

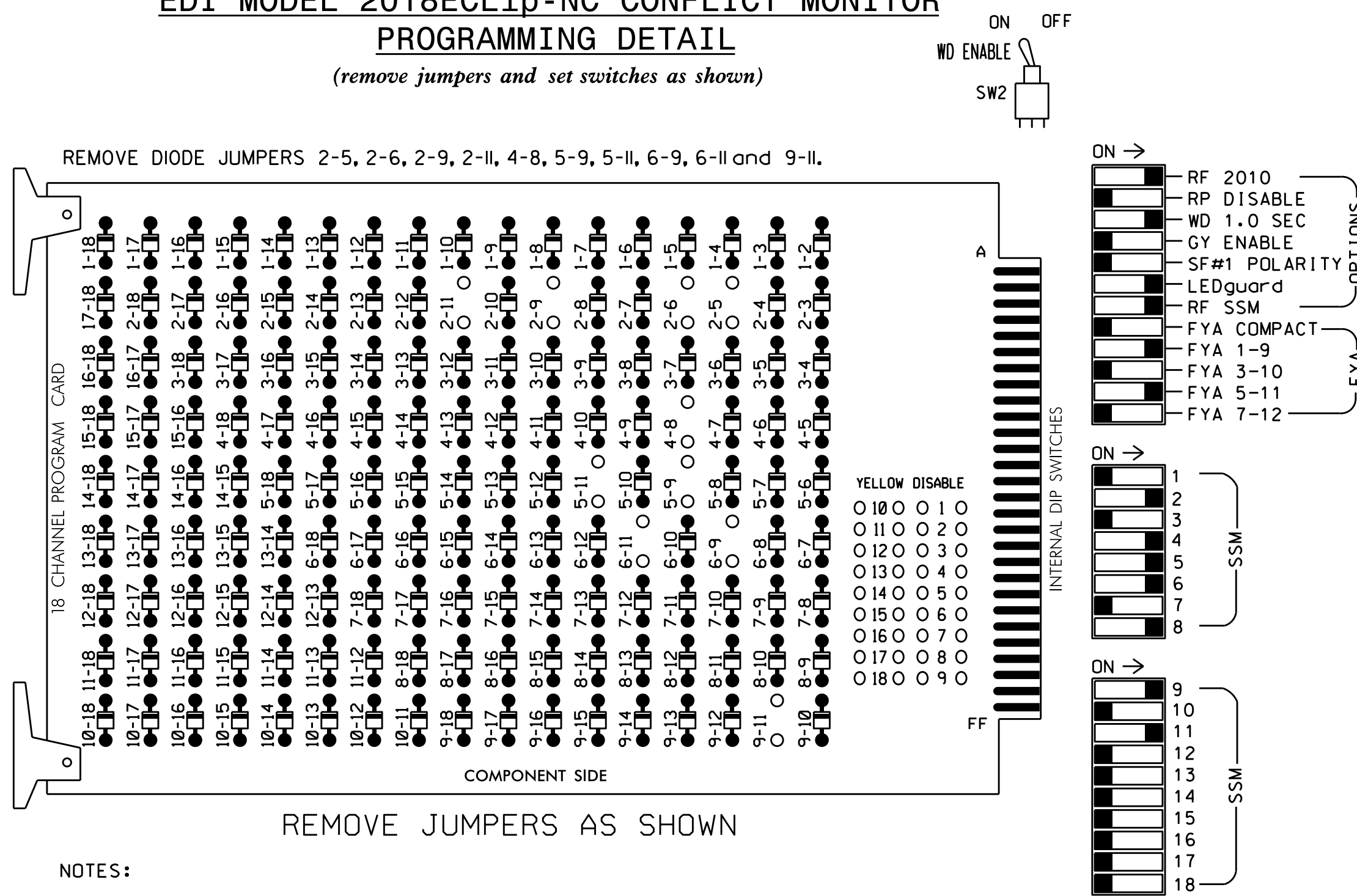
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EDI MODEL 2018ECLIP-NC CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phases 2 and 6 for Startup In Green.
5. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
6. The cabinet and controller are part of the Winston-Salem Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,S11,AUX S1,AUX S4
 PHASES USED.....2,4,5,6,8
 OVERLAP "A".....2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|----|-------|-------|----|-------|-------|-----|-----|-------|-----|-----|-------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | NU | 42 | 51★ | 62,63 | NU | NU | 81,82 | NU | 61★ | NU | NU | 51★ | NU |
| RED | | 128 | | | 101 | | | * | 134 | | | 107 | | | | | | |
| YELLOW | | 129 | | | 102 | | | | 135 | | | 108 | | | | | | |
| GREEN | | 130 | | | 103 | | | | 136 | | | 109 | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | | A114 | |
| YELLOW ARROW | | | | | | | 132 | | | | | | A122 | | | | A115 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | | A116 | |
| GREEN ARROW | | | | | | | 133 | 133 | | | | | | | | | | |

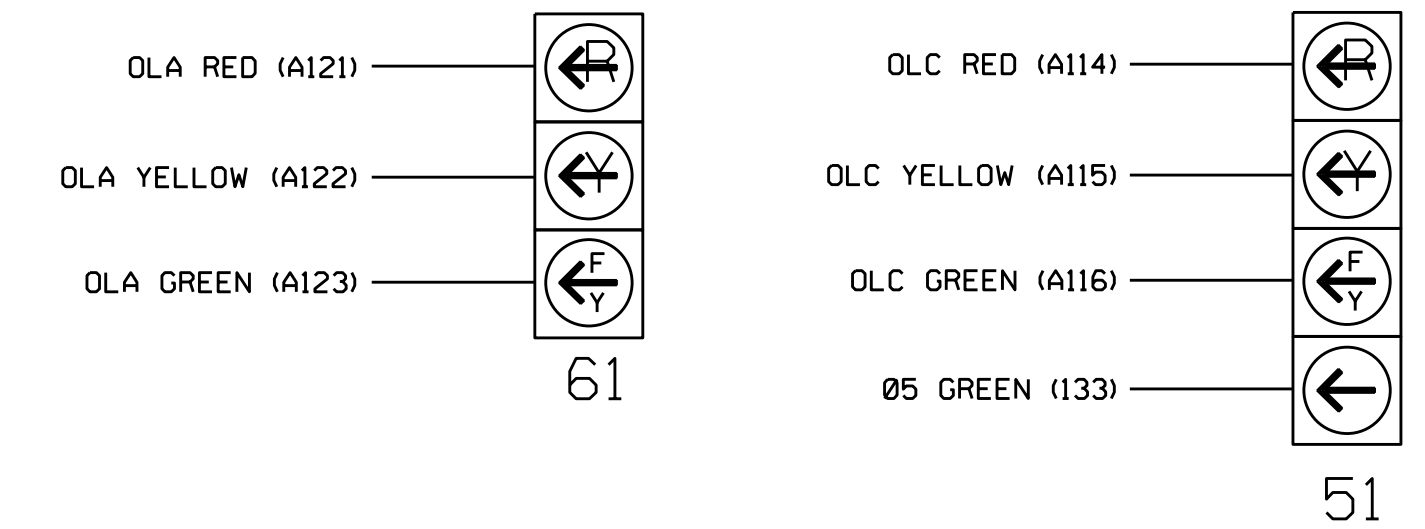
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

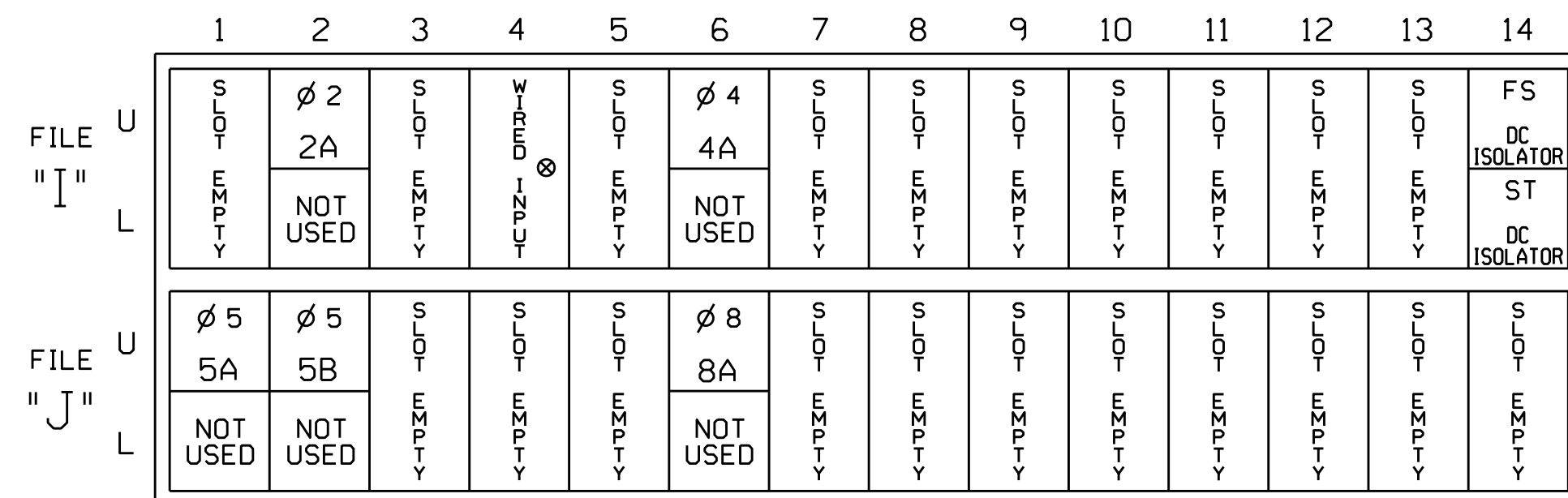


NOTE

The sequence display for signal head 51 requires special logic programming. See sheet 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

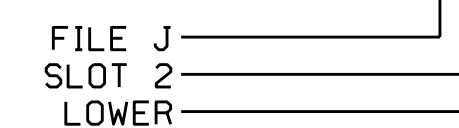
INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|-----------------|---------------|-----------------|---------|----------------------|--------------|------------|------|--------|-----------------|--------------|------------|
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 5A ¹ | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9★ | 22 | 2 | Y | Y | | | |
| 5B | - | J1U | 55 | 17★ | 55 | 5 | Y | Y | | | 3 |
| | TB3-5,6 | J2U | 40 | 2 | 6 | 5 | Y | Y | | | 10 |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 10 |

¹Add jumper from J1-W to I4-W, on rear of input file.

★ See Input Page Assignment programming details on sheet 3.

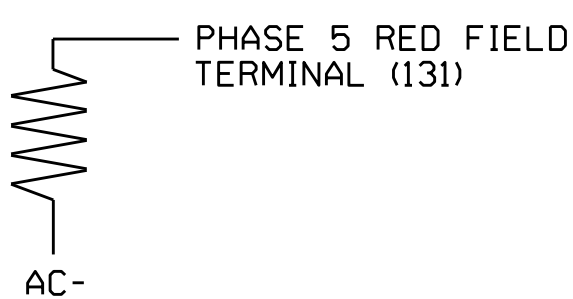
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

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

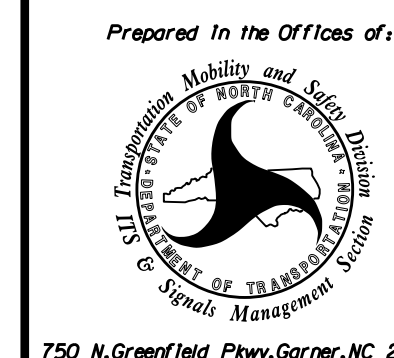


SPECIAL DETECTOR NOTE

For zones 6A and 6B 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.

Electrical Detail - Sheet 1 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:



Prepared In the Offices of:
 SR 2264 (Akron Drive)
 at
 Glenn Avenue

Division 9 Forsyth County Winston-Salem

PLAN DATE: November 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

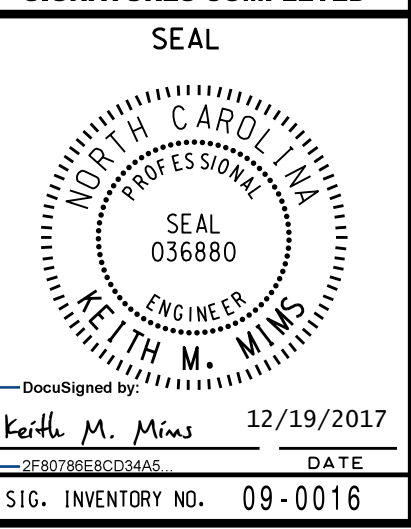
REVISIONS INIT. DATE

DocSigned by: Keith M. Mins 12/19/2017

DATE

SIG. INVENTORY NO. 09-0016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

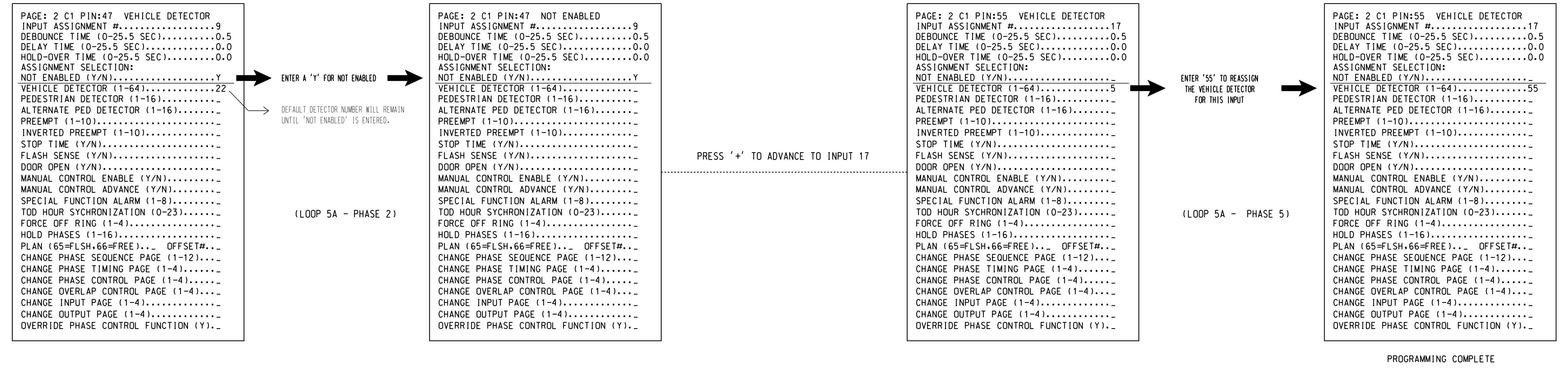


INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #17 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 15 SECONDS TO 3 SECONDS.

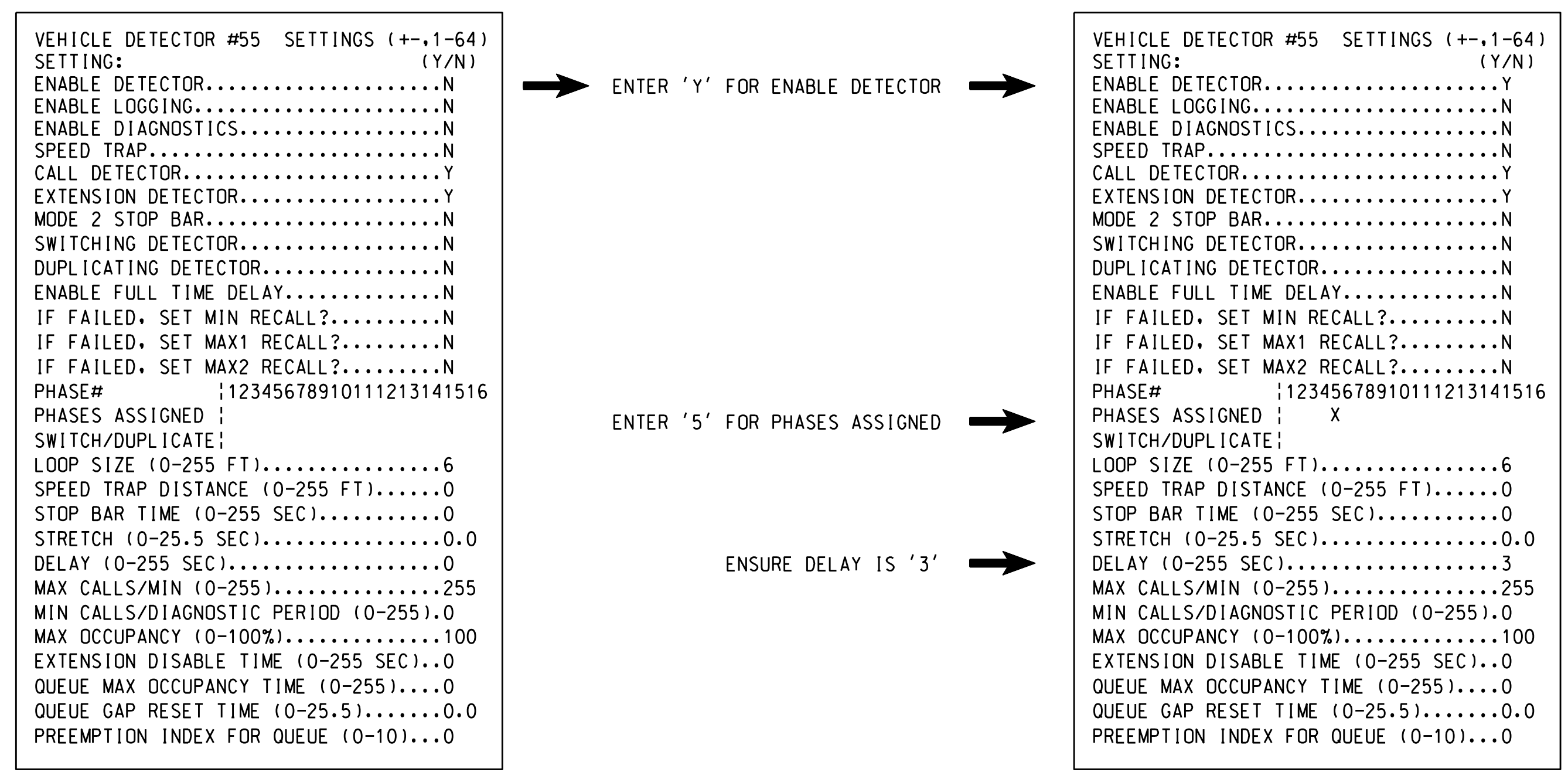
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 9 IS REACHED.



SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 5A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.



NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0016
DESIGNED: November 2017
SEALED: 12-07-17
REVISED: N/A

10-DEC-2017 08:11 S:\IT\SS\10115\Sig\10115\work\hgr\loop5a\g_Mon#eter.som\090016_sml.ele_xxx.dgn T:peterson

Electrical Detail - Sheet 3 of 4

| | | | |
|--|---|---------------------------------------|----------------------------|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: | | SR 2264 (Akron Drive) at Glenn Avenue | |
| Prepared In the Offices of: | Division 9 Forsyth County Winston-Salem | | |
| | PLAN DATE: November 2017 | REVIEWED BY: | |
| | PREPARED BY: James Peterson | REVIEWED BY: | |
| REVISIONS | INIT. | DATE | |
| DocuSigned by: Keith M. Mims | | | 12/19/2017 |
| 750 N. Greenfield Pkwy, Garner, NC 27529 | | | SIG. INVENTORY NO. 09-0016 |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
KEITH M. MIMS
036880

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

| <u>PHASING</u> | <u>INPUTS PAGE</u> | <u>OVERLAPS PAGE</u> |
|---|--------------------|----------------------|
| ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u> | 1 | 1 |
| ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u> | 2 | 2 |

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY PAGE CHANGE EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN PAGE CHANGE EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING PAGE CHANGE SUMMARY


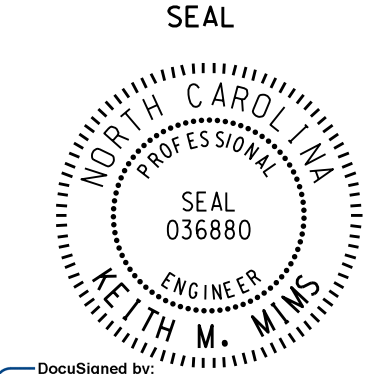
THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for head 51 to run protected turns only.

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

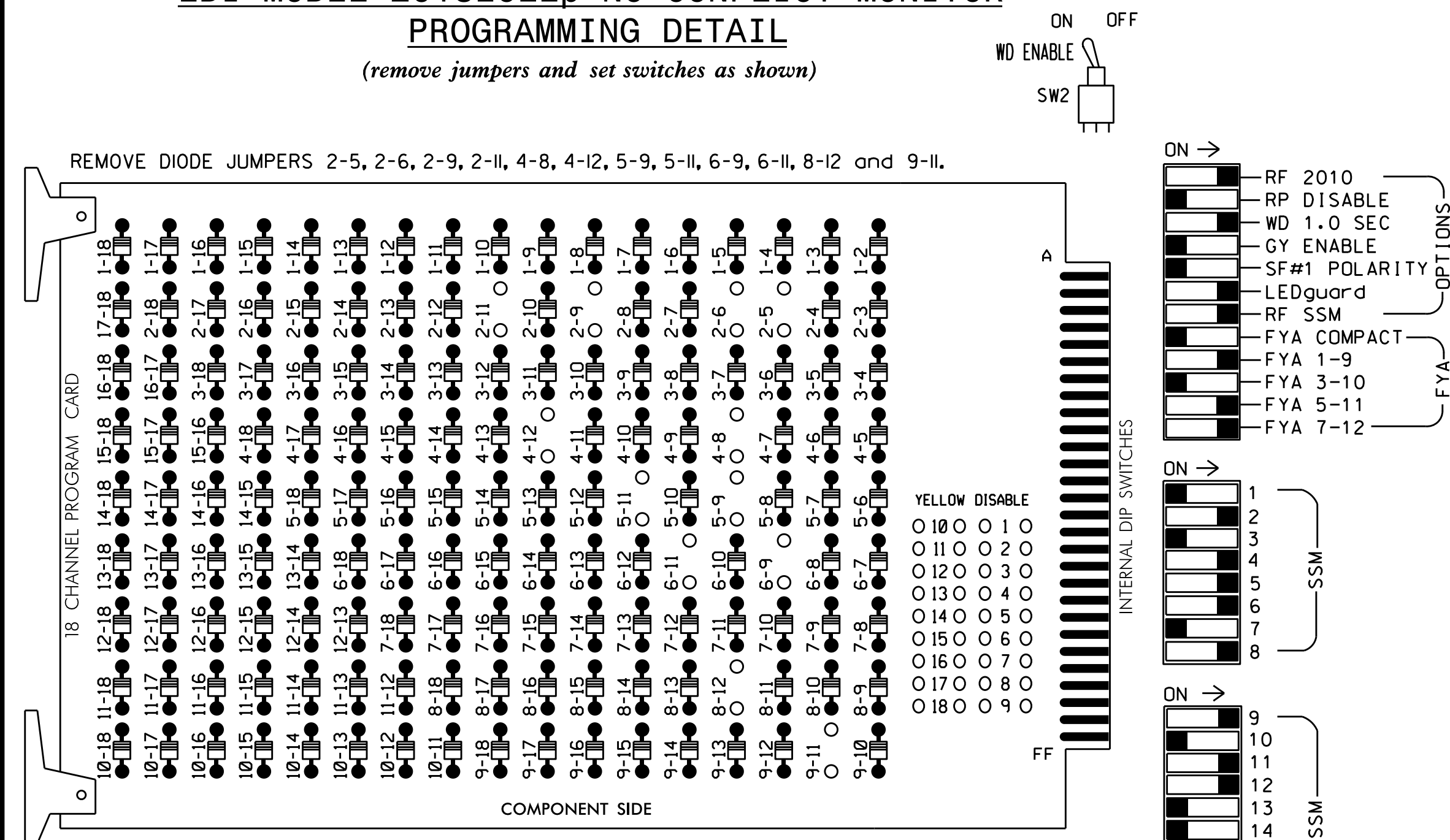
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0016
DESIGNED: November 2017
SEALED: 12-07-17
REVISED: N/A

Electrical Detail - Sheet 4 of 4

| <p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p>Prepared In the Offices of:</p>  <p>750 N. Greenfield Pkwy, Garner, NC 27529</p> | <p>SR 2264 (Akron Drive) at Glenn Avenue</p> <p>Division 9 Forsyth County Winston-Salem</p> <p>PLAN DATE: November 2017 REVIEWED BY:</p> <p>PREPARED BY: James Peterson REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table> | REVISIONS | INIT. | DATE | | | | | | | <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p style="text-align: center;">SEAL</p>  <p>DocuSigned by: Keith M. Mins 12/19/2017</p> <p>SIG. INVENTORY NO. 09-0018</p> |
|---|--|-----------|-------|------|--|--|--|--|--|--|---|
| REVISIONS | INIT. | DATE | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

REMOVE JUMPERS AS SHOWN

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
- The cabinet and controller are part of the Winston-Salem Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,S11,AUX S1,
 AUX S4,AUX S5
 PHASES USED.....2,4,5,6,8
 OVERLAP "A".....2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....8

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|----|-------|-------|----|-------|-------|----|-------|-------|-----|-------|-------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 42,43 | NU | 51 | 62,63 | NU | NU | 81,82 | NU | 61 | NU | NU | 51 | 41 | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | | | | | |
| YELLOW | | 129 | | | 102 | | * | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | | | A114 | A101 | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | | | A115 | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | | | A116 | A103 | |
| GREEN ARROW | | | | | | | | 133 | | | | | | | | | | |

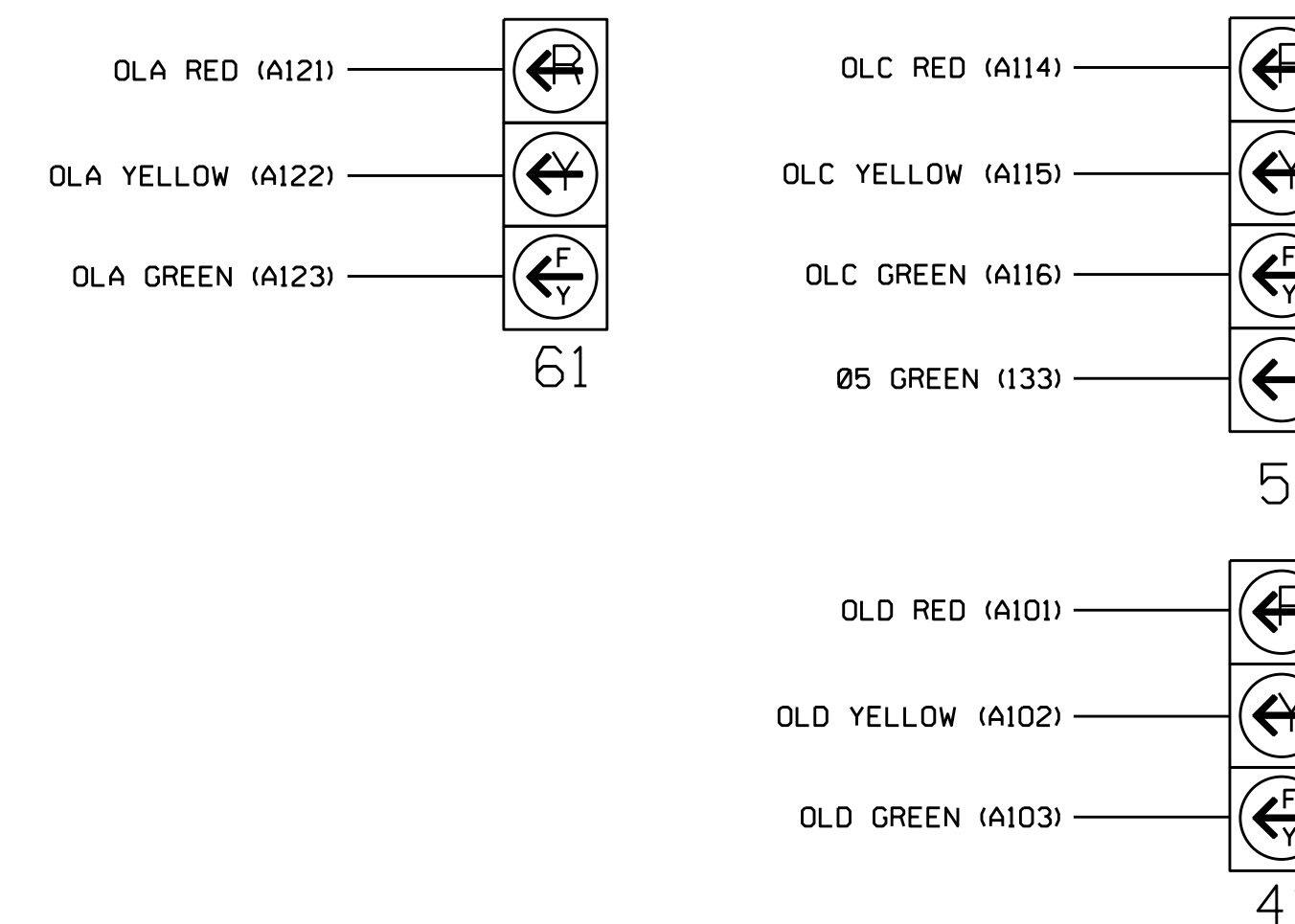
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

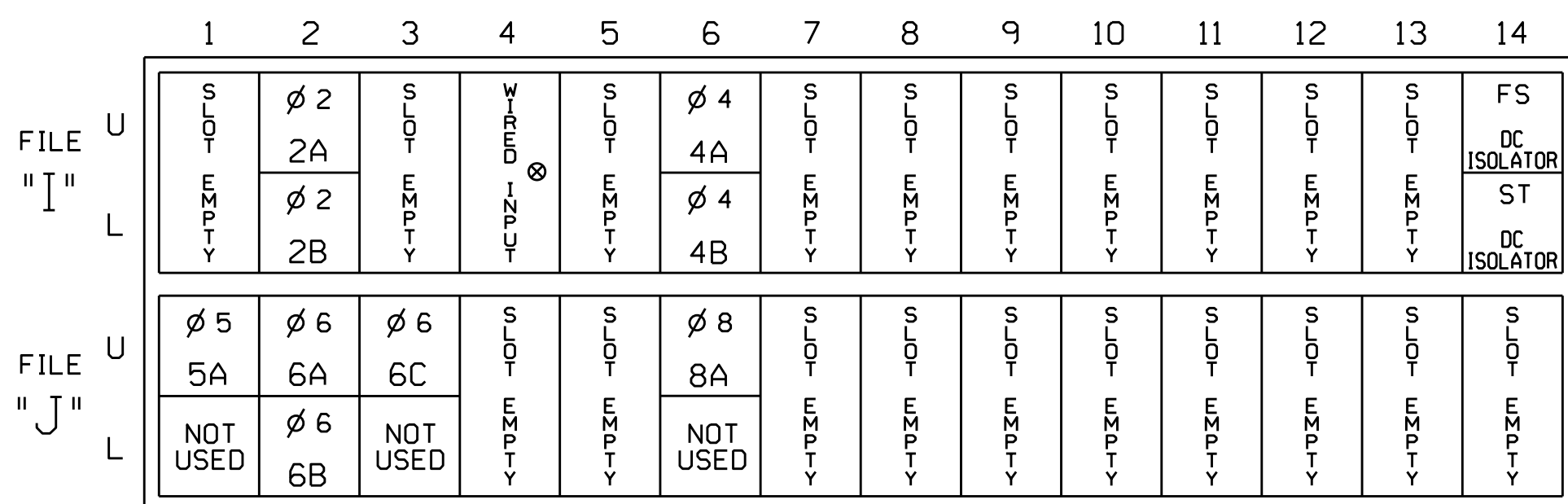


NOTE

The sequence display for signal head 51 requires special logic programming. See sheet 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

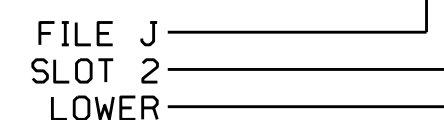
INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|-----------------|---------------|-----------------|---------|----------------------|--------------|------------|------|--------|-----------------|--------------|------------|
| 2A | TB2-5,6 | I2U | 39 | 1 | 2 | 2 | Y | Y | | | |
| 2B | TB2-7,8 | I2L | 43 | 5 | 12 | 2 | Y | Y | | | |
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | 3 |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | 10 |
| 5A ¹ | TB3-1,2 | J1U | 55 | 17 | 5 | 5 | Y | Y | | | 15 |
| | - | I4U | 47 | 9 ★ | 22 | 2 | Y | Y | Y | | 3 |
| | - | J1U | 55 | 17 ★ | 55 | 5 | Y | Y | | | 3 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |
| 6C | TB3-9,10 | J3U | 64 | 26 | 36 | 6 | Y | Y | Y | | 3 |
| 8A | TB5-9,10 | J6U | 42 | 4 | 8 | 8 | Y | Y | | | 10 |

¹Add jumper from J1-W to I4-W, on rear of input file.

★ See Input Page Assignment programming details on sheet 3.

INPUT FILE POSITION LEGEND: J2L



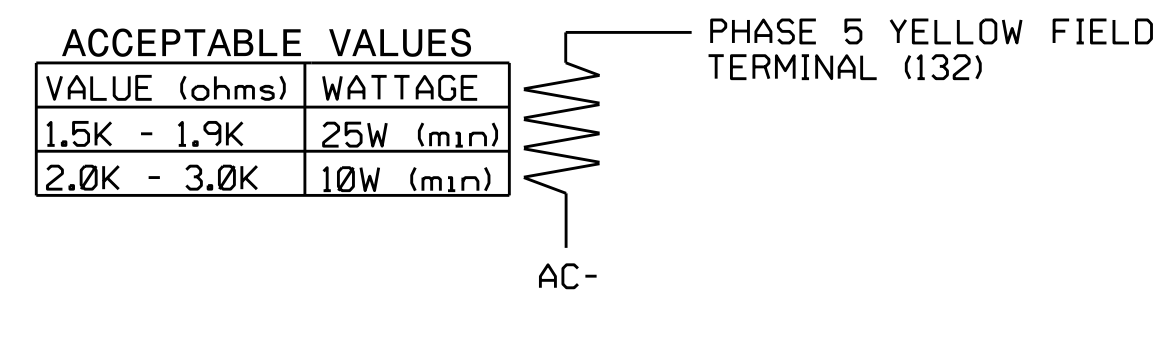
BACKUP PROTECTION NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 2 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)



Electrical Detail - Sheet 1 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:

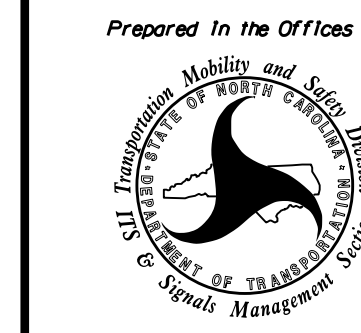
SR 2456 (N. Liberty Street)
 at
 SR 2264 (Akron Drive)
 and Airport Access

Division 9 Forsyth County Winston-Salem

PLAN DATE: December 2017 REVIEWED BY:

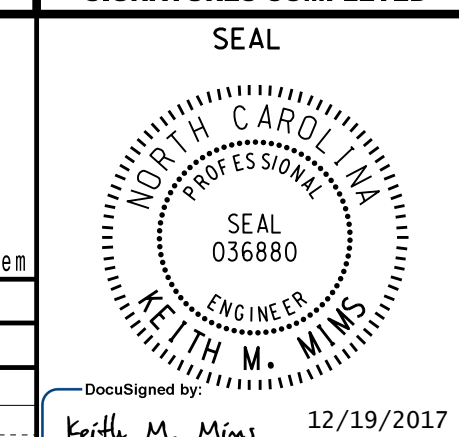
PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE



750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



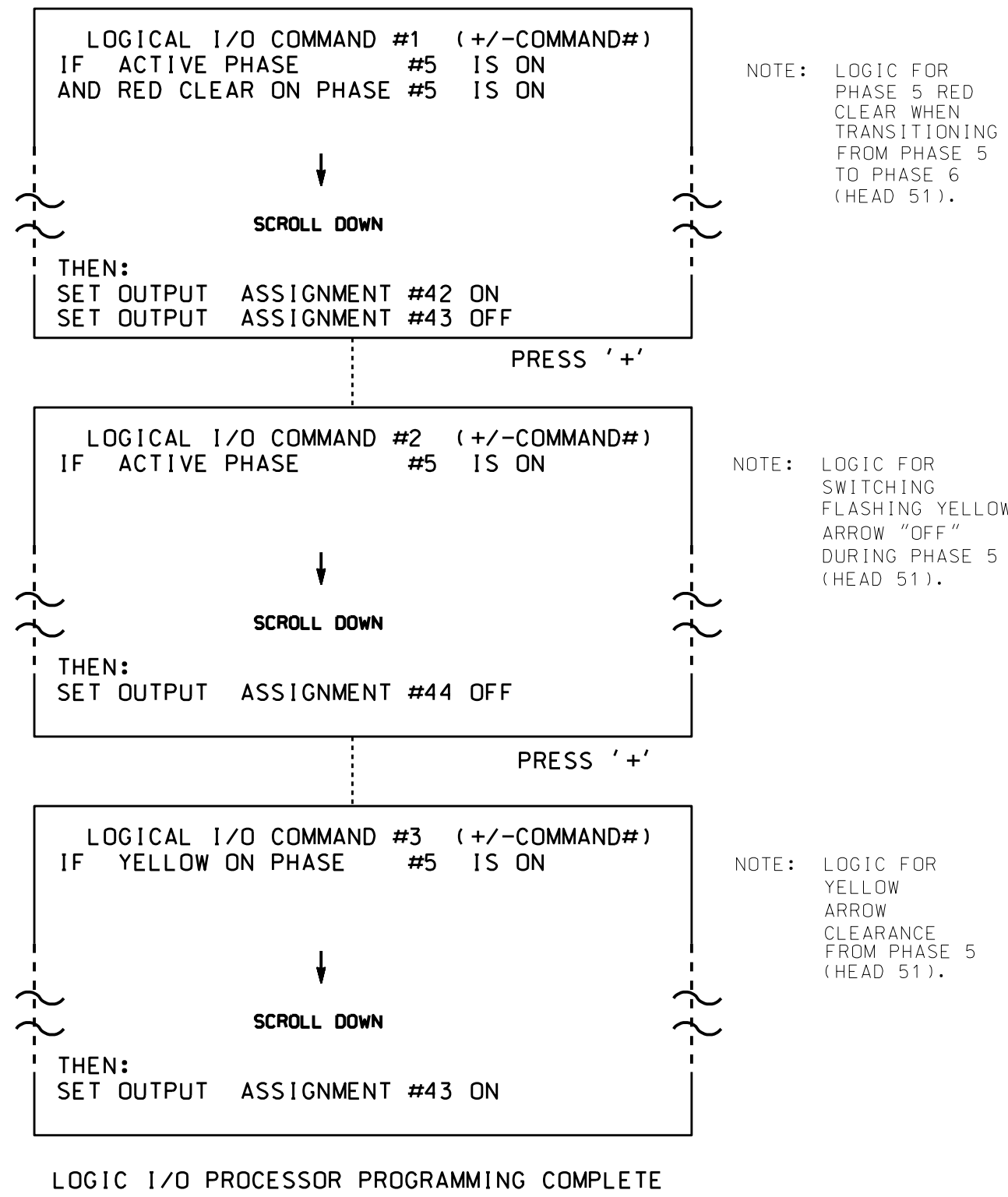
DocuSigned by: Keith M. Miras 12/19/2017

SIG. INVENTORY NO. 09-0267

**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

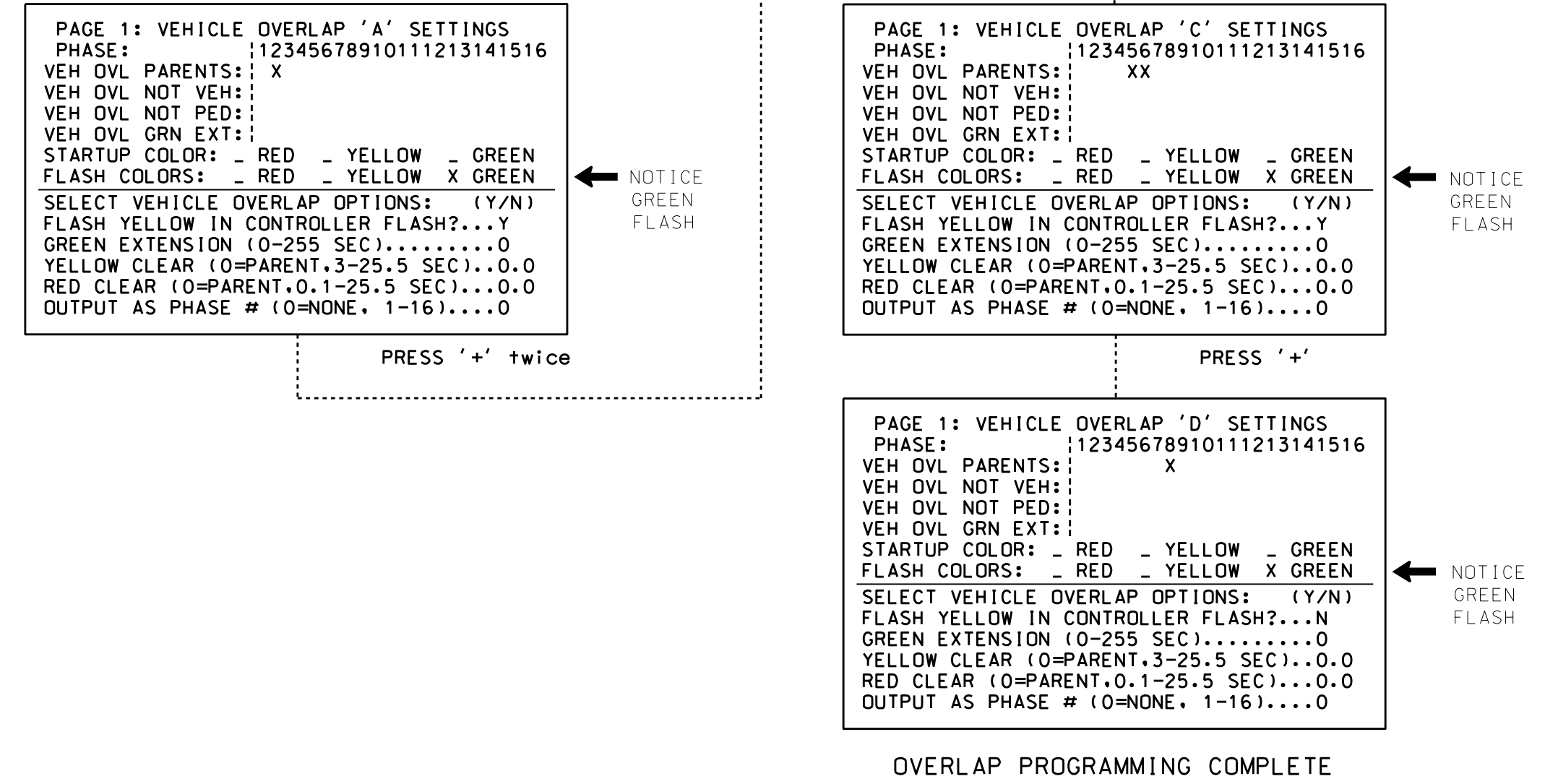


| OUTPUT REFERENCE SCHEDULE | |
|---------------------------|--------------------|
| OUTPUT 42 | = Overlap C Red |
| OUTPUT 43 | = Overlap C Yellow |
| OUTPUT 44 | = Overlap C Green |

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

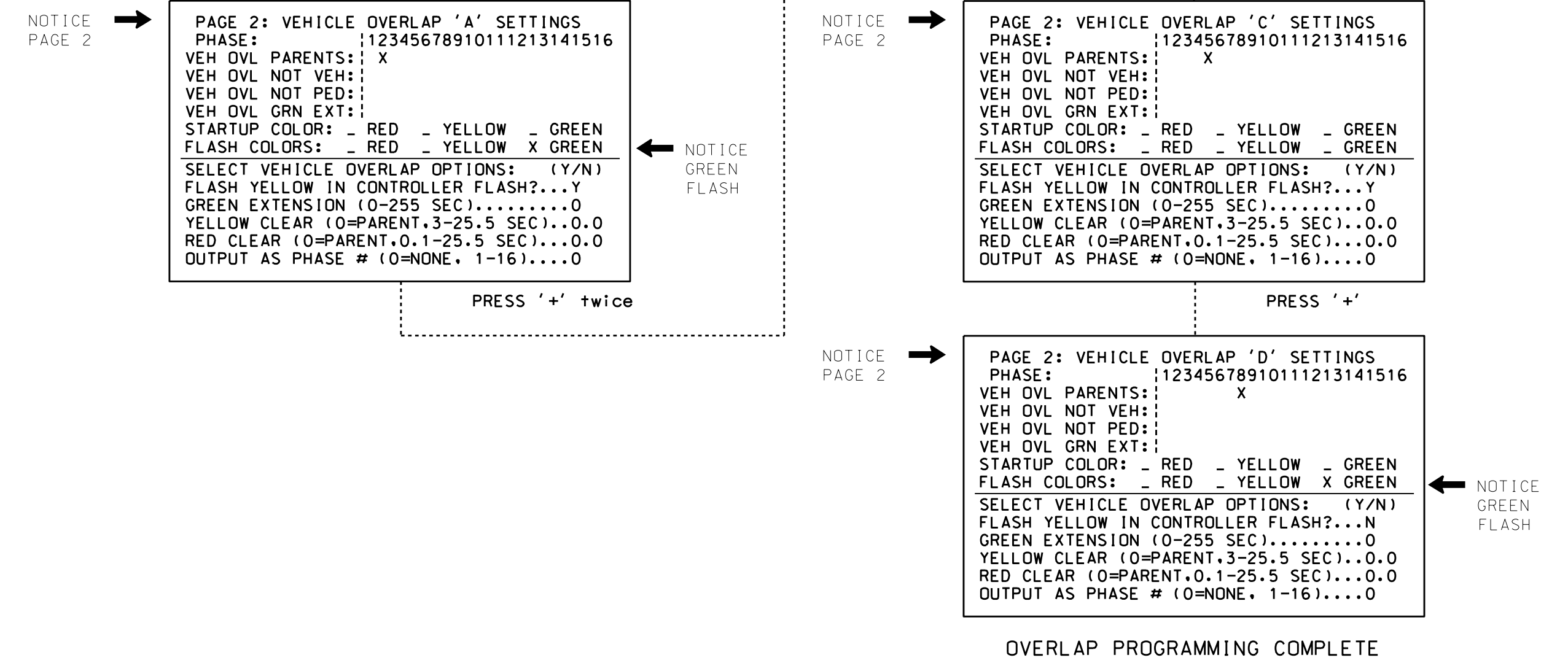
FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).



OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS 'NEXT' TO ADVANCE TO PAGE 2.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0267
DESIGNED: November 2017
SEALED: 12-07-17
REVISED: N/A

Electrical Detail - Sheet 2 of 4

Electrical and Programming Details for: SR 2456 (N. Liberty Street) at SR 2264 (Akron Drive) and Airport Access

Division 9 Forsyth County Winston-Salem

PLAN DATE: December 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

Prepared In the Offices of:

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SEAL

DocuSigned by: Keith M. Mims 12/19/2017

SIG. INVENTORY NO. 09-0267

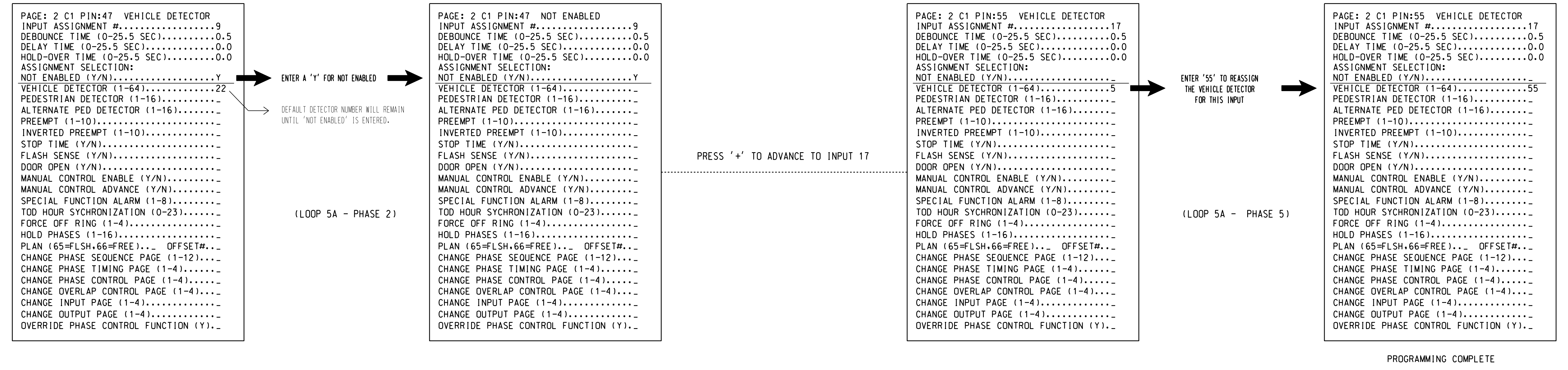
10-06-2017 08:43
S:\IT\SSM\15\Sig\01\work\hgr\oups\sig\Main\Peter.som\090267_smc.ele_xxx.dgn
J Peterson

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #17 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 15 SECONDS TO 3 SECONDS.

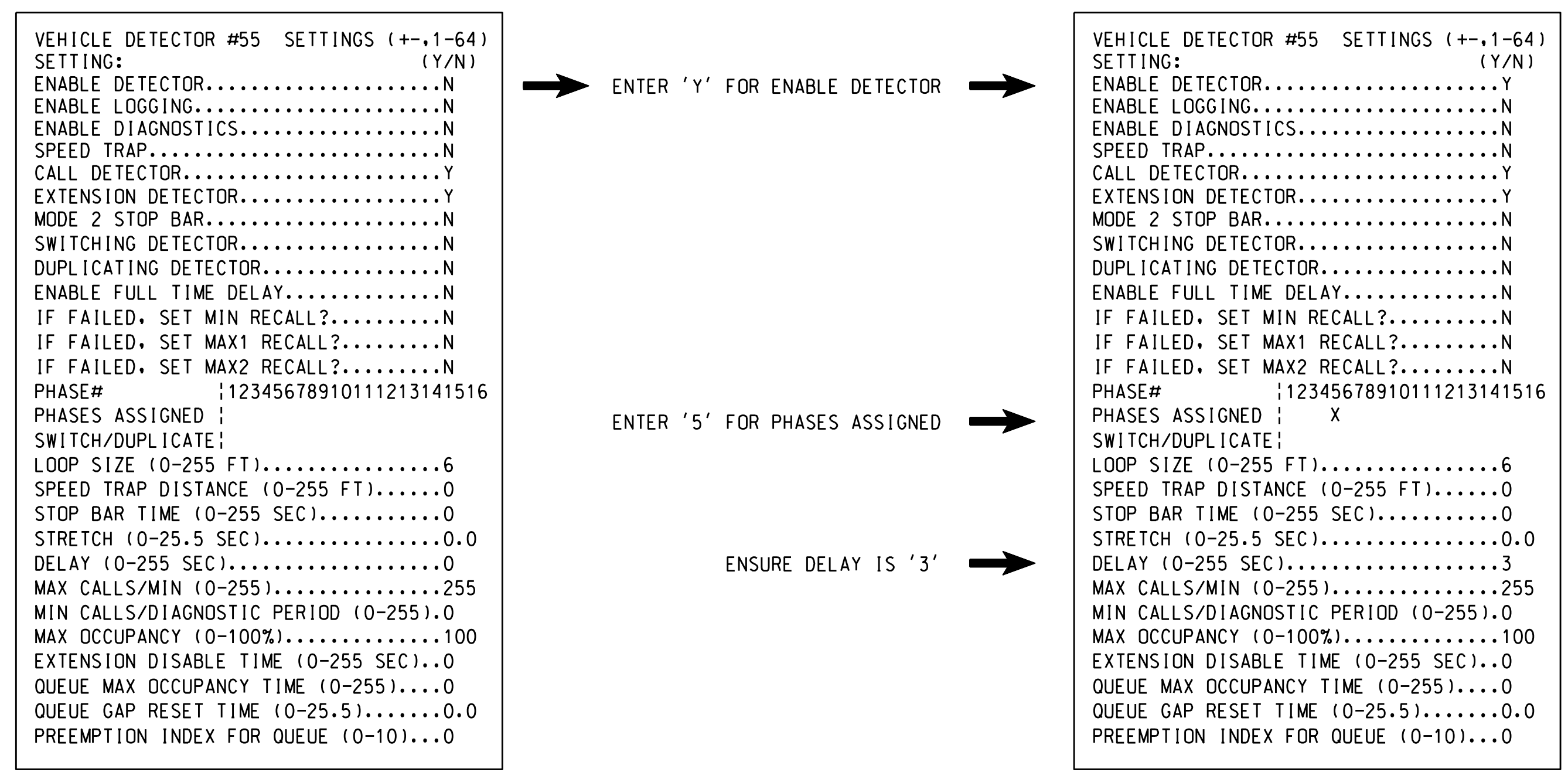
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 9 IS REACHED.



SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 5A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.



NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0267
DESIGNED: November 2017
SEALED: 12-07-17
REVISED: N/A

10-DEC-2017 08:44 S:\IT\SS\10115\Sig\m\peter.som\090267_she.e...xxx.dgn T:\peter.som

Electrical Detail - Sheet 3 of 4

| | | | |
|---|--------------|---|--------------|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: | | SR 2456 (N. Liberty Street) at SR 2264 (Akron Drive) and Airport Access | |
| Prepared In the Offices of: | | Division 9 Forsyth County Winston-Salem | |
| PLAN DATE: December 2017 | REVIEWED BY: | PREPARED BY: James Peterson | REVIEWED BY: |
| REVISIONS | INIT. | DATE | |
| | | | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
KEITH M. MIMS
12/19/2017
DATE
SIG. INVENTORY NO. 09-0267

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

| <u>PHASING</u> | <u>INPUTS PAGE</u> | <u>OVERLAPS PAGE</u> |
|---|--------------------|----------------------|
| ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u> | 1 | 1 |
| ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u> | 2 | 2 |

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY PAGE CHANGE EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN PAGE CHANGE EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for head 51 to run protected turns only.

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

FLASHER CIRCUIT MODIFICATION DETAIL


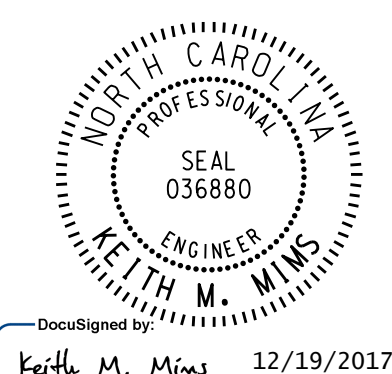
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

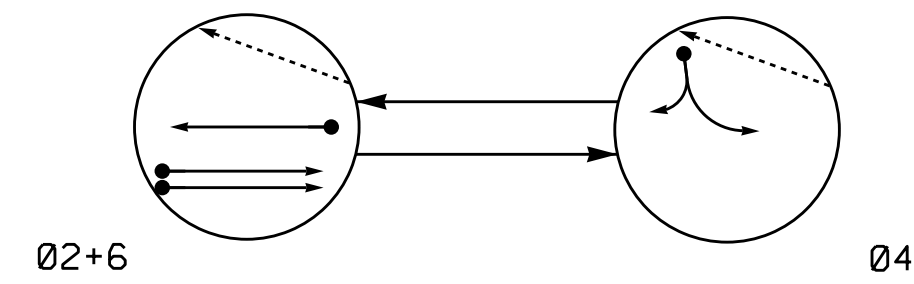
THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0267
 DESIGNED: November 2017
 SEALED: 12-07-17
 REVISED: N/A

Electrical Detail - Sheet 4 of 4

| | | |
|---|--|--|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529 | SR 2456 (N. Liberty Street) at SR 2264 (Akron Drive) and Airport Access Division 9 Forsyth County Winston-Salem PLAN DATE: December 2017 REVIEWED BY: PREPARED BY: James Peterson REVIEWED BY: REVISIONS INIT. DATE | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL  DocuSigned by: Keith M. Mins 12/19/2017 2F80786E8CD3455 DATE SIG. INVENTORY NO. 09-0267 |
|---|--|--|

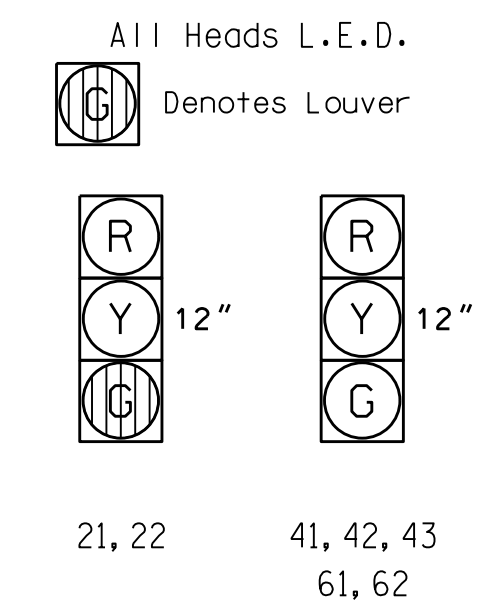
PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND
 ● ← DETECTED MOVEMENT
 ← UNDETECTED MOVEMENT (OVERLAP)
 - - - ← UNSIGNALIZED MOVEMENT
 ← - - - → PEDESTRIAN MOVEMENT

| SIGNAL FACE | PHASE | | |
|-------------|---------|-----|-------|
| | Ø 2 + 6 | Ø 4 | FLASH |
| 21, 22 | G | R | Y |
| 41, 42, 43 | R | G | R |
| 61, 62 | G | R | Y |

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

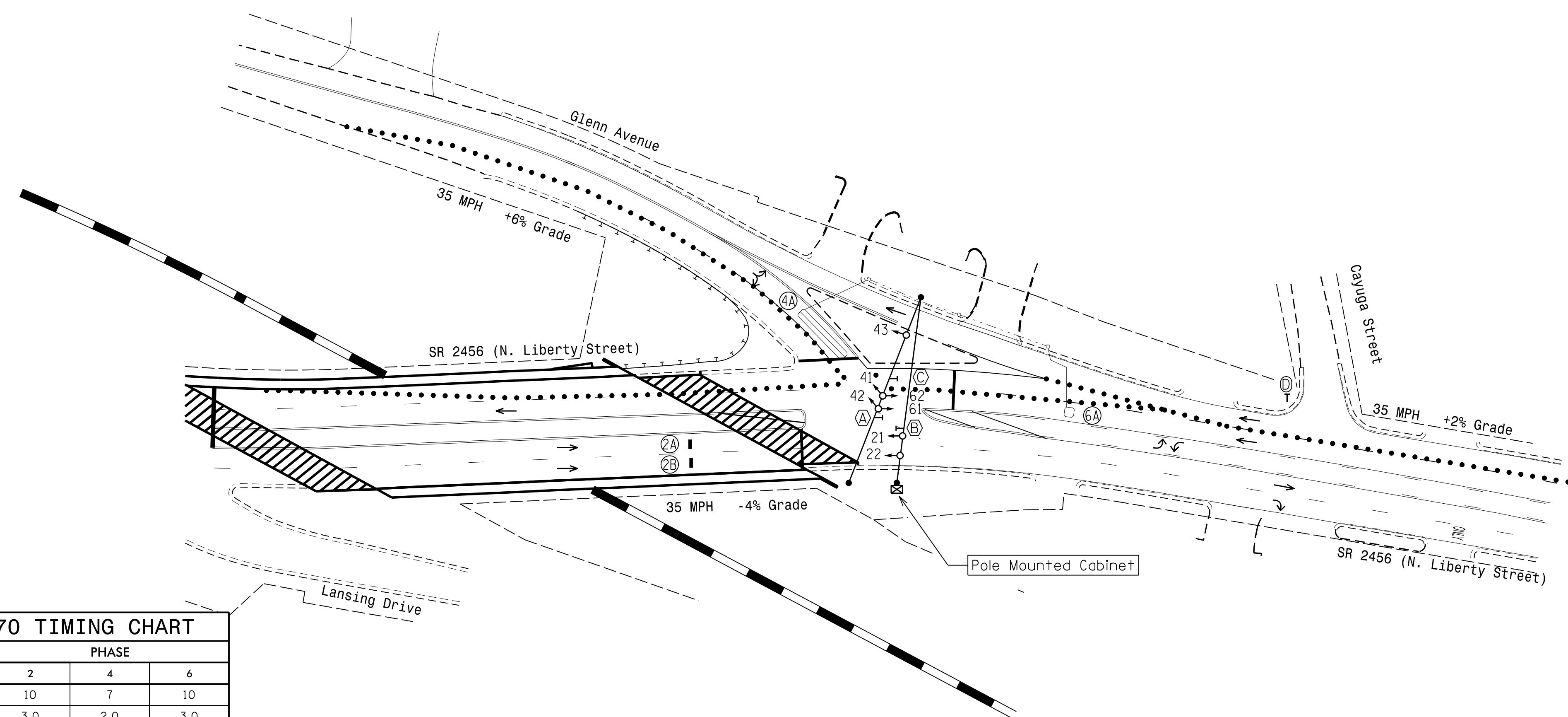
| LOOP/ZONE | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | DETECTOR PROGRAMMING | | | | | SYSTEM LOOP | NEW CARD | |
|-----------|-----------|----------------------------|-------|----------|----------------------|---------|-----------|-----------------|--------------|-------------|----------|------------|
| | | | | | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | | | DELAY TIME |
| 2A* | 6X6 | 70 | * | Y | 2 | Y | Y | - | - | - | - | Y |
| 2B* | 6X6 | 70 | * | Y | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X40 | 0 | 2-4-2 | Y | 4 | Y | Y | - | - | 5 | - | Y |
| 6A | 6X6 | 70 | 5 | Y | 6 | Y | Y | - | - | - | - | Y |

* Video Detection Zone

2 Phase Fully Actuated (Winston-Salem Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Maintain (ON or OFF) TOD late night flash based on existing programming for this location.
- Tether signal heads number 21 and 22.
- 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 features a video detection system. Shown locations of optical detectors are conceptual only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



| FEATURE | PHASE | | |
|-------------------------|------------|-----|------------|
| | 2 | 4 | 6 |
| Min Green 1 * | 10 | 7 | 10 |
| Extension 1 * | 3.0 | 2.0 | 3.0 |
| Max Green 1 * | 45 | 25 | 45 |
| Yellow Clearance | 4.1 | 3.0 | 3.7 |
| Red Clearance | 1.5 | 2.3 | 1.9 |
| Red Revert | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - |
| Don't Walk 1 | - | - | - |
| Seconds Per Actuation * | - | - | - |
| Max Variable Initial * | - | - | - |
| Time Before Reduction * | - | - | - |
| Time To Reduce * | - | - | - |
| Minimum Gap | - | - | - |
| Recall Mode | MIN RECALL | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | YELLOW |
| Dual Entry | - | - | - |
| Simultaneous Gap | ON | ON | ON |

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

| PROPOSED | EXISTING |
|--|---|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ⊥ Sign | ⊥ N/A |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ N/A |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ● Signal Pole with Sidewalk Guy |
| □ Inductive Loop Detector | □ Inductive Loop Detector |
| □ Controller & Cabinet | □ Controller & Cabinet |
| □ Junction Box | □ Junction Box |
| - - - 2-in Underground Conduit | - - - 2-in Underground Conduit |
| - - - Right of Way | - - - Right of Way |
| → Directional Arrow | → Directional Arrow |
| ● Construction Zone Drums | ● Construction Zone Drums |
| ■ Construction Zone | ■ Construction Zone |
| - - - Guardrail | - - - Guardrail |
| - - - Video Detection Area | - - - Video Detection Area |
| - - - Railroad Tracks | - - - Railroad Tracks |
| (A) No U-Turn Sign (R3-4) | (A) No U-Turn Sign (R3-4) |
| (B) No U-Turn/No Left Turn Sign (R3-18) | (B) No U-Turn/No Left Turn Sign (R3-18) |
| (C) No Right Turn Sign (R3-1) | (C) No Right Turn Sign (R3-1) |
| (D) "STOP" Sign (R1-1) | (D) "STOP" Sign (R1-1) |

Signal Upgrade Temporary Design 1 (TMP Phase I, Detail 1)

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 2456 (N. Liberty Street) at Glenn Avenue

Divison 9 Forsyth County Winston-Salem

PLAN DATE: November 2017 REVIEWED BY:

PREPARED BY: I. O. Umozurike REVIEWED BY:

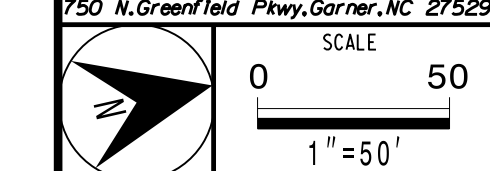
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

ROBERT J. ZIEMBA
ENGINEER

12/11/2017

SIG. INVENTORY NO. 09-018611

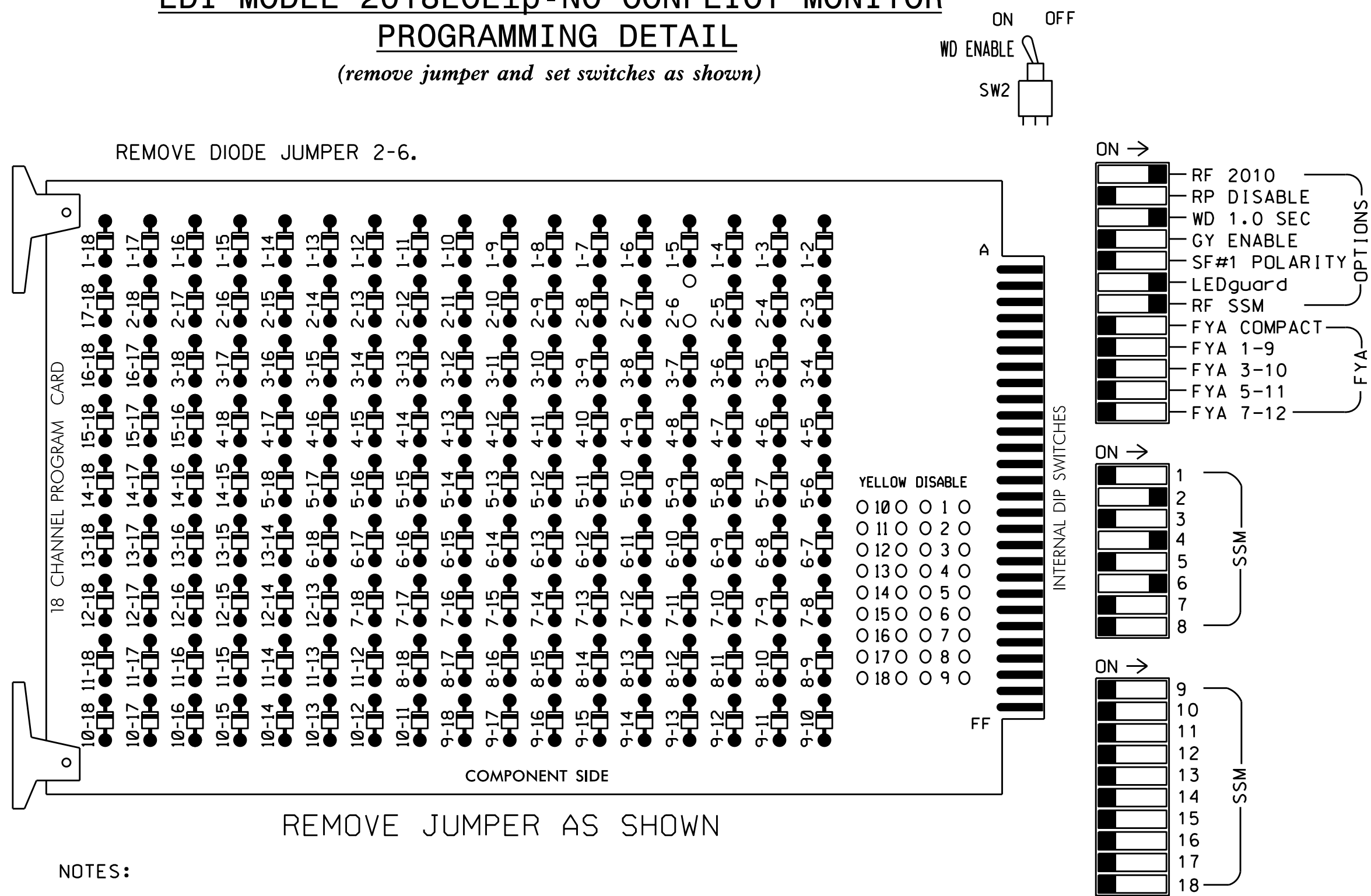


| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |
| | | |

21-DEC-2017 12:33
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**EDI MODEL 2018ECLip-NC CONFLICT MONITOR
PROGRAMMING DETAIL**

(remove jumper and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all Phases.
3. Program phases 2 and 6 for Startup In Green.
4. Program phases 2 and 6 for Yellow Flash.
5. The cabinet and controller are part of the Winston-Salem Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....336
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8
 PHASES USED.....2,4,6
 OVERLAPS.....NONE

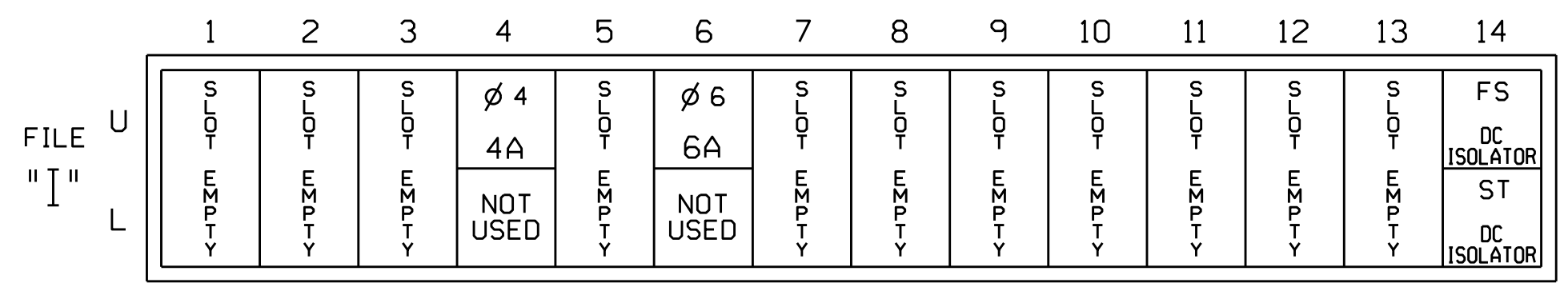
SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------|----|-------|-------|----|-------------|-------|----|-------|-------|-----|-----|-------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 43 | NU | NU | 61,62 | NU | NU | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



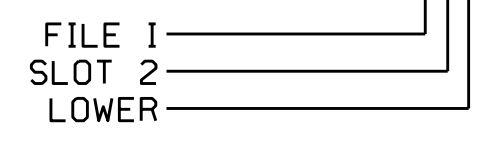
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|----------|---------------|-----------------|---------|----------------------|--------------|------------|------|--------|-----------------|--------------|------------|
| 4A | TB21-7,8 | 14U | 41 | 3 | 4 | 4 | Y | Y | | | 5 |
| 6A | TB21-11,12 | 16U | 40 | 2 | 6 | 6 | Y | Y | | | |

INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 09-0186T1
 DESIGNED: November 2017
 SEALED: 12-11-17
 REVISED: N/A

SPECIAL DETECTOR NOTE

For zones 2A and 2B 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.

Electrical Detail - Temp 1 (TMP Phase I, Detail I)

Electrical and Programming Details For: SR 2456 (N. Liberty Street) at Glenn Avenue

Division 9 Forsyth County Winston-Salem

PLAN DATE: December 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

DocuSigned by: Keith M. Mins 12/20/2017

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

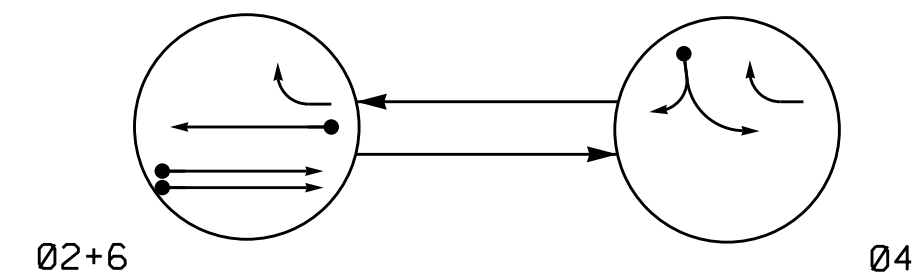
SEAL 036880

KEITH M. MINS ENGINEER

SIG. INVENTORY NO. 09-0186T1

2018-05-20 17:07:48
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 J.peterson

PHASING DIAGRAM

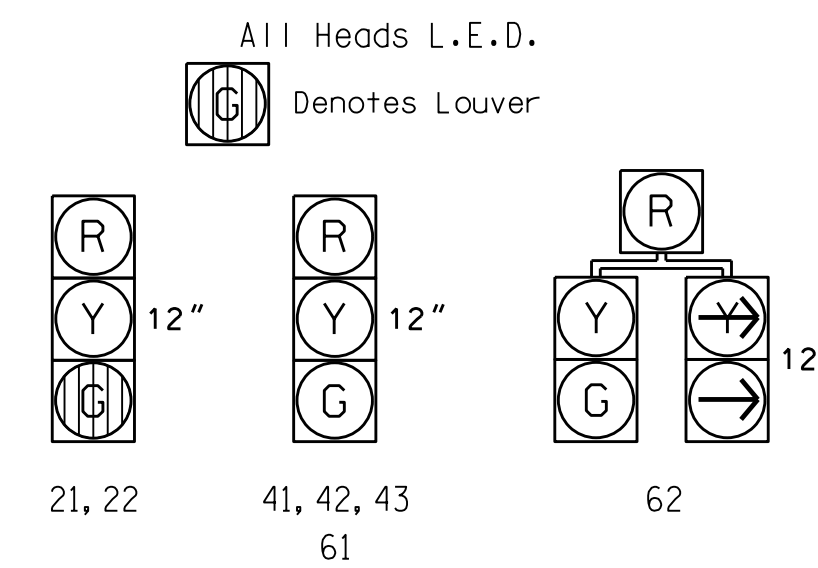


PHASING DIAGRAM DETECTION LEGEND

- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- ←- - -→ UNSIGNALIZED MOVEMENT
- ←- - -> PEDESTRIAN MOVEMENT

| SIGNAL FACE | PHASE | | |
|-------------|-------|----|-------|
| | 02+6 | 04 | FLASH |
| 21, 22 | G | R | Y |
| 41, 42, 43 | R | G | R |
| 61 | G | R | Y |
| 62 | G | R | Y |

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

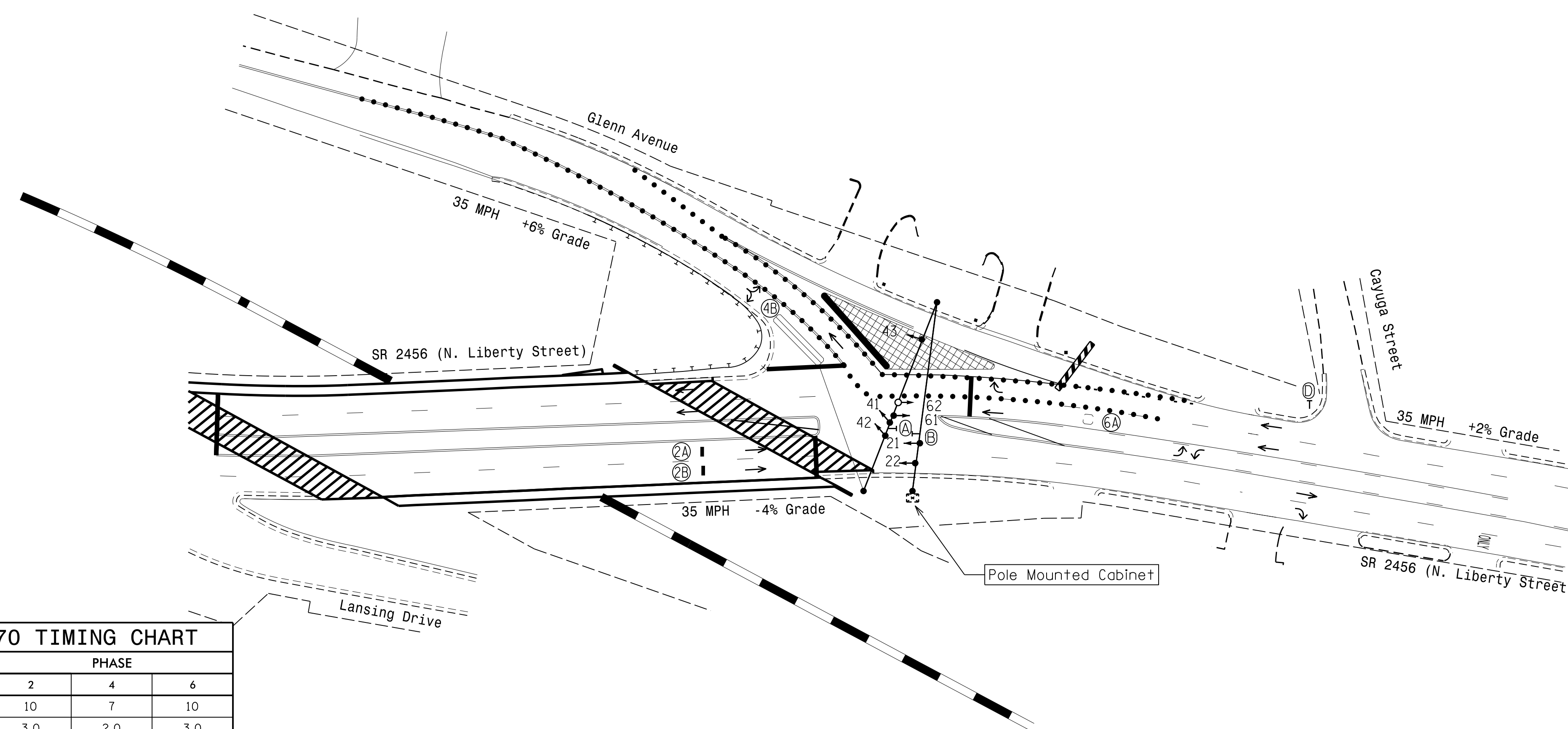
| LOOP/ZONE | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | DETECTOR PROGRAMMING | | | | | SYSTEM LOOP | NEW CARD | |
|-----------|-----------|----------------------------|-------|----------|----------------------|---------|-----------|-----------------|--------------|-------------|----------|------------|
| | | | | | PHASE | CALLING | EXTENSION | FULL TIME DELAY | STRETCH TIME | | | DELAY TIME |
| 2A* | 6X6 | 70 | * | - | 2 | Y | Y | - | - | - | - | - |
| 2B* | 6X6 | 70 | * | - | 2 | Y | Y | - | - | - | - | - |
| 4B | 6X40 | 0 | 2-4-2 | Y | 4 | Y | Y | - | - | 5 | - | Y |
| 6A | 6X6 | 70 | 5 | - | 6 | Y | Y | - | - | - | - | - |

* Video Detection Zone

2 Phase Fully Actuated (Winston-Salem Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Maintain (ON or OFF) TOD late night flash based on existing programming for this location.
- Reposition existing signal heads number 41 and 42.
- Tether signal heads number 21 and 22.
- Set all detector units to presence mode.
- This intersection features a video detection system. Shown locations of optical detectors are conceptual only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



| FEATURE | PHASE | | |
|-------------------------|------------|-----|------------|
| | 2 | 4 | 6 |
| Min Green 1 * | 10 | 7 | 10 |
| Extension 1 * | 3.0 | 2.0 | 3.0 |
| Max Green 1 * | 45 | 25 | 45 |
| Yellow Clearance | 4.1 | 3.0 | 3.7 |
| Red Clearance | 1.5 | 2.3 | 2.6 |
| Red Revert | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - |
| Don't Walk 1 | - | - | - |
| Seconds Per Actuation * | - | - | - |
| Max Variable Initial * | - | - | - |
| Time Before Reduction * | - | - | - |
| Time To Reduce * | - | - | - |
| Minimum Gap | - | - | - |
| Recall Mode | MIN RECALL | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | YELLOW |
| Dual Entry | - | - | - |
| Simultaneous Gap | ON | ON | ON |

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

| PROPOSED | EXISTING |
|--|---|
| ○ → Traffic Signal Head | ● → N/A |
| ● → Modified Signal Head | ○ → N/A |
| ⊥ Sign | ⊥ N/A |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ N/A |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ● Signal Pole with Sidewalk Guy |
| ⊠ Inductive Loop Detector | ⊠ Inductive Loop Detector |
| □ Controller & Cabinet | □ Controller & Cabinet |
| □ Junction Box | □ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A Right of Way | --- Right of Way |
| → Directional Arrow | → Directional Arrow |
| ● Construction Zone Drums | ● Construction Zone Drums |
| ■ Construction Zone | ■ Construction Zone |
| N/A Guardrail | — Guardrail |
| N/A Railroad Tracks | — Railroad Tracks |
| Video Detection Area | Video Detection Area |
| (A) No U-Turn Sign (R3-4) | (A) No U-Turn Sign (R3-4) |
| (B) No U-Turn/No Left Turn Sign (R3-18) | (B) No U-Turn/No Left Turn Sign (R3-18) |
| (D) "STOP" Sign (R1-1) | (D) "STOP" Sign (R1-1) |

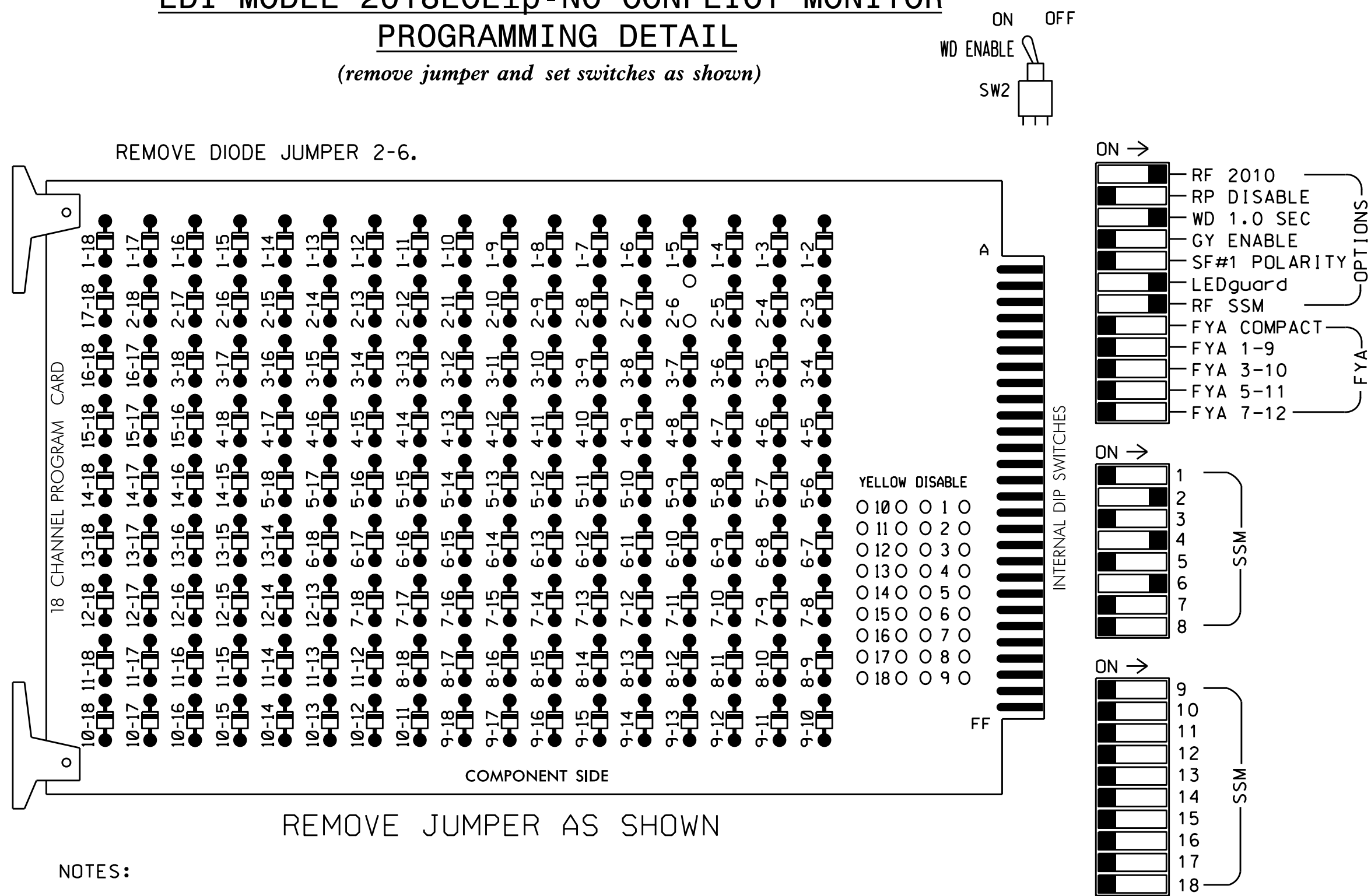
Signal Upgrade Temporary Design 2 (TMP Phase I, Detail 2)

| | | | |
|----------------|---|---------------------------------------|---|
| | SR 2456 (N. Liberty Street) at Glenn Avenue | | |
| | Divison 9 Forsyth County Winston-Salem | PLAN DATE: November 2017 REVIEWED BY: | |
| SCALE 1" = 50' | REVISIONS | INIT. DATE | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED |

21-DEC-2017 12:31 P:\IT\PRJ\01\act-5-1484746\Traffic\cas\gnal\sa405-01864030186T2.s1g.dgn_20171211.dgn

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Enable Simultaneous Gap-Out for all Phases.
3. Program phases 2 and 6 for Startup In Green.
4. Program phases 2 and 6 for Yellow Flash.
5. The cabinet and controller are part of the Winston-Salem Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....336
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8
 PHASES USED.....2,4,6
 OVERLAPS.....NONE

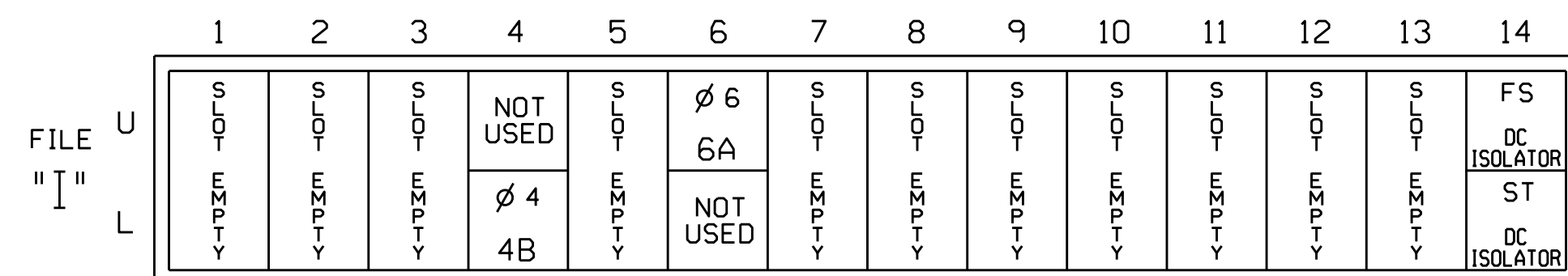
SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------|----|-------|-------|----|-------------|-------|----|----|-------|-----|-----|-------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 43 | 62 | NU | NU | 61,62 | NU | NU | NU |
| RED | | 128 | | | 101 | | | | 134 | | | |
| YELLOW | | 129 | | | 102 | | | | 135 | | | |
| GREEN | | 130 | | | 103 | | | | 136 | | | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | 102 | | | | | | | |
| GREEN ARROW | | | | | 103 | | | | | | | |

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



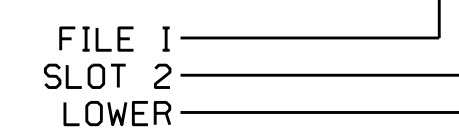
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|----------|---------------|-----------------|---------|----------------------|--------------|------------|------|--------|-----------------|--------------|------------|
| 4B | TB23-7,8 | 14L | 45 | 7 | 14 | 4 | Y | Y | | | 5 |
| 6A | TB21-11,12 | 16U | 40 | 2 | 6 | 6 | Y | Y | | | |

INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0186T2
 DESIGNED: November 2017
 SEALED: 12-17-11
 REVISED: N/A

SPECIAL DETECTOR NOTE

For zones 2A and 2B 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.

Electrical Detail - Temp. 2 (TMP Phase I, Detail 2)

Prepared In the Offices of:
 G.L. Transportation, Mobility and Signal Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 2456 (N. Liberty Street) at Glenn Avenue

Division 9 Forsyth County Winston-Salem

PLAN DATE: December 2017 REVIEWED BY:
 PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

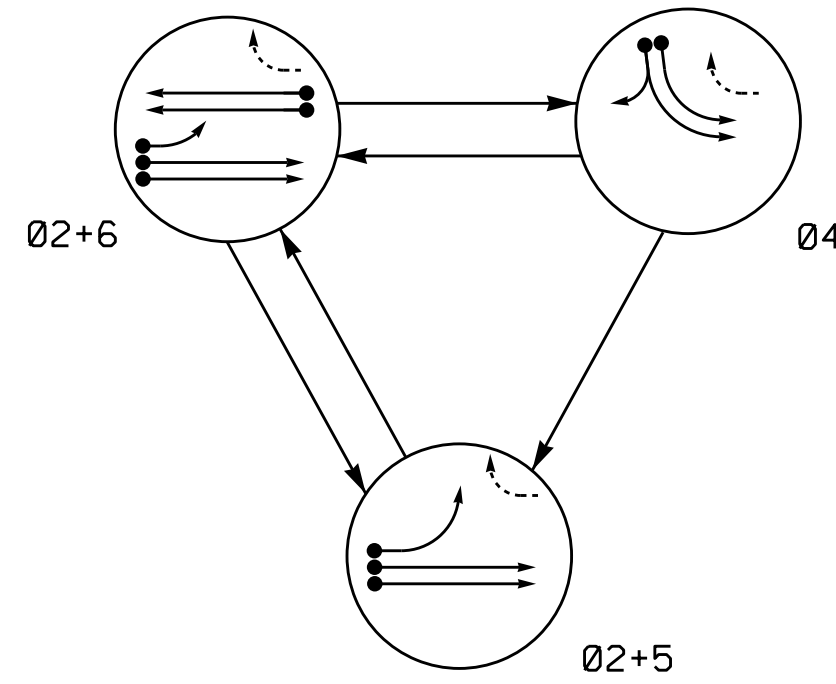
DocuSigned by:
 Keith M. Mins 12/20/2017
 2F8078E85CD3455

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 KEITH M. MINS
 036880

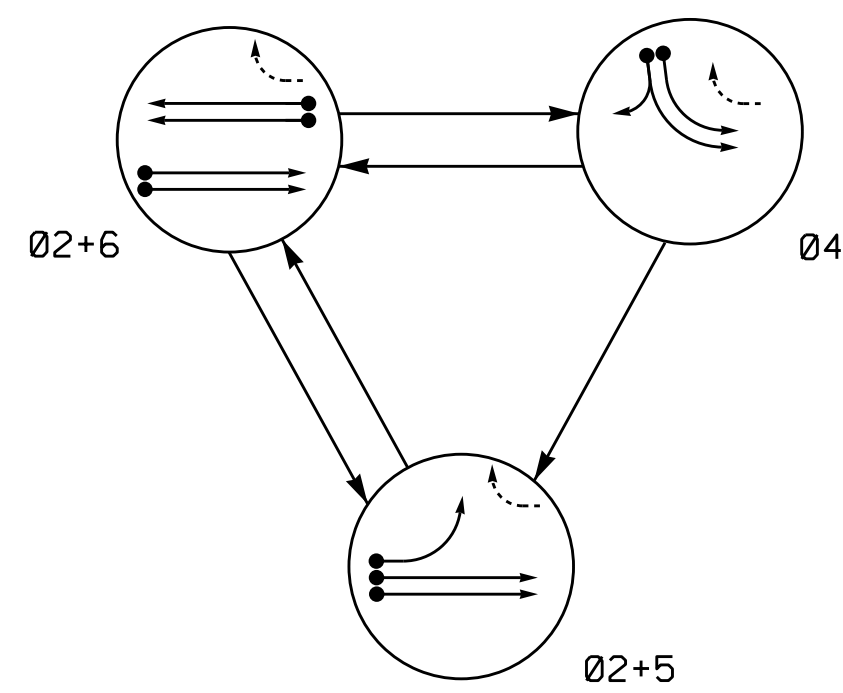
SIG. INVENTORY NO. 09-0186T2

2018-05-20 17:07:48
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 J.peterson

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|------|----|-------|
| | 02+5 | 02+6 | 04 | FLASH |
| 21, 22 | G | G | R | Y |
| 41, 42, 43 | R | R | G | R |
| 51 | - | - | - | - |
| 61, 62 | R | G | R | Y |

ALTERNATE PHASING TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|------|----|-------|
| | 02+5 | 02+6 | 04 | FLASH |
| 21, 22 | G | G | R | Y |
| 41, 42, 43 | R | R | G | R |
| 51 | - | - | - | - |
| 61, 62 | R | G | R | Y |

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

| LOOP/ZONE | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | DETECTOR PROGRAMMING | | | | | | | |
|-----------|-----------|----------------------------|-------|----------|----------------------|---------|-----------|--------------|------------|-------------|----------|---|
| | | | | | PHASE | CALLING | EXTENSION | STRETCH TIME | DELAY TIME | LOOP SYSTEM | NEW CARD | |
| 2A* | 6X6 | 70 | * | - | 2 | Y | Y | - | - | - | - | Y |
| 2B* | 6X6 | 70 | * | - | 2 | Y | Y | - | - | - | - | Y |
| 4A | 6X40 | 0 | 2-4-2 | Y | 4 | Y | Y | - | - | 5 | - | Y |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | - | 15 | - | - |
| 5A* | 6X40 | 0 | * | Y | 5 | Y | Y | - | - | 15@ | - | Y |
| 6A | 6X6 | 70 | 4 | - | 6 | Y | Y | - | - | - | - | - |
| 6B | 6X6 | 70 | 4 | Y | 6 | Y | Y | - | - | - | - | - |

@ Disable Delay During Alternate Phasing Operation.
 # Disable Phase Call For Loop During Alternate Phasing Operation.
 * Video Detection Zone.

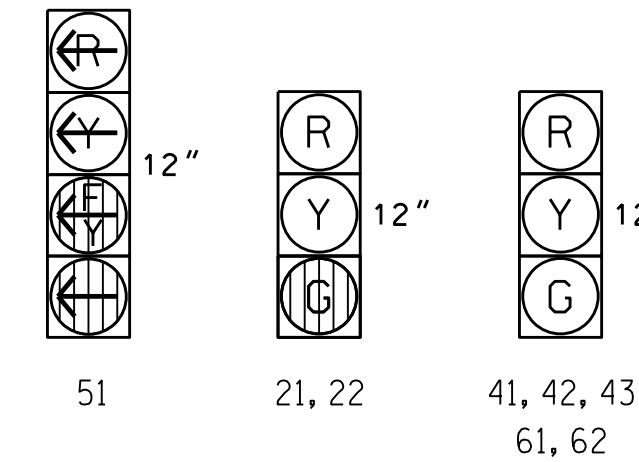
PHASING DIAGRAM DETECTION LEGEND

- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ←- - -> PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

All Heads L.E.D.

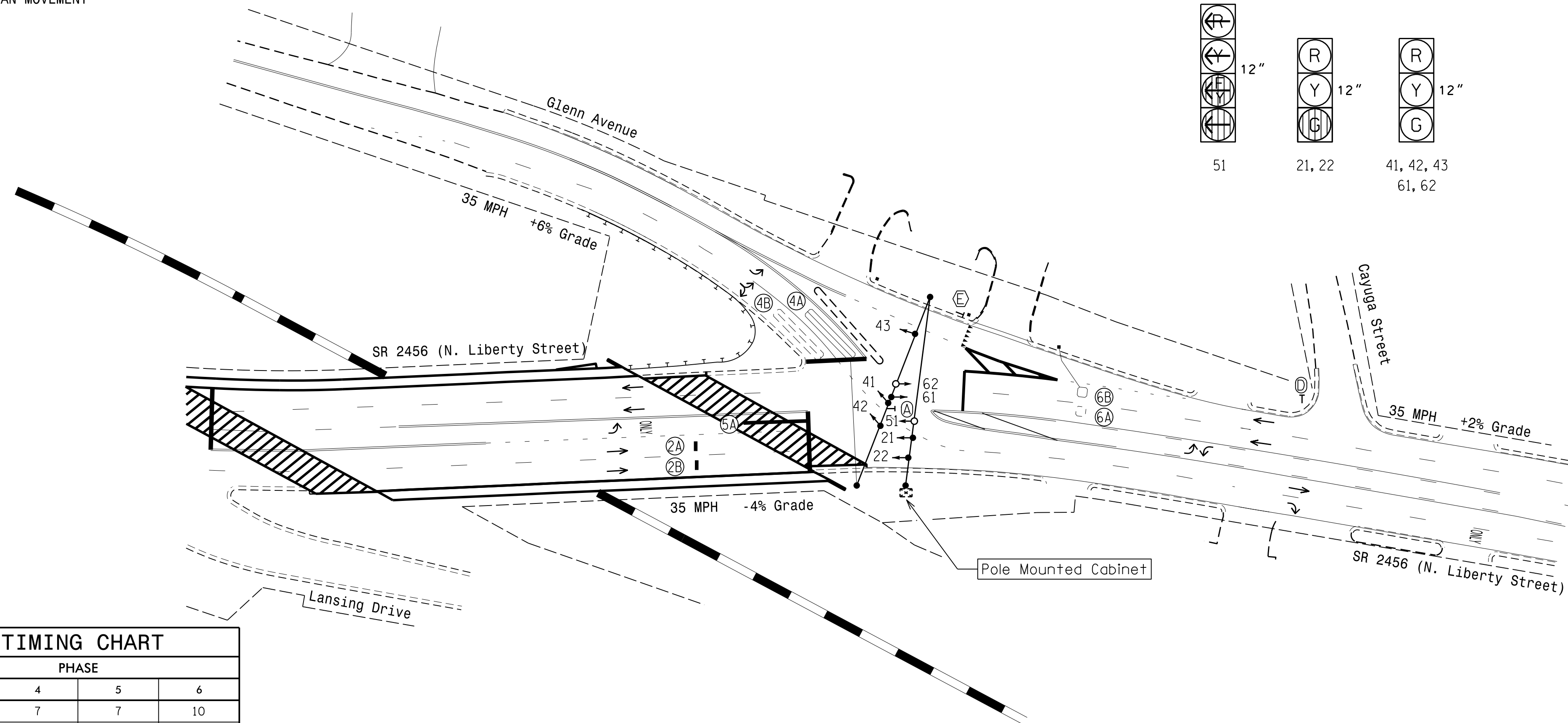
(G) Denotes Louver



3 Phase Fully Actuated (Winston-Salem Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Maintain (ON or OFF) TOD late night flash based on existing programming for this location.
- Phase 5 may be lagged.
- Reposition existing signal heads number 41, 42, 61 and 62.
- Tether signal heads number 21, 22, and 51.
- Set all detector units to presence mode.
- Program controller to operate using FYA compact mode.
- This intersection features a video detection system. Shown locations of optical detectors are conceptual only.
- 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 | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Sign |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ● Signal Pole with Sidewalk Guy |
| □ Inductive Loop Detector | □ Inductive Loop Detector |
| □ Controller & Cabinet | □ Controller & Cabinet |
| □ Junction Box | □ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A Right of Way | --- Right of Way |
| → Directional Arrow | → Directional Arrow |
| ● Construction Zone Drums | ● Construction Zone Drums |
| ■ Construction Zone | ■ Construction Zone |
| N/A Guardrail | --- Guardrail |
| N/A Railroad Tracks | --- Railroad Tracks |
| Video Detection Area | Video Detection Area |
| (A) No U-Turn Sign (R3-4) | (A) No U-Turn Sign (R3-4) |
| (D) "STOP" Sign (R1-1) | (D) "STOP" Sign (R1-1) |
| (E) "YIELD" Sign (R1-2) | (E) "YIELD" Sign (R1-2) |

OASIS 2070 TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|------------|-----|-----|------------|
| | 2 | 4 | 5 | 6 |
| Min Green 1 * | 10 | 7 | 7 | 10 |
| Extension 1 * | 3.0 | 2.0 | 2.0 | 3.0 |
| Max Green 1 * | 45 | 25 | 25 | 45 |
| Yellow Clearance | 4.1 | 3.0 | 3.0 | 4.1 |
| Red Clearance | 2.0 | 3.2 | 2.3 | 2.0 |
| Red Revert | 2.0 | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - | - |
| Don't Walk 1 | - | - | - | - |
| Seconds Per Actuation * | - | - | - | - |
| Max Variable Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Recall Mode | MIN RECALL | - | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | - | YELLOW |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | ON | ON | ON | ON |

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

Signal Upgrade Temporary Design 3 (TMP Phase I, Detail 3)

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

SR 2456 (N. Liberty Street) at Glenn Avenue

Divison 9 Forsyth County Winston-Salem

PLAN DATE: November 2017 REVIEWED BY:

PREPARED BY: I. O. Umzurike REVIEWED BY:

SCALE: 1" = 50'

REVISIONS: INIT. DATE

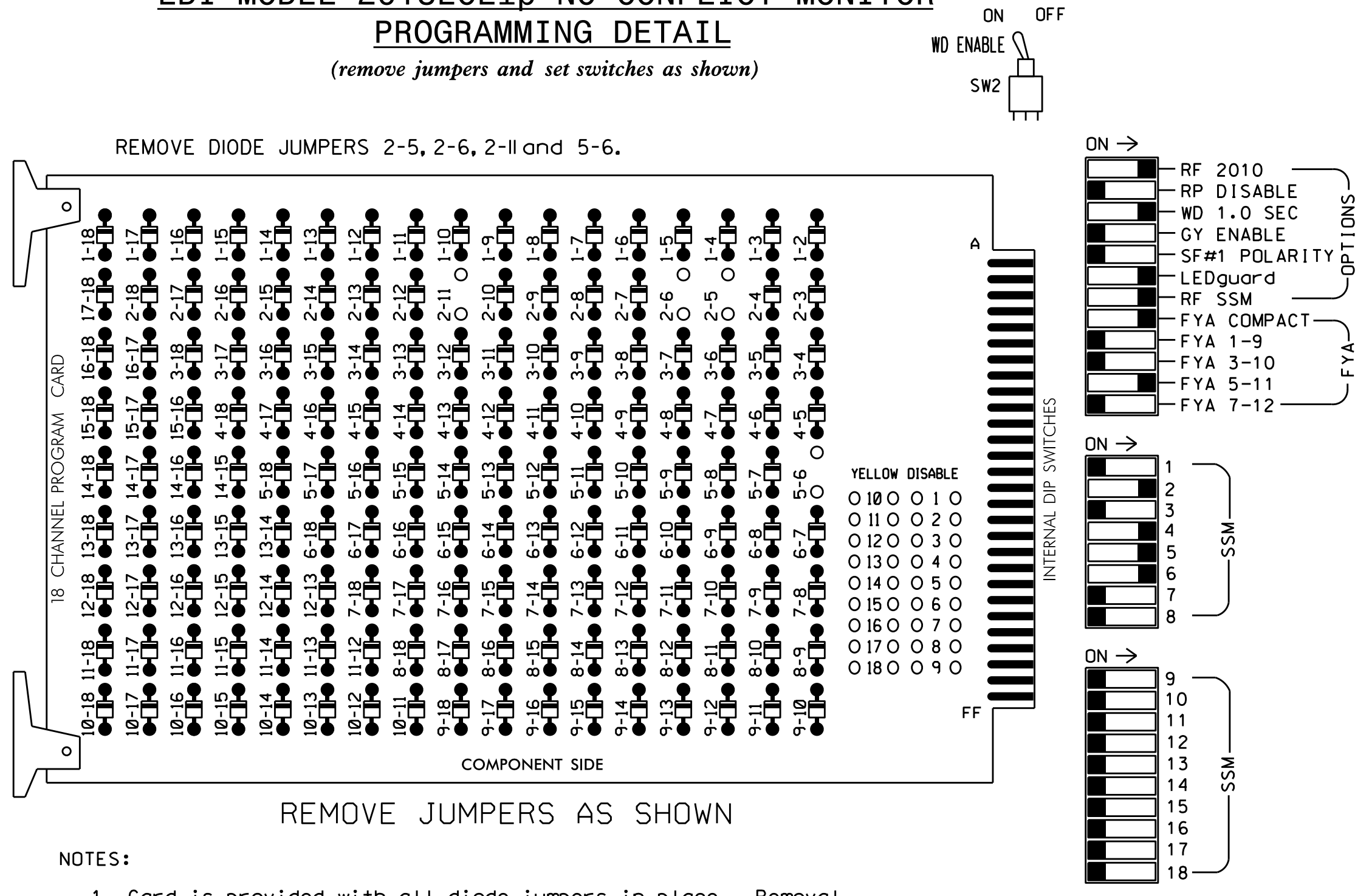
DocuSigned by: Robert J. Ziemba 12/11/2017

SEAL: ROBERT J. ZIEMBA, ENGINEER, SEAL 026486

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIG. INVENTORY NO. 09-0186T3

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL
(remove jumpers and set switches as shown)



- NOTES:**
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Integrate monitor with Ethernet network in cabinet.
 - Special cabinet wiring is required to utilize FYA COMPACT mode. See Ped Yellow Conflict Monitor Wiring Detail on this sheet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Winston-Salem Signal System.

SIGNAL HEAD HOOK-UP CHART

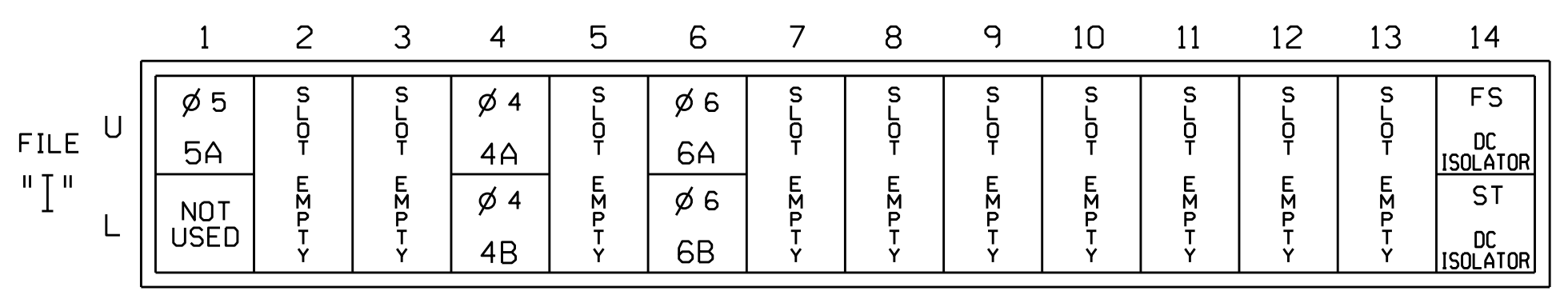
| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------------|----|-------|-------|----|-------------|-------|-----|-------|-------|-------|-----|-------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 11 | 15 | 7 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | OLC | 6 | 5 GRN | 6 PED | 7 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 43 | NU | 51 | 61,62 | 51 | NU | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | | |
| RED ARROW | | | | | | | | 131 | | | | |
| YELLOW ARROW | | | | | | | | 132 | | | | |
| FLASHING YELLOW ARROW | | | | | | | | 133 | | | | |
| GREEN ARROW | | | | | | | | | 120 | | | |
| | | | | | | | | | | * | | |

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

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S5,S7,S8,S9
PHASES USED.....2,4,5,6
OVERLAP "A".....NOT USED
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

INPUT FILE POSITION LAYOUT
(front view)

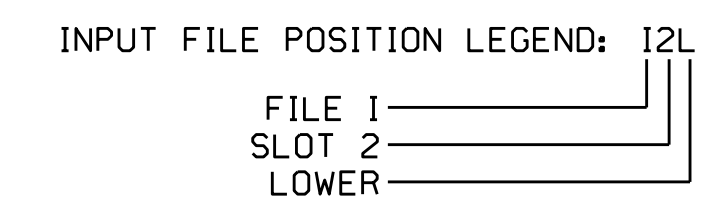


EX.: 1A, 2A, ETC. = LOOP NO.'S
FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|-----------------|---------------|-----------------|---------|----------------------|--------------|------------|------|--------|-----------------|--------------|------------|
| 5A ¹ | TB21-1,2 | I1U | 56 | 18 | 1 | 5 | Y | Y | | | 15 |
| | - | - | 63 | 25 | 32 | 2 | Y | Y | | | |
| | - | - | 56 | 18 | 55 | 5 | Y | Y | | | |
| 4A | TB21-7,8 | I4U | 41 | 3 | 4 | 4 | Y | Y | | | 5 |
| 4B | TB23-7,8 | I4L | 45 | 7 | 14 | 4 | Y | Y | | | 15 |
| 6A | TB21-11,12 | I6U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB23-11,12 | I6L | 44 | 6 | 16 | 6 | Y | Y | | | |

¹Add jumper from I1-F to I5-SP, on rear of input file.



SPECIAL DETECTOR NOTE

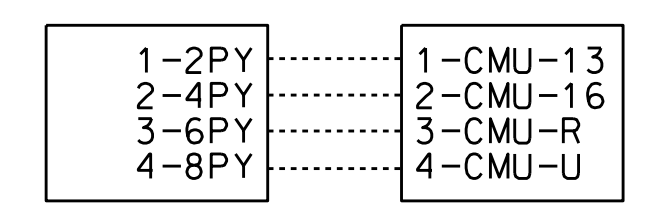
- For zones 2A, 2B and 5A install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.
- For zone 5A detector card placement and slots reserved for wired inputs are typical for a NCDOT installation. Inputs associated with these slots are compatible with time of day instructions located on sheet 3 of this electrical detail.

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

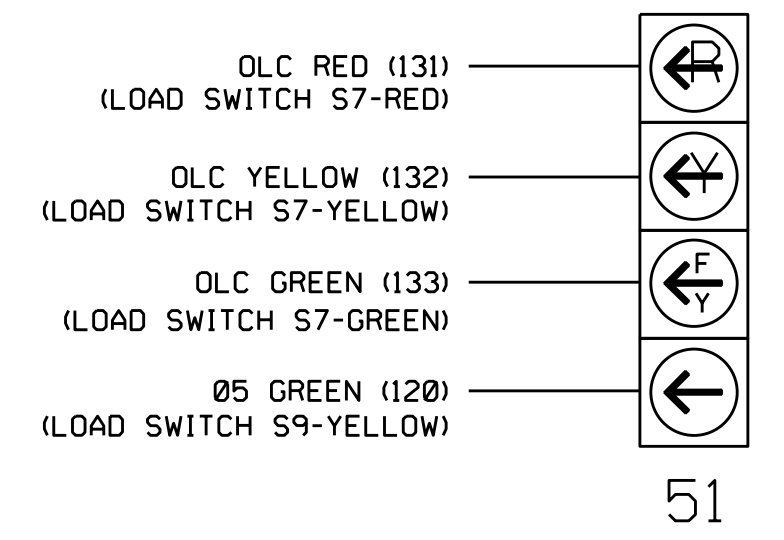
In order to use FYA COMPACT mode with the 2018ECLip-NC Monitor, the cabinet must be wired such that the (unused) Ped Yellow load switch outputs are wired to the conflict monitor as follows: from 6 PY (field term, 120) to chan. 10 green (monitor pin R).

- Follow the instructions below to make the appropriate connections:
- STEP 1: Fold down rear panel of output file.
- STEP 2: Find unused wiring harness from conflict monitor card edge connector (which should be tied and bundled together).
- STEP 3: Find the conductors that correspond to the following conflict monitor card edge pins and solder wire to the appropriate terminal on the rear of the output file as shown below:
- CMU-R _____ 6PY (term. 120)

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

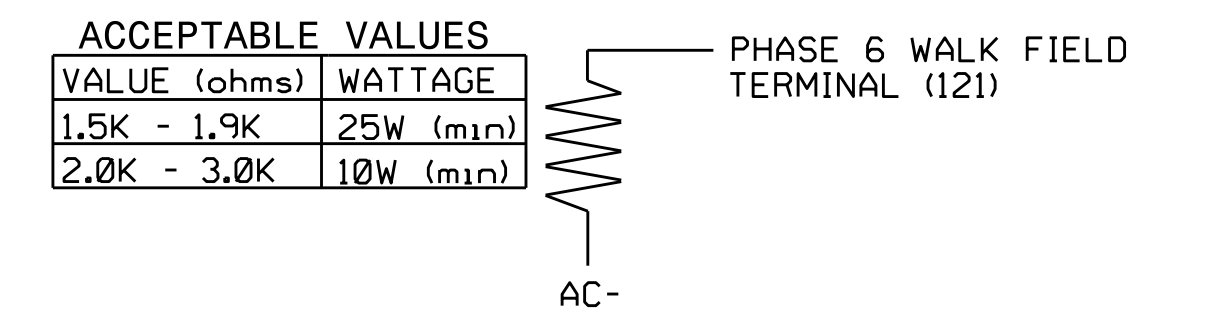


FYA SIGNAL WIRING DETAIL
(wire signal head as shown)



NOTE: The sequence display for signal head 51 require special logic and output remapping. See sheets 2 & 3 for programming instructions.

LOAD RESISTOR INSTALLATION DETAIL
(install resistor as shown below)



Electrical and Programming Details For: SR 2456 (N. Liberty Street) at Glenn Avenue

Division 9 Forsyth County Winston-Salem

PLAN DATE: December 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS: INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

Document Not Considered Final Unless All Signatures Completed

SEAL: KEITH M. MINIS, PROFESSIONAL ENGINEER, 036880

DocuSigned by: Keith M. Minis 12/20/2017

SIG. INVENTORY NO. 09-0186T3

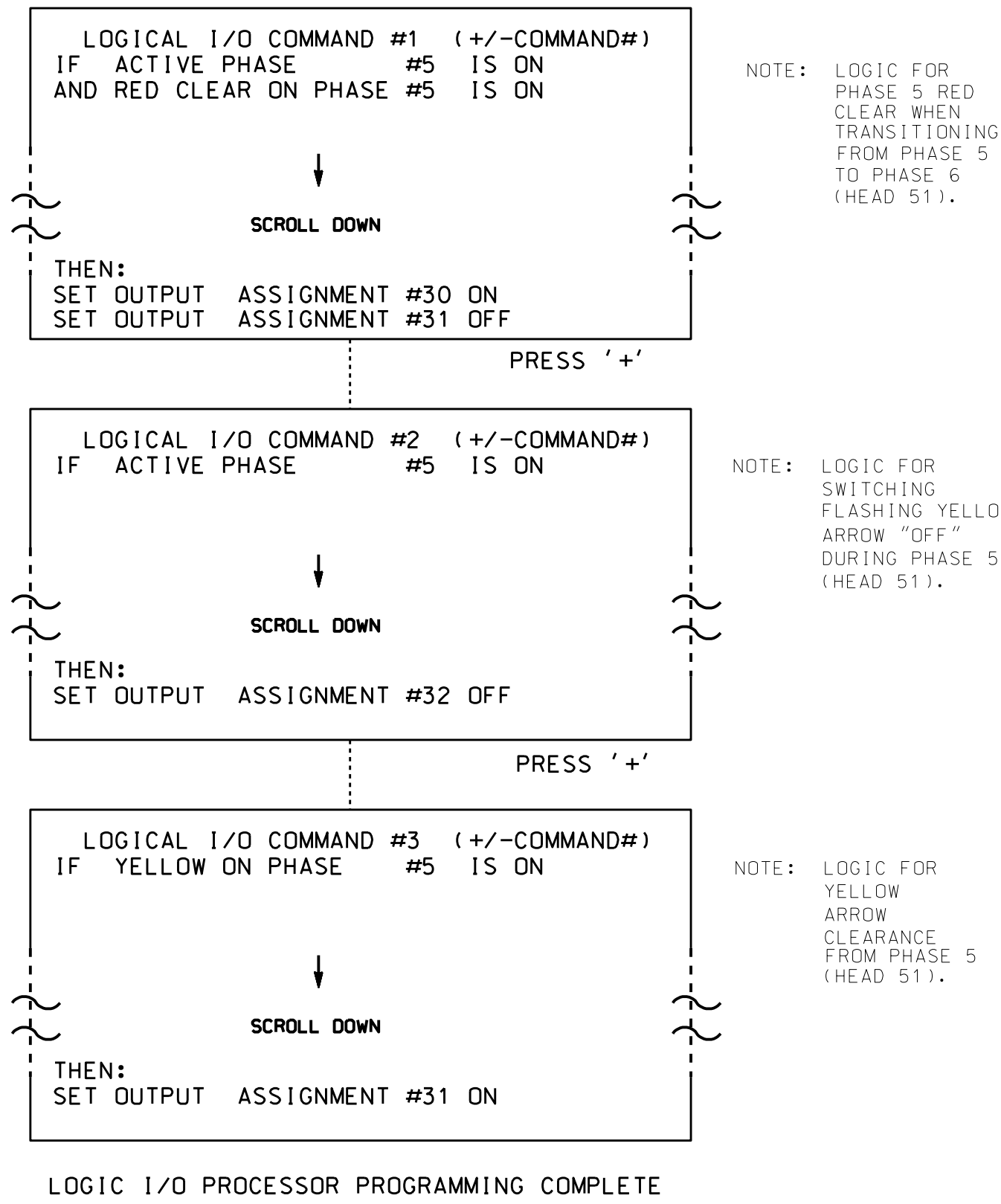
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0186T3
DESIGNED: November 2017
SEALED: 12-11-17
REVISED: N/A

16-Nov-2016 13:19 S:\IT\SIG\115-Signal\work\hgr\oups\G_Mon\Peter.som\090186_smc.ele_20171220.dgn J.peterson

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 and 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



OUTPUT REFERENCE SCHEDULE

OUTPUT 30 = Overlap C Red
OUTPUT 31 = Overlap C Yellow
OUTPUT 32 = Overlap C Green

OUTPUT 34 = Phase 5 Green

Note: All outputs shown above have been remapped. See sheet 3 of this electrical detail.

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

- FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).
PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

- FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).
PRESS 'NEXT' TO ADVANCE TO PAGE 2.

PRESS '+' TWICE

NOTICE
PAGE 2

PAGE 2: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0186T3
DESIGNED: November 2017
SEALED: 12-11-17
REVISED: N/A

Electrical Detail - Temp. 3 (TMP Phase I, Detail 3) - Sheet 2 of 5

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 2456 (N. Liberty Street)
at
Glenn Avenue

Division 9 Forsyth County Winston-Salem

PLAN DATE: December 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

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

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL

DocuSigned by:
Keith M. Mims 12/20/2017
2F80798E6C02465

SIG. INVENTORY NO. 09-0186T3

FYA SIGNAL OUTPUT REMAPPING ASSIGNMENT PROGRAMMING DETAIL FOR LOADSWITCHES S7 & S9 (SIGNAL HEAD 51)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), WITH CURSOR IN "OUTPUT ASSIGNMENT#" POSITION, ENTER "30"

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:32 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....30
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
                
```

```

PAGE:1 C1 PIN:32 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....30
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
                
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT, THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.
ENTER A "Y" FOR VEHICLE OVERLAP.

PAGE:1 C1 PIN:32 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...3
SELECT COLOR(0=RED,1=YEL,2=GRN)...0

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER ENTERING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 31

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:33 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....31
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
                
```

```

PAGE:1 C1 PIN:33 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....31
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
                
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT, THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.
ENTER A "Y" FOR VEHICLE OVERLAP.

PAGE:1 C1 PIN:33 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...3
SELECT COLOR(0=RED,1=YEL,2=GRN)...1

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER ENTERING DATA, THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 32

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:34 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....32
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
                
```

```

PAGE:1 C1 PIN:34 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....32
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
                
```

THE OUTPUT IS SET AS A VEHICLE PHASE BY DEFAULT, THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.
ENTER A "Y" FOR VEHICLE OVERLAP.

PAGE:1 C1 PIN:34 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...3
SELECT COLOR(0=RED,1=YEL,2=GRN)...2

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER ENTERING DATA, THEN 'ESC'.

PRESS "+" TWICE TO REACH OUTPUT 34.

```

PAGE:1 C1 PIN:36 NOT ENABLED
OUTPUT ASSIGNMENT #.....34
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
                
```

```

PAGE:1 C1 PIN:36 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....34
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
                
```

THE OUTPUT IS SET AS "NOT ENABLED" BY DEFAULT, THIS "Y" WILL REMAIN UNTIL THE OUTPUT IS CHANGED.
ENTER A "Y" FOR VEHICLE PHASE.

PAGE:1 C1 PIN:36 NOT ENABLED
SELECT VEHICLE PHASE (1-16)...5
SELECT COLOR(0=RED,1=YEL,2=GRN)...2

WHEN A 'Y' IS ENTERED FOR 'VEHICLE PHASE' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER ENTERING DATA, THEN 'ESC'.

OUTPUT PROGRAMMING COMPLETE


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0186T3
DESIGNED: November 2017
SEALED: 12-11-17
REVISED: N/A

16-Nov-2016 13:21
 S:\IT\ASIS\15_Sig\mol\work\hgr\oupa\sig_Mon#eter\smc\09186_smc.e_20171220.dgn
 J.peterson

Electrical Detail - Temp. 3 (TMP Phase I, Detail 3) - Sheet 3 of 5

Electrical AND PROGRAMMING DETAILS FOR:

Prepared In the Office of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 2456 (N. Liberty Street) at Glenn Avenue

Division 9 Forsyth County Winston-Salem

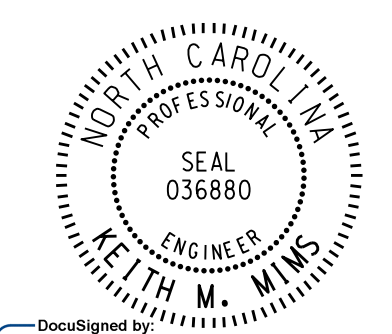
PLAN DATE: December 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



Keith M. Minus
2007080603405
12/20/2017
DATE

SIG. INVENTORY NO. 09-0186T3

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.

2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #25 (DETECTOR 32) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #18 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 25 IS REACHED.

```

PAGE: 2 C1 PIN:63 VEHICLE DETECTOR
INPUT ASSIGNMENT #.....25
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....Y
VEHICLE DETECTOR (1-64).....32
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

ENTER A 'Y' FOR NOT ENABLED

DEFAULT DETECTOR NUMBER WILL REMAIN UNTIL 'NOT ENABLED' IS ENTERED.

(LOOP 5A - PHASE 2)

```

PAGE: 2 C1 PIN:63 NOT ENABLED
INPUT ASSIGNMENT #.....25
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....Y
VEHICLE DETECTOR (1-64).....
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

PRESS '+' TO ADVANCE TO INPUT 18

```

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR
INPUT ASSIGNMENT #.....18
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....1
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

ENTER '55' TO REASSIGN THE VEHICLE DETECTOR FOR THIS INPUT

(LOOP 5A - PHASE 5)

```

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR
INPUT ASSIGNMENT #.....18
DEBOUNCE TIME (0-25.5 SEC).....0.5
DELAY TIME (0-25.5 SEC).....0.0
HOLD-OVER TIME (0-25.5 SEC).....0.0
ASSIGNMENT SELECTION:
NOT ENABLED (Y/N).....
VEHICLE DETECTOR (1-64).....55
PEDESTRIAN DETECTOR (1-16).....
ALTERNATE PED DETECTOR (1-16).....
PREEMPT (1-10).....
INVERTED PREEMPT (1-10).....
STOP TIME (Y/N).....
FLASH SENSE (Y/N).....
DOOR OPEN (Y/N).....
MANUAL CONTROL ENABLE (Y/N).....
MANUAL CONTROL ADVANCE (Y/N).....
SPECIAL FUNCTION ALARM (1-8).....
TOD HOUR SYNCHRONIZATION (0-23).....
FORCE OFF RING (1-4).....
HOLD PHASES (1-16).....
PLAN (65=FLSH,66=FREE)... OFFSET#...
CHANGE PHASE SEQUENCE PAGE (1-12)...
CHANGE PHASE TIMING PAGE (1-4)...
CHANGE PHASE CONTROL PAGE (1-4)...
CHANGE OVERLAP CONTROL PAGE (1-4)...
CHANGE INPUT PAGE (1-4)...
CHANGE OUTPUT PAGE (1-4)...
OVERRIDE PHASE CONTROL FUNCTION (Y)...
    
```

PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 5A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.

```

VEHICLE DETECTOR #55 SETTINGS (+,-,1-64)
SETTING: (Y/N)
ENABLE DETECTOR.....N
ENABLE LOGGING.....N
ENABLE DIAGNOSTICS.....N
SPEED TRAP.....N
CALL DETECTOR.....Y
EXTENSION DETECTOR.....Y
MODE 2 STOP BAR.....N
SWITCHING DETECTOR.....N
DUPLICATING DETECTOR.....N
ENABLE FULL TIME DELAY.....N
IF FAILED, SET MIN RECALL?.....N
IF FAILED, SET MAX1 RECALL?.....N
IF FAILED, SET MAX2 RECALL?.....N
PHASE# ;12345678910111213141516
PHASES ASSIGNED ;
SWITCH/DUPLICATE;
LOOP SIZE (0-255 FT).....6
SPEED TRAP DISTANCE (0-255 FT).....0
STOP BAR TIME (0-255 SEC).....0
STRETCH (0-25.5 SEC).....0.0
DELAY (0-255 SEC).....0.0
MAX CALLS/MIN (0-255).....255
MIN CALLS/DIAGNOSTIC PERIOD (0-255).....0
MAX OCCUPANCY (0-100%).....100
EXTENSION DISABLE TIME (0-255 SEC).....0
QUEUE MAX OCCUPANCY TIME (0-255).....0
QUEUE GAP RESET TIME (0-25.5).....0.0
PREEMPTION INDEX FOR QUEUE (0-10).....0
    
```

ENTER 'Y' FOR ENABLE DETECTOR

ENTER '5' FOR PHASES ASSIGNED

ENSURE DELAY IS '0'

```

VEHICLE DETECTOR #55 SETTINGS (+,-,1-64)
SETTING: (Y/N)
ENABLE DETECTOR.....Y
ENABLE LOGGING.....N
ENABLE DIAGNOSTICS.....N
SPEED TRAP.....N
CALL DETECTOR.....Y
EXTENSION DETECTOR.....Y
MODE 2 STOP BAR.....N
SWITCHING DETECTOR.....N
DUPLICATING DETECTOR.....N
ENABLE FULL TIME DELAY.....N
IF FAILED, SET MIN RECALL?.....N
IF FAILED, SET MAX1 RECALL?.....N
IF FAILED, SET MAX2 RECALL?.....N
PHASE# ;12345678910111213141516
PHASES ASSIGNED ; X
SWITCH/DUPLICATE;
LOOP SIZE (0-255 FT).....6
SPEED TRAP DISTANCE (0-255 FT).....0
STOP BAR TIME (0-255 SEC).....0
STRETCH (0-25.5 SEC).....0.0
DELAY (0-255 SEC).....0.0
MAX CALLS/MIN (0-255).....255
MIN CALLS/DIAGNOSTIC PERIOD (0-255).....0
MAX OCCUPANCY (0-100%).....100
EXTENSION DISABLE TIME (0-255 SEC).....0
QUEUE MAX OCCUPANCY TIME (0-255).....0
QUEUE GAP RESET TIME (0-25.5).....0.0
PREEMPTION INDEX FOR QUEUE (0-10).....0
    
```

DETECTOR PROGRAMMING COMPLETE

NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

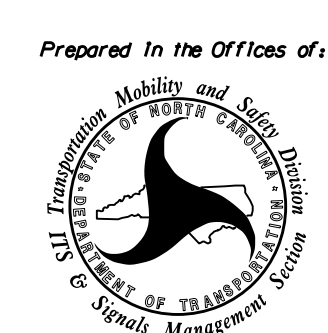
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0186T3
 DESIGNED: November 2017
 SEALED: 12-11-17
 REVISED: N/A

16-1116-2016 13:22
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 J. Peterson

Electrical Detail - Temp. 3 (TMP Phase I, Detail 3) - Sheet 4 of 5

Electrical and Programming Details For:

Prepared In the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 2456 (N. Liberty Street) at Glenn Avenue

Division 9 Forsyth County Winston-Salem

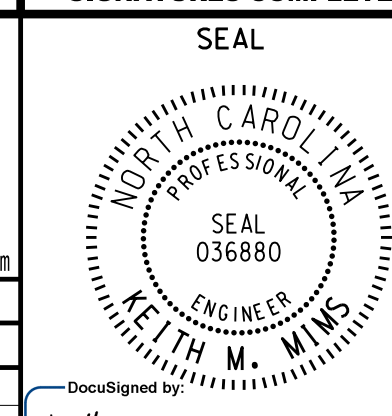
PLAN DATE: December 2017 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

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

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SEAL



DocuSigned by: Keith M. Mims 12/20/2017 2:07:08 PM EST

SIG. INVENTORY NO. 09-0186T3

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

| <u>PHASING</u> | <u>INPUTS PAGE</u> | <u>OVERLAPS PAGE</u> |
|---|--------------------|----------------------|
| ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u> | 1 | 1 |
| ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u> | 2 | 2 |

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY PAGE CHANGE EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN PAGE CHANGE EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING PAGE CHANGE SUMMARY

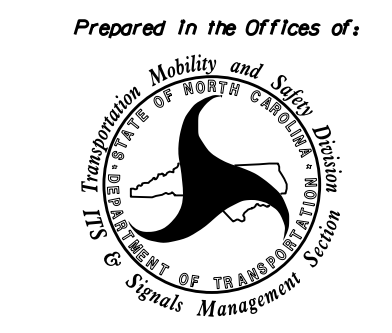
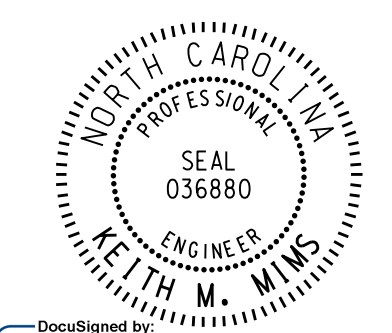
THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for head 51 to run protected turns only.

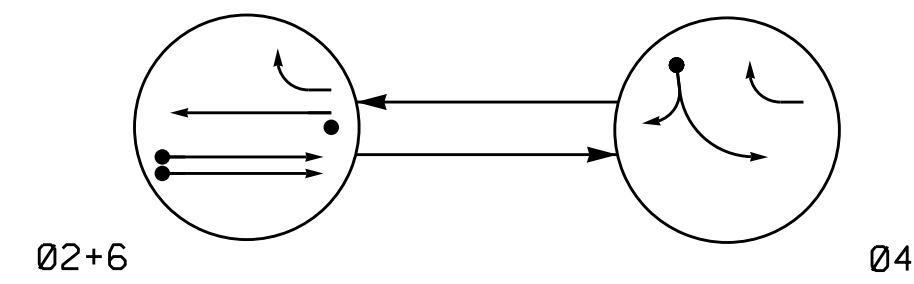
INPUTS PAGE 2: Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0186T3
 DESIGNED: November 2017
 SEALED: 12-11-17
 REVISED: N/A

Electrical Detail - Temp. 3 (TMP Phase I, Detail 3) - Sheet 5 of 5

| | | |
|--|---|--|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529 | SR 2456 (N. Liberty Street) at Glenn Avenue Division 9 Forsyth County Winston-Salem PLAN DATE: December 2017 REVIEWED BY: PREPARED BY: James Peterson REVIEWED BY: REVISIONS INIT. DATE | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL  DocuSigned by: Keith M. Mins 12/20/2017 2F8078E85CD3445 DATE SIG. INVENTORY NO. 09-0186T3 |
|--|---|--|

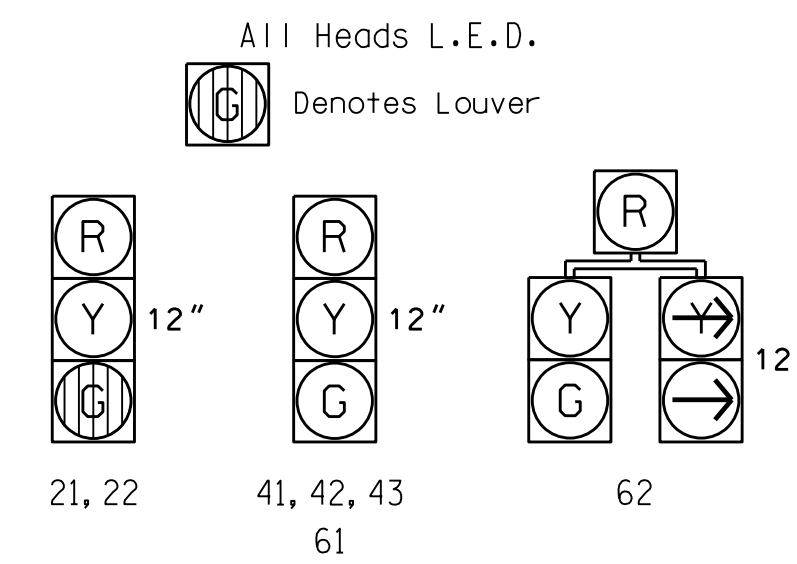
PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND
 ←●→ DETECTED MOVEMENT
 ←○→ UNDETECTED MOVEMENT (OVERLAP)
 ←- - - UNSIGNALIZED MOVEMENT
 ←- - -> PEDESTRIAN MOVEMENT

| SIGNAL FACE | PHASE | | |
|-------------|---------|-----|-------|
| | Ø 2 + 6 | Ø 4 | FLASH |
| 21, 22 | G | R | Y |
| 41, 42, 43 | R | G | R |
| 61 | G | R | Y |
| 62 | G | R | Y |

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

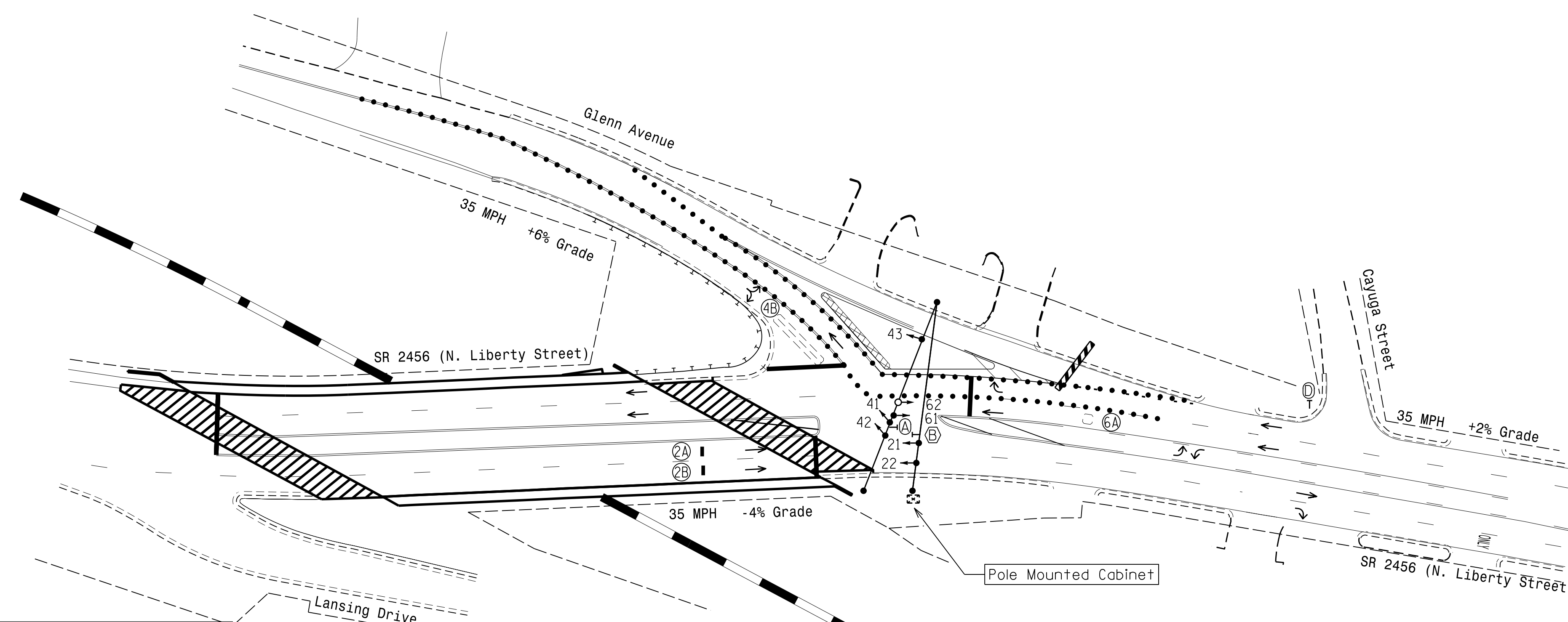
| LOOP | INDUCTIVE LOOPS | | | DETECTOR PROGRAMMING | | | | SYSTEM LOOP | NEW CARD | |
|------|-----------------|----------------------------|-------|----------------------|---------|-----------|--------------|-------------|----------|------------|
| | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | PHASE | CALLING | EXTENSION | STRETCH TIME | | | DELAY TIME |
| 2A* | 6X6 | 70 | * | - | 2 | Y | Y | - | - | Y |
| 2B* | 6X6 | 70 | * | - | 2 | Y | Y | - | - | Y |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Y | Y | - | 5 | - |
| 6A | 6X6 | 70 | 5 | - | 6 | Y | Y | - | - | - |

* Video Detection Zone

2 Phase Fully Actuated (Winston-Salem Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Maintain (ON or OFF) TOD late night flash based on existing programming for this location.
- Reposition existing signal head numbers 41, 42, 61, and 62.
- Tether signal heads number 21 and 22.
- Set all detector units to presence mode.
- This intersection features a video detection system. Shown locations of optical detectors are conceptual only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



| FEATURE | PHASE | | |
|-------------------------|------------|-----|------------|
| | 2 | 4 | 6 |
| Min Green 1 * | 10 | 7 | 10 |
| Extension 1 * | 3.0 | 2.0 | 3.0 |
| Max Green 1 * | 45 | 25 | 45 |
| Yellow Clearance | 4.1 | 3.0 | 3.7 |
| Red Clearance | 1.5 | 3.3 | 2.6 |
| Red Revert | 2.0 | 2.0 | 2.0 |
| Walk 1 * | - | - | - |
| Don't Walk 1 | - | - | - |
| Seconds Per Actuation * | - | - | - |
| Max Variable Initial * | - | - | - |
| Time Before Reduction * | - | - | - |
| Time To Reduce * | - | - | - |
| Minimum Gap | - | - | - |
| Recall Mode | MIN RECALL | - | MIN RECALL |
| Vehicle Call Memory | YELLOW | - | YELLOW |
| Dual Entry | - | - | - |
| Simultaneous Gap | ON | ON | ON |

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

| PROPOSED | EXISTING |
|--|---|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ⊥ Sign | ⊥ N/A |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ N/A |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ● Signal Pole with Sidewalk Guy |
| □ Inductive Loop Detector | □ Inductive Loop Detector |
| □ Controller & Cabinet | □ Controller & Cabinet |
| □ Junction Box | □ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A Right of Way | --- Right of Way |
| → Directional Arrow | → Directional Arrow |
| ● Construction Zone Drums | ● Construction Zone Drums |
| ■ Construction Zone | ■ Construction Zone |
| ○ Metal Strain Pole | ○ Metal Strain Pole |
| N/A Guardrail | --- Guardrail |
| ○ Video Detection Area | ○ Video Detection Area |
| (A) No U-Turn Sign (R3-4) | (A) No U-Turn Sign (R3-4) |
| (B) No U-Turn/No Left Turn Sign (R3-18) | (B) No U-Turn/No Left Turn Sign (R3-18) |
| (D) "STOP" Sign (R1-1) | (D) "STOP" Sign (R1-1) |

Signal Upgrade Temporary Design 4 (TMP Phase II)

SR 2456 (N. Liberty Street) at Glenn Avenue

Divison 9 Forsyth County Winston-Salem

PLAN DATE: November 2017 REVIEWED BY: [Signature]

PREPARED BY: I. O. Umzurike REVIEWED BY: [Signature]

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 1" = 50'

REVISIONS: [Table]

INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: ROBERT J. ZIEGLER, PROFESSIONAL ENGINEER, No. 026486

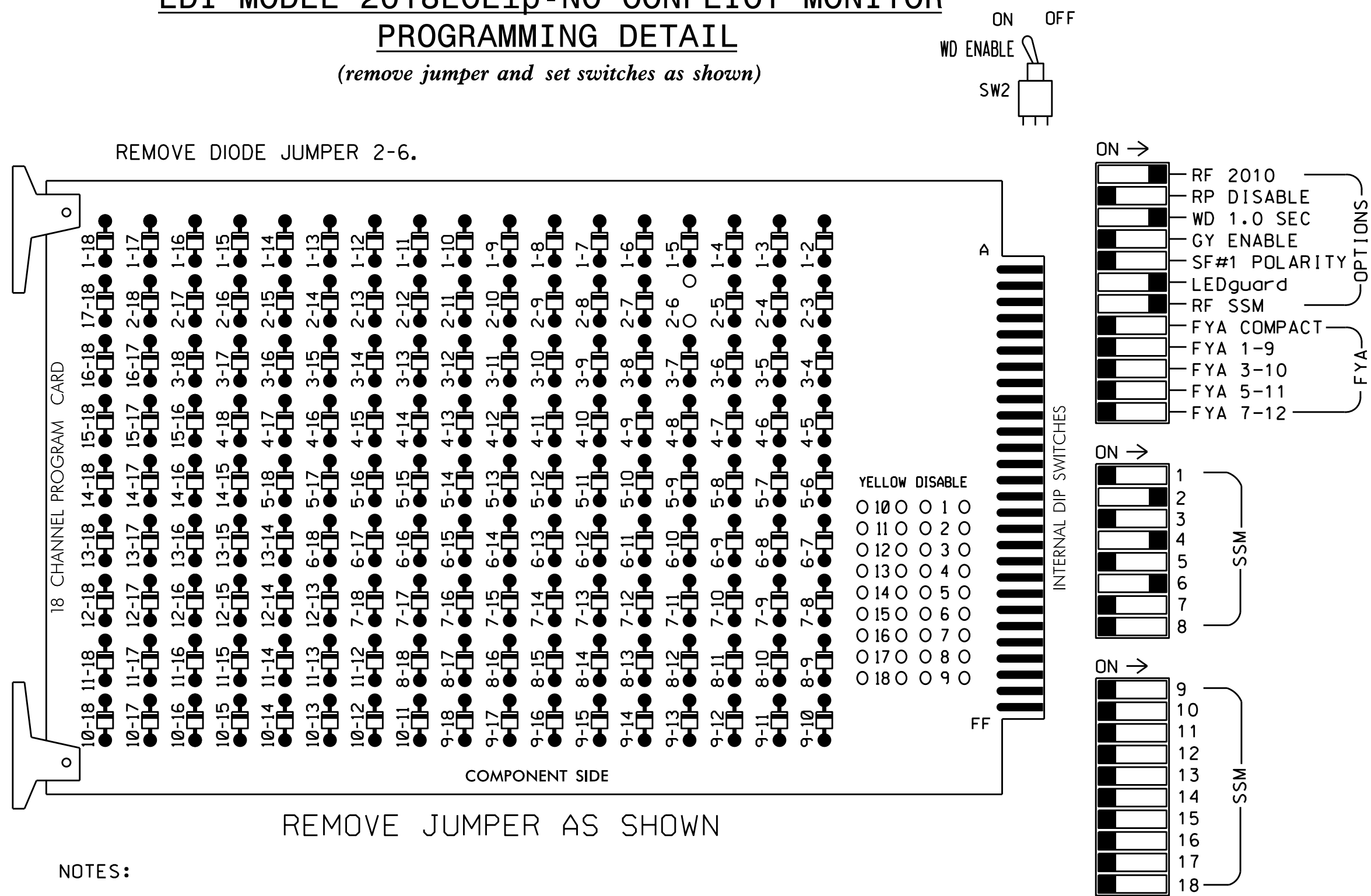
12/11/2017

SIG. INVENTORY NO. 09-018614

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 cz:lemo

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Winston-Salem Signal System.

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------|----|-------|-------|----|-------------|-------|----|-------|-------|-----|-----|-------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 43 | NU | NU | 61,62 | NU | NU | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | | |
| GREEN | | | | | 103 | | | | | | | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | 130 | | | | | | 136 | | | | |

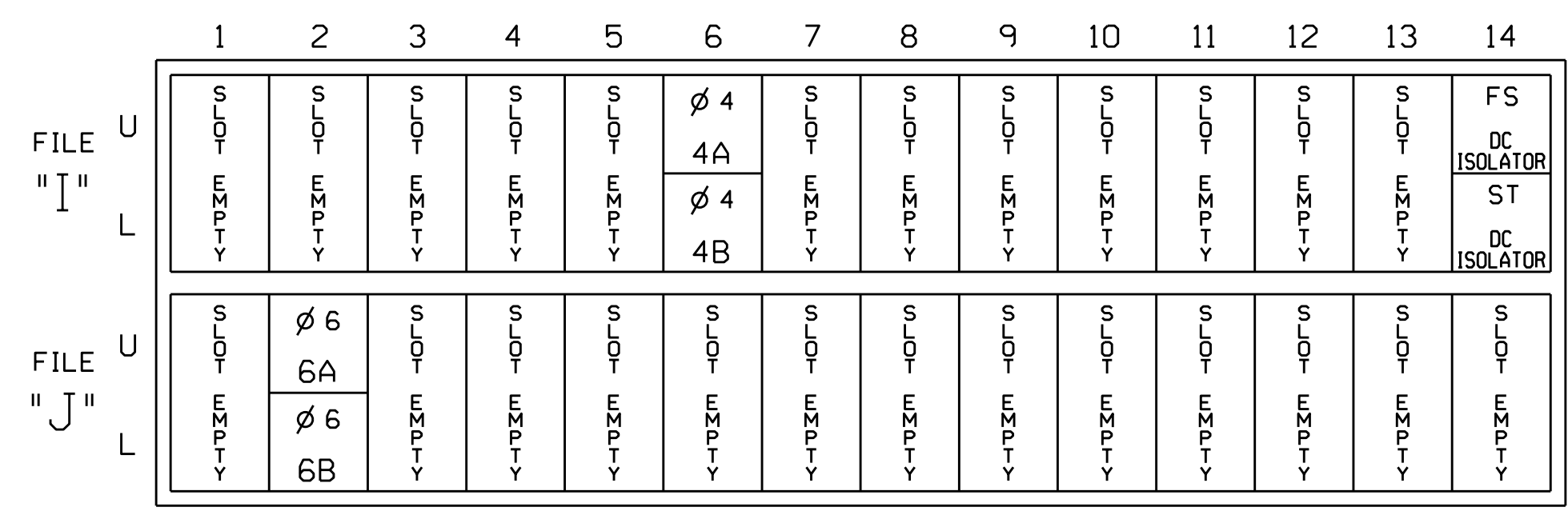
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8
 PHASES USED.....2,4,6
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



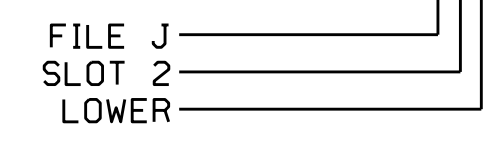
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|----------|---------------|-----------------|---------|----------------------|--------------|------------|------|--------|-----------------|--------------|------------|
| 4A | TB4-9,10 | I6U | 41 | 3 | 4 | 4 | Y | Y | | | |
| 4B | TB4-11,12 | I6L | 45 | 7 | 14 | 4 | Y | Y | | | 5 |
| 6A | TB3-5,6 | J2U | 40 | 2 | 6 | 6 | Y | Y | | | |
| 6B | TB3-7,8 | J2L | 44 | 6 | 16 | 6 | Y | Y | | | |

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0186
 DESIGNED: November 2017
 SEALED: 12-11-17
 REVISED: N/A

SPECIAL DETECTOR NOTE

For zones 2A and 2B 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.

Electrical Detail - Final

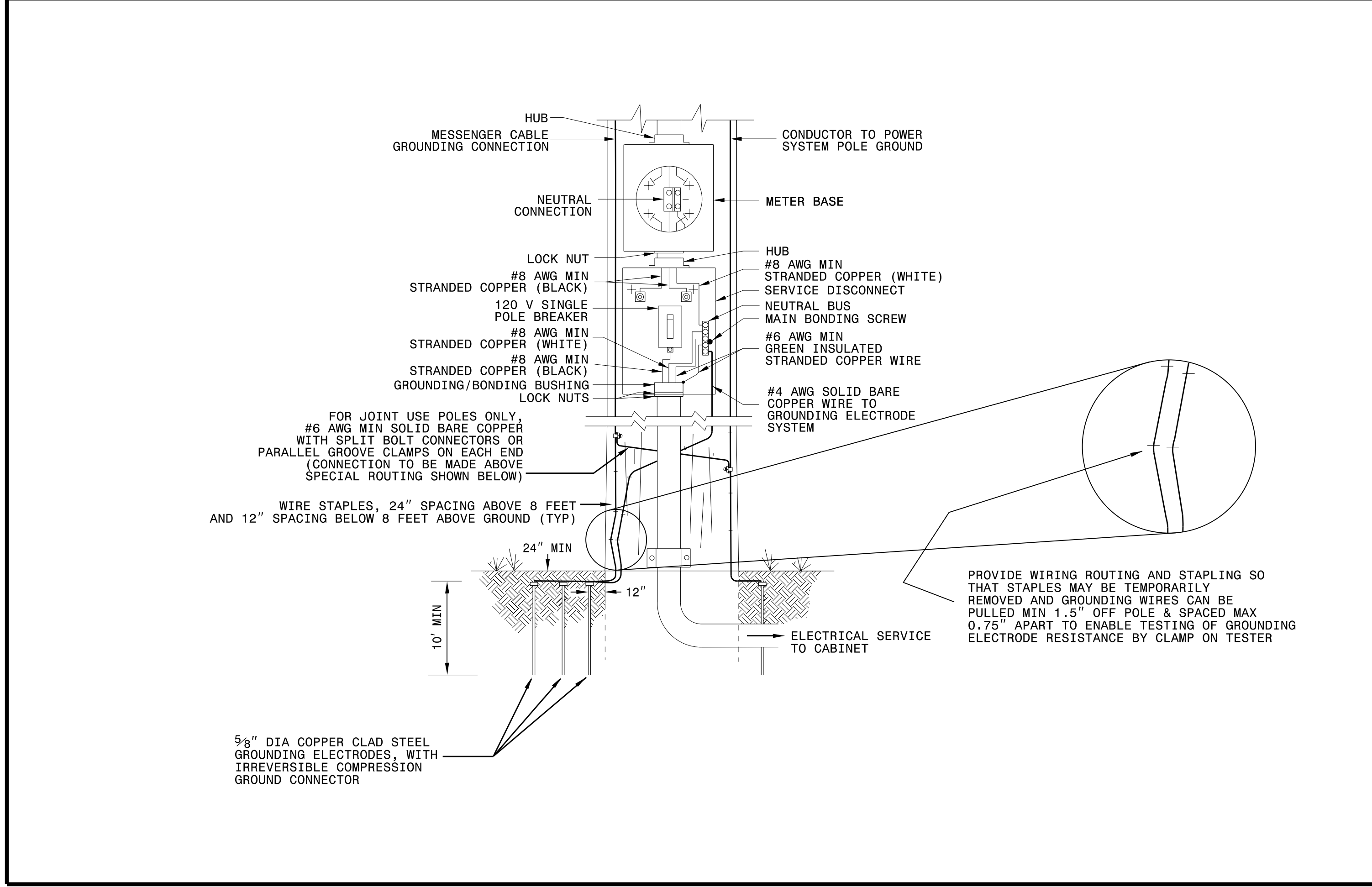
| | | | |
|--|---|--|--|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529 | SR 2456 (N. Liberty Street) at Glenn Avenue | | SEAL KEITH M. MINIS ENGINEER |
| | Division 9 PLAN DATE: December 2017 PREPARED BY: James Peterson | Forsyth County REVIEWED BY: REVIEWED BY: | |

08-06-2017 09:17
 S:\IT\SAS\15\Sig\ed\work\hgr\ed\sig\Mon\Peter.som\090186_smc.ele_20171220.dgn
 J.peterson

1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR **ELECTRICAL SERVICE GROUNDING** GROUNDING AND BONDING

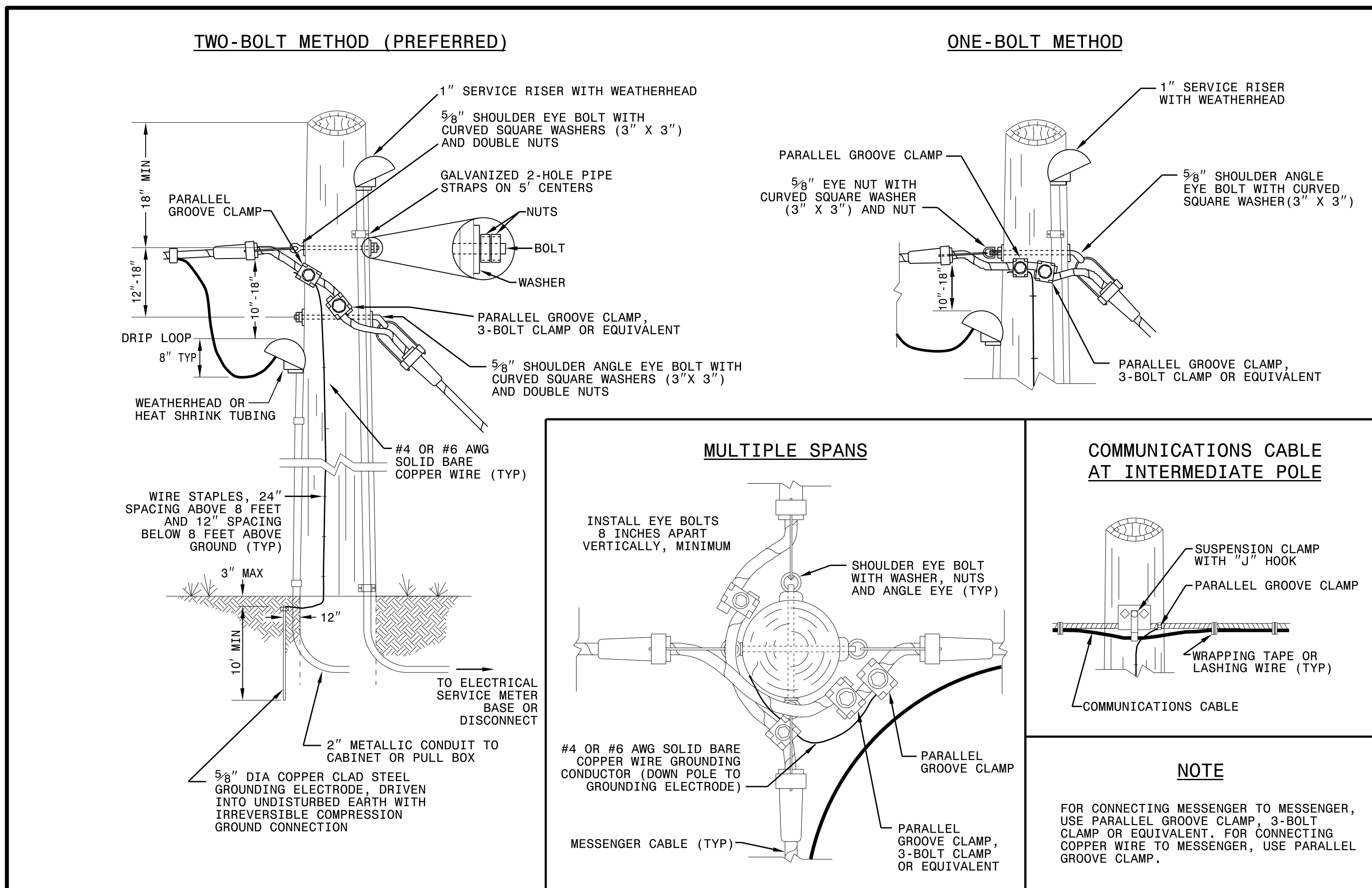
SHEET 1 OF 1 **1700D01**



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR **WOOD POLES** METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1 **1720D01**



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

See Plate for Title

Prepared in the Offices of:

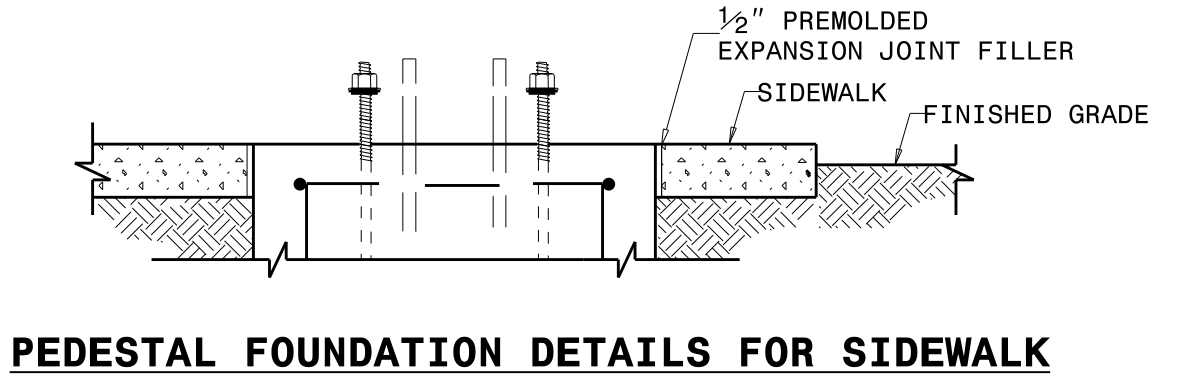
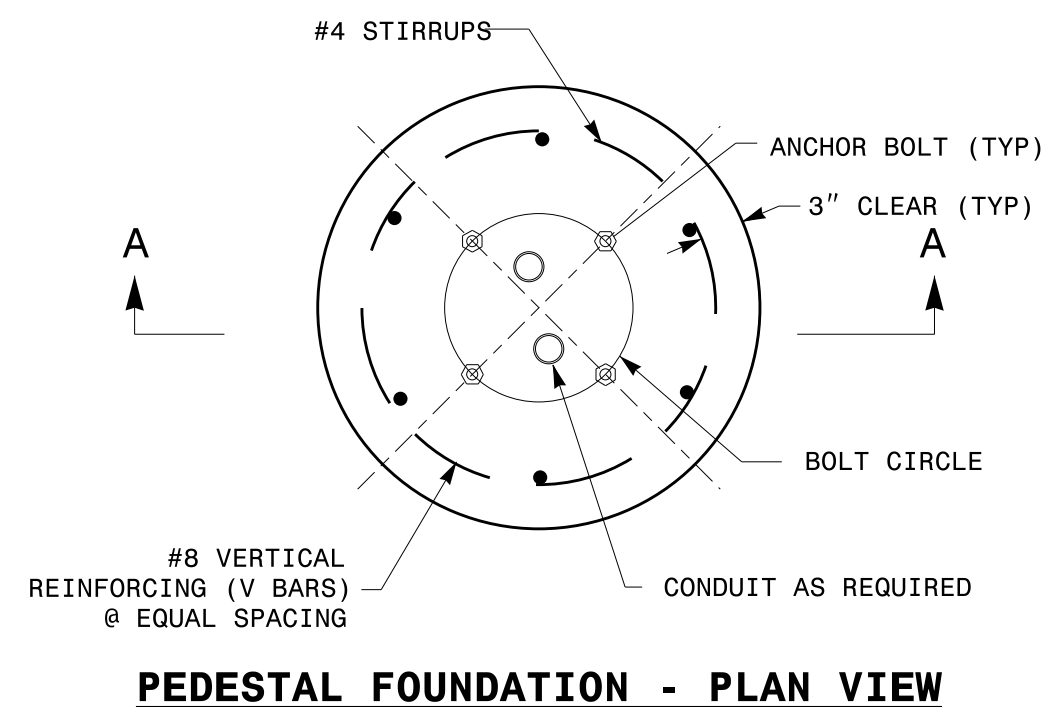
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DocuSigned by: **Mohd Aslami** 10/11/2017

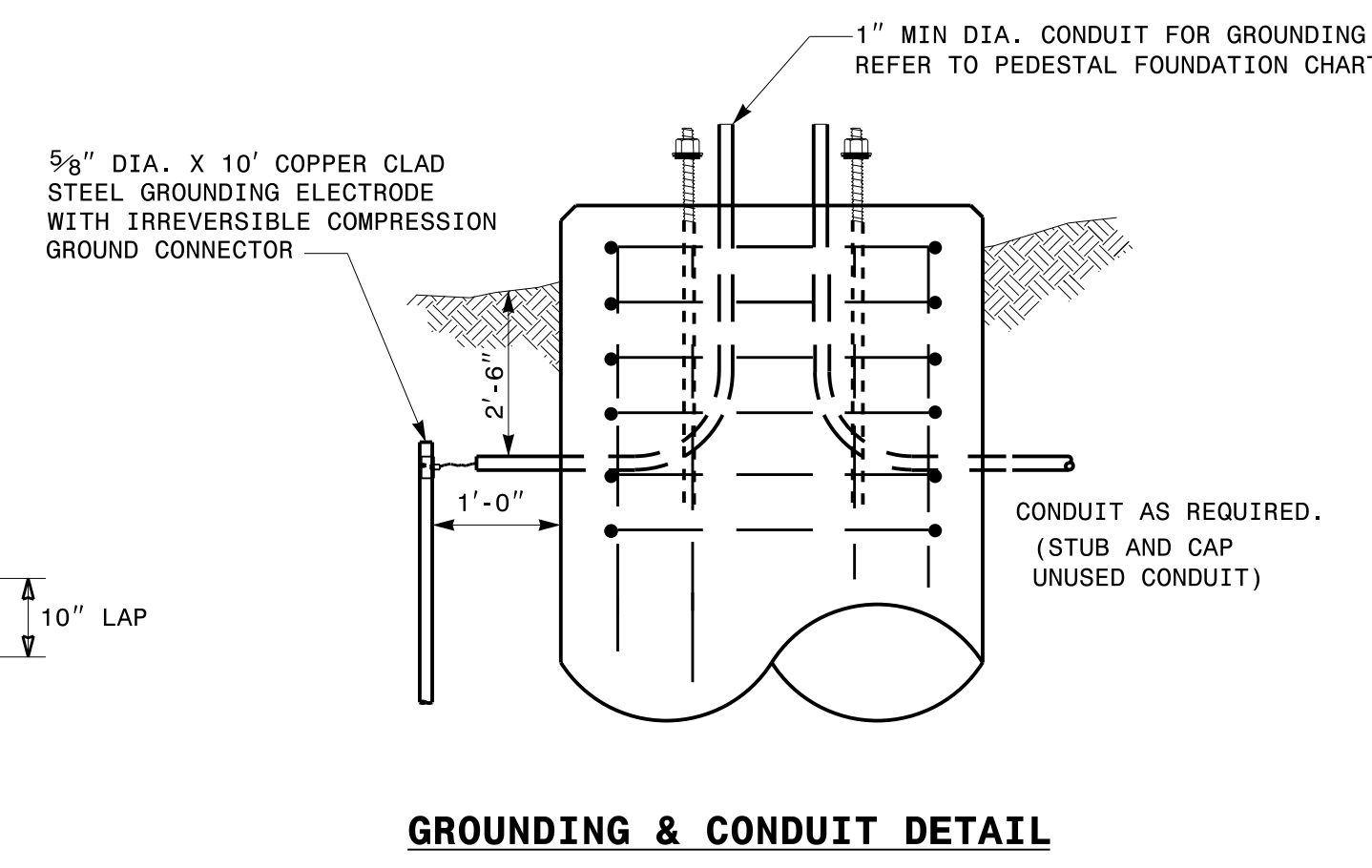
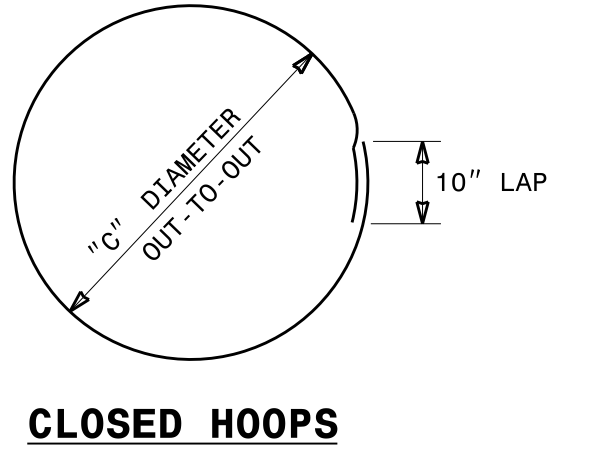
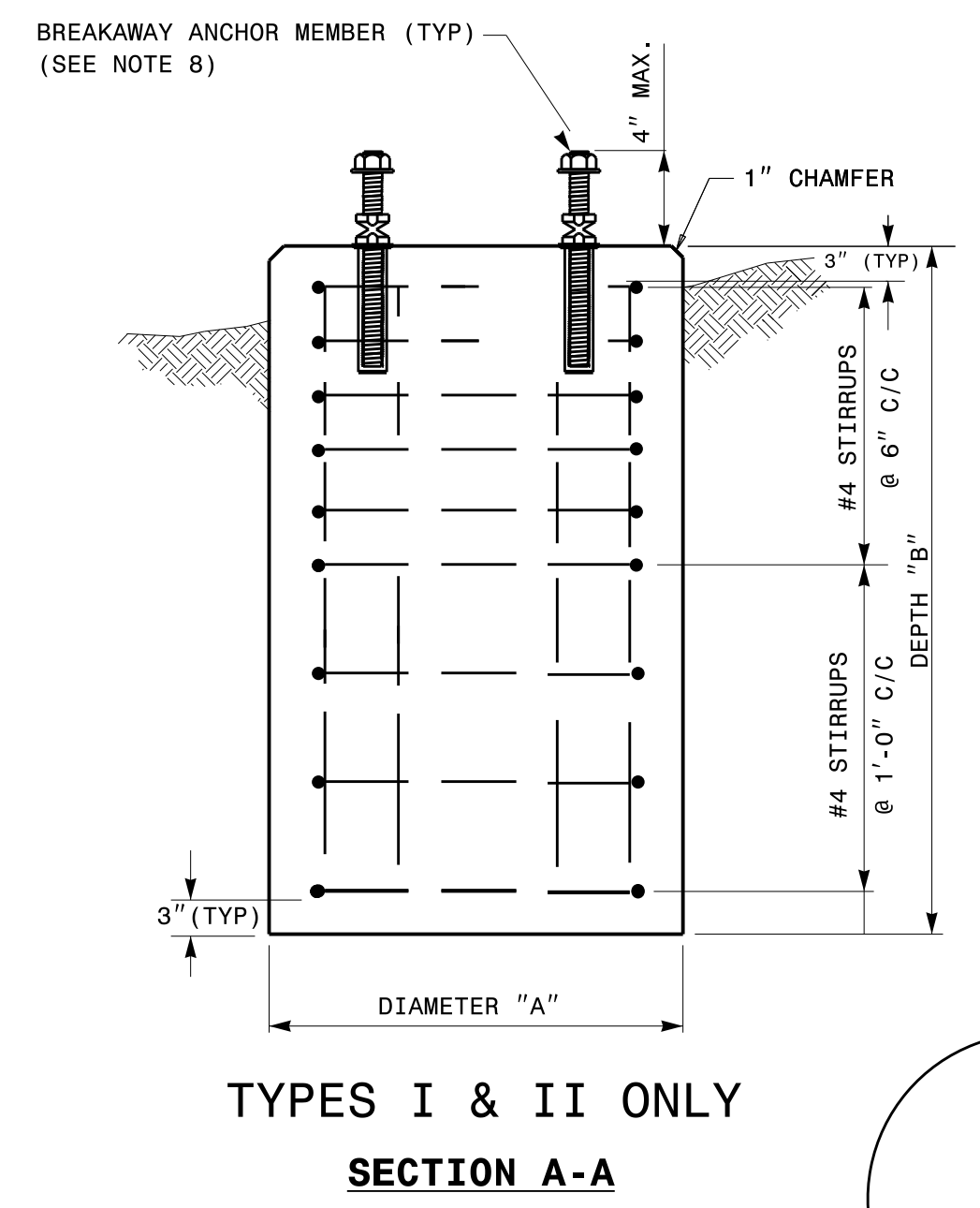
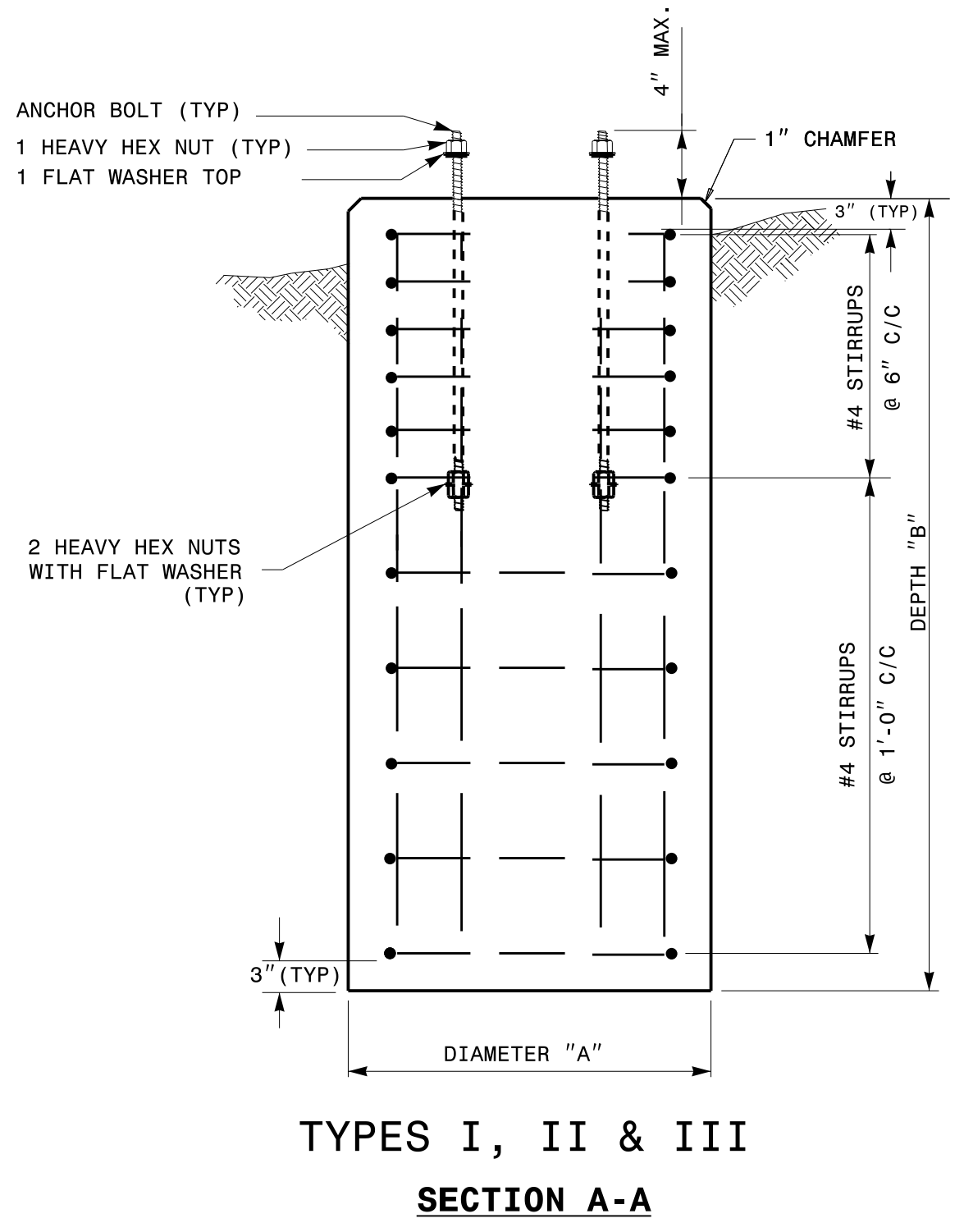
750 N. Greenfield Parkway
Garner, NC 27529

DATE

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- NOTES:**
- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
 - COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
 - USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF $F'c = 3000$ PSI (MIN.).
 - USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
 - GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
 - A. SANDY TYPE SOIL
 - B. NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
 - C. WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
 - MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
 - ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
 - USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



| PEDESTAL FOUNDATION TYPE AND SIZE | | | | | | | |
|-----------------------------------|-----------------------|-----------------|--------------|--------------------|--------------------|--------------|-----------------------------------|
| TYPE | PEDESTAL DESCRIPTION | SIZE | | | ANCHOR BOLT | | INSTALL GROUNDING SYSTEM (YES/NO) |
| | | DIAMETER "A" FT | DEPTH "B" FT | CONCRETE VOLUME CY | DIAMETER (MIN.) IN | LENGTH FT-IN | |
| I | PEDESTRIAN PUSHBUTTON | 2'-0" | 3'-6" | .41 | 1/2 | 1'-6" | NO |
| II | NORMAL-DUTY | 2'-0" | 5'-0" | .58 | 3/4 | 2'-0" | YES |
| III | HEAVY-DUTY | 2'-6" | 7'-0" | 1.27 | 1 | 4'-0" | YES |

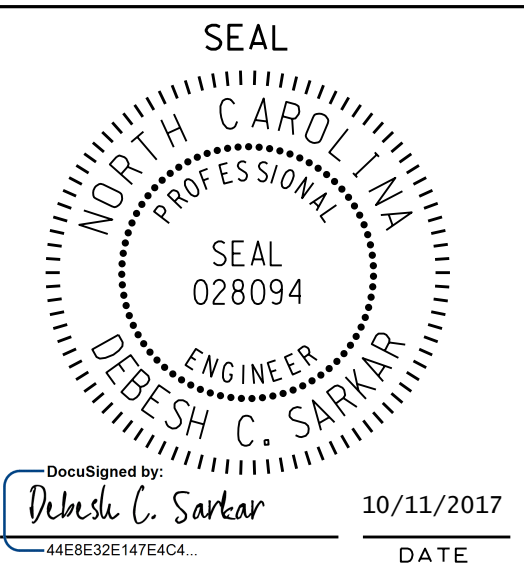
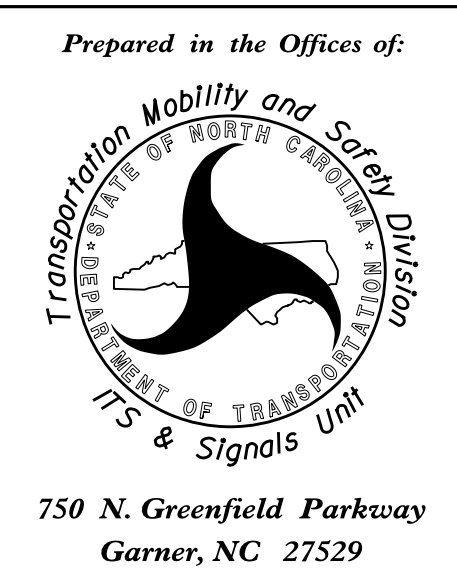
| REINFORCING STEEL SCHEDULE | | | | | | | | | | | | | |
|----------------------------|--------|-----|--------|------------|---------------|----------------|-------|--------|-----------------|--------------|------------|------------------------|-----|
| TYPE | V-BAR | | | | STIRRUP | | | | | | | | |
| | SIZE # | QTY | LENGTH | WEIGHT LBS | QUANTITY | | | LENGTH | DIAMETER "C" FT | OVERLAP MIN. | WEIGHT LBS | TOTAL STEEL WEIGHT LBS | |
| | | | | | ON 6" CENTERS | ON 12" CENTERS | TOTAL | | | | | | |
| I | 8 | 6 | 3'-0" | 56 | 4 | 0 | 4 | 5'-7" | 1'-6" | 0'-10" | 15 | 71 | |
| II | 8 | 6 | 4'-6" | 86 | 4 | 5 | 3 | 8 | 5'-7" | 1'-6" | 0'-10" | 30 | 116 |
| III | 8 | 6 | 6'-6" | 122 | 4 | 7 | 4 | 11 | 7'-2" | 2'-0" | 0'-10" | 53 | 175 |

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
PEDESTALS
FOUNDATIONS

SHEET 1 OF 1
1743D01

See Plate for Title



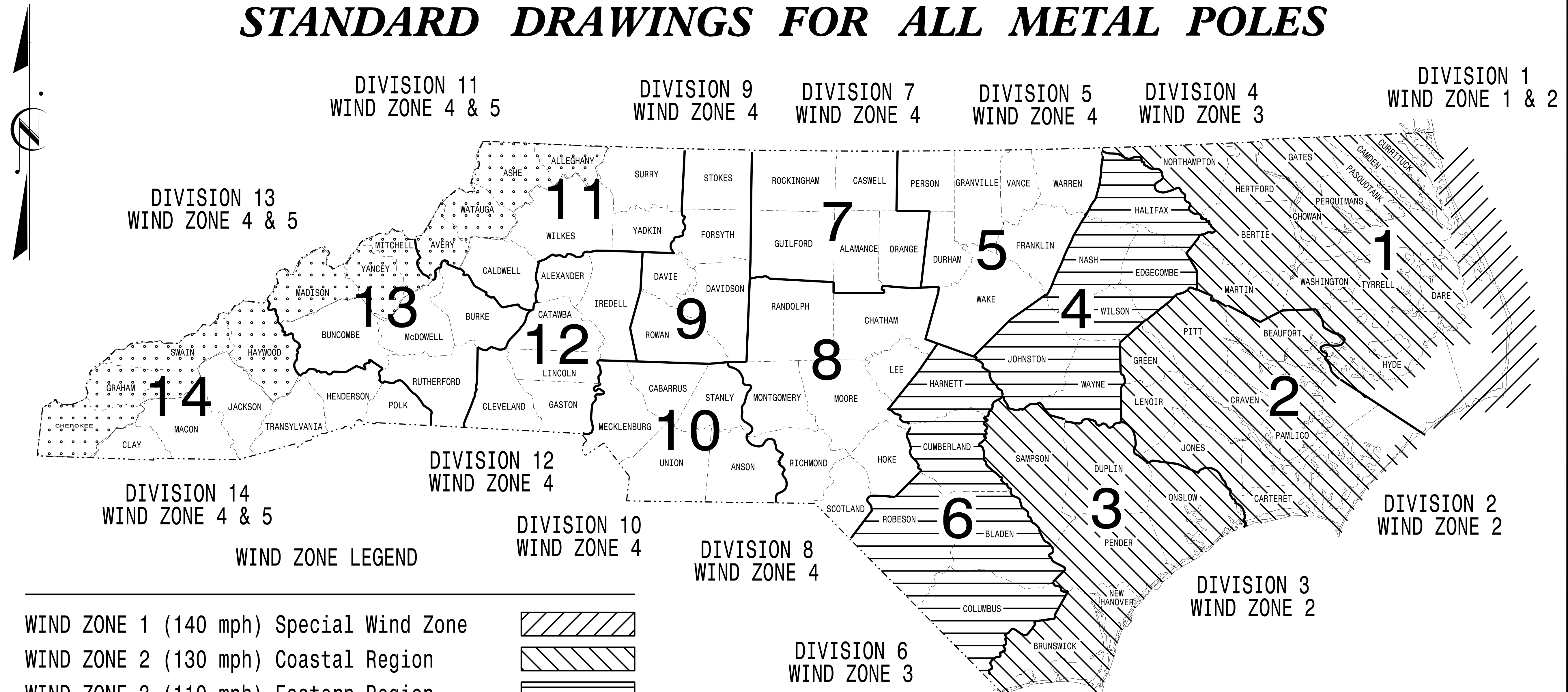
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FINAL UNLESS ALL
SIGNATURES COMPLETED

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11-2018 514 Drawings\Plate Sheets\2018_Plate Sheet - .dgn
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STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

| | |
|----------------------------|---------------------|
| PROJECT I.D. NO. B-4746 | SHEET NO. Sig.M1 |
|----------------------------|---------------------|

STANDARD DRAWINGS FOR ALL METAL POLES



WIND ZONE LEGEND

| | |
|--|--|
| WIND ZONE 1 (140 mph) Special Wind Zone | |
| WIND ZONE 2 (130 mph) Coastal Region | |
| WIND ZONE 3 (110 mph) Eastern Region | |
| WIND ZONE 4 (90 mph) Central & Mtn. Region | |
| WIND ZONE 5 (120 mph) Special Wind Zone | |

<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 2015 Interim to the 6th Edition 2013 **AASHTO** Standard Specifications for Highway Signs, Luminaires, and Traffic Signals

| DRAWING NUMBER | DESCRIPTION |
|----------------|---|
| Sig. M 1 | Statewide Wind Zone Map |
| 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 |

NC DOT CONTACTS:

MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT

M.M. MC DIARMID, P.E. - STATE ITS AND SIGNALS ENGINEER

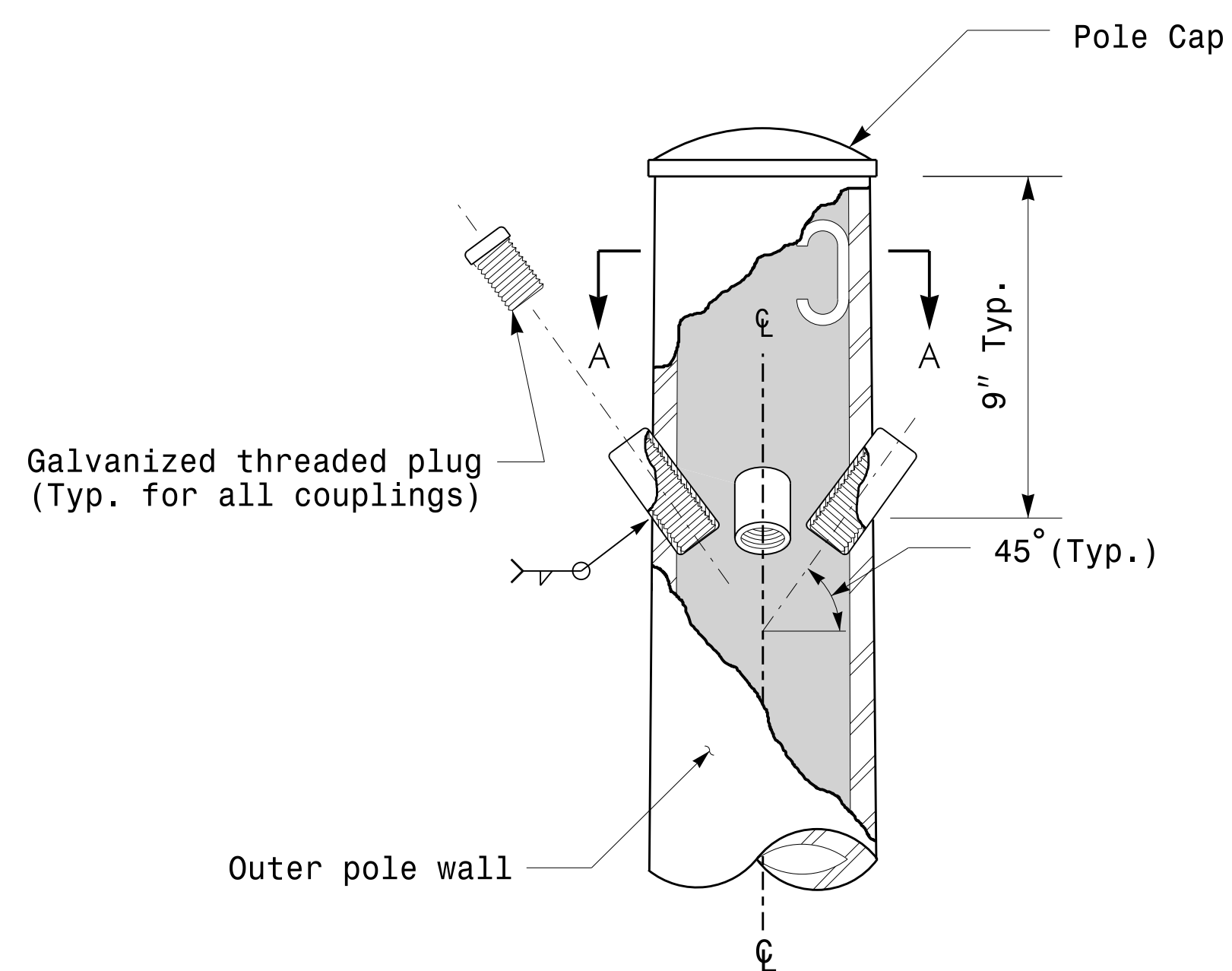
J.P. GALLOWAY, P.E. - STATE SIGNALS ENGINEER

D.C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

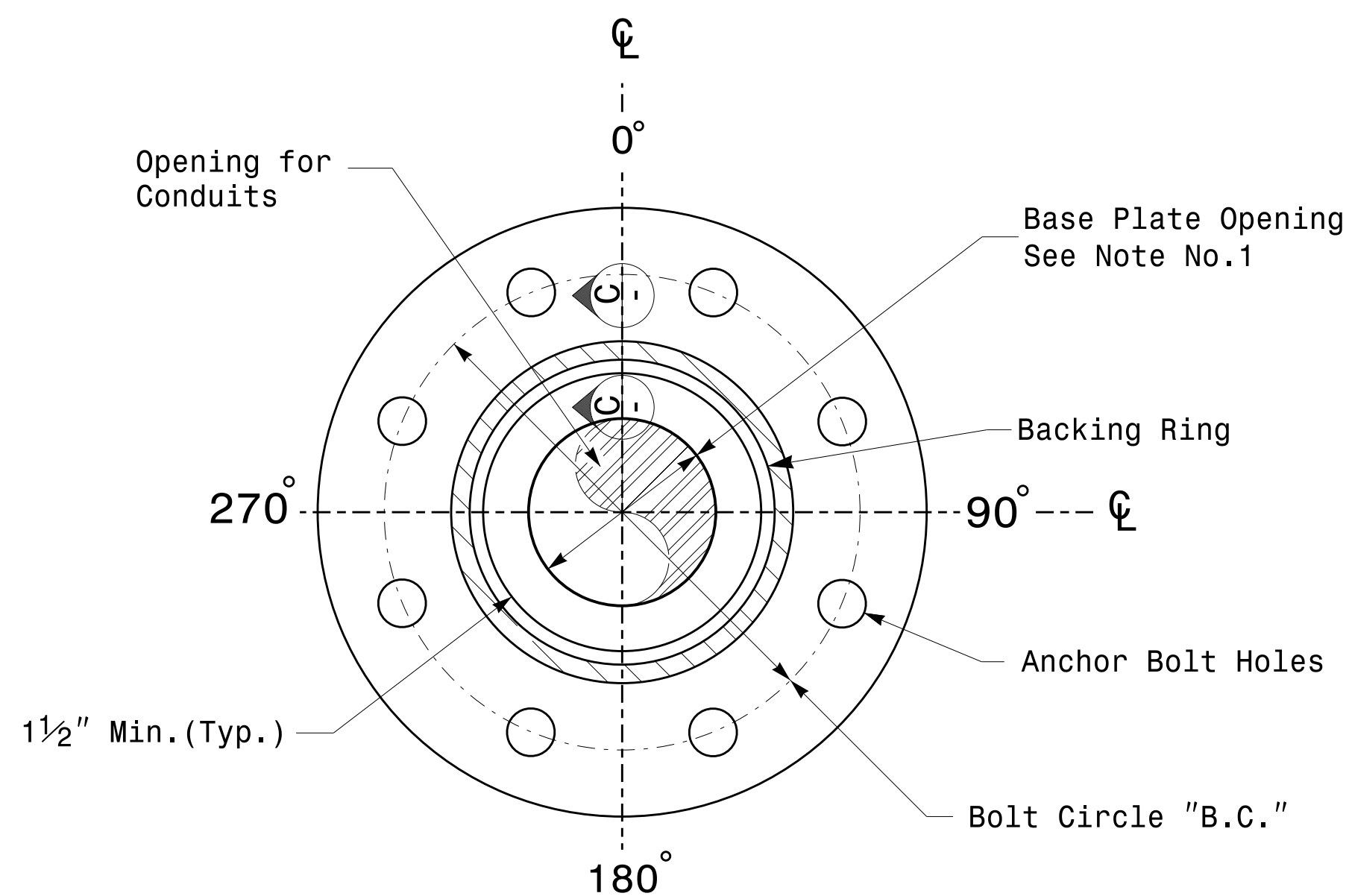
SEAL

DocuSigned by:
Debesh C. Sarkar
10/11/2017
DATE

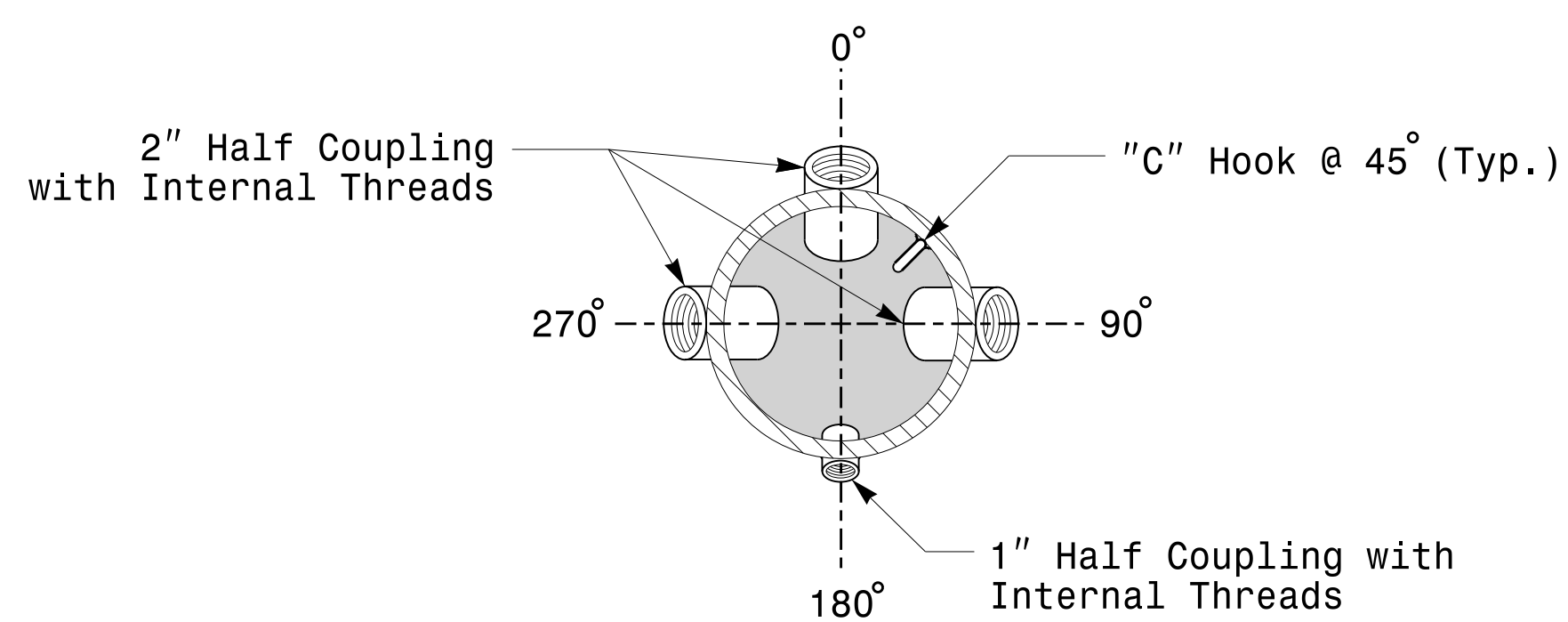
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



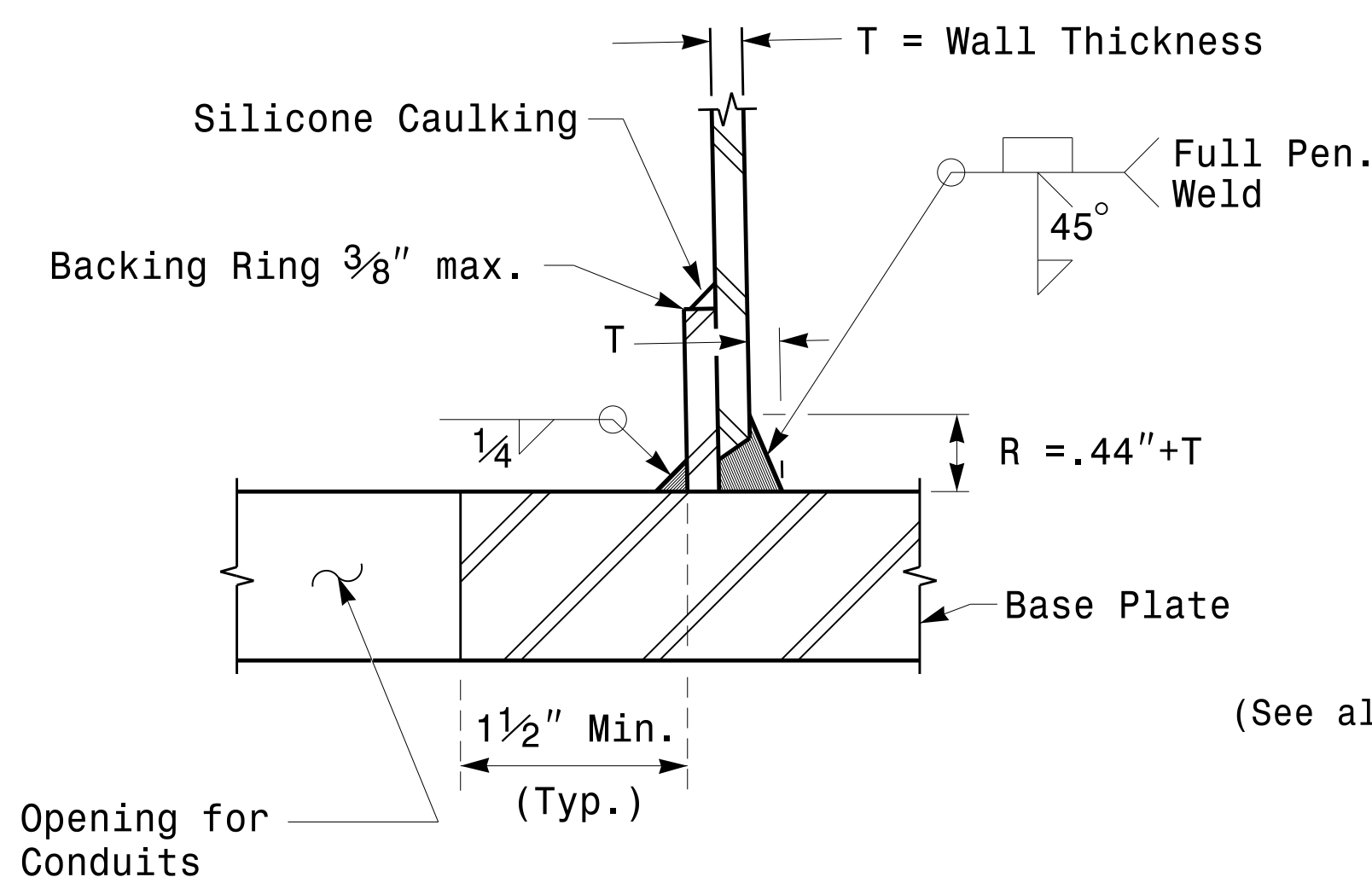
Cable Entrances at Top of Pole



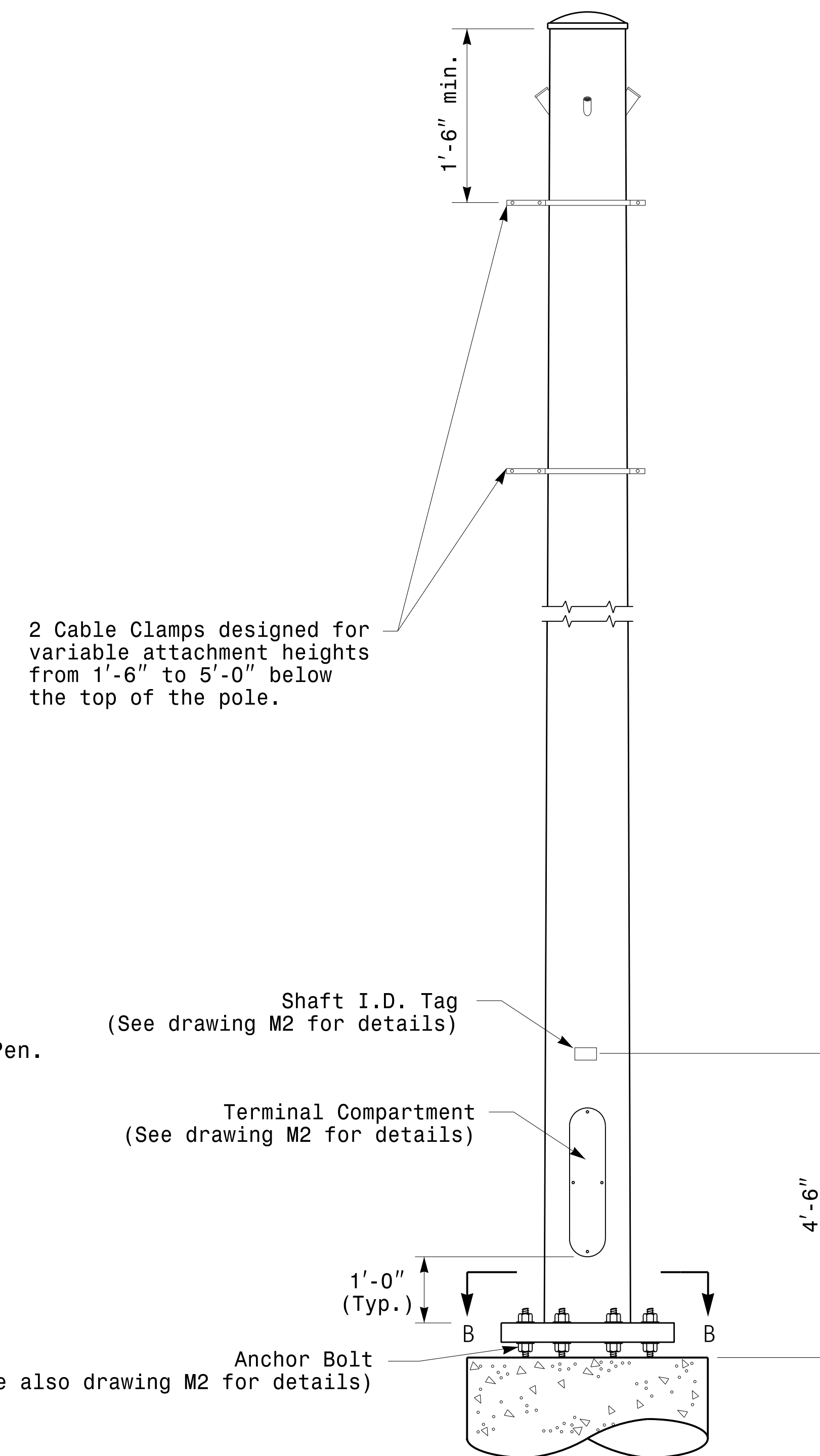
Section B-B
Pole Base Plate Details
(8 and 12 Bolt Pattern)



Section A-A
Radial Orientation for Factory Installed
Accessories at Top of Pole



Section C-C
(Pole Attachment to Base Plate)
Full-Penetration
Groove Weld Detail



Monotube Strain Pole

Prepared in the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

Typical Fabrication Details For Strain Poles

| | |
|-------------------------|---------------------------|
| PLAN DATE: OCTOBER 2017 | DESIGNED BY: K.C. DURIGON |
| PREPARED BY: N. BITTING | REVIEWED BY: D.C. SARKAR |
| REVISIONS | INIT. DATE |
| | |
| | |

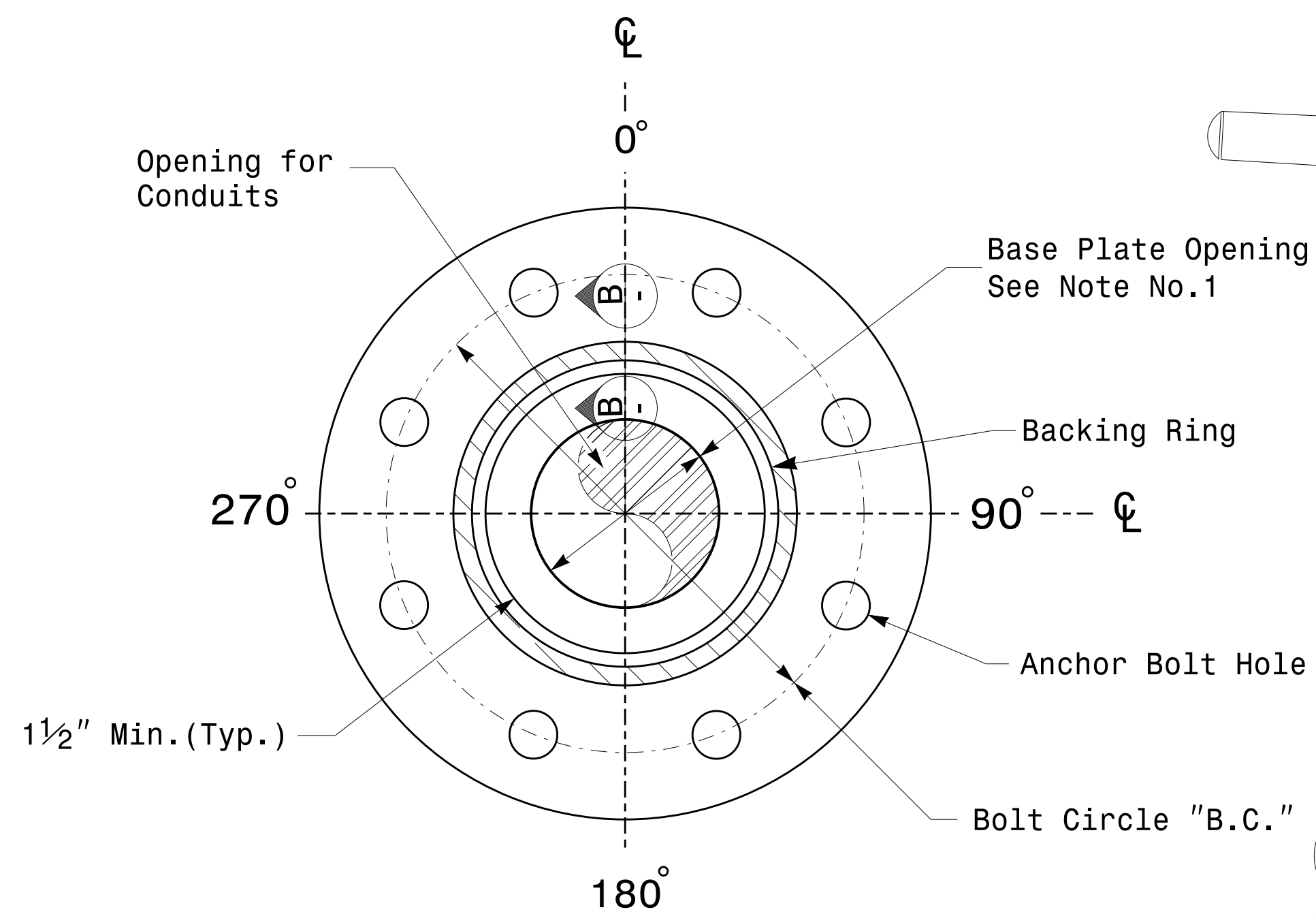
SEAL

 DocuSigned by: D.C. Sarkar
 44E8E7816FA4F49E

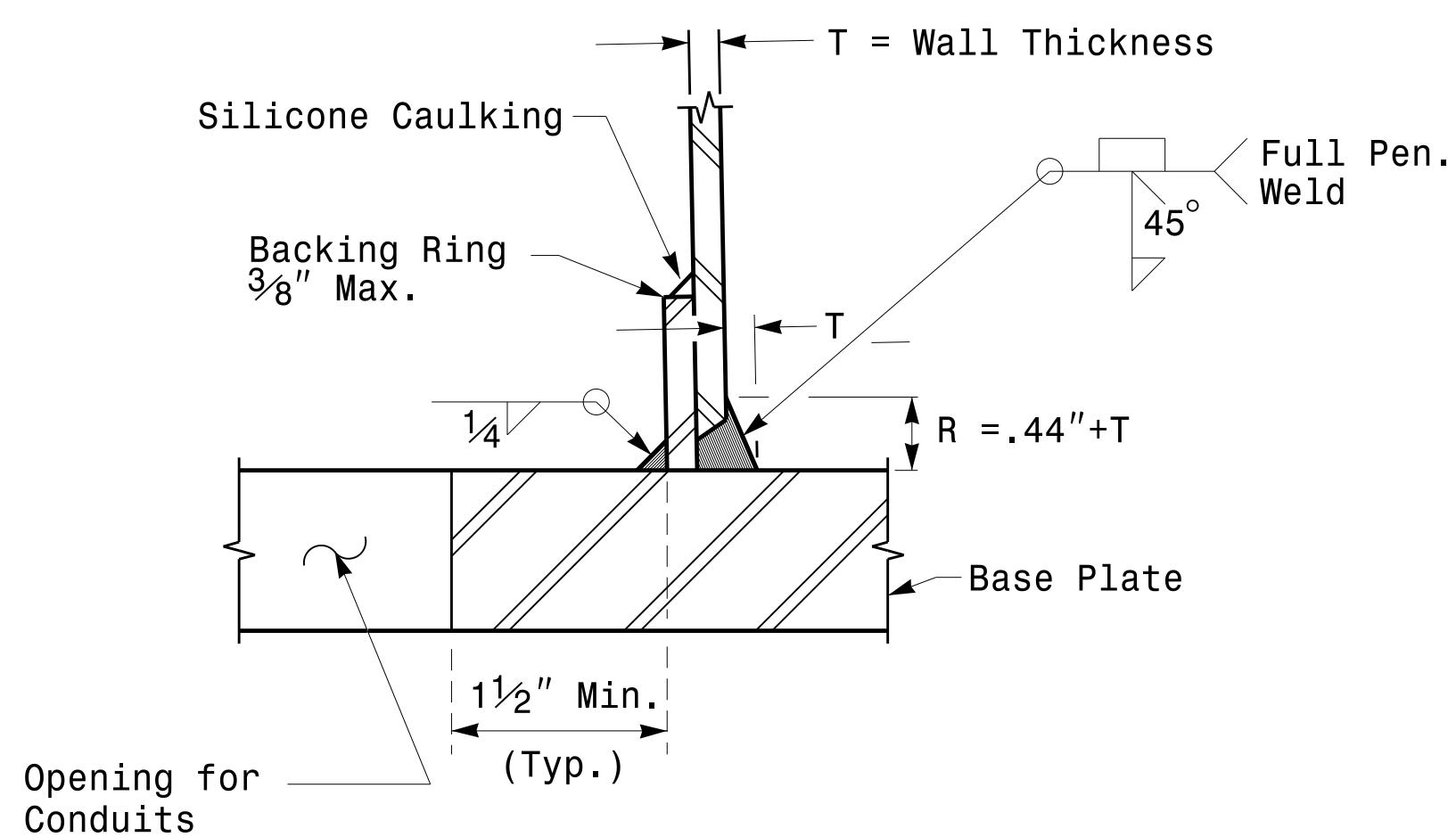
10/11/2017
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Fabrication Details – Strain Poles

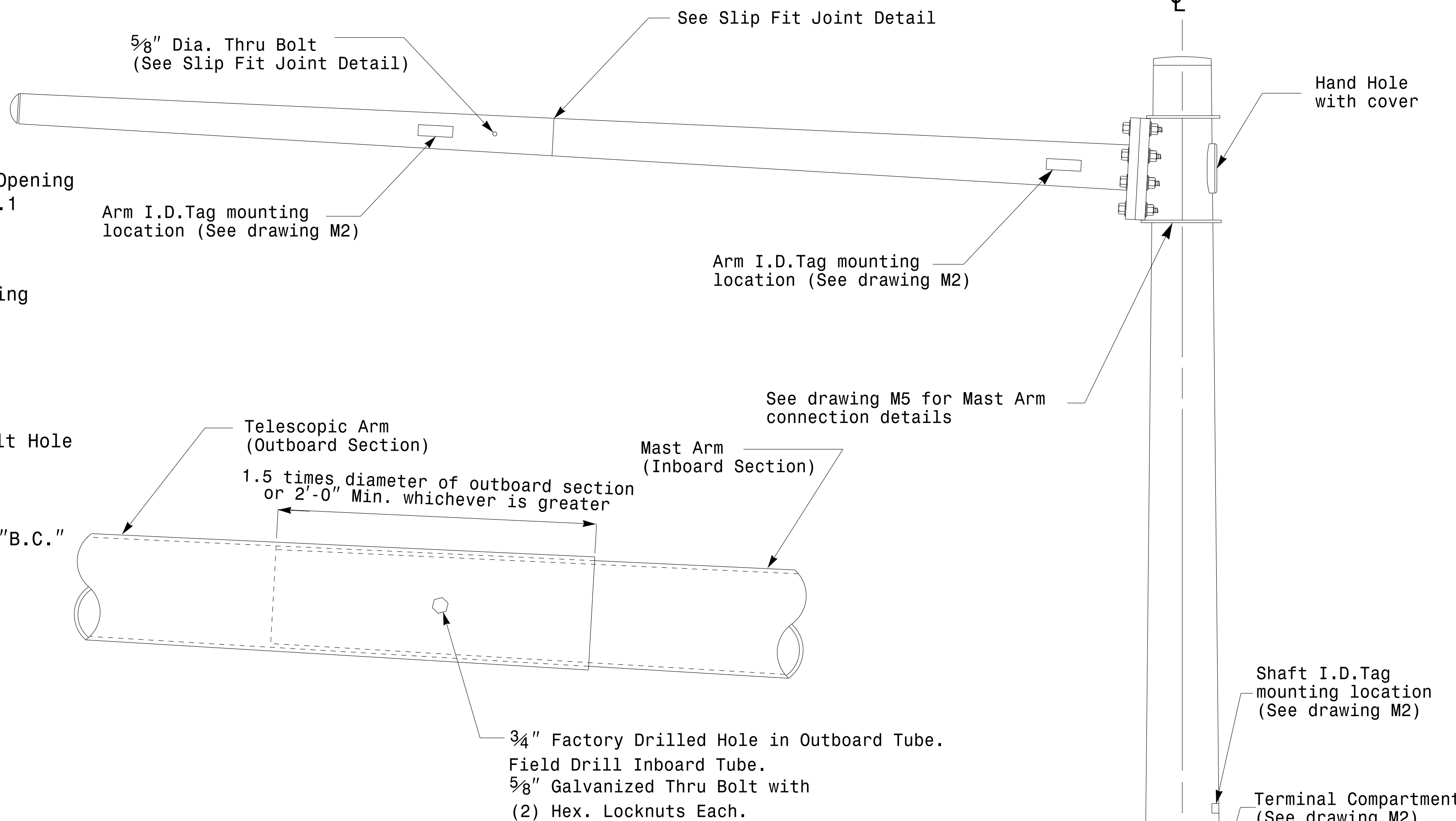
Note:
1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



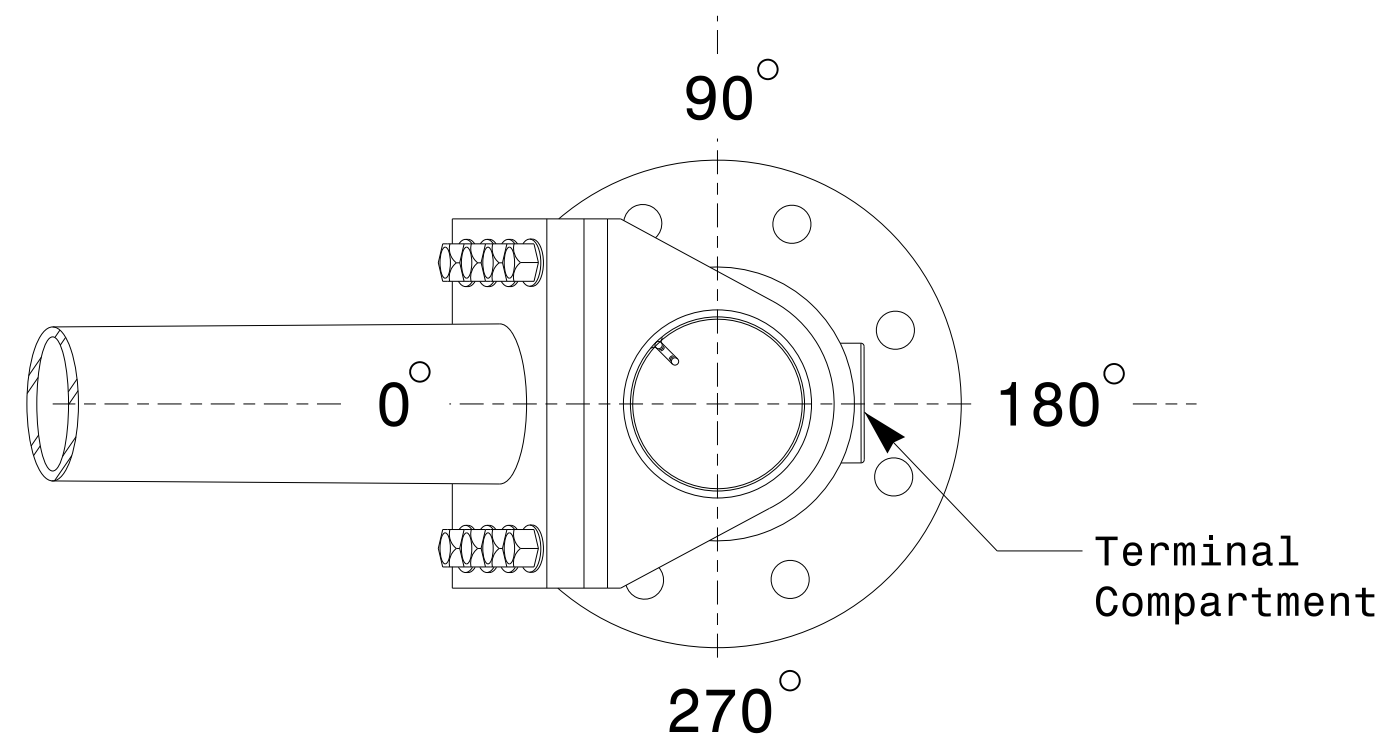
Section A-A
Pole Base Plate Details



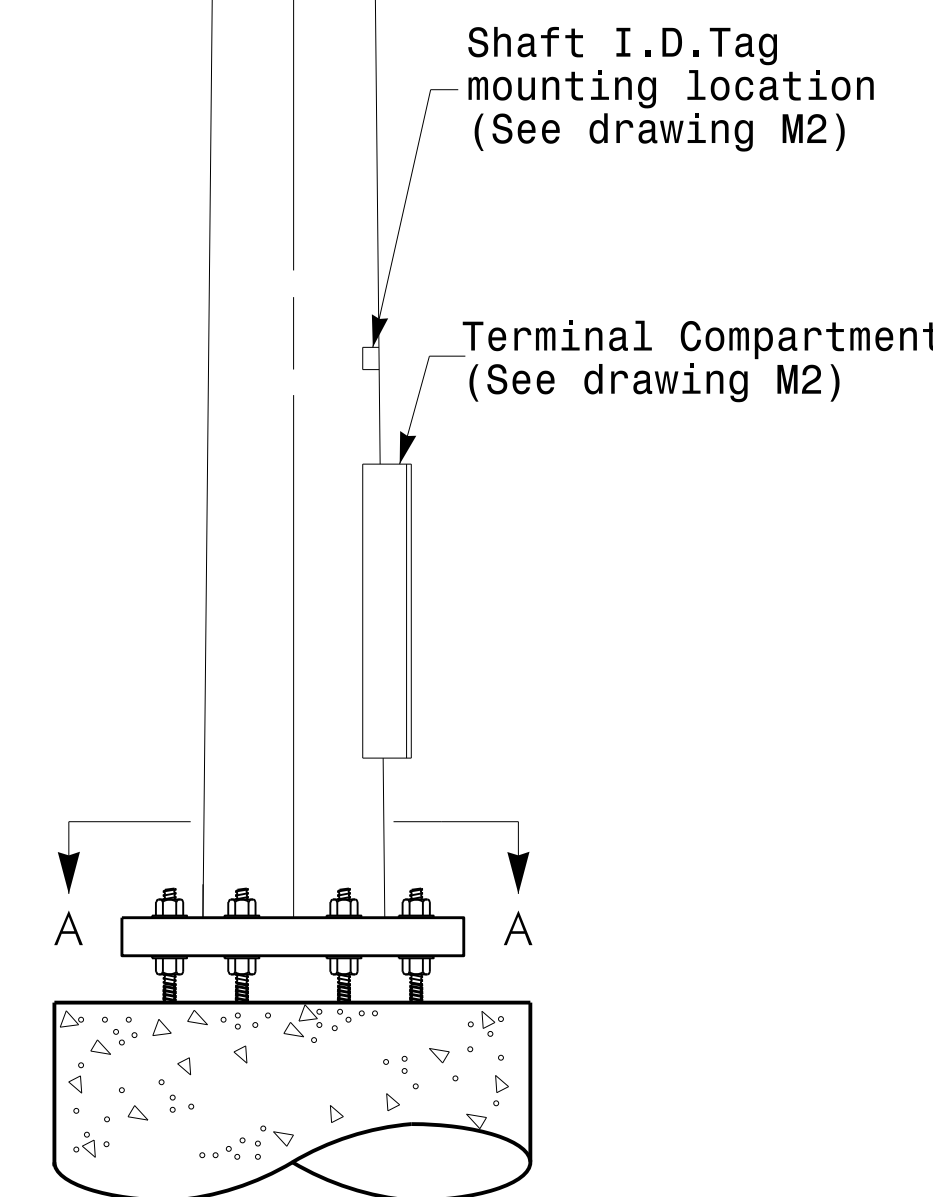
Section B-B
(Pole Attachment to Base Plate)
Full-Penetration Groove Weld Detail



Slip Fit Joint Detail for Mast Arm



Mast Arm Radial Orientation



Mast Arm Pole

| | | | |
|--|---|----------------------------------|-------------------|
| <p>Prepared in the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p> | <p>Typical Fabrication Details For Mast Arm Poles</p> | | <p>SEAL</p> |
| | <p>PLAN DATE: OCTOBER 2017</p> | <p>DESIGNED BY: K.C. DURIGON</p> | |
| <p>SCALE: 0 NA NONE</p> | <p>PREPARED BY: N. BITTING</p> | <p>REVIEWED BY: D.C. SARKAR</p> | <p>10/11/2017</p> |
| <p>REVISIONS</p> | <p>INIT.</p> | <p>DATE</p> | <p>DATE</p> |

11-OCT-2017 08:33 13650W115 Signal&Signal Design Section Eastern Region\m4 Sheets\2016\2014 Sig.M4 Std. Fabrication Detail-Mast Arm Poles.dgn

Fabrication Details - Mast Arm Poles

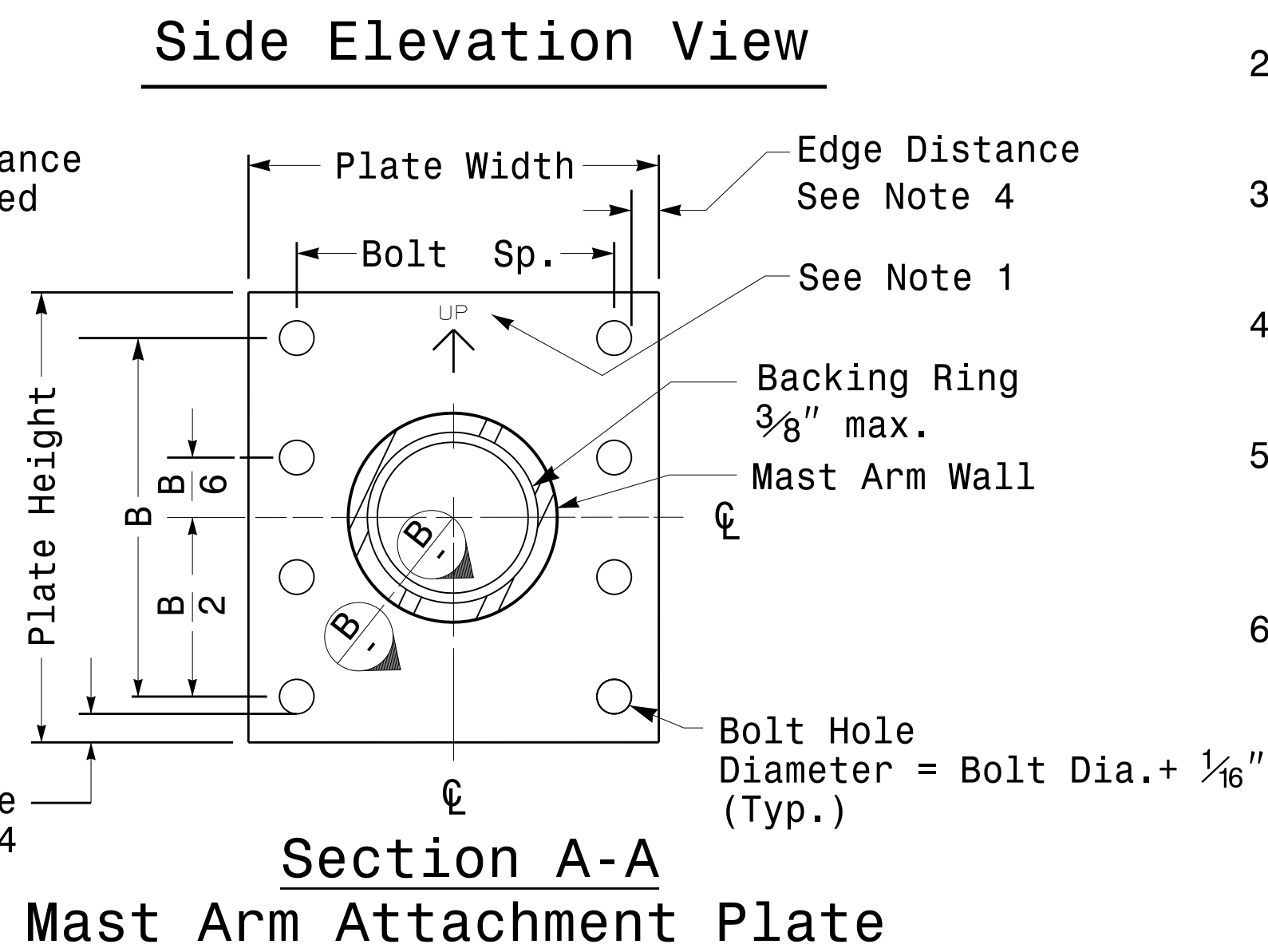
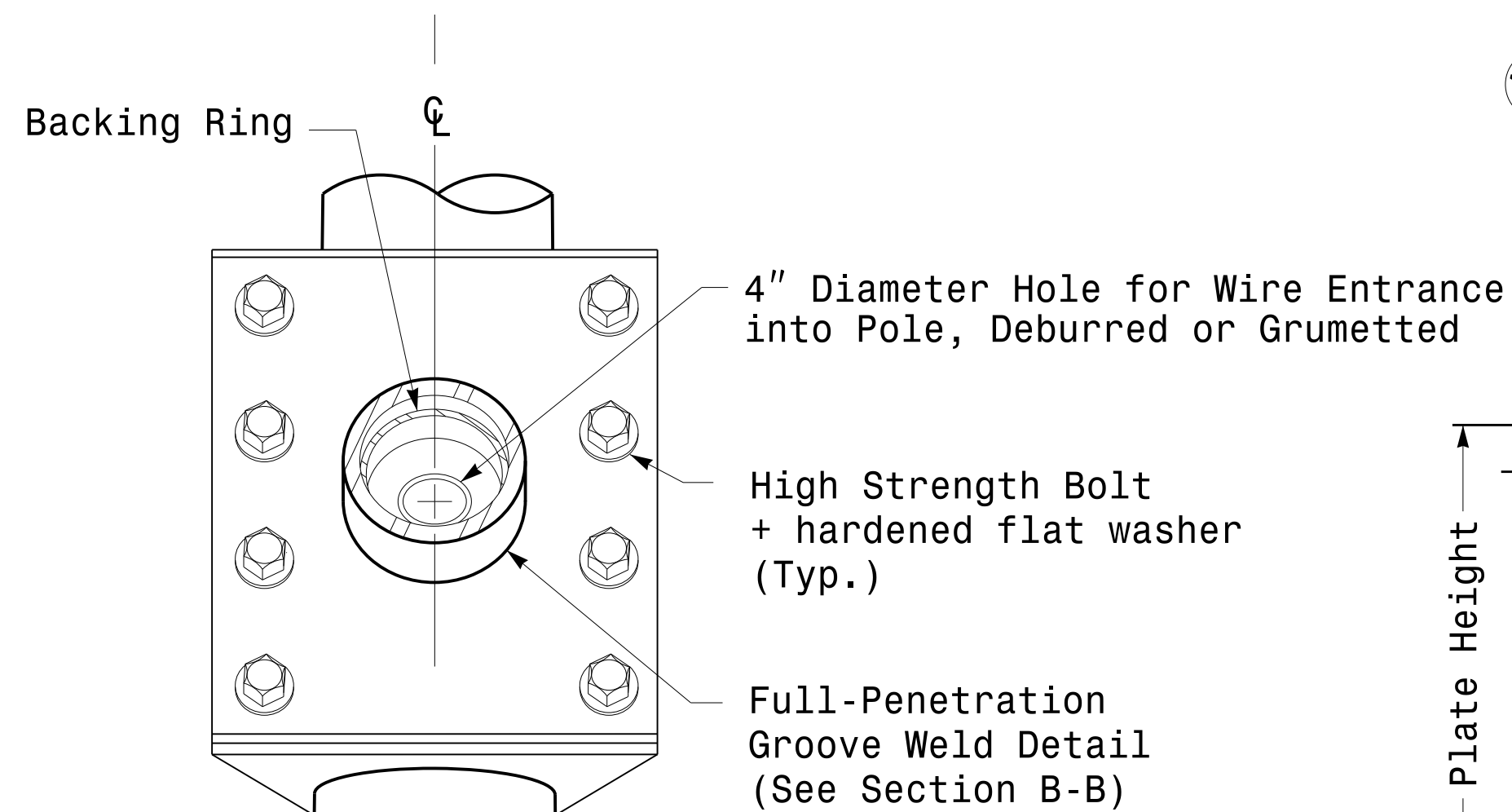
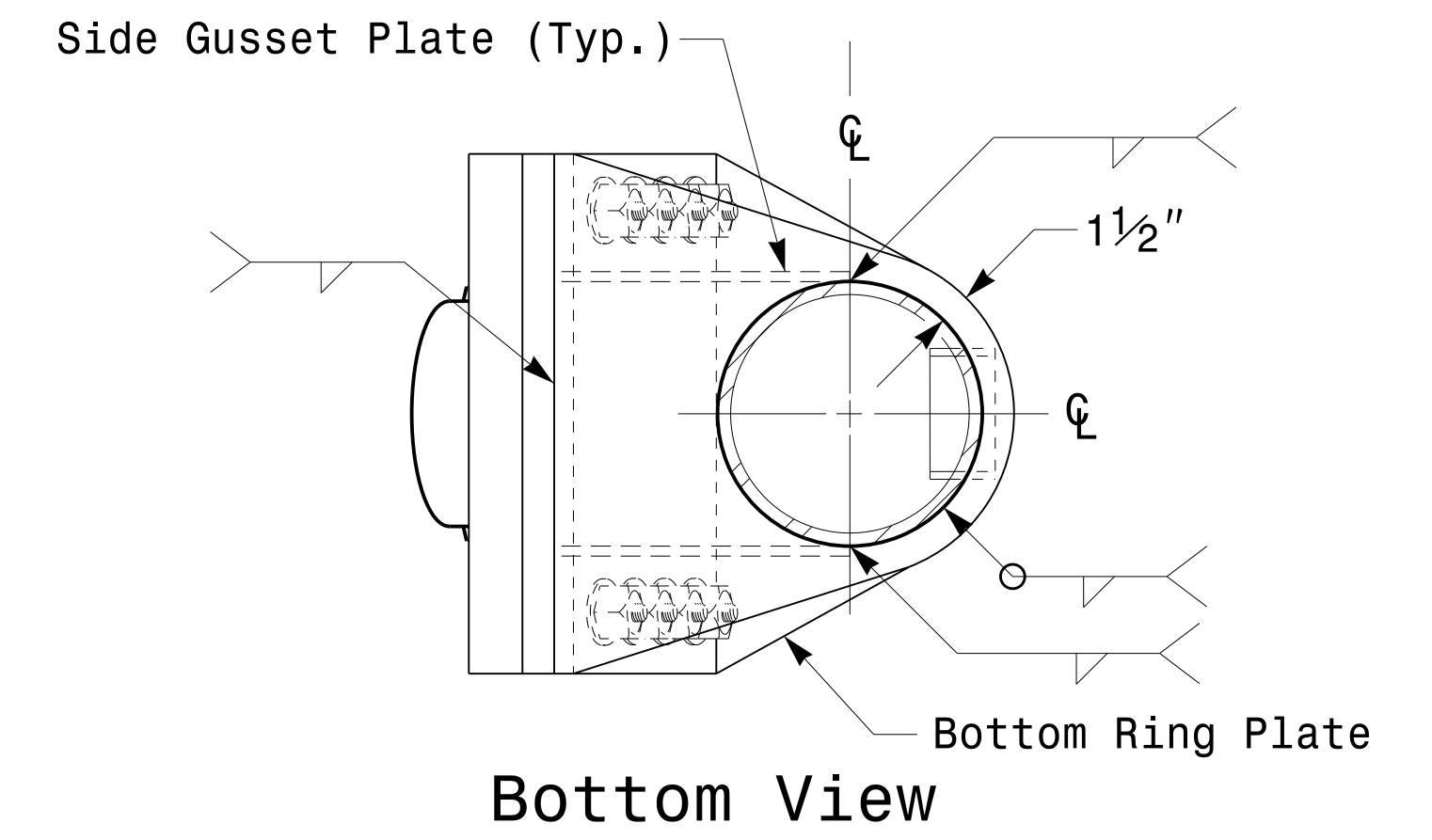
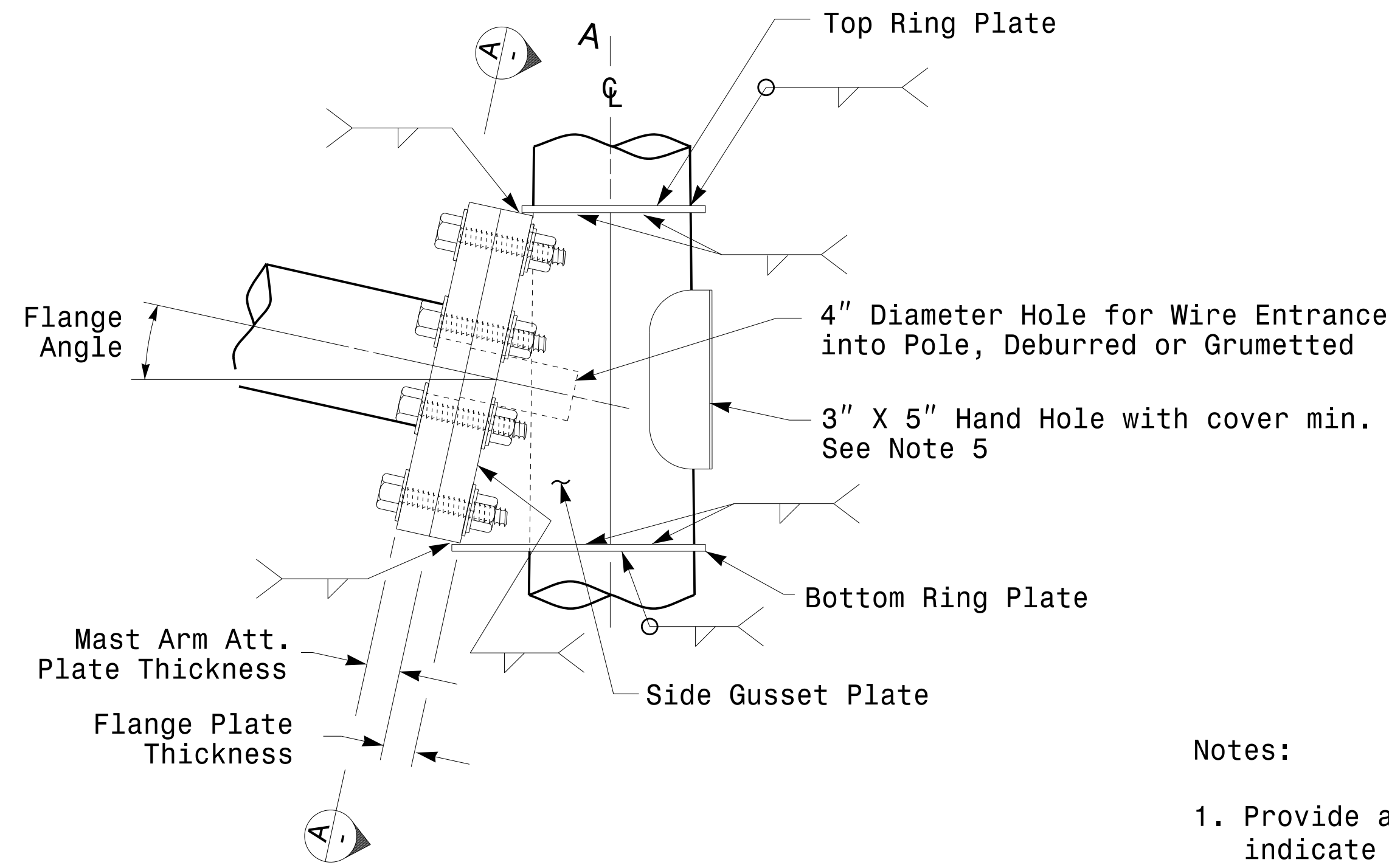
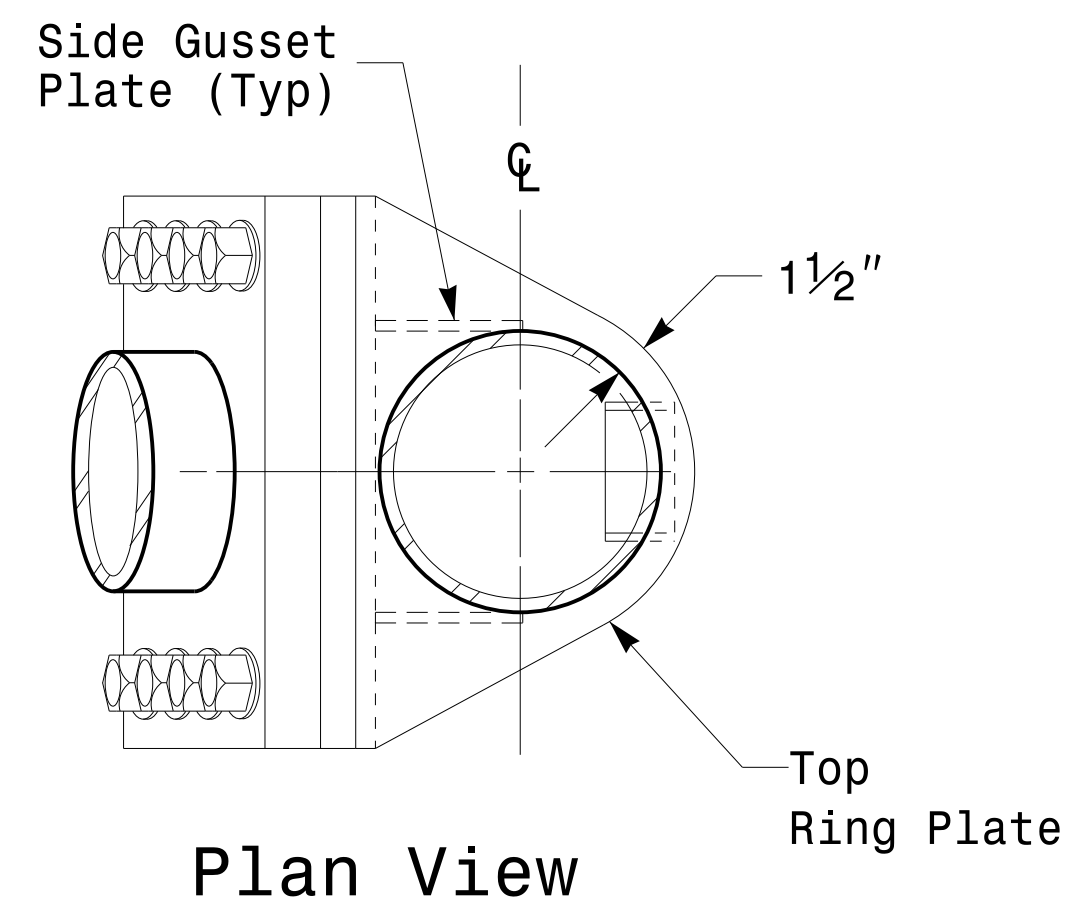
Welded Ring Stiffened Mast Arm Connection

PROJECT ID. NO.

SHEET NO.

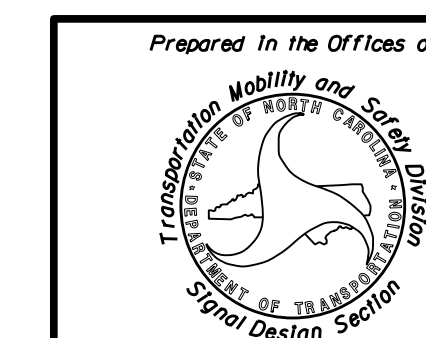
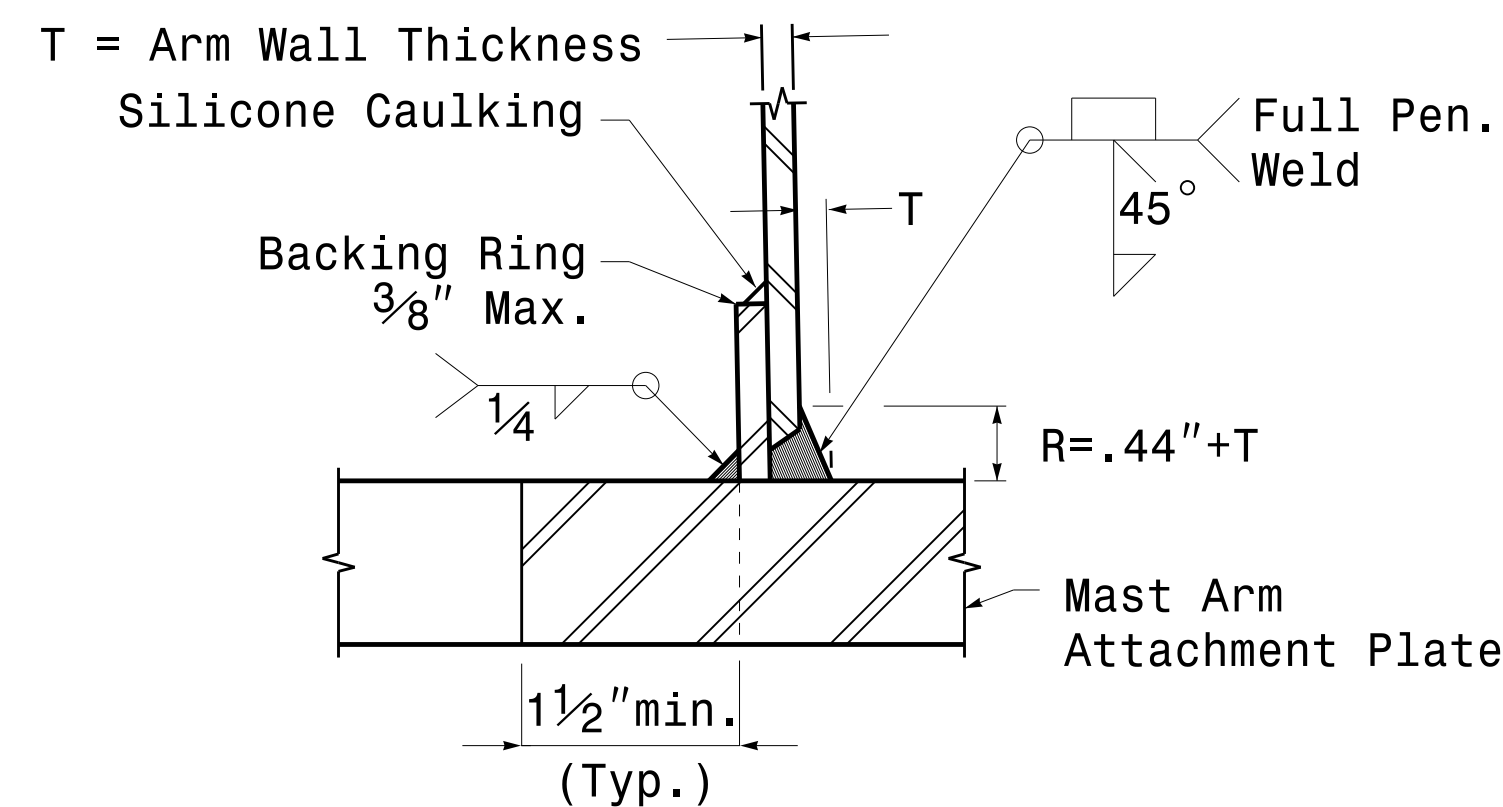
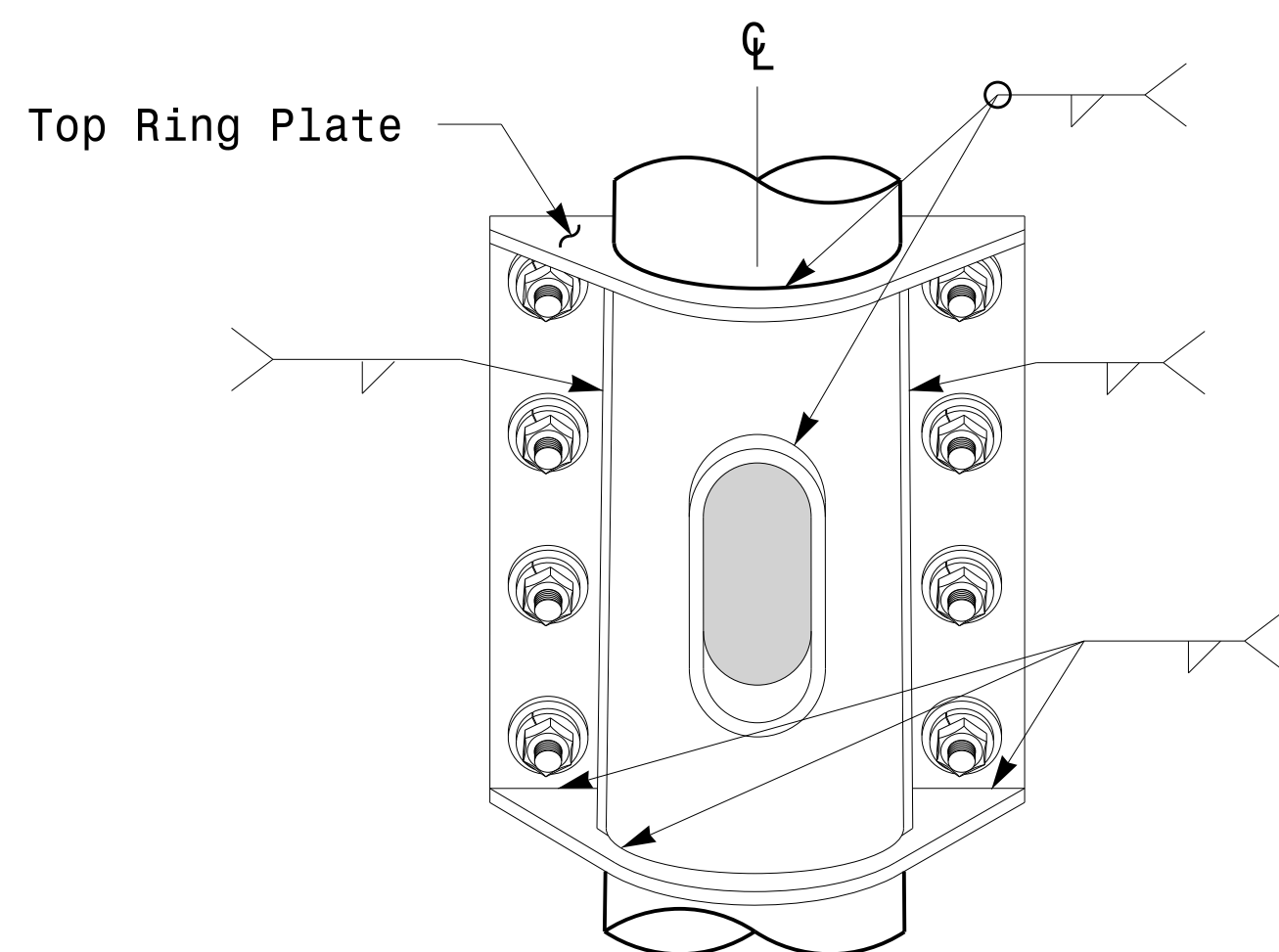
B-4746

Sig.M5



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 follow AISC Table J3.4 and J3.5. For nominal bolt hole size use Table J3.3.
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.

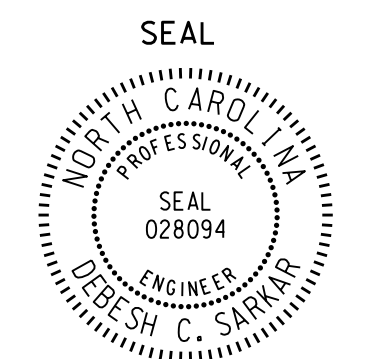


**Typical Fabrication Details
For
Mast Arm Connection To Pole**

PLAN DATE: OCTOBER 2017 DESIGNED BY: C.F. ANDREWS
PREPARED BY: N. BITTING REVIEWED BY: D.C. SARKAR

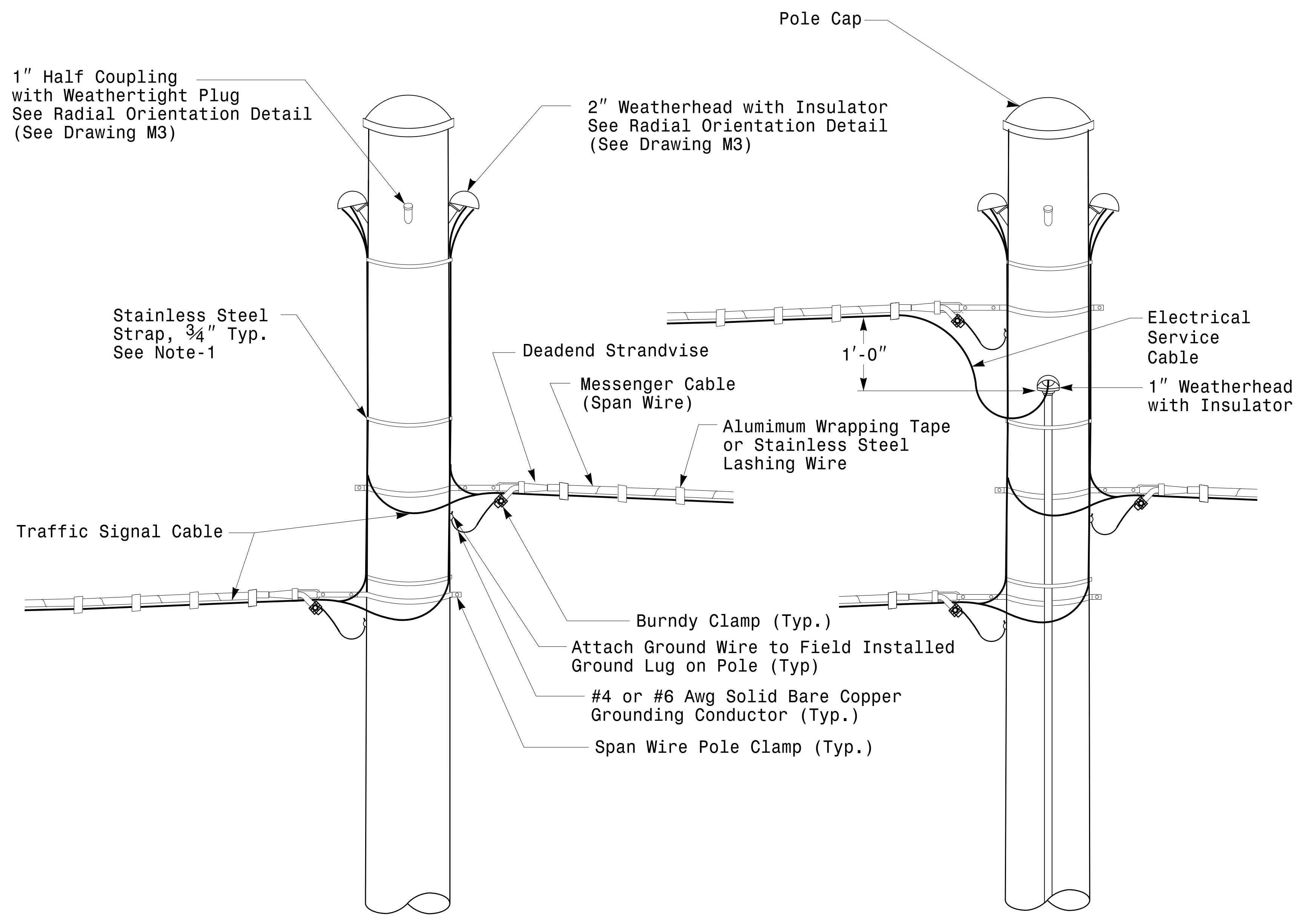
750 N. Greenfield Pkwy, Garner, NC 27529
SCALE: 0 NA NONE

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



Designed by:
Debesh C. Sarkar
SIGNATURE

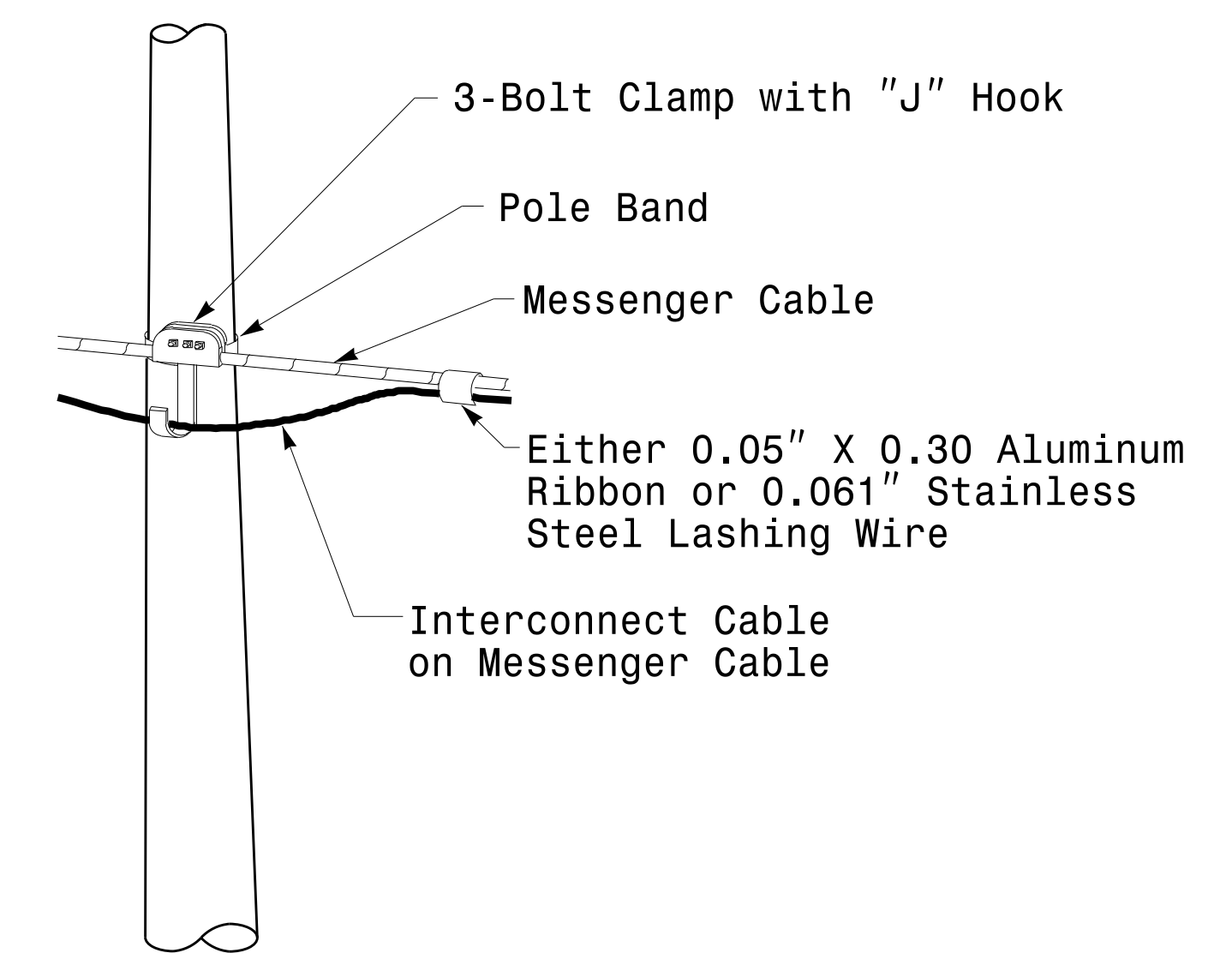
10/11/2017
DATE



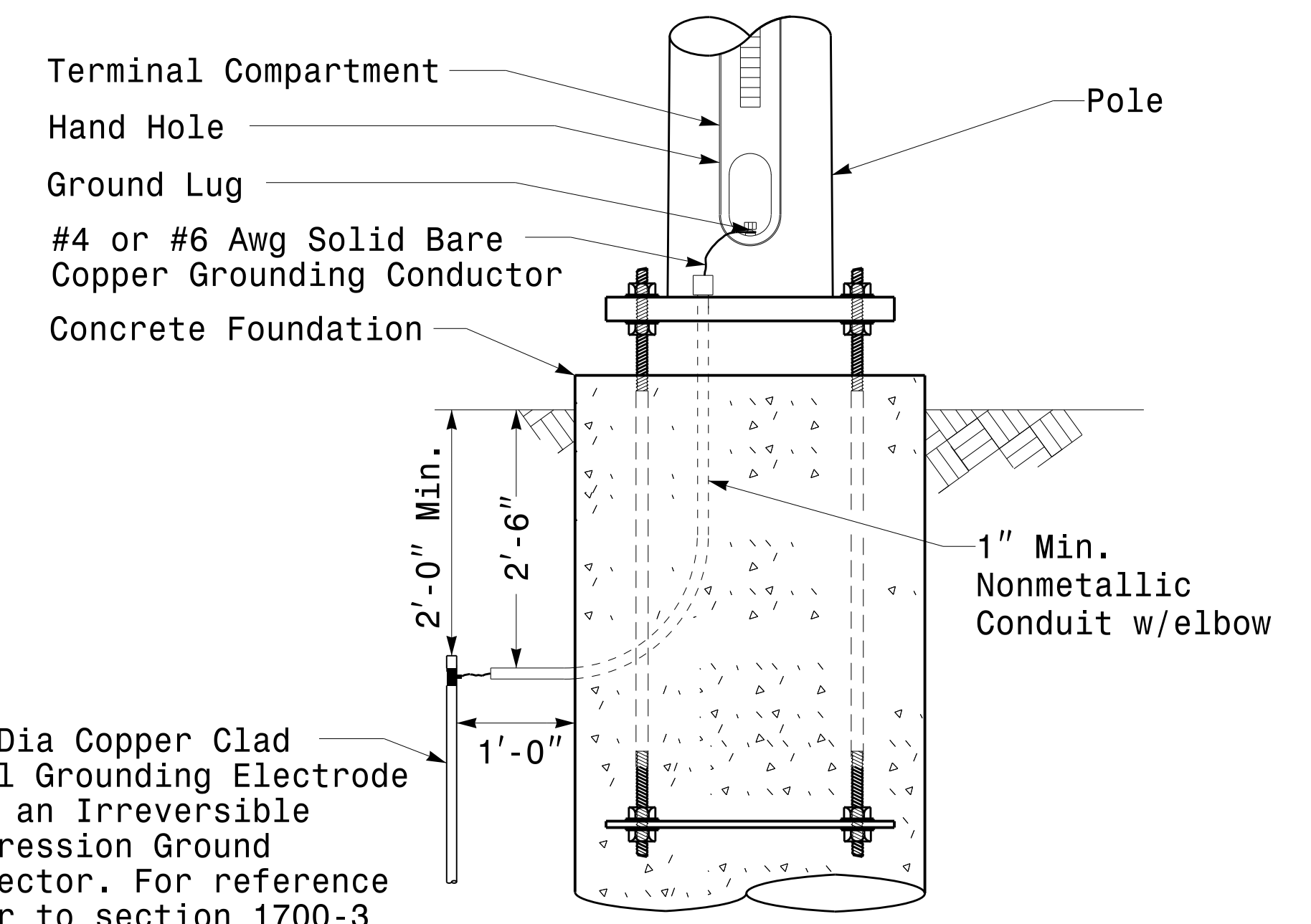
Strain Pole Attachments

NOTE:

1. Strap all signal cables to the side of the pole with 3/4" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 3'-0".
2. Provide minimum two spanwire pole clamps per pole.
3. It is prohibited to attach two span wires at one pole clamp.
4. For general requirements refer to NCDOT Standard Specifications for Roadway and Structures, January 2018.



Attachment of Cable to Intermediate Metal Pole



5/8" Dia Copper Clad Steel Grounding Electrode with an Irreversible Compression Ground Connector. For reference refer to section 1700-3 K and L for electrical grounding and bonding requirements, See Note 4.

Metal Pole Grounding Detail For Strain Pole and Mast Arm

11-0CT-2017-08:36 136504115 StrainPole.dgn Design Section Eastern Region 11/16/2014 Sig.M6 Std. Fabrication Detail: Strain Poles.dgn

| | | | |
|---|--|----------------------------------|-------------------|
| | <p>Typical Fabrication Details For Strain Pole Attachments</p> | | |
| | <p>PLAN DATE: OCTOBER 2017</p> | <p>DESIGNED BY: C.F. ANDREWS</p> | |
| <p>750 N. Greenfield Pkwy, Garner, NC 27529</p> | <p>PREPARED BY: N. BITTING</p> | <p>REVISIONS</p> | <p>INIT. DATE</p> |
| <p>SCALE: 0 NA NONE</p> | <p>DocuSigned by: Dinesh C. Sarkar</p> | | <p>10/11/2017</p> |

SOIL CONDITION

| | |
|-----------------|-----------|
| PROJECT ID. NO. | SHEET NO. |
| B-4746 | Sig.M8 |

| | | STANDARD STRAIN POLES | | | | | STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) - Feet | | | | | | | Reinforcement | | | | |
|-------------|-------|-----------------------|-------------------|---------------------|----------------------------|-------------|---|--------------------|--------------------|--------------------------|------------------|--------------------|----------------------|-------------------|--------------|----------------|--------------|---------------|
| | | Case No. | Pole Height (Ft.) | Base Plate BC (In.) | Reactions at the Pole Base | | | Clay | | | | Sand | | | Longitudinal | | Stirrups | |
| | | | | | Axial (kip) | Shear (kip) | Moment (ft-kip) | Medium N-Value 4-8 | Stiff N-Value 9-15 | Very Stiff N-Value 16-30 | Hard N-Value >30 | Loose N-Value 4-10 | Medium N-Value 11-30 | Dense N-Value >30 | Bar Size (#) | Quantity (ea.) | Bar Size (#) | Spacing (in.) |
| WIND ZONE 1 | LIGHT | S26L3 | 26 | 25 | 2 | 11 | 270 | 19 | 13 | 10 | 8 | 17 | 14.5 | 12.5 | 8 | 12 | 4 | 12 |
| | | S30L3 | 30 | 25 | 2 | 11 | 300 | 19.5 | 13.5 | 10 | 8 | 17.5 | 15 | 13 | 8 | 14 | 4 | 12 |
| | | S35L3 | 35 | 25 | 3 | 11 | 320 | 20 | 13.5 | 10.5 | 8 | 17.5 | 15 | 13 | 8 | 14 | 4 | 12 |
| | HEAVY | S30H3 | 30 | 29 | 3 | 16 | 450 | 24.5 | 16 | 12 | 9 | 21 | 17.5 | 15 | 8 | 16 | 4 | 6 |
| | | S35H3 | 35 | 29 | 4 | 16 | 515 | 26 | 17 | 12.5 | 9.5 | 22 | 18.5 | 16 | 8 | 16 | 4 | 6 |
| WIND ZONE 2 | LIGHT | S26L2 | 26 | 23 | 2 | 10 | 245 | 18 | 12.5 | 9.5 | 8 | 16.5 | 14 | 12 | 8 | 12 | 4 | 12 |
| | | S30L2 | 30 | 23 | 2 | 10 | 270 | 18.5 | 12.5 | 10 | 8 | 16.5 | 14 | 12.5 | 8 | 12 | 4 | 12 |
| | | S35L2 | 35 | 23 | 3 | 10 | 300 | 19.5 | 13 | 10 | 8 | 17 | 14.5 | 13 | 8 | 12 | 4 | 12 |
| | HEAVY | S30H2 | 30 | 29 | 3 | 15 | 415 | 23 | 15.5 | 11.5 | 9 | 20 | 17 | 14.5 | 8 | 16 | 4 | 6 |
| | | S35H2 | 35 | 29 | 4 | 15 | 475 | 25 | 16.5 | 12 | 9.5 | 21 | 17.5 | 15.5 | 8 | 16 | 4 | 6 |
| WIND ZONE 3 | LIGHT | S26L2 | 26 | 23 | 2 | 10 | 245 | 18 | 12.5 | 9.5 | 8 | 16.5 | 14 | 12 | 8 | 12 | 4 | 12 |
| | | S30L2 | 30 | 23 | 2 | 10 | 270 | 18.5 | 12.5 | 10 | 8 | 16.5 | 14 | 12.5 | 8 | 12 | 4 | 12 |
| | | S35L2 | 35 | 23 | 3 | 10 | 300 | 19.5 | 13 | 10 | 8 | 17 | 14.5 | 13 | 8 | 12 | 4 | 12 |
| | HEAVY | S30H2 | 30 | 29 | 3 | 15 | 415 | 23 | 15.5 | 11.5 | 9 | 20 | 17 | 14.5 | 8 | 16 | 4 | 6 |
| | | S35H2 | 35 | 29 | 4 | 15 | 475 | 25 | 16.5 | 12 | 9.5 | 21 | 17.5 | 15.5 | 8 | 16 | 4 | 6 |
| WIND ZONE 4 | LIGHT | S26L1 | 26 | 22 | 2 | 8 | 190 | 16 | 11.5 | 8.5 | 8 | 15 | 12.5 | 11 | 8 | 12 | 4 | 12 |
| | | S30L1 | 30 | 22 | 2 | 8 | 205 | 16.5 | 11.5 | 9 | 8 | 15 | 13 | 11.5 | 8 | 12 | 4 | 12 |
| | | S35L1 | 35 | 22 | 3 | 8 | 230 | 17 | 12 | 9 | 8 | 15.5 | 13.5 | 11.5 | 8 | 12 | 4 | 12 |
| | HEAVY | S30H1 | 30 | 25 | 3 | 12 | 320 | 20.5 | 13.5 | 10.5 | 8 | 18 | 15 | 13.5 | 8 | 16 | 4 | 6 |
| | | S35H1 | 35 | 25 | 4 | 12 | 350 | 21 | 14 | 10.5 | 8.5 | 18.5 | 15.5 | 13.5 | 8 | 16 | 4 | 6 |
| WIND ZONE 5 | LIGHT | S26L2 | 26 | 23 | 2 | 10 | 245 | 18 | 12.5 | 9.5 | 8 | 16.5 | 14 | 12 | 8 | 12 | 4 | 12 |
| | | S30L2 | 30 | 23 | 2 | 10 | 270 | 18.5 | 12.5 | 10 | 8 | 16.5 | 14 | 12.5 | 8 | 12 | 4 | 12 |
| | | S35L2 | 35 | 23 | 3 | 10 | 300 | 19.5 | 13 | 10 | 8 | 17 | 14.5 | 13 | 8 | 12 | 4 | 12 |
| | HEAVY | S30H2 | 30 | 29 | 3 | 15 | 415 | 23 | 15.5 | 11.5 | 9 | 20 | 17 | 14.5 | 8 | 16 | 4 | 6 |
| | | S35H2 | 35 | 29 | 4 | 15 | 475 | 25 | 16.5 | 12 | 9.5 | 21 | 17.5 | 15.5 | 8 | 16 | 4 | 6 |

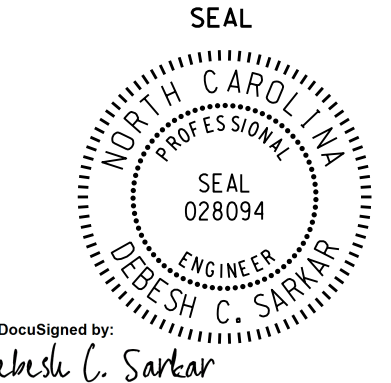
General Notes:

1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain 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 M 1 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 for Reference Drilled Shafts.

48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Drilled Pier Length



SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
028094
D. C. SARKAR

Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE: OCTOBER 2017 DESIGNED BY: C. B. COGDILL
 PREPARED BY: N. BITTING REVIEWED BY: D. C. SARKAR

REVISIONS: INIT. DATE
 Changed "Foundation Depth" to "Drilled Pier Length" in Conc. Egn. N.B. 7/12/2015

Scale: 0 NA NONE

DocuSigned by:
D. C. SARKAR

10/11/2017
DATE

I:\Projects\2017_08-10_Sig.M8\15_Sig.M8_Sig.M8_Std_Strain Pole Found_Saturated Soil_Condition.dgn
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 11/08/2017 08:40
 S:\11242014\Sig.M8_Sig.M8_Sig.M8_Std_Strain Pole Found_Saturated Soil_Condition.dgn
 rnz:insgr

Standard Strain Pole Foundation-All Soil Condition

- 1 INSTALL REA, PE - 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 2 INSTALL COAX CABLE
- 3 INSTALL ETHERNET CABLE
- 4 INSTALL SMFO CABLE
- 5 INSTALL MMFO 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 (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (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 MODIFY EXISTING INTERCONNECT CENTER /SPLICE ENCLOSURE
- 27 INSTALL NEW FIBER OPTIC TRANSCEIVER
- 28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPLICE CABLE IN CABINET
- 29 INSTALL UNDERGROUND SPLICE ENCLOSURE
- 30 INSTALL AERIAL SPLICE ENCLOSURE
- 31 INSTALL POLE MOUNTED SPLICE CABINET
- 32 INSTALL BASE MOUNTED SPLICE CABINET
- 33 REMOVE EXISTING SPLICE CABINET

- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 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 REMOVE EXISTING MESSENGER CABLE
- 50 INSTALL TELEPHONE SERVICE
- 51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
- 52A INSTALL DELINEATOR MARKER
- 52B INSTALL JUNCTION BOX MARKER
- 53 STORE 20 FEET OF COMMUNICATIONS CABLE
- 54 LASH CABLE(S) TO EXISTING SIGNAL/COMMUNICATIONS CABLE
- 55 LASH CABLE(S) TO EXISTING MESSENGER CABLE
- 56 LASH CABLE(S) TO NEW MESSENGER CABLE
- 57 MODIFY EXISTING ELECTRICAL SERVICE
- 58 INSTALL NEW ELECTRICAL SERVICE
- 59 INSTALL NEW FIELD ETHERNET SWITCH
- 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

ATTACHMENT POINT:

XX"/SS
YYY DISTANCE ABOVE (IN)/ATTACHMENT POINT REFERENCE POINT

YYY
XX"/SS REFERENCE POINT DISTANCE BELOW (IN)/ATTACHMENT POINT

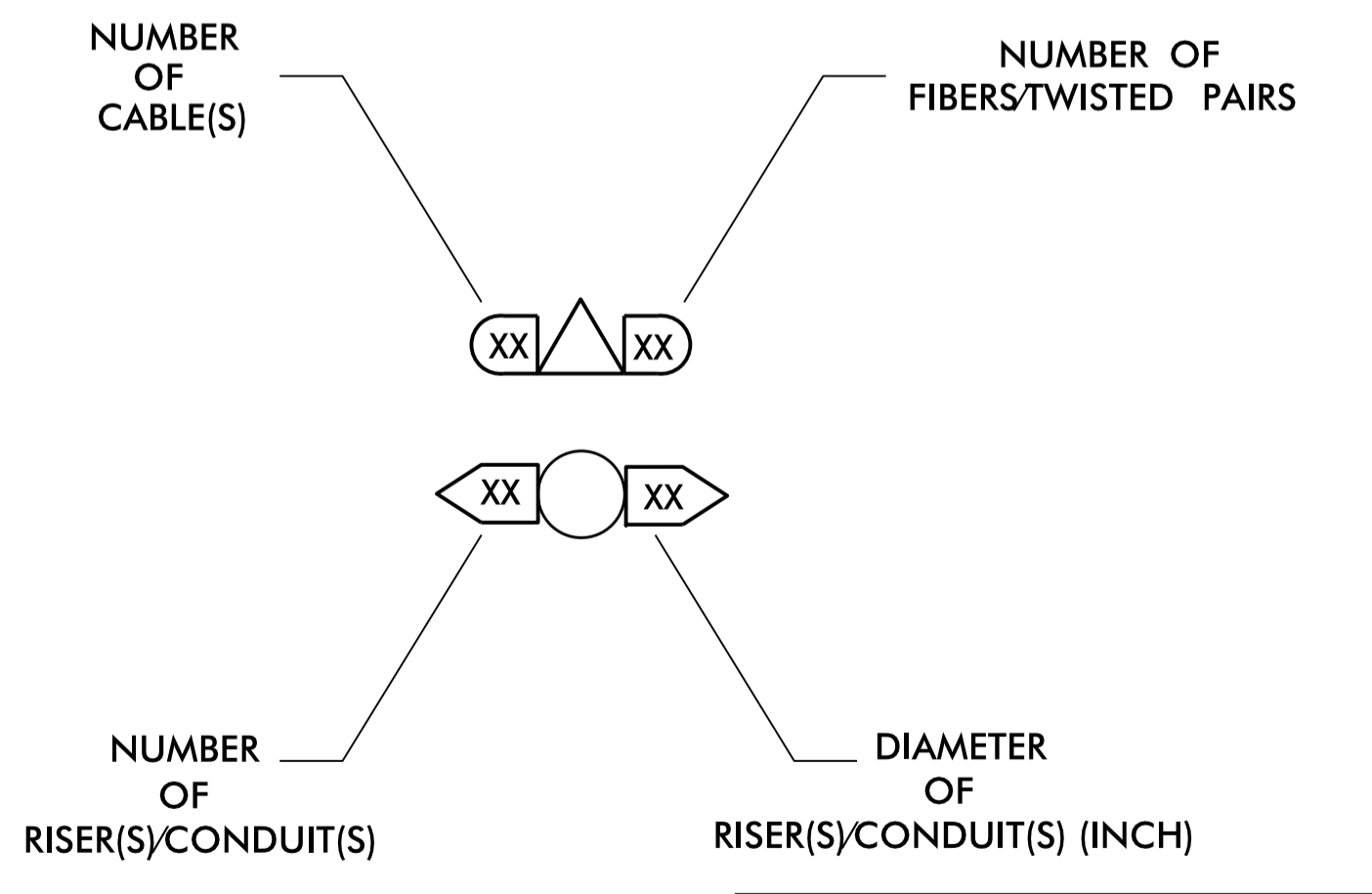
"SS" REFERENCE LOCATION
FS = FRONT SIDE OF POLE
BS = BACK SIDE OF POLE

LEGEND

- FO NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST PR NEW TWISTED PAIR 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
- B&J NEW BORED AND JACKED CONDUIT
- NEW JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW WOOD POLE
- EXISTING WOOD POLE
- S AERIAL SPLICE ENCLOSURE
- NEW METAL POLE
- EXISTING METAL POLE
- NEW CCTV ASSEMBLY
- NEW STANDARD GUY ASSEMBLY
- NEW SIDEWALK GUY ASSEMBLY
- NEW CABLE STORAGE RACKS (SNOW SHOES)
- EXISTING CABLE STORAGE RACK (SNOW SHOE)
- EXISTING CONTROLLER AND CABINET
- EXISTING SPLICE CABINET
- S NEW SPLICE CABINET
- SP SIGNAL POLE
- XX-XXXX SIGNAL INVENTORY NUMBER

CONSTRUCTION NOTE SYMBOLOGY KEY

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



TMP PHASE 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| | | | |
|--|---|------------------------------------|--|
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | <p>CONSTRUCTION NOTES</p> | | |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: I. M. Avery</p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> <p>INIT. DATE</p> | |

GENERAL NOTES:

- 1) CONTRACTOR TO BECOME FAMILIAR WITH THE "ICT" ASSOCIATED WITH THE FOLLOWING WORK.
- 2) NOTIFY THE CITY OF WINSTON SALEM'S SIGNAL SYSTEM OPERATIONS MANAGER, LARRY WALKER AT (336-747-6879) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEM COMMUNICATIONS CABLE AND THE CITY "IS" SERVICES COORDINATOR, TODD PORTER AT (336-747-7006). NOTIFY THE SIGNAL SYSTEM OPERATIONS MANAGER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. ALL WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- 3) PRIOR TO BEGINNING ANY WORK, CONTACTOR IS TO RECORD EXISTING SPLICE ARRANGEMENT/CONFIGURATIONS IN THE FOLLOWING LOCATIONS. (THIS INCLUDES WINSTON SALEM SIGNAL SYSTEM FIBER ONLY) :
 - EXISTING SPLICE ENCLOSURE "B"
 - EXISTING SIGNAL CABINET 09-0016
 - EXISTING SPLICE ENCLOSURE "C"
 - EXISTING SIGNAL CABINET 09-0186
 - EXISTING SPLICE ENCLOSURE "A"
 - EXISTING INTERSECTION 09-0267


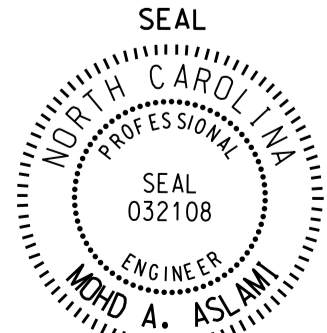
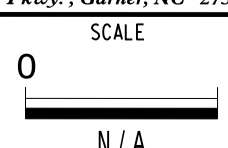
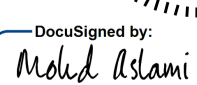
- 4) CONTACTOR IS TO INSTALL NEW 24-FIBER CABLES (ONE (1) FOR SIGNAL SYSTEM AND ONE (1) FOR CITY "IS" DEPARTMENT) STARTING NEAR 09-0016. RUN NEW CABLES ALONG GLENN AVENUE TO THE VICINITY OF 09-0186. ON AERIAL INSTALLATIONS LASH BOTH CABLES TOGETHER, HOWEVER, INSTALL CABLES IN SEPARATE RISERS. FOR ALL UNDERGROUND RUNS INSTALL CABLES IN SEPARATE CONDUITS.
- 5) ONCE ALL CABLES ARE IN PLACE FROM STEP 4 ABOVE, BEGIN THE CUTOVER AND SPLICING OF ONLY THE CITY OF WINSTON SALEM'S SIGNAL SYSTEM FIBER NETWORK.
- 6) NOTIFY THE CITY OF WINSTON SALEM'S "IS" SERVICES COORDINATOR WHEN ALL THE "IS" CABLE HAS BEEN INSTALLED AND IS READY FOR CUTOVER AND SPLICING.
- 7) UPON COMPLETION OF ALL CUTOVERS, INCLUDING THE CITY OF WINSTON SALEM'S "IS" FIBER, REMOVE BOTH 24-FIBER CABLES CROSSING OVER THE EXISTING NORFOLK SOUTHERN TRACKS. NOTIFY THE ENGINEER WHEN ALL WORK IS COMPLETE.

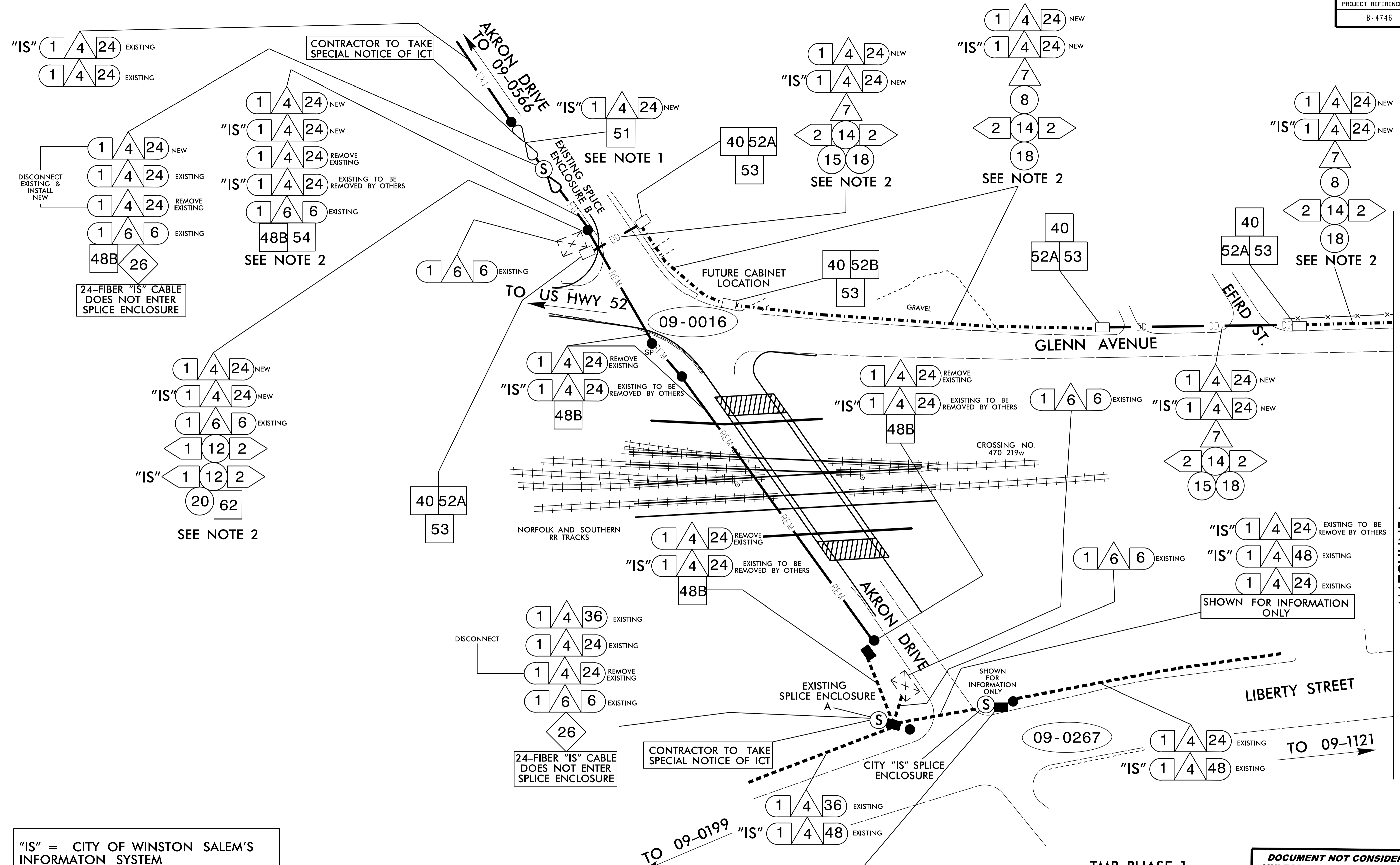
DELIVER THE RECORDED SPLICE ARRANGEMENT/ CONFIGURATIONS TO THE ENGINEER FOR USE IN THE FINAL PHASE. CONTRACTOR WILL USE RECORDED SPLICES ARRANGEMENT/CONFIGURATIONS MADE DURING TMP PHASE 1 FOR COMPARISON TO SPLICE PLANS PROVIDED FOR THE FINAL PHASE.

*NOTE THAT THE CONTRACTOR WILL INSTALL NEW 24-FIBER CABLE FOR THE CITY OF WINSTON SALEM "IS" DEPARTMENT; HOWEVER, THE CITY "IS" DEPARTMENT WILL BE RESPONSIBLE FOR ALL SPLICING, CUTOVERS, AND OPERATIONS OF THE CITY "IS" CABLE. DO NOT ENTER THE CITY "IS" SPLICE ENCLOSURES. PROVIDED SPLICE PLANS ARE SOLELY FOR SIGNAL SYSTEM CABLE AND ARE TO BE MADE IN SIGNAL SYSTEM SPLICE ENCLOSURES "A", "B", AND "C", AS NOTED IN THE PLANS.

TMP PHASE 1

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

| | | | |
|---|---|---|--|
|  <small>Prepared in the Offices of:</small> <small>750 N. Greenfield Pkwy., Garner, NC 27529</small> | COMMUNICATION CABLE AND CONDUIT ROUTING PLANS | |  <small>SEAL 032108 ENGINEER M. A. ASLAM</small> |
| | <small>DIVISION 9</small> FORSYTH <small>WINSTON SALEM</small> <small>PLAN DATE: DECEMBER 2017</small> <small>REVIEWED BY: I. N. Berry</small> <small>PREPARED BY: H. T. BERGGREN, EI</small> | <small>REVISIONS</small> <small>INIT.</small> <small>DATE</small> | |
| <small>SCALE</small>  <small>N/A</small> | <small>REVISIONS</small> <small>INIT.</small> <small>DATE</small> | | <small>Drawn/Signed by:</small>  <small>1/2/2018</small> <small>DATE</small> |



"IS" = CITY OF WINSTON SALEM'S INFORMATION SYSTEM

SEE GENERAL NOTES ON SCP 2.

NOTES:

- 1) COIL 100 FT OF 24-FIBER CITY "IS" FIBER ON CABLE STORAGE RACK FOR FUTURE TERMINATION AND USE BY THE CITY OF WINSTON SALEM "IS" DEPARTMENT.
- 2) INSTALL CITY "IS" CABLE IN SEPARATE CONDUIT/RISER.

TO 09-0199

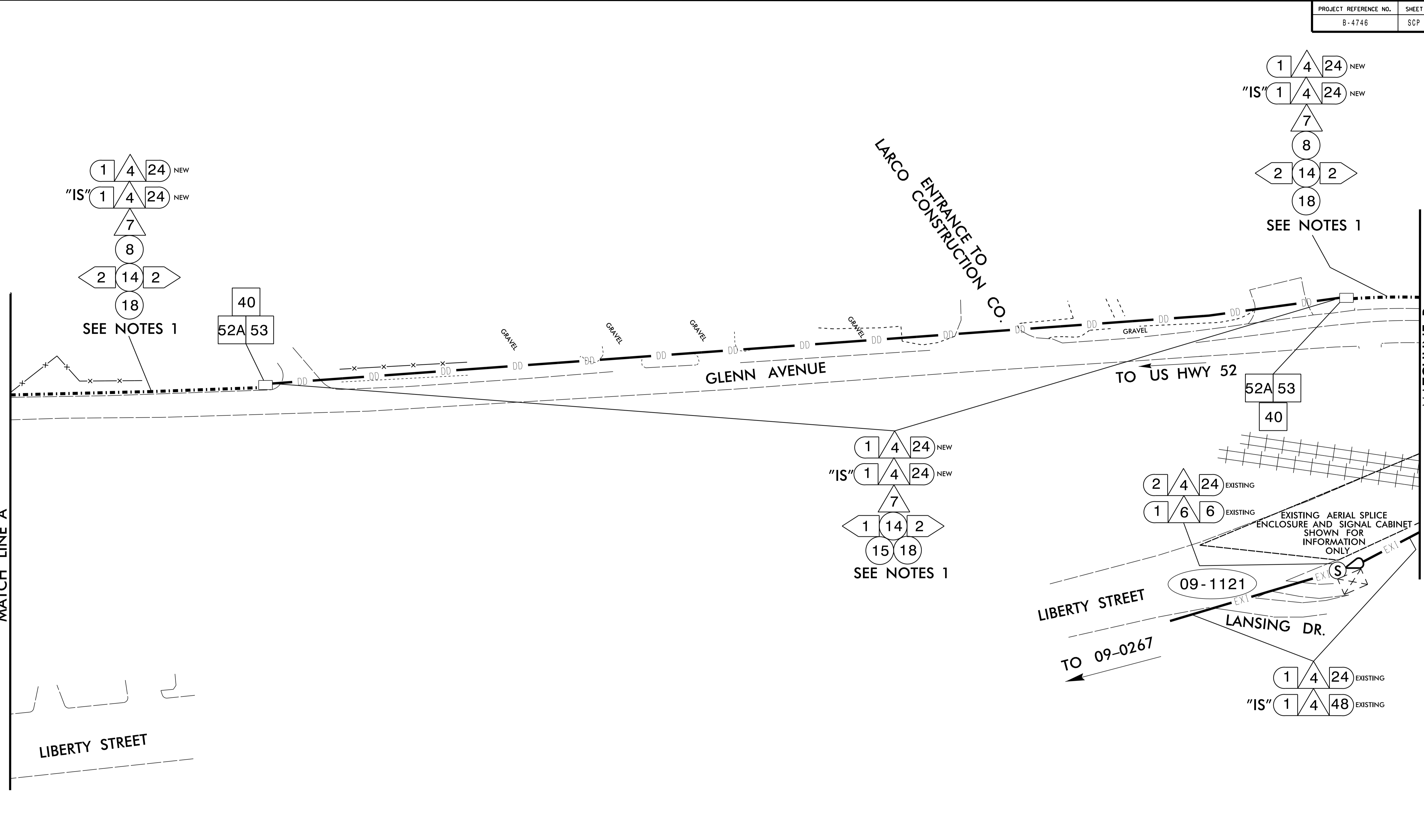
"IS" 1 4 24 EXISTING TO BE REMOVE BY OTHERS
 "IS" 2 4 48 EXISTING
 DO NOT DO ANY WORK AT THIS SPLICE ENCLOSURE TERMINATIONS TO BE DONE BY OTHERS

TMP PHASE 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| | | | |
|--|--|------------------------------------|--|
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | <p>COMMUNICATION CABLE AND CONDUIT ROUTING PLANS</p> | | |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: I. M. Lavery</p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> <p>INIT. DATE</p> | |

MATCHLINE A



MATCH LINE A

MATCHLINE B

"IS" = CITY OF WINSTON SALEM'S INFORMATION SYSTEM

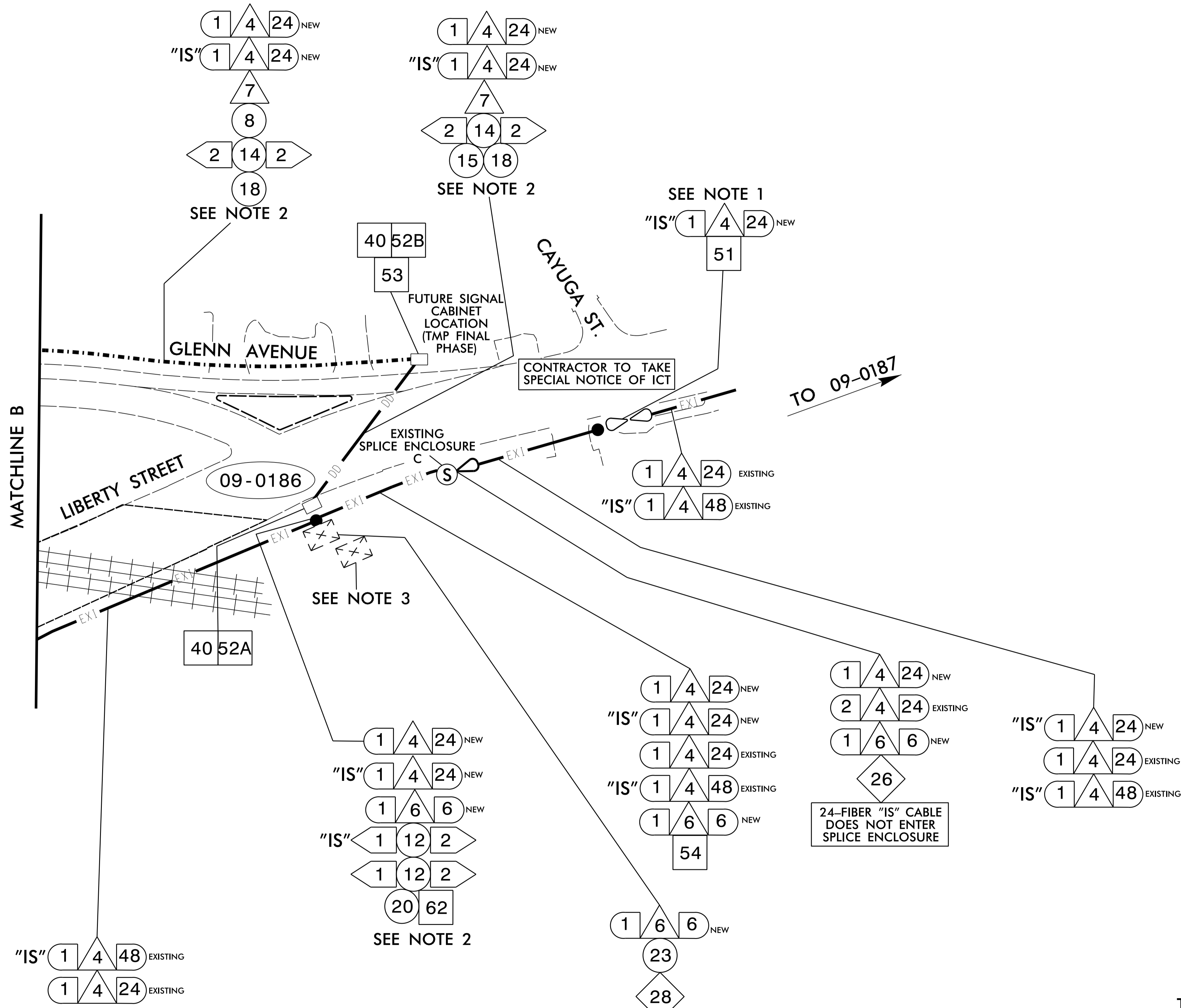
SEE GENERAL NOTES ON SCP 2.

1) INSTALL CITY "IS" CABLE IN SEPARATE CONDUIT/RISER.

TMP PHASE 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| | | | |
|--|---|------------------------------------|--|
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | <p>COMMUNICATION CABLE AND CONDUIT ROUTING PLANS</p> | | |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: I. M. Berry</p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> <p>INIT. DATE</p> | |



SEE GENERAL NOTES ON SCP 2.

NOTES:

- 1) COIL 100 FT OF 24-FIBER CITY "IS" FIBER ON CABLE STORAGE RACK FOR FUTURE TERMINATION AND USE BY THE CITY OF WINSTON SALEM "IS" DEPARTMENT.
- 2) INSTALL CITY "IS" CABLE IN SEPARATE CONDUIT/RISER.
- 3) EXISTING BASE MOUNTED CABINET TO BE REMOVED AND REPLACED WITH A POLE MOUNTED CABINET IN SAME QUADRANT.

REUSE EXISTING
ETHERNET SWITCH
SEE NOTE 3

"IS" = CITY OF WINSTON SALEM'S
INFORMATION SYSTEM

TMP PHASE 1

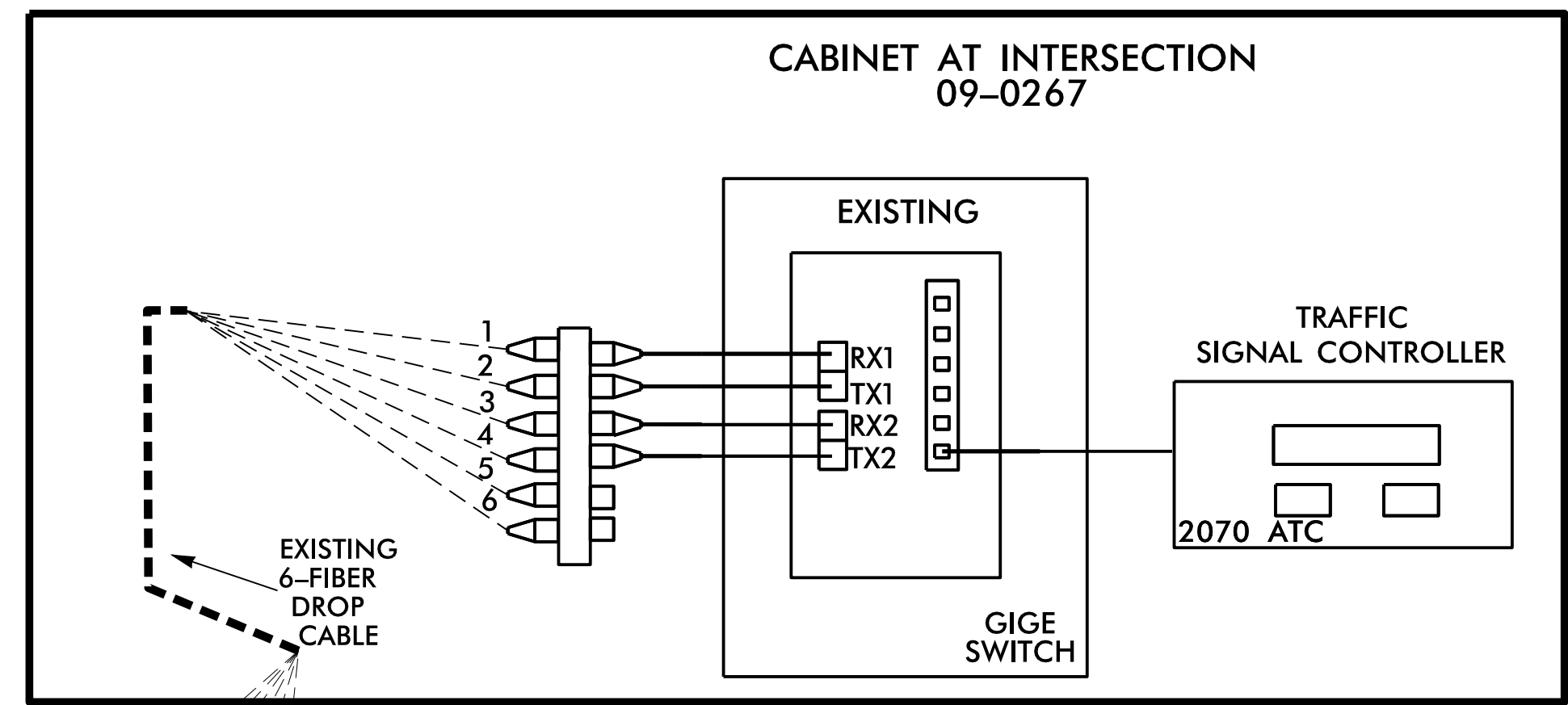
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

| | | | |
|--|---|------------------|-----------------|
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | <p>SPLICE PLANS</p> | | |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: I. M. Ivery</p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> | |
| <p>SCALE</p> <p>0 1" = 50'</p> | <p>DATE</p> | | <p>1/2/2018</p> |

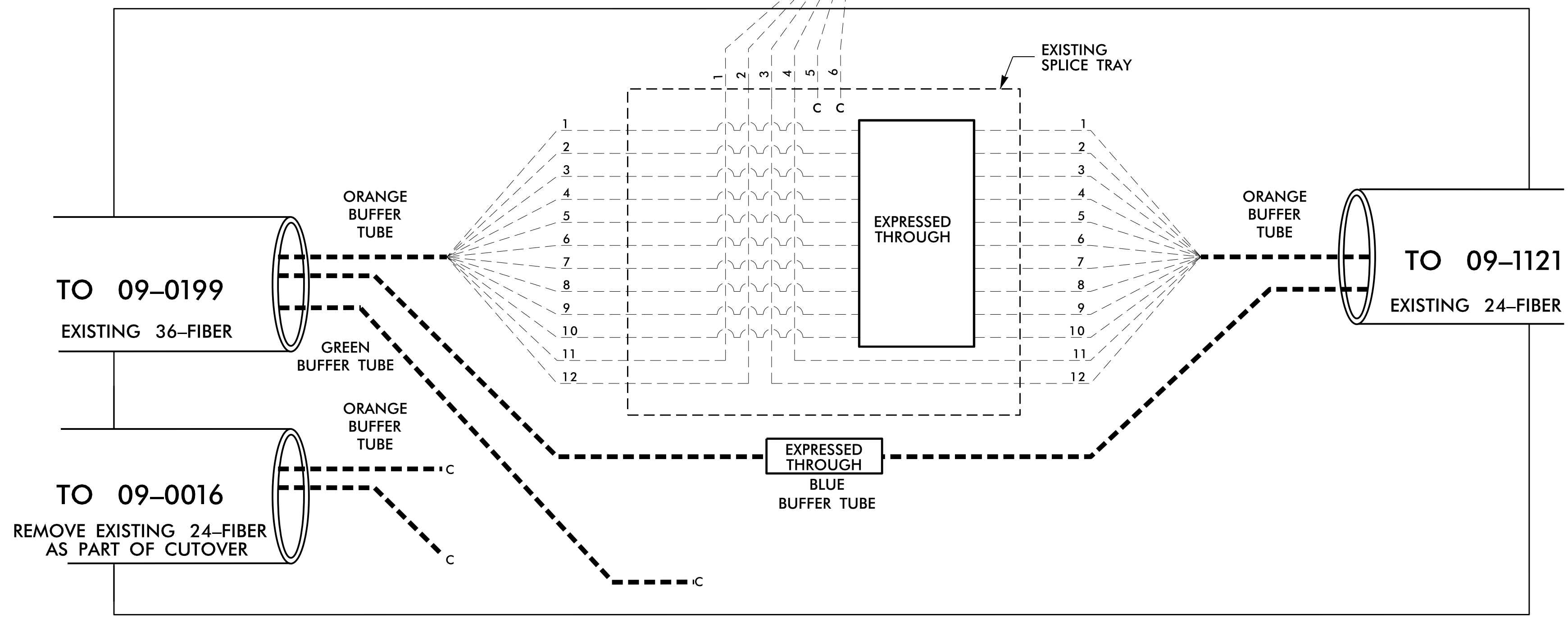
**MODIFY EXISTING AERIAL SPLICE ENCLOSURE
AKRON DRIVE AT
LIBERTY STREET
SIG. INV. # 09-0267**

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 | | LEGEND | |
|-----------------------------|-------------|--|--|
| (1) BLUE | (7) RED | C - CAP AND SEAL | |
| (2) ORANGE | (8) BLACK | X - FUSION SPLICE INDIVIDUAL FIBER | |
| (3) GREEN | (9) YELLOW | EXPRESS THROUGH SPLICE FIBERS THROUGH OR EXPRESS ENTIRE BUFFER TUBE AS NOTED | |
| (4) BROWN | (10) VIOLET | | |
| (5) SLATE | (11) ROSE | | |
| (6) WHITE | (12) AQUA | | |



**24-FIBER CABLE FOR CITY OF
WINSTON SALEM "IS"
DEPARTMENT
DOES NOT ENTER THIS SIGNAL
SYSTEM SPLICE ENCLOSURE**



- NOTES:**
- ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
 - 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.

TMP PHASE 1

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

| | | | |
|--|--|-------------------------|--|
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | SPLICE PLANS | | |
| | DIVISION 9 FORSYTH WINSTON SALEM PLAN DATE: DECEMBER 2017 PREPARED BY: H. T. BERGGREN, EI REVIEWED BY: I. M. Kury | REVISIONS INIT. DATE | |

DocuSigned by:
 Mohd Aslam
 1/2/2018
 DATE

EXISTING AERIAL SPLICE ENCLOSURE
LIBERTY STREET AT
LANSING DRIVE
SIG. INV. # 09-1121

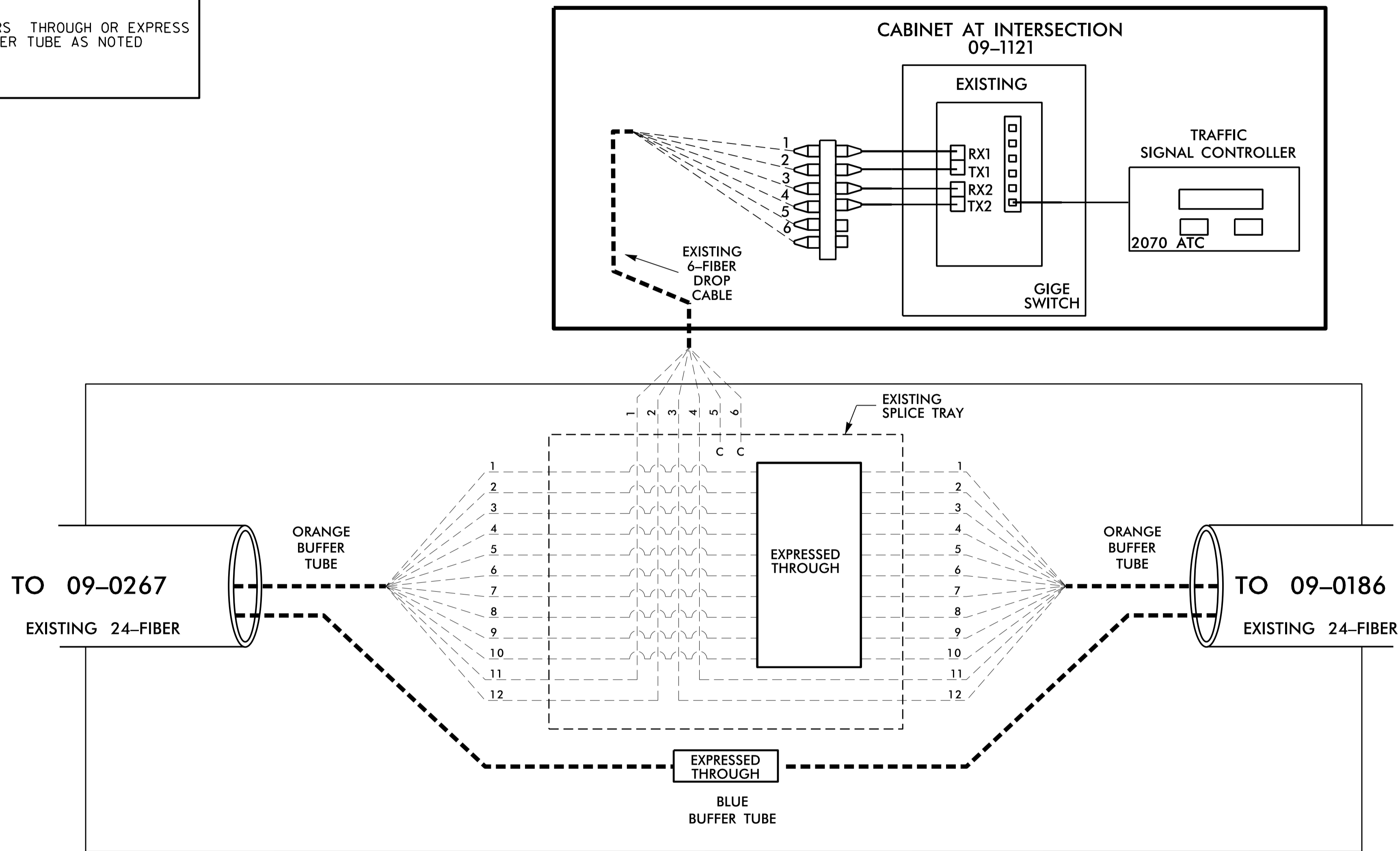
**SPLICE PLAN AT THIS LOCATION IS
SHOWN FOR INFORMATION ONLY.
NO WORK TO BE DONE AT THIS
LOCATION.**

Notes:

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

LEGEND

| | | |
|-----------------------------|-------------|--|
| COLOR CODE TIA/EIA 598-A | | C - CAP AND SEAL |
| (1) BLUE | (7) RED | X - FUSION SPLICE INDIVIDUAL FIBER |
| (2) ORANGE | (8) BLACK | EXPRESS THROUGH SPLICE FIBERS THROUGH OR EXPRESS ENTIRE BUFFER TUBE AS NOTED |
| (3) GREEN | (9) YELLOW | |
| (4) BROWN | (10) VIOLET | |
| (5) SLATE | (11) ROSE | |
| (6) WHITE | (12) AQUA | |



TMP PHASE 1

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

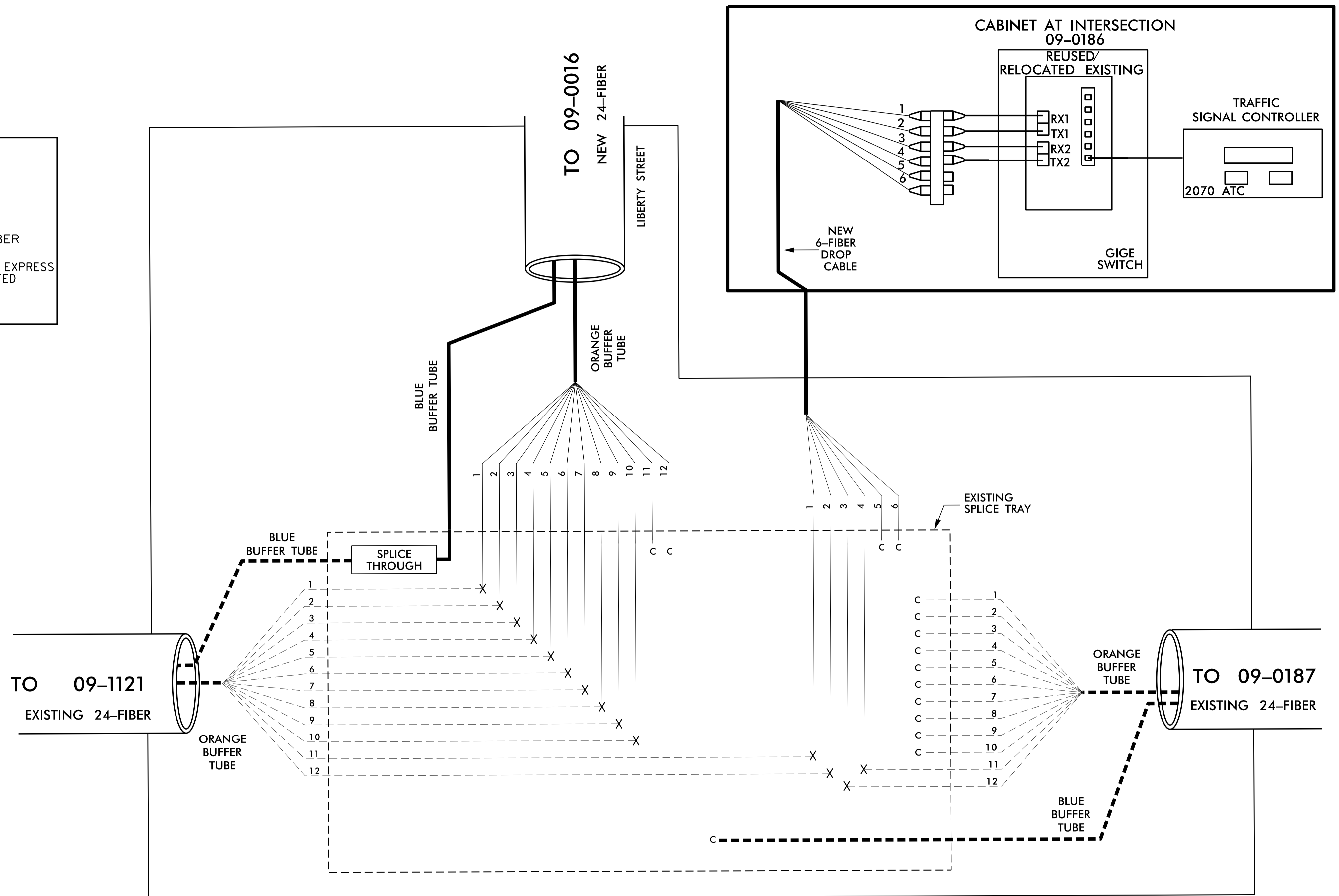
| | | |
|---------------------------------|---|---|
| | SPLICE PLANS | |
| | DIVISION 9 FORSYTH WINSTON SALEM PLAN DATE: DECEMBER 2017 REVIEWED BY: <i>I. M. Ivry</i> PREPARED BY: H. T. BERGGREN, EI | |
| SCALE 0 N/A | REVISIONS _____ _____ _____ | INIT. DATE _____ _____ _____ _____ _____ _____ |
| Prepared in the Offices of: | | SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032108 M. A. ASAMI 1/2/2018 DATE |

MODIFY EXISTING AERIAL SPLICE ENCLOSURE
LIBERTY STREET AT
GLENN AVENUE
SIG. INV. # 09-0186

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 | | LEGEND | |
|-----------------------------|-------------|------------------------------------|--|
| (1) BLUE | (7) RED | C - CAP AND SEAL | |
| (2) ORANGE | (8) BLACK | X - FUSION SPLICE INDIVIDUAL FIBER | |
| (3) GREEN | (9) YELLOW | EXPRESS THROUGH | SPLICE FIBERS THROUGH OR EXPRESS ENTIRE BUFFER TUBE AS NOTED |
| (4) BROWN | (10) VIOLET | | |
| (5) SLATE | (11) ROSE | | |
| (6) WHITE | (12) AQUA | | |

24-FIBER CABLE FOR CITY OF WINSTON SALEM "IS" DEPARTMENT DOES NOT ENTER THIS SIGNAL SYSTEM SPLICE ENCLOSURE



- NOTES:
- 1) ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
 - 2) 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.

TMP PHASE 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

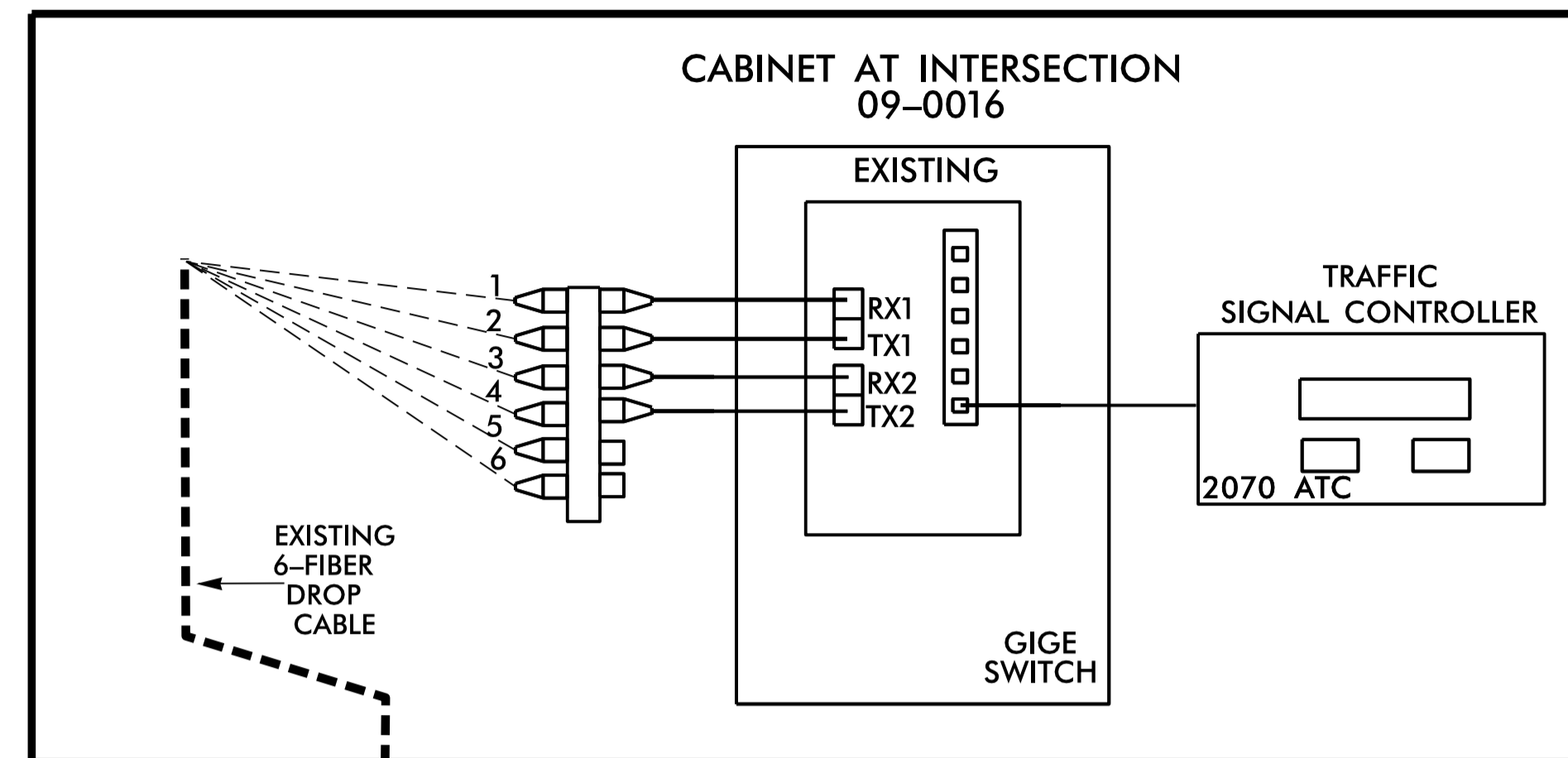
| | | | |
|--|---|------------------------------------|-----------------------------|
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | <p>SPLICE PLANS</p> | | |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: I. M. Berry</p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> <p>INIT. DATE</p> | |
| <p>DATE</p> | | | <p>DATE</p> <p>1/2/2018</p> |

**MODIFY EXISTING AERIAL SPLICE ENCLOSURE
AKRON DRIVE AT
GLENN AVENUE
SIG. INV. # 09-0016**

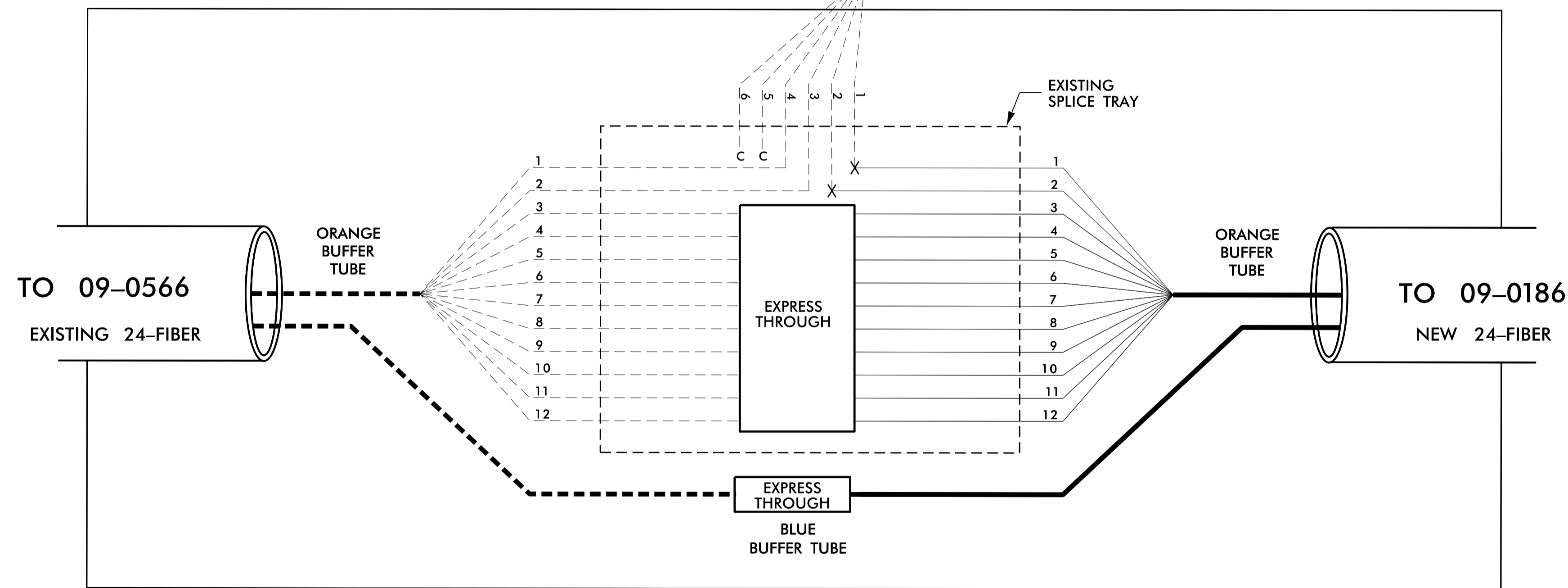
Notes:
Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

LEGEND

| | | |
|------------------------------------|-------------|--|
| COLOR CODE TIA/EIA 598-A | | C - CAP AND SEAL |
| (1) BLUE | (7) RED | X - FUSION SPLICE INDIVIDUAL FIBER |
| (2) ORANGE | (8) BLACK | EXPRESS THROUGH SPLICE FIBERS THROUGH OR EXPRESS ENTIRE BUFFER TUBE AS NOTED |
| (3) GREEN | (9) YELLOW | |
| (4) BROWN | (10) VIOLET | |
| (5) SLATE | (11) ROSE | |
| (6) WHITE | (12) AQUA | |



**24-FIBER CABLE FOR CITY OF
WINSTON SALEM "IS"
DEPARTMENT
DOES NOT ENTER THIS SIGNAL
SYSTEM SPLICE ENCLOSURE**



- NOTES:**
- ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
 - INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"
 - SPLICE LOCATION
 - DATE
 - COMPANY NAME
 - 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.

TMP PHASE 1

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

| | | | |
|--|---|-------------------------|---------------------------------|
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | SPLICE PLANS | | |
| | DIVISION 9 FORSYTH WINSTON SALEM PLAN DATE: DECEMBER 2017 PREPARED BY: H. T. BERGGREN, EI REVIEWED BY: I. M. Ivery | REVISIONS INIT. DATE | |
| SCALE 0 N/A | DATE 1/2/2018 | | SEAL 032108 MOHD A. ASLAM |

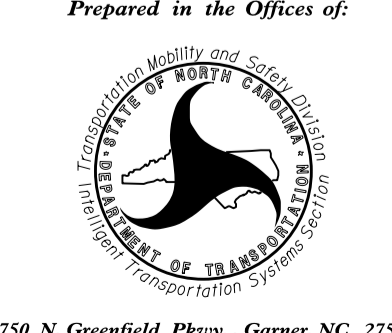
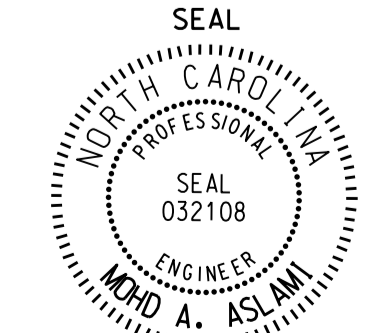
GENERAL NOTES:

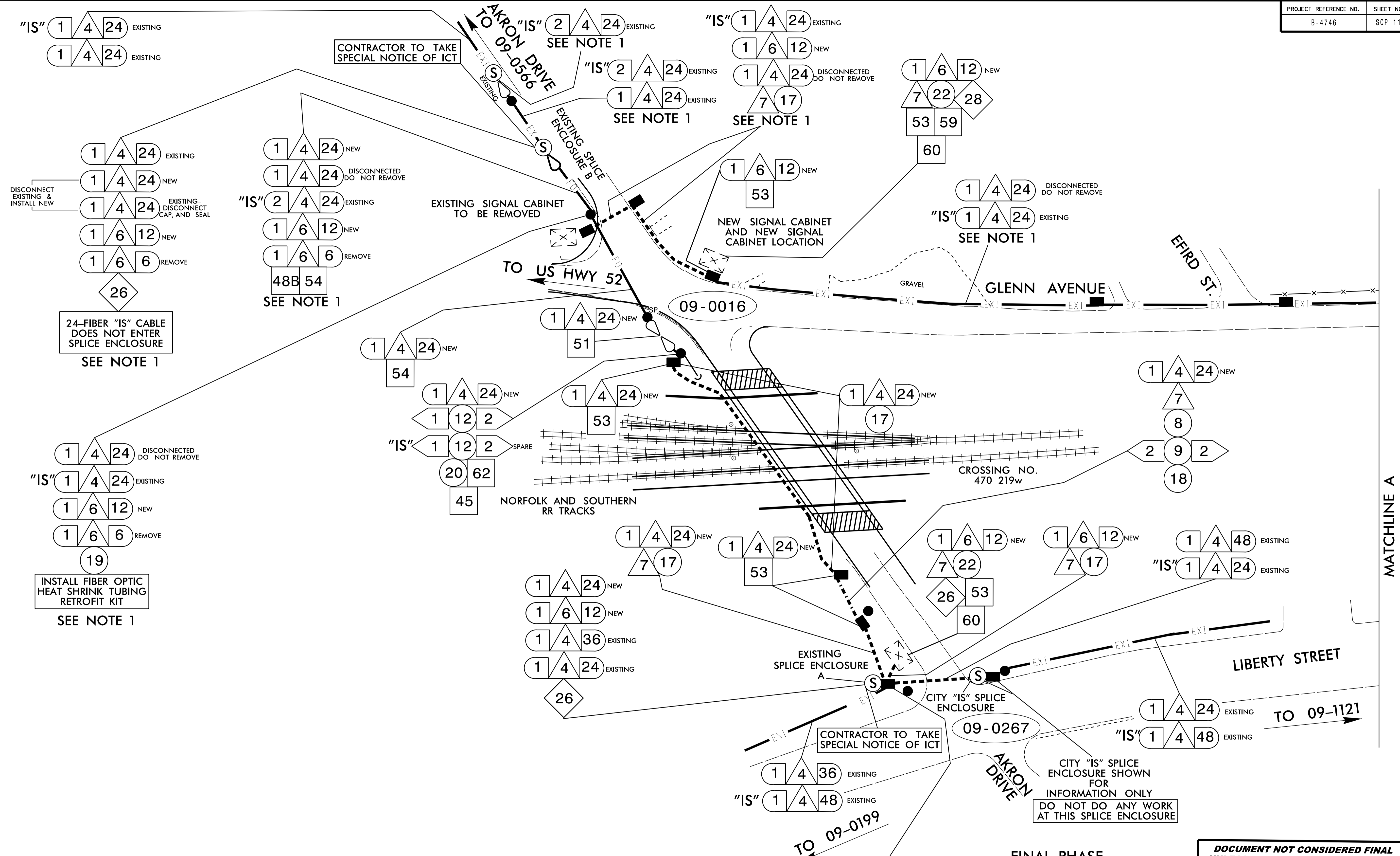
- 1) CONTRACTOR TO BECOME FAMILIAR WITH THE "ICT" ASSOCIATED WITH THE FOLLOWING WORK.
- 2) NOTIFY THE CITY OF WINSTON SALEM'S SIGNAL SYSTEM OPERATIONS MANAGER, LARRY WALKER AT (336-747-6879) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEM COMMUNICATIONS CABLE. NOTIFY THE SIGNAL SYSTEM OPERATIONS MANAGER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. ALL WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- 3) USE SPLICE CONFIGURATION/ ARRANGEMENTS RECORDED IN TMP PHASE 1 FROM THE THE FOLLOWING LOCATIONS:
 EXISTING SPLICE ENCLOSURE "B"
 EXISTING SIGNAL CABINET 09-0016
 EXISTING SPLICE ENCLOSURE "C"
 EXISTING SIGNAL CABINET 09-0186
 EXISTING SPLICE ENCLOSURE "A"
 EXISTING INTERSECTION 09-0267 AND
 COMPARE THE RECORDED INFORMATION TO THE SUPPLIED FINAL PHASE SPLICE PLANS. IF DISCREPANCIES EXIT, 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 PLANS. (NOTE: THE ONLY DISCREPANCIES ANTICIPATED ARE FROM CHANGING OUT THE 6-FIBER DROP CABLE TO 12-FIBER DROP CABLE.)

 *NOTE THAT THE CITY "IS" DEPARTMENT WILL BE RESPONSIBLE FOR ALL SPLICING AND OPERATIONS OF THE CITY "IS" CABLE.
- 4) CONTACTOR IS TO INSTALL NEW 24-FIBER CABLE ALONG AKRON DRIVE FOR CITY SIGNAL SYSTEM. INSTALL CABLE STARTING NEAR 09-0016 TO THE VICINITY OF 09-0267.
- 5) ONCE CABLE IS IN PLACE FROM STEP 4 ABOVE, BEGIN THE CUTOVER AND SPLICING OF THE CITY OF WINSTON SALEM'S SIGNAL SYSTEM FIBER NETWORK.
- 6) UPON COMPLETION OF CUTOVER CONTRACTOR TO LEAVE 24-FIBER CABLE ALONG GLENN AVENUE DISCONNECTED CAPPED AND LEFT IN PLACE FOR FUTURE USE. NOTIFY THE ENGINEER WHEN ALL WORK IS COMPLETE.

FINAL PHASE

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

| | | | |
|---|---|--|--|
|  Prepared in the Offices of: 750 N. Greenfield Pkwy., Garner, NC 27529 | COMMUNICATION CABLE AND CONDUIT ROUTING PLANS | |  SEAL 032108 ENGINEER MOHD A. ASLAM |
| | DIVISION 9 FORSYTH WINSTON SALEM PLAN DATE: DECEMBER 2017 REVIEWED BY: <i>I. N. Avery</i> PREPARED BY: H. T. BERGGREN, EI DATE: _____ | | |
| SCALE 0 _____ N/A | REVISIONS INIT. DATE | | Date Signed by: <i>Mohd Aslam</i> 1/2/2018 _____ DATE |



"IS" = CITY OF WINSTON SALEM'S INFORMATION SYSTEM

SEE GENERAL NOTES ON SCP 10.

1) NOTE THAT THE CITY "IS" DEPARTMENT WILL BE RESPONSIBLE FOR ALL SPLICING AND OPERATIONS OF THE CITY "IS" CABLE.

FINAL PHASE

Prepared in the Offices of:

COMMUNICATION CABLE AND CONDUIT ROUTING PLANS

DIVISION 9 FORSYTH WINSTON SALEM

PLAN DATE: DECEMBER 2017 REVIEWED BY: I. M. Berry

PREPARED BY: H. T. BERGGREN, EI

REVISIONS: _____ INIT. DATE

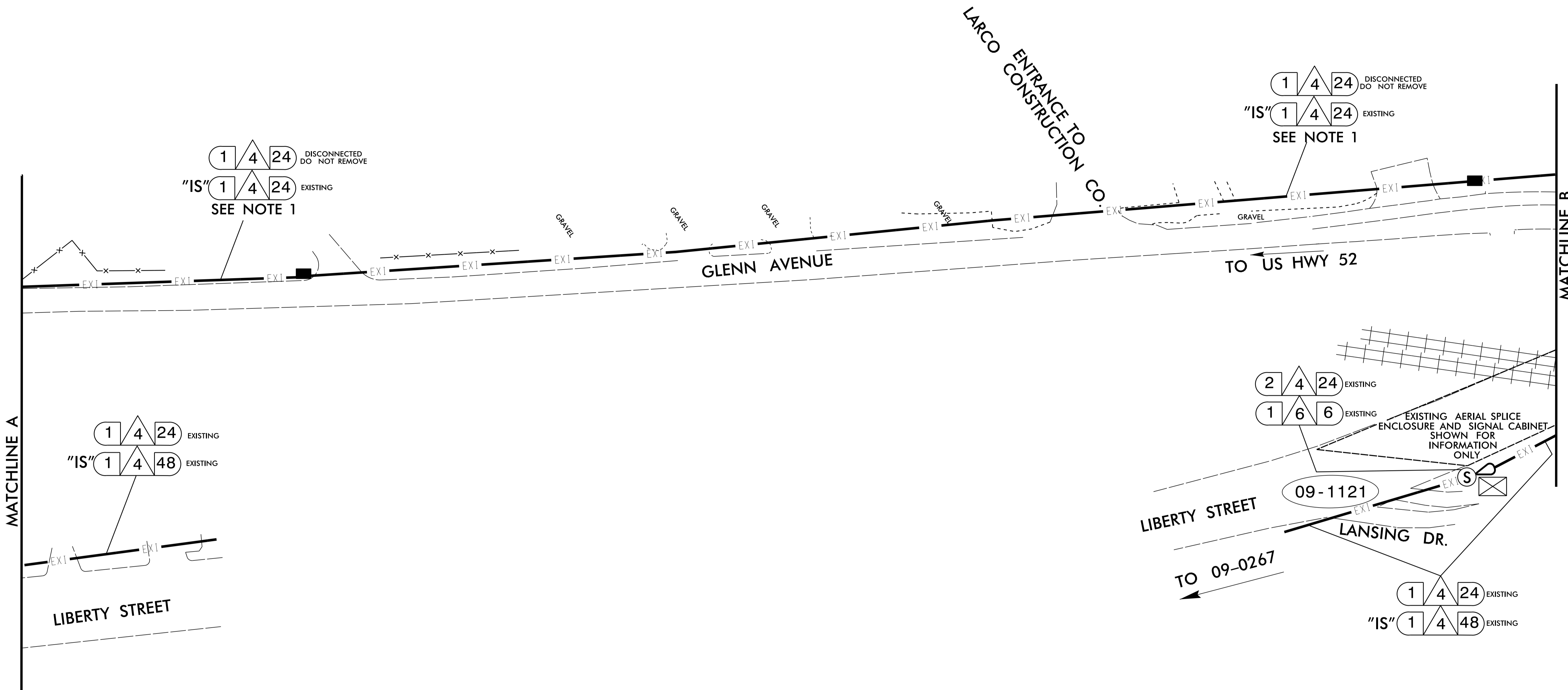
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DATE: 1/2/2018

MATCHLINE A

SHEET SHOWN FOR INFORMATION ONLY



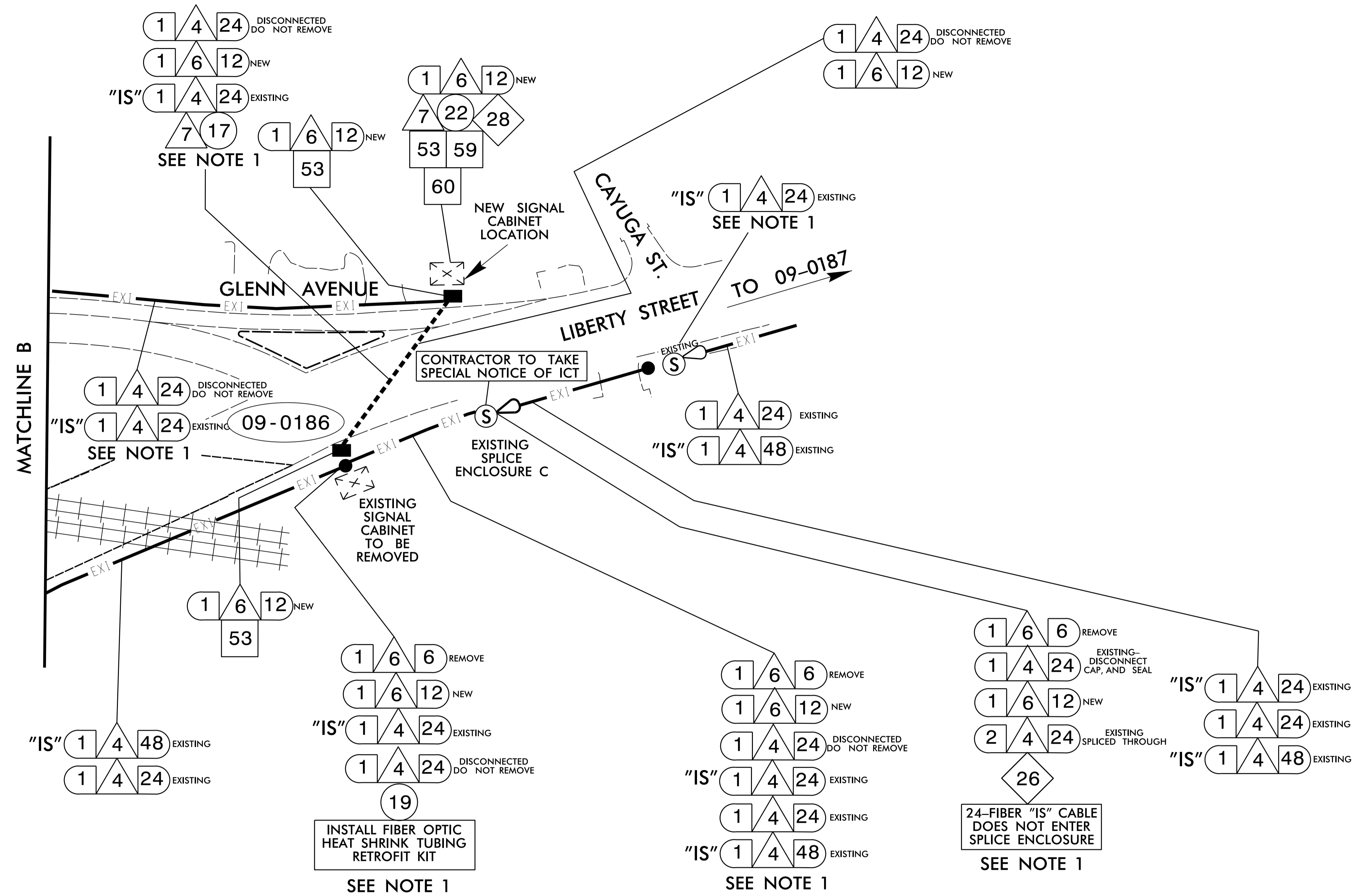
"IS" = CITY OF WINSTON SALEM'S INFORMATON SYSTEM

1) NOTE THAT THE CITY "IS" DEPARTMENT WILL BE RESPONSIBLE FOR ALL SPLICING AND OPERATIONS OF THE CITY "IS" CABLE.

FINAL PHASE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

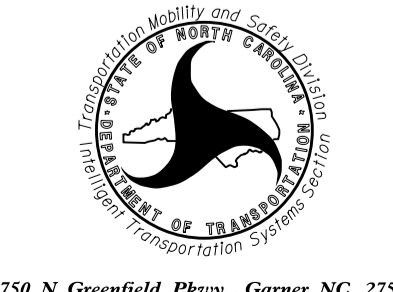
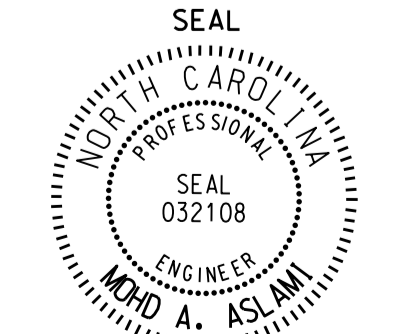
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|--|--|------------------------------------|--|
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | <p>COMMUNICATION CABLE AND CONDUIT ROUTING PLANS</p> | | |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: <i>I. M. Berry</i></p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> <p>INIT. DATE</p> | |



1) NOTE THAT THE CITY "IS" DEPARTMENT WILL BE RESPONSIBLE FOR ALL SPLICING AND OPERATIONS OF THE CITY "IS" CABLE.

FINAL PHASE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

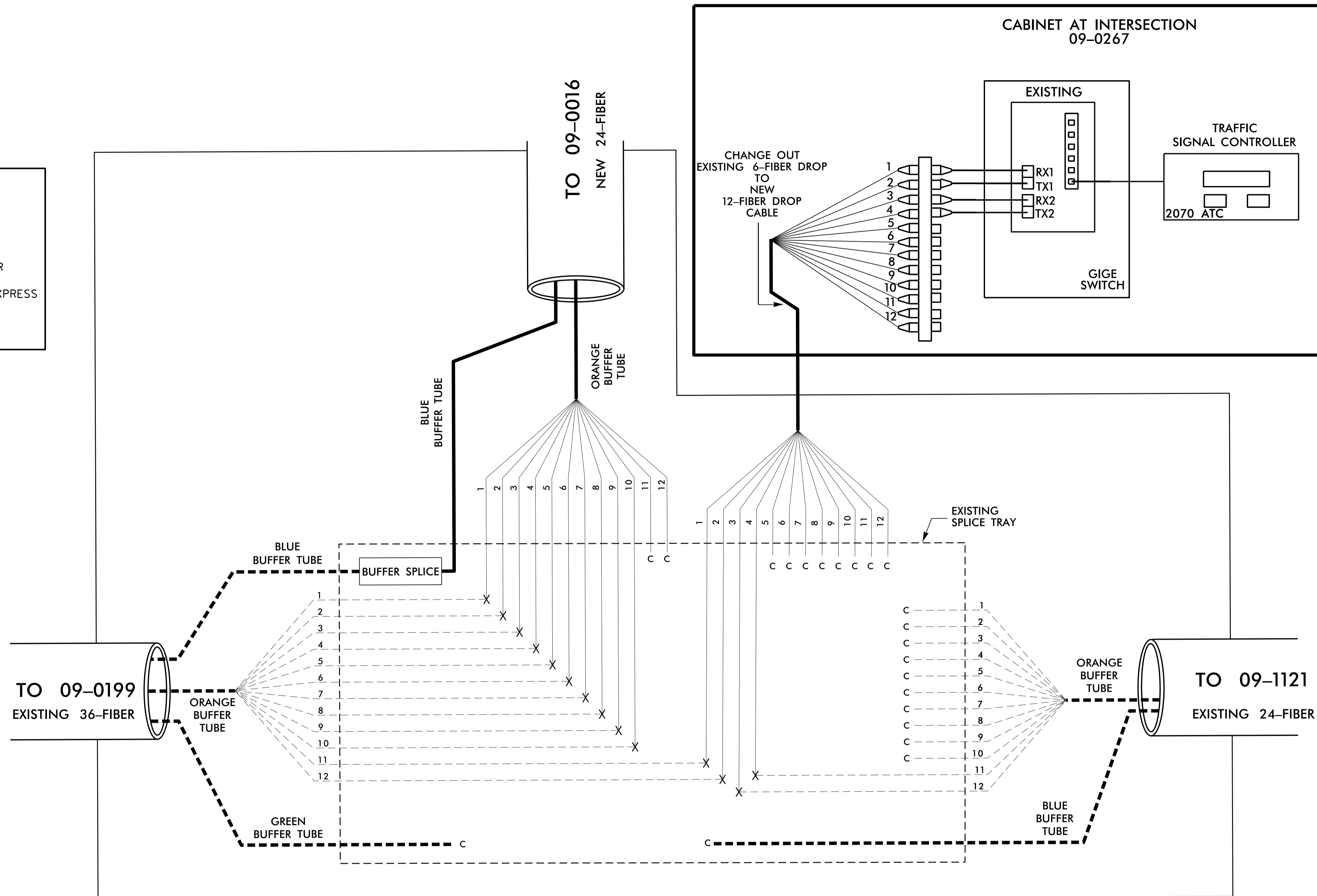
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|--|--|------------------------------------|---|
|  <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | <p>COMMUNICATION CABLE AND CONDUIT ROUTING PLANS</p> | |  |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: <i>I. M. Avery</i></p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> <p>INIT. DATE</p> | |

MODIFY EXISTING AERIAL SPLICE ENCLOSURE
AKRON DRIVE AT
LIBERTY STREET
SIG. INV. # 09-0267

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 | | LEGEND | |
|-----------------------------|-------------|--|--|
| (1) BLUE | (7) RED | C - CAP AND SEAL | |
| (2) ORANGE | (8) BLACK | X - FUSION SPLICE INDIVIDUAL FIBER | |
| (3) GREEN | (9) YELLOW | EXPRESS THROUGH SPLICE FIBERS THROUGH OR EXPRESS ENTIRE BUFFER TUBE AS NOTED | |
| (4) BROWN | (10) VIOLET | | |
| (5) SLATE | (11) ROSE | | |
| (6) WHITE | (12) AQUA | | |

SPLICE PLANS SHOULD MATCH
SPLICE CONFIGURATIONS
RECORDED IN TMP PHASE 1
EXCEPT THE CHANGE OUT
FROM 6 TO 12
FIBER DROP CABLE.



- NOTES:
- 1) ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
 - 2) 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.

FINAL PHASE

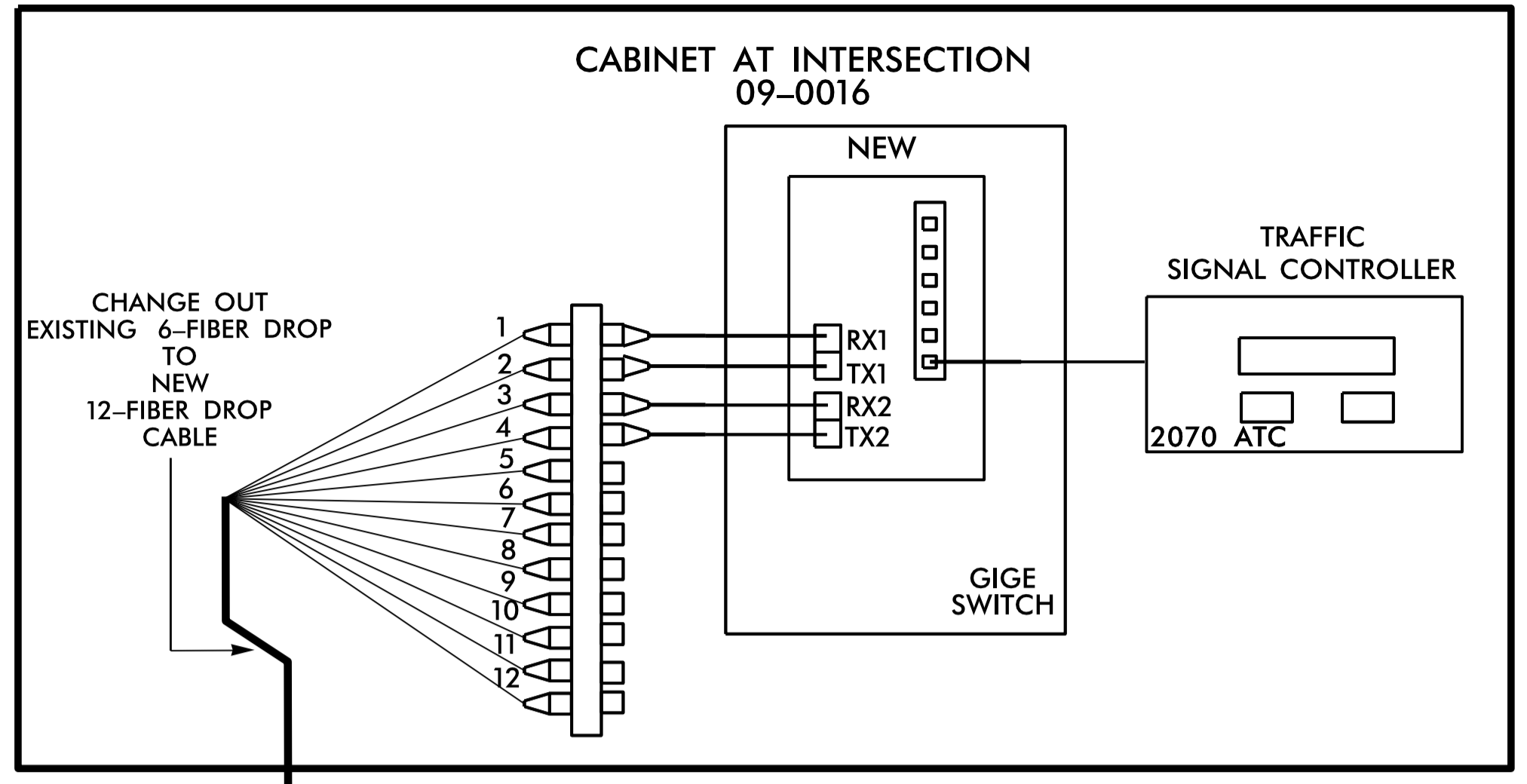
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| | | | |
|--|---|------------------------------------|--|
| | <p>SPLICE PLANS</p> | | |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: I. N. Ivery</p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> <p>INIT. DATE</p> | |
| <p>750 N. Greenfield Pkwy., Garner, NC 27529</p> | | | |
| <p>DATE 1/2/2018</p> | | | |

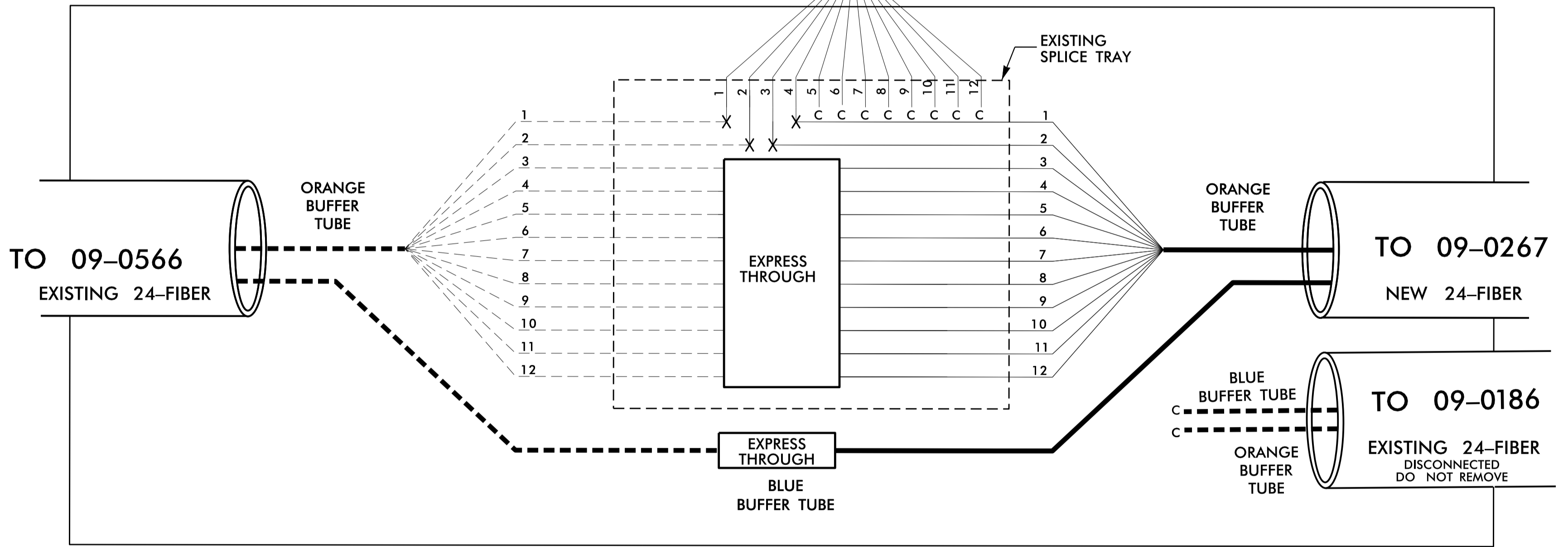
MODIFY EXISTING AERIAL SPLICE ENCLOSURE
AKRON DRIVE AT
GLENN AVENUE
SIG. INV. # 09-0016

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 | | LEGEND | |
|-----------------------------|-------------|--|--|
| (1) BLUE | (7) RED | C - CAP AND SEAL | |
| (2) ORANGE | (8) BLACK | X - FUSION SPLICE INDIVIDUAL FIBER | |
| (3) GREEN | (9) YELLOW | EXPRESS THROUGH SPLICE FIBERS THROUGH OR EXPRESS ENTIRE BUFFER TUBE AS NOTED | |
| (4) BROWN | (10) VIOLET | | |
| (5) SLATE | (11) ROSE | | |
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SPLICE PLANS SHOULD MATCH
SPLICE CONFIGURATIONS
RECORDED IN TMP PHASE 1
EXCEPT THE CHANGE OUT
FROM 6 TO 12
FIBER DROP CABLE.



- NOTES:
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FINAL PHASE

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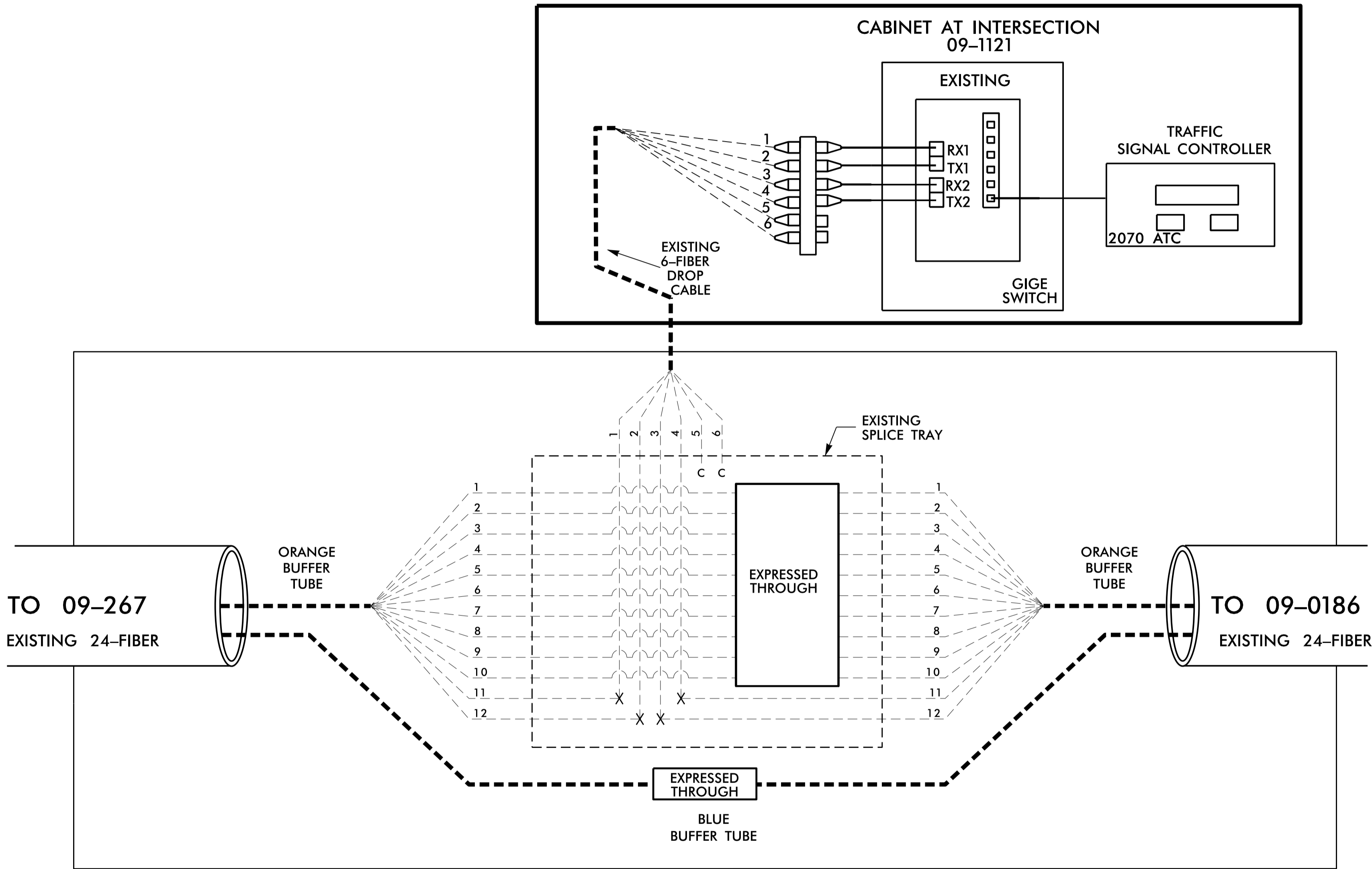
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| | <p>SPLICE PLANS</p> | | |
| | <p>DIVISION 9 FORSYTH WINSTON SALEM</p> <p>PLAN DATE: DECEMBER 2017 REVIEWED BY: I. M. Berry</p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVISIONS</p> <p>INIT. DATE</p> | |

EXISTING AERIAL SPLICE ENCLOSURE
LIBERTY STREET AT
LANSING DRIVE
SIG. INV. # 09-1121

SPLICE PLAN AT THIS LOCATION IS SHOWN FOR INFORMATION ONLY. NO WORK TO BE DONE AT THIS LOCATION.

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 | | LEGEND | |
|-----------------------------|-------------|---|--|
| (1) BLUE | (7) RED | C - CAP AND SEAL | |
| (2) ORANGE | (8) BLACK | X - FUSION SPLICE INDIVIDUAL FIBER | |
| (3) GREEN | (9) YELLOW | EXPRESS THROUGH SPLICE FIBERS THROUGH OR EXPRESS ENTIRE BUFFER TUBE AS NOTED | |
| (4) BROWN | (10) VIOLET | | |
| (5) SLATE | (11) ROSE | | |
| (6) WHITE | (12) AQUA | | |



FINAL PHASE

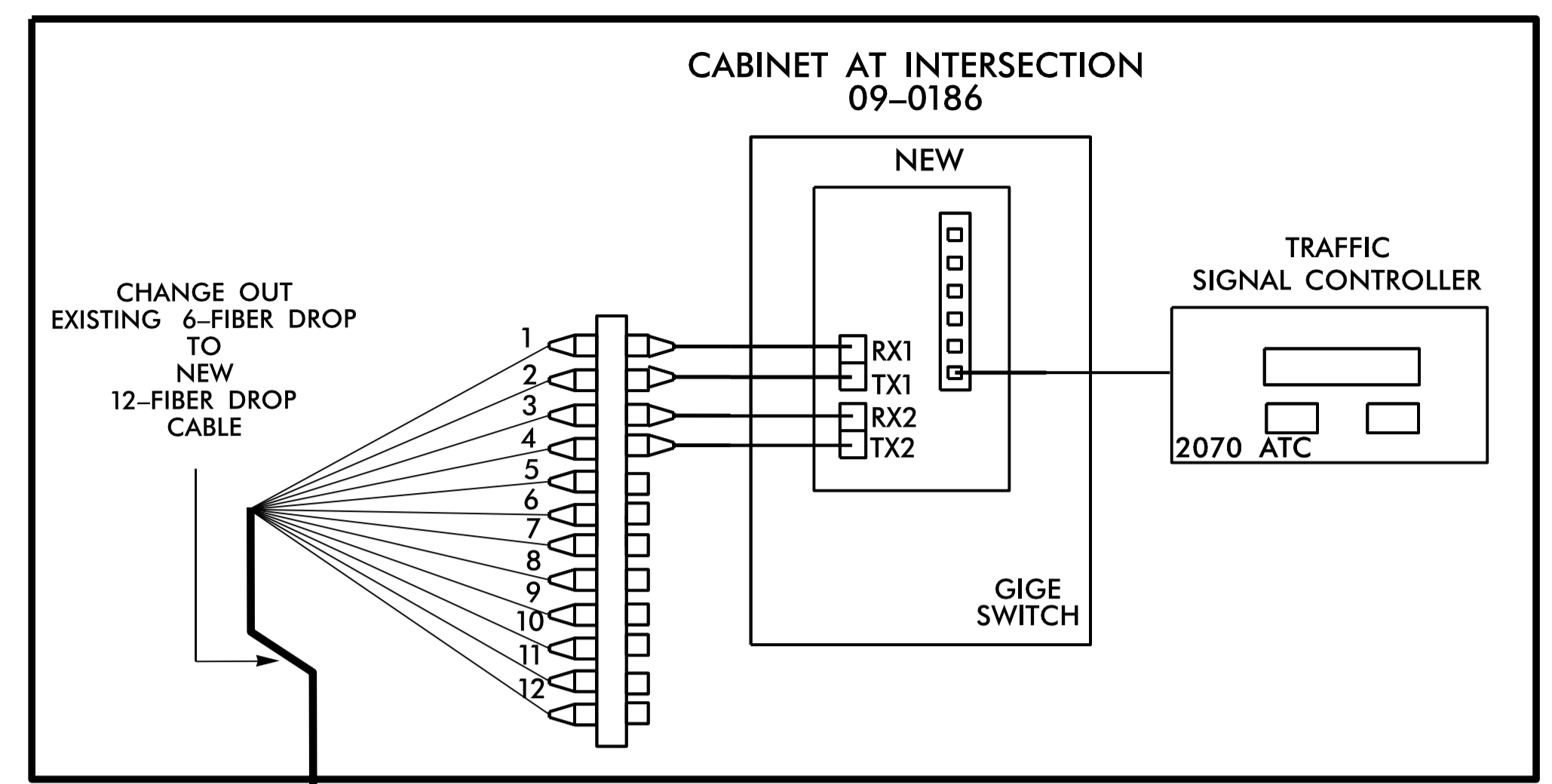
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|-------------------|--|--------------------------------|--------------|
| | <p>SPLICE PLANS</p> <p>DIVISION 9 FORSYTH WINSTON SALEM</p> | | |
| | <p>PLAN DATE: DECEMBER 2017</p> <p>PREPARED BY: H. T. BERGGREN, EI</p> | <p>REVIEWED BY: I. M. Kury</p> | |
| <p>SCALE: N/A</p> | <p>REVISIONS:</p> | <p>INIT. DATE:</p> | <p>DATE:</p> |

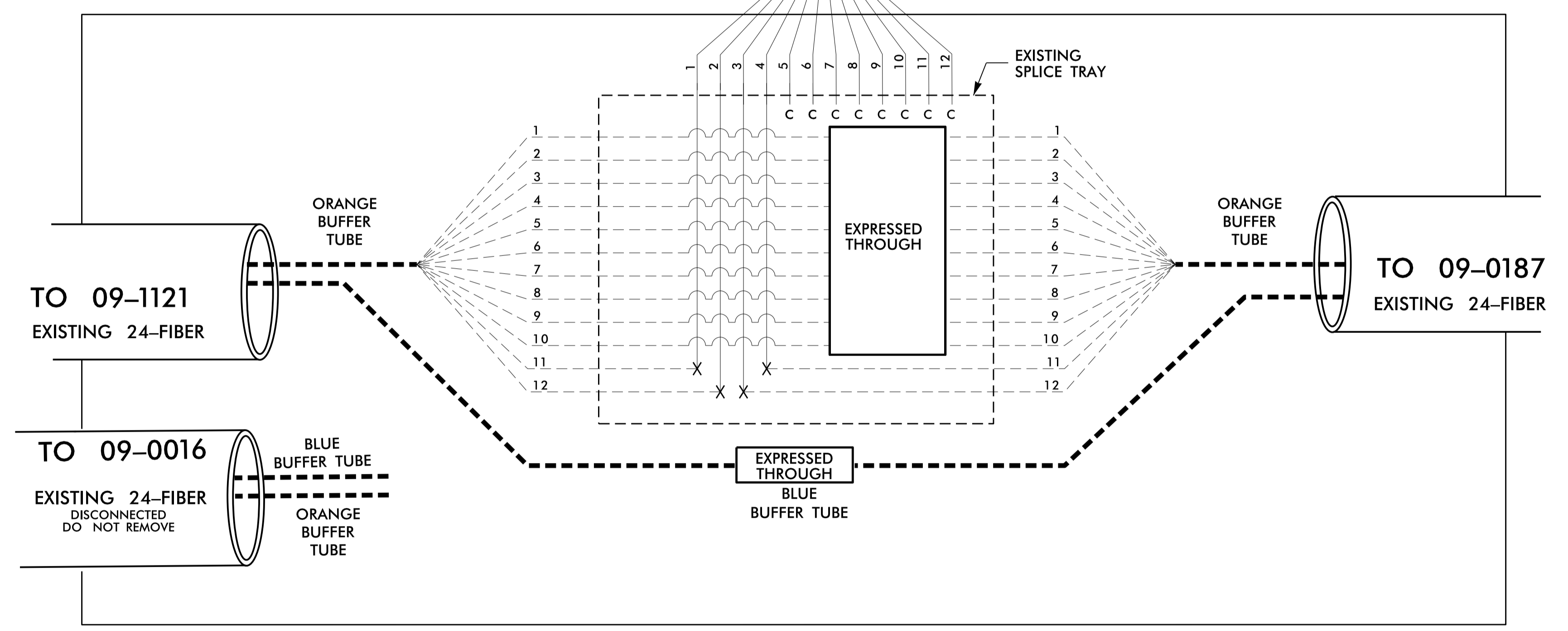
**MODIFY EXISTING AERIAL SPLICE ENCLOSURE
LIBERTY STREET AT
GLENN AVENUE
SIG. INV. # 09-0186**

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 | | LEGEND | |
|-----------------------------|-------------|--|--|
| (1) BLUE | (7) RED | C - CAP AND SEAL | |
| (2) ORANGE | (8) BLACK | X - FUSION SPLICE INDIVIDUAL FIBER | |
| (3) GREEN | (9) YELLOW | EXPRESS THROUGH SPLICE FIBERS THROUGH OR EXPRESS ENTIRE BUFFER TUBE AS NOTED | |
| (4) BROWN | (10) VIOLET | | |
| (5) SLATE | (11) ROSE | | |
| (6) WHITE | (12) AQUA | | |



**SPLICE PLANS SHOULD MATCH
SPLICE CONFIGURATIONS
RECORDED IN TMP PHASE 1
EXCEPT THE CHANGE OUT
FROM 6 TO 12
FIBER DROP CABLE.**



- NOTES:**
- ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
 - INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"
 - SPLICE LOCATION
 - DATE
 - COMPANY NAME
 - 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.

FINAL PHASE

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| | | | |
|----------------|--|------------|------------------|
| | SPLICE PLANS | | |
| | DIVISION 9 FORSYTH WINSTON SALEM PLAN DATE: DECEMBER 2017 REVIEWED BY: I. M. Berry PREPARED BY: H. T. BERGGREN, EI | | |
| SCALE 0 N/A | REVISIONS | INIT. DATE | DATE 1/2/2018 |