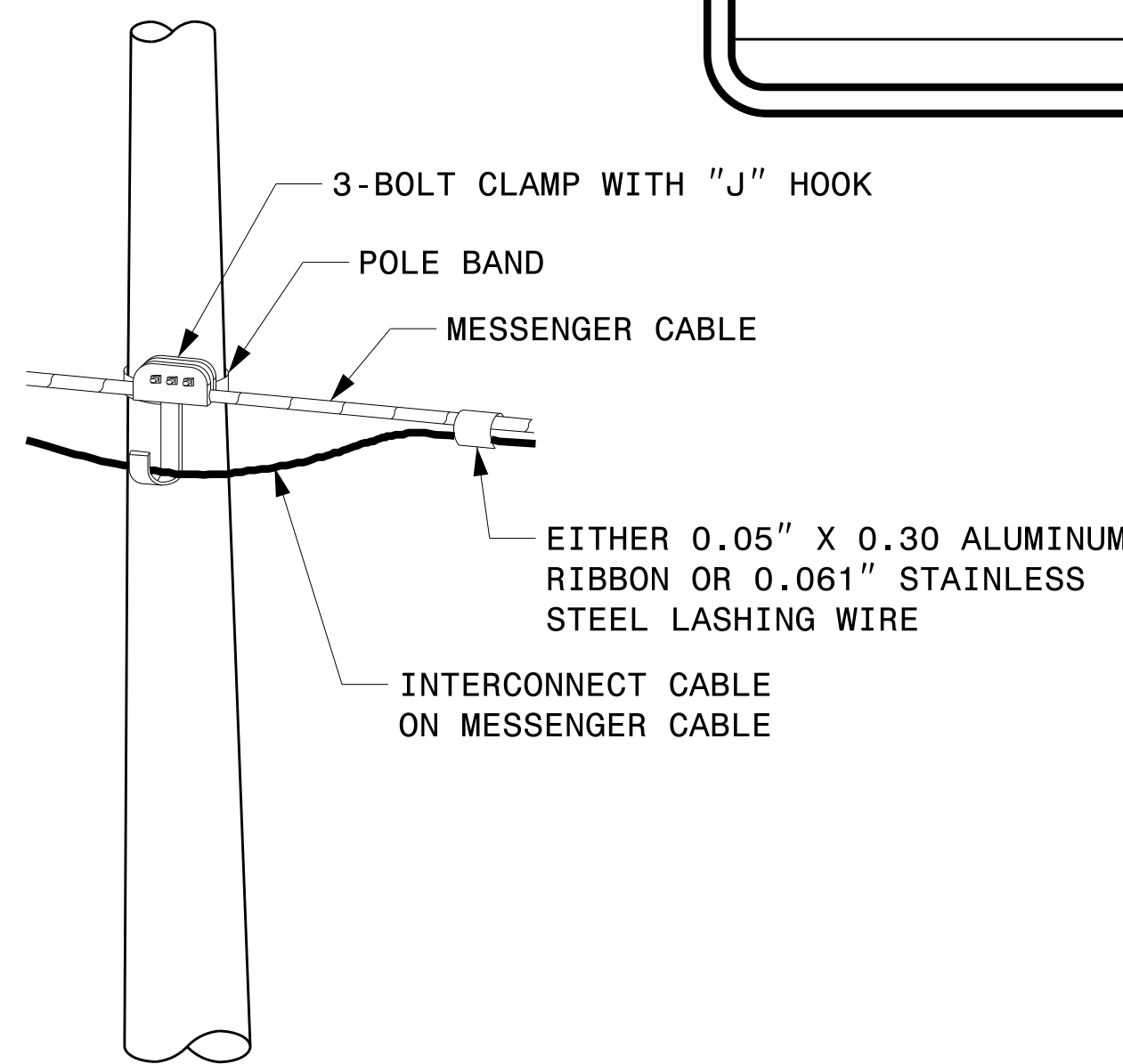
Fabrication Details – Mast Arm Connection

|                                                                                                                                                                  |  |                                                                   |  |                                                                                                                               |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------|--|
| Prepared In the Offices of:<br><br>750 N. Greenfield Pkwy, Garner, NC 27529 |  | Typical Fabrication Details<br>For<br>Mast Arm Connection To Pole |  | SEAL<br>                                 |  |
| PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F. ANDREWS                                                                                                              |  | PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR                |  | DocuSigned by:<br><br>4B23DC79B3784DA... |  |
| SCALE<br>0 NA<br>NONE                                                                                                                                            |  | REVISIONS<br>INIT. DATE                                           |  | DATE<br>09/21/2023                                                                                                            |  |

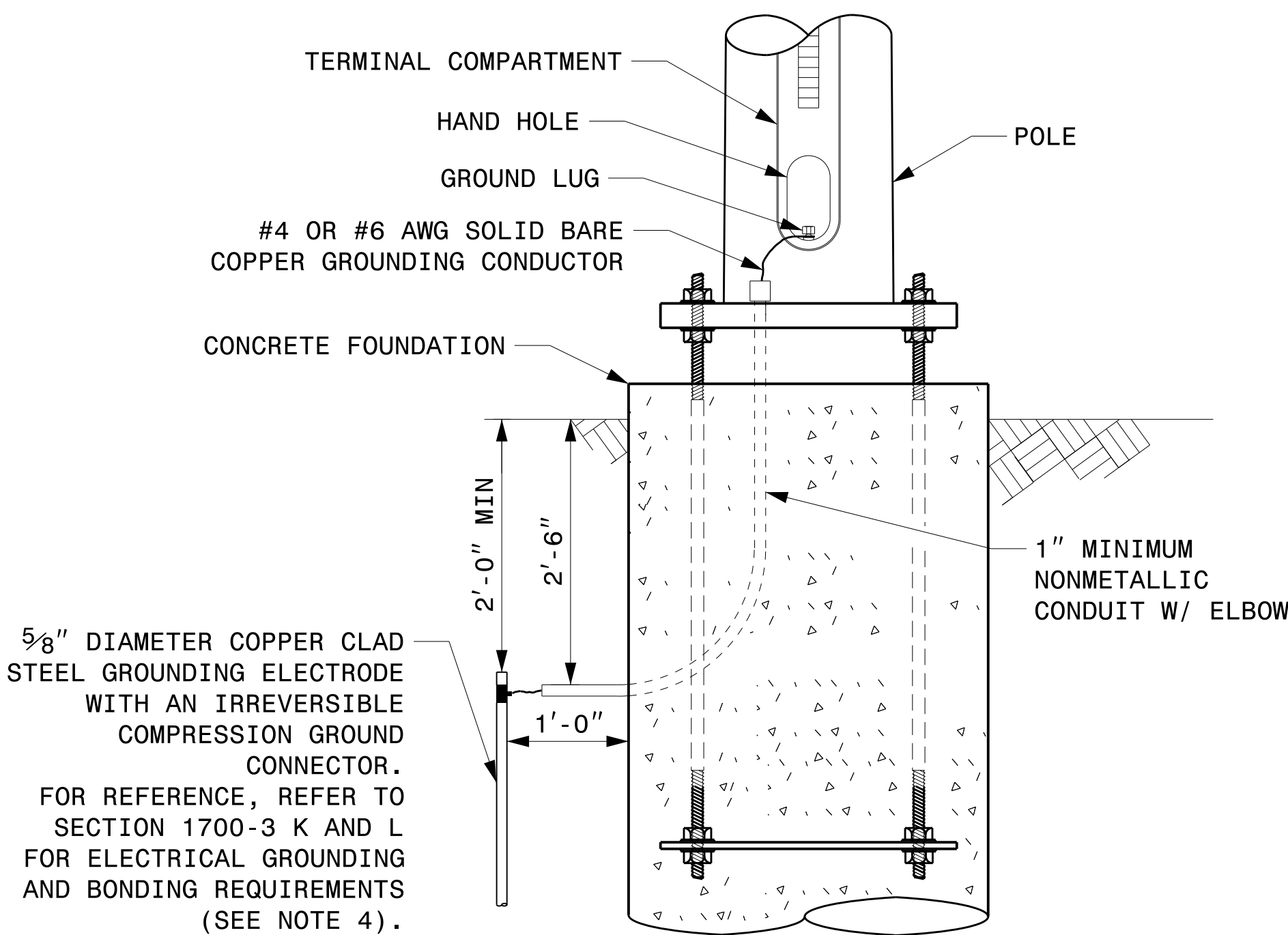


STRAIN POLE ATTACHMENTS

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



ATTACHMENT OF CABLE TO INTERMEDIATE METAL POLE

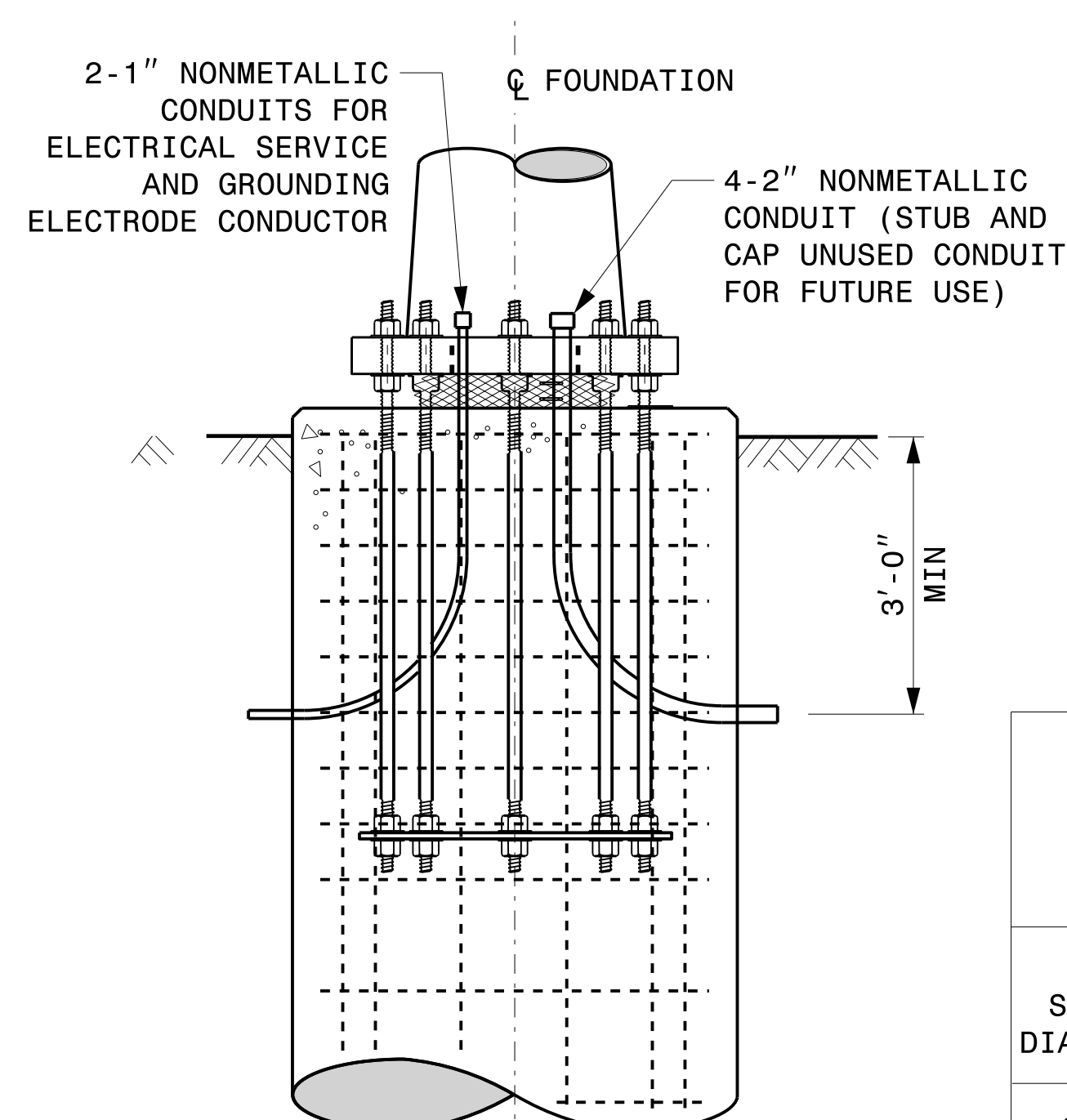
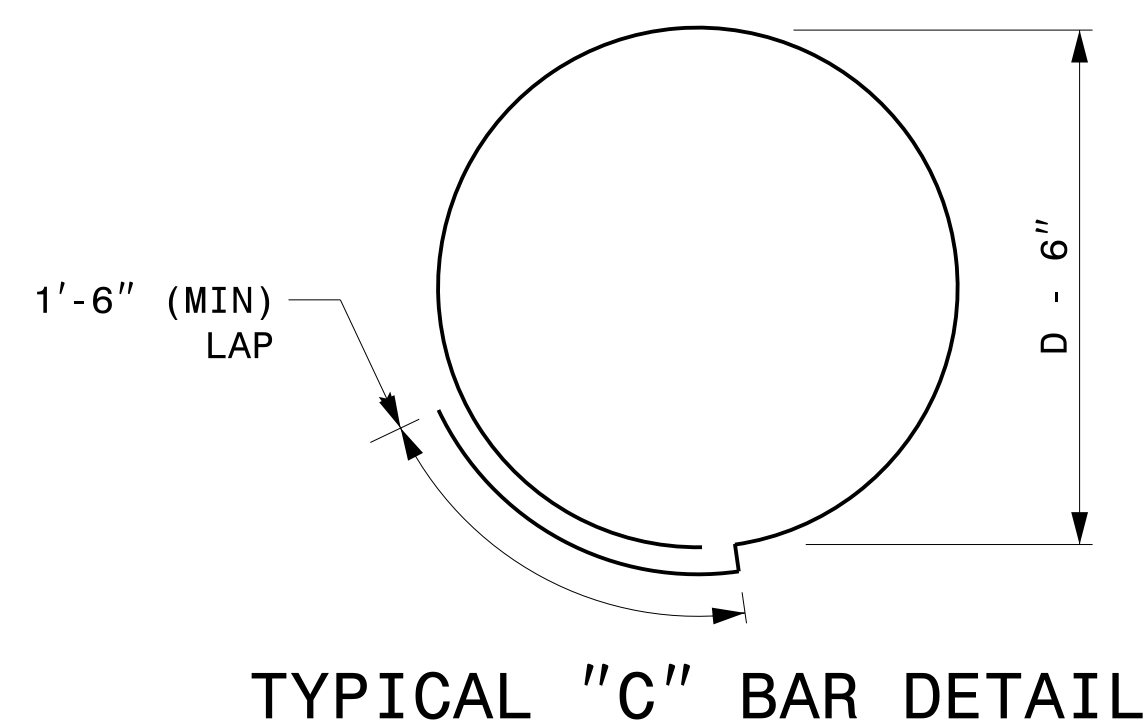
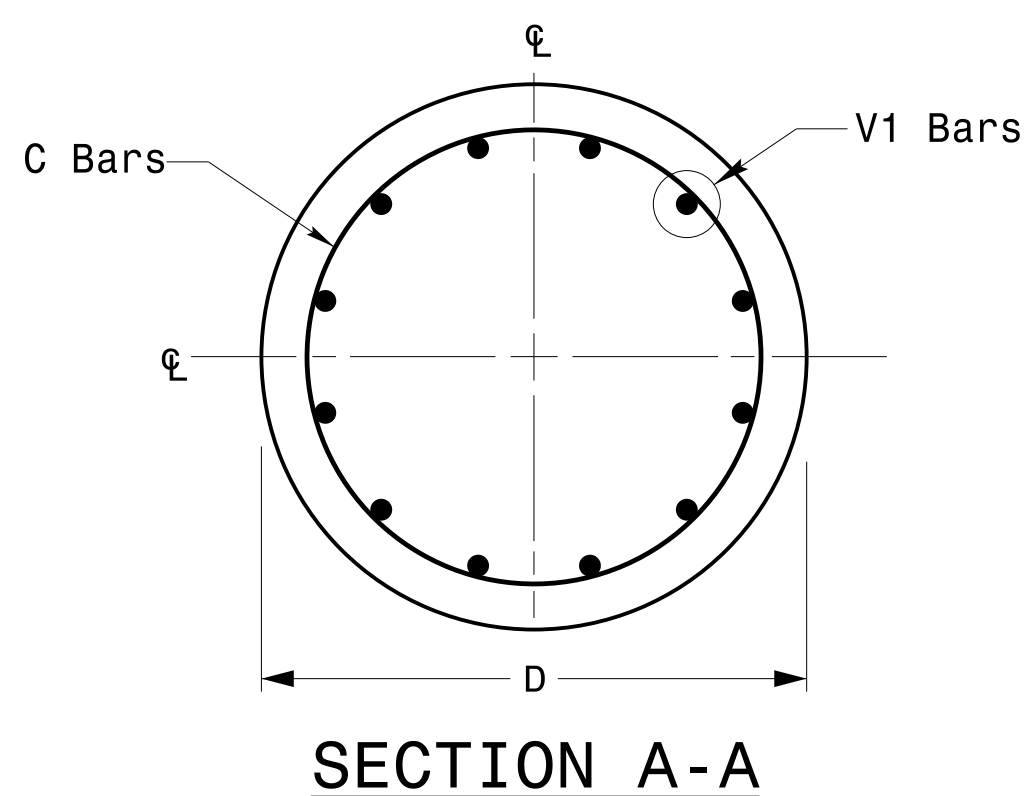


METAL POLE GROUNDING DETAIL FOR STRAIN POLE AND MAST ARM

|                                                                                          |                                                               |      |                                                                                         |
|------------------------------------------------------------------------------------------|---------------------------------------------------------------|------|-----------------------------------------------------------------------------------------|
| <div>Prepared In the Offices of:<br/><br/>750 N. Greenfield Pkwy, Garner, NC 27529</div> | Typical Fabrication Details<br>For<br>Strain Pole Attachments |      | <div>SEAL<br/><br/>DocuSigned by:<br/><i>Kevin Durigon</i><br/>4B23DC79B3784DA...</div> |
|                                                                                          | PLAN DATE: SEPTEMBER 2023 DESIGNED BY: C.F. ANDREWS           |      |                                                                                         |
|                                                                                          | PREPARED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR            |      |                                                                                         |
|                                                                                          | REVISIONS                                                     |      |                                                                                         |
| SCALE<br>0 NA<br>NONE                                                                    | INIT.                                                         | DATE | SIGNATURE<br>DATE                                                                       |

03-dgt-2023-10-41  
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Kedurigon

Fabrication Details – Strain Pole Attachments

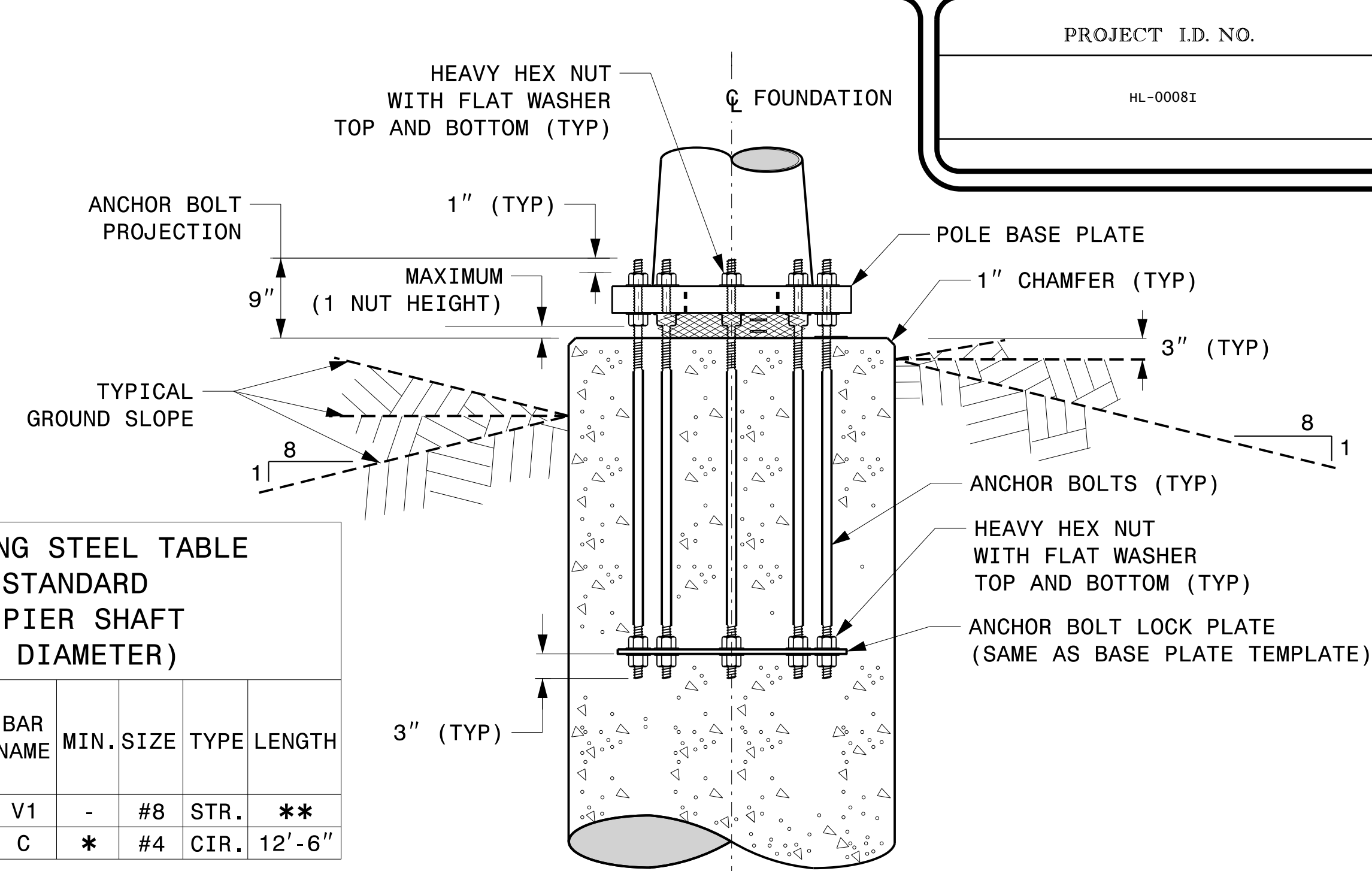


## TYPICAL FOUNDATION CONDUIT DETAILS

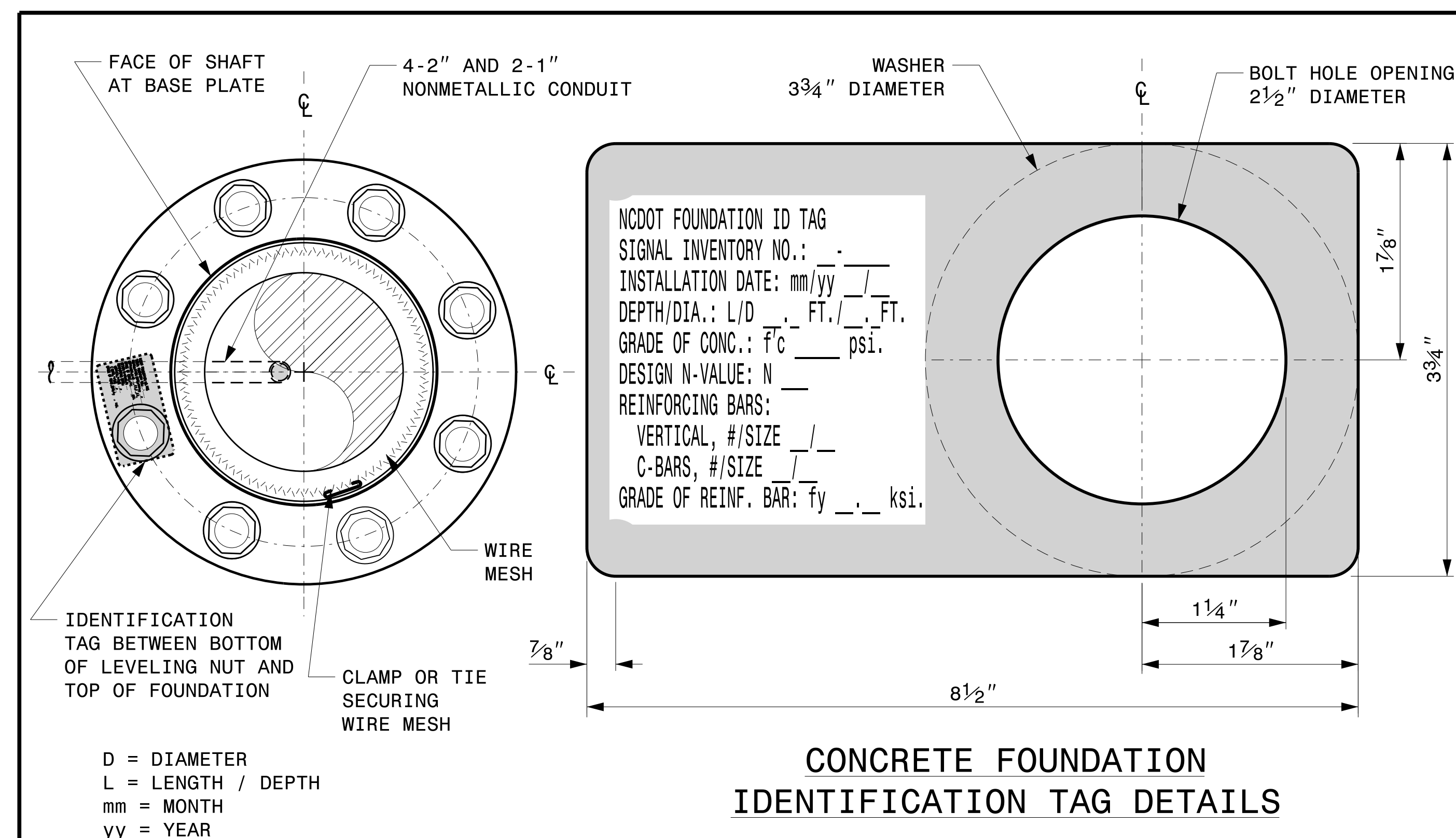
1. IF ACTUAL SUBSURFACE CONDITIONS DIFFER SIGNIFICANTLY FROM BORING DATA, CONTACT THE ENGINEER BEFORE EXCAVATING OR PLACING CONCRETE.
2. CIRCULAR TIE REINFORCING RINGS MAY BE VERTICALLY ADJUSTED BY  $\pm 3"$  AT A DEPTH BETWEEN 2'-0" AND 3'-0" TO FACILITATE THE INSTALLATION OF ELECTRICAL CONDUIT ENTERING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

| <p style="text-align: center;"><b>REINFORCING STEEL TABLE</b><br/> <b>FOR STANDARD</b><br/> <b>DRILL PIER SHAFT</b><br/> <b>(4'-0" DIAMETER)</b></p> |                                 |             |      |      |      |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|------|------|------|--------|
| "D"<br>SHAFT<br>DIAMETER                                                                                                                             | CONCRETE<br>VOLUME<br>(CU. YDS) | BAR<br>NAME | MIN. | SIZE | TYPE | LENGTH |
| 4'-0"                                                                                                                                                | .465 X L                        | V1          | -    | #8   | STR. | **     |
|                                                                                                                                                      |                                 | C           | *    | #4   | CIR. | 12'-6" |

\* SEE NOTE 2  
\*\* SEE NOTE 3



**TYPICAL FOUNDATION ANCHOR BOLT DETAILS**  
(REINFORCING CAGE NOT SHOWN FOR CLARITY)



DETAIL - A

| <p>Prepared In The Offices of:</p>  <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <h2 style="margin: 0;">Construction Details<br/>For<br/>Foundations</h2>                                                                                                                                                                                                                                                             | <p>SEAL</p>  |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <table style="width: 100%; border: none;"> <tr> <td style="border: none;">PLAN DATE: <b>SEPTEMBER 2023</b></td> <td style="border: none;">DESIGNED BY: <b>K.C. DURIGON</b></td> </tr> <tr> <td style="border: none;">PREPARED BY: <b>K.C. DURIGON</b></td> <td style="border: none;">REVIEWED BY: <b>D.C. SARKAR</b></td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   | PLAN DATE: <b>SEPTEMBER 2023</b> | DESIGNED BY: <b>K.C. DURIGON</b> | PREPARED BY: <b>K.C. DURIGON</b> | REVIEWED BY: <b>D.C. SARKAR</b> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PLAN DATE: <b>SEPTEMBER 2023</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DESIGNED BY: <b>K.C. DURIGON</b>                                                                                                                                                                                                                                                                                                     |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PREPARED BY: <b>K.C. DURIGON</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | REVIEWED BY: <b>D.C. SARKAR</b>                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <table style="width: 100%; border: none;"> <tr> <th style="border: none; width: 50%;">REVISIONS</th> <th style="border: none; width: 50%;">INIT.      DATE</th> </tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> <tr><td style="border: none;"> </td><td style="border: none;"> </td></tr> </table> |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   | REVISIONS                        | INIT.      DATE                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| REVISIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | INIT.      DATE                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <p>SCALE</p> <div style="text-align: center;"> <span style="font-size: 24px; margin-right: 10px;">0</span> <span style="font-size: 24px; margin-right: 10px;">NA</span> </div> <p style="text-align: center; font-weight: bold;">NONE</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>DocuSigned by:</p> <div style="border: 1px solid black; border-radius: 10px; padding: 5px; display: inline-block;">  </div> <p style="text-align: right; margin-top: 5px;"> <small>SIGNATURE</small><br/> <small>032307037828NA</small> </p> |                                                                                                   |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      | <p>09/21/2023<br/>DATE</p>                                                                        |                                  |                                  |                                  |                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

SOIL CONDITION

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

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

GENERAL NOTES:

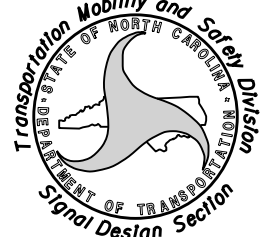
1. VALUES SHOWN IN THE "REACTIONS AT THE POLE BASE" COLUMN REPRESENT THE MINIMUM ACCEPTABLE CAPACITY ALLOWED FOR DESIGN USING A COMBINED FORCE RATIO (CFR) OF 1.00.
2. USE CHAIRS AND SPACERS TO MAINTAIN PROPER CLEARANCE.
3. FOR FOUNDATION, ALWAYS USE AIR-ENTRAINED CONCRETE MIX.

FOUNDATION SELECTION:

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

09-001-2023 19x48  
S:\1\SSM1\15 Signal\Signal Design Section\Structures\Drawings\2024 Metal Pole Strd Drawings for LBF0\2024 Sig.M8 Strd Strain Pole Found--Saturated Soil Condition.dgn  
Kedur.fgm

Prepared In the Offices of:



750 N.Greenfield Pkwy,Garner,NC 27529

0

SCALE

NA

NONE

Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE: SEPTEMBER 2023

DESIGNED BY: K.C. DURIGON

PREPARED BY: K.C. DURIGON

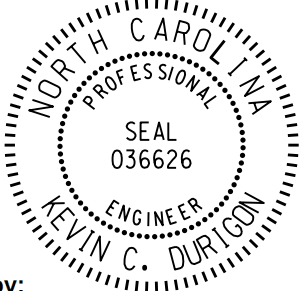
REVIEWED BY: D.C. SARKAR

REVISIONS

INIT.

DATE

SEAL



ENGINEER

KEVIN C. DURIGON

DocuSigned by:

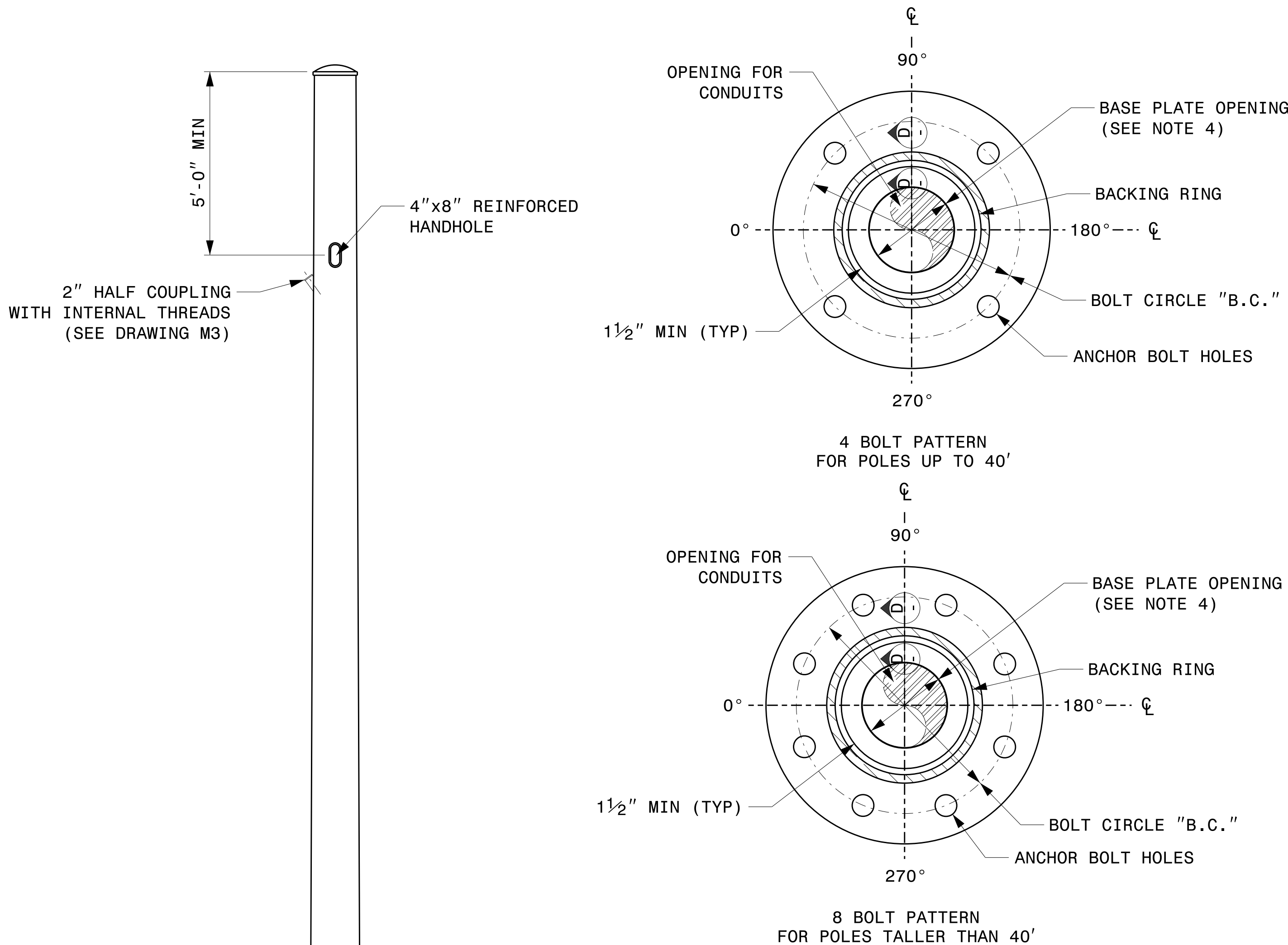


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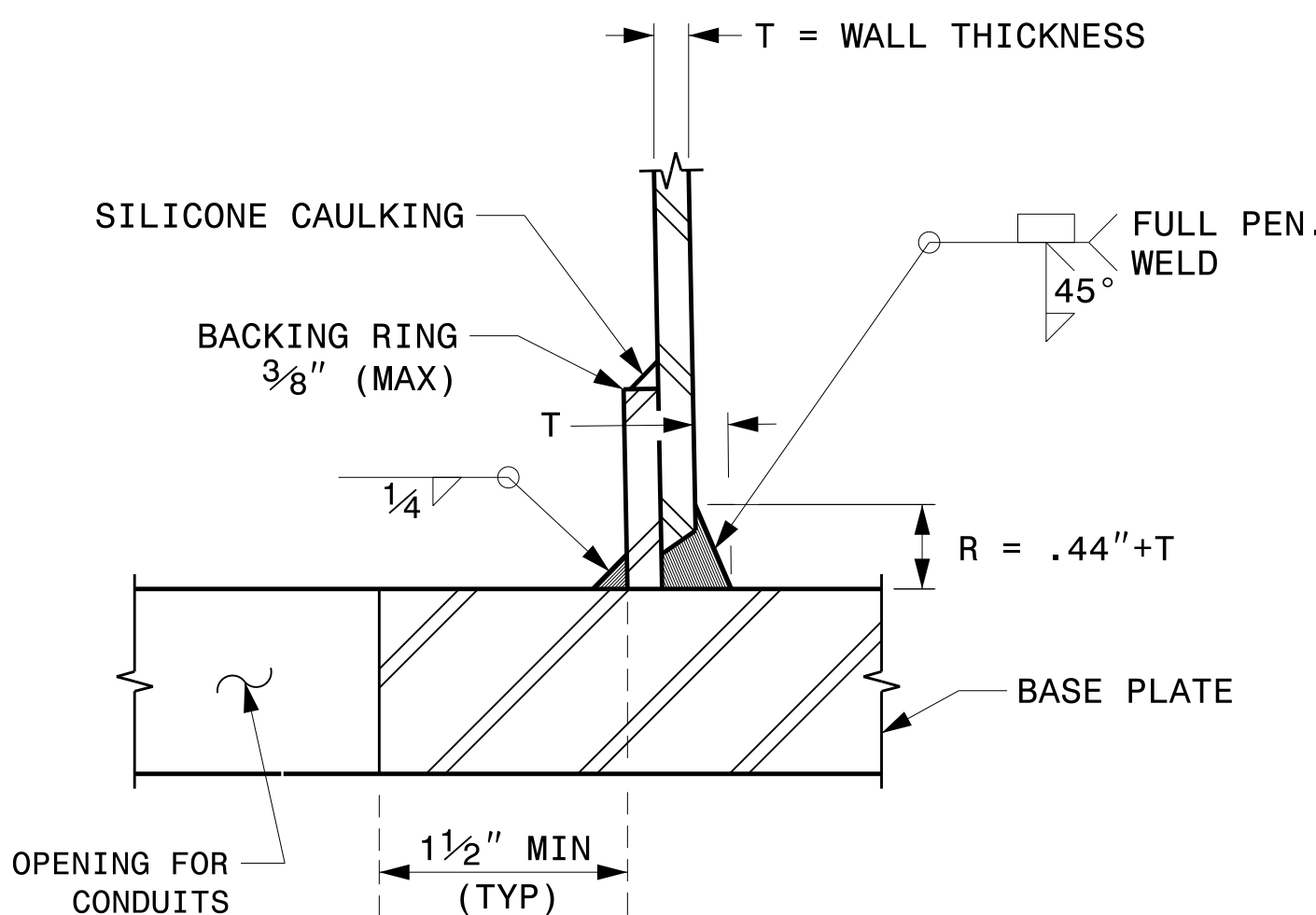
09/21/2023

DATE

Standard Strain Pole Foundation – All Soil Conditions



BASE PLATE DETAILS



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

NOTES:

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

CCTV CAMERA POLE  
(NOT TO SCALE)

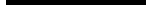
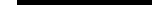
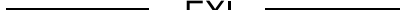
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|----------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------|
| <br>750 N. Greenfield Pkwy, Garner, NC 27529 | Typical Fabrication Details<br>For<br>CCTV Poles                                                                 |                                                                      |                                                    |
|                                              | PLAN DATE: SEPTEMBER 2023<br>DESIGNED BY: K.C. DURIGON<br>PREPARED BY: K.C. DURIGON<br>REVIEWED BY: C.F. ANDREWS | DESIGNED BY: K.C. DURIGON<br>REVIEWED BY: C.F. ANDREWS<br>INIT. DATE |                                                    |
| SCALE<br>0 NA<br>NONE                        | REVISIONS                                                                                                        |                                                                      | DocuSigned by:<br>Kevin Durigon<br>4B23DC79B3784DA |
|                                              |                                                                                                                  |                                                                      | 09/21/2023<br>DATE                                 |

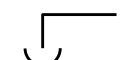
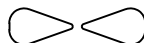
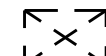
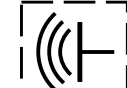
|                       |           |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| HL-00081              | SCP-1     |

|    |                                                                                                   |
|----|---------------------------------------------------------------------------------------------------|
| 1  | INSTALL COAX CABLE                                                                                |
| 2  | INSTALL ETHERNET CABLE                                                                            |
| 3  | EXISTING ETHERNET (OR COAX) CABLE                                                                 |
| 4  | INSTALL SMFO CABLE                                                                                |
| 5  | EXISTING SMFO CABLE                                                                               |
| 6  | INSTALL FIBER OPTIC DROP CABLE                                                                    |
| 7  | INSTALL TRACER WIRE                                                                               |
| 8  | TRENCH                                                                                            |
| 9  | INSTALL PVC CONDUIT                                                                               |
| 10 | INSTALL RIGID, GALVANIZED STEEL CONDUIT                                                           |
| 11 | INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD                                            |
| 12 | INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL                                 |
| 13 | INSTALL OUTER-DUCT POLYETHYLENE CONDUIT                                                           |
| 14 | INSTALL POLYETHYLENE CONDUIT                                                                      |
| 15 | DIRECTIONAL DRILL CONDUIT                                                                         |
| 16 | BORE AND JACK CONDUIT                                                                             |
| 17 | INSTALL CABLE(S) IN EXISTING CONDUIT                                                              |
| 18 | INSTALL CABLE(S) IN NEW CONDUIT                                                                   |
| 19 | INSTALL CABLE(S) IN EXISTING RISER                                                                |
| 20 | INSTALL CABLE(S) IN NEW RISER                                                                     |
| 21 | INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS                                                    |
| 22 | INSTALL NEW CONDUIT INTO EXISTING CABINET BASE<br>(USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE) |
| 23 | INSTALL NEW RISER INTO EXISTING CABINET BASE<br>(USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)   |
| 24 | INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET                                            |
| 25 | INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET                                              |
| 26 | INSTALL NEW ETHERNET EDGE SWITCH                                                                  |
| 27 | INSTALL NEW FIBER OPTIC TRANSCEIVER                                                               |
| 28 | INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS<br>AND FUSION SPLICE CABLE IN CABINET           |
| 29 | INSTALL UNDERGROUND SPLICE ENCLOSURE                                                              |
| 30 | INSTALL AERIAL SPLICE ENCLOSURE                                                                   |
| 31 | MODIFY EXISTING INTERCONNECT CENTER / SPLICE ENCLOSURE                                            |
| 32 | INSTALL POLE MOUNTED SPLICE CABINET                                                               |
| 33 | INSTALL BASE MOUNTED SPLICE CABINET                                                               |

|     |                                                                      |                      |
|-----|----------------------------------------------------------------------|----------------------|
| 34  | INSTALL CABINET FOUNDATION                                           |                      |
| 35  | INSTALL CCTV CAMERA POLE MOUNTED CABINET                             |                      |
| 36  | INSTALL CCTV CAMERA ASSEMBLY                                         |                      |
| 37  | INSTALL CCTV CAMERA WOOD POLE                                        |                      |
| 38  | INSTALL CCTV CAMERA METAL POLE AND FOUNDATION                        |                      |
| 39  | INSTALL JUNCTION BOX                                                 |                      |
| 40A | INSTALL OVERSIZED JUNCTION BOX                                       |                      |
| 40B | INSTALL SPECIAL OVERSIZED JUNCTION BOX (36" x 24" x 24")             |                      |
| 41  | REMOVE EXISTING JUNCTION BOX                                         |                      |
| 42  | INSTALL WOOD POLE                                                    |                      |
| 43  | REMOVE EXISTING WOOD POLE                                            |                      |
| 44  | INSTALL AERIAL GUY ASSEMBLY                                          |                      |
| 45  | INSTALL STANDARD GUY ASSEMBLY                                        |                      |
| 46  | INSTALL SIDEWALK GUY ASSEMBLY                                        |                      |
| 47  | INSTALL MESSENGER CABLE                                              |                      |
| 48A | REMOVE EXISTING COMMUNICATIONS AND MESSENGER CABLE                   |                      |
| 48B | REMOVE EXISTING COMMUNICATIONS CABLE                                 |                      |
| 49  | BACK PULL EXISTING COMMUNICATIONS CABLE                              |                      |
| 50  | INSTALL CELL MODEM AND ANTENNA                                       |                      |
| 51  | INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE |                      |
| 52A | INSTALL DELINEATOR MARKER                                            |                      |
| 52B | INSTALL JUNCTION BOX MARKER                                          |                      |
| 53A | STORE 20 FEET OF COMMUNICATIONS CABLE                                |                      |
| 53B | STORE 50 FEET OF EACH COMMUNICATIONS CABLE                           |                      |
| 54  | LASH CABLE(S) TO EXISTING COMMUNICATIONS CABLE                       |                      |
| 55  | LASH CABLE(S) TO EXISTING MESSENGER CABLE                            |                      |
| 56  | LASH CABLE(S) TO NEW MESSENGER CABLE                                 |                      |
| 57  | MODIFY EXISTING ELECTRICAL SERVICE                                   | XX"/S<br>YYY         |
| 58  | INSTALL NEW ELECTRICAL SERVICE                                       | YYY<br>XX"/S         |
| 59  | INSTALL NEW EQUIPMENT CABINET DISCONNECT                             | "SS"<br>FS =<br>BS = |
| 60  | BOND TRACER WIRE TO EQUIPMENT GROUND BUS                             |                      |
| 61  | DO NOT BOND TRACER WIRE TO EQUIPMENT GROUND BUS                      |                      |
| 62  | BOND RISER AND MESSENGER CABLE TO POLE GROUND                        |                      |
| 63  | BOND RISER TO POLE GROUND                                            |                      |
| 64  | BOND MESSENGER CABLE TO POLE GROUND                                  |                      |
| 65  | INSTALL HEAT SHRINK TUBING RETROFIT KIT                              |                      |
| 66  | INSTALL MOLDABLE DUCT SEAL                                           |                      |
| 67  | SLACK SPAN                                                           |                      |

**LEGEND**

|                                                                                     |     |                                                                                     |                                             |
|-------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------|---------------------------------------------|
|    | FO  |    | NEW FIBER OPTIC COMMUNICATIONS CABLE        |
|  | EXI |  | EXISTING COMMUNICATIONS CABLE               |
|  | REM |  | EXISTING COMMUNICATIONS CABLE TO BE REMOVED |
|  |     |                                                                                     | NEW AERIAL GUY ASSEMBLY                     |
|  |     |                                                                                     | NEW CONDUIT                                 |
|  |     |                                                                                     | EXISTING CONDUIT                            |
|  | DD  |  | NEW DIRECTIONAL DRILLED CONDUIT             |

| NEW                                                                                 |                                              | EXISTING                                                                            |
|-------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------|
|  | OVERSIZED JUNCTION BOX                       |  |
|  | WOOD POLE                                    |  |
|  | AERIAL SPICE ENCLOSURE                       |  |
|  | UNDERGROUND SPICE ENCLOSURE                  |  |
|  | METAL POLE                                   |  |
|  | CCTV ASSEMBLY                                |  |
|  | STANDARD GUY ASSEMBLY                        |  |
|  | SIDEWALK GUY ASSEMBLY                        |  |
|  | CABLE STORAGE RACKS (SNOW SHOES)             |  |
|  | SIGNAL/EQUIPMENT CABINET                     |  |
|  | SPICE CABINET                                |  |
|  | FLAT PANEL ANTENNA (SINGLE)                  |  |
|  | YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION |  |
|  | YAGI ANTENNA (SINGLE)                        |  |
|  | OMNI ANTENNA                                 |  |
| SP                                                                                  | SIGNAL POLE                                  | SP                                                                                  |
| XX-XXXX                                                                             | SIGNAL INVENTORY NUMBER                      | XX-XXXX                                                                             |

## CONSTRUCTION NOTE SYMBOLS KEY

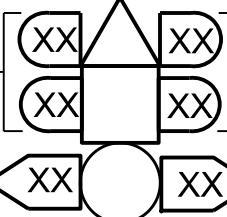
|                                                                                       |                                                                        |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------|
|  | INDICATES NUMBER OF CABLES, LOOPS, ETC.                                |
|  | INDICATES NUMBER OF FIBERS PER CABLE,<br>TWISTED PAIRS PER CABLE, ETC. |
|  | INDICATES NUMBER OF RISER(S) / CONDUIT(S)                              |
|  | INDICATES DIAMETER OF RISER(S) / CONDUIT(S) (INCH)                     |

NUMBER  
OF  
CABLE(S)

NT

INT

NUMBER  
OF  
RISER(S)/CONDUIT(S)



NUMBER OF  
FIBERS/TWISTED PAIRS

NEW/ EXISTING CABLE

REMOVE/ MODIFY CABLE

CONDUIT/ RISER

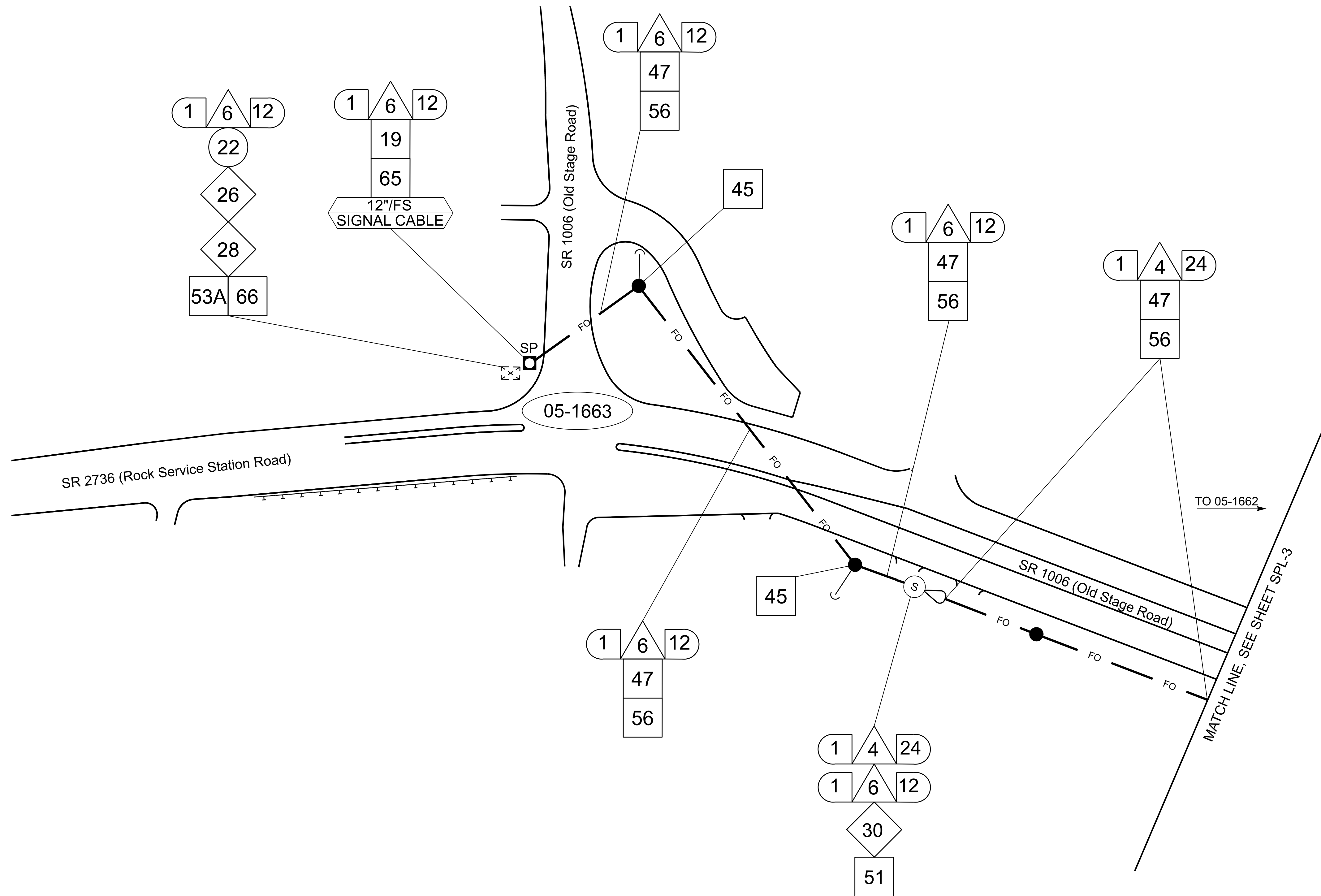
DIAMETER  
OF  
RISER(S)/CONDUIT(S) (INCH)

**ATTACHMENT POINT:**

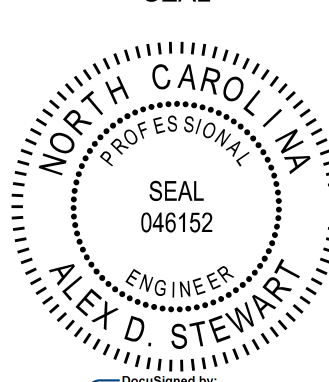
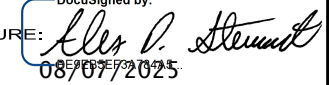
|                                                                                                                                                              |                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
|  | DISTANCE ABOVE (IN)/ATTACHMENT POINT<br>REFERENCE POINT |
|                                 | REFERENCE POINT<br>DISTANCE BELOW (IN)/ATTACHMENT POINT |

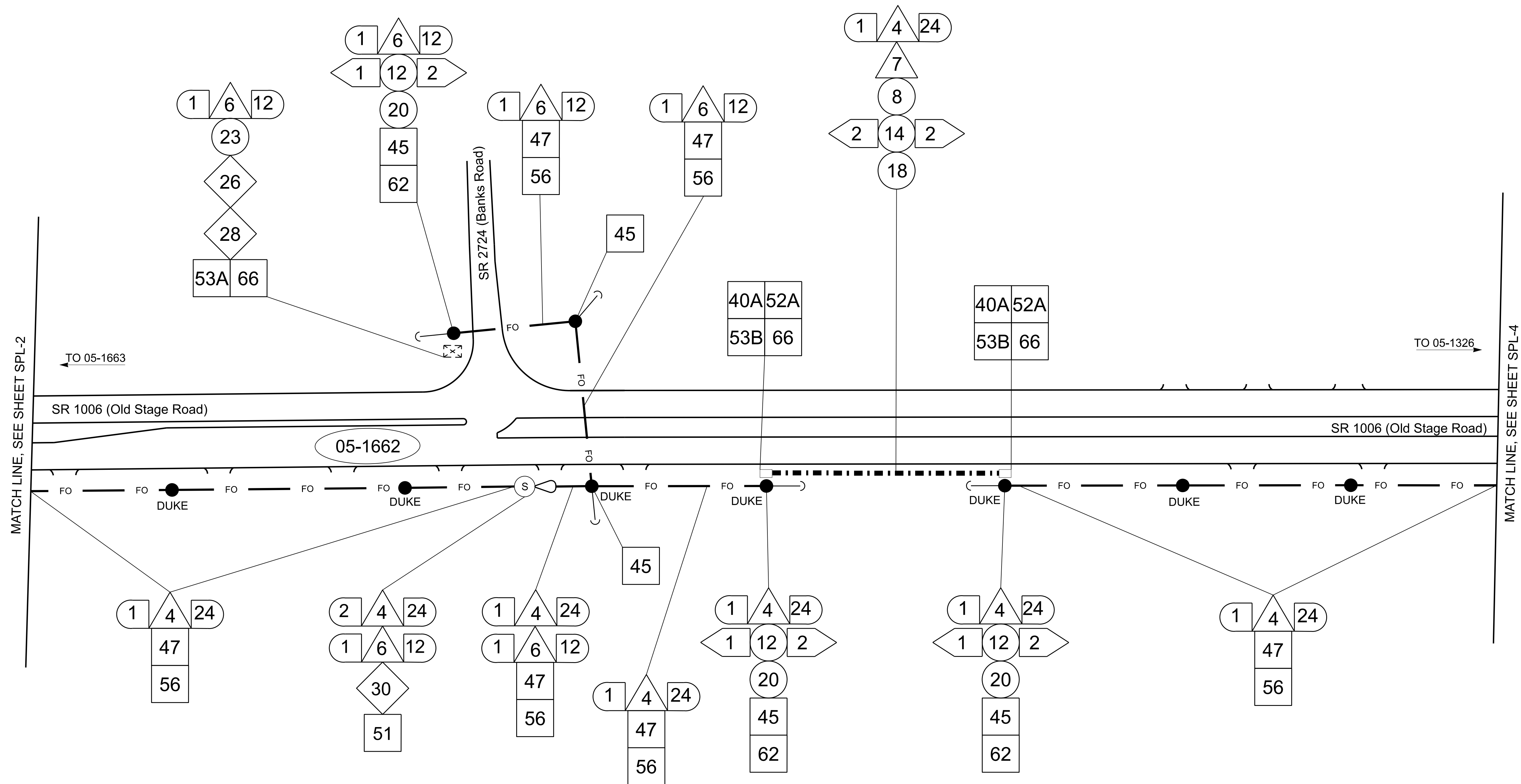
|                         |
|-------------------------|
| "SS" REFERENCE LOCATION |
| FS = FRONT SIDE OF POLE |
| BS = BACK SIDE OF POLE  |

[illegible]



1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 5 TRAFFIC ENGINEER AT (919) 536-4000 TO ARRANGE FOR THE TOWN TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE DIVISION 5 TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNALSYSTEM IS BACK UP AND OPERATIONAL.
2. ALL NCDOT ATTACHMENTS ARE 64" BELOW POWER, FRONT SIDE OF POLE, UNLESS OTHERWISE NOTED.

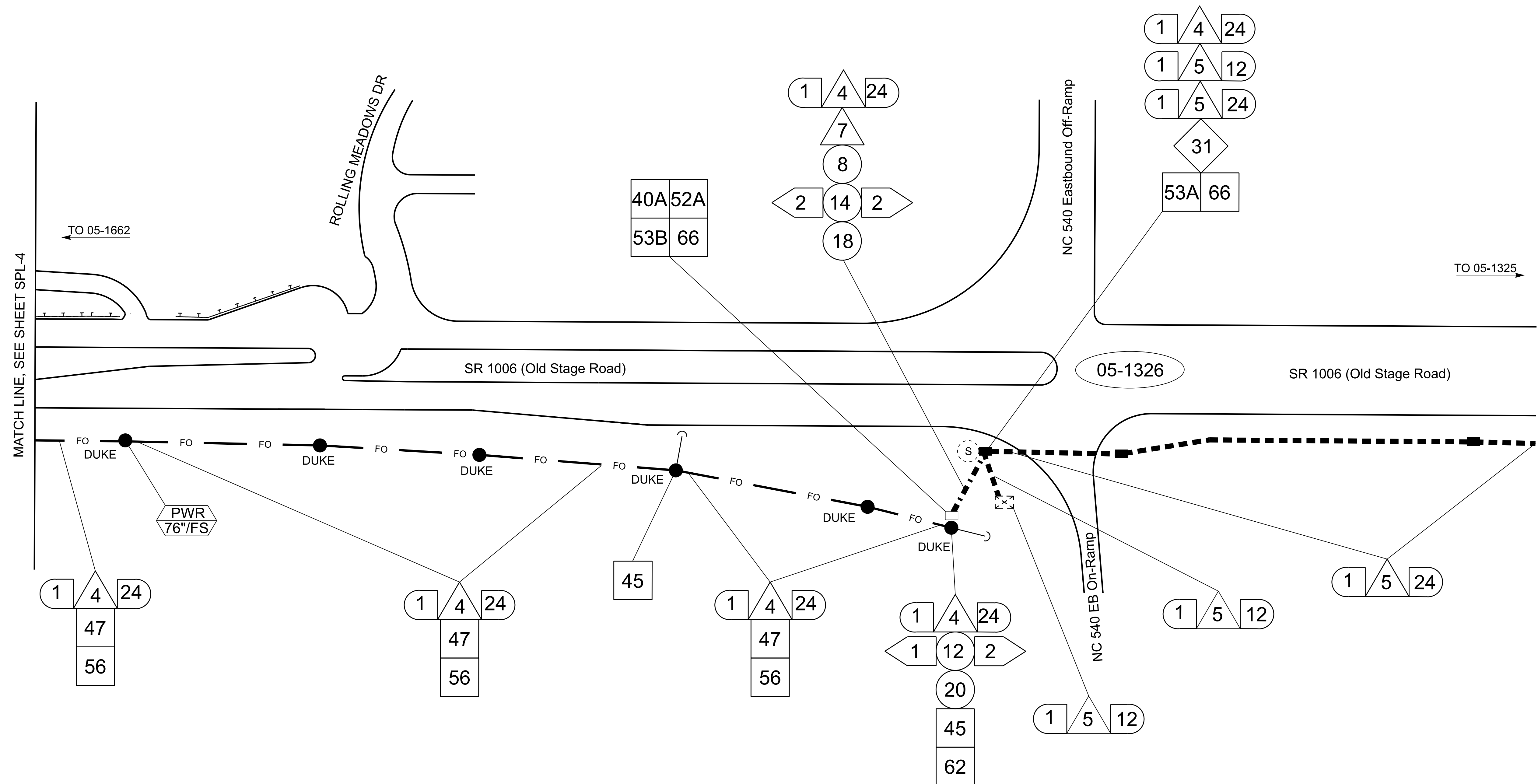
|                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |               |               |                        |                          |  |                      |  |  |           |       |      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------|---------------|------------------------|--------------------------|--|----------------------|--|--|-----------|-------|------|--|--|--|--|--|--|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>Prepared in the Offices of:</div> <div><br/>750 N. Greenfield Pkwy., Garner, NC 27529</div> <div><div>0SCALEN/A</div></div> | <div>D05-17 Fuquay-Varina COMMUNICATIONS AND CABLE ROUTING PLANS</div> <table><tr><td>DIVISION 5</td><td>WAKE COUNTY</td><td>FUQUAY VARINA</td></tr><tr><td>PLAN DATE: AUGUST 2025</td><td colspan="2">REVIEWED BY: GREGG GREEN</td></tr><tr><td>PREPARED BY: M. DIAZ</td><td colspan="2"></td></tr><tr><td>REVISIONS</td><td>INIT.</td><td>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></table> | DIVISION 5               | WAKE COUNTY   | FUQUAY VARINA | PLAN DATE: AUGUST 2025 | REVIEWED BY: GREGG GREEN |  | PREPARED BY: M. DIAZ |  |  | REVISIONS | INIT. | DATE |  |  |  |  |  |  |  |  |  | <div>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</div> <div>SEAL</div> <div><br/>ALEX D. STEWART<br/>ENGINEER</div> <div>SIGNATURE: <br/>DATE: 08/07/2025</div> |
|                                                                                                                                                                                                                                                                                                            | DIVISION 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | WAKE COUNTY              | FUQUAY VARINA |               |                        |                          |  |                      |  |  |           |       |      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                            | PLAN DATE: AUGUST 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                         | REVIEWED BY: GREGG GREEN |               |               |                        |                          |  |                      |  |  |           |       |      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                            | PREPARED BY: M. DIAZ                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                          |               |               |                        |                          |  |                      |  |  |           |       |      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                             |
| REVISIONS                                                                                                                                                                                                                                                                                                  | INIT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DATE                     |               |               |                        |                          |  |                      |  |  |           |       |      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |               |               |                        |                          |  |                      |  |  |           |       |      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |               |               |                        |                          |  |                      |  |  |           |       |      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |               |               |                        |                          |  |                      |  |  |           |       |      |  |  |  |  |  |  |  |  |  |                                                                                                                                                                                                                                                                                                                                                             |



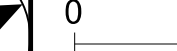
1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 5 TRAFFIC ENGINEER AT (919) 536-4000 TO ARRANGE FOR THE TOWN TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE DIVISION 5 TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNALSYSTEM IS BACK UP AND OPERATIONAL.
2. ALL NCDOT ATTACHMENTS ARE 64" BELOW POWER, FRONT SIDE OF POLE, UNLESS OTHERWISE NOTED.

|                             |                                                                            |                                                                     |      |
|-----------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------|------|
| Prepared in the Offices of: |                                                                            | DOCUMENT NOT CONSIDERED<br>FINAL UNLESS ALL<br>SIGNATURES COMPLETED |      |
|                             | <b>D05-17 Fuquay-Varina<br/>COMMUNICATIONS AND<br/>CABLE ROUTING PLANS</b> |                                                                     |      |
|                             | DIVISION 5 WAKE COUNTY FUQUAY VARINA                                       |                                                                     |      |
|                             | PLAN DATE: AUGUST 2025                                                     | REVIEWED BY: GREGG GREEN                                            |      |
|                             | PREPARED BY: M. DIAZ                                                       |                                                                     |      |
|                             | REVISIONS                                                                  | INIT.                                                               | DATE |
|                             |                                                                            |                                                                     |      |
| 0 SCALE N/A                 |                                                                            |                                                                     |      |
|                             | SIGNATURE: <i>Alex D. Stewart</i><br>DATE: 08/07/2025                      |                                                                     |      |





1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 5 TRAFFIC ENGINEER AT (919) 536-4000 TO ARRANGE FOR THE TOWN TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE DIVISION 5 TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNALSYSTEM IS BACK UP AND OPERATIONAL.
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|                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                     |                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Prepared in the Office of:<br><br>TRANSPORTATION SYSTEMS SECTION<br>750 N. Greenfield Pkwy., Garner, NC 27529                                                                                                                                                                                               | <h2 style="margin: 0;">D05-17 Fuquay-Varina</h2> <h1 style="margin: 0;">COMMUNICATIONS AND CABLE ROUTING PLANS</h1> | SEAL<br> |
|                                                                                                                                                                                                                                                                                                                                                                                                  | <b>DIVISION 5      WAKE COUNTY      FUQUAY VARINA</b>                                                               |                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                  | PLAN DATE: <b>AUGUST 2025</b> REVIEWED BY: <b>GREGG GREEN</b>                                                       |                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                  | PREPARED BY: <b>M. DIAZ</b>                                                                                         |                                                                                               |
|  <div style="display: inline-block; margin-left: 20px;">           SCALE<br/> <span style="font-size: 2em; font-weight: bold;">0</span> _____ <span style="font-size: 2em; font-weight: bold;">N/A</span><br/>  </div> | REVISIONS                                                                                                           | INT.      DATE                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                     |                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                  | Drawn by: _____<br>Checked by: _____<br>Date: <b>08/07/2025</b>                                                     |                                                                                               |



AERIAL SPLICE ENCLOSURE  
SR 1006/OLD STAGE RD AT  
SR 2724 BANKS RD  
SIG. INV. # 05-1662

Notes:

Unused fibers left coiled and stored in splice tray.  
Unused Buffer Tubes left coiled and stored in splice tray.

|         |       |
|---------|-------|
| COLOR   | CODE  |
| TIA/EIA | 598-A |

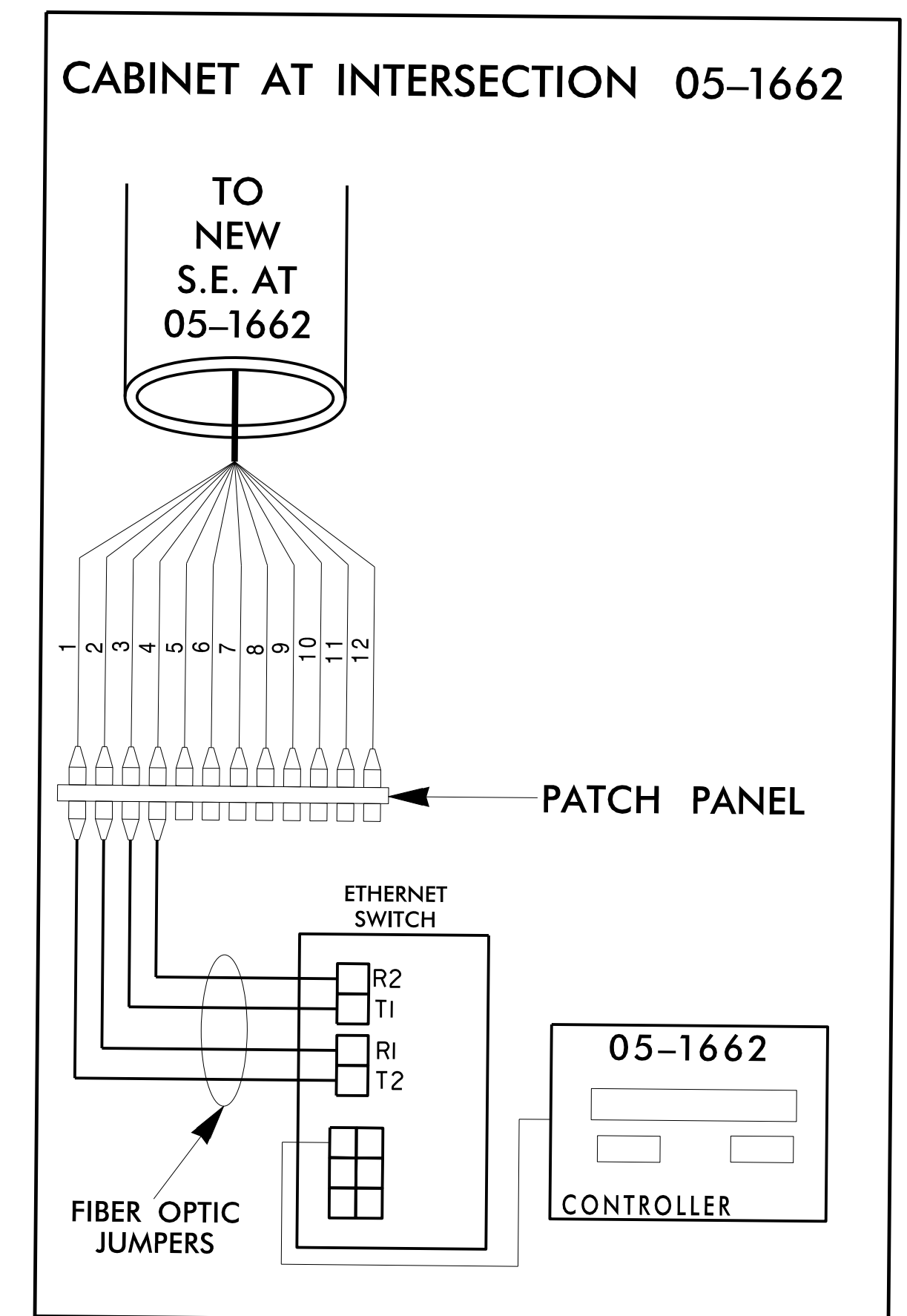
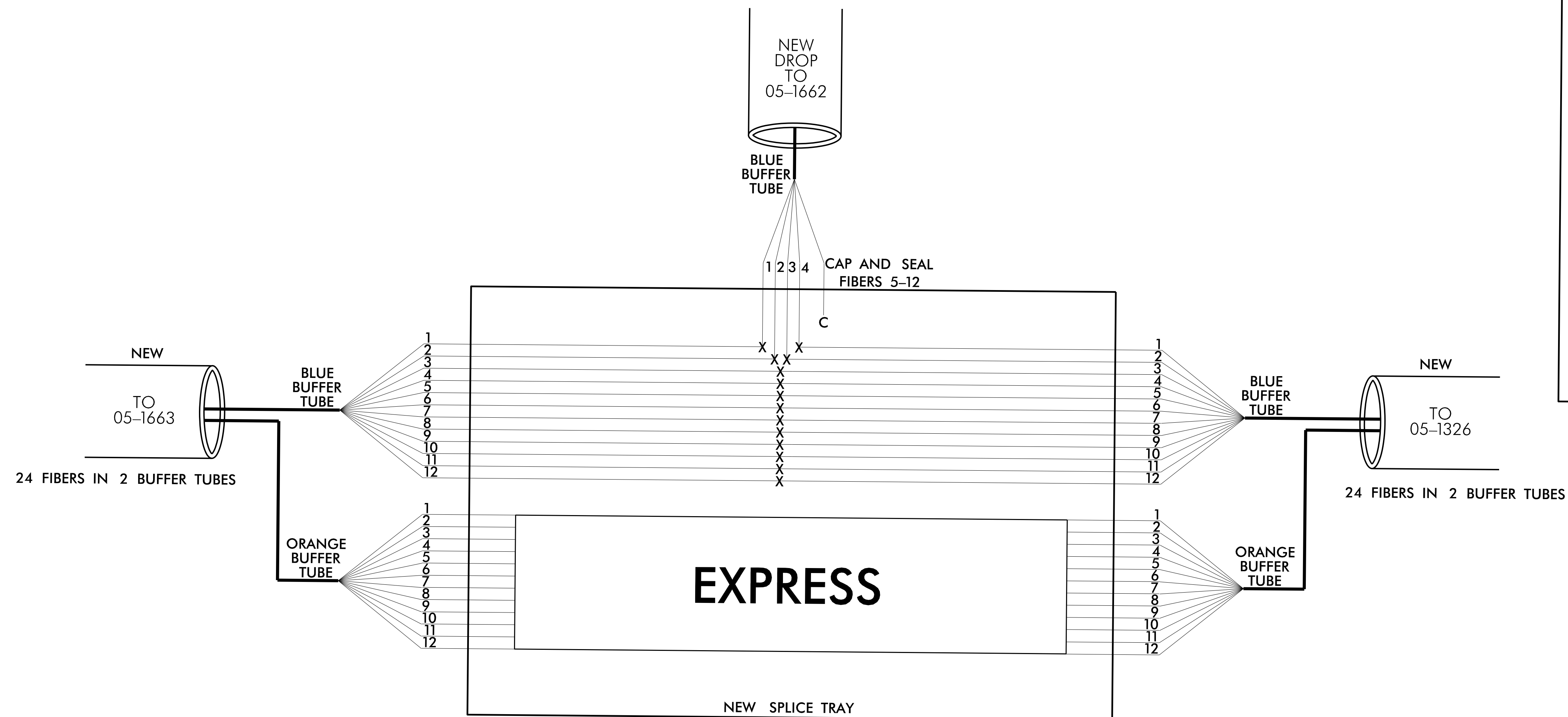
- (1) BLUE (7) RED  
(2) ORANGE (8) BLACK  
(3) GREEN (9) YELLOW  
(4) BROWN (10) VIOLET  
(5) SLATE (11) ROSE  
(6) WHITE (12) AQUA

### LEGEND

X = FUSION SPLICE  
E = EXISTING SPLICE  
C = CAP IN TRAY

**EXPRESS** = **EXPRESS ALL FIBERS/  
BUFFER TUBES**

**SPLICE** = SPLICE ALL FIBERS/  
BUFFER TUBES



1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 5 TRAFFIC ENGINEER AT 919-536-4000 TO ARRANGE FOR THE TOWN TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL
2. CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.
3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
4. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:  
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"
- 1) SPLICE LOCATION
  - 2) DATE
  - 3) COMPANY NAME
  - 4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

[illegible]

