

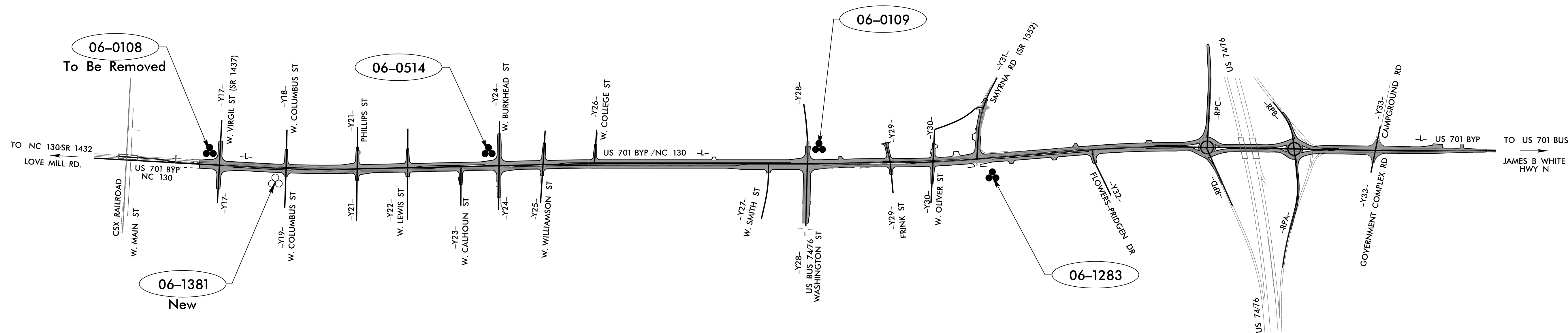
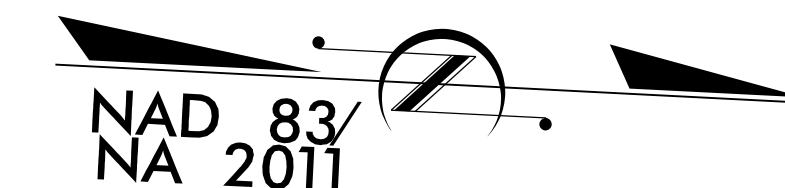
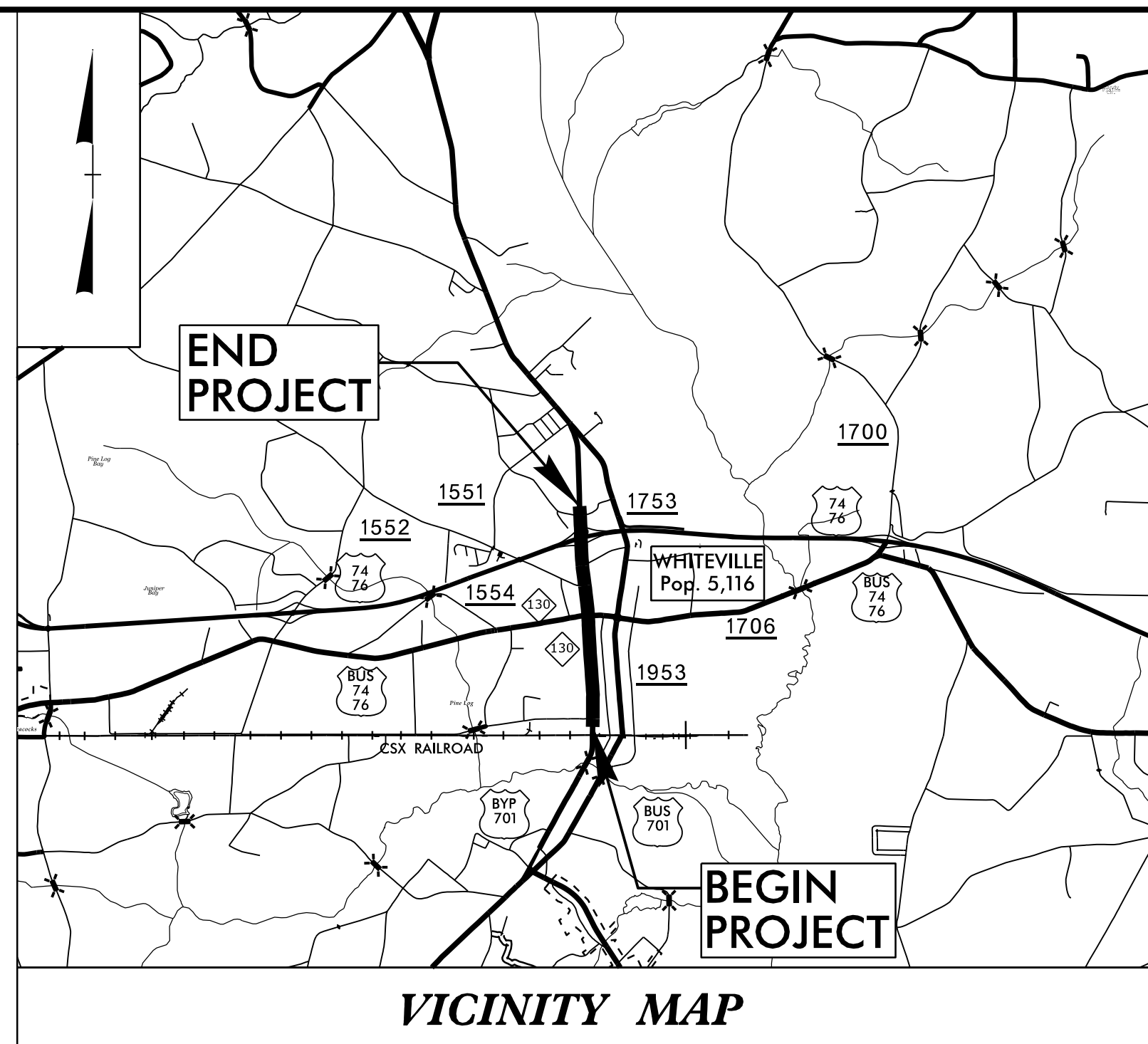
**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**TRAFFIC SIGNAL AND SIGNAL COMMUNICATIONS PLAN
COLUMBUS COUNTY**

**LOCATION: US 701 BYPASS (J.K. POWELL BOULEVARD) FROM W. COLUMBUS STREET
TO SR 1552 (SMYRNA ROAD / McDONALD'S DRIVEWAY)**

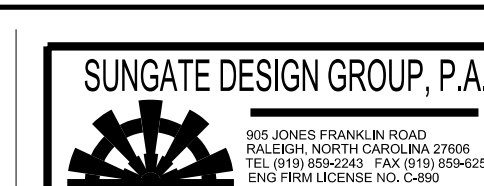
TYPE OF WORK: TRAFFIC SIGNALS AND TRAFFIC SIGNAL COMMUNICATIONS

TIP PROJECT: R-5020B



CONTRACT:

| INDEX OF PLANS | | |
|-----------------------|--------------------|--|
| SHEET NUMBER | SIGNAL INV. NUMBER | LOCATION /DESCRIPTION |
| Sig. 1.0 | - | Tile Sheet |
| Sig. 2.0 - Sig. 3.2 | 06-1381 | US 701 Byp/NC 130 (S. J.K. Powell Blvd) at W. Columbus St. |
| Sig. 4.0 - Sig. 7.2 | 06-0514 | US 701 Byp/NC 130 (N. J.K. Powell Blvd) at Burkhead St. |
| Sig. 8.0 - Sig. 10.2 | 06-0109 | US 701 Byp/NC 130 (N. J.K. Powell Blvd) at US 74-76/NC 130 (Washington St.) |
| Sig. 11.0 - Sig. 12.2 | 06-1283 | US 701 Byp (N. J.K. Powell Blvd) at SR 1552 (Smyrna Rd.)/McDonald's D/W |
| Sig. 13.0 - Sig. 16.2 | Off-site | Signal Equipment Upgrades to ASC3 Controllers keeping Existing Cabinets |
| Sig. 17.0 - Sig. 27.2 | Off-site | Signal Equipment Upgrades to ASC3 Controllers and New Cabinets |
| Sig. 28.0 | - | Plate Drawings: 1700D01 - Electrical Service Grounding; 1720D01 - Wood Poles |
| Sig. 29.0 | - | Plate Drawing: 1743D01 - Pedestals (Foundations) |
| MI - M8 | - | Metal Pole Design Plans |
| SCP1 - SCP14 | - | Communications Cable and Conduit/Routing Plans |
| SCP15 - SCP33 | - | Splice Details |
| ITS1 - ITS3 | - | Queue Back-up Warning System |



Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and Standard Specifications for Roads and Structures" dated January 2018

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS UNIT

Contacts:

Meghan E. LeBlanc, P.E. - Eastern Region Signals Project Engineer
Keith M. Mims, P.E. - Signal Equipment Design Engineer
Gregg Green - Signal Communications Project Engineer

Prepared for the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY
DIVISION
Transportation Systems Management & Operations Unit



PHASING DIAGRAM

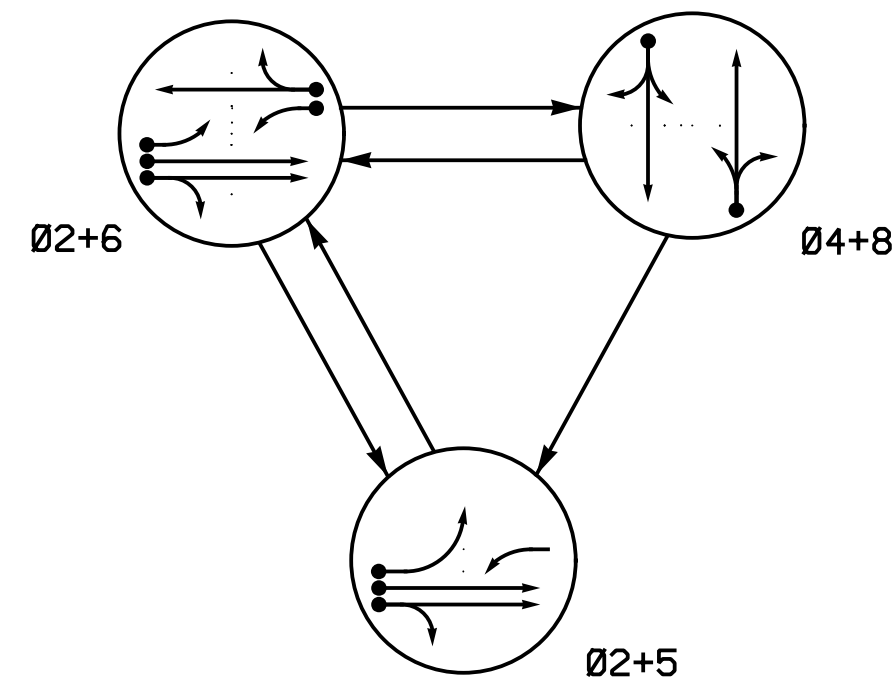
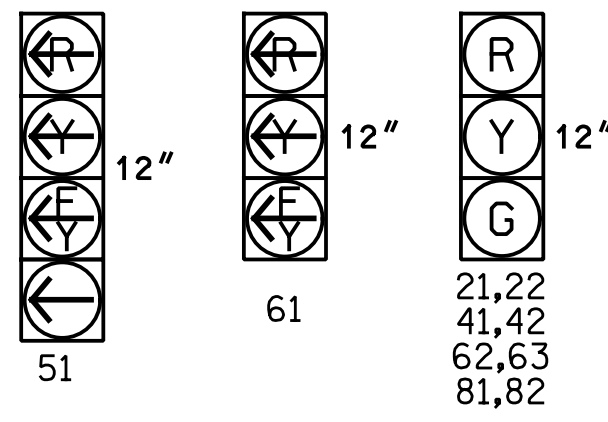


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|------|------|-----|
| | Ø2+5 | Ø2+6 | Ø4+8 | F L |
| 21,22 | G | G | R | Y |
| 41,42 | R | R | G | R |
| 51 | F | F | R | Y |
| 61 | F | F | R | Y |
| 62,63 | R | G | R | Y |
| 81,82 | R | R | G | R |

SIGNAL FACE I.D.
All Heads L.E.D.



ASC/3 DETECTOR INSTALLATION CHART

| LOOP | DETECTOR | | | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 2A | 6X6 | 300 | * | X | 2 | Yes | - | - | X | N | - | X |
| 2B | 6X6 | 300 | * | X | 2 | Yes | - | - | X | N | - | X |
| 4A | 6X40 | 0 | * | X | 4 | Yes | - | 10 | - | N | - | X |
| 5A | 6X40 | 0 | * | X | 5 | Yes | - | 15 | - | N | - | X |
| 6A | 6X6 | 300 | * | X | 6 | Yes | - | - | X | N | - | X |
| 6B | 6X40 | 0 | * | X | 6 | Yes | - | - | X | N | - | X |
| 8A | 6X40 | 0 | * | X | 8 | Yes | - | 10 | - | N | - | X |

* Video Detection Zone

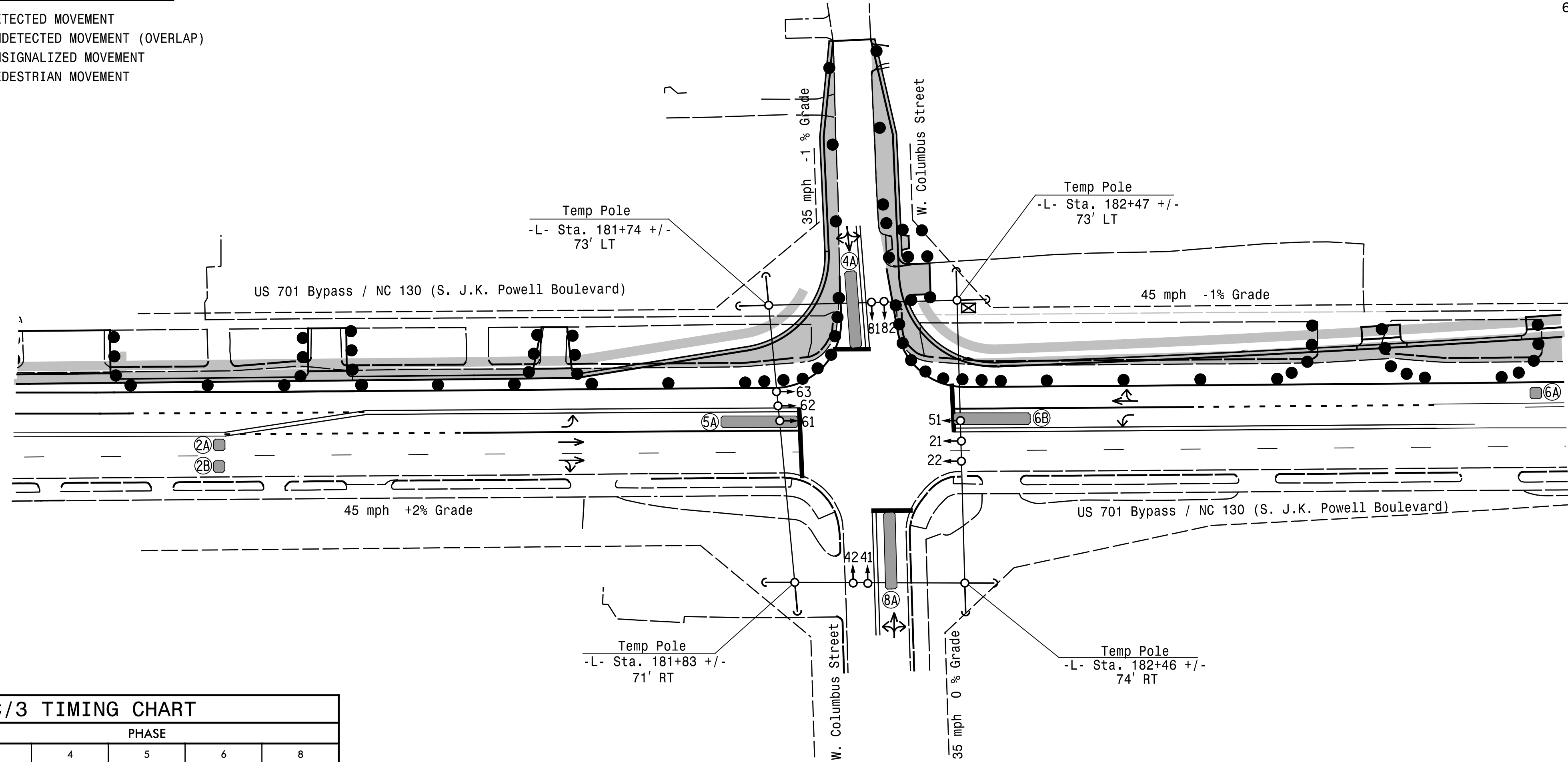
3 Phase Fully Actuated System #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.

PHASING DIAGRAM DETECTION LEGEND

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



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | |
|-------------------------|-------------|-----|-----|-------------|-----|
| | 2 | 4 | 5 | 6 | 8 |
| Min Green * | 12 | 7 | 7 | 12 | 7 |
| Walk * | - | - | - | - | - |
| Ped Clear | - | - | - | - | - |
| Veh. Extension * | 6.0 | 2.0 | 2.0 | 6.0 | 2.0 |
| Max I * | 90 | 30 | 15 | 90 | 30 |
| Yellow | 4.6 | 3.9 | 3.0 | 4.6 | 3.9 |
| Red Clear | 1.0 | 1.5 | 1.6 | 1.0 | 1.5 |
| Actuations B4 Add * | 0 | - | - | 0 | - |
| Seconds / Actuation * | 1.5 | - | - | 2.5 | - |
| Max Initial * | 34 | - | - | 34 | - |
| Time Before Reduction * | 15 | - | - | 15 | - |
| Time To Reduce * | 30 | - | - | 30 | - |
| Minimum Gap | 3.0 | - | - | 3.0 | - |
| Locking Detector | X | - | - | X | - |
| Recall Position | VEH. RECALL | - | - | VEH. RECALL | - |
| Dual Entry | - | X | - | - | X |
| Simultaneous Gap | X | X | X | X | X |

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

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
| ○ → | ● → |
| ○ | N/A |
| ⊥ | ⊥ |
| ⊥ | ⊥ |
| ⊥ | ⊥ |
| ⊥ | ⊥ |
| ⊥ | ⊥ |
| ⊥ | ⊥ |
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| ⊥ | ⊥ |
| ⊥ | ⊥ |
| ⊥ | ⊥ |
| ⊥ | ⊥ |
| ⊥ | ⊥ |

New Signal Temporary Design 1 - (TMP Phases 1 & 1A)

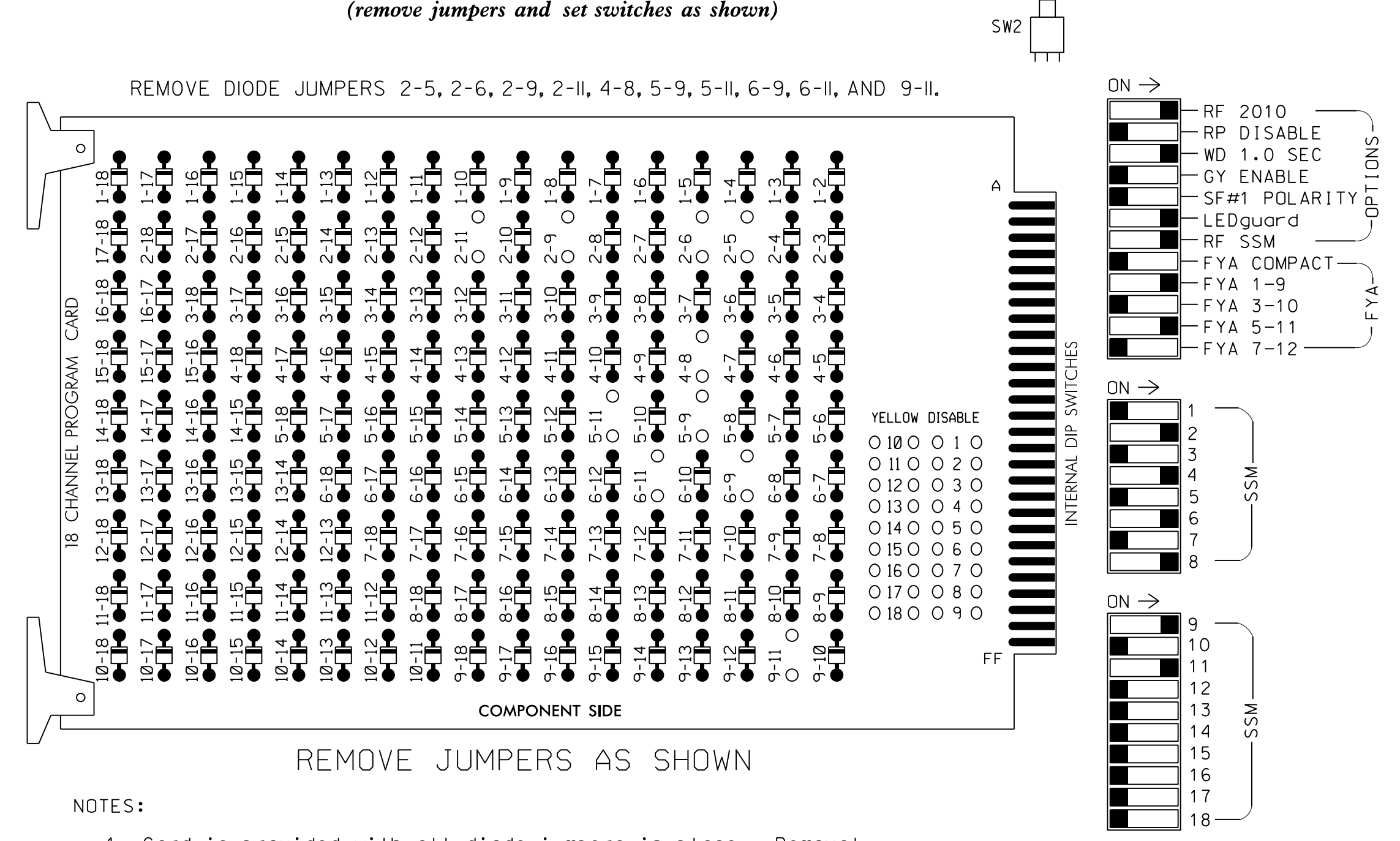
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Engineering & Construction, Inc.
1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

| | | | |
|--|---|-------------------------|--|
| | US 701 Bypass/NC 130 (S. J.K. Powell Blvd) at W. Columbus Street Division 06 Columbus County Whiteville PLAN DATE: MARCH 2020 REVIEWED BY: G. G. Murr, Jr PREPARED BY: B. Wynn REVIEWED BY: | | SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14543 GENE G. MURR, JR. |
| | SCALE 0 40' 1" = 40' | REVISIONS INIT. DATE | |

5/13/2020
 X:\2017\SET-11-135-00 R-50208\MTP\Traffic\05\Signal\GMS\GNM\SIGNAL\2 - US 701 and Columbus Street - new\Signal ML-H50208.sig_dsn_06-1381T1.dgn
 MCDP.e

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.

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.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of System # 10605.

EQUIPMENT INFORMATION

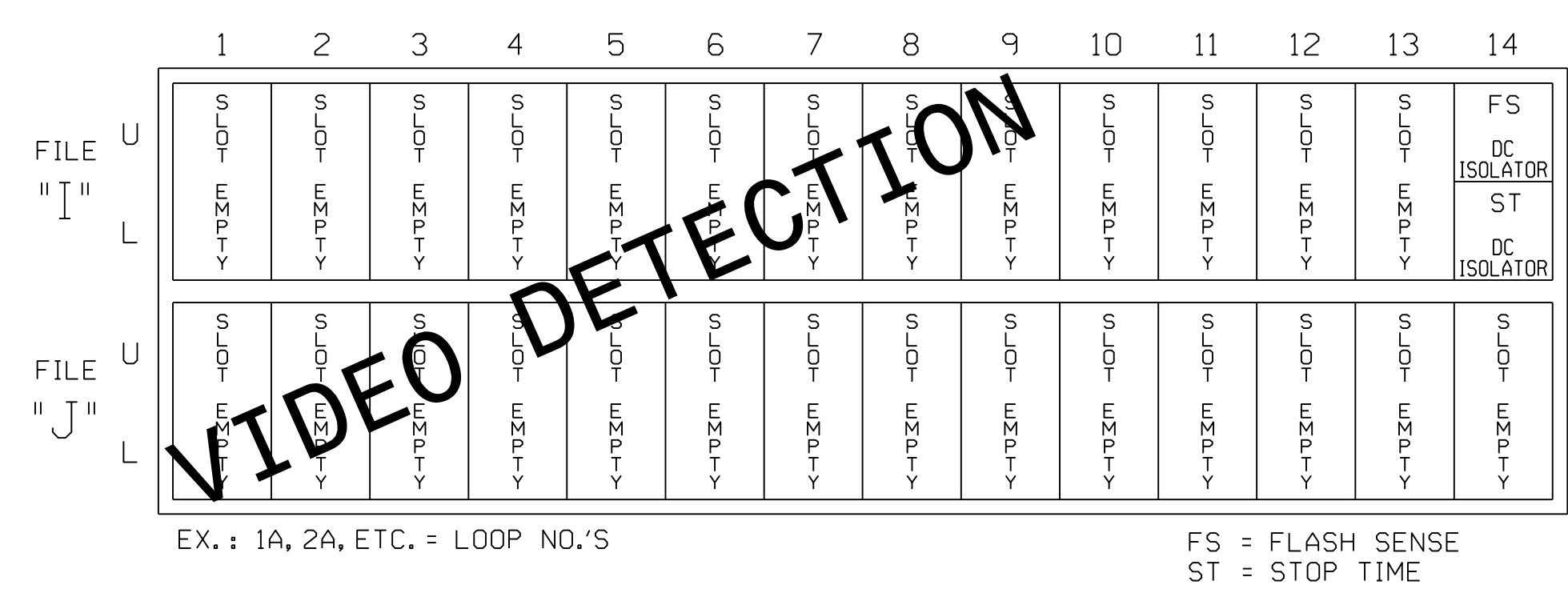
CONTROLLER.....CONTRACTOR SUPPLIED 2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,S11,
 AUX S1,AUX S4
 PHASES USED.....2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

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

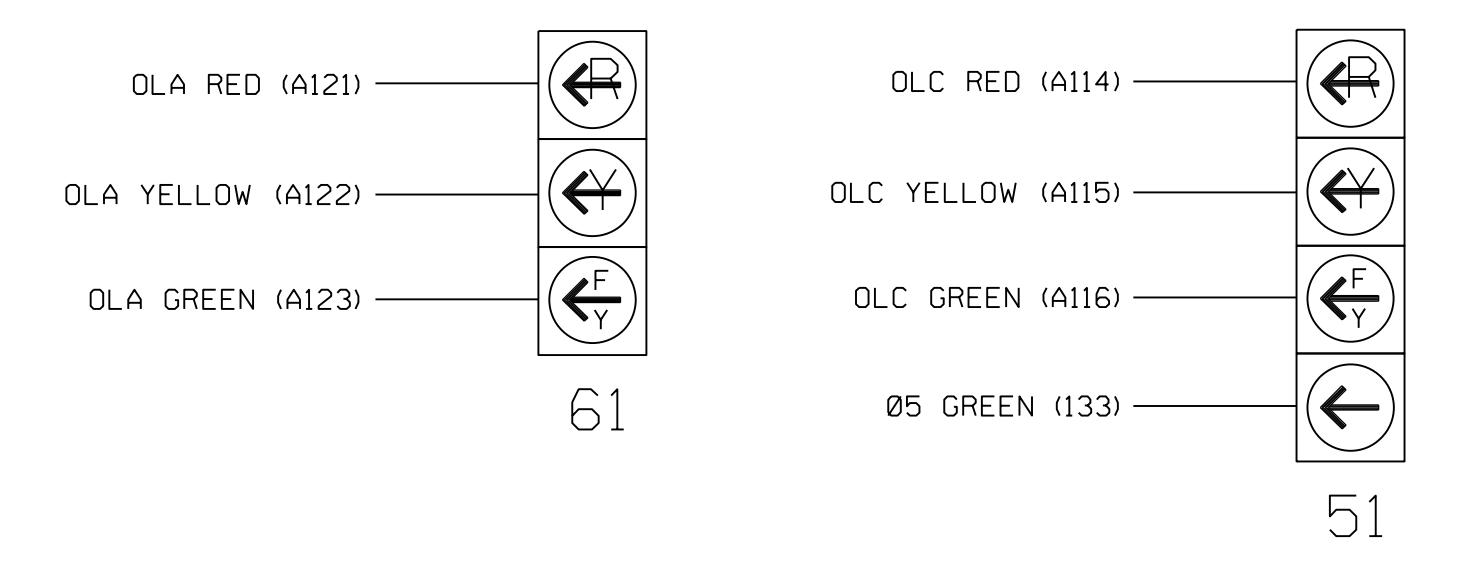
INPUT FILE POSITION LAYOUT
(front view)



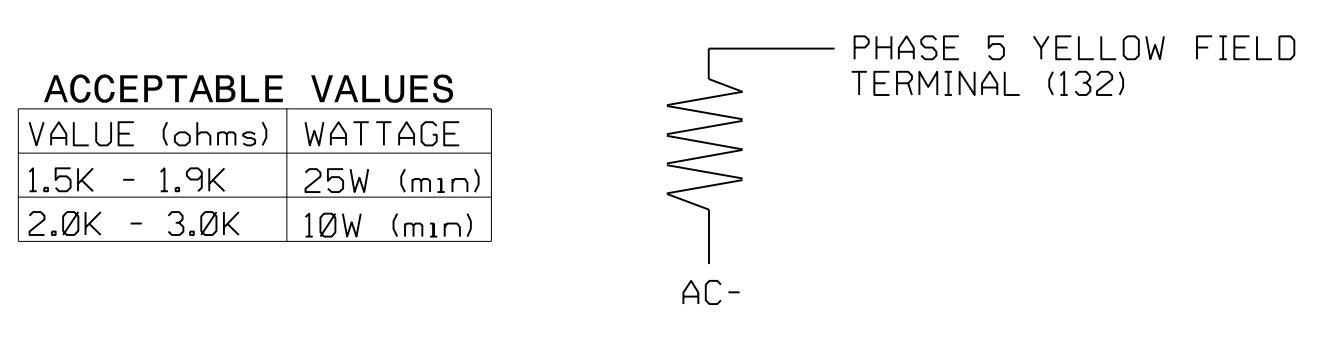
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE:
 Note: Install a video detection system for vehicle detection. Perform installation in accordance with manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans for the following video zones: 2A, 2B, 4A, 5A, 6A, 6B, AND 8A.

FYA SIGNAL WIRING DETAIL
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL
(install resistors as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1381
 DESIGNED: March 2020
 SEALED: 05/15/2020
 REVISED: N/A

SEPI
 Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

Temporary Design 1 - (TMP Phases 1 & 1A)
 Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 MATTHEW B. COYLE
 SEAL 27771

US 701 Bypass/NC 130
 (S. J.K. Powell Boulevard)
 at
 W. Columbus Street

Division 06 Columbus County Whiteville

PLAN DATE: December 2019 REVIEWED BY:
 PREPARED BY: M.B. Copple REVIEWED BY: G.G. Murr Jr

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SIG. INVENTORY NO. 06-1381T1

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[A] TYPE: OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED . X

PROTECT

PED PRTC

NOT OVLP

FLSH GRN . 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

↓ Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE: PPLT FYA

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

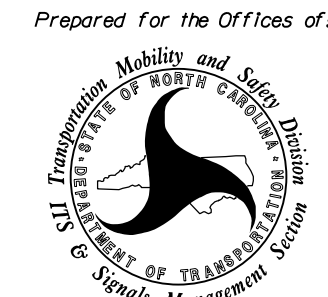

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-1381
 DESIGNED: March 2020
 SEALED: 05/15/2020
 REVISED: N/A

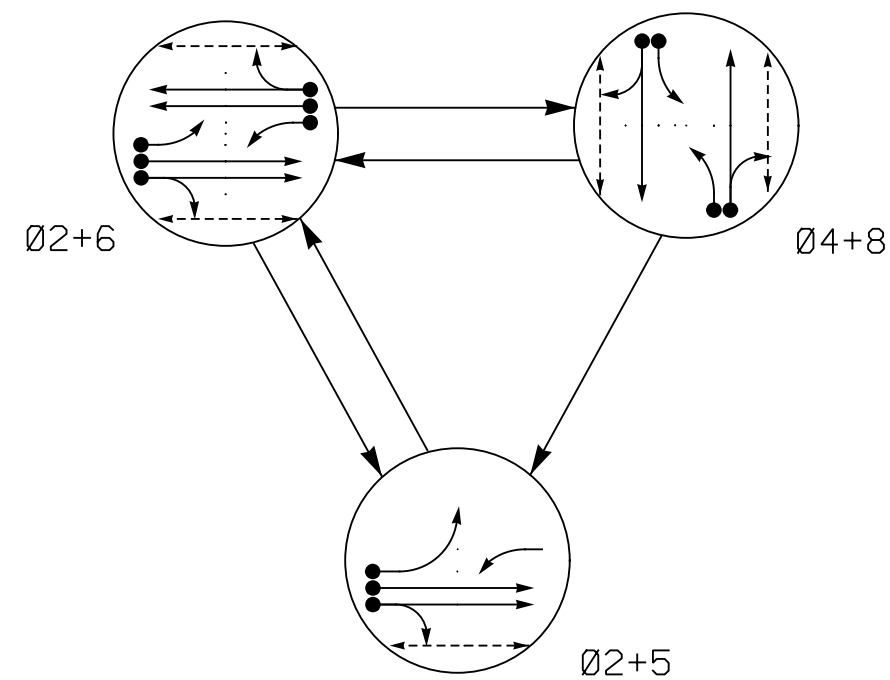
Temporary Design 1 - (TMP Phases 1 & 1A)
 Electrical Detail - Sheet 2 of 2

| ELECTRICAL AND PROGRAMMING DETAILS FOR: | US 701 Bypass/NC 130 (S. J.K. Powell Boulevard) at W. Columbus Street | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | | | | | | | | | |
|---|--|--|-------|------|--|--|--|--|--|--|--|
|  | Division 06 Columbus County Whiteville |  | | | | | | | | | |
| | PLAN DATE: December 2019 REVIEWED BY: | | | | | | | | | | |
| | PREPARED BY: M.B. Copple REVIEWED BY: GG Murr Jr | | | | | | | | | | |
| | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | REVISIONS | INIT. | DATE | | | | | | | |
| REVISIONS | INIT. | DATE | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | 750 N. Greenfield Pkwy, Garner, NC 27529 | DATE SIG. INVENTORY NO. 06-1381T1 | | | | | | | | | |

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PHASING DIAGRAM



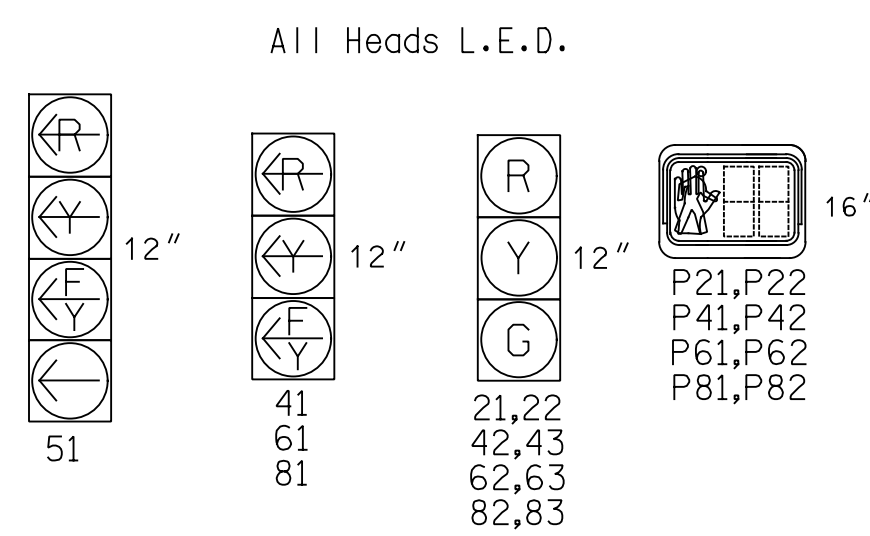
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|------|------|-------|
| | Ø2+5 | Ø2+6 | Ø4+8 | FLASH |
| 21,22 | G | G | R | Y |
| 41 | ← | ← | ← | ← |
| 42,43 | R | R | G | R |
| 51 | ← | ← | ← | ← |
| 61 | ← | ← | ← | ← |
| 62,63 | R | G | R | Y |
| 81 | ← | ← | ← | ← |
| 82,83 | R | R | G | R |
| P21,P22 | W | W | DW | DRK |
| P41,P42 | DW | DW | W | DRK |
| P61,P62 | DW | W | DW | DRK |
| P81,P82 | DW | DW | W | DRK |

SIGNAL FACE I.D.



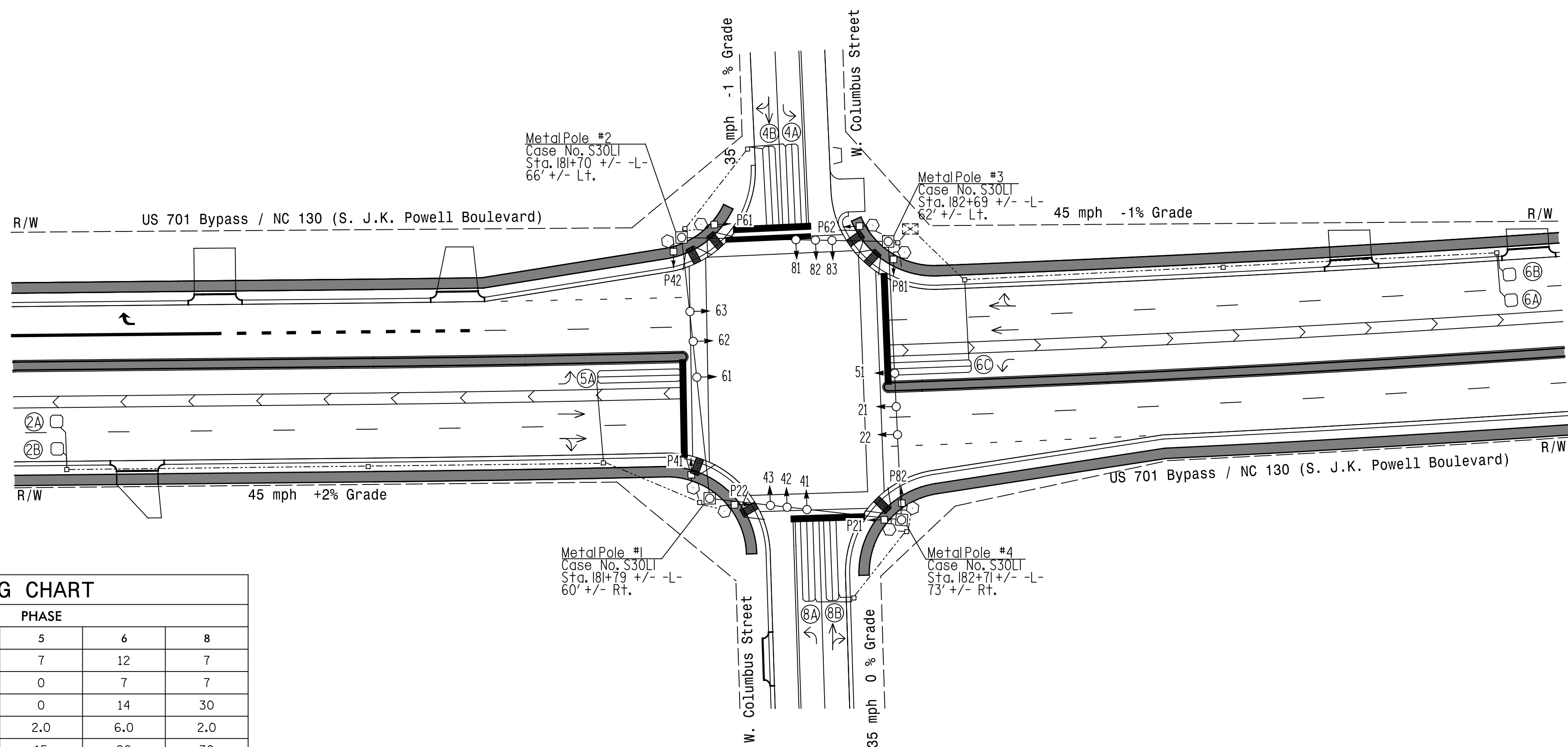
ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 2A | 6X6 | 300 | 4 | X | 2 | Yes | - | - | X | N | - | X |
| 2B | 6X6 | 300 | 4 | X | 2 | Yes | - | - | X | N | - | X |
| 4A | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | 3 | - | N | - | X |
| 4B | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | 10 | - | N | - | X |
| | | | | | 5 | Yes | - | 15 | - | N | - | X |
| 6A | 6X6 | 300 | 4 | X | 6 | Yes | - | - | X | N | - | X |
| 6B | 6X6 | 300 | 4 | X | 6 | Yes | - | - | X | N | - | X |
| 6C | 6X40 | 0 | 2-4-2 | X | 6 | Yes | - | 3 | - | N | - | X |
| 8A | 6X40 | 0 | 2-4-2 | X | 8 | Yes | - | 3 | - | N | - | X |
| 8B | 6X40 | 0 | 2-4-2 | X | 8 | Yes | - | 10 | - | N | - | X |

3 Phase Fully Actuated System #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | |
|-------------------------|-------------|-----|-----|-------------|-----|
| | 2 | 4 | 5 | 6 | 8 |
| Min Green * | 12 | 7 | 7 | 12 | 7 |
| Walk * | 7 | 7 | 0 | 7 | 7 |
| Ped Clear | 13 | 24 | 0 | 14 | 30 |
| Veh. Extension * | 6.0 | 2.0 | 2.0 | 6.0 | 2.0 |
| Max 1 * | 90 | 30 | 15 | 90 | 30 |
| Yellow | 4.6 | 3.9 | 3.0 | 4.6 | 3.9 |
| Red Clear | 1.8 | 2.5 | 3.1 | 1.8 | 2.5 |
| Actuations B4 Add * | 0 | - | - | 0 | - |
| Seconds / Actuation * | 1.5 | - | - | 1.5 | - |
| Max Initial * | 34 | - | - | 34 | - |
| Time Before Reduction * | 15 | - | - | 15 | - |
| Time To Reduce * | 30 | - | - | 30 | - |
| Minimum Gap | 3.0 | - | - | 3.0 | - |
| Locking Detector | X | - | - | X | - |
| Recall Position | VEH. RECALL | - | - | VEH. RECALL | - |
| Dual Entry | - | X | - | - | X |
| Simultaneous Gap | X | X | X | X | X |

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

LEGEND

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

Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

US 701 Bypass/NC 130 (S. J.K. Powell Blvd) at W. Columbus Street

Division 06 Columbus County Whiteville

PLAN DATE: NOVEMBER 2019 REVIEWED BY: G. G. Murr, Jr.

PREPARED BY: M. Ishak REVIEWED BY:

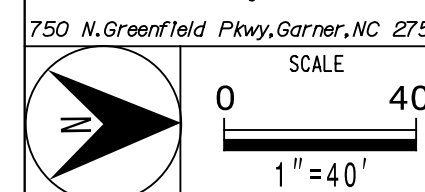
| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |

SEAL

SIGNATURE DATE

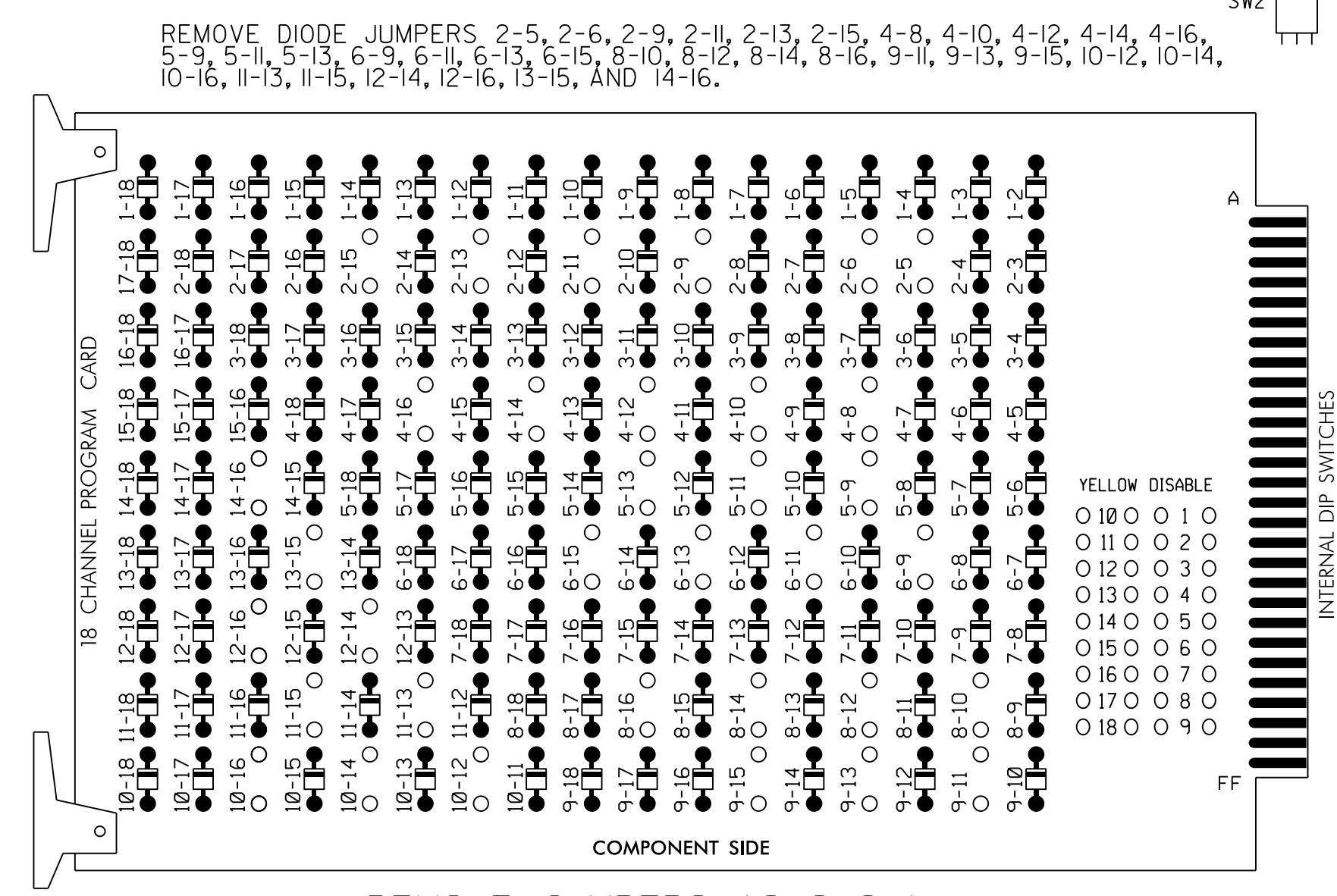
SIG. INVENTORY NO. 06-1381

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197



5/13/2020
...M:\R5020B...s (a.dsn)_06-1381.dgn...dgn
USER:MCoppel

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



- REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, AND 14-16.
- 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.

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Walk and 6 Walk.
- The cabinet and controller are part of System # 10605.

EQUIPMENT INFORMATION

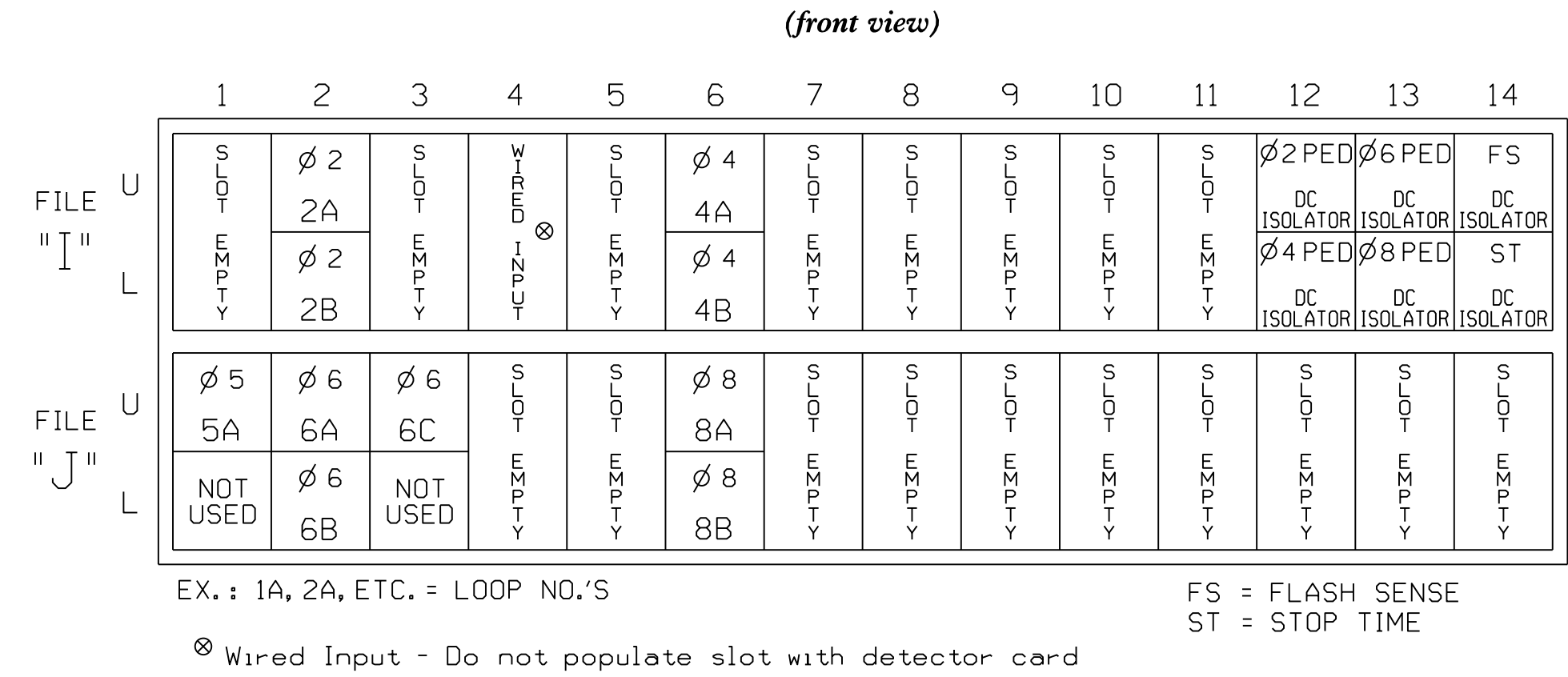
CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S3,S5,S6,S7,S8,S9,S11,S12,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....2,2 PED,4,4 PED,5,6,6 PED,8,8 PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|-----|-------|----------|-----|-------|----------|-----|-------|----------|-----|-------|----------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | P21, P22 | NU | 42,43 | P41, P42 | 51 | 62,63 | P61, P62 | NU | 82,83 | P81, P82 | 61 | 81 | NU | 51 | 41 | NU |
| RED | 128 | | | 101 | | | | 134 | | | 107 | | | | | | | |
| YELLOW | 129 | | | 102 | | * | 135 | | | | 108 | | | | | | | |
| GREEN | 130 | | | 103 | | | 136 | | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | A125 | | A115 | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | |
| GREEN ARROW | | | | | | | 133 | | | | | | | | | | | |
| Hand | | | 113 | | | 104 | | 119 | | | 110 | | | | | | | |
| Foot | | | 115 | | | 106 | | 121 | | | 112 | | | | | | | |

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

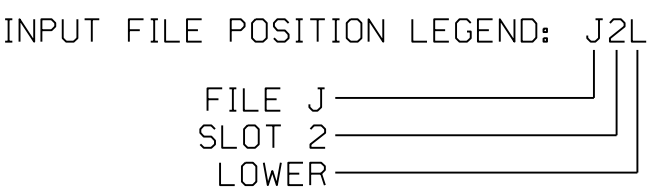
INPUT FILE POSITION LAYOUT



INPUT FILE CONNECTION & PROGRAMMING CHART

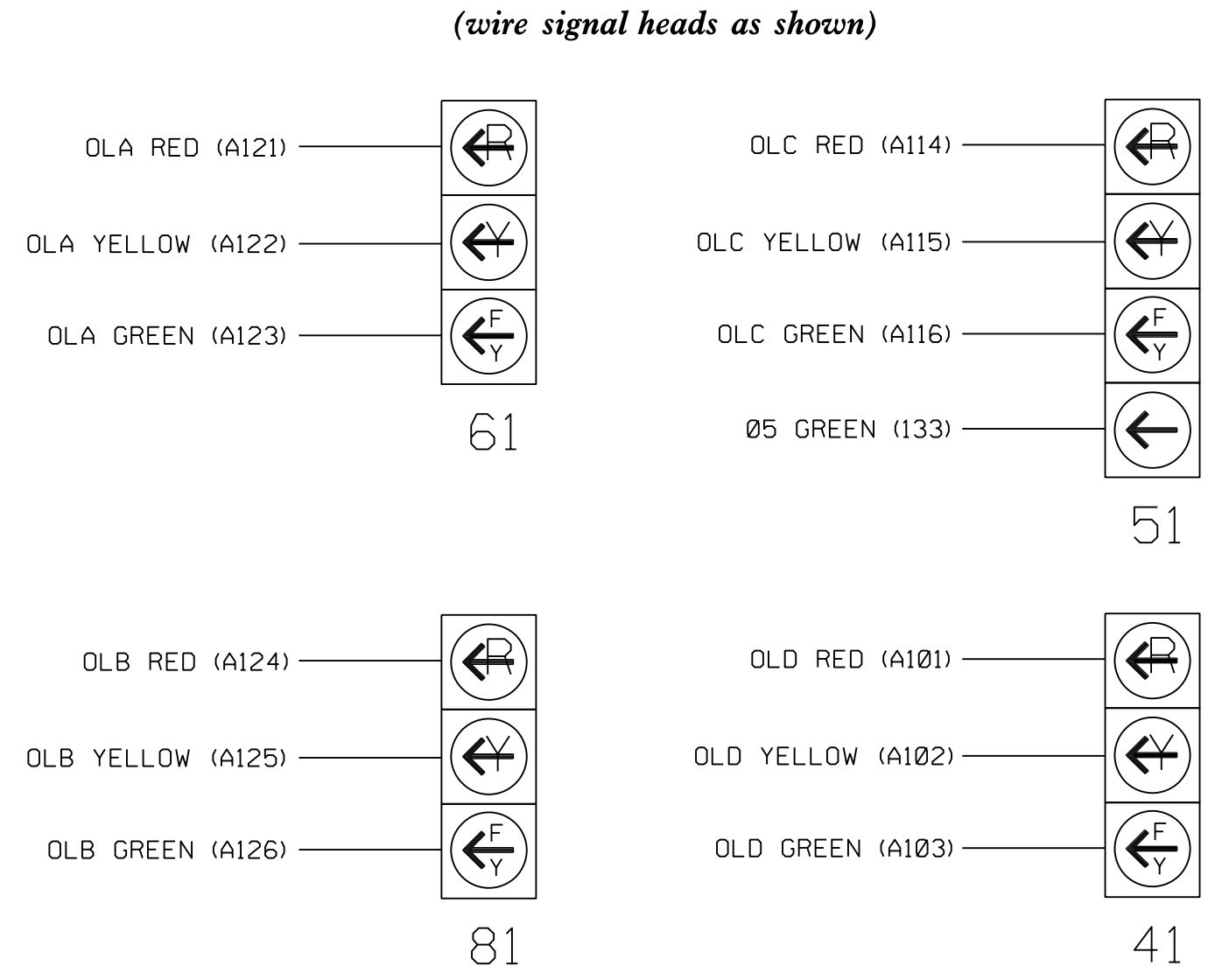
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 2A | TB2-5,6 | I2U | 39 | 2 | 2 | YES | | | X | N |
| 2B | TB2-7,8 | I2L | 43 | 12 | 2 | YES | | | X | N |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | 3 | | N |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | 10 | | N |
| 5A ¹ | TB3-1,2 | J1U | 55 | 5 | 5 | YES | | 15 | | N |
| | | I4U | 47 | 22 | 2 | YES | | 3 | | G |
| 6A | TB3-5,6 | J2U | 40 | 6 | 6 | YES | | | X | N |
| 6B | TB3-7,8 | J2L | 44 | 16 | 6 | YES | | | X | N |
| 6C | TB3-9,10 | J3U | 64 | 36 | 6 | YES | | 3 | | G |
| 8A | TB5-9,10 | J6U | 42 | 8 | 8 | YES | | 3 | | N |
| 8B | TB5-11,12 | J6L | 46 | 18 | 8 | YES | | 10 | | N |
| PED PUSH BUTTONS | | | | | | | | | | |
| P21,P22 | TB8-4,6 | I12U | 67 | PED 2 | 2 PED | | | | | |
| P41,P42 | TB8-5,6 | I12L | 69 | PED 4 | 4 PED | | | | | |
| P61,P62 | TB8-7,9 | I13U | 68 | PED 6 | 6 PED | | | | | |
| P81,P82 | TB8-8,9 | I13L | 70 | PED 8 | 8 PED | | | | | |

¹Add jumper from J1-W to 14-W, on rear of input file.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1381
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

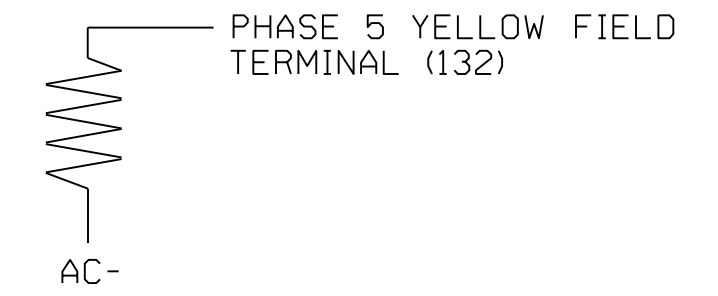
FYA SIGNAL WIRING DETAIL



LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

New Signal
 Electrical Detail - Sheet 1 of 2

US 701 Bypass/NC 130
 (S. J.K. Powell Boulevard)
 at
 W. Columbus Street

Division 06 Columbus County Whiteville

PLAN DATE: December 2019 REVIEWED BY:

PREPARED BY: M.B. Copple REVIEWED BY: G.G. Murr Jr

REVISIONS: INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 M. B. COPPLE
 27771

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEPI
 Engineering & Construction, Inc.

1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE
  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
  
```

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE
  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
  
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: . . . . .PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
  
```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE
  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . 8 . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
  
```

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

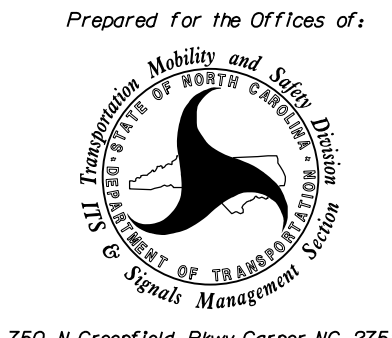
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

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

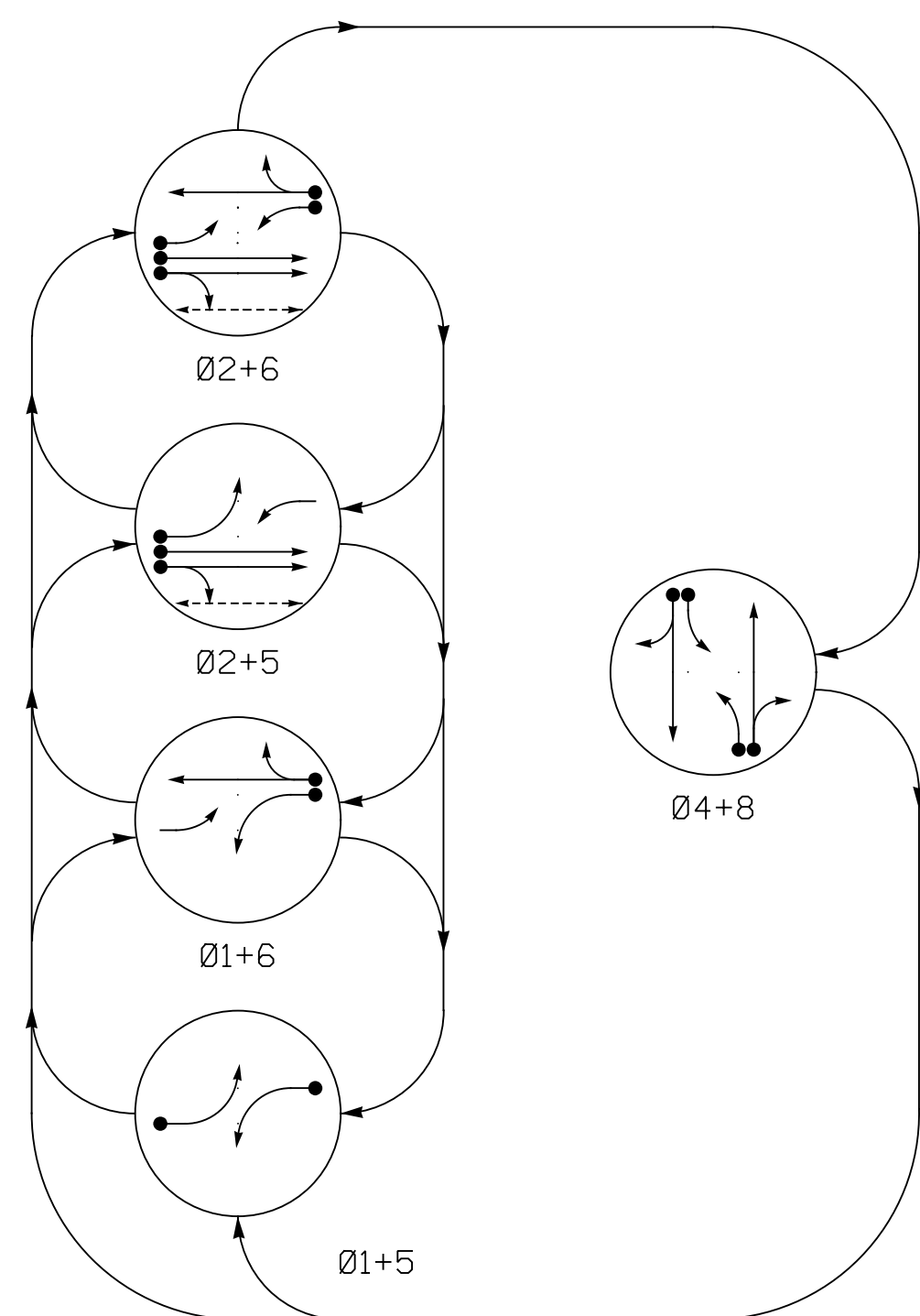
THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-1381
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

New Signal
 Electrical Detail - Sheet 2 of 2

|  | <p>US 701 Bypass/NC 130 (S. J.K. Powell Boulevard) at W. Columbus Street</p> | <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> | | | | | | |
|--|---|---|-------|------|--|--|--|---|
| <p>Prepared for the Offices of: Mobility and Safety Division Department of Transportation Signal Management Section</p> | <p>Division 06 Columbus County Whiteville</p> | <p>SEAL 27771 ENGINEER MATTHEW B. COPPLE</p> | | | | | | |
| <p>1 Glenwood Avenue Raleigh, NC 27603 Tel: 919.789.9977 Fax: 919.789.9591 License: C-2197</p> | <p>PLAN DATE: December 2019 REVIEWED BY:</p> <p>PREPARED BY: M.B. Copple REVIEWED BY: GG Murr Jr</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | REVISIONS | INIT. | DATE | | | | <p>DATE</p> <p>SIG. INVENTORY NO. 06-1381</p> |
| REVISIONS | INIT. | DATE | | | | | | |
| | | | | | | | | |

5/15/2020
 R-5020B.dgn
 USER: M.Copple

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

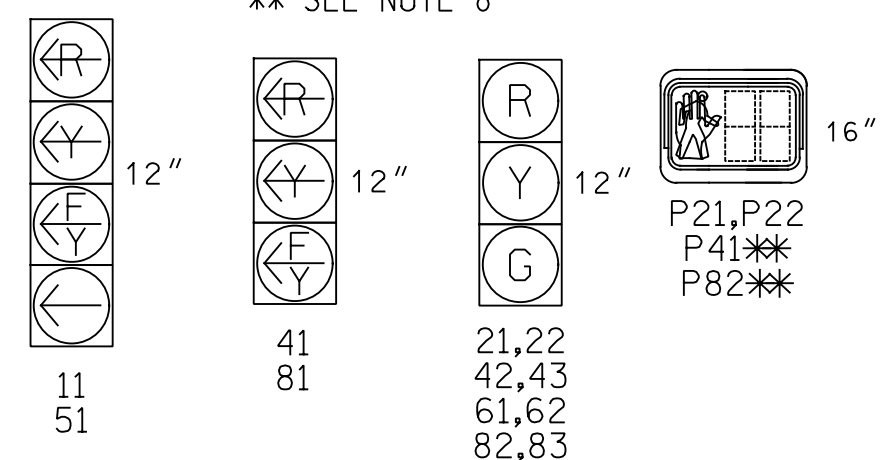
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | |
|-------------|-------|------|------|------|------|-----|---|
| | Ø1+5 | Ø1+6 | Ø2+5 | Ø2+6 | Ø4+8 | P | Y |
| 11 | ← | ← | ← | ← | ← | ← | ← |
| 21,22 | R | R | G | G | R | Y | |
| 41 | ← | ← | ← | ← | ← | ← | ← |
| 42,43 | R | R | R | R | G | R | |
| 51 | ← | ← | ← | ← | ← | ← | ← |
| 61,62 | R | G | R | G | R | Y | |
| 81 | ← | ← | ← | ← | ← | ← | ← |
| 82,83 | R | R | R | R | G | R | |
| P21,P22 | DW | DW | W | W | DW | DRK | |

SIGNAL FACE I.D.

All Heads L.E.D.
** SEE NOTE 8



ASC/3 DETECTOR INSTALLATION CHART

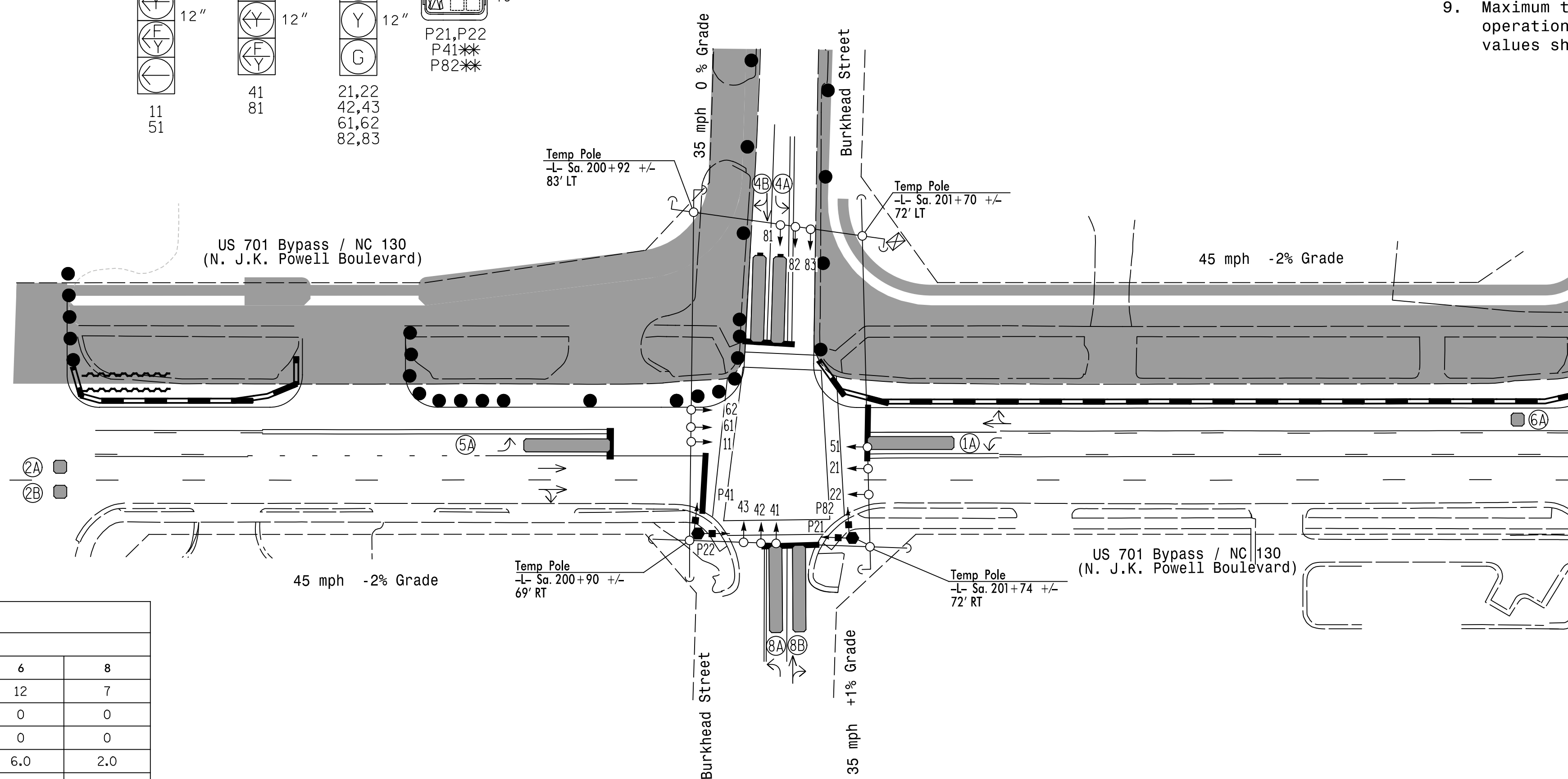
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | * | X | 1 | Yes | - | 15 | - | N | - | X |
| | | | | | 6 | Yes | - | 3 | - | G | - | X |
| 2A | 6X6 | 300 | * | X | 2 | Yes | - | - | X | N | - | X |
| | | | | | 2 | Yes | - | - | X | N | - | X |
| 4A | 6X40 | 0 | * | X | 4 | Yes | - | 3 | - | N | - | X |
| | | | | | 4 | Yes | - | 10 | - | N | - | X |
| 5A | 6X40 | 0 | * | X | 5 | Yes | - | 15 | - | N | - | X |
| | | | | | 2 | Yes | - | 3 | - | G | - | X |
| 6A | 6X6 | 300 | * | X | 6 | Yes | - | - | X | N | - | X |
| | | | | | 8 | Yes | - | 3 | - | N | - | X |
| 8B | 6X40 | 0 | * | X | 8 | Yes | - | 10 | - | N | - | X |

* Video Detection Zone

5 Phase Fully Actuated SYSTEM # 10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or 5 may be lagged.
- Set all detection zones to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Bag and disconnect pedestrian signal heads P41, P82 and remove Phase 4 and 8 push buttons & educational signs.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | | |
|-------------------------|-------|-------------|-----|-----|-------------|-----|--|
| | 1 | 2 | 4 | 5 | 6 | 8 | |
| Min Green * | 7 | 12 | 7 | 7 | 12 | 7 | |
| Walk * | 0 | 7 | 0 | 0 | 0 | 0 | |
| Ped Clear | 0 | 10 | 0 | 0 | 0 | 0 | |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 6.0 | 2.0 | |
| Max I * | 15 | 90 | 20 | 15 | 90 | 20 | |
| Yellow | 3.0 | 4.7 | 3.8 | 3.0 | 4.7 | 3.8 | |
| Red Clear | 2.3 | 1.4 | 1.7 | 3.1 | 1.4 | 1.3 | |
| Actuations B4 Add * | - | 0 | - | - | 0 | - | |
| Seconds / Actuation * | - | 1.5 | - | - | 2.5 | - | |
| Max Initial * | - | 34 | - | - | 34 | - | |
| Time Before Reduction * | - | 15 | - | - | 15 | - | |
| Time To Reduce * | - | 30 | - | - | 30 | - | |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - | |
| Locking Detector | - | - | - | - | - | - | |
| Recall Position | - | VEH. RECALL | - | - | VEH. RECALL | - | |
| Dual Entry | - | - | X | - | - | X | |
| Simultaneous Gap | X | X | X | X | X | X | |

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

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
| | |
| | N/A |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| N/A | |
| | |
| | N/A |
| | N/A |
| | N/A |
| | |
| | |

Signal Upgrade - Temporary Design 1 - (TMP Phase I)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

US 701 Bypass/NC 130 (N. J.K. Powell Blvd) at Burkhead Street

Division 06 Columbus County Whiteville

PLAN DATE: December 2019 REVIEWED BY: G. G. Murr, Jr.

PREPARED BY: M. Ishak REVIEWED BY:

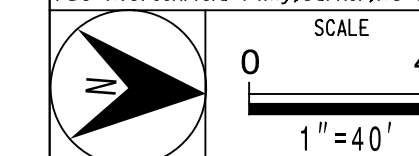
| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |

SIGNATURE DATE

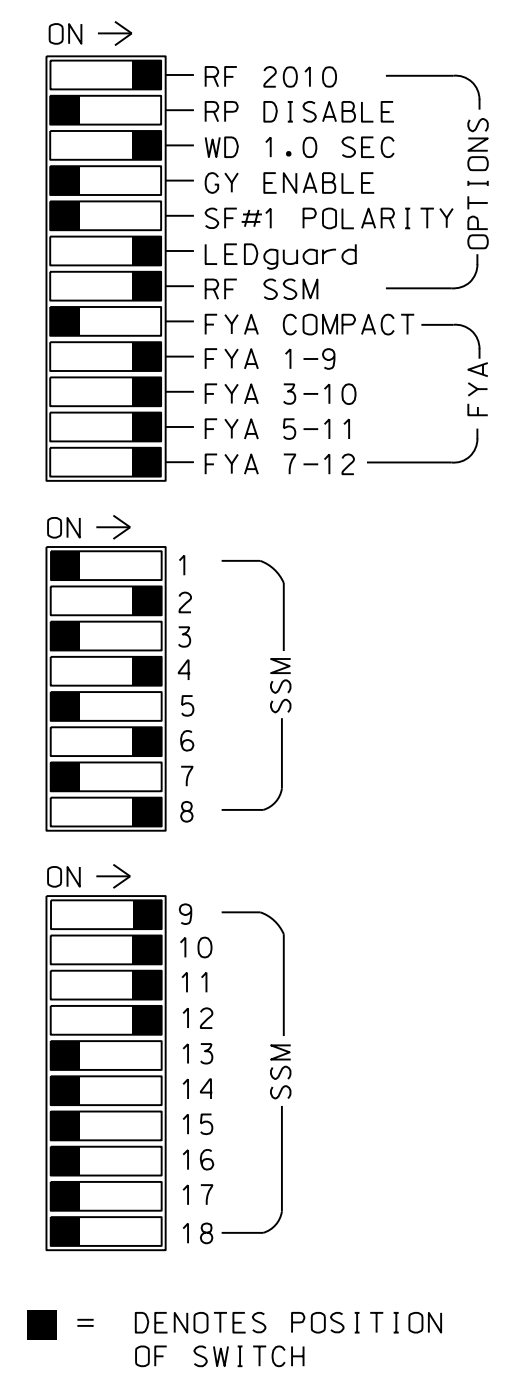
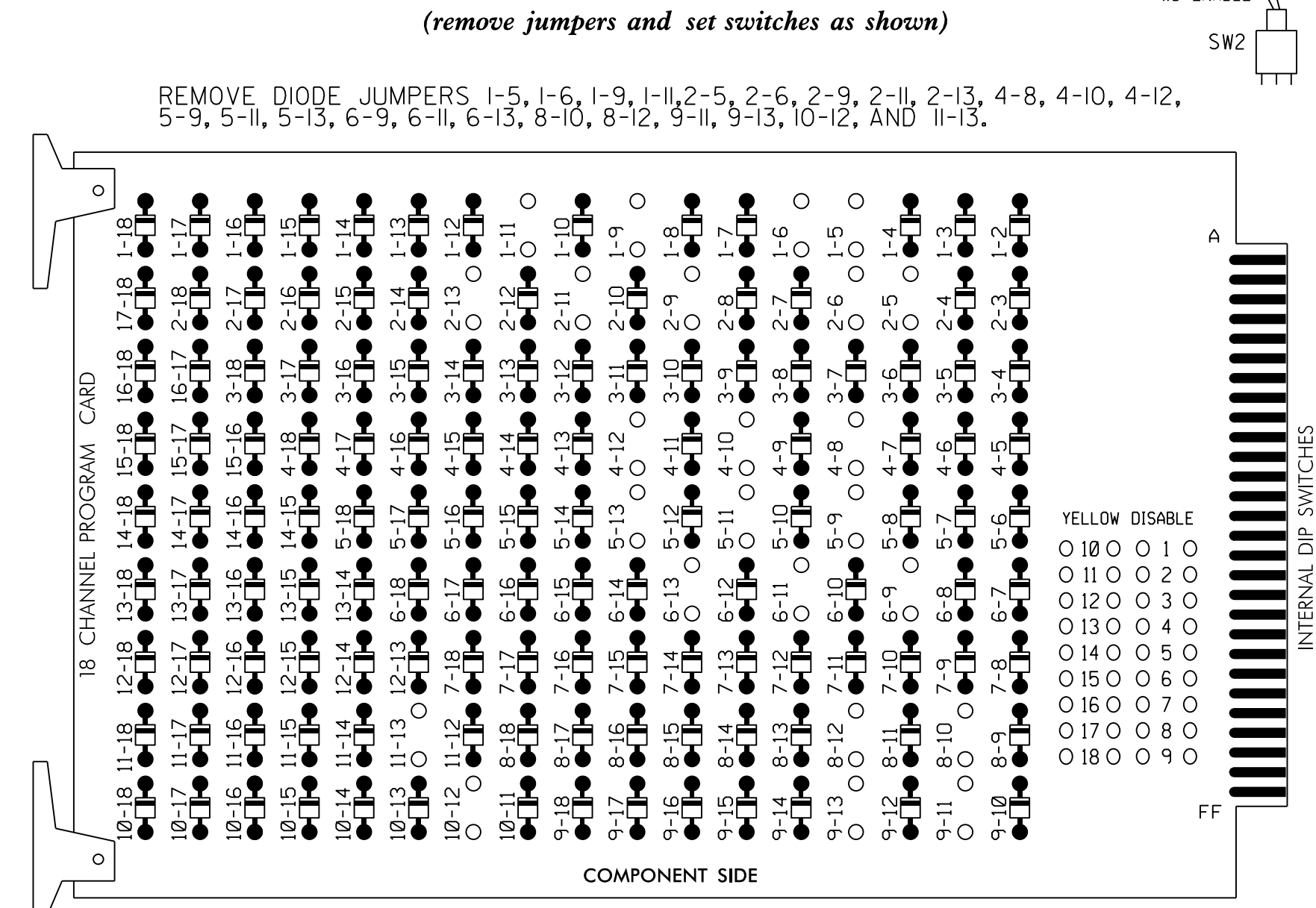
SIG. INVENTORY NO. 06-051471

SEPI
Engineering & Construction, Inc.

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197



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.

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.
- Program controller to start up in phase 2 Walk and 6 Green.
- The cabinet and controller are part of System # 10605.

EQUIPMENT INFORMATION

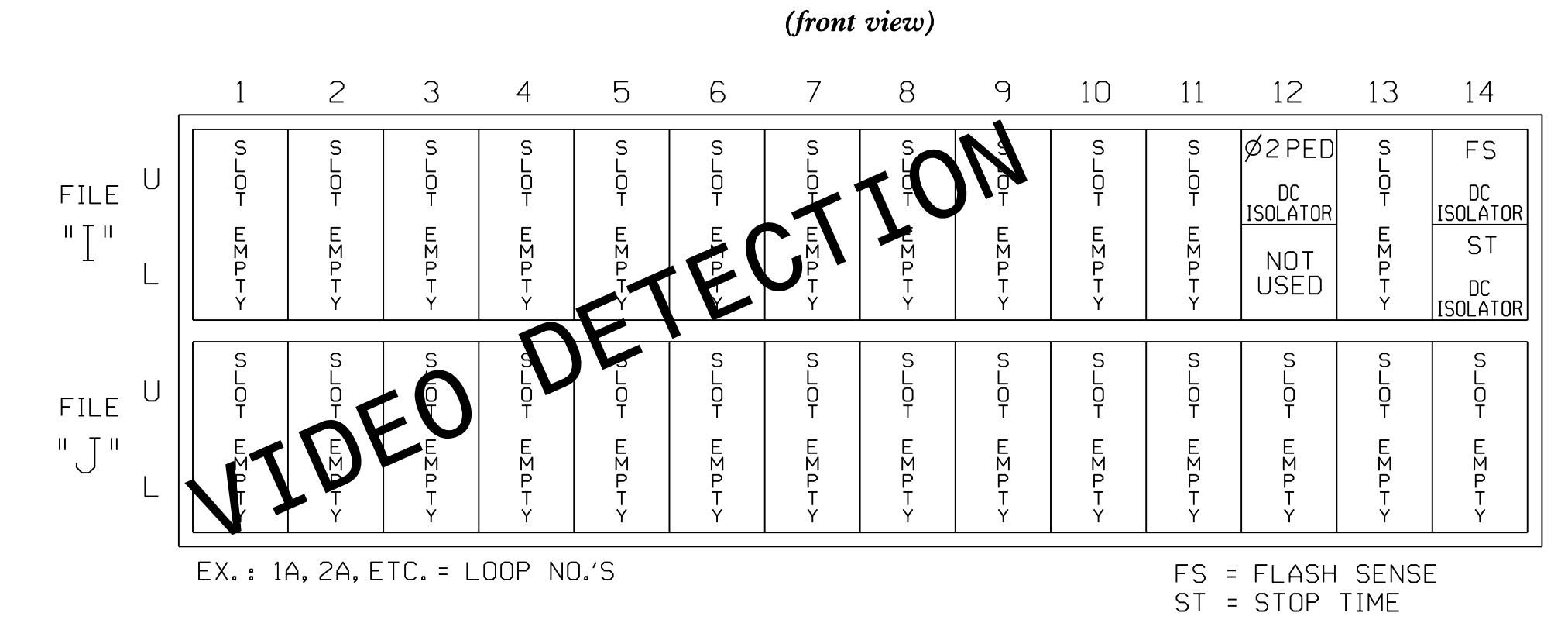
CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S7,S8,S11,AUX S1
 AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,2 PED,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|-----|-------|----------|-----|-------|-------|-----|-------|-------|-----|-------|-------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | P21, P22 | NU | 42,43 | NU | 51 | 61,62 | NU | NU | 82,83 | NU | 11 | 81 | NU | 51 | 41 | NU |
| RED | 128 | | | 101 | | | | 134 | | | 107 | | | | | | | |
| YELLOW | * | 129 | | 102 | | * | 135 | | | 108 | | | | | | | | |
| GREEN | | 130 | | 103 | | | 136 | | | 109 | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | A125 | | A115 | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | | | | | | |
| Hand | | | | | | | 113 | | | | | | | | | | | |
| Person | | | | | | | 115 | | | | | | | | | | | |

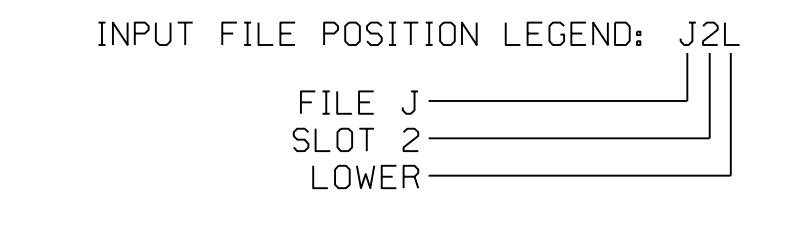
NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

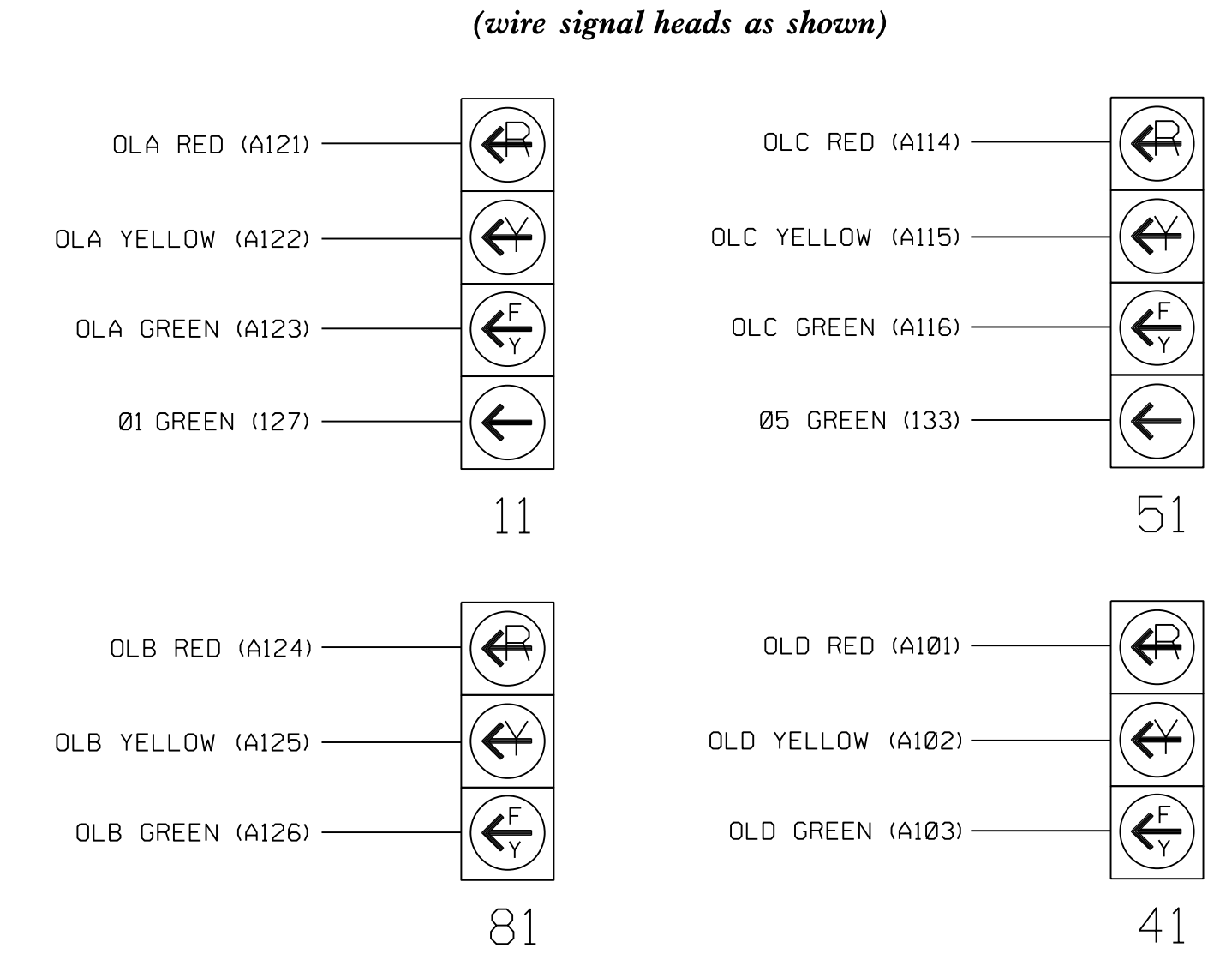


INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| PED PUSH BUTTONS | | | | | | | | | | |
| P21,P22 | TB8-4,6 | I12U | 67 | PED 2 | 2 PED | | | | | |



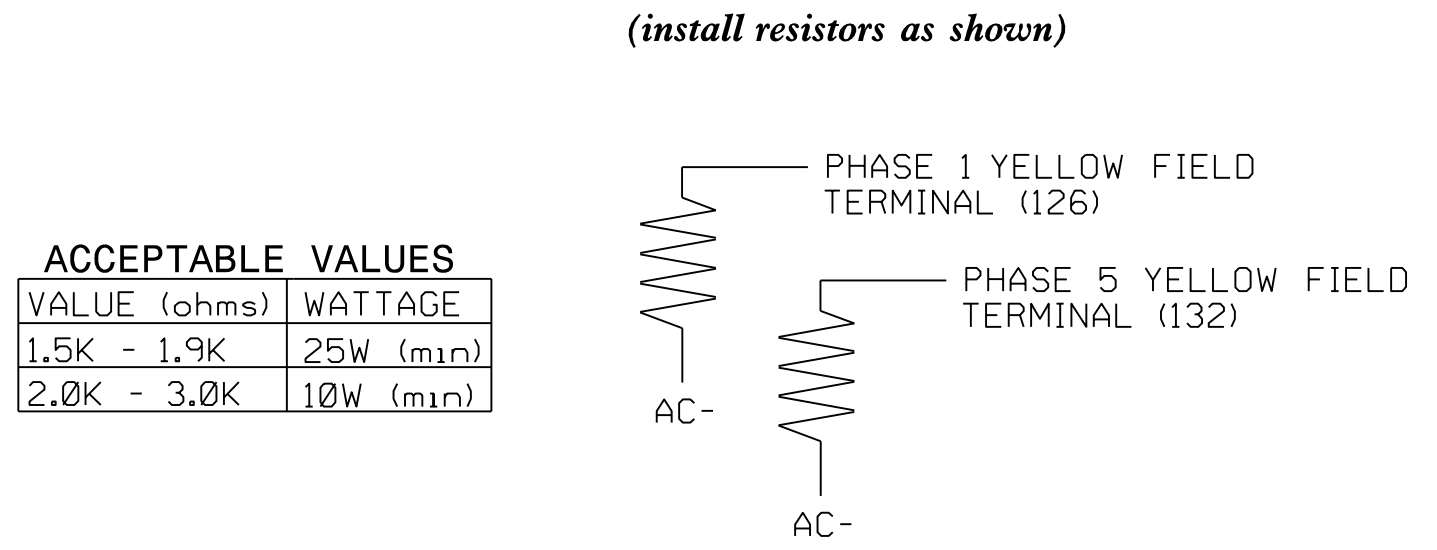
FYA SIGNAL WIRING DETAIL



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

LOAD RESISTOR INSTALLATION DETAIL



SPECIAL DETECTOR NOTE:
 Note: Install a video detection system for vehicle detection. Perform installation in accordance with manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans for the following video zones: 1A, 2A, 2B, 4A, 4B, 5A, 6A, 8A, AND 8B.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0514T1
 DESIGNED: December 2019
 SEALED: 05/15/2020
 REVISED: N/A

Temporary Design 1 - (TMP Phase I)
 Electrical Detail - Sheet 1 of 2

US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at Burkhead Street

Division 06 Columbus County Whiteville

PLAN DATE: December 2019 REVIEWED BY:

PREPARED BY: M.B. Copple REVIEWED BY: G.G. Murr Jr

REVISIONS: INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 M. B. COPPLE
 27771

SIG. INVENTORY NO. 06-0514T1

5/15/2020
 W:\PROJECTS\06-0514T1\EDD\USER\MCCopple

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
        
```

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
        
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
        
```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . 8 . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
        
```

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

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

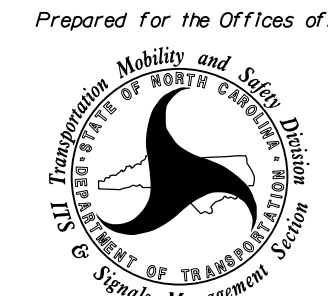
1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0514T1
 DESIGNED: December 2019
 SEALED: 05/15/2020
 REVISED: N/A

Temporary Design 1 - (TMP Phase I)
 Electrical Detail - Sheet 2 of 2


ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared for the Offices of:

 DEPARTMENT OF TRANSPORTATION
 Mobility and Safety Division
 Signal Management Section
 750 N. Greenfield Pkwy, Garner, NC 27529

| | |
|---|-------------------------|
| US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at Burkhead Street | |
| Division 06 | Columbus County |
| Whiteville | |
| PLAN DATE: December 2019 | REVIEWED BY: |
| PREPARED BY: M.B. Copple | REVIEWED BY: GG Murr Jr |
| REVISIONS | INIT. DATE |
| | |
| | |

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL



SEAL
27771
ENGINEER
MATTHEW B. COPPLE

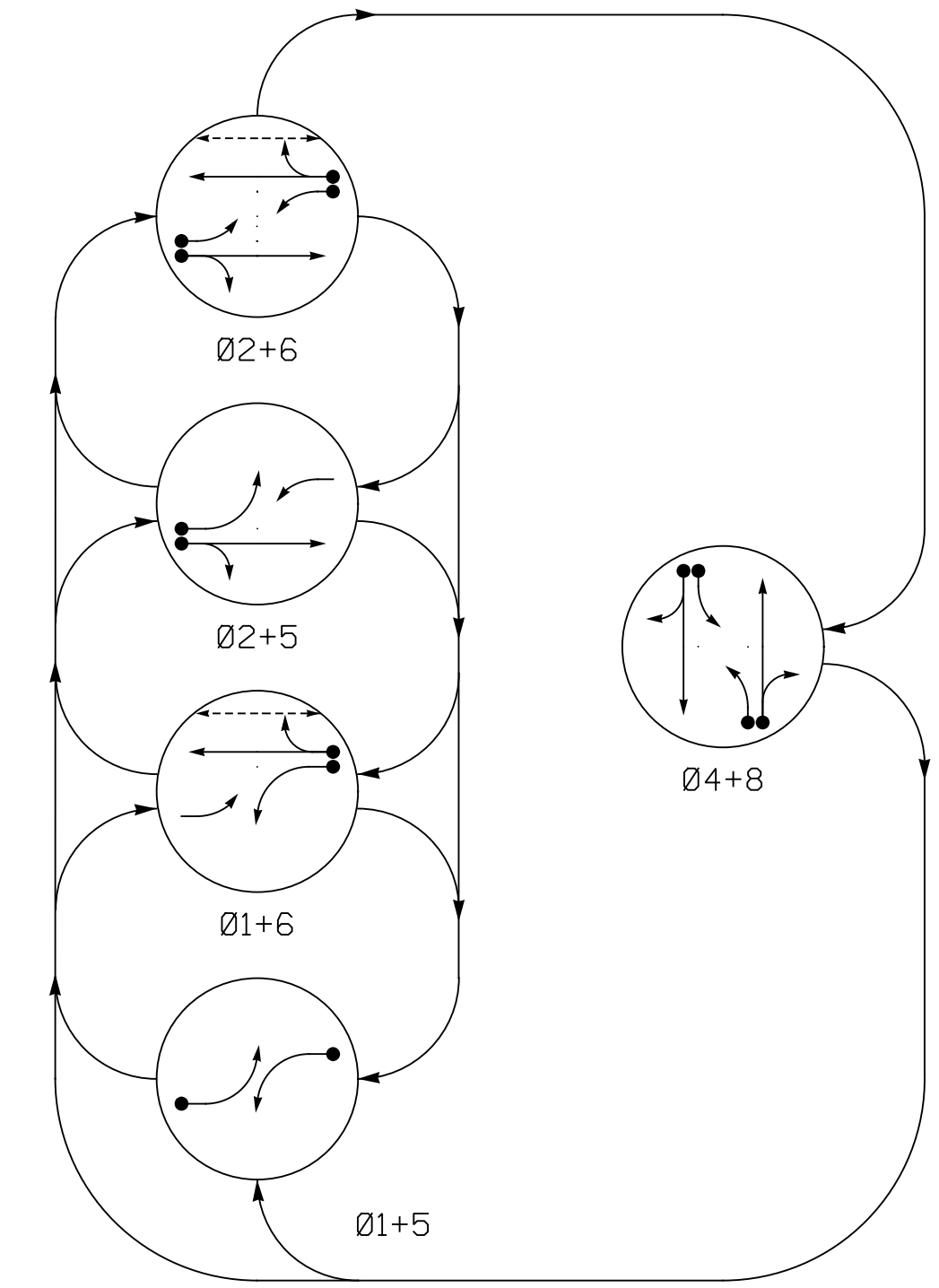
DATE

SIG. INVENTORY NO. 06-0514T1



1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | |
|-------------|-------|-------|-------|-------|-------|-------|
| | Ø 1+5 | Ø 1+6 | Ø 2+5 | Ø 2+6 | Ø 4+8 | Ø 4+8 |
| 11 | ← | ← | ← | ← | ← | ← |
| 21,22 | R | R | G | G | R | Y |
| 41 | ← | ← | ← | ← | ← | ← |
| 42,43 | R | R | R | R | G | R |
| 51 | ← | ← | ← | ← | ← | ← |
| 61,62 | R | G | R | G | R | Y |
| 81 | ← | ← | ← | ← | ← | ← |
| 82,83 | R | R | R | R | G | R |
| P61,P62 | DW | W | DW | W | DW | DRK |

ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | * | X | 1 | Yes | - | 15 | - | N | - | - |
| 2A | 6X6 | 300 | * | X | 2 | Yes | - | - | - | X | N | - |
| 4A | 6X40 | 0 | * | X | 4 | Yes | - | 3 | - | N | - | - |
| 4B | 6X40 | 0 | * | X | 4 | Yes | - | 10 | - | N | - | - |
| 5A | 6X40 | 0 | * | X | 5 | Yes | - | 15 | - | N | - | - |
| 6A | 6X6 | 300 | * | X | 6 | Yes | - | - | - | X | N | - |
| 8A | 6X40 | 0 | * | X | 8 | Yes | - | 3 | - | N | - | - |
| 8B | 6X40 | 0 | * | X | 8 | Yes | - | 10 | - | N | - | - |

* Video Detection Zone

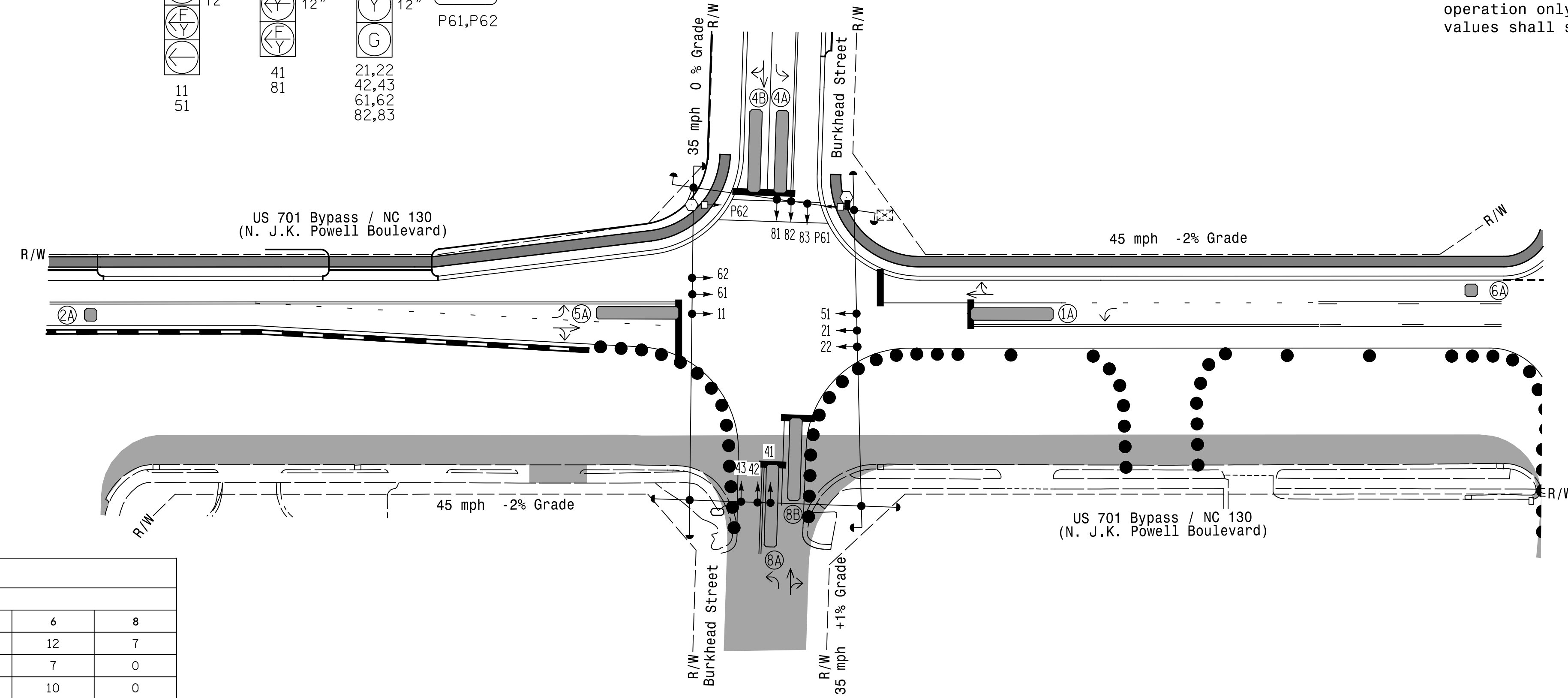
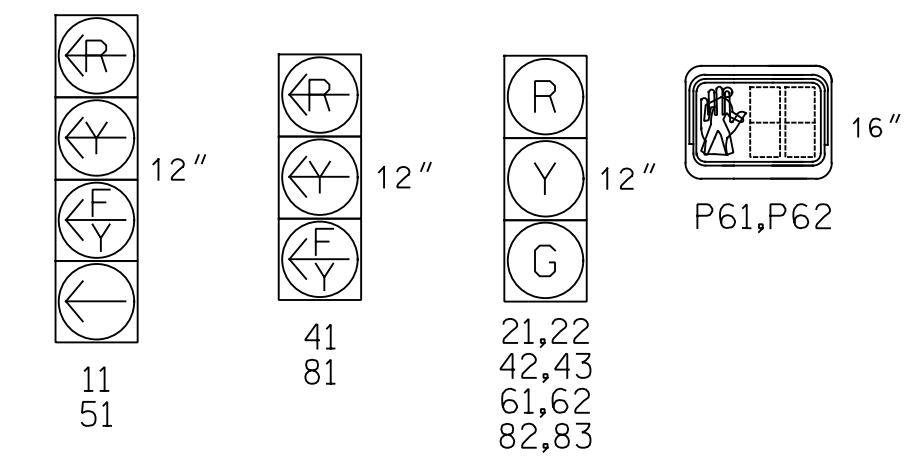
5 Phase Fully Actuated SYSTEM # 10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or 5 may be lagged.
- Reposition existing signal heads 11, 21, 22, 51, 61, and 62.
- Remove, and stockpile, existing pedestrian heads P21 & P22 along with the existing Type II signal pedestals on the east side of US 701 Bypass. These heads and pedestals will be reused in the final signal plan.
- Set all detection zones to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | |
|-------------------------|-------|-------------|-----|-----|-------------|-----|
| | 1 | 2 | 4 | 5 | 6 | 8 |
| Min Green * | 7 | 12 | 7 | 7 | 12 | 7 |
| Walk * | 0 | 0 | 0 | 0 | 7 | 0 |
| Ped Clear | 0 | 0 | 0 | 0 | 10 | 0 |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 6.0 | 2.0 |
| Max I * | 15 | 90 | 20 | 15 | 90 | 20 |
| Yellow | 3.0 | 4.7 | 3.8 | 3.0 | 4.7 | 3.8 |
| Red Clear | 3.3 | 1.6 | 1.6 | 2.4 | 1.6 | 2.1 |
| Actuations B4 Add * | - | 0 | - | - | 0 | - |
| Seconds /Actuation * | - | 2.5 | - | - | 2.5 | - |
| Max Initial * | - | 34 | - | - | 34 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 30 | - | - | 30 | - |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - |
| Locking Detector | - | - | - | - | - | - |
| Recall Position | - | VEH. RECALL | - | - | VEH. RECALL | - |
| Dual Entry | - | - | X | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X |

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

LEGEND

| PROPOSED | EXISTING |
|--|---------------------------------|
| ○ Traffic Signal Head | ● Traffic Signal Head |
| ○ Modified Signal Head | N/A |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Pedestrian Signal Head |
| ○ 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 | N/A |
| ● Video Detection Zone Drums | ● Video Detection Zone Drums |
| ○ Type II Signal Pedestal | ● Type II Signal Pedestal |

Signal Upgrade - Temporary Design 2 - (TMP Phase 1A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEPI
Engineering & Construction, Inc.

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

Prepared For:
STATE OF NORTH CAROLINA
Department of Transportation
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 701 Bypass/NC 130 (N. J.K. Powell Blvd) at Burkhead Street

Division 06 Columbus County Whiteville

PLAN DATE: November 2019 REVIEWED BY: G.G. Murr, Jr.

PREPARED BY: M. Ishak REVIEWED BY:

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

SEAL

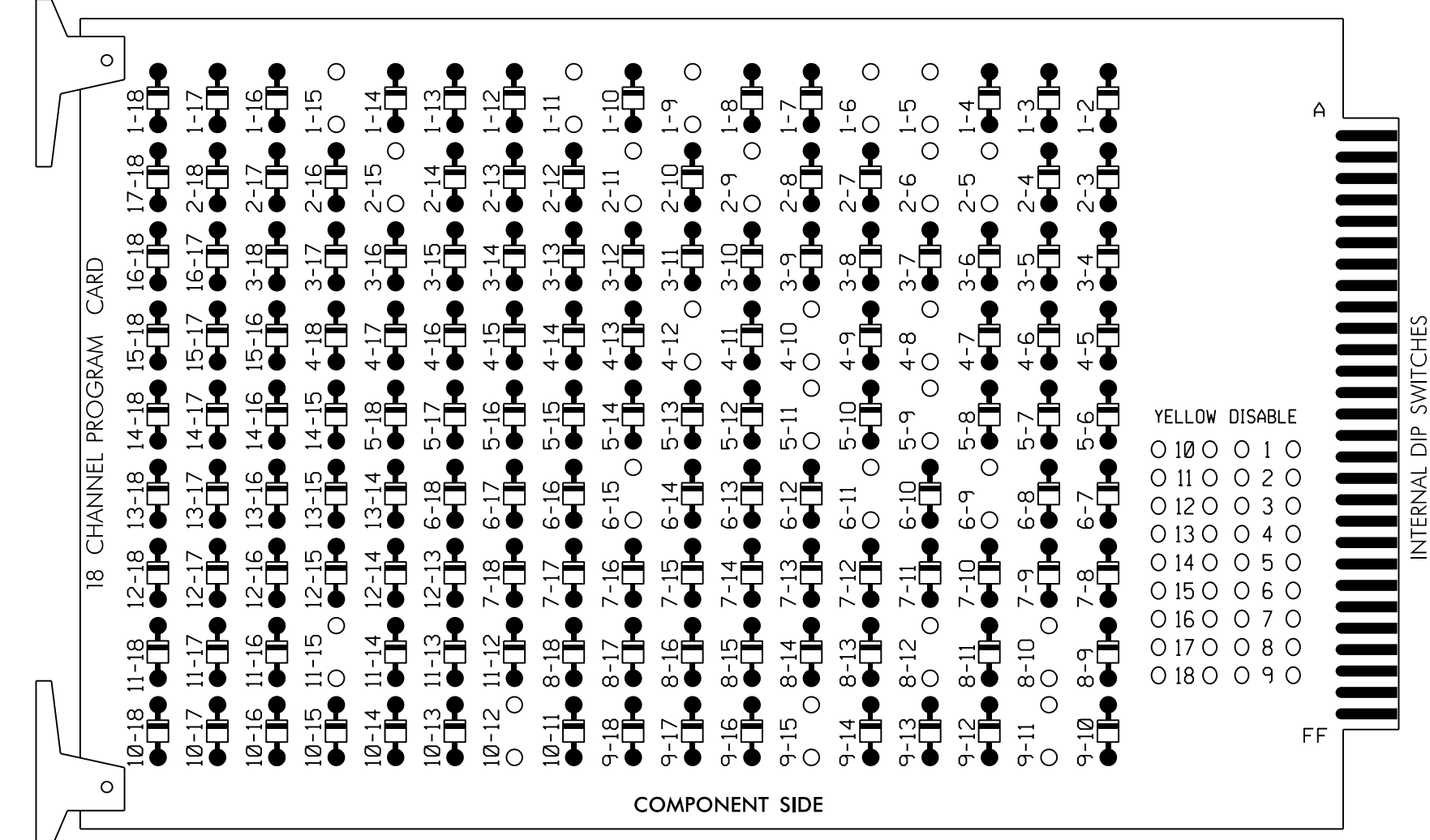
G. G. MURR, JR.
PROFESSIONAL ENGINEER
SEAL 14543

SIGNATURE DATE

SIG. INVENTORY NO. 06-0514T2

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

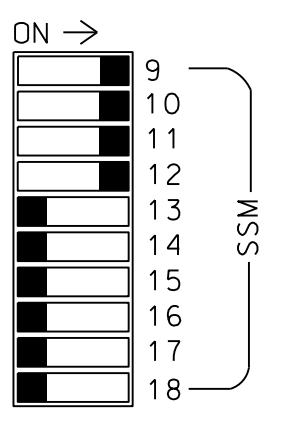
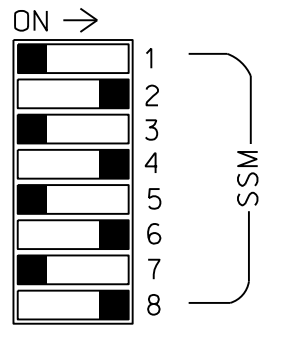
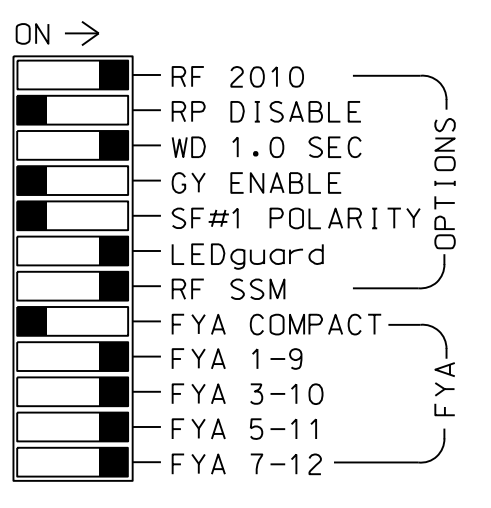
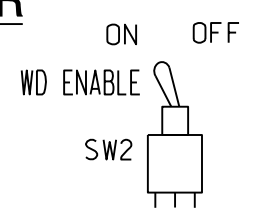
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 6-15, 8-10, 8-12, 9-11, 9-15, 10-12, AND 11-15.



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Walk.
- The cabinet and controller are part of System # 10605.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S9,S11,AUX S1
 AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,4,5,6,6 PED,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

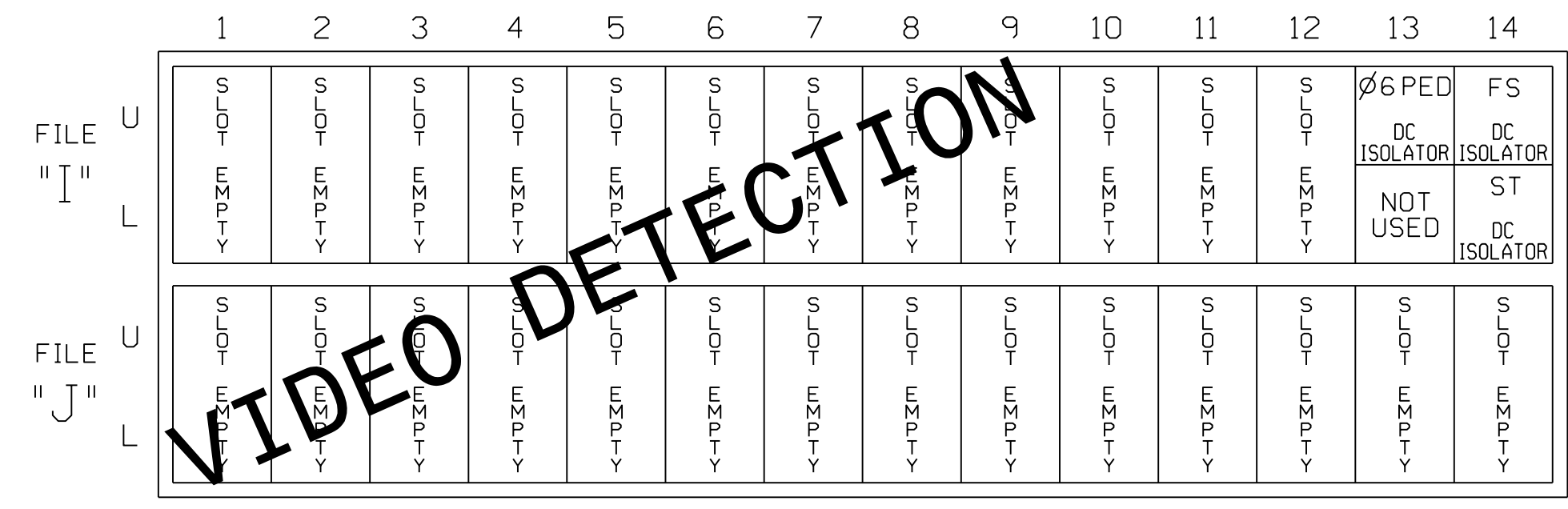
| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|-----|-------|-------|----|-------|-------|----|-------|----------|-----|-------|-------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | NU | NU | 42,43 | NU | 51 | 61,62 | P61, P62 | NU | 82,83 | NU | 11 | 81 | NU | 51 | 41 | NU |
| RED | 128 | | | | 101 | | | 134 | | | 107 | | | | | | | |
| YELLOW | * | 129 | | | 102 | | * | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | A121 | A124 | | A114 | A101 |
| YELLOW ARROW | | | | | | | | | | | | | | A122 | A125 | | A115 | A102 |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | A123 | A126 | | A116 | A103 |
| GREEN ARROW | 127 | | | | | | | 133 | | | | | | | | | | |
| | | | | | | | | | | 119 | | | | | | | | |
| | | | | | | | | | | | 121 | | | | | | | |

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)



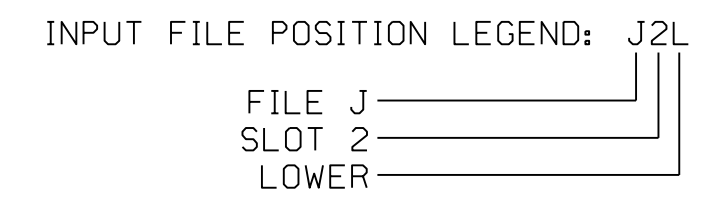
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

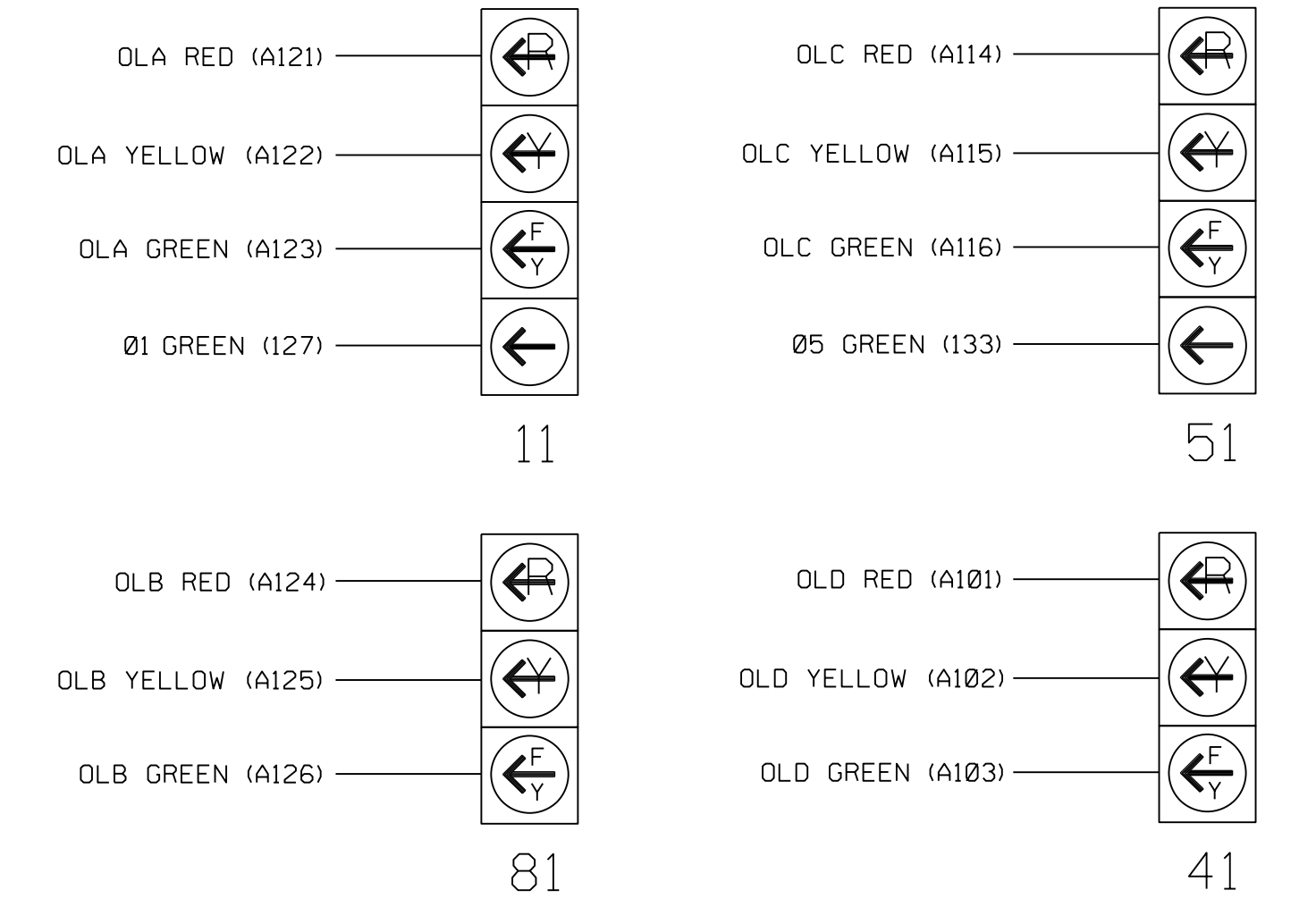
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| PED PUSH BUTTONS | | | | | | | | | | |
| P61,P62 | TB8-7,9 | I13U | 68 | PED 6 | 6 PED | | | | | |

NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS 113.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

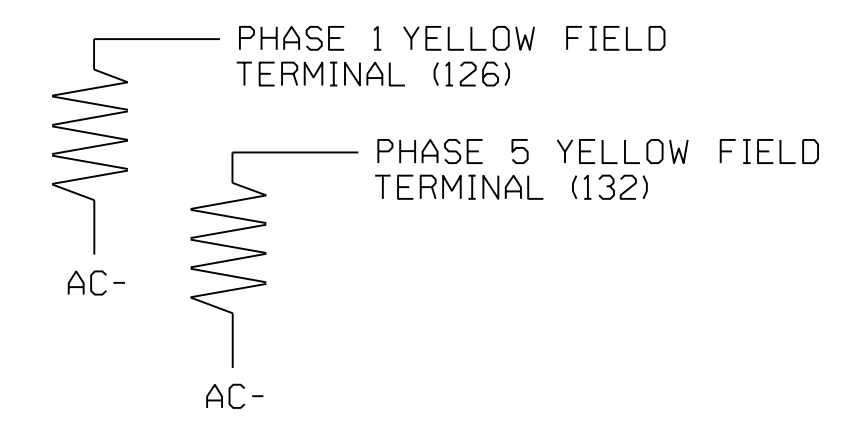


LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES

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



SPECIAL DETECTOR NOTE:

Note: Install a video detection system for vehicle detection. Perform installation in accordance with manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans for the following video zones: 1A, 2A, 4A, 4B, 5A, 6A, 8A, AND 8B.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0514T2
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

SEPI
 Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

Temporary Design 2 - (TMP Phase 1A)
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 US 701 Bypass/NC 130
 (N. J.K. Powell Boulevard)
 at
 Burkhead Street
 Division 06 Columbus County Whiteville
 PLAN DATE: November 2019 REVIEWED BY:
 PREPARED BY: M.B. Copple REVIEWED BY: G.G. Murr Jr.
 REVISIONS: INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEERS
 SEAL 27771
 MATTHEW B. COPPLE
 DATE
 SIG. INVENTORY NO. 06-0514T2

5/15/2020
 W:\PROJECTS\06-0514T2\06-0514T2.dgn
 USER:MCOPPLE

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
        
```

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
        
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
        
```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . 8 . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
        
```

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

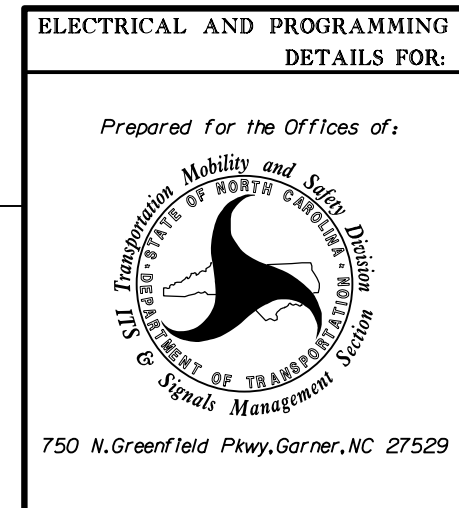
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

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

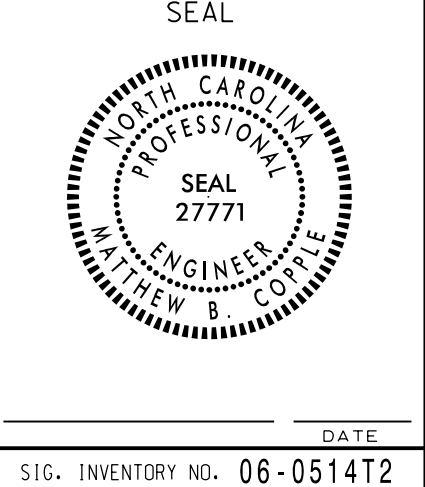
THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0514T2
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

Temporary Design 2 - (TMP Phase 1A)
 Electrical Detail - Sheet 2 of 2

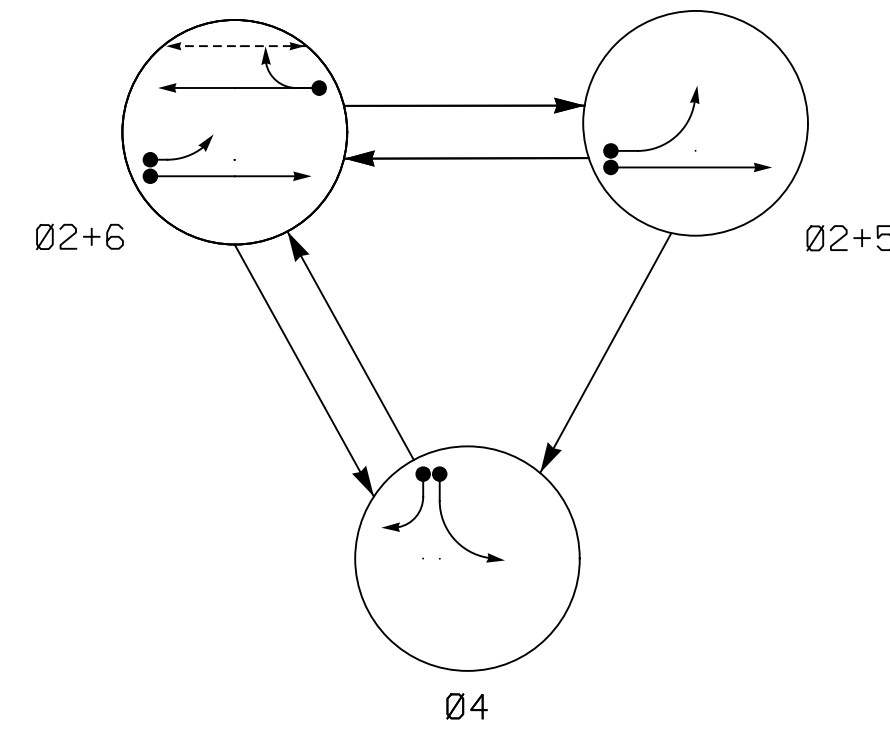


| | |
|---|-------------------------|
| US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at Burkhead Street | |
| Division 06 | Columbus County |
| Whiteville | |
| PLAN DATE: December 2019 | REVIEWED BY: |
| PREPARED BY: M.B. Copple | REVIEWED BY: GG Murr Jr |
| REVISIONS | INIT. DATE |
| | |
| | |
| | |

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|-------|-----|-------|
| | Ø 2+5 | Ø 2+6 | Ø 4 | FLASH |
| 21,22 | G | G | R | Y |
| 41 | R | R | F | R |
| 42,43 | R | R | G | R |
| 51 | F | F | R | Y |
| 61,62 | R | G | R | Y |
| P61,P62 | DW | W | DW | DRK |

ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 2A | 6X6 | 300 | * | - | 2 | Yes | - | - | X | N | - | - |
| 4A | 6X40 | 0 | * | - | 4 | Yes | - | 3 | - | N | - | - |
| 4B | 6X40 | 0 | * | - | 4 | Yes | - | 10 | - | N | - | - |
| 5A | 6X40 | 0 | * | - | 5 | Yes | - | 15 | - | N | - | - |
| 6A | 6X6 | 300 | * | - | 2 | Yes | - | 3 | - | G | - | - |
| | | | | | 6 | Yes | - | - | X | N | - | - |

* Video Detection Zone

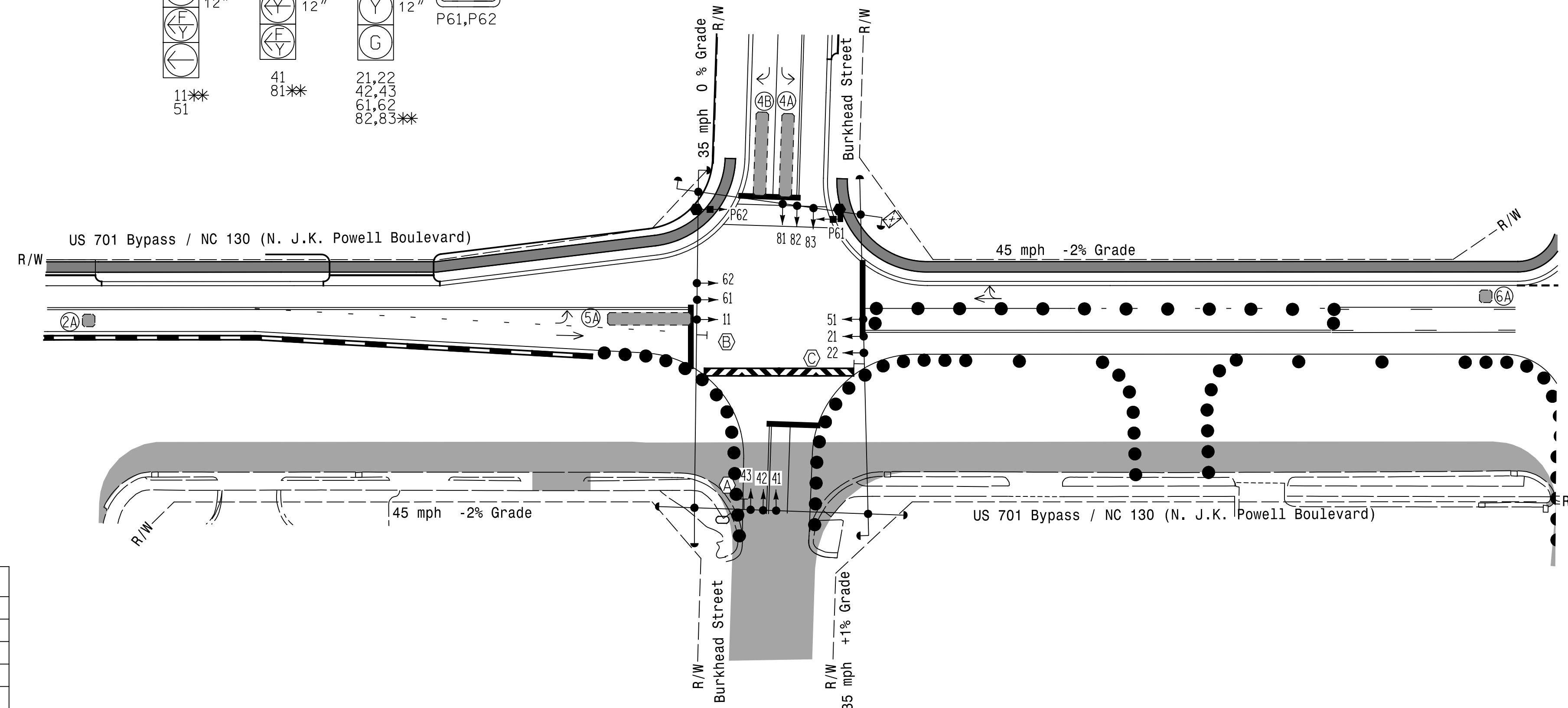
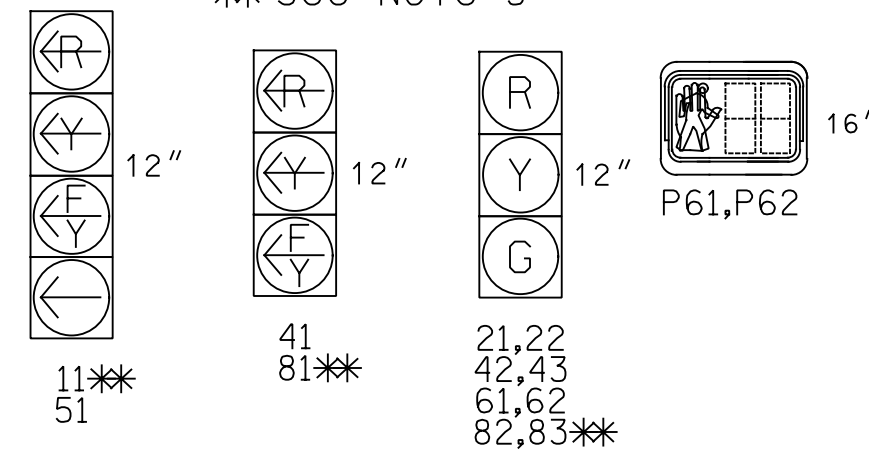
3 Phase Fully Actuated SYSTEM # 10605

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may lead.
4. Reposition existing signal heads 21, 22, 51, 61, and 62.
5. Bag and disconnect signal heads 11, 81, 82, and 83.
6. Set all detection zones to presence mode.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D. * See Note 5



ASC/3 TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|-------------|-----|-----|-------------|
| | 2 | 4 | 5 | 6 |
| Min Green * | 12 | 7 | 7 | 12 |
| Walk * | 0 | 0 | 0 | 7 |
| Ped Clear | 0 | 0 | 0 | 10 |
| Veh. Extension * | 6.0 | 2.0 | 2.0 | 6.0 |
| Max I * | 90 | 20 | 15 | 90 |
| Yellow | 4.7 | 3.0 | 3.0 | 4.7 |
| Red Clear | 1.0 | 2.4 | 2.4 | 1.0 |
| Actuations B4 Add * | 0 | - | - | 0 |
| Seconds /Actuation * | 2.5 | - | - | 2.5 |
| Max Initial * | 34 | - | - | 34 |
| Time Before Reduction * | 15 | - | - | 15 |
| Time To Reduce * | 30 | - | - | 30 |
| Minimum Gap | 3.0 | - | - | 3.0 |
| Locking Detector | - | - | - | - |
| Recall Position | VEH. RECALL | - | - | VEH. RECALL |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | X | X | X | X |

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

LEGEND

- | PROPOSED | EXISTING |
|--|--|
| ○ Traffic Signal Head | ● Traffic Signal Head |
| ○ Modified Signal Head | N/A |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Pedestrian Signal Head With Push Button & 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 |
| ▬ Video Detection Area | ▬ Video Detection Area |
| ▬ BARRICADE (TYPE III) | ▬ BARRICADE (TYPE III) |
| ▬ Construction Zone | N/A |
| ▬ Video Detection Zone | ▬ Video Detection Zone |
| ● Drums | N/A |
| Ⓐ "RIGHT ARROW ONLY" Sign (R3-5R) | Ⓐ "RIGHT ARROW ONLY" Sign (R3-5R) |
| Ⓑ "NO LEFT TURN" Sign (R3-2) | Ⓑ "NO LEFT TURN" Sign (R3-2) |
| Ⓒ "NO RIGHT TURN" Sign (R3-1) | Ⓒ "NO RIGHT TURN" Sign (R3-1) |
| ○ Type II Signal Pedestal | ● Type II Signal Pedestal |

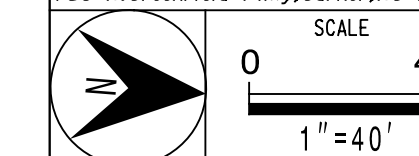
Signal Upgrade - Temporary Design 3 - (TMP Phase 1A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| | |
|--|-----------------------------|
| US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at Burkhead Street | |
| Division 06 Columbus County | Whiteville |
| PLAN DATE: November 2019 | REVIEWED BY: G.G. Murr, Jr. |
| PREPARED BY: M. Ishak | REVIEWED BY: |
| REVISIONS | INIT. DATE |
| | |
| | |
| SIGNATURE | DATE |
| | |

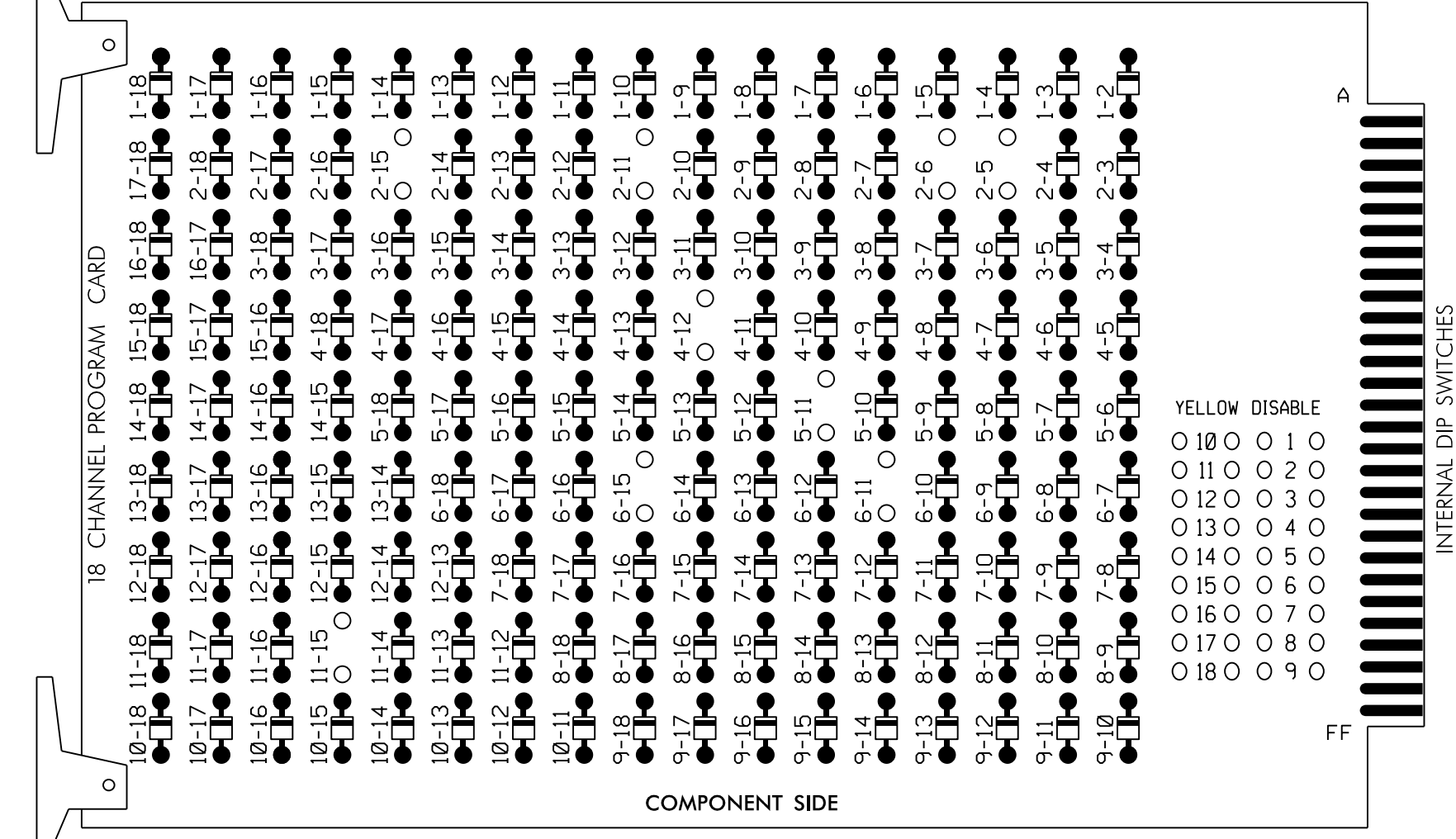
SEPI
Engineering & Construction, Inc.

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197



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

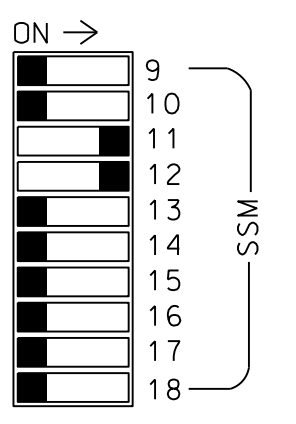
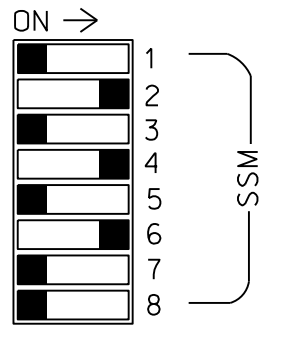
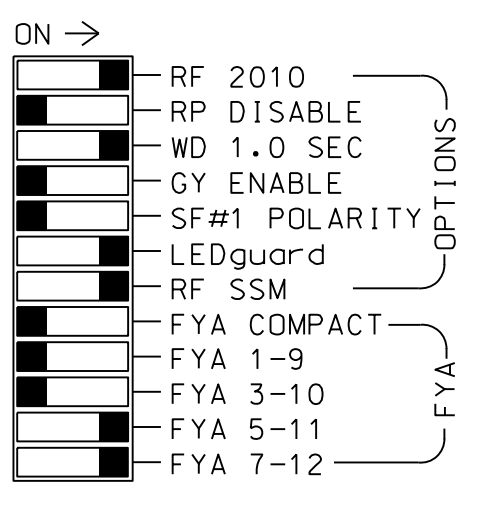
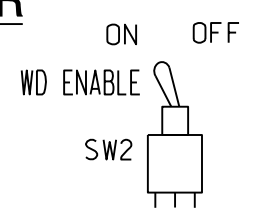
REMOVE DIODE JUMPERS 2-5, 2-6, 2-11, 2-15, 4-12, 5-11, 6-11, 6-15, AND 11-15.



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Walk.
- The cabinet and controller are part of System # 10605.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,S9,AUX S4,AUX S5
 PHASES USED.....2,4,5,6,6 PED
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....*

* See overlap programming detail on sheet 2

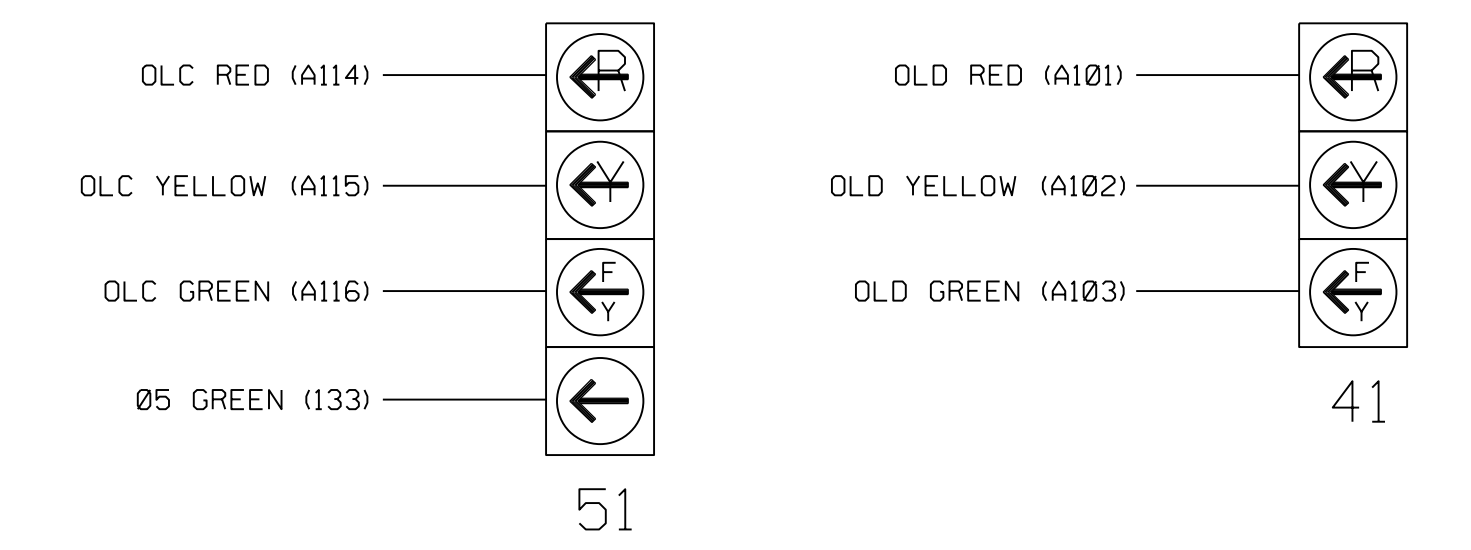
SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|----|-------|-------|----|-------|-------|----|-------|----------|-----|-----|-------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 42,43 | NU | 51 | 61,62 | P61, P62 | NU | NU | NU | NU | NU | NU | 51 | 41 | NU |
| RED | | 128 | | | 101 | | | 134 | | | | | | | | | | |
| YELLOW | | 129 | | | 102 | | * | 135 | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | | | A114 | A101 |
| YELLOW ARROW | | | | | | | | | | | | | | | | | A115 | A102 |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | | | A116 | A103 |
| GREEN ARROW | | | | | | | | 133 | | | | | | | | | | |
| Hand icon | | | | | | | | | 119 | | | | | | | | | |
| Person icon | | | | | | | | | 121 | | | | | | | | | |

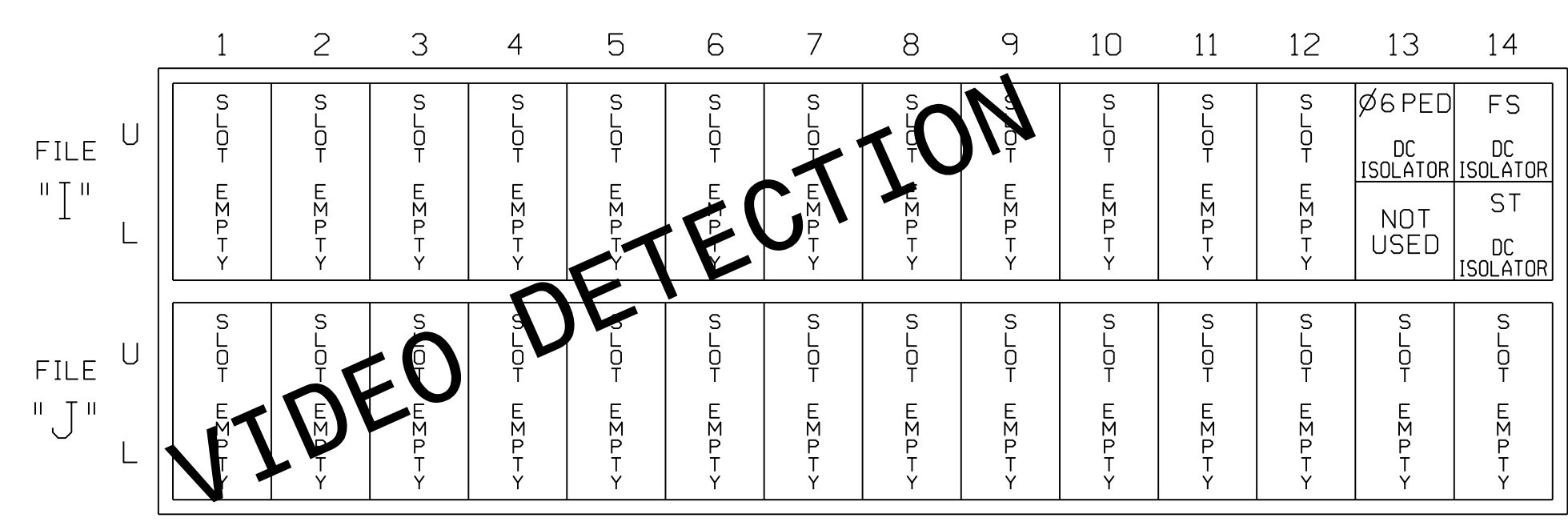
NU = Not Used

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

FYA SIGNAL WIRING DETAIL
(wire signal heads as shown)



INPUT FILE POSITION LAYOUT
(front view)



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

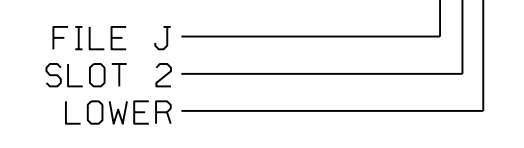
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| PED PUSH BUTTONS | | | | | | | | | | |
| P61,P62 | TB8-7,9 | I13U | 68 | PED 6 | 6 PED | | | | | |

NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS 113.

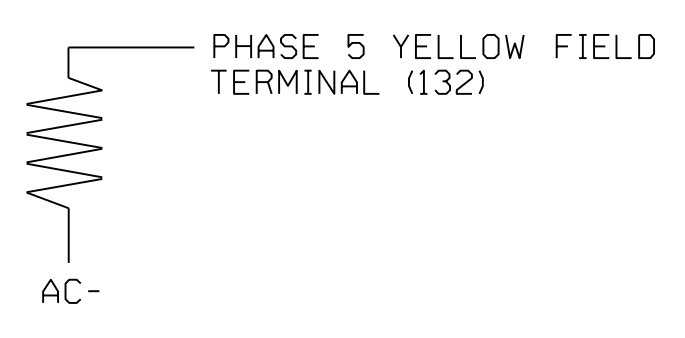
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL
(install resistor as shown)

ACCEPTABLE VALUES

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



SPECIAL DETECTOR NOTE:

Note: Install a video detection system for vehicle detection. Perform installation in accordance with manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans for the following video zones: 2A, 4A, 4B, 5A, AND 6A.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0514T3
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

SEPI
 Engineering & Construction, Inc.
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 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

Temporary Design 3 - (TMP Phase 1A)
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 US 701 Bypass/NC 130
 (N. J.K. Powell Boulevard)
 at
 Burkhead Street
 Division 06 Columbus County Whiteville

Prepared for the Offices of:
 North Carolina Department of Transportation
 Signal Management Section
 750 N. Greenfield Pkwy, Garner, NC 27529

Prepared by: M.B. Copple
 Reviewed by: G.G. Murr Jr.

REVISIONS: _____ INIT. DATE _____

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 MATHIEW B. COPPLE
 SEAL 27771

SIG. INVENTORY NO. 06-0514T3

5/15/2020
 W:\P60208\sig.dsn_06-0514T3a.dgn
 USER:MCopple

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED . . . 4

PROTECT

PED PRTC

NOT OVLP

FLSH GRN . . . 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

END PROGRAMMING

ECONOLITE ASC/3-2070 CONTROLLER

SEQUENCE PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 1. CONTROLLER SEQ
3. From CONTROLLER SEQUENCE Submenu select 1. PHASE RING SEQUENCE AND ASSIGNMENT

CONTROLLER SEQUENCE [1]

| SEQUENCE COMMANDS | . HW ALT SEQ ENA. | NO. |
|---|-------------------|-----|
| 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 | | |
| BC=B - B - B - - - - - | | |
| R1- . 02 04 | | |
| R2- 06 05 | | |
| R3- | | |
| R4- | | |

R1-R4=RING 1-4, DATA ENTRY, PHASES 1-16
BC=BARRIER CONTROL, VALUES: B,C
B=BARRIER MODE
C=COMPATIBILITY MODE

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

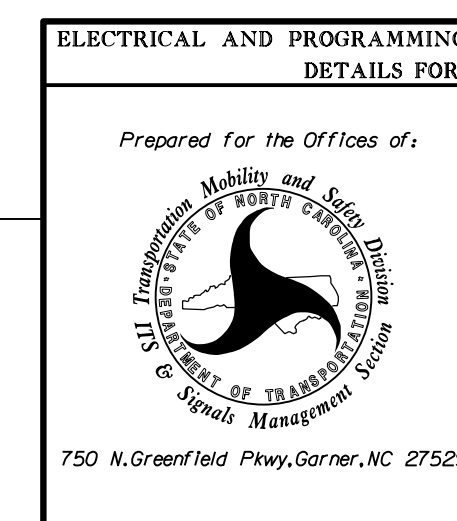
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0514T3
DESIGNED: November 2019
SEALED: 05/15/2020
REVISED: N/A

Temporary Design 3 - (TMP Phase 1A)
Electrical Detail - Sheet 2 of 2



| | |
|--|-------------------------|
| US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at Burkhead Street | |
| Division 06 | Columbus County |
| PLAN DATE: November 2019 | REVIEWED BY: GG Murr Jr |
| PREPARED BY: M.B. Copple | REVIEWED BY: GG Murr Jr |
| REVISIONS | INIT. DATE |
| | |
| | |

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

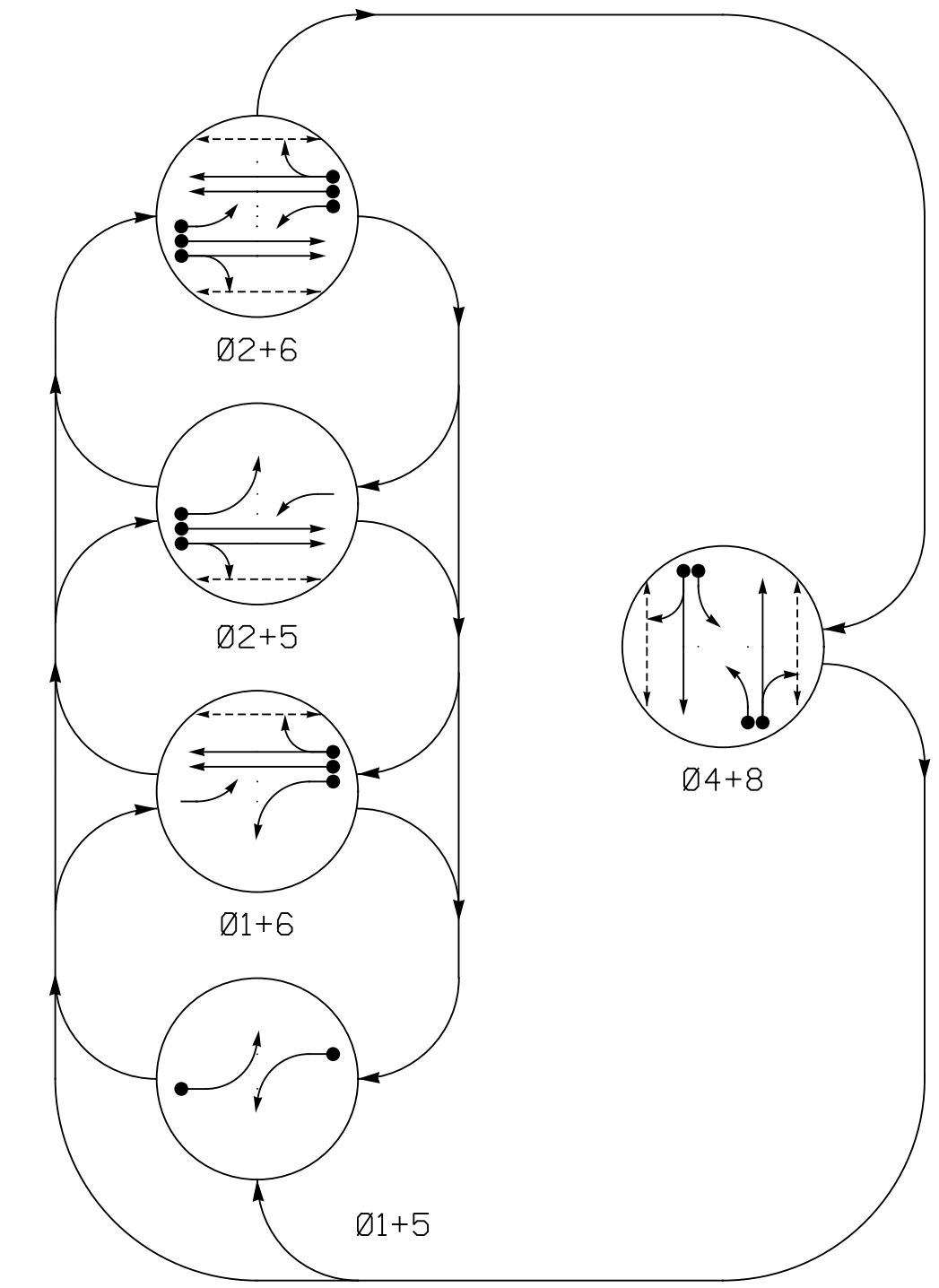
SEAL

DATE

SIG. INVENTORY NO. 06-0514T3

5/15/2020
\\F5020B.s:\p.dsn.06-0514T3.e.dgn
USER:MCopple

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | |
|-------------|---------|---------|---------|---------|---------|---------|
| | Ø 1 + 5 | Ø 1 + 6 | Ø 2 + 5 | Ø 2 + 6 | Ø 4 + 8 | Ø 4 + 8 |
| 11 | ← | ← | ← | ← | ← | ← |
| 21,22 | R | R | G | G | R | Y |
| 41 | ← | ← | ← | ← | ← | ← |
| 42,43 | R | R | R | R | G | R |
| 51 | ← | ← | ← | ← | ← | ← |
| 61,62 | R | G | R | G | R | Y |
| 81 | ← | ← | ← | ← | ← | ← |
| 82,83 | R | R | R | R | G | R |
| P21,P22 | DW | DW | W | W | DW | DRK |
| P41,P42 | DW | DW | DW | DW | W | DRK |
| P61,P62 | DW | W | DW | W | DW | DRK |
| P81,P82 | DW | DW | DW | DW | W | DRK |

ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | X | 1 | Yes | - | 15 | - | N | - | X |
| 2A | 6X6 | 300 | 4 | X | 2 | Yes | - | - | - | X | N | - |
| 2B | 6X6 | 300 | 4 | X | 2 | Yes | - | - | - | X | N | - |
| 4A | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | 3 | - | N | - | X |
| 4B | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | 10 | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | X | 5 | Yes | - | 15 | - | N | - | X |
| 6A | 6X6 | 300 | 4 | X | 6 | Yes | - | - | - | X | N | - |
| 6B | 6X6 | 300 | 4 | X | 6 | Yes | - | - | - | X | N | - |
| 8A | 6X40 | 0 | 2-4-2 | X | 8 | Yes | - | 3 | - | N | - | X |
| 8B | 6X40 | 0 | 2-4-2 | X | 8 | Yes | - | 10 | - | N | - | X |

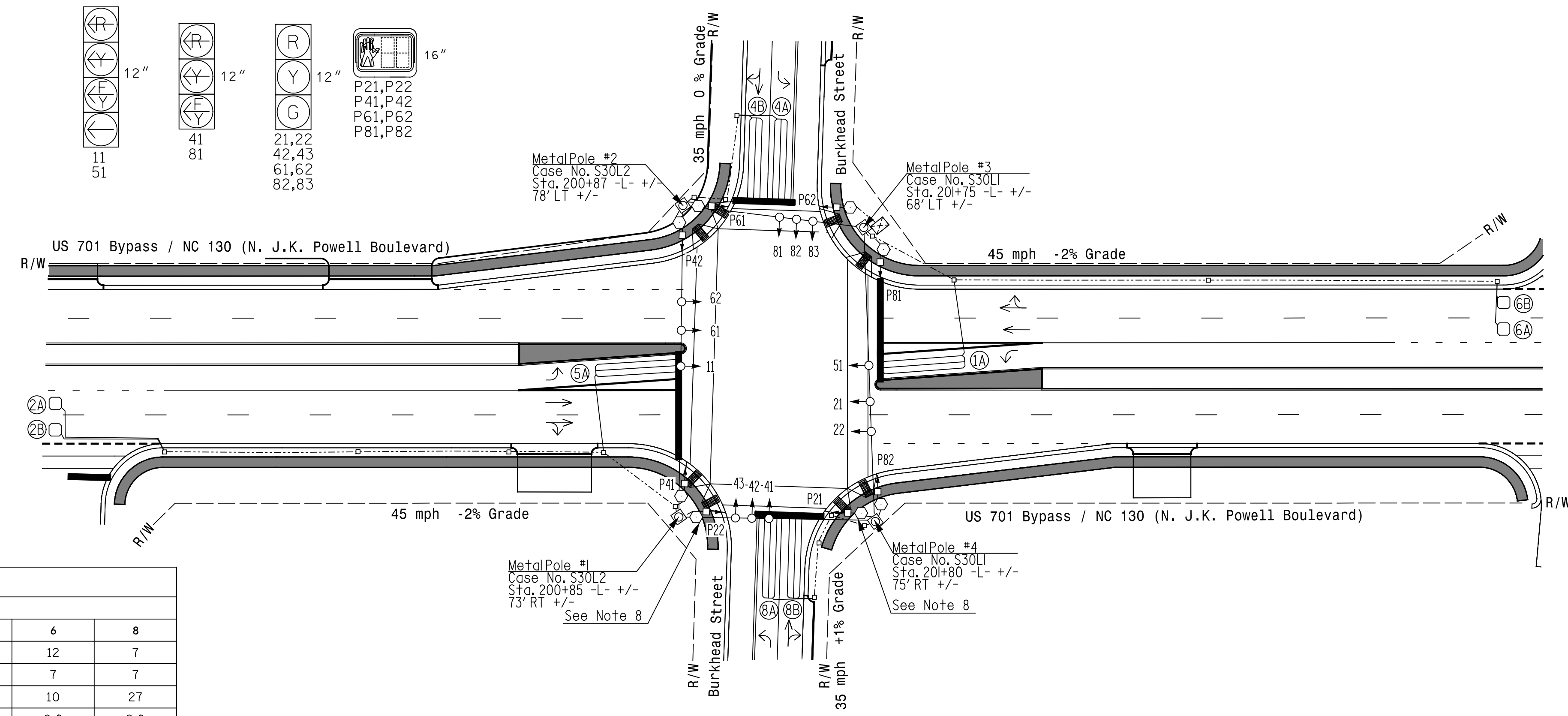
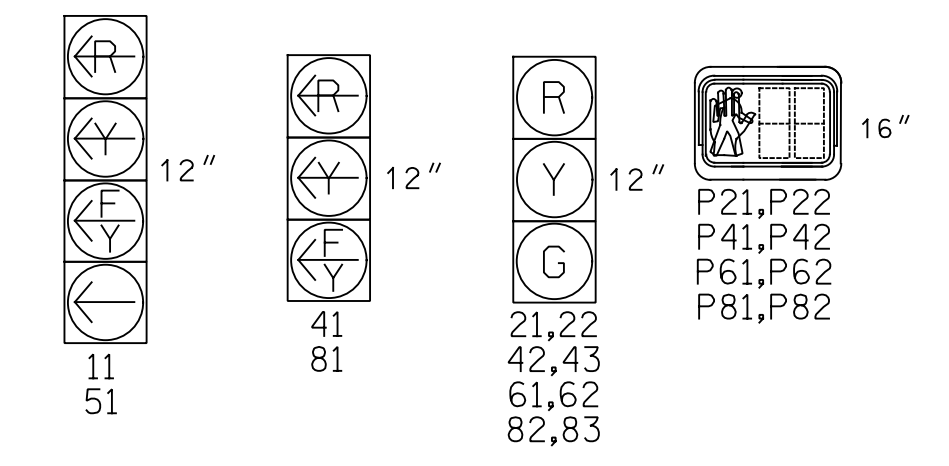
5 Phase Fully Actuated SYSTEM # 10605

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or 5 may be lagged.
4. Set all detector units to presence mode.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Reuse the stockpiled pedestrian heads P21 & P22 along with the Type II signal pedestals from Temporary Design 2

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | | |
|-------------------------|-------|-------------|-----|-----|-------------|-----|--|
| | 1 | 2 | 4 | 5 | 6 | 8 | |
| Min Green * | 7 | 12 | 7 | 7 | 12 | 7 | |
| Walk * | 0 | 7 | 7 | 0 | 7 | 7 | |
| Ped Clear | 0 | 13 | 30 | 0 | 10 | 27 | |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 6.0 | 2.0 | |
| Max I * | 15 | 90 | 20 | 15 | 90 | 20 | |
| Yellow | 3.0 | 4.7 | 3.8 | 3.0 | 4.7 | 3.8 | |
| Red Clear | 3.1 | 1.4 | 2.8 | 3.1 | 1.4 | 2.8 | |
| Actuations B4 Add * | - | 0 | - | - | 0 | - | |
| Seconds /Actuation * | - | 1.5 | - | - | 1.5 | - | |
| Max Initial * | - | 34 | - | - | 34 | - | |
| Time Before Reduction * | - | 15 | - | - | 15 | - | |
| Time To Reduce * | - | 30 | - | - | 30 | - | |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - | |
| Locking Detector | - | X | - | - | X | - | |
| Recall Position | - | VEH. RECALL | - | - | VEH. RECALL | - | |
| Dual Entry | - | - | X | - | - | X | |
| Simultaneous Gap | X | X | X | X | X | X | |

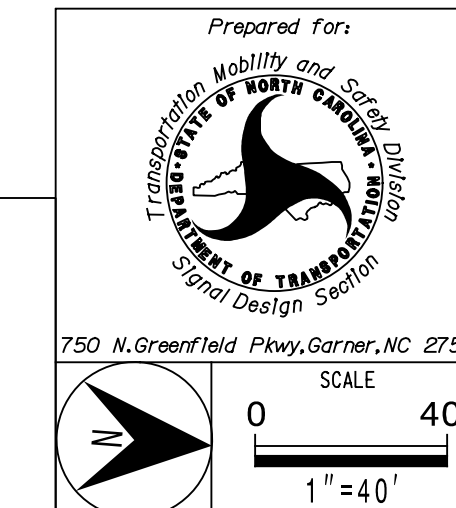
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

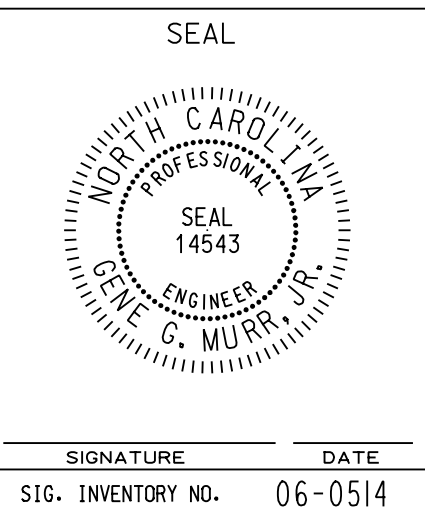
| PROPOSED | EXISTING |
|--|---------------------------------|
| ○→ Traffic Signal Head | ●→ N/A |
| ●→ Modified Signal Head | ○→ N/A |
| ⊥ Sign | ⊥ N/A |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ N/A |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ● 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 | N/A Right of Way |
| → Directional Arrow | → Directional Arrow |
| ○ Metal Strain Pole | ○ Metal Strain Pole |
| ○ Type II Signal Pedestal | ○ Type II Signal Pedestal |
| N/A Wheelchair Ramp | ▲ Wheelchair Ramp |

Signal Upgrade - Final Design

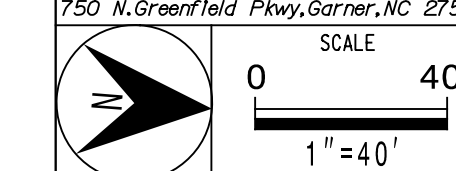
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



US 701 Bypass/NC 130 (N. J.K. Powell Blvd) at Burkhead Street
 Division 06 Columbus County Whiteville
 PLAN DATE: November 2019 REVIEWED BY: G.G. Murr, Jr.
 PREPARED BY: M Ishak REVIEWED BY:
 REVISIONS INIT. DATE

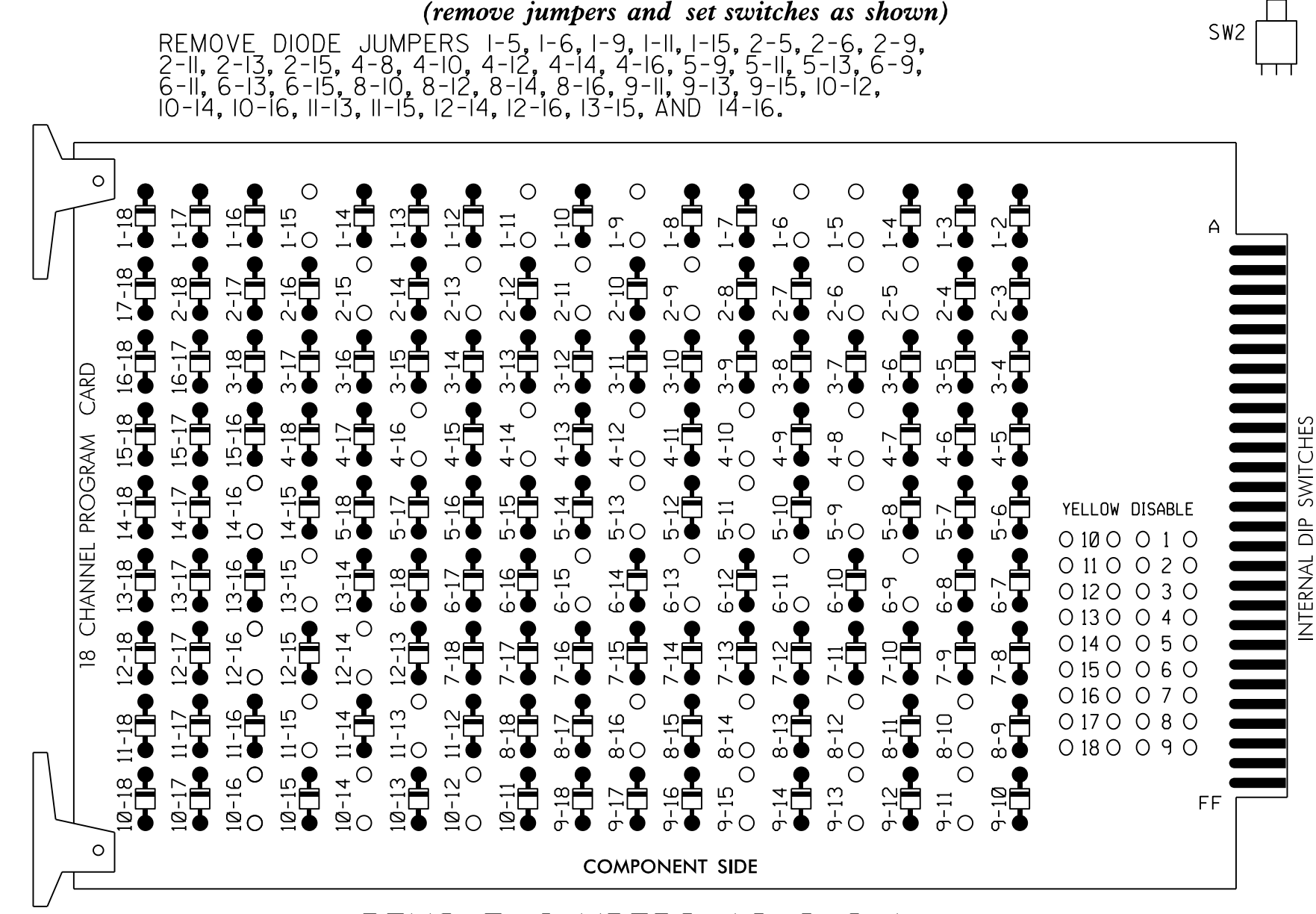


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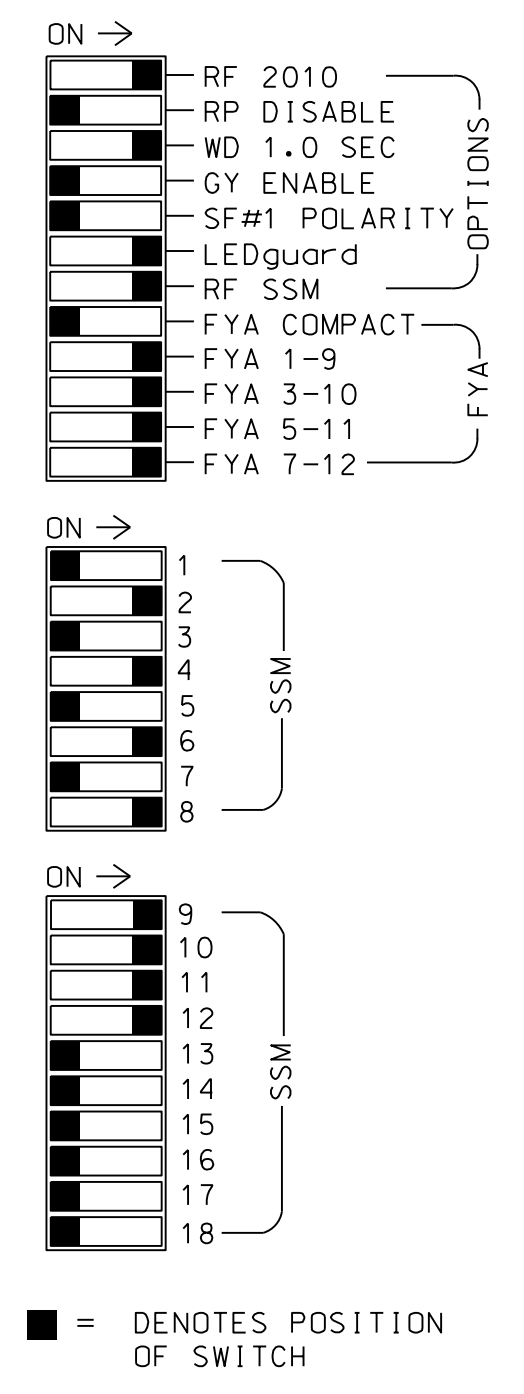


5/13/2020 11:05:00 AM R-5020B.dwg (p.dwg) 06-0514.dgn USER:MCopple

EDI MODEL 2018ECLip-NC CONFLICT MONITOR
PROGRAMMING DETAIL



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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Walk and 6 Walk.
- The cabinet and controller are part of System # 10605.

EQUIPMENT INFORMATION

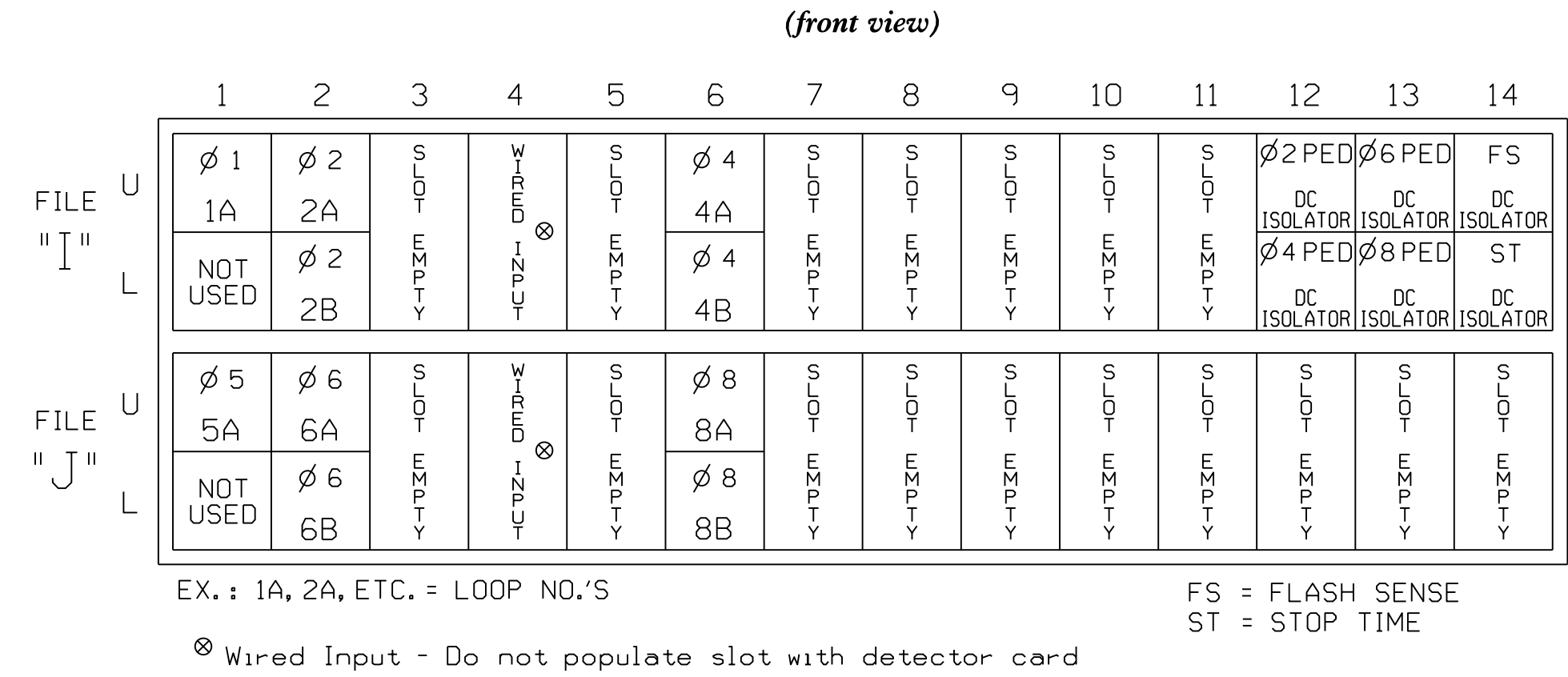
CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|-----|-------|----------|-----|-------|----------|-----|-------|----------|-----|-------|----------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | P21, P22 | NU | 42,43 | P41, P42 | 51 | 61,62 | P61, P62 | NU | 82,83 | P81, P82 | 11 | 81 | NU | 51 | 41 | NU |
| RED | 128 | | | 101 | | | | 134 | | 107 | | | | | | | | |
| YELLOW | * | 129 | | | 102 | | * | 135 | | 108 | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | 109 | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | |
| YELLOW ARROW | | | | | | | | | | | | | A122 | A125 | | A115 | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | |
| GREEN ARROW | 127 | | | | | | 133 | | | | | | | | | | | |
| Hand icon | | | 113 | | | 104 | | 119 | | 110 | | | | | | | | |
| Person icon | | | | | | 106 | | 121 | | 112 | | | | | | | | |

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

INPUT FILE POSITION LAYOUT

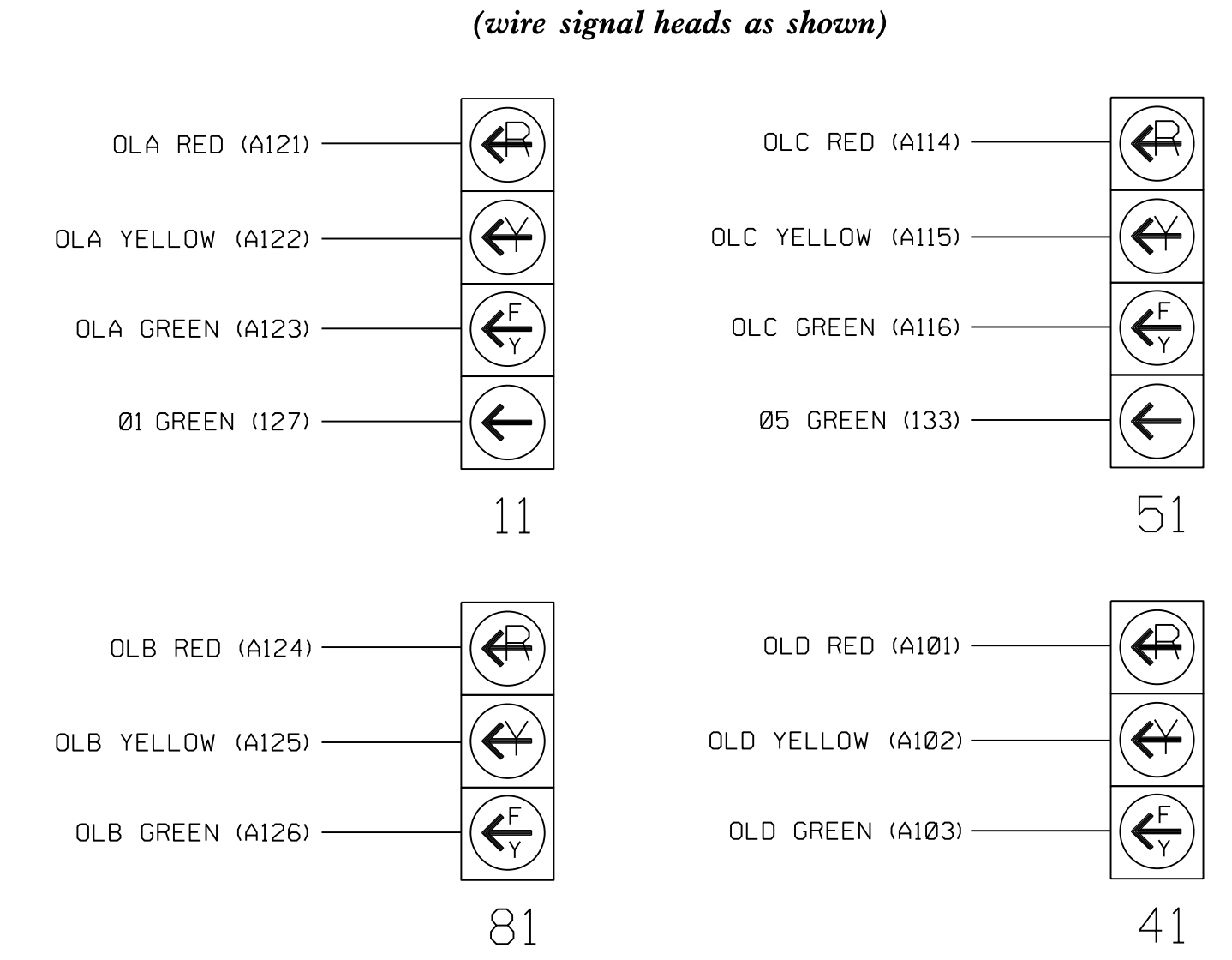


INPUT FILE CONNECTION & PROGRAMMING CHART

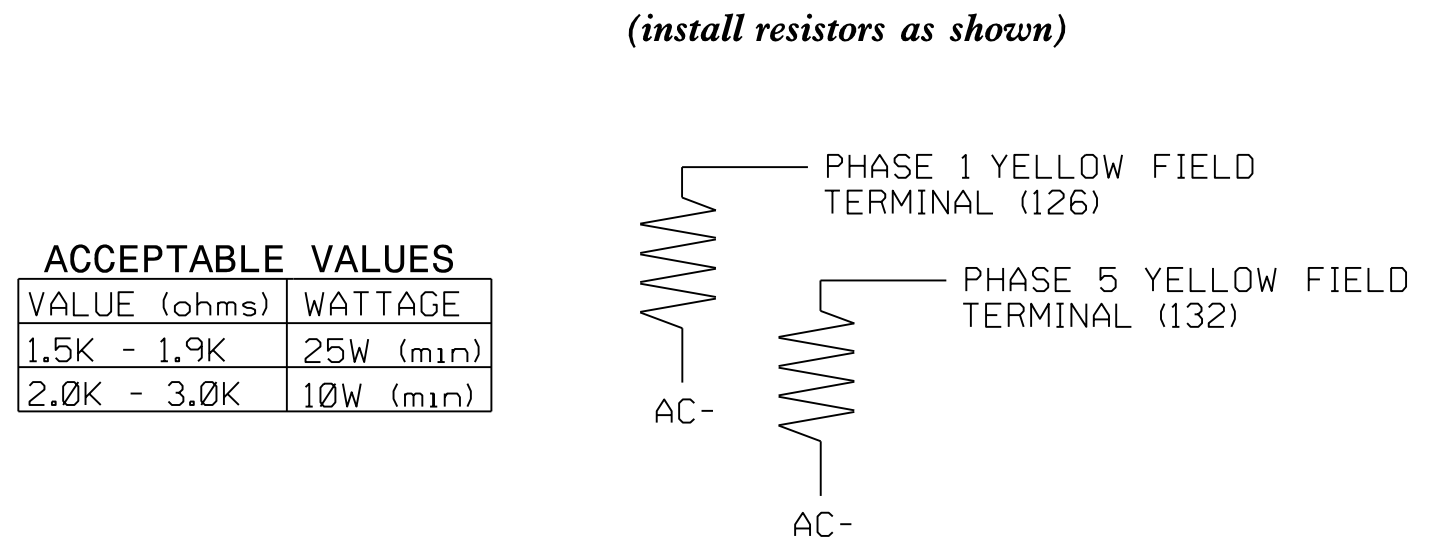
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 1A ¹ | TB2-1,2 | I1U | 56 | 1 | 1 | YES | | 15 | | N |
| 2A | TB2-5,6 | J4U | 48 | 26 | 6 | YES | | 3 | | G |
| 2B | TB2-7,8 | I2L | 43 | 12 | 2 | YES | | | X | N |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | 3 | | N |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | 10 | | N |
| 5A ² | TB3-1,2 | J1U | 55 | 5 | 5 | YES | | 15 | | N |
| 6A | TB3-5,6 | J2U | 40 | 6 | 6 | YES | | | X | N |
| 6B | TB3-7,8 | J2L | 44 | 16 | 6 | YES | | | X | N |
| 8A | TB5-9,10 | J6U | 42 | 8 | 8 | YES | | 3 | | N |
| 8B | TB5-11,12 | J6L | 46 | 18 | 8 | YES | | 10 | | N |
| PED PUSH BUTTONS | | | | | | | | | | |
| P21,P22 | TB8-4,6 | I12U | 67 | PED 2 | 2 PED | | | | | |
| P41,P42 | TB8-5,6 | I12L | 69 | PED 4 | 4 PED | | | | | |
| P61,P62 | TB8-7,9 | I13U | 68 | PED 6 | 6 PED | | | | | |
| P81,P82 | TB8-8,9 | I13L | 70 | PED 8 | 8 PED | | | | | |

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.
 INPUT FILE POSITION LEGEND: J2L
 FILE J
 SLOT 2
 LOWER

FYA SIGNAL WIRING DETAIL



LOAD RESISTOR INSTALLATION DETAIL



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0514
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

5/15/2020
 W:\PROJ\0208_sigs\asn_06-0514e.dgn
 USER:MCopple

SEPI
 Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel:919.789.9977
 Fax:919.789.9591
 License: C-2197

Final Design
 Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

US 701 Bypass/NC 130
 (N. J.K. Powell Boulevard)
 at
 Burkhead Street

Division 06 Columbus County Whiteville

PLAN DATE: December 2019 REVIEWED BY:
 PREPARED BY: M.B. Copple REVIEWED BY: G G Murr Jr

REVISIONS INIT. DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 M. B. COPPLE
 SEAL 27771

SIG. INVENTORY NO. 06-0514

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
        
```

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[B] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
        
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
        
```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . 8 . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
        
```

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

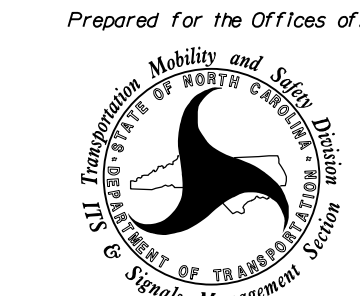
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

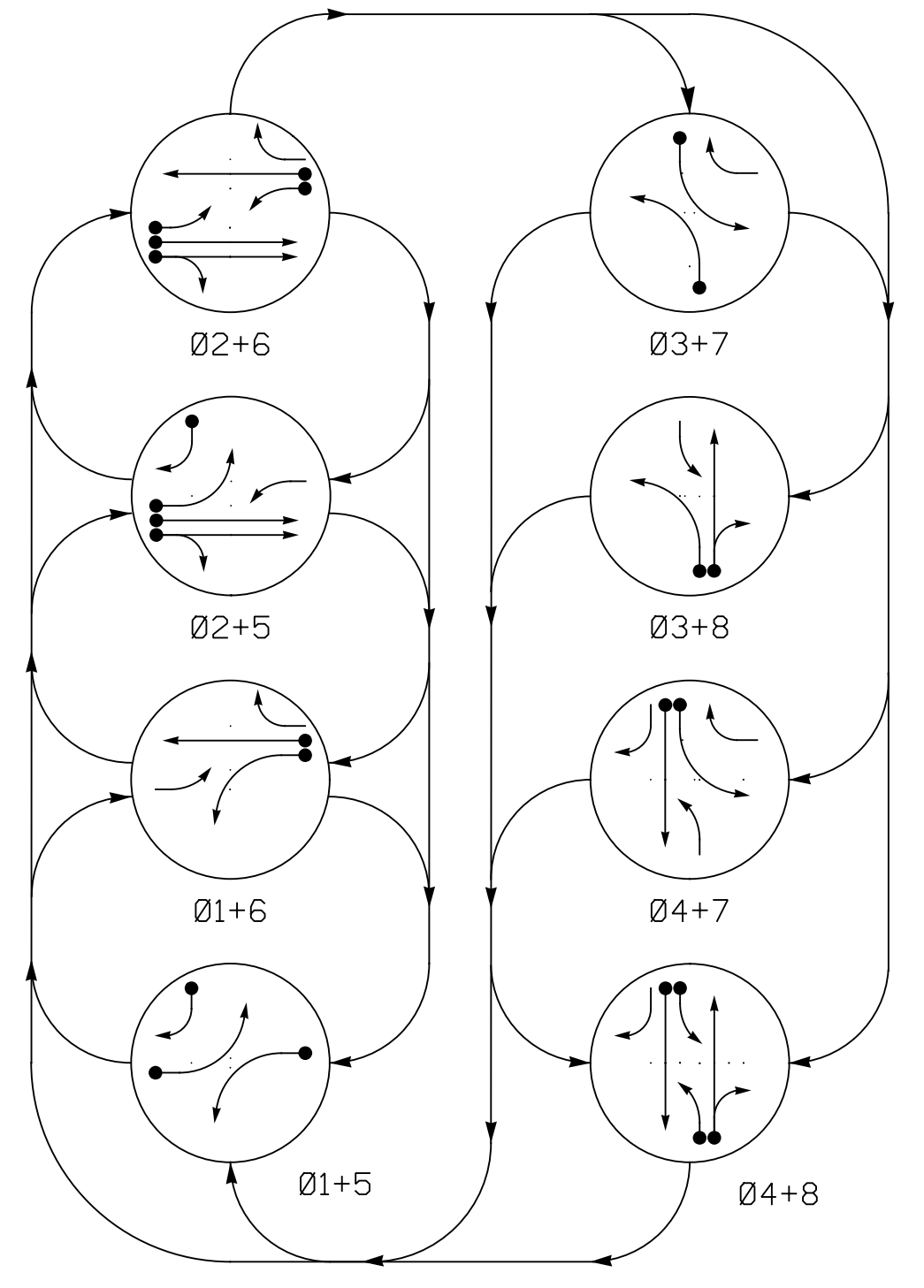
THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0514
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 2 of 2

| | | |
|---|---|---|
|  Prepared for the Offices of: City of Raleigh Department of Transportation Signal Management Section | US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at Burkhead Street | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED |
| 1 Glenwood Avenue Raleigh, NC 27603 Tel: 919.789.9977 Fax: 919.789.9591 License: C-2197 | Division 06 Columbus County Whiteville PLAN DATE: November 2019 REVIEWED BY: PREPARED BY: M.B. Copple REVIEWED BY: GG Murr Jr REVISIONS INIT. DATE | SEAL NORTH CAROLINA PROFESSIONAL ENGINEER MATTHEW B. COPPLE SEAL 27771 |
| SIG. INVENTORY NO. 06-0514 | | |

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

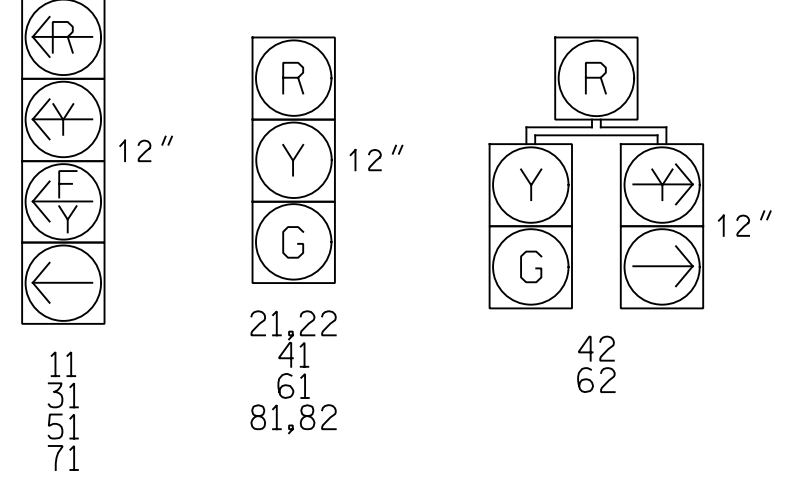
- ←●→ DETECTED MOVEMENT
- ←→ UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ←- - - -> PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | |
|-------------|-------|------|------|------|------|------|------|------|
| | Ø1+5 | Ø2+6 | Ø3+7 | Ø4+8 | Ø1+6 | Ø2+5 | Ø3+8 | Ø4+7 |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← |
| 21,22 | R | R | G | G | R | R | G | G |
| 31 | ← | ← | ← | ← | ← | ← | ← | ← |
| 41 | R | R | R | R | R | R | G | G |
| 42 | R | R | R | R | R | R | G | G |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← |
| 61 | R | G | R | G | R | R | R | Y |
| 62 | R | G | R | G | R | R | R | Y |
| 71 | ← | ← | ← | ← | ← | ← | ← | ← |
| 81,82 | R | R | R | R | R | R | G | G |

SIGNAL FACE I.D.

All Heads L.E.D.



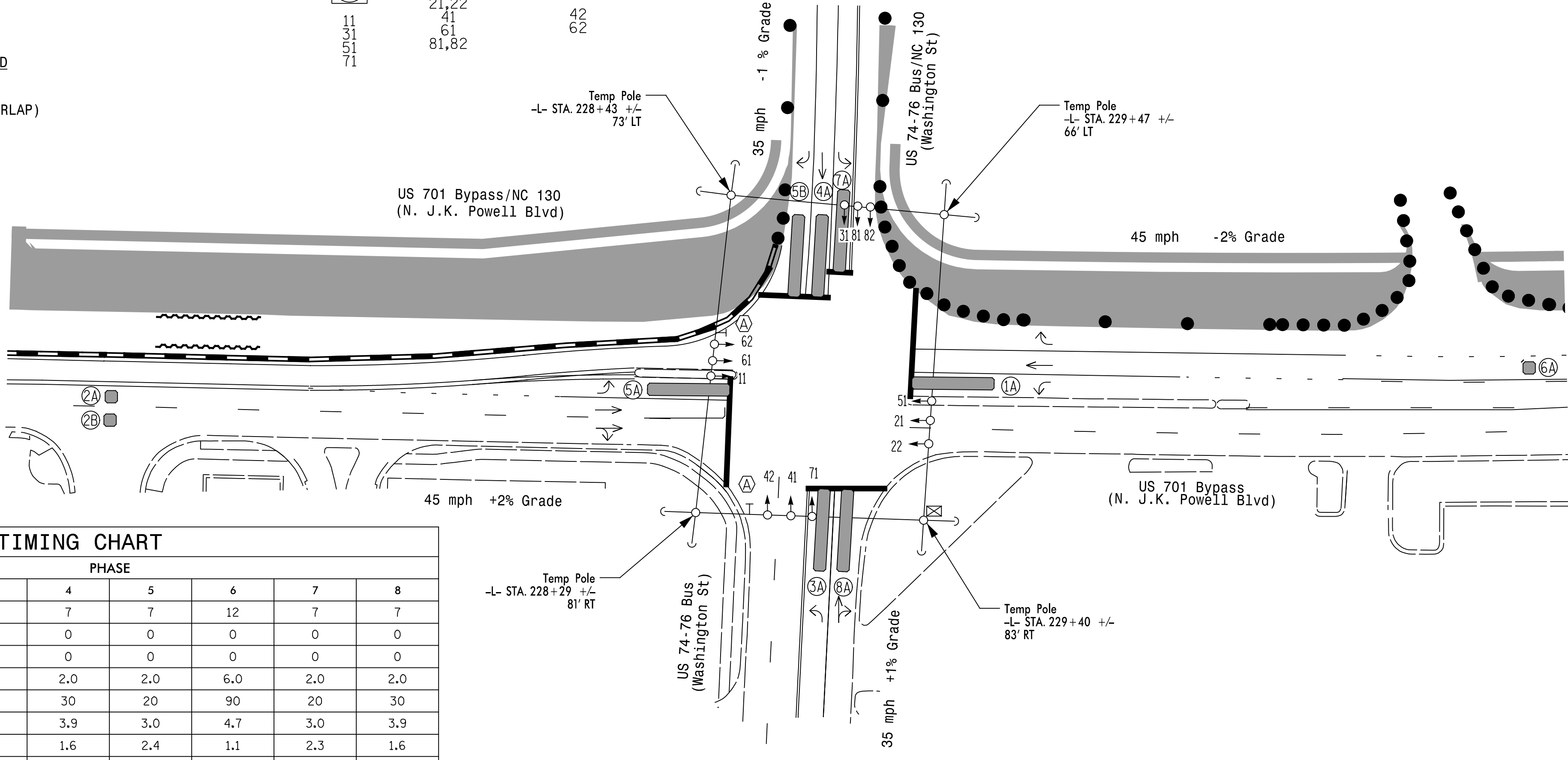
ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | * | X | 1 | Yes | - | 15 | - | N | - | X |
| | | | | | 6 | Yes | - | 3 | - | G | - | X |
| 2A | 6X6 | 300 | * | X | 2 | Yes | - | - | X | N | - | X |
| | | | | | 3 | Yes | - | 15 | - | N | - | X |
| 3A | 6X40 | 0 | * | X | 8 | Yes | - | 3 | - | N | - | X |
| | | | | | 4 | Yes | - | - | - | N | - | X |
| 4A | 6X40 | 0 | * | X | 5 | Yes | - | 15 | - | N | - | X |
| | | | | | 2 | Yes | - | 3 | - | G | - | X |
| 5B | 6X40 | 0 | * | X | 5 | Yes | - | 15 | - | N | - | X |
| | | | | | 6 | Yes | - | - | X | N | - | X |
| 6A | 6X6 | 300 | * | X | 7 | Yes | - | 15 | - | N | - | X |
| | | | | | 4 | Yes | - | 3 | - | N | - | X |
| 7A | 6X40 | 0 | * | X | 4 | Yes | - | 10 | - | N | - | X |
| | | | | | 8 | Yes | - | - | - | N | - | X |

*Video Detection Zone

8 Phase Fully Actuated SYSTEM #10605 NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detection zones to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Pavement markings are existing.
- Field adjust temporary poles as needed.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|-------------|-----|-----|-----|-------------|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Min Green * | 7 | 12 | 7 | 7 | 7 | 12 | 7 | 7 |
| Walk * | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped Clear | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 2.0 | 6.0 | 2.0 | 2.0 |
| Max I * | 20 | 90 | 20 | 30 | 20 | 90 | 20 | 30 |
| Yellow | 3.0 | 4.7 | 3.0 | 3.9 | 3.0 | 4.7 | 3.0 | 3.9 |
| Red Clear | 2.1 | 1.1 | 2.1 | 1.6 | 2.4 | 1.1 | 2.3 | 1.6 |
| Actuations B4 Add * | - | 0 | - | - | - | 0 | - | - |
| Seconds /Actuation * | - | 1.5 | - | - | - | 2.5 | - | - |
| Max Initial * | - | 37 | - | - | - | 34 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 30 | - | - | - | 30 | - | - |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 | - | - |
| Locking Detector | - | - | - | - | - | - | - | - |
| Recall Position | - | VEH. RECALL | - | - | - | VEH. RECALL | - | - |
| Dual Entry | - | - | - | X | - | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X | X | X |

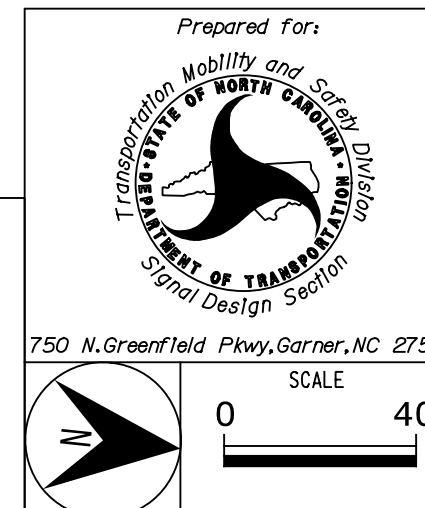
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

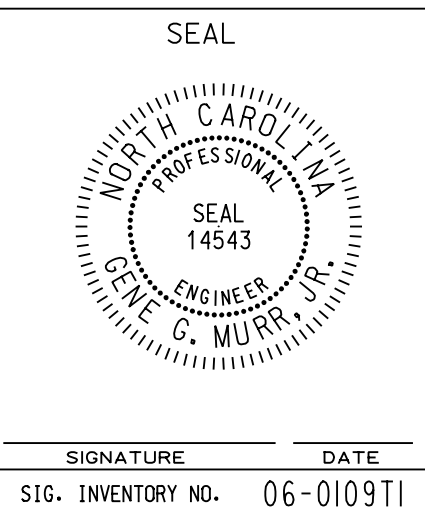
- | PROPOSED | EXISTING |
|---|----------|
| ○→ Traffic Signal Head | ●→ N/A |
| ○→ Modified Signal Head | ○→ N/A |
| ○→ Sign | ○→ N/A |
| ○→ Pedestrian Signal Head With Push Button & Sign | ○→ N/A |
| ○→ Signal Pole with Guy | ○→ N/A |
| ○→ Signal Pole with Sidewalk Guy | ○→ N/A |
| □→ Inductive Loop Detector | □→ N/A |
| □→ Controller & Cabinet | □→ N/A |
| □→ Junction Box | □→ N/A |
| --- 2-in Underground Conduit | --- N/A |
| N/A Right of Way | N/A |
| → Directional Arrow | → N/A |
| ▬ Video Detection Zone | ▬ N/A |
| ▬ Construction Zone | ▬ N/A |
| ● Drums | ● N/A |
| ⊙ Right Arrow "ONLY" Sign (R3-5R) | ⊙ N/A |
| ▬ PORTABLE CONCRETE BARRIER | ▬ N/A |

Signal Upgrade Temporary Design 1 - (TMP Phase I)

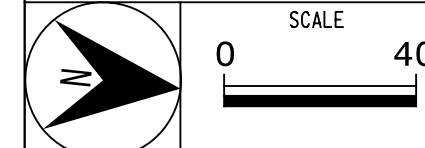
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



| | |
|---|-----------------------------|
| US 701 Bypass/NC 130 (N. J.K. Powell Blvd) at US 74-76 BUS/NC 130 (Washington Street) | |
| Division 6 | Columbus County |
| Whiteville | |
| PLAN DATE: November 2019 | REVIEWED BY: G.G. Murr, Jr. |
| PREPARED BY: M. Ishak | REVIEWED BY: |
| REVISIONS | INIT. DATE |
| | |

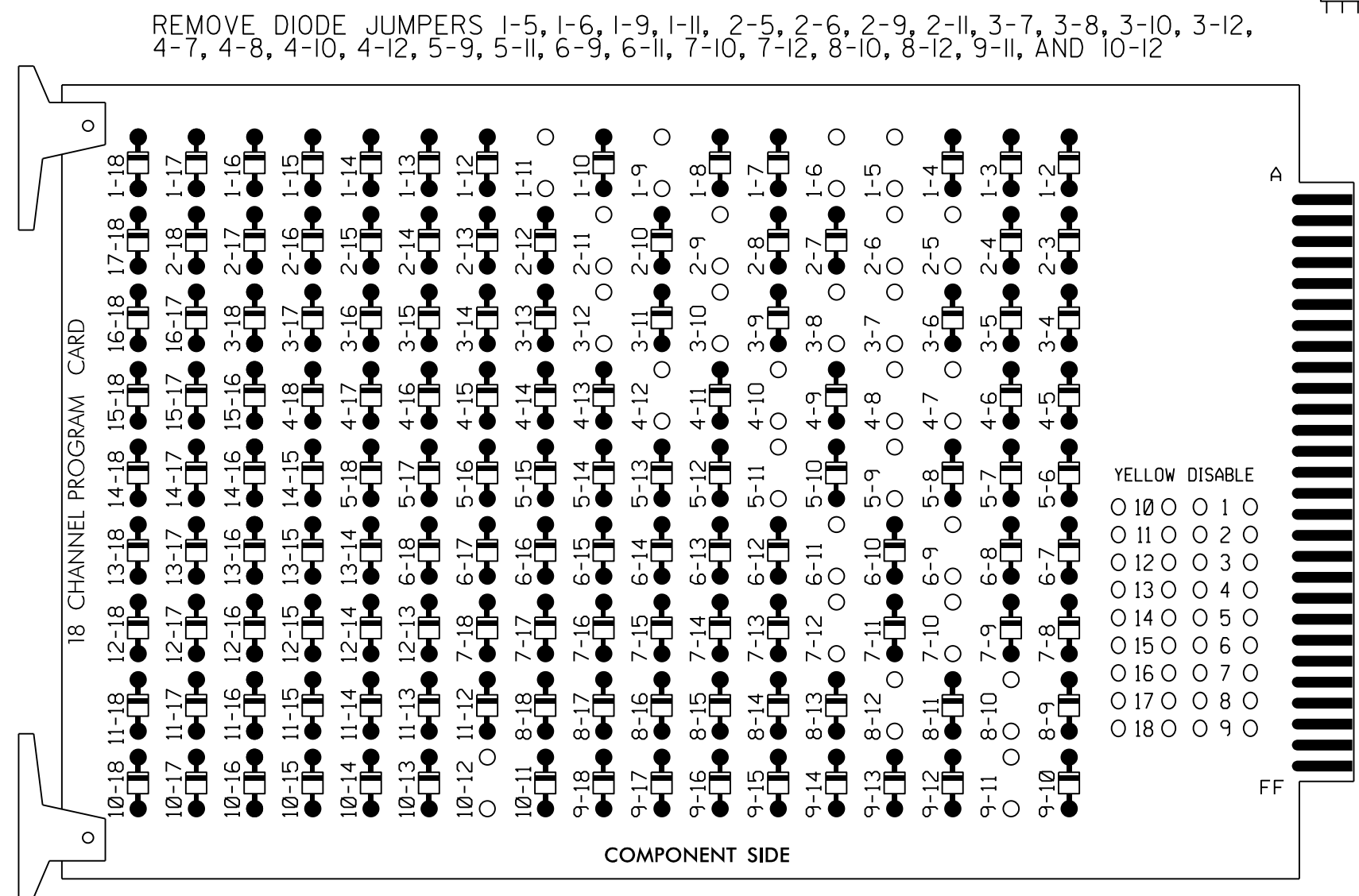


1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197



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.

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. Program controller to start up in phase 2 Green and 6 Green.
4. The cabinet and controller are part of Signal System # 10605.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S10,S11
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,3,4,5,6,7,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------------|-----|-------|----|-----|-------|----|-----|-----|-------|-----|-----|-----|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 | 3 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 8 | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | 11 | 21,22 | NU | 31 | 41,42 | NU | 42 | 51 | 61,62 | NU | 62 | 71 | 81,82 | NU | 31 | 51 | 71 | NU |
| RED | | 128 | | | 101 | | * | | 134 | | * | | 107 | | | | | |
| YELLOW | * | 129 | | * | 102 | | | | 135 | | | | 108 | | | | | |
| GREEN | | 130 | | | 103 | | | | 136 | | | | 109 | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | |
| YELLOW ARROW | | | | | | | 132 | | | 123 | | | A122 | A125 | | A115 | A102 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | |
| GREEN ARROW | 127 | | | 118 | | | 133 | 133 | | 124 | 124 | | | | | | | |

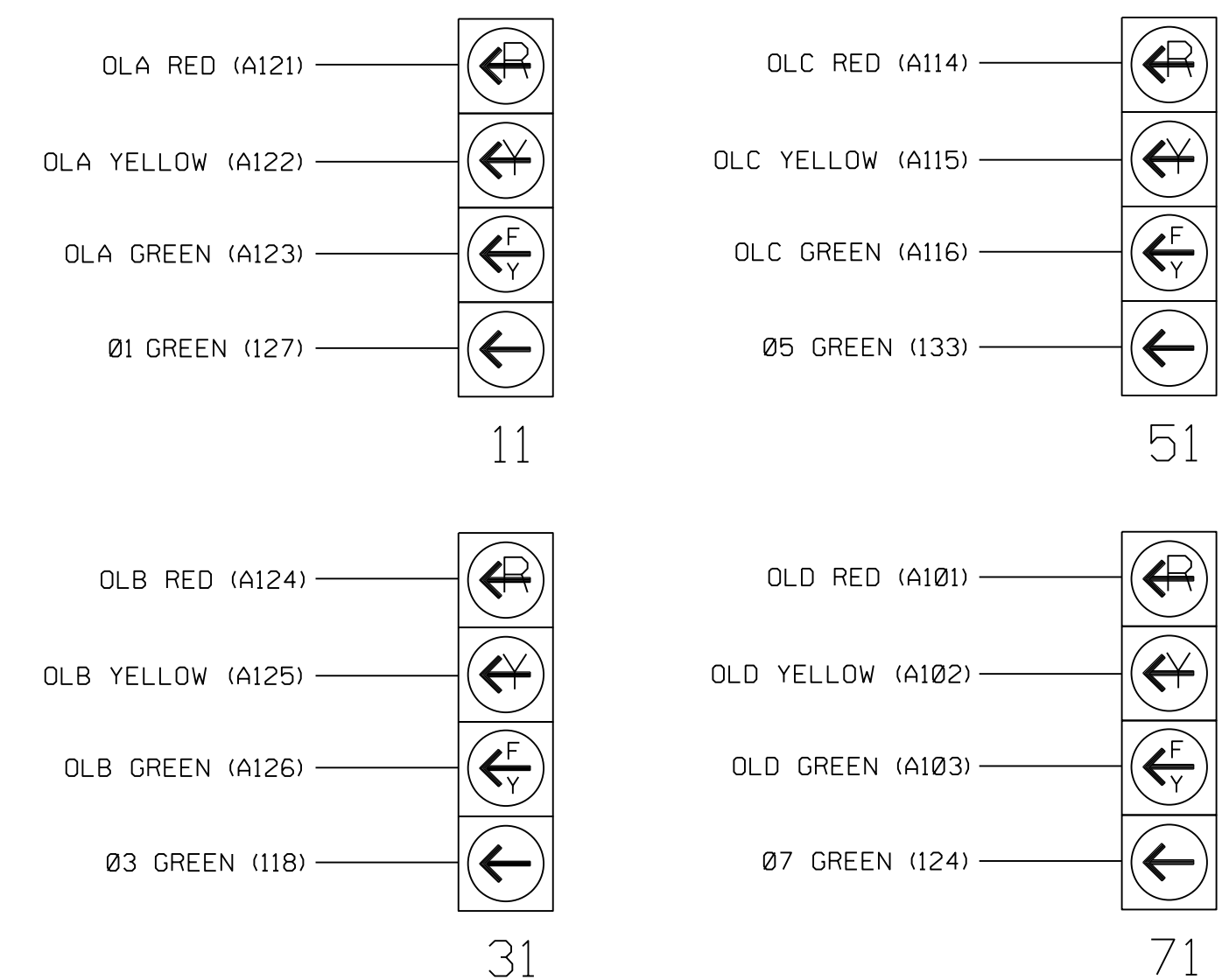
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

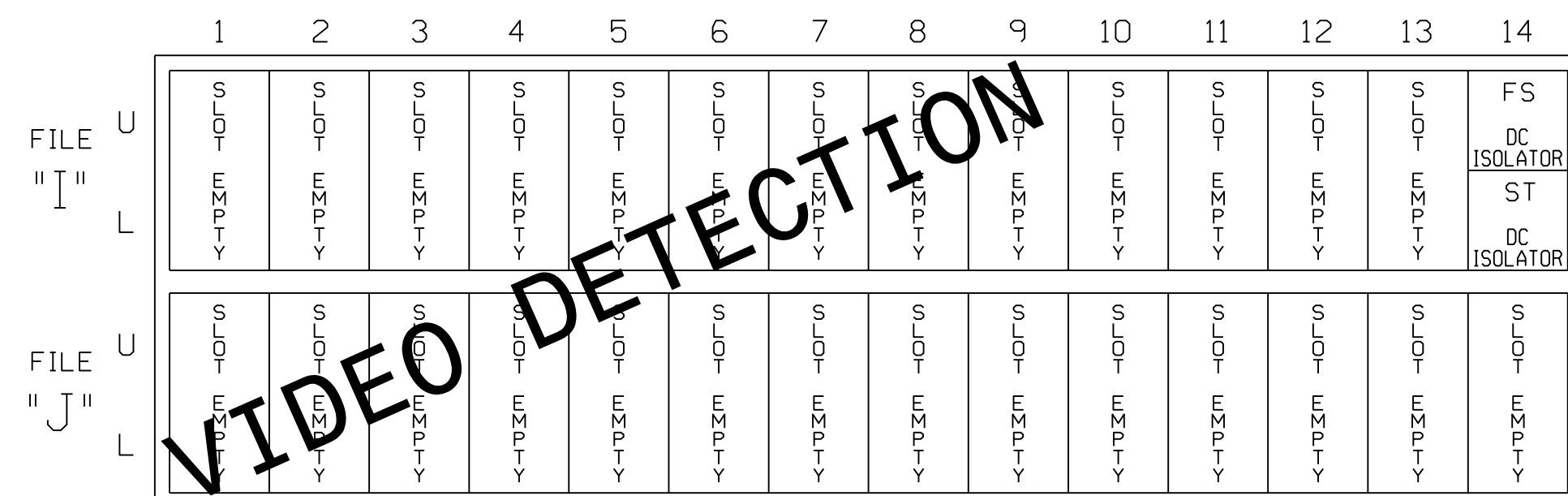
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE:

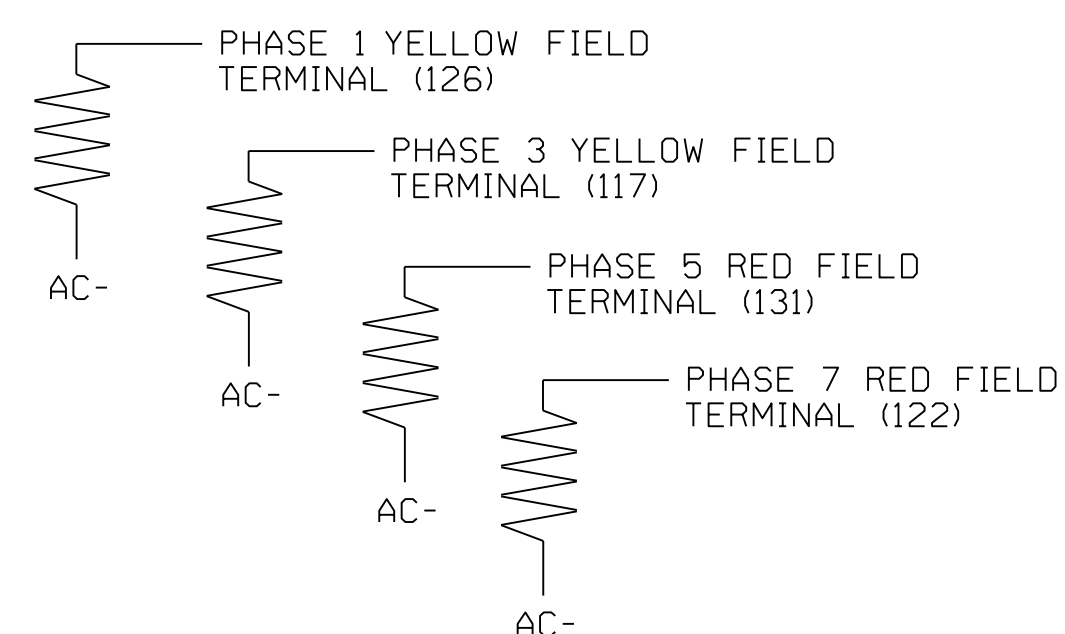
Note: Install a video detection system for vehicle detection. Perform installation in accordance with manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans for the following video zones: 1A, 2A, 2B, 3A, 4A, 5A, 5B, 6A, 7A, AND 8A.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0109T1
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A



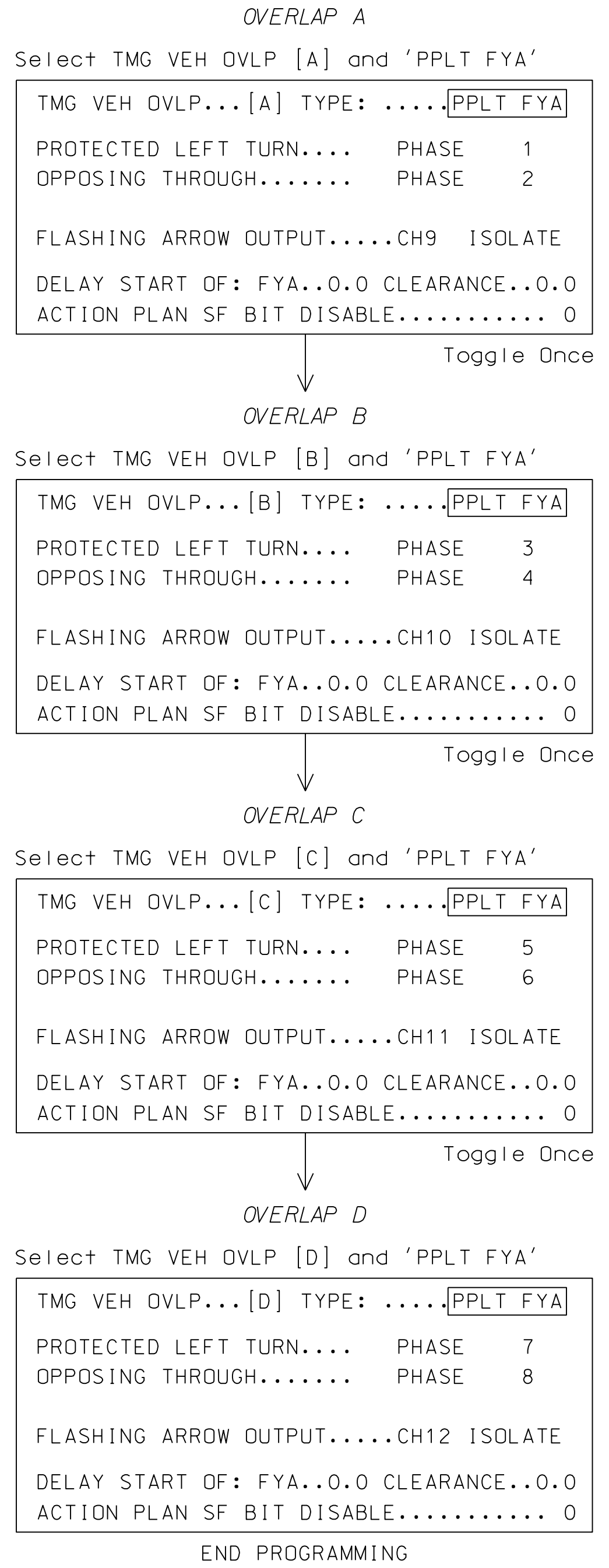
Temporary Design 1 - (TMP Phase I)
 Electrical Detail - Sheet 1 of 2

| | | | |
|---|--|---|--|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529 | US 701 Bypass/NC 130 (N. J.K. Powell Blvd) at US 74-76 BUS/NC 130 (Washington Street) | | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL SEAL 27771 MATTHEW B. COPPLE |
| | Division 06 PLAN DATE: November 2019 PREPARED BY: M.B. Copple | Columbus County REVIEWED BY: G.G. Murr, Jr. REVIEWED BY: G.G. Murr, Jr. | |

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS



FLASHER CIRCUIT MODIFICATION DETAIL



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

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

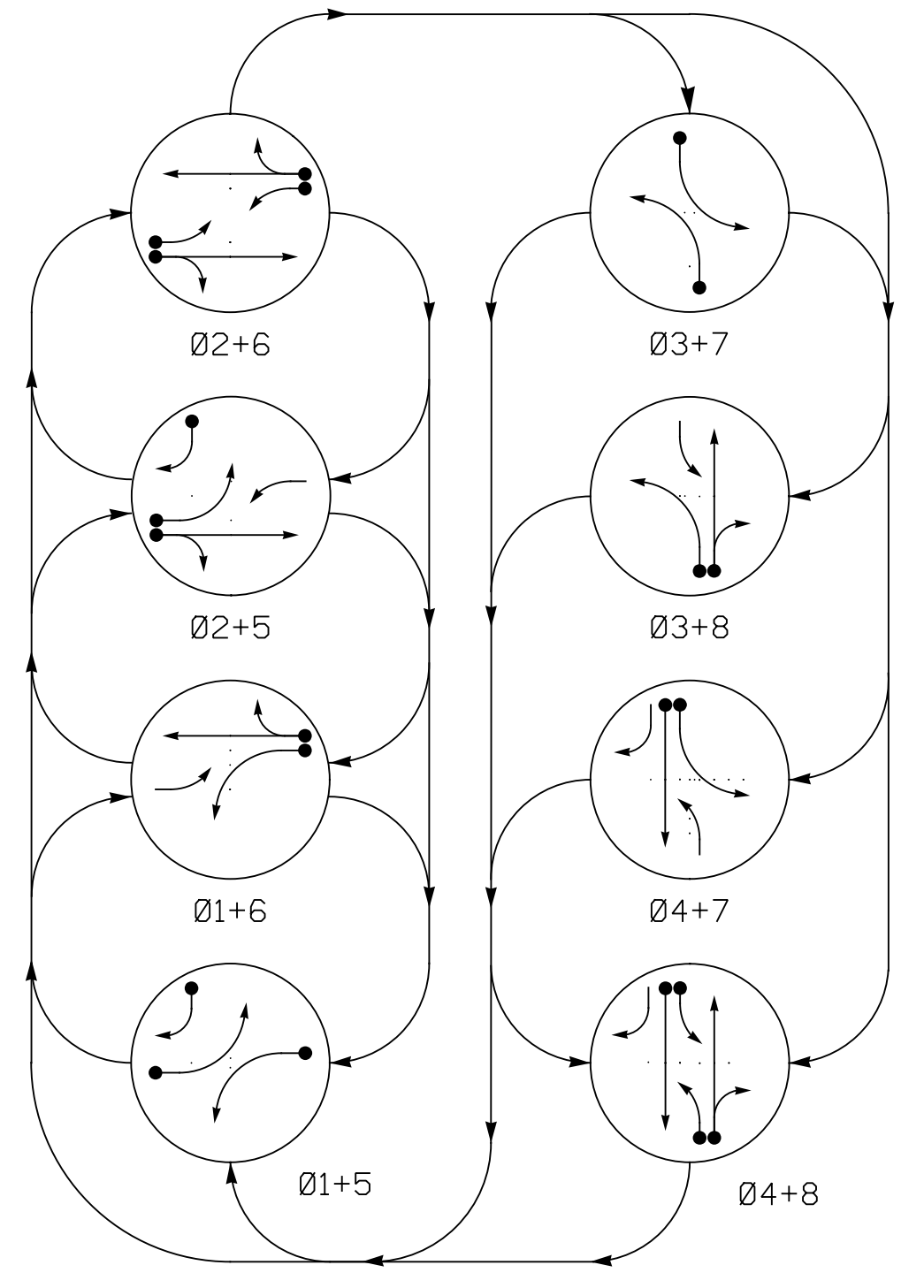
THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0109T1
DESIGNED: November 2019
SEALED: 05/15/2020
REVISED: N/A

Temporary Design 1 - (TMP Phase I)
Electrical Detail - Sheet 2 of 2

| | | |
|--|--|---|
|  SEPI Engineering & Construction, Inc. | Prepared for the Offices of:  Division 06 Columbus County Whiteville PLAN DATE: November 2019 REVIEWED BY: J T Rowe PREPARED BY: C Lawson REVIEWED BY: GG Murr, Jr. REVISIONS INIT. DATE | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>US 701 Bypass/NC 130 (N. J.K. Powell Blvd) at US 74-76 BUS/NC 130 (Washington Street)</p> </div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;"> <p>SEAL 27771 ENGINEER MATTHEW B. COLE</p> </div> <p style="text-align: center;">SIG. INVENTORY NO. 06-0109T1</p> |
|--|--|---|

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

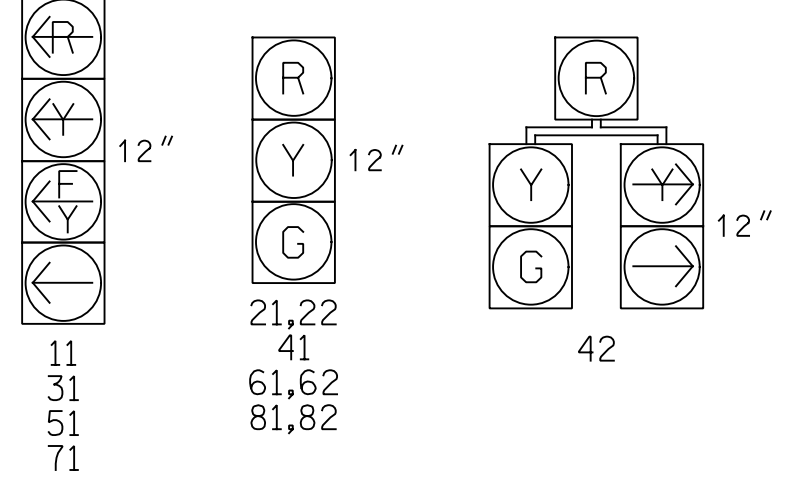
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- - - UNSIGNALIZED MOVEMENT
- ← - - - PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | |
|-------------|---------|---------|---------|---------|---------|---------|---------|-------|
| | Ø 1 + 5 | Ø 2 + 5 | Ø 2 + 6 | Ø 3 + 7 | Ø 3 + 8 | Ø 4 + 7 | Ø 4 + 8 | FLASH |
| 11 | ← | ← | ← | ← | ← | ← | ← | Y |
| 21,22 | R | R | G | G | R | R | R | Y |
| 31 | ← | ← | ← | ← | ← | ← | ← | Y |
| 41 | R | R | R | R | R | R | G | R |
| 42 | R | R | R | R | R | R | G | R |
| 51 | ← | ← | ← | ← | ← | ← | ← | Y |
| 61,62 | R | G | R | G | R | R | R | Y |
| 71 | ← | ← | ← | ← | ← | ← | ← | Y |
| 81,82 | R | R | R | R | R | G | R | G |

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 DETECTOR INSTALLATION CHART

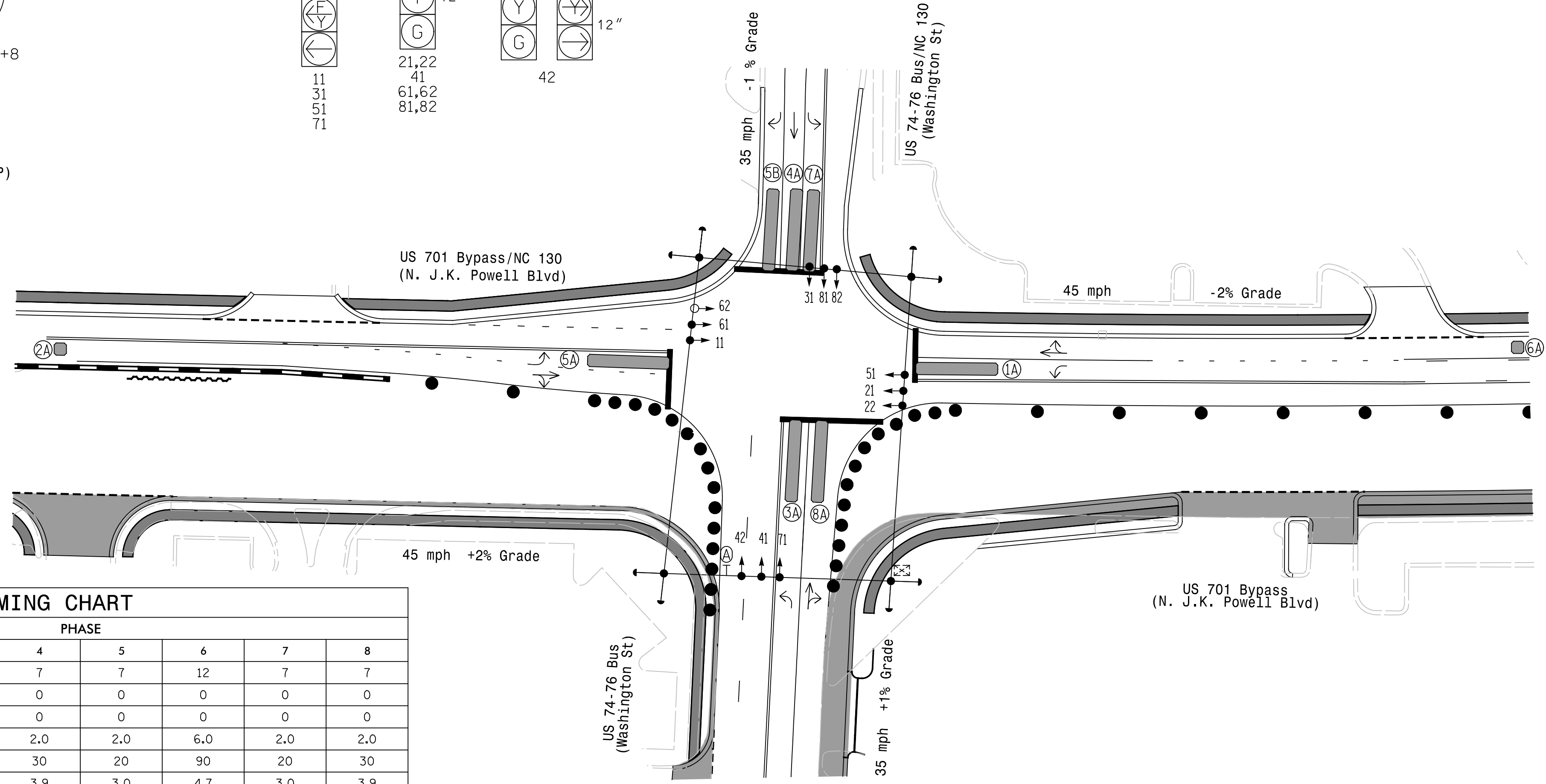
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | * | X | 1 | Yes | - | 15 | - | N | - | - |
| | | | | | 6 | Yes | - | 3 | - | G | - | - |
| 2A | 6X6 | 300 | * | X | 3 | Yes | - | - | - | X | - | - |
| 3A | 6X40 | 0 | * | X | 8 | Yes | - | 15 | - | N | - | - |
| | | | | | 4 | Yes | - | 3 | - | N | - | - |
| 4A | 6X40 | 0 | * | X | 5 | Yes | - | 15 | - | N | - | - |
| | | | | | 2 | Yes | - | 3 | - | G | - | - |
| 5B | 6X40 | 0 | * | X | 5 | Yes | - | 15 | - | N | - | - |
| 6A | 6X6 | 300 | * | X | 6 | Yes | - | - | - | X | - | - |
| 7A | 6X40 | 0 | * | X | 7 | Yes | - | 15 | - | N | - | - |
| | | | | | 4 | Yes | - | 3 | - | N | - | - |
| 8A | 6X40 | 0 | * | X | 8 | Yes | - | 10 | - | N | - | - |

* Video Detection Zone

8 Phase Fully Actuated SYSTEM #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detection zones to presence mode.
- Reposition existing signal heads 11,21,22,51, and 61.
- This intersection uses video detection. Follow manufacturer's instructions for installation and operation to achieve the optimal detection scheme.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|-------------|-----|-----|-----|-------------|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Min Green * | 7 | 12 | 7 | 7 | 7 | 12 | 7 | 7 |
| Walk * | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped Clear | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 2.0 | 6.0 | 2.0 | 2.0 |
| Max I * | 20 | 90 | 20 | 30 | 20 | 90 | 20 | 30 |
| Yellow | 3.0 | 4.7 | 3.0 | 3.9 | 3.0 | 4.7 | 3.0 | 3.9 |
| Red Clear | 2.4 | 1.3 | 1.4 | 1.3 | 2.6 | 1.3 | 2.1 | 1.3 |
| Actuations B4 Add * | - | 0 | - | - | - | 0 | - | - |
| Seconds /Actuation * | - | 2.5 | - | - | - | 2.5 | - | - |
| Max Initial * | - | 37 | - | - | - | 37 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 30 | - | - | - | 30 | - | - |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 | - | - |
| Locking Detector | - | X | - | - | - | X | - | - |
| Recall Position | - | VEH. RECALL | - | - | - | VEH. RECALL | - | - |
| Dual Entry | - | - | - | X | - | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X | X | X |

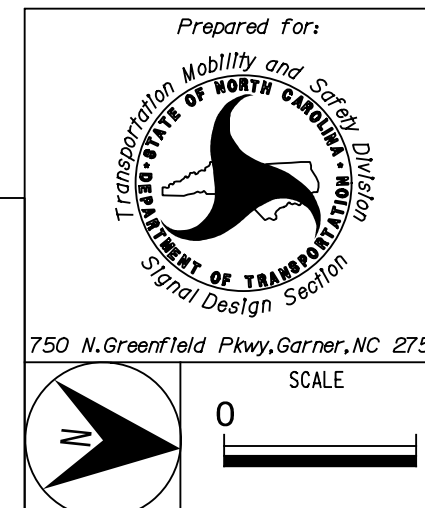
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

| PROPOSED | EXISTING |
|--|-------------------------------------|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ○ → Modified Signal Head | N/A |
| ○ → Sign | N/A |
| ○ → Pedestrian Signal Head With Push Button & Sign | ○ → Pedestrian Signal Head |
| ○ → Signal Pole with Guy | ○ → Signal Pole with Sidewalk Guy |
| ○ → Signal Pole with Sidewalk Guy | ○ → Inductive Loop Detector |
| ○ → Inductive Loop Detector | ○ → 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 |
| ○ → Video Detection Zone | ○ → Video Detection Zone |
| ○ → Construction Zone | N/A |
| ○ → Drums | N/A |
| ○ → Right Arrow "ONLY" Sign (R3-5R) | ○ → Right Arrow "ONLY" Sign (R3-5R) |
| ○ → PORTABLE CONCRETE BARRIER | N/A |

Signal Upgrade Temporary Design 2 - (TMP Phase II)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



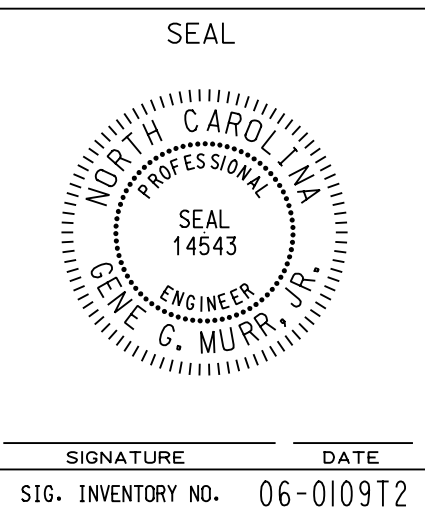
US 701 Bypass/NC 130 (N. J.K. Powell Blvd) at US 74-76 BUS/NC 130 (Washington Street)

Division 6 Columbus County Whiteville

PLAN DATE: November 2019 REVIEWED BY: G. G. Murr, Jr

PREPARED BY: M. Ishak REVIEWED BY:

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

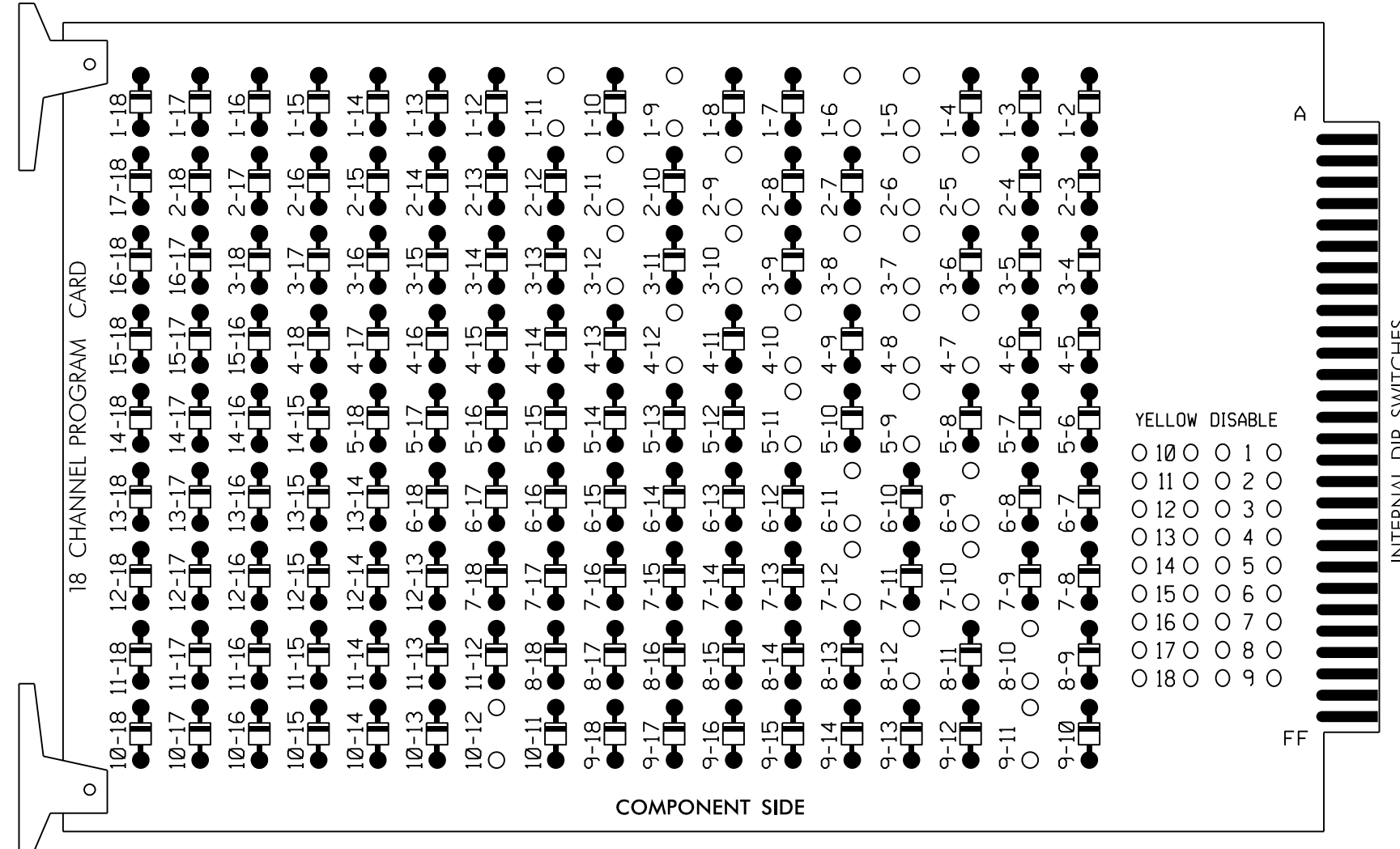


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License: C-2197

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

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 7-10, 7-12, 8-10, 8-12, 9-11, AND 10-12



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of Signal System # 10605.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S10,S11
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,3,4,5,6,7,8

OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*

* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

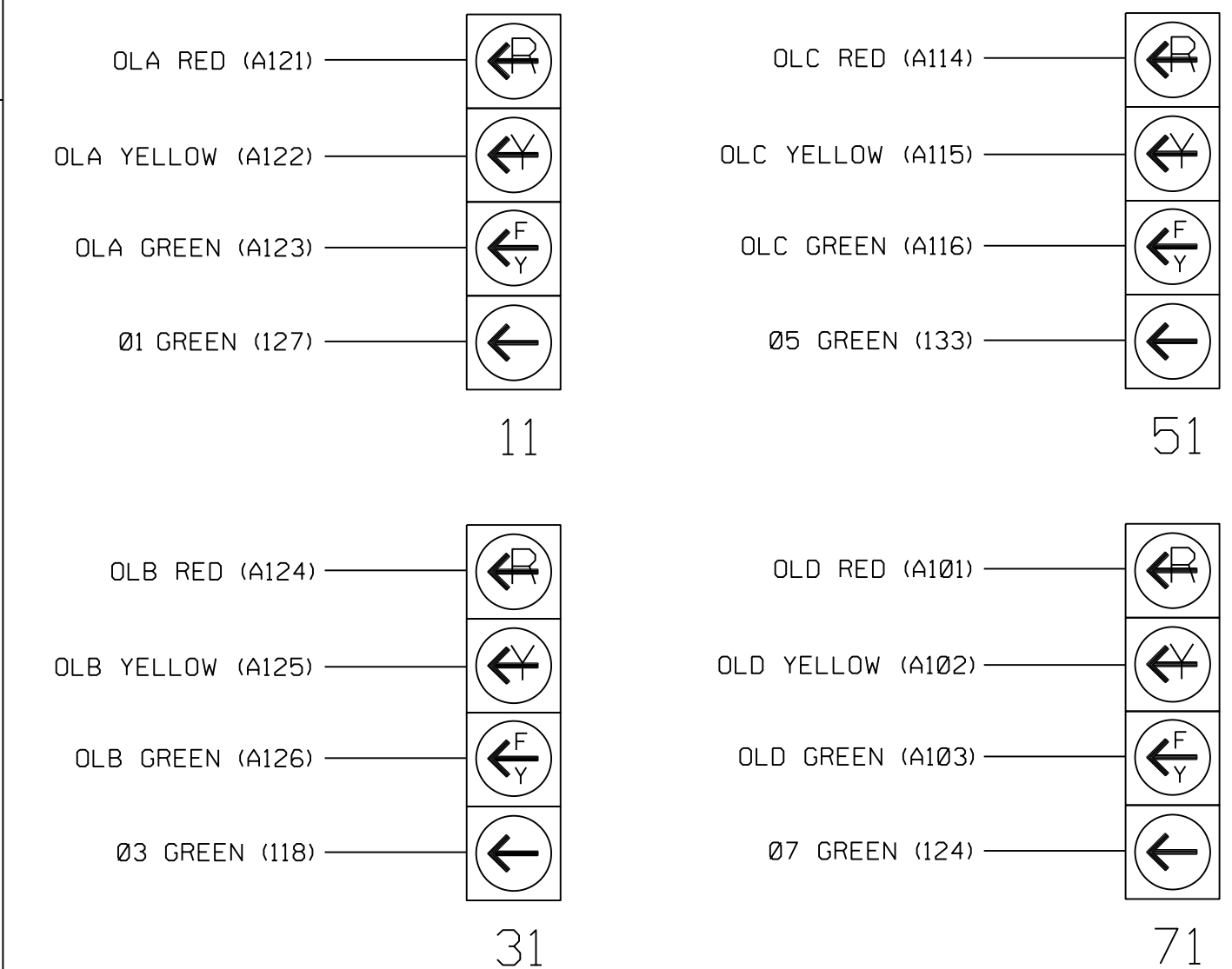
| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 | |
|-----------------------|-----|-------|-------|-----|-------|-------|-----|-----|-------|-----|-------|-------|--------|--------|--------|--------|--------|--------|----|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 | |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE | |
| SIGNAL HEAD NO. | 11 | 21,22 | NU | 31 | 41,42 | NU | 42 | 51 | 61,62 | NU | 71 | 81,82 | NU | 11 | 31 | NU | 51 | 71 | NU |
| RED | | 128 | | | 101 | | * | | 134 | | 107 | | | | | | | | |
| YELLOW | * | 129 | | * | 102 | | | | 135 | | * 108 | | | | | | | | |
| GREEN | | 130 | | | 103 | | | | 136 | | 109 | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | | |
| YELLOW ARROW | | | | | | | | 132 | | | | | A122 | A125 | | A115 | A102 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | | |
| GREEN ARROW | 127 | | | 118 | | | 133 | 133 | | 124 | | | | | | | | | |

NU = Not Used

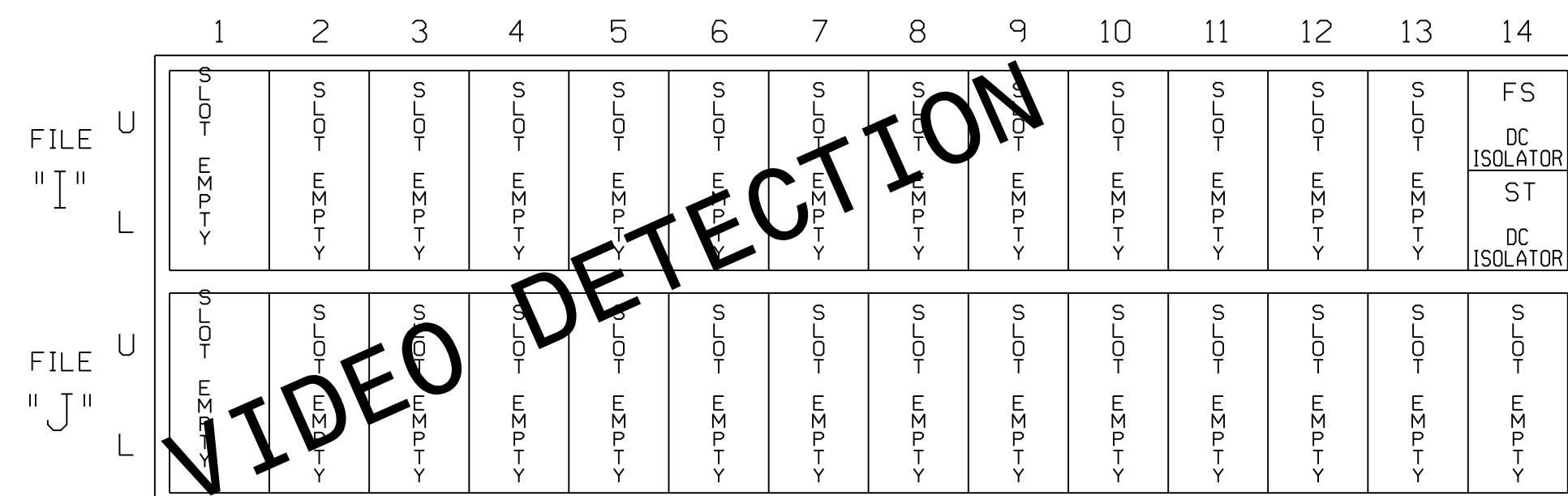
* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL
(wire signal heads as shown)



INPUT FILE POSITION LAYOUT
(front view)



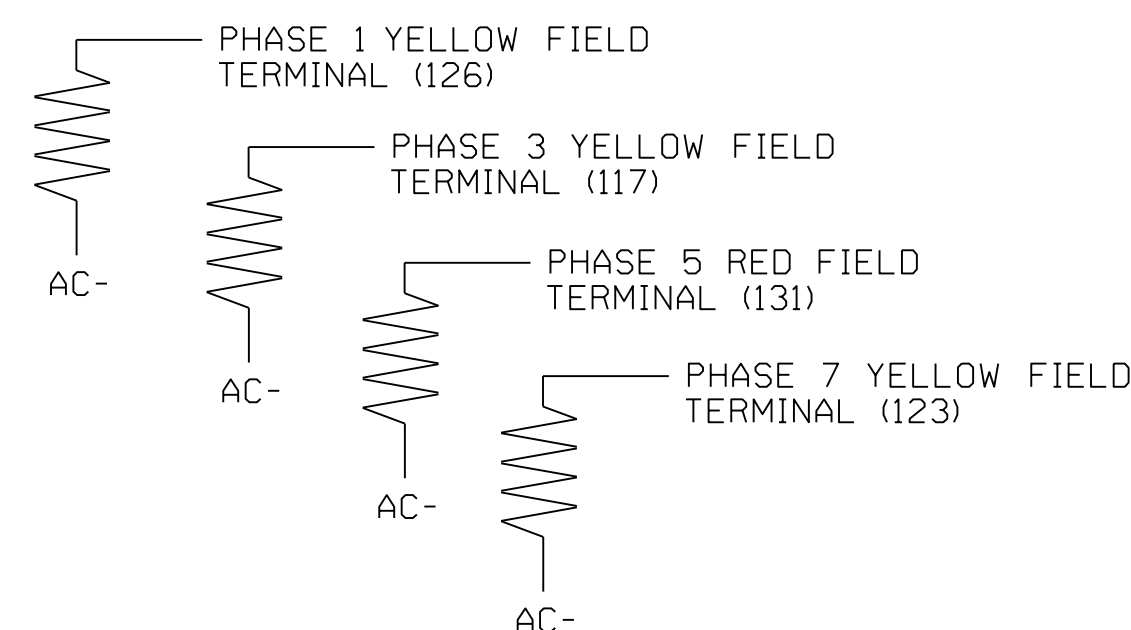
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

LOAD RESISTOR INSTALLATION DETAIL
(install resistors as shown)

ACCEPTABLE VALUES

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



SPECIAL DETECTOR NOTE:

Note: Install a video detection system for vehicle detection. Perform installation in accordance with manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans for the following video zones: 1A, 2A, 3A, 4A, 5A, 5B, 6A, 7A, AND 8A.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0109T2
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A



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Temporary Design 2 - (TMP Phase II)
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 701 Bypass/NC 130
 (N. J.K. Powell Boulevard)
 at
 US 74-76 BUS/NC130(Washington St)

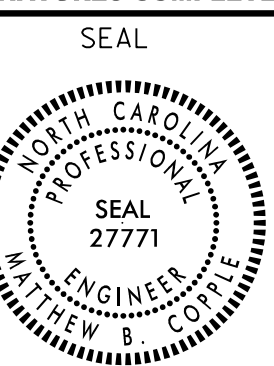
Division 06 Columbus County Whiteville

PLAN DATE: November 2019 REVIEWED BY:

PREPARED BY: M.B. Copple REVIEWED BY: G G Murr, Jr.

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SIG. INVENTORY NO. 06-0109T2

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

| | |
|--|---------|
| TMG VEH OVLP...[A] TYPE: PPLT FYA | |
| PROTECTED LEFT TURN.... | PHASE 1 |
| OPPOSING THROUGH..... | PHASE 2 |
| FLASHING ARROW OUTPUT.....CH9 ISOLATE | |
| DELAY START OF: FYA..0.0 CLEARANCE..0.0 | |
| ACTION PLAN SF BIT DISABLE..... 0 | |

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'PPLT FYA'

| | |
|--|---------|
| TMG VEH OVLP...[B] TYPE: PPLT FYA | |
| PROTECTED LEFT TURN.... | PHASE 3 |
| OPPOSING THROUGH..... | PHASE 4 |
| FLASHING ARROW OUTPUT.....CH10 ISOLATE | |
| DELAY START OF: FYA..0.0 CLEARANCE..0.0 | |
| ACTION PLAN SF BIT DISABLE..... 0 | |

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

| | |
|--|---------|
| TMG VEH OVLP...[C] TYPE: PPLT FYA | |
| PROTECTED LEFT TURN.... | PHASE 5 |
| OPPOSING THROUGH..... | PHASE 6 |
| FLASHING ARROW OUTPUT.....CH11 ISOLATE | |
| DELAY START OF: FYA..0.0 CLEARANCE..0.0 | |
| ACTION PLAN SF BIT DISABLE..... 0 | |

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'PPLT FYA'

| | |
|--|---------|
| TMG VEH OVLP...[D] TYPE: PPLT FYA | |
| PROTECTED LEFT TURN.... | PHASE 7 |
| OPPOSING THROUGH..... | PHASE 8 |
| FLASHING ARROW OUTPUT.....CH12 ISOLATE | |
| DELAY START OF: FYA..0.0 CLEARANCE..0.0 | |
| ACTION PLAN SF BIT DISABLE..... 0 | |

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0109T2
DESIGNED: November 2019
SEALED: 05/15/2020
REVISED: N/A

Temporary Design 2 - (TMP Phase II)
Electrical Detail - Sheet 2 of 2

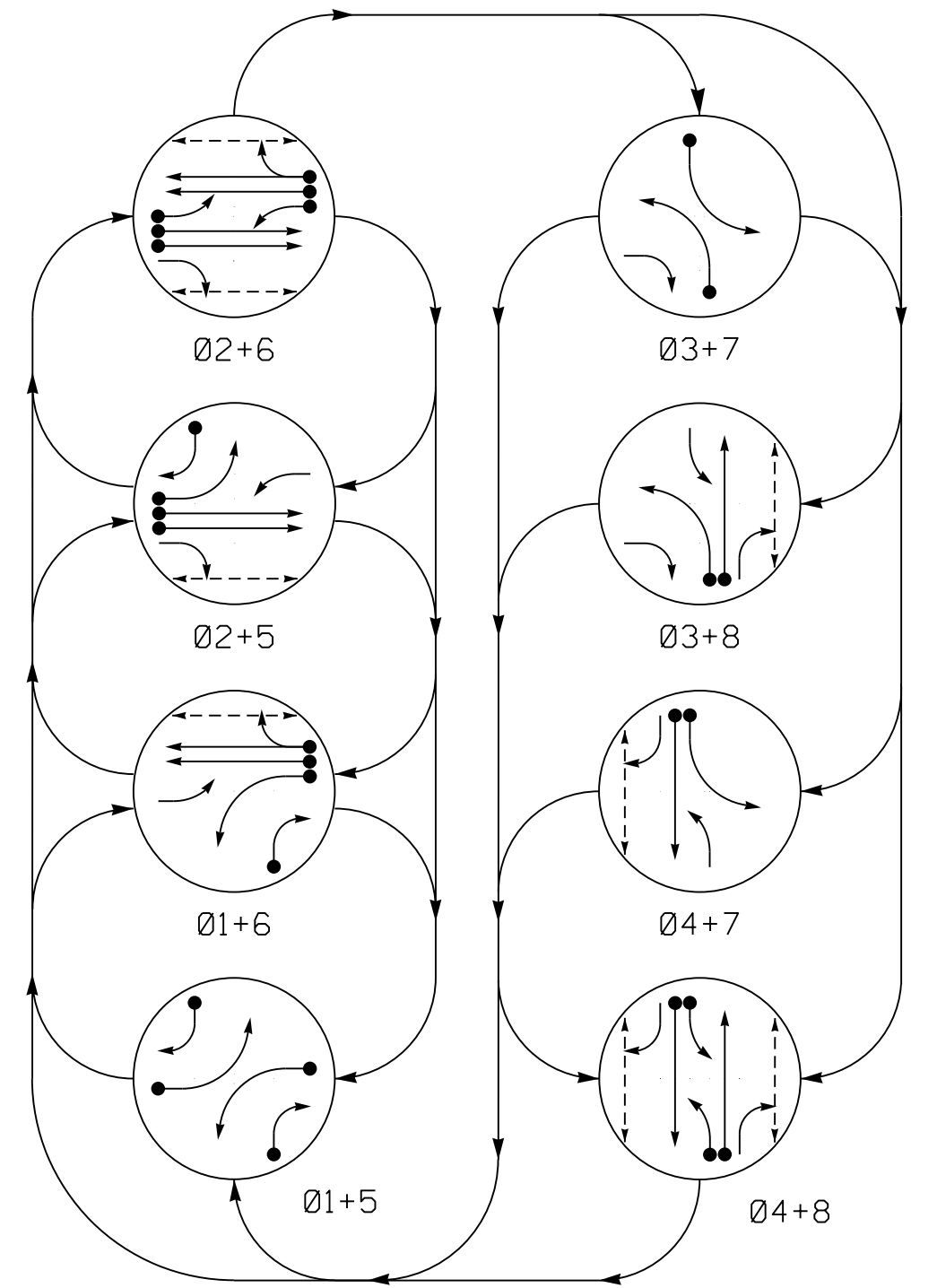
| Prepared for the Offices of: City of Raleigh Department of Transportation Signal Management Section | US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at US 74-76 BUS/NC130(Washington St) Division 06 Columbus County Whiteville | SEAL SEAL 27771 MATTHEW B. COPPLE | | | | | | | | | |
|--|---|---|-------|------|--|--|--|--|--|--|------|
| PLAN DATE: November 2019 REVIEWED BY: | | PREPARED BY: M.B. Copple REVIEWED BY: GG Murr Jr | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | | REVISIONS | INIT. | DATE | | | | | | | DATE |
| REVISIONS | INIT. | DATE | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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SEPI

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 License: C-2197

PHASING DIAGRAM



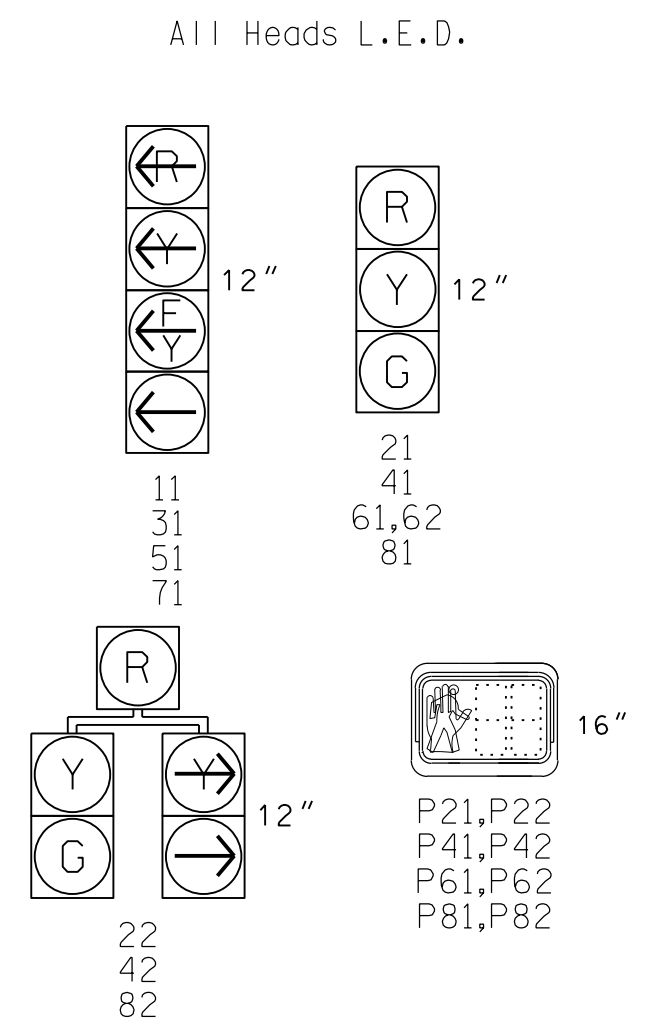
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | |
|-------------|-------|------|------|------|------|------|------|------|
| | Ø1+5 | Ø1+6 | Ø2+5 | Ø2+6 | Ø3+7 | Ø3+8 | Ø4+7 | Ø4+8 |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← |
| 21 | R | R | G | G | R | R | R | Y |
| 22 | R | R | G | G | R | R | R | Y |
| 31 | ← | ← | ← | ← | ← | ← | ← | ← |
| 41 | R | R | R | R | R | R | G | R |
| 42 | R | R | R | R | R | R | G | R |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← |
| 61,62 | R | G | R | G | R | R | R | Y |
| 71 | ← | ← | ← | ← | ← | ← | ← | ← |
| 81 | R | R | R | R | R | G | R | G |
| 82 | R | R | R | R | R | G | R | G |
| P21,P22 | DW | DW | W | W | DW | DW | DW | DRK |
| P41,P42 | DW | DW | DW | DW | DW | DW | W | DRK |
| P61,P62 | DW | W | DW | W | DW | DW | DW | DRK |
| P81,P82 | DW | DW | DW | DW | DW | W | DW | DRK |

SIGNAL FACE I.D.



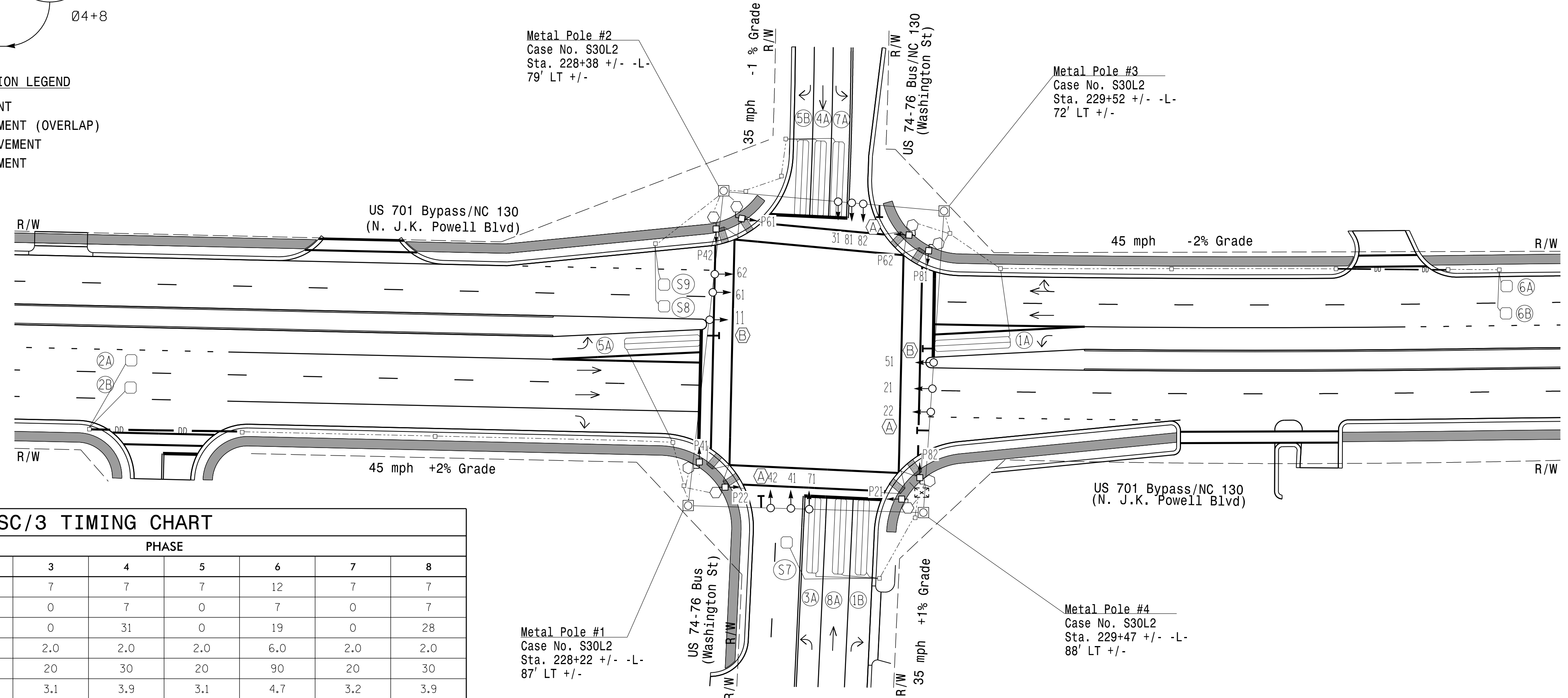
ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | X | 1 | Yes | - | 15 | - | N | - | X |
| 1B | 6X40 | 0 | 2-4-2 | X | 6 | Yes | - | 3 | - | G | - | X |
| 2A | 6X6 | 300 | 4 | X | 2 | Yes | - | - | X | N | - | X |
| 2B | 6X6 | 300 | 4 | X | 2 | Yes | - | - | X | N | - | X |
| 3A | 6X40 | 0 | 2-4-2 | X | 3 | Yes | - | 15 | - | N | - | X |
| 4A | 6X40 | 0 | 2-4-2 | X | 8 | Yes | - | 3 | - | N | - | X |
| 5A | 6X40 | 0 | 2-4-2 | X | 5 | Yes | - | 15 | - | N | - | X |
| 5B | 6X40 | 0 | 2-4-2 | X | 5 | Yes | - | 15 | - | N | - | X |
| 6A | 6X6 | 300 | 4 | X | 6 | Yes | - | - | X | N | - | X |
| 6B | 6X6 | 300 | 4 | X | 6 | Yes | - | - | X | N | - | X |
| 7A | 6X40 | 0 | 2-4-2 | X | 7 | Yes | - | 15 | - | N | - | X |
| 8A | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | 3 | - | N | - | X |
| S7 | 6X6 | +170 | 4 | X | - | NO | - | - | - | N | X | X |
| S8 | 6X6 | +140 | 4 | X | - | NO | - | - | - | N | X | X |
| S9 | 6X6 | +140 | 4 | X | - | NO | - | - | - | N | X | X |

8 Phase Fully Actuated SYSTEM #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and /or phase 7 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.



LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
| ○ | ● |
| ○ | N/A |
| ⊥ | ⊥ |
| ⊥ | ⊥ |
| ○ | ○ |
| ○ | ○ |
| ⊗ | ⊗ |
| ⊗ | ⊗ |
| - - - | - - - |
| N/A | N/A |
| → | → |
| → | N/A |
| ○ | ○ |
| ○ | ○ |
| N/A | ⊥ |
| ⊗ | ⊗ |
| ⊗ | ⊗ |

ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|-------------|-----|-----|-----|-------------|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Min Green * | 7 | 12 | 7 | 7 | 7 | 12 | 7 | 7 |
| Walk * | 0 | 7 | 0 | 7 | 0 | 7 | 0 | 7 |
| Ped Clear | 0 | 20 | 0 | 31 | 0 | 19 | 0 | 28 |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 2.0 | 6.0 | 2.0 | 2.0 |
| Max I * | 20 | 90 | 20 | 30 | 20 | 90 | 20 | 30 |
| Yellow | 3.3 | 4.7 | 3.1 | 3.9 | 3.1 | 4.7 | 3.2 | 3.9 |
| Red Clear | 2.8 | 1.6 | 2.9 | 2.7 | 2.6 | 1.6 | 2.5 | 2.7 |
| Actuations B4 Add * | - | 0 | - | - | - | 0 | - | - |
| Seconds / Actuation * | - | 1.5 | - | - | - | 1.5 | - | - |
| Max Initial * | - | 34 | - | - | - | 34 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 30 | - | - | - | 30 | - | - |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 | - | - |
| Locking Detector | - | X | - | - | - | X | - | - |
| Recall Position | - | VEH. RECALL | - | - | - | VEH. RECALL | - | - |
| Dual Entry | - | - | - | X | - | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X | X | X |

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

Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

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

US 701 Bypass/NC 130 (N. J.K. Powell Blvd) at US 74-76 BUS/NC 130 (Washington Street)

Division 6 Columbus County Whiteville

PLAN DATE: November 2019 REVIEWED BY: G. G. Murr, Jr.

PREPARED BY: M. Ishak REVIEWED BY:

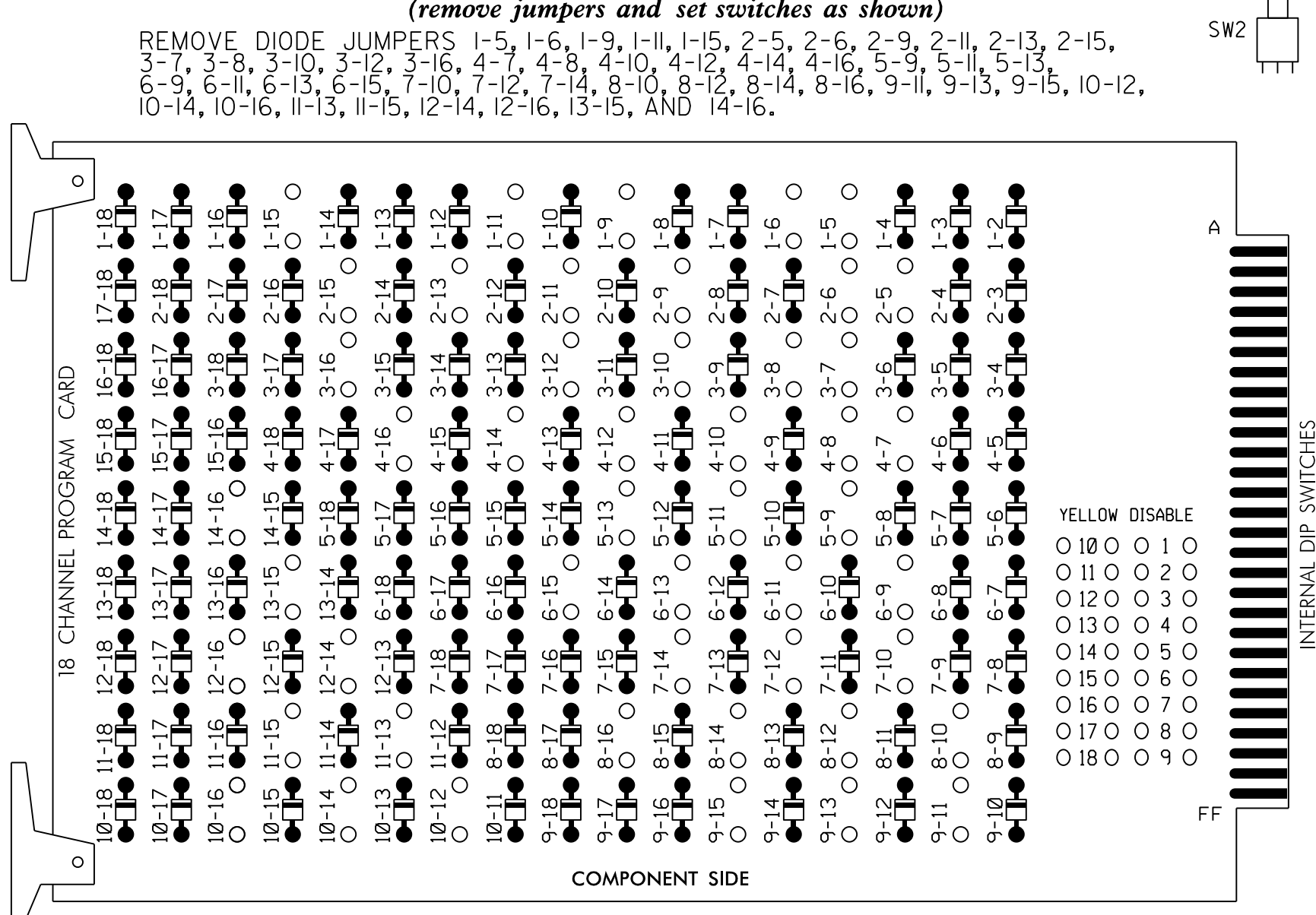
REVISIONS: INIT. DATE

SCALE: 0 40

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14543 G. G. MURR, JR.

SIGNATURE: DATE: SIG. INVENTORY NO. 06-0109

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL



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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Walk and 6 Walk.
- The cabinet and controller are part of Signal System # 10605.

EQUIPMENT INFORMATION

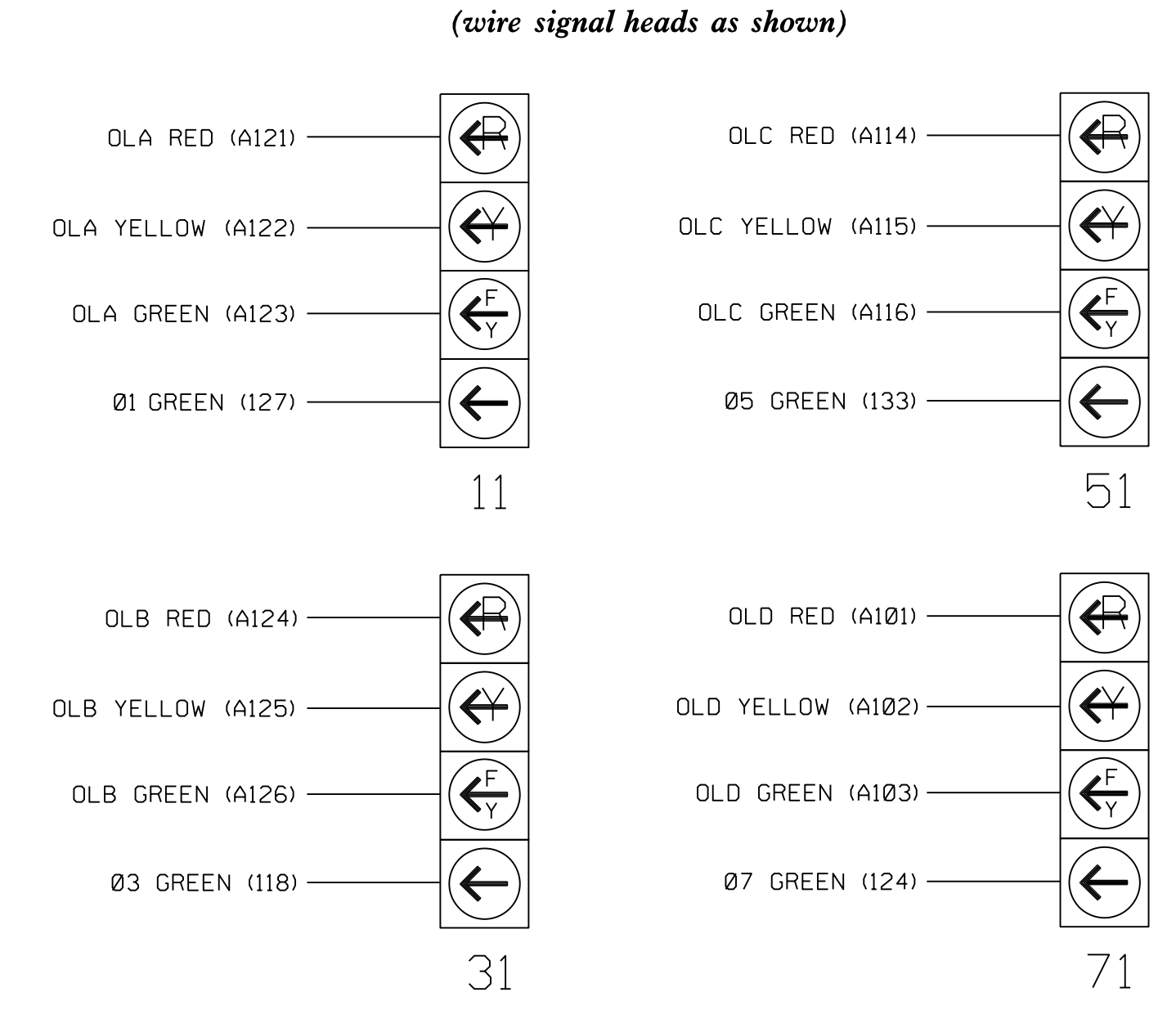
CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE S12,AUX S1,AUX S2,AUX S4,AUX S5
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,
 S12,AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

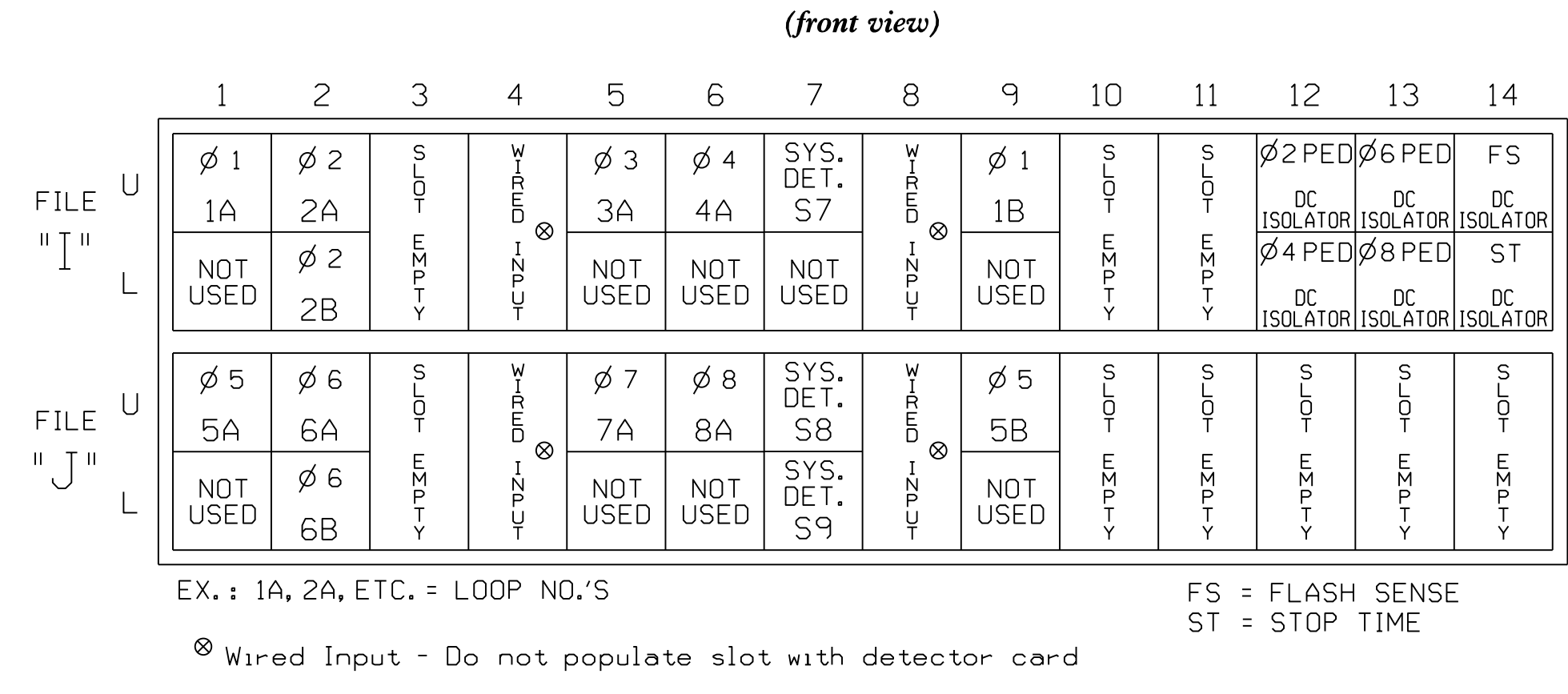
| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 | | | | |
|-----------------------|-----|-----|-------|----------|-----|-------|-------|----------|-------|-----|-------|----------|--------|--------|----------|--------|--------|--------|------|------|----|--|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 | | | | |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE | | | | |
| SIGNAL HEAD NO. | 11 | 82 | 21,22 | P21, P22 | 22 | 31 | 41,42 | P41, P42 | 42 | 51 | 61,62 | P61, P62 | 71 | 81,82 | P81, P82 | 11 | 31 | NU | 51 | 71 | NU | |
| RED | * | 128 | | * | 101 | | * | 134 | | | 107 | | | | | | | | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | * | 108 | | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | | |
| YELLOW ARROW | | 126 | | | 117 | | | 132 | | | | | | | | A122 | A125 | | A115 | A102 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | | |
| GREEN ARROW | 127 | 127 | | | 118 | 118 | | 133 | 133 | | | 124 | | | | | | | | | | |
| Hand | | | | | | | | 104 | | | 119 | | | | | | | | | | | |
| Walking | | | | | | | | 106 | | | 121 | | | | | | | | | | | |

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



INPUT FILE POSITION LAYOUT

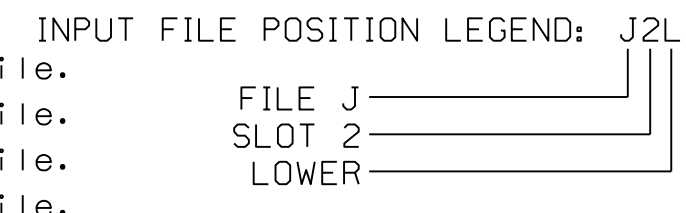


EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 * Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 1A ¹ | TB2-1,2 | I1U | 56 | 1 | 1 | YES | | 15 | | N |
| | - | J4U | 48 | 26 | 6 | YES | | 3 | | G |
| 1B | TB6-9,10 | I9U | 60 | 11 | 1 | YES | | 15 | | N |
| 2A | TB2-5,6 | I2U | 39 | 2 | 2 | YES | | | X | N |
| 2B | TB2-7,8 | I2L | 43 | 12 | 2 | YES | | | X | N |
| 3A ² | TB4-5,6 | I5U | 58 | 3 | 3 | YES | | 15 | | N |
| | - | J8U | 50 | 28 | 8 | YES | | 3 | | N |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | | | N |
| 5A ³ | TB3-1,2 | J1U | 55 | 5 | 5 | YES | | 15 | | N |
| | - | I4U | 47 | 22 | 2 | YES | | 3 | | G |
| 5B | TB7-9,10 | J9U | 59 | 15 | 5 | YES | | 15 | | N |
| 6A | TB3-5,6 | J2U | 40 | 6 | 6 | YES | | | X | N |
| 6B | TB3-7,8 | J2L | 44 | 16 | 6 | YES | | | X | N |
| 7A ⁴ | TB5-5,6 | J5U | 57 | 7 | 7 | YES | | 15 | | N |
| | - | I8U | 49 | 24 | 4 | YES | | 3 | | N |
| 8A | TB5-9,10 | J6U | 42 | 8 | 8 | YES | | | | N |
| * S7 | TB6-1,2 | I7U | 65 | 34 | SYS | NO | | | | N |
| * S8 | TB7-1,2 | J7U | 66 | 38 | SYS | NO | | | | N |
| * S9 | TB7-3,4 | J7L | 79 | 48 | SYS | NO | | | | N |
| PED PUSH BUTTONS | | | | | | | | | | |
| P21,P22 | TB8-4,6 | I12U | 67 | PED 2 | 2 PED | | | | | |
| P41,P42 | TB8-5,6 | I12L | 69 | PED 4 | 4 PED | | | | | |
| P61,P62 | TB8-7,9 | I13U | 68 | PED 6 | 6 PED | | | | | |
| P81,P82 | TB8-8,9 | I13L | 70 | PED 8 | 8 PED | | | | | |

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

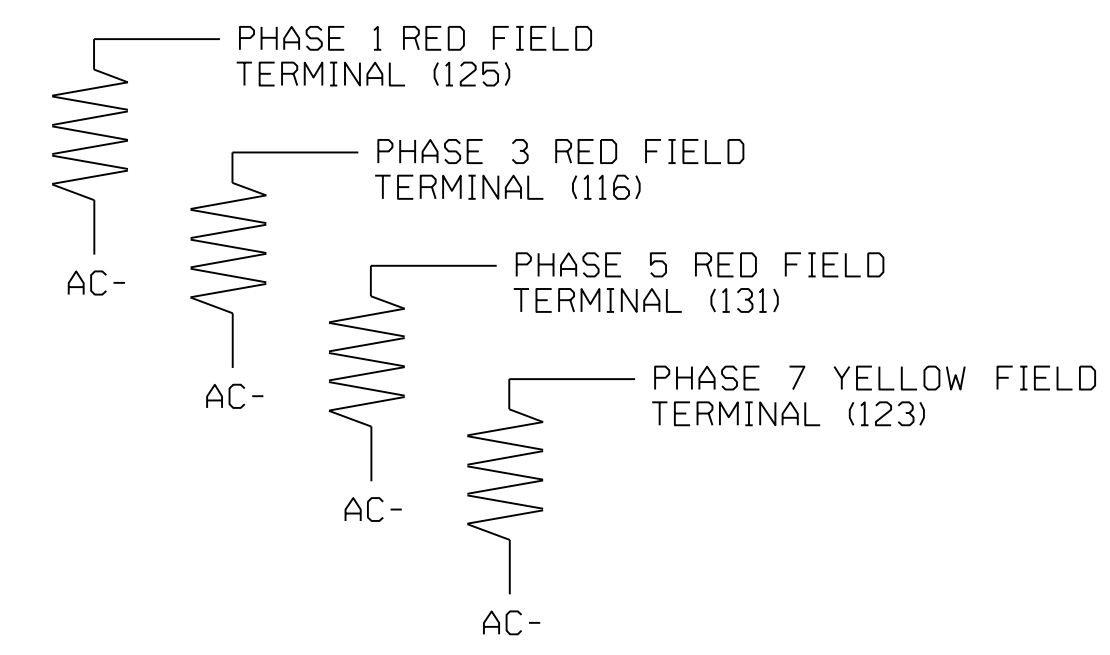


- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from I5-W to J8-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
 - Add jumper from J5-W to I8-W, on rear of input file.
- * System Detector only. Remove the vehicle phase assigned to this detector in the default programming.

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Final Design
 Electrical Detail - Sheet 1 of 2

Electrical and Programming Details For: US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at US 74-76 BUS/NC 130 (Washington St)

Division 06 Columbus County Whiteville

PLAN DATE: November 2019 REVIEWED BY:

PREPARED BY: M B COPPLE REVIEWED BY: G G Murr Jr

REVISIONS: INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: M.B. COPPLE, PROFESSIONAL ENGINEER, No. 27771

SIG. INVENTORY NO. 06-0109

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0109
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

SEPI
 Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP...[A] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'PPLT FYA'

TMG VEH OVLP...[B] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 3

OPPOSING THROUGH..... PHASE 4

FLASHING ARROW OUTPUT.....CH10 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'PPLT FYA'

TMG VEH OVLP...[D] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 7

OPPOSING THROUGH..... PHASE 8

FLASHING ARROW OUTPUT.....CH12 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

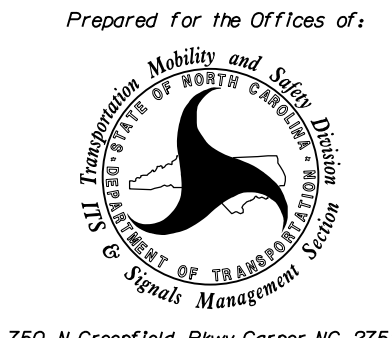
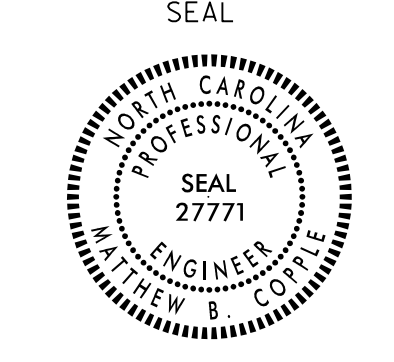
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

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

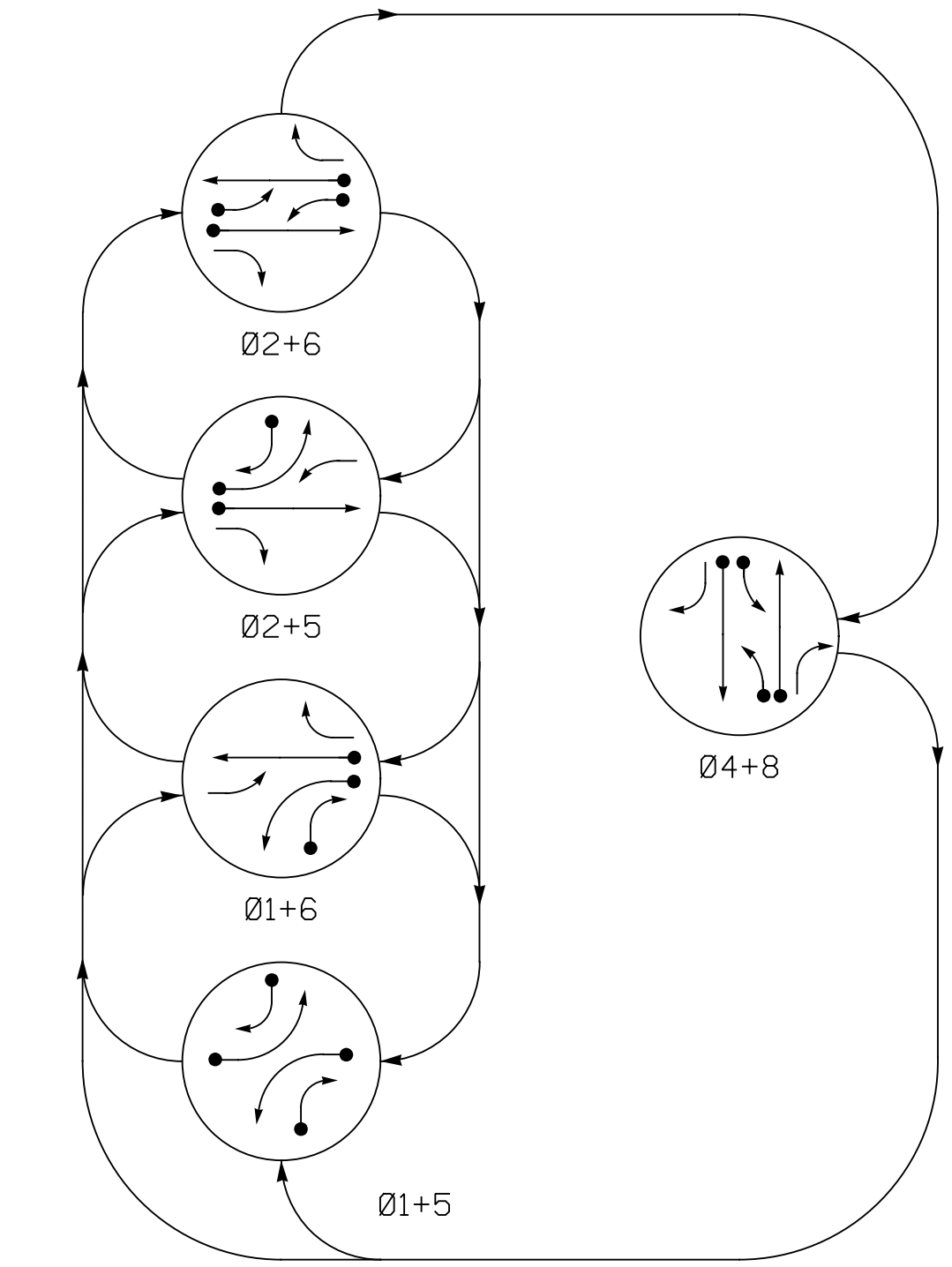
THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0109
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 2 of 2

|  | <p>US 701 Bypass/NC 130 (N. J.K. Powell Boulevard) at US 74-76 BUS/NC 130 (Washington St)</p> |  | | | | | | | | | |
|---|--|--|-----------|-------|------|--|--|--|--|--|--|
| <p>SEPI Engineering & Construction, Inc.</p> | <p>1 Glenwood Avenue Raleigh, NC 27603 Tel: 919.789.9977 Fax: 919.789.9591 License: C-2197</p> | <p>Division 06 Columbus County Whiteville</p> <p>PLAN DATE: November 2019 REVIEWED BY:</p> <p>PREPARED BY: M B COPPLE REVIEWED BY: GG Murr Jr</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | REVISIONS | INIT. | DATE | | | | | | |
| REVISIONS | INIT. | DATE | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| <p>750 N. Greenfield Pkwy, Garner, NC 27529</p> | | <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p>SIG. INVENTORY NO. 06-0109</p> | | | | | | | | | |

5/15/2020
 R-50208.s1g.dsn_06-0109e.dgn
 USER: MCOPPLE

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

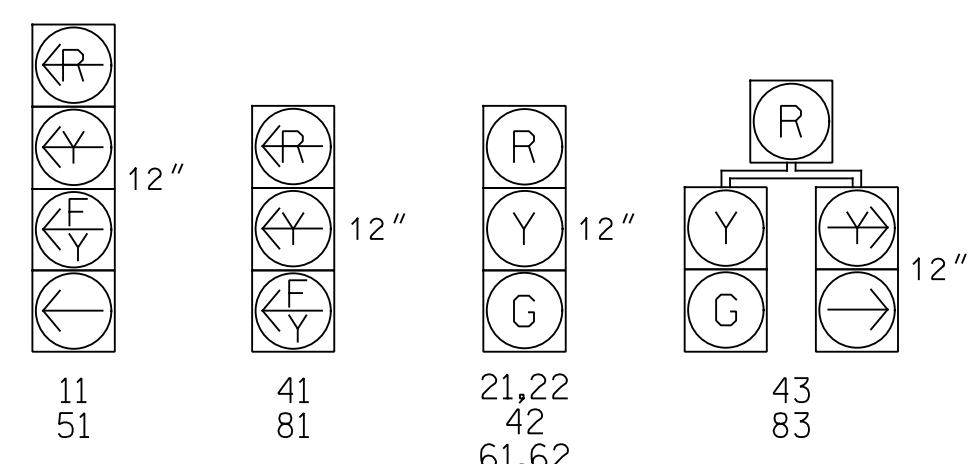
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | |
|-------------|-------|------|------|------|------|------|
| | Ø1+5 | Ø1+6 | Ø2+5 | Ø2+6 | Ø4+8 | Ø4+8 |
| 11 | ← | ← | ← | ← | ← | ← |
| 21,22 | R | R | G | G | R | Y |
| 41 | ← | ← | ← | ← | ← | ← |
| 42 | R | R | R | R | G | R |
| 43 | ← | ← | ← | ← | ← | ← |
| 51 | ← | ← | ← | ← | ← | ← |
| 61,62 | R | G | R | G | R | Y |
| 81 | ← | ← | ← | ← | ← | ← |
| 82 | ← | ← | ← | ← | ← | ← |
| 83 | ← | ← | ← | ← | ← | ← |

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 DETECTOR INSTALLATION CHART

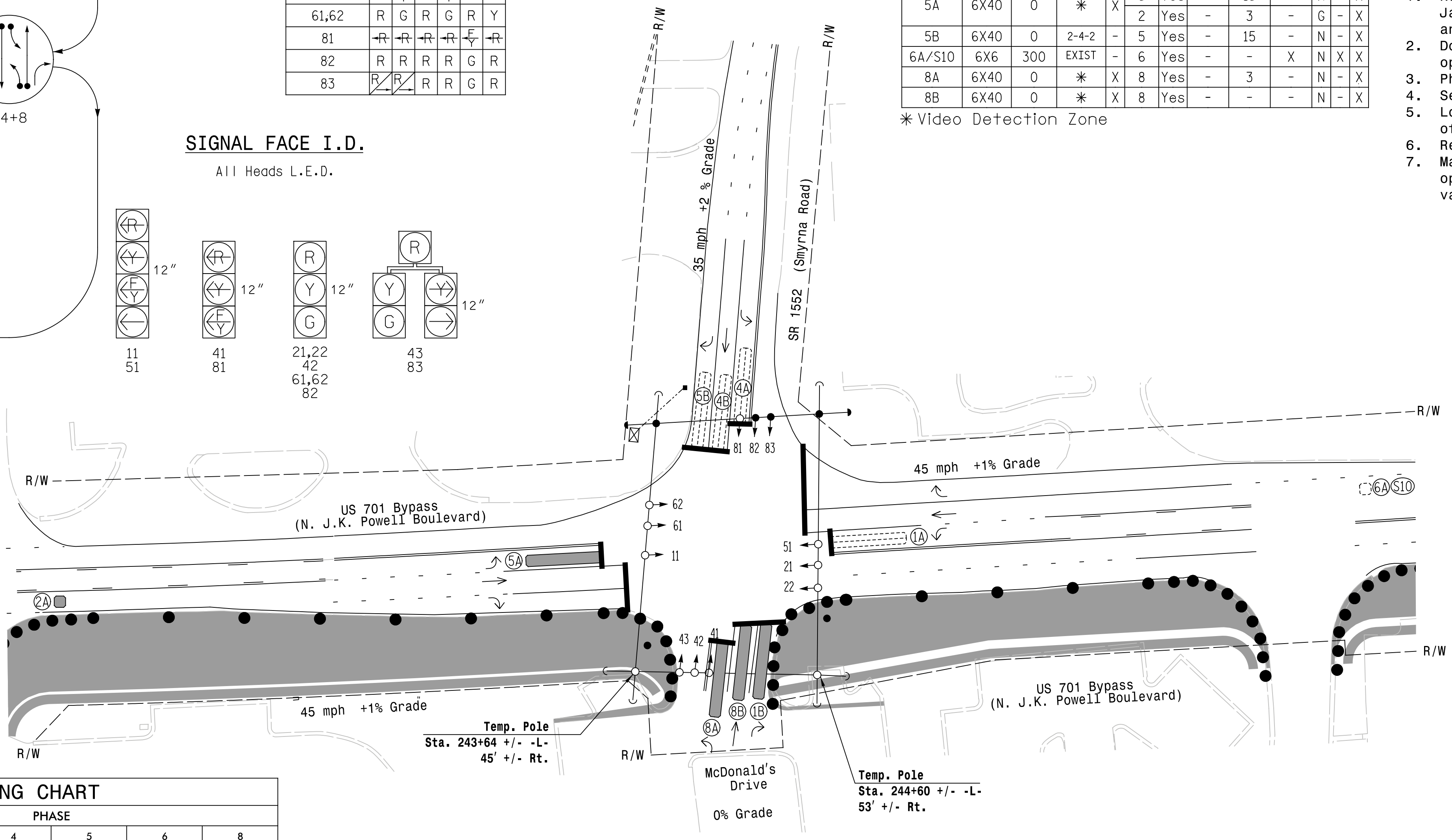
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|--------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP SYSTEM | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | - | 1 | Yes | - | 15 | - | N | - | X |
| | | | | | 6 | Yes | - | 3 | - | G | - | X |
| 1B | 6X40 | 0 | * | X | 1 | Yes | - | 15 | - | N | - | X |
| 2A | 6X6 | 300 | * | X | 2 | Yes | - | - | X | N | - | X |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | 3 | - | N | - | X |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - | X |
| 5A | 6X40 | 0 | * | - | 5 | Yes | - | 15 | - | N | - | X |
| | | | | | 2 | Yes | - | 3 | - | G | - | X |
| 5B | 6X40 | 0 | 2-4-2 | - | 5 | Yes | - | 15 | - | N | - | X |
| 6A/S10 | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | X | X |
| 8A | 6X40 | 0 | * | X | 8 | Yes | - | 3 | - | N | - | X |
| 8B | 6X40 | 0 | * | X | 8 | Yes | - | - | - | N | - | X |

* Video Detection Zone

5 Phase Fully Actuated SYSTEM # 10605

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or 5 may be lagged.
4. Set all detection zones to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Reposition existing signal heads numbered # 82,83
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.

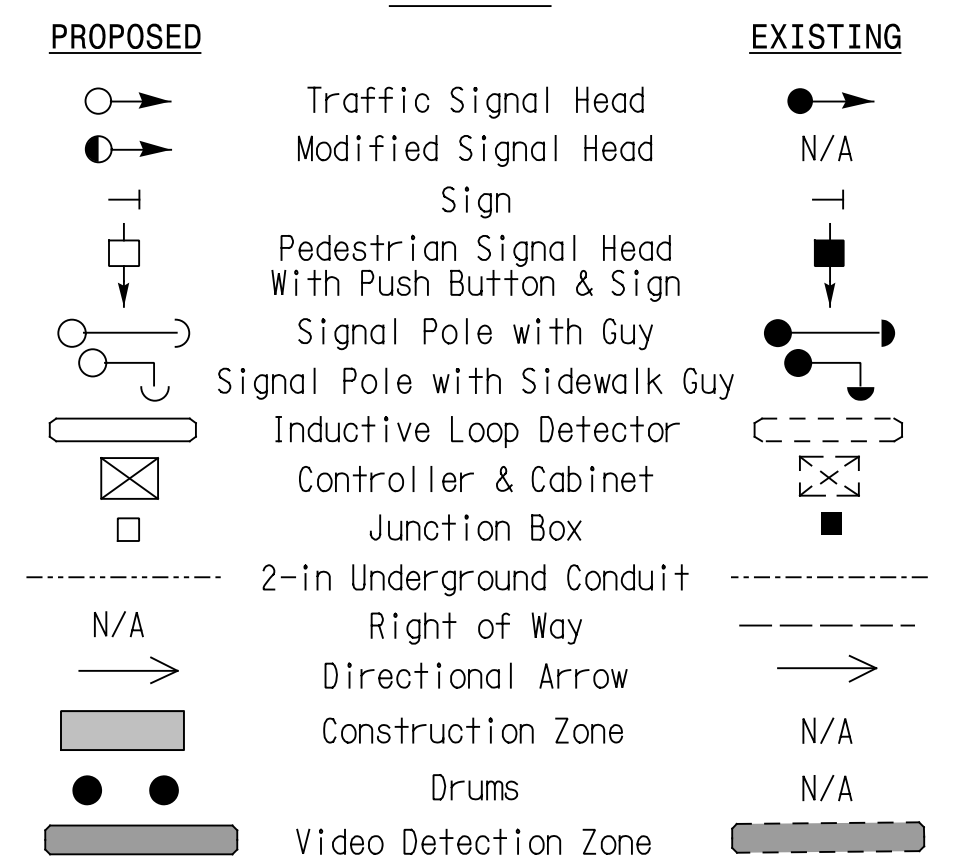


ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | |
|-------------------------|-------|-------------|-----|-----|-------------|-----|
| | 1 | 2 | 4 | 5 | 6 | 8 |
| Min Green * | 7 | 12 | 7 | 7 | 12 | 7 |
| Walk * | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped Clear | 0 | 0 | 0 | 0 | 0 | 0 |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 6.0 | 2.0 |
| Max I * | 15 | 90 | 25 | 15 | 90 | 30 |
| Yellow | 3.0 | 4.4 | 3.7 | 3.0 | 4.4 | 3.0 |
| Red Clear | 2.4 | 1.4 | 1.9 | 2.8 | 1.4 | 2.8 |
| Actuations B4 Add * | - | 0 | - | - | 0 | - |
| Seconds /Actuation * | - | 2.5 | - | - | 2.5 | - |
| Max Initial * | - | 34 | - | - | 34 | - |
| Time Before Reduction * | - | 15 | - | - | 15 | - |
| Time To Reduce * | - | 30 | - | - | 30 | - |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - |
| Locking Detector | - | X | - | - | X | - |
| Recall Position | - | VEH. RECALL | - | - | VEH. RECALL | - |
| Dual Entry | - | - | X | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X |

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

LEGEND



Signal Upgrade Temporary Design 1 - (TMP Phase I)

US 701 Bypass (N. J.K. Powell Blvd) at SR 1552 (Smyrna Road) - McDonald's D/W

Division 6 Columbus County Whiteville

PLAN DATE: November 2019 REVIEWED BY: G.G. Murr, Jr

PREPARED BY: M. Ishak REVIEWED BY:

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

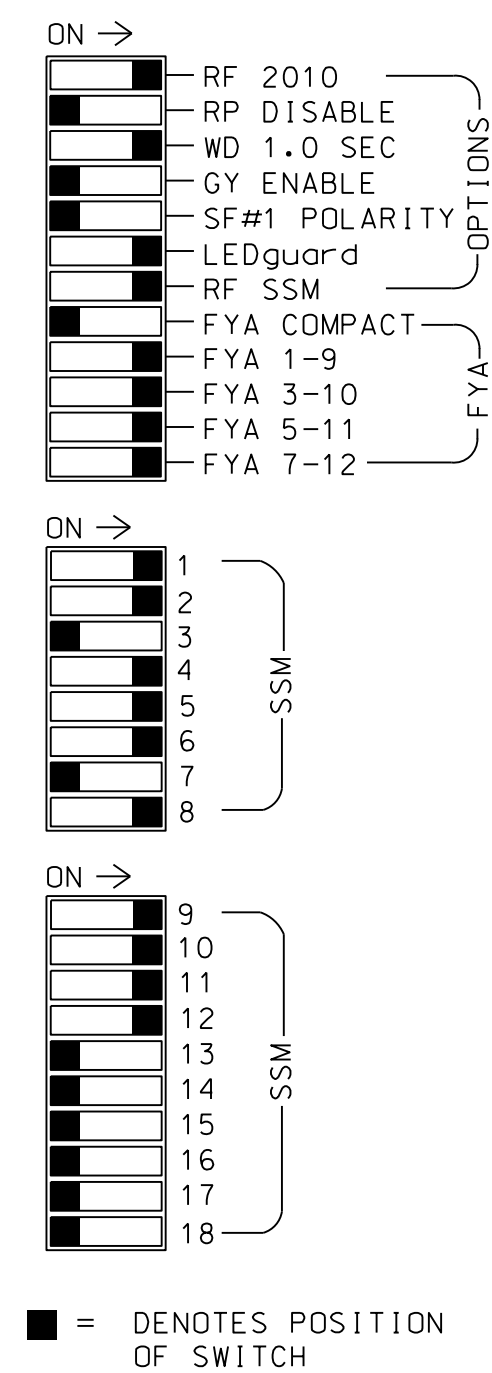
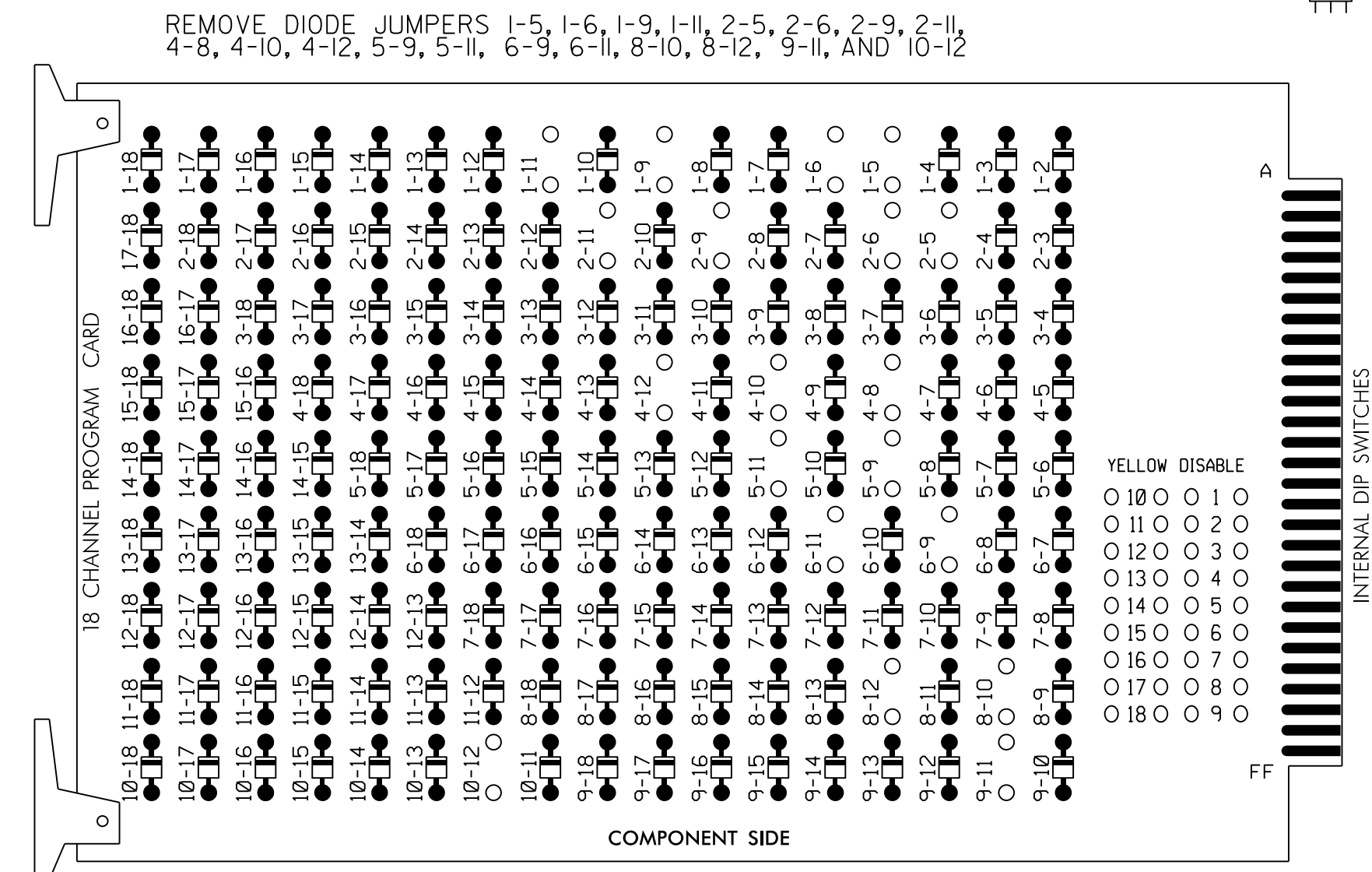
SEAL

SIGNATURE DATE

SIG. INVENTORY NO. 06-128311

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

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.

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.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of Signal System # 10605.

EQUIPMENT INFORMATION

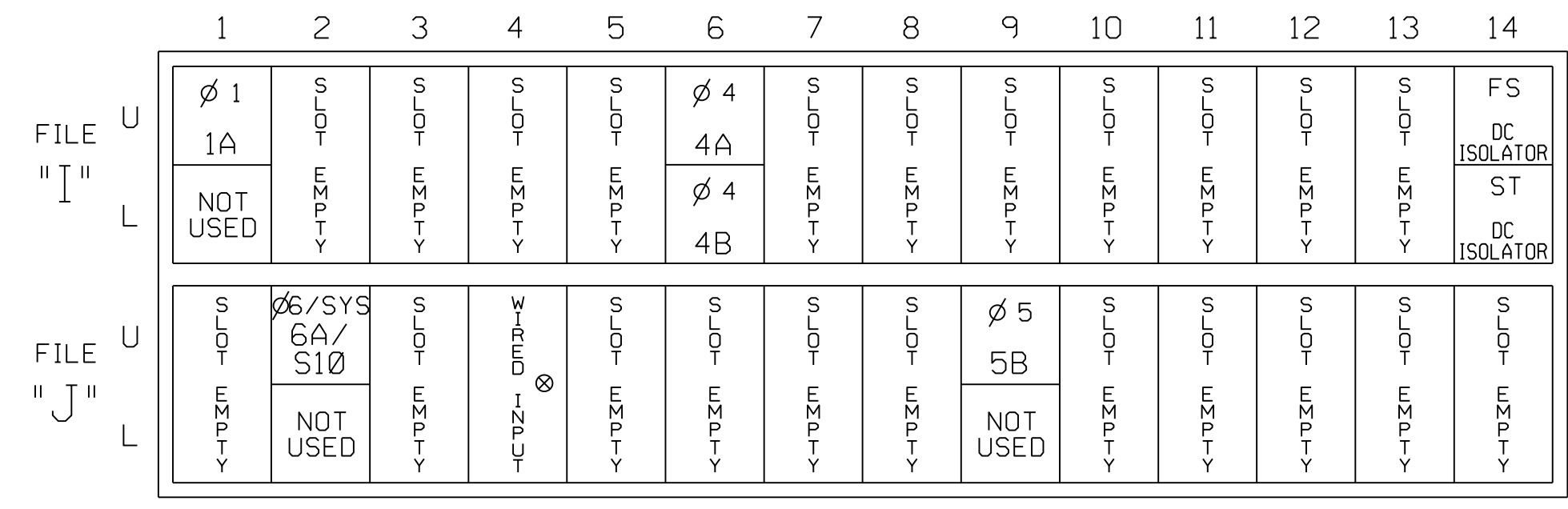
CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 | |
|-----------------------|-----|-----|-------|----|-----|-------|-----|-----|-------|-------|-----|-------|--------|--------|--------|--------|--------|--------|----|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 | |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE | |
| SIGNAL HEAD NO. | 11 | 83 | 21,22 | NU | NU | 42,43 | NU | 43 | 51 | 61,62 | NU | NU | 82,83 | NU | 81 | NU | 51 | 41 | NU |
| RED | * | 128 | | | 101 | | | * | 134 | | | 107 | | | | | | | |
| YELLOW | | 129 | | | 102 | | | | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | | |
| YELLOW ARROW | 126 | | | | | | | 132 | | | | | A122 | A125 | | A115 | A102 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | | |
| GREEN ARROW | 127 | 127 | | | | | 133 | 133 | | | | | | | | | | | |

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

INPUT FILE POSITION LAYOUT
(front view)



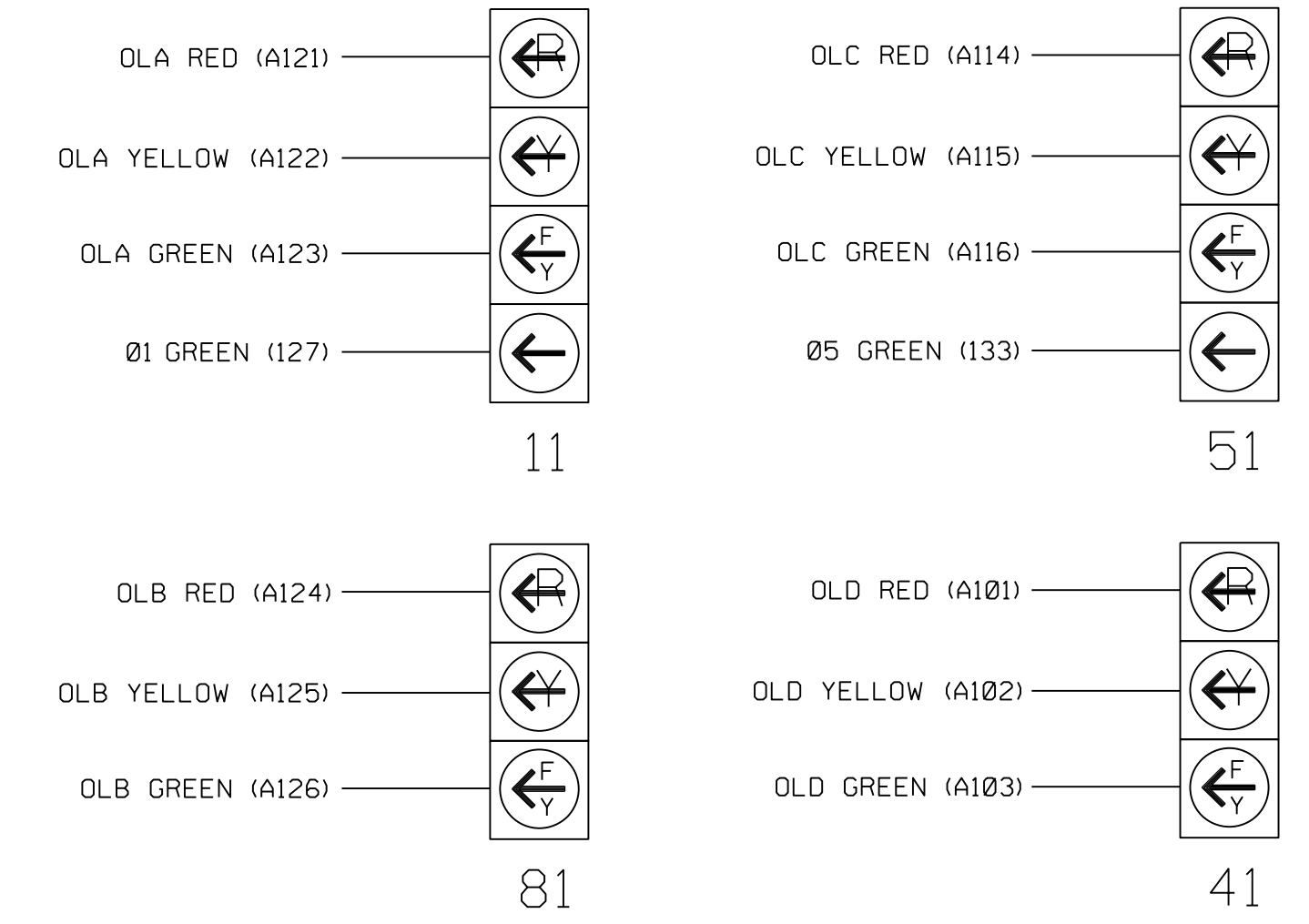
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|-----------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 1A ¹ | TB2-1,2 | I1U | 56 | 1 | 1 | YES | | 15 | | N |
| | | J4U | 48 | 26 | 6 | YES | | 3 | | G |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | 3 | | N |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | | | N |
| 5B | TB7-9,10 | J9U | 59 | 15 | 5 | YES | | 15 | | N |
| 6A/S10 | TB3-5,6 | J2U | 40 | 6 | 6/SYS | YES | | | X | N |

¹Add jumper from I1-W to J4-W, on rear of input file.
 INPUT FILE POSITION LEGEND: J2L
 FILE J
 SLOT 2
 LOWER

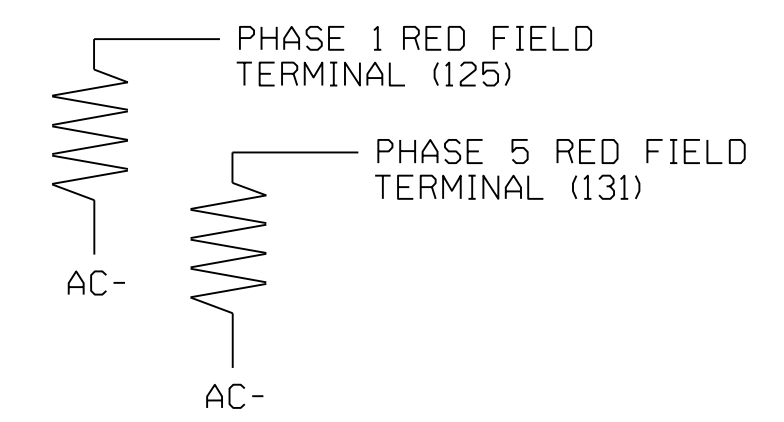
FYA SIGNAL WIRING DETAIL
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL
(install resistors as shown)

ACCEPTABLE VALUES

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



SPECIAL DETECTOR NOTES:
 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 detection zone 1A, the equipment placement and slots reserved for wired inputs are typical for a NCDOT installation.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1283T
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

SEPI
 Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

Temporary Design - (TMP Phase I)
 Electrical Detail - Sheet 1 of 2

US 701 Bypass (N. J.K. Powell Blvd) at SR 1552 (Smyrna Road) - McDonald's D/W

Division 06 Columbus County Whiteville

Prepared by: M Copple
 Reviewed by: G G Murr Jr

REVISIONS: _____ INIT. DATE _____

DATE: _____

SIG. INVENTORY NO. 06-1283T

5/15/2020
 W:\R50208\sig.dgn, 06-1283T1.e.dgn
 USER: M Copple

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP...[A] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED . . . X

PROTECT

PED PRTC

NOT OVLP

FLSH GRN . . . 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED 8

PROTECT

PED PRTC

NOT OVLP

FLSH GRN 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-1283T
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

Temporary Design - (TMP Phase I)
 Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared for the Offices of:

 Department of Transportation
 Signal Management Section
 750 N. Greenfield Pkwy, Garner, NC 27529

| | |
|---|-------------------------|
| US 701 Bypass (N. J.K. Powell Blvd) at SR 1552 (Smyrna Road)- McDonald's D/W | |
| Division 06 | Columbus County |
| PLAN DATE: November 2019 | REVIEWED BY: |
| PREPARED BY: M Copple | REVIEWED BY: GG Murr Jr |
| REVISIONS | INIT. DATE |
| | |
| | |

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL

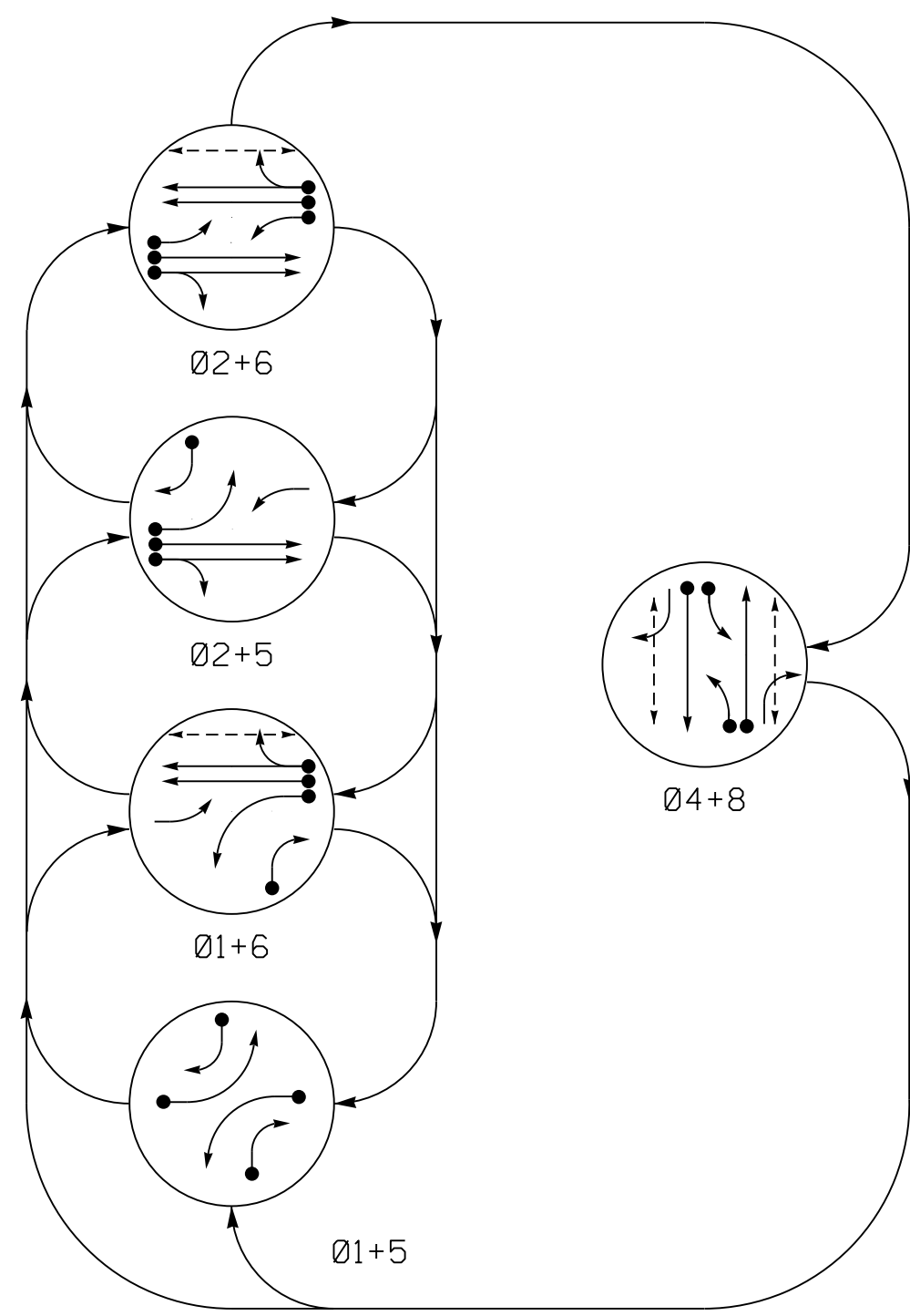
SEAL
27771
ENGINEER
MATTHEW B. COPPLE

DATE

SIG. INVENTORY NO. 06-1283T

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

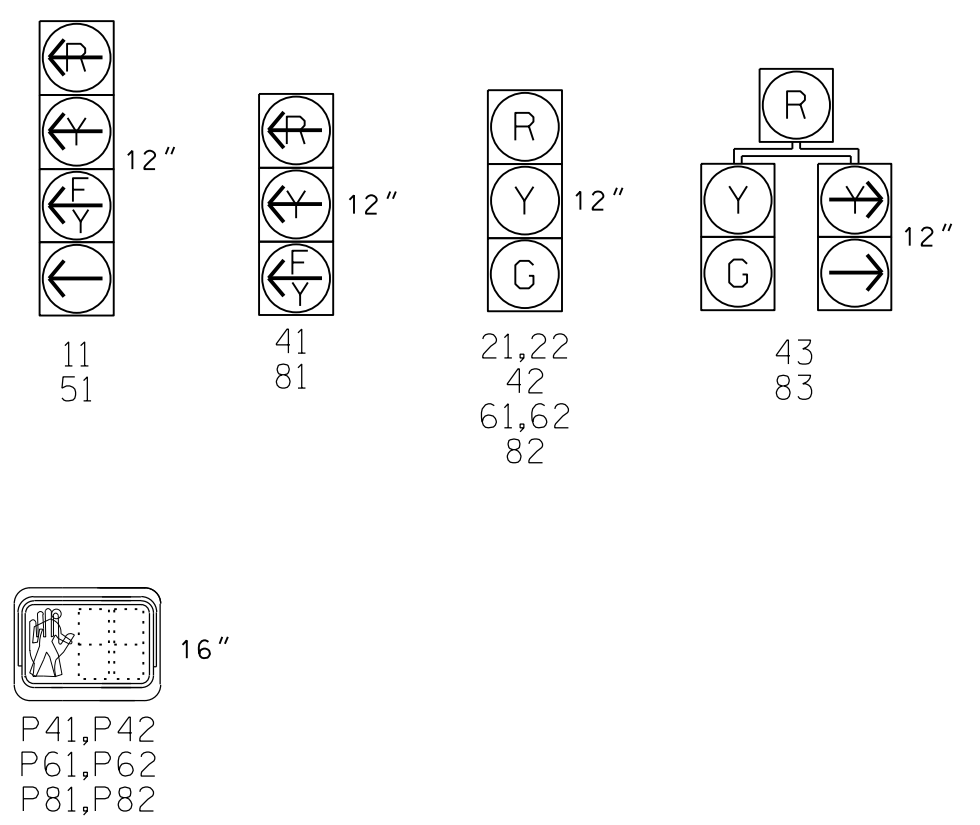


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | |
|-------------|----------|----------|----------|----------|----------|----------|----------|----------|
| | Ø 1 5 | Ø 1 6 | Ø 2 5 | Ø 2 6 | Ø 4 8 | Ø 1 5 | Ø 1 6 | Ø 4 8 |
| 11 | ← | ← | ← | ← | ← | ← | ← | ← |
| 21,22 | R | R | G | G | R | Y | | |
| 41 | ← | ← | ← | ← | ← | ← | ← | ← |
| 42 | R | R | R | R | G | R | | |
| 43 | ← | ← | ← | ← | ← | ← | ← | ← |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← |
| 61,62 | R | G | R | G | R | Y | | |
| 81 | ← | ← | ← | ← | ← | ← | ← | ← |
| 82 | R | R | R | R | G | R | | |
| 83 | ← | ← | ← | ← | ← | ← | ← | ← |
| P41,P42 | DW | DW | DW | DW | W | DRK | | |
| P61,P62 | DW | W | DW | W | DW | DRK | | |
| P81,P82 | DW | DW | DW | DW | W | DRK | | |

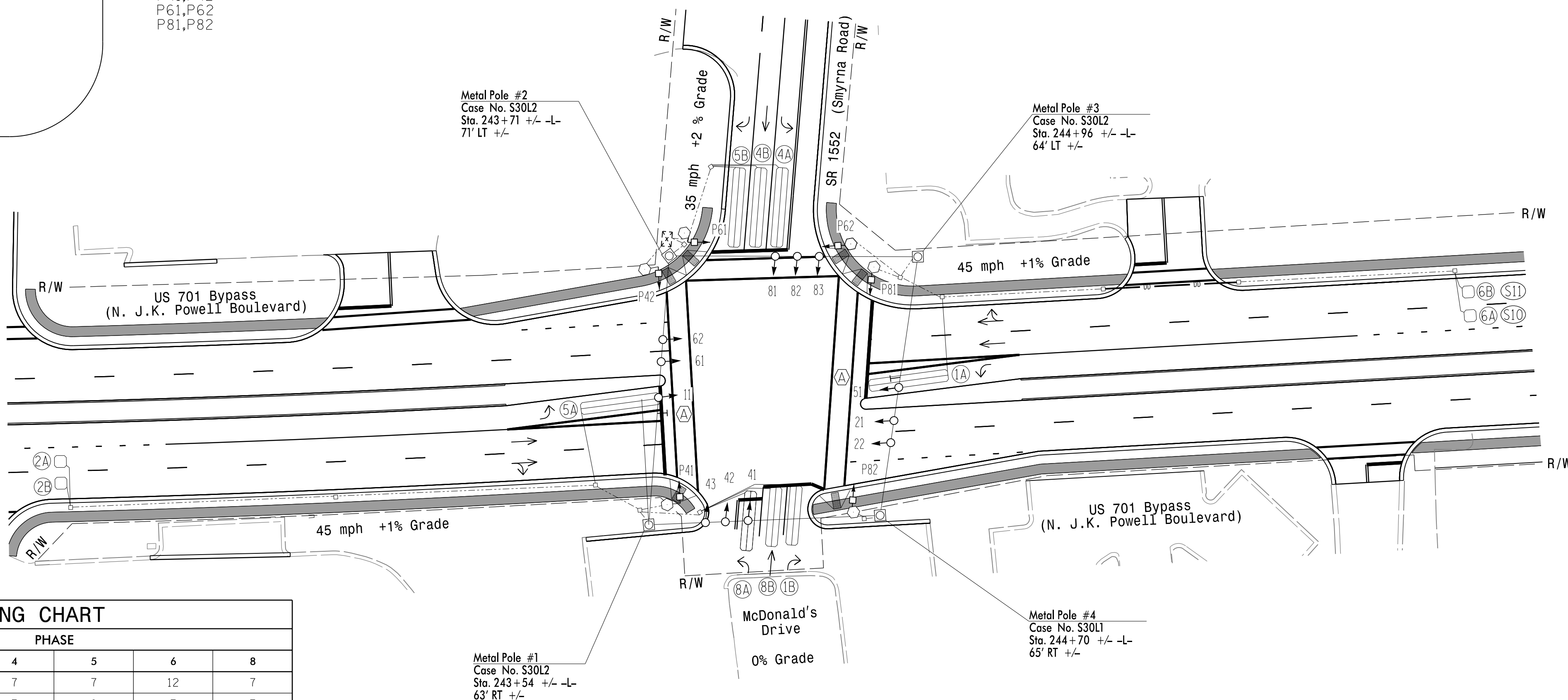
ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|--------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6X40 | 0 | 2-4-2 | X | 1 | Yes | - | 15 | - | N | - | - |
| 1B | 6X30 | 0 | 2-4-2 | X | 1 | Yes | - | 15 | - | N | - | X |
| 2A | 6X6 | 300 | 4 | X | 2 | Yes | - | - | - | X | N | - |
| 2B | 6X6 | 300 | 4 | X | 2 | Yes | - | - | - | X | N | - |
| 4A | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | 3 | - | N | - | - |
| 4B | 6X40 | 0 | 2-4-2 | X | 4 | Yes | - | - | - | S | - | - |
| 5A | 6X40 | 0 | 2-4-2 | X | 5 | Yes | - | 15 | - | N | - | X |
| 5B | 6X40 | 0 | 2-4-2 | X | 5 | Yes | - | 15 | - | N | - | - |
| 6A/S10 | 6X6 | 300 | 4 | X | 6 | Yes | - | - | - | X | N | X |
| 6B/S11 | 6X6 | 300 | 4 | X | 6 | Yes | - | - | - | X | N | X |
| 8A | 6X30 | +5 | 2-4-2 | X | 8 | Yes | - | 5 | - | N | - | X |
| 8B | 6X30 | 0 | 2-4-2 | X | 8 | Yes | - | 10 | - | N | - | X |

5 Phase Fully Actuated SYSTEM # 10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or 5 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|-------------|-----|-----|-------------|-----|--|--|
| | 1 | 2 | 4 | 5 | 6 | 8 | | |
| Min Green * | 7 | 12 | 7 | 7 | 12 | 7 | | |
| Walk * | 0 | 0 | 7 | 0 | 7 | 7 | | |
| Ped Clear | 0 | 0 | 25 | 0 | 15 | 26 | | |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 6.0 | 3.0 | | |
| Max I * | 15 | 90 | 30 | 15 | 90 | 30 | | |
| Yellow | 3.0 | 4.4 | 3.7 | 3.0 | 4.4 | 3.0 | | |
| Red Clear | 2.8 | 1.7 | 2.7 | 3.1 | 1.7 | 4.0 | | |
| Actuations B4 Add * | - | 0 | - | - | 0 | - | | |
| Seconds /Actuation * | - | 1.5 | - | - | 1.5 | - | | |
| Max Initial * | - | 34 | - | - | 34 | - | | |
| Time Before Reduction * | - | 15 | - | - | 15 | - | | |
| Time To Reduce * | - | 30 | - | - | 30 | - | | |
| Minimum Gap | - | 3.0 | - | - | 3.0 | - | | |
| Locking Detector | - | X | - | - | X | - | | |
| Recall Position | - | VEH. RECALL | - | - | VEH. RECALL | - | | |
| Dual Entry | - | - | X | - | - | X | | |
| Simultaneous Gap | X | X | X | X | X | X | | |

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

LEGEND

- | | | | |
|--|---|--|---|
| | PROPOSED Traffic Signal Head | | EXISTING Traffic Signal Head |
| | PROPOSED Modified Signal Head | | EXISTING Modified Signal Head |
| | PROPOSED Pedestrian Signal Head | | EXISTING Pedestrian Signal Head |
| | PROPOSED Signal Pole with Guy | | EXISTING Signal Pole with Guy |
| | PROPOSED Inductive Loop Detector | | EXISTING Inductive Loop Detector |
| | PROPOSED Controller & Cabinet | | EXISTING Controller & Cabinet |
| | PROPOSED Junction Box | | EXISTING Junction Box |
| | PROPOSED Metal Strain Pole | | EXISTING Metal Strain Pole |
| | PROPOSED 2-in Underground Conduit | | EXISTING 2-in Underground Conduit |
| | PROPOSED Right of Way | | EXISTING Right of Way |
| | PROPOSED Directional Arrow | | EXISTING Directional Arrow |
| | PROPOSED "U Turn Yield To RIGHT TURN" Sign (R10-16) | | EXISTING "U Turn Yield To RIGHT TURN" Sign (R10-16) |
| | PROPOSED Directional Drill | | EXISTING Directional Drill |
| | PROPOSED Type II Signal Pedestal | | EXISTING Type II Signal Pedestal |
| | PROPOSED Wheelchair Ramp | | EXISTING Wheelchair Ramp |

Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
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License: C-2197

US 701 Bypass (N. J.K. Powell Blvd) at SR 1552 (Smyrna Road) - McDonald's D/W

Division 6 Columbus County Whiteville

PLAN DATE: November 2019 REVIEWED BY: G.G. Murr, Jr

PREPARED BY: M. Ishak REVIEWED BY:

SEAL

SEAL 14543

G. G. MURR, JR.
ENGINEER

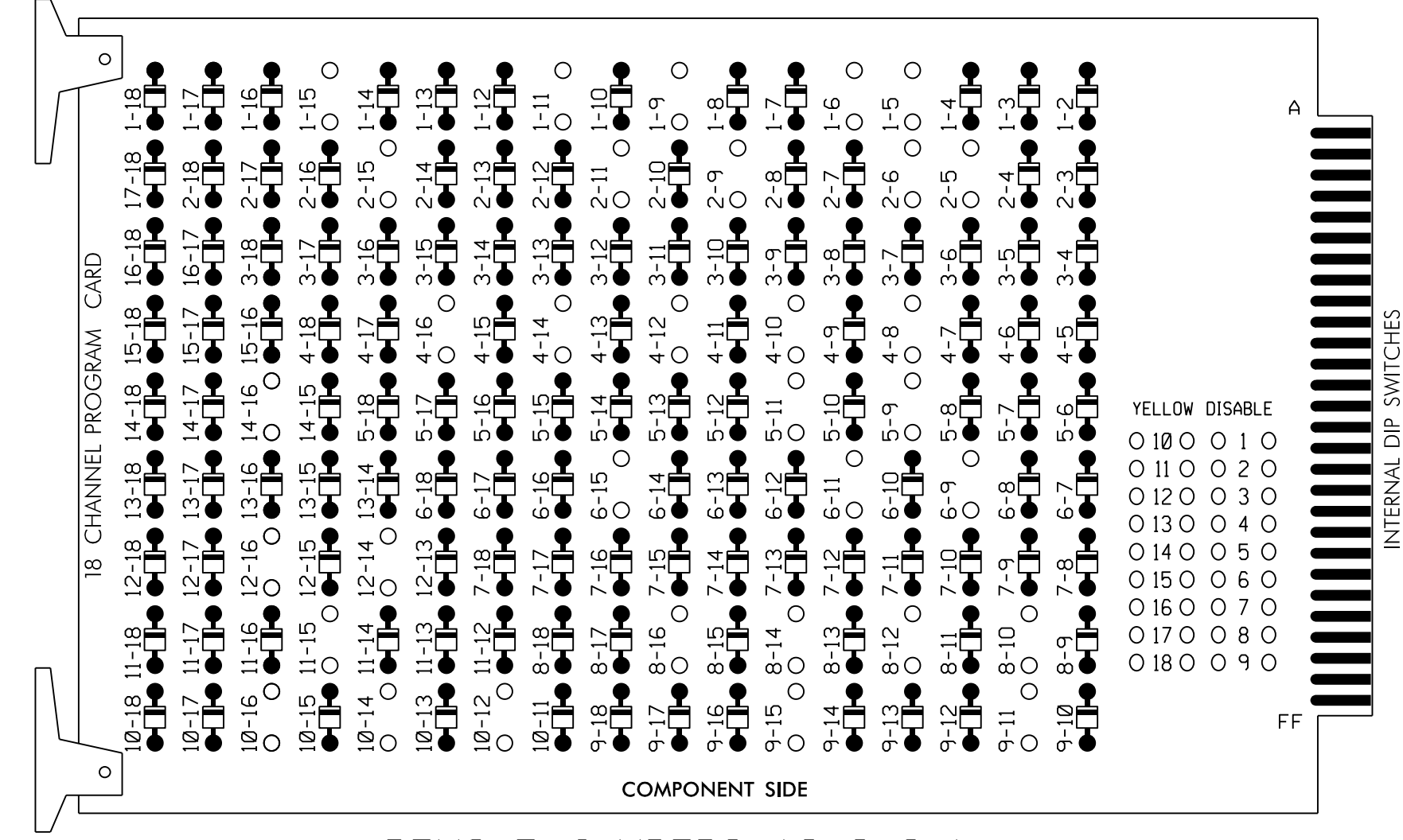
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

| REVISIONS | INIT. | DATE |
|-----------|-------|------|
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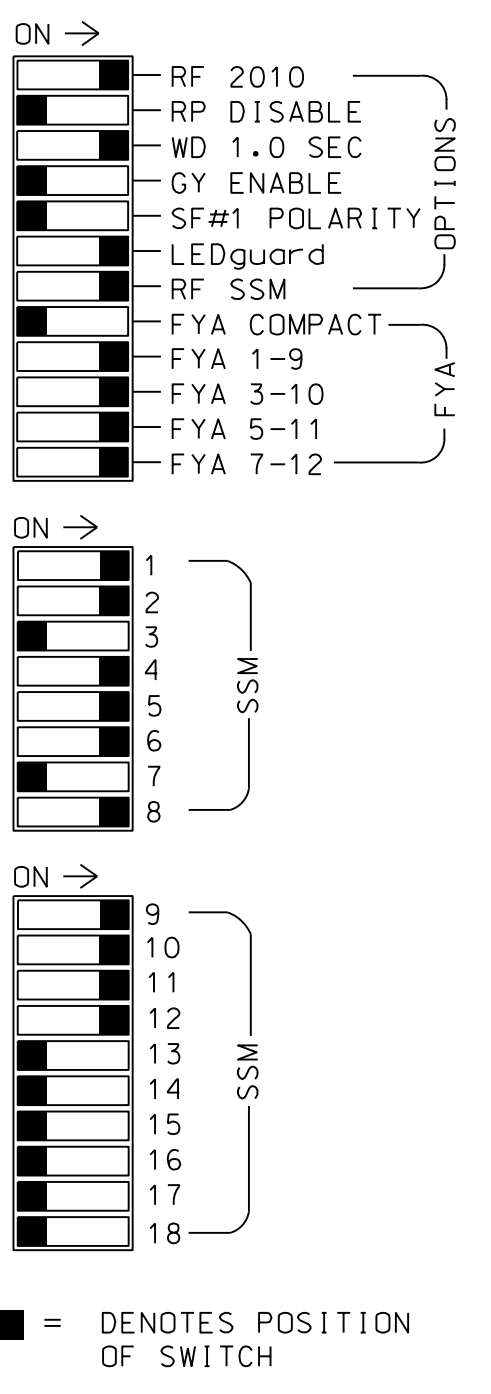
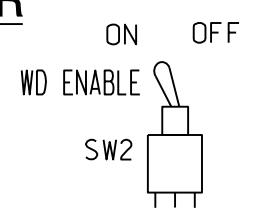
EDI MODEL 2018ECLip-NC CONFLICT MONITOR
PROGRAMMING DETAIL
(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 3-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 6-9, 6-11, 6-15, 8-10, 8-12, 8-14, 8-16, 9-11, 9-15, 10-12, 10-14, 10-16, 11-15, 12-14, 12-16, AND 14-16



NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Walk.
- The cabinet and controller are part of Signal System # 10605.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S6,S7,S8,S9,S11,S12
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,4,4PED,5,6,6PED,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

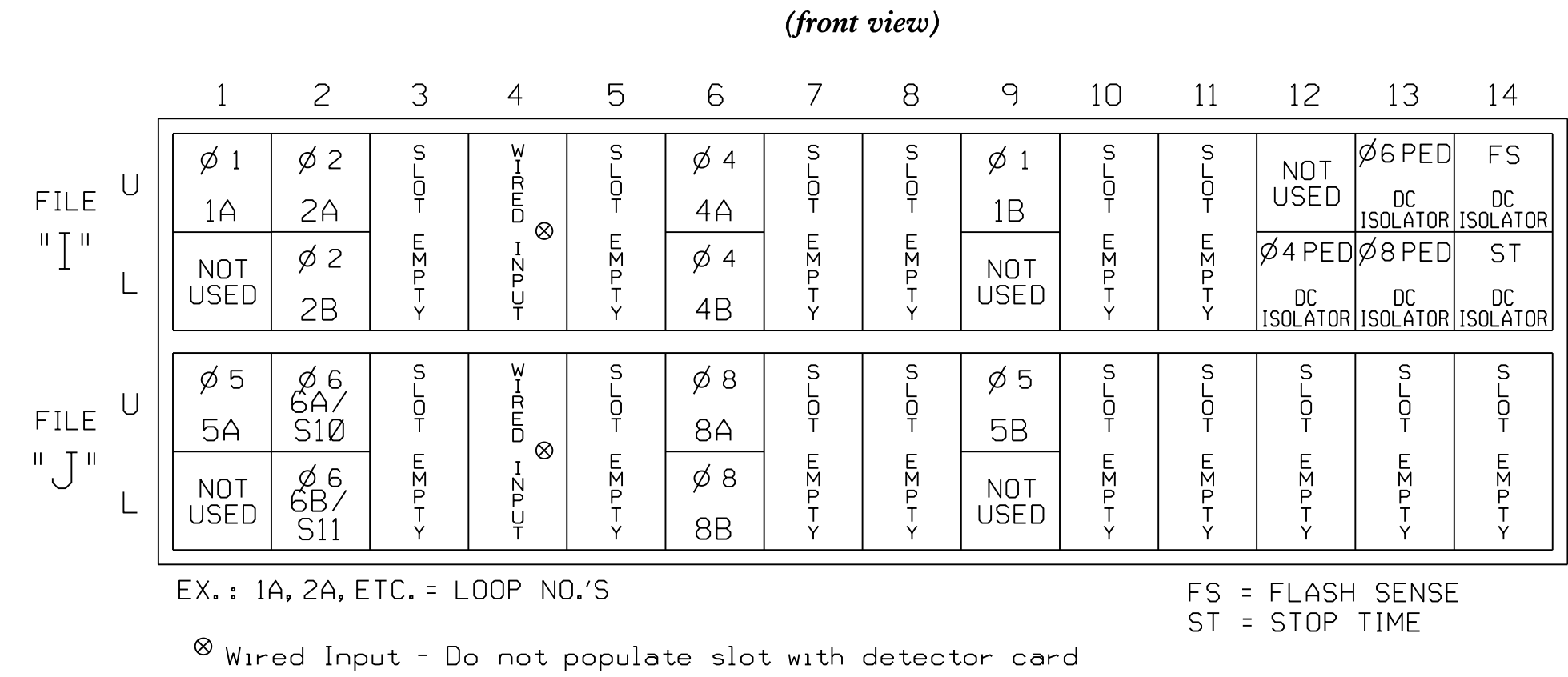
SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 | |
|-----------------------|-----|-----|-------|----|-----|-------|----------|-----|-------|-------|----------|-------|--------|----------|--------|--------|--------|--------|----|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 | |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE | |
| SIGNAL HEAD NO. | 11 | 83 | 21,22 | NU | NU | 42,43 | P41, P42 | 43 | 51 | 61,62 | P61, P62 | NU | 82,83 | P81, P82 | 11 | 81 | NU | 51 | 41 |
| RED | * | 128 | | | 101 | | | * | 134 | | 107 | | | | | | | | |
| YELLOW | | 129 | | | 102 | | | | 135 | | 108 | | | | | | | | |
| GREEN | | 130 | | | 103 | | | | 136 | | 109 | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | | |
| YELLOW ARROW | 126 | | | | | | | 132 | | | | | A122 | A125 | | A115 | A102 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | | |
| GREEN ARROW | 127 | 127 | | | | | 133 | 133 | | | | | | | | | | | |
| Hand | | | | | | | 104 | | | 119 | | 110 | | | | | | | |
| Person | | | | | | | 106 | | | 121 | | 112 | | | | | | | |

NU = Not Used

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

INPUT FILE POSITION LAYOUT



INPUT FILE CONNECTION & PROGRAMMING CHART

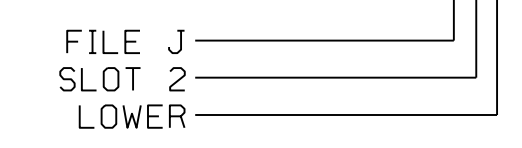
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 1A ¹ | TB2-1,2 | I1U | 56 | 1 | 1 | YES | | 15 | | N |
| | | J4U | 48 | 26 | 6 | YES | | 3 | | G |
| 1B | TB6-9,10 | I9U | 60 | 11 | 1 | YES | | 15 | | N |
| 2A | TB2-5,6 | I2U | 39 | 2 | 2 | YES | | | X | N |
| 2B | TB2-7,8 | I2L | 43 | 12 | 2 | YES | | | X | N |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | 3 | | N |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | | | N |
| 5A ² | TB3-1,2 | J1U | 55 | 5 | 5 | YES | | 15 | | N |
| | | I4U | 47 | 22 | 2 | YES | | 3 | | G |
| 5B | TB7-9,10 | J9U | 59 | 15 | 5 | YES | | 15 | | N |
| 6A/S10 | TB3-5,6 | J2U | 40 | 6 | 6 | YES | | | X | N |
| 6B/S11 | TB3-7,8 | J2L | 44 | 16 | 6 | YES | | | X | N |
| 8A | TB5-9,10 | J6U | 42 | 8 | 8 | YES | | 5 | | N |
| 8B | TB5-11,12 | J6L | 46 | 18 | 8 | YES | | 10 | | N |
| PED PUSH BUTTONS | | | | | | | | | | |
| P41,P42 | TB8-5,6 | I12L | 69 | PED 4 | 4 PED | | | | | |
| P61,P62 | TB8-7,9 | I13U | 68 | PED 6 | 6 PED | | | | | |
| P81,P82 | TB8-8,9 | I13L | 70 | PED 8 | 8 PED | | | | | |

NOTE:

INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

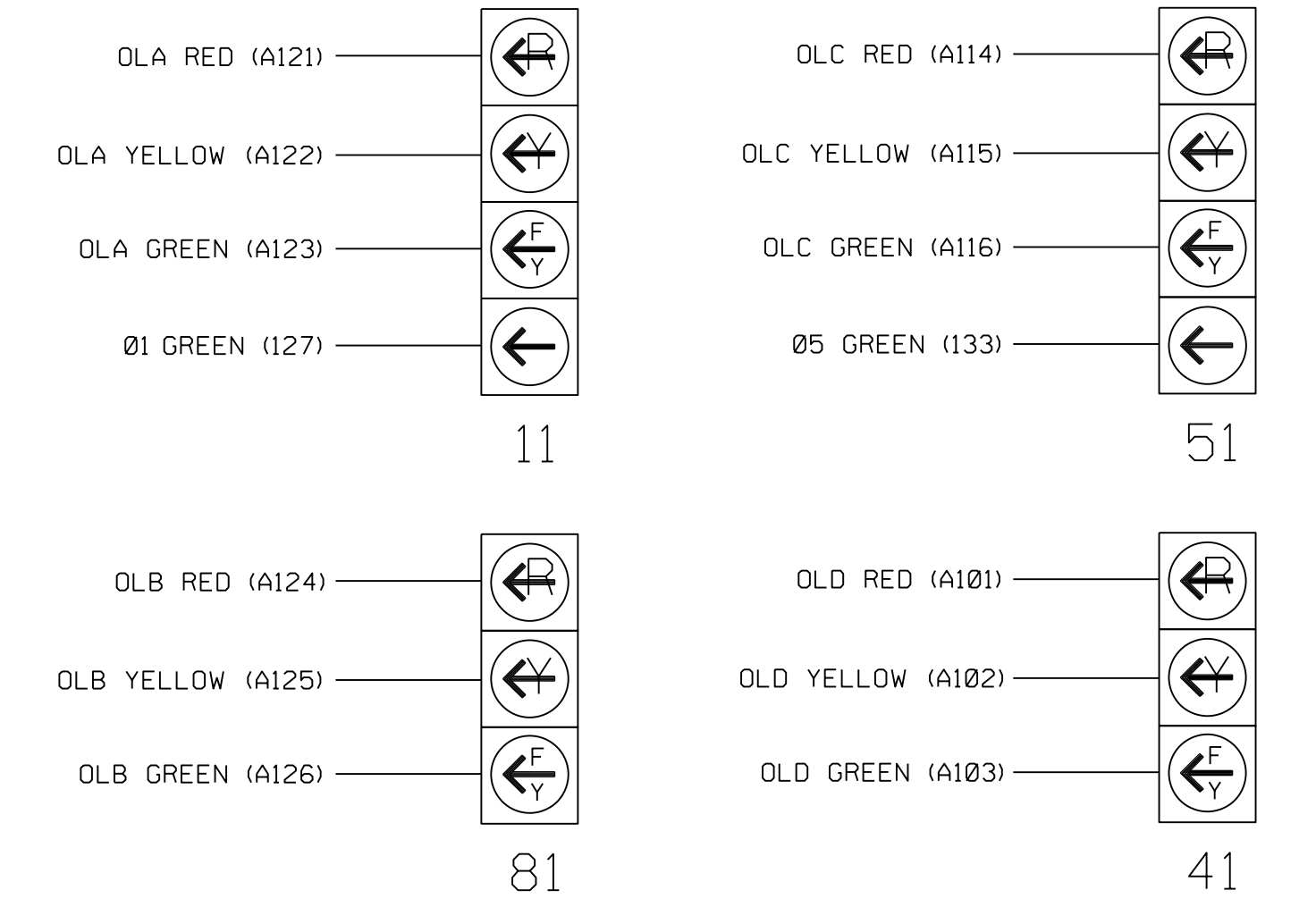
INPUT FILE POSITION LEGEND: J2L

- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

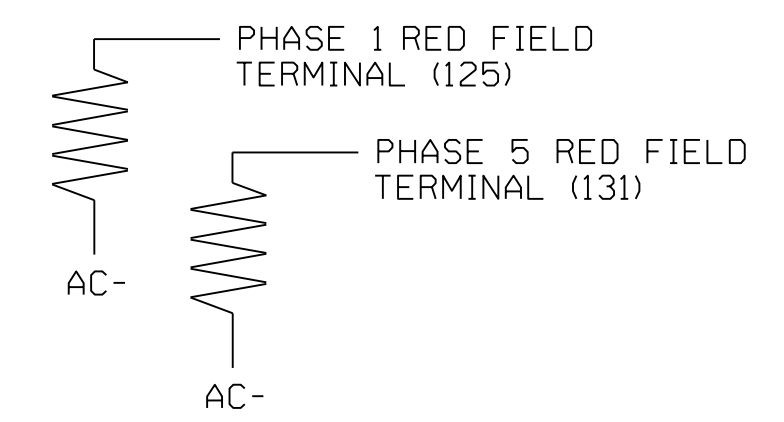
Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1283
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

SEPI
 Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

Final Design
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 Prepared for the Offices of:
 City of Raleigh
 Department of Transportation
 Signal Management Section
 750 N. Greenfield Pkwy, Garner, NC 27529

US 701 Bypass
 (N. J.K. Powell Blvd) at
 SR 1552 (Smyrna Road)-
 McDonald's D/W

Division 06 Columbus County Whiteville

PLAN DATE: November 2019 REVIEWED BY:

PREPARED BY: M Copple REVIEWED BY: G G Murr Jr

REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 M. THOMAS B. COPPLE
 27771

DATE

SIG. INVENTORY NO. 06-1283

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP...[A] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED . . . X

PROTECT

PED PRTC

NOT OVLP

FLSH GRN . . . 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED 8

PROTECT

PED PRTC

NOT OVLP

FLSH GRN 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

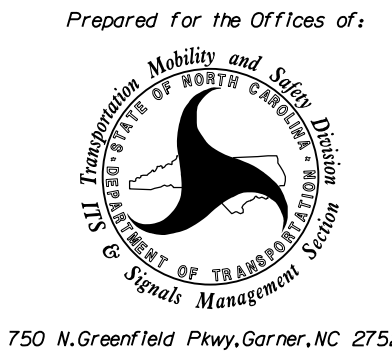
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-1283
 DESIGNED: November 2019
 SEALED: 05/15/2020
 REVISED: N/A

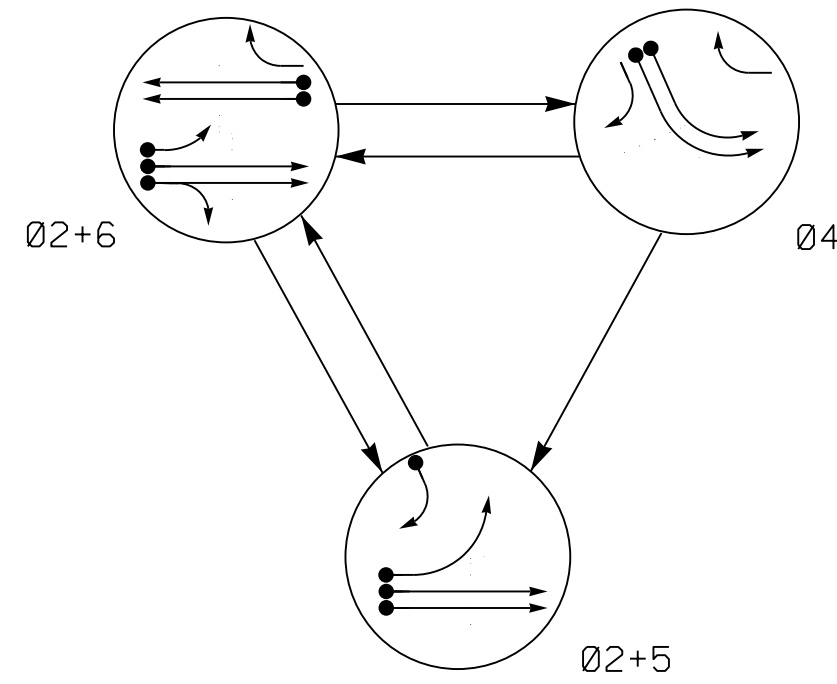
Final Design
 Electrical Detail - Sheet 2 of 2

|  | <p>US 701 Bypass (N. J.K. Powell Blvd) at SR 1552 (Smyrna Road)- McDonald's D/W</p> <p>Division 06 Columbus County Whiteville</p> <p>PLAN DATE: November 2019 REVIEWED BY:</p> <p>PREPARED BY: M Copple REVIEWED BY: GG Murr Jr</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | REVISIONS | INIT. | DATE | | | | | | | <div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <p style="font-size: x-small; margin: 0;">SEAL 27771 ENGINEER MATTHEW B. COPPLE</p> </div> </div> |
|---|--|-----------|-------|------|--|--|--|--|--|--|--|
| REVISIONS | INIT. | DATE | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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 License: C-2197

PHASING DIAGRAM



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

| ASC/3 DETECTOR INSTALLATION CHART | | | | | | | | | | | |
|-----------------------------------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|-------------------|------|----------------------|
| DETECTOR | | | | PROGRAMMING | | | | | | | |
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP NEW CARD |
| 2A/S15 | 6X6 | 300 | EXIST | - | 2 | Yes | - | - | X | N | X |
| 2B/S16 | 6X6 | 300 | EXIST | - | 2 | Yes | - | - | X | N | X |
| 4A | 6X60 | +10 | 2-4-2 | - | 4 | Yes | - | 3 | - | N | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - |
| 5A | 6X60 | 0 | 2-4-2 | - | 5 | Yes | - | 15 | - | N | - |
| 5B | 6X60 | 0 | 2-4-2 | - | 5 | Yes | - | 15 | - | N | - |
| 6A/S13 | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | X |
| 6B/S14 | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | X |

3 Phase Fully Actuated System #10605

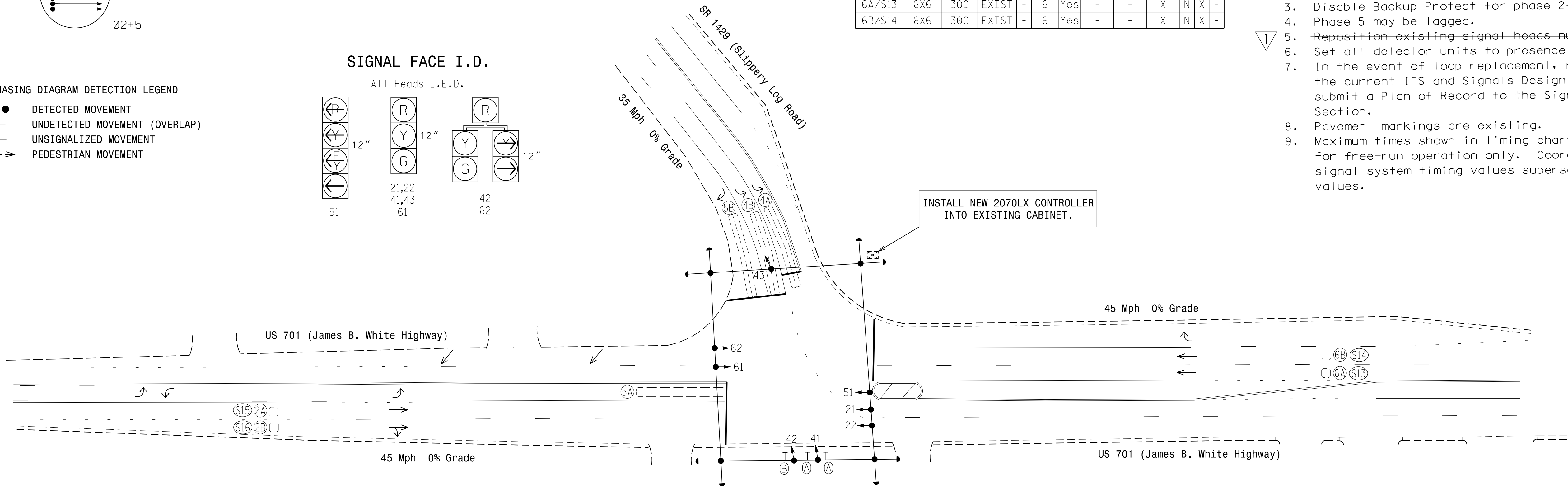
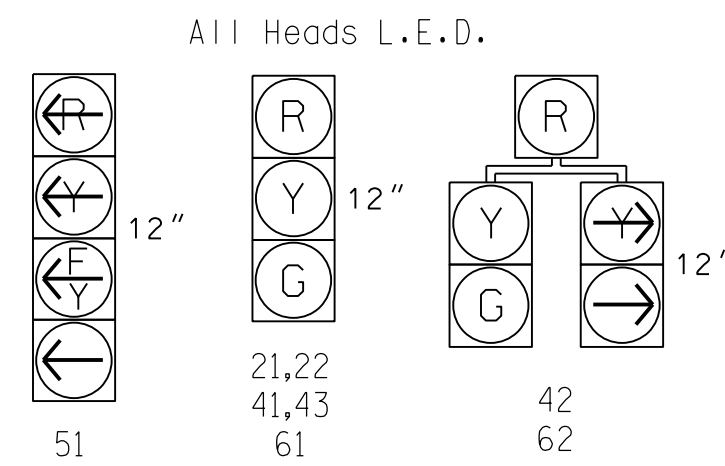
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Disable Backup Protect for phase 2+6.
4. Phase 5 may be lagged.
5. Reposition existing signal heads numbered 22.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

- ◄●► DETECTED MOVEMENT
- ◄◄◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄◄◄ UNSIGNALIZED MOVEMENT
- ◄◄◄ PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.



| ASC/3 TIMING CHART | | | | |
|-------------------------|-------------|-----|-----|-------------|
| FEATURE | PHASE | | | |
| | 2 | 4 | 5 | 6 |
| Min Green * | 12 | 7 | 7 | 12 |
| Walk * | - | - | - | - |
| Ped Clear | - | - | - | - |
| Veh. Extension * | 6.0 | 1.0 | 1.0 | 6.0 |
| Max 1 * | 90 | 20 | 25 | 90 |
| Yellow | 4.5 | 3.0 | 3.0 | 4.5 |
| Red Clear | 1.5 | 3.3 | 2.9 | 1.5 |
| Actuations B4 Add * | 0 | - | - | 0 |
| Seconds / Actuation * | 1.5 | - | - | 1.5 |
| Max Initial * | 34 | - | - | 34 |
| Time Before Reduction * | 15 | - | - | 15 |
| Time To Reduce * | 30 | - | - | 30 |
| Minimum Gap | 3.0 | - | - | 3.0 |
| Locking Detector | X | - | - | X |
| Recall Position | VEH. RECALL | - | - | VEH. RECALL |
| Dual Entry | - | - | - | - |
| Simultaneous Gap | X | X | X | X |

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

LEGEND

- | PROPOSED | EXISTING |
|--|----------|
| ○► Traffic Signal Head | ●► N/A |
| ◐► Modified Signal Head | ◐► N/A |
| ⊥ Sign | ⊥ N/A |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ N/A |
| ⊥ Signal Pole with Guy | ⊥ N/A |
| ⊥ Signal Pole with Sidewalk Guy | ⊥ N/A |
| ⊥ Inductive Loop Detector | ⊥ N/A |
| ⊥ Controller & Cabinet | ⊥ N/A |
| ⊥ Junction Box | ⊥ N/A |
| ⊥ 2-in Underground Conduit | ⊥ N/A |
| → N/A Right of Way | → N/A |
| → Directional Arrow | → N/A |
| (A) Left Arrow "ONLY" Sign (R3-5L) | (A) N/A |
| (B) Right Arrow "ONLY" Sign (R3-5R) | (B) N/A |

Signal Revision

Revision Seal

Prepared for: Transportation Mobility and Safety Division, STATE OF NORTH CAROLINA, Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 701 (James B. White Highway) at SR 1429 (Slippery Log Road)

Division 6 Columbus County Whiteville

PLAN DATE: November 2012 REVIEWED BY: PLA

PREPARED BY: Jeff Spence REVIEWED BY:

| REVISIONS | INIT. | DATE |
|-----------------------------|-------|----------|
| Controller changed to ASC/3 | GS | 05/14/20 |

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SIGNATURE _____ DATE _____

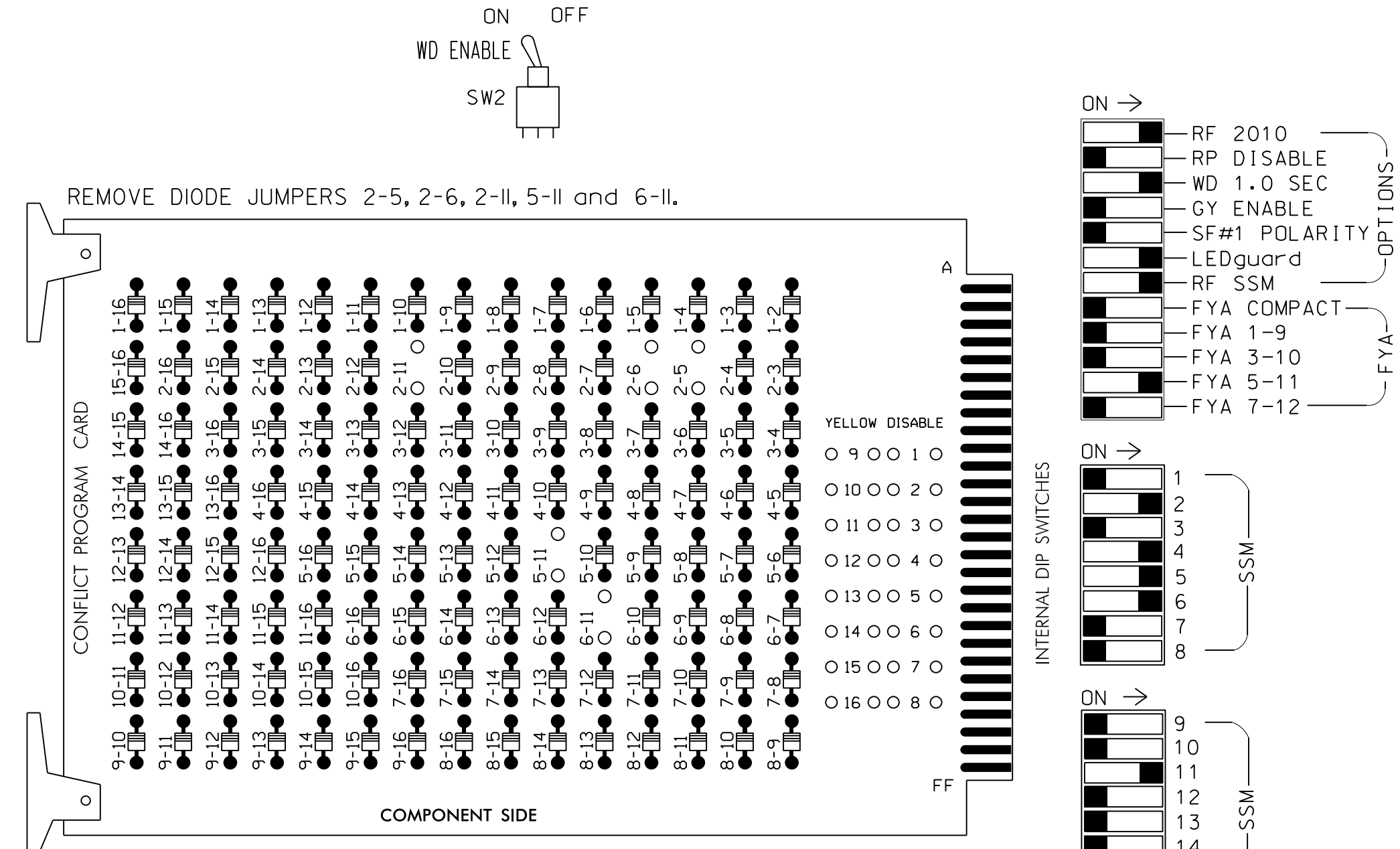
SIG. INVENTORY NO. 06-0951

SEPI Engineering & Construction, Inc.

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Fax: 919.789.9591
License: C-2197

EDI MODEL 2010ECL-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.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

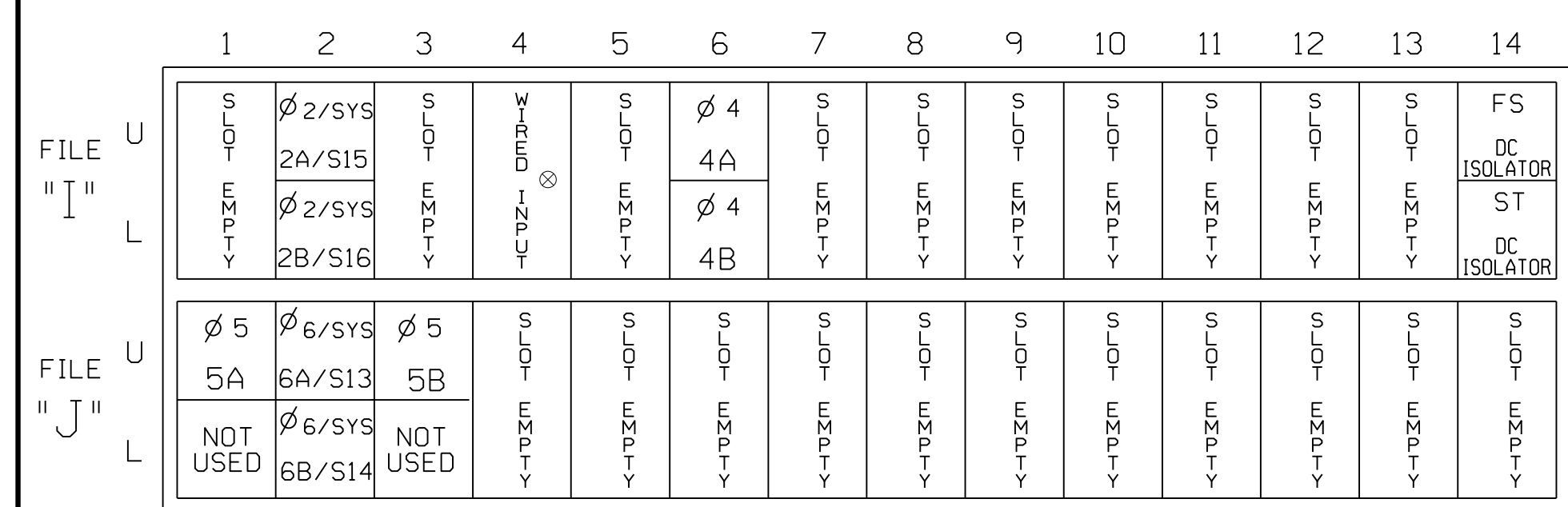
- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

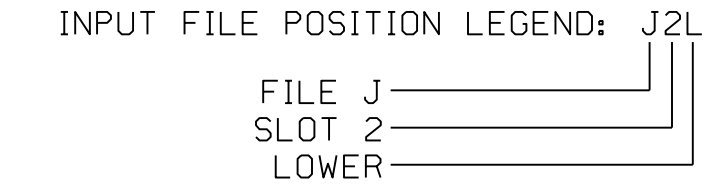
| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 | |
|-----------------------|----|-------|-------|----|-------------|-------|-----|-----|-------|-------|----|-------|-----|-----|-------|-----|-----|-------|------|
| PHASE | 1 | 2 | 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 43 | 62 | NU | 51* | 42 | 61,62 | NU | NU | NU | NU | NU | 51* | NU | NU | |
| RED | | 128 | | | 101 | | | * | 134 | | | | | | | | | | |
| YELLOW | | 129 | | | 102 | | | | 135 | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | | | | A114 | |
| YELLOW ARROW | | | | | 102 | | | | 132 | | | | | | | | | | A115 |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | | | | | A116 |
| GREEN ARROW | | | | | 103 | | 133 | 133 | | | | | | | | | | | |

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

INPUT FILE POSITION LAYOUT (front view)



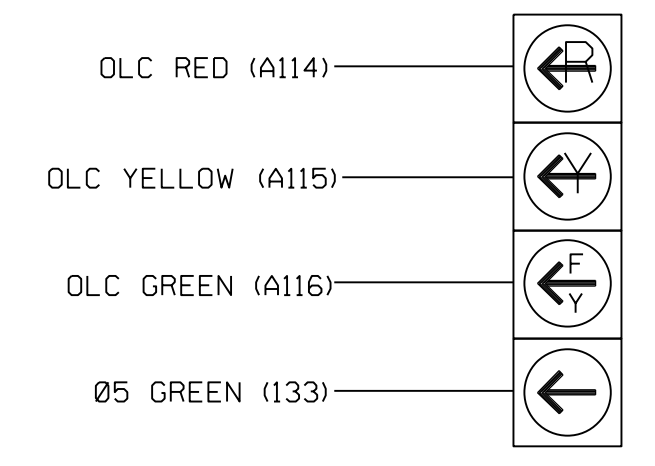
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card



EQUIPMENT INFORMATION

- CONTROLLER.....CONTRACTOR SUPPLIED 2070LX
- CABINET.....EXISTING EAGLE 332 /W/ AUX
- SOFTWAREECONOLITE ASC/3-2070
- CABINET MOUNT.....BASE
- OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
- LOAD SWITCHES USED.....S2,S4,S5,S6,S12.
- PHASES USED.....2,4,5,6.
- OVERLAP "A".....NOT USED
- OVERLAP "B".....NOT USED
- OVERLAP "C".....* * See overlap programming detail on sheet 2
- OVERLAP "D".....NOT USED

4 SECTION FYA PPLT SIGNAL WIRING DETAIL (wire signal heads as shown)



51

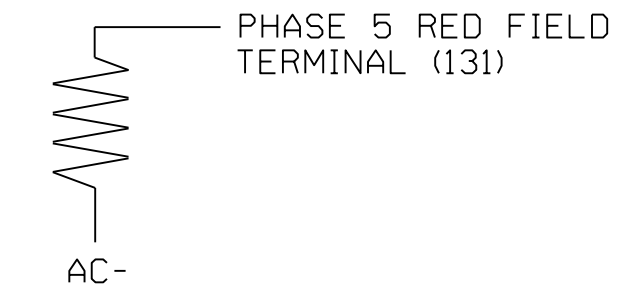
INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|-----------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 2A/S15 | TB2-5,6 | I2U | 39 | 2 | 2 | YES | | | X | N |
| 2B/S16 | TB2-7,8 | I2L | 43 | 12 | 2 | YES | | | X | N |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | 3 | | N |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | | | N |
| 5A ¹ | TB3-1,2 | J1U | 55 | 5 | 5 | YES | | 15 | | N |
| | - | I4U | 47 | 22 | 2 | YES | | 3 | | G |
| 6A/S13 | TB3-5,6 | J2U | 40 | 6 | 6 | YES | | | X | N |
| 6B/S14 | TB3-7,8 | J2L | 44 | 16 | 6 | YES | | | X | N |
| 5B | TB3-9,10 | J3U | 64 | 36 | 5 | YES | | 15 | | N |

¹Add jumper from J1-W to I4-W, on rear of input file.
 If present, remove jumpers from TB3-9 to TB3-11, and from TB3-10 to TB3-12.

LOAD RESISTOR INSTALLATION DETAIL (install resistors as shown below)

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0951
 DESIGNED: November 2012
 SEALED: 2-22-13
 REVISED: 05/14/2020

SEPI
 Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
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 Fax:919.789.9591
 License: C-2197

Revision Seal

ELECTRICAL DETAIL SHEET 1 OF 2
 ELECTRICAL AND PROGRAMMING DETAILS FOR: US 701 (James B. White Highway) at SR 1429 (Slippery Log Road)
 Prepared In the Offices of:

 Division 06 Columbus County Whiteville
 PLAN DATE: 2-19-13 REVIEWED BY:
 PREPARED BY: D.H. Spaulding REVIEWED BY:
 REVISIONS: CONTROLLED TO ASC/3 MBC 05/14/20
 INIT. DATE
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0951

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▽ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: .....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING
    
```

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0951
 DESIGNED: November 2012
 SEALED: 2-22-13
 REVISED: 05/14/2020

ELECTRICAL DETAIL SHEET 2 OF 2

SEPI
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Revision Seal

SIGNATURE _____ DATE _____

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 701 (James B. White Highway)
at
SR 1429 (Slippery Log Road)

Division 06 Columbus County Whiteville

| | | |
|-------------------------------|--------------|----------|
| PLAN DATE: 2-19-13 | REVIEWED BY: | |
| PREPARED BY: D.H. Spaulding | REVIEWED BY: | |
| REVISIONS | INIT. | DATE |
| ▽ Controller changed to ASC/3 | MBC | 05/14/20 |

SIGNATURE _____ DATE _____

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SIGNATURE _____ DATE _____

SIG. INVENTORY NO. 06-0951

PHASING DIAGRAM

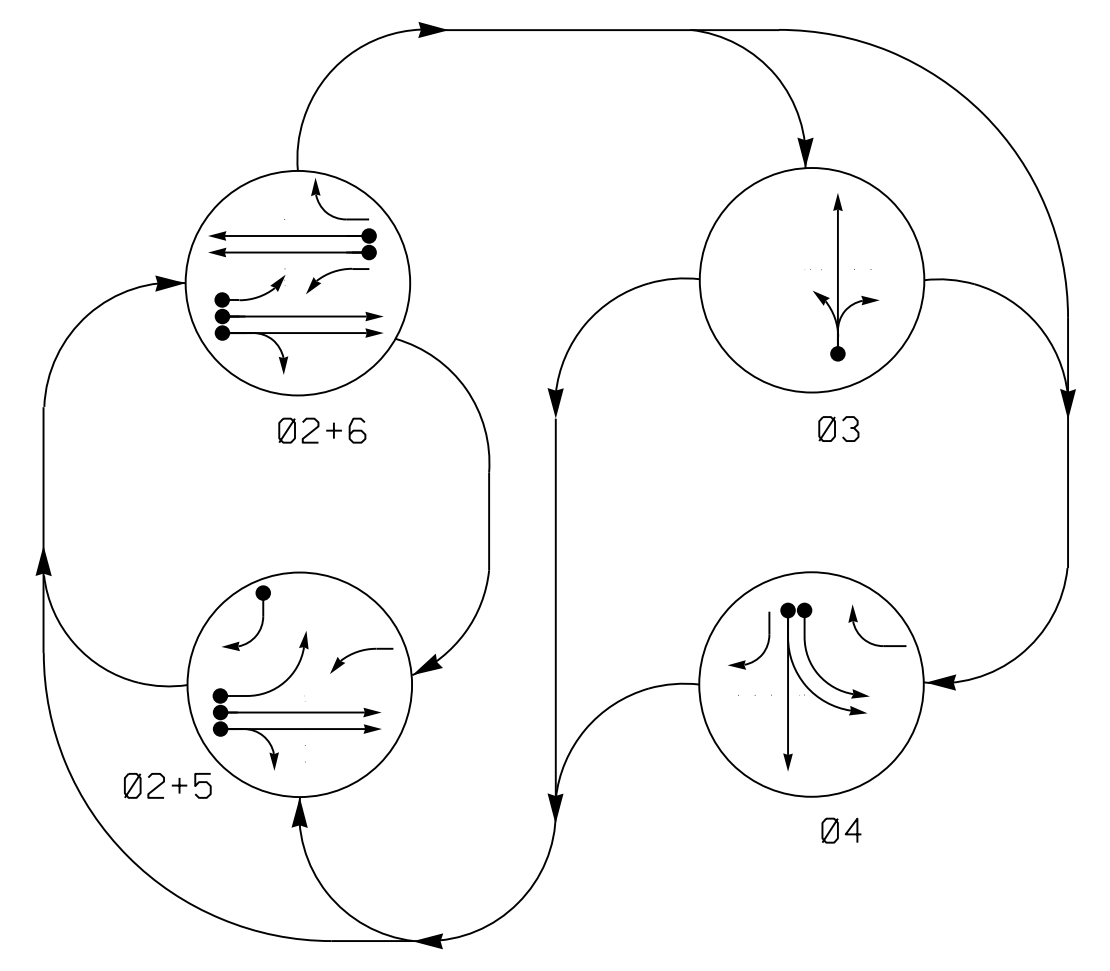


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | |
|-------------|-------|------|----|----|-------|
| | 02+5 | 02+6 | 03 | 04 | FLASH |
| 21,22 | G | G | R | R | Y |
| 31 | R | R | G | R | R |
| 32 | R | R | G | R | R |
| 41 | R | R | R | G | R |
| 42 | R | R | R | G | R |
| 51 | F | F | R | R | Y |
| 61 | F | F | R | R | Y |
| 62 | R | G | R | R | Y |
| 63 | R | G | R | R | Y |

ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | |
|-------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | SYSTEM LOOP | NEW CARD |
| 2A,2B | 6X6 | 300 | EXIST | - | 2 | Yes | - | - | X | N | - |
| 3A | 6X12 | 0 | 2-4-2 | - | 3 | Yes | - | 10 | - | N | - |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | 3 | - | N | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - |
| 5A | 6X60 | 0 | 2-4-2 | - | 5 | Yes | - | 15 | - | N | - |
| 5B | 6X60 | 0 | 2-4-2 | - | 5 | Yes | - | 15 | - | N | - |
| 6A,6B | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | - |

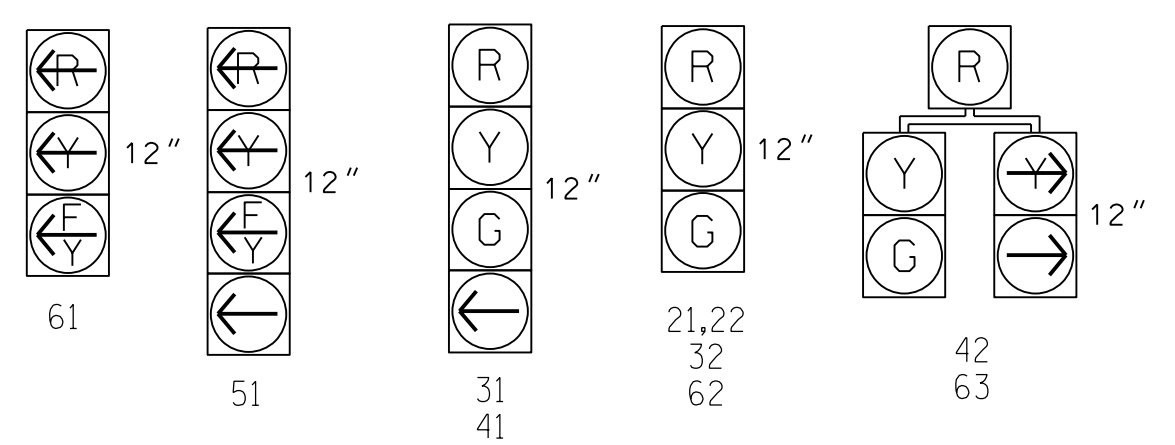
4 Phase Fully Actuated System #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Disable Backup Protect for phase 2+6.
- Phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

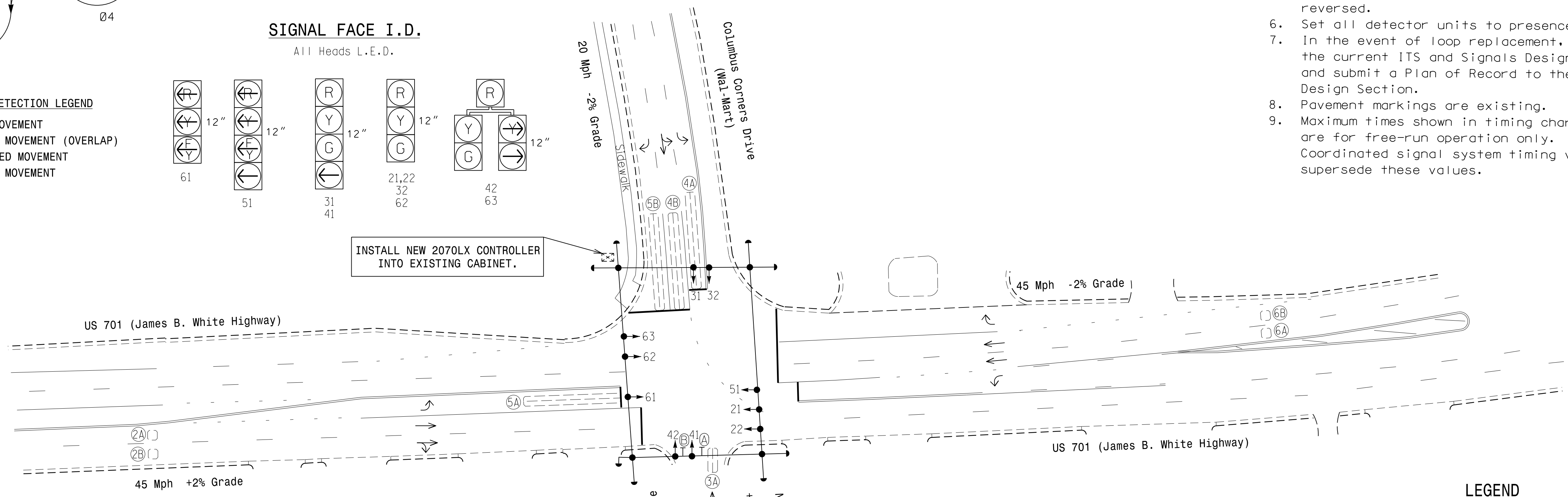
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT



SIGNAL FACE I.D.

All Heads L.E.D.

INSTALL NEW 2070LX CONTROLLER INTO EXISTING CABINET.

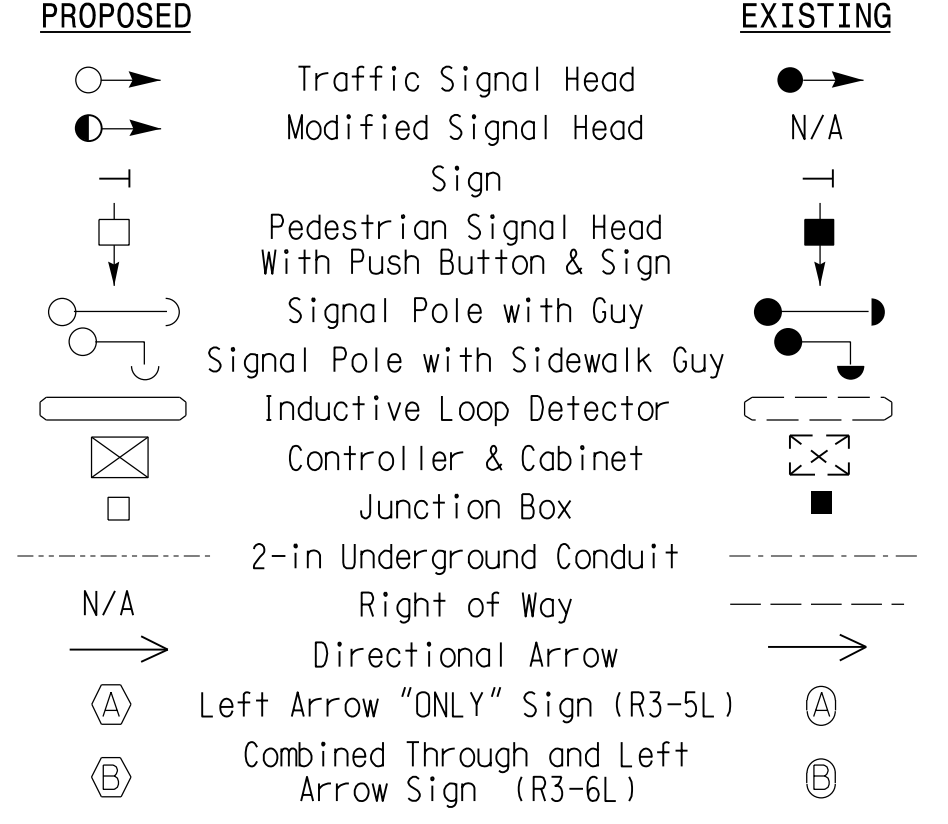


ASC/3 TIMING CHART

| FEATURE | PHASE | | | | |
|-------------------------|-------------|-----|-----|-----|-------------|
| | 2 | 3 | 4 | 5 | 6 |
| Min Green * | 12 | 7 | 7 | 7 | 12 |
| Walk * | - | - | - | - | - |
| Ped Clear | - | - | - | - | - |
| Veh. Extension * | 6.0 | 3.0 | 1.0 | 1.0 | 6.0 |
| Max I * | 90 | 15 | 20 | 15 | 90 |
| Yellow | 4.7 | 3.0 | 3.0 | 3.0 | 4.7 |
| Red Clear | 1.5 | 2.8 | 2.9 | 2.8 | 1.5 |
| Actuations B4 Add * | 0 | - | - | - | 0 |
| Seconds / Actuation * | 2.0 | - | - | - | 2.0 |
| Max Initial * | 34 | - | - | - | 34 |
| Time Before Reduction * | 15 | - | - | - | 15 |
| Time To Reduce * | 30 | - | - | - | 30 |
| Minimum Gap | 3.0 | - | - | - | 3.0 |
| Locking Detector | X | - | - | - | X |
| Recall Position | VEH. RECALL | - | - | - | VEH. RECALL |
| Dual Entry | - | - | - | - | - |
| Simultaneous Gap | X | X | X | X | X |

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

LEGEND



Signal Revision

Revision Seal
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 14543
 C. G. MURPHY, JR.

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

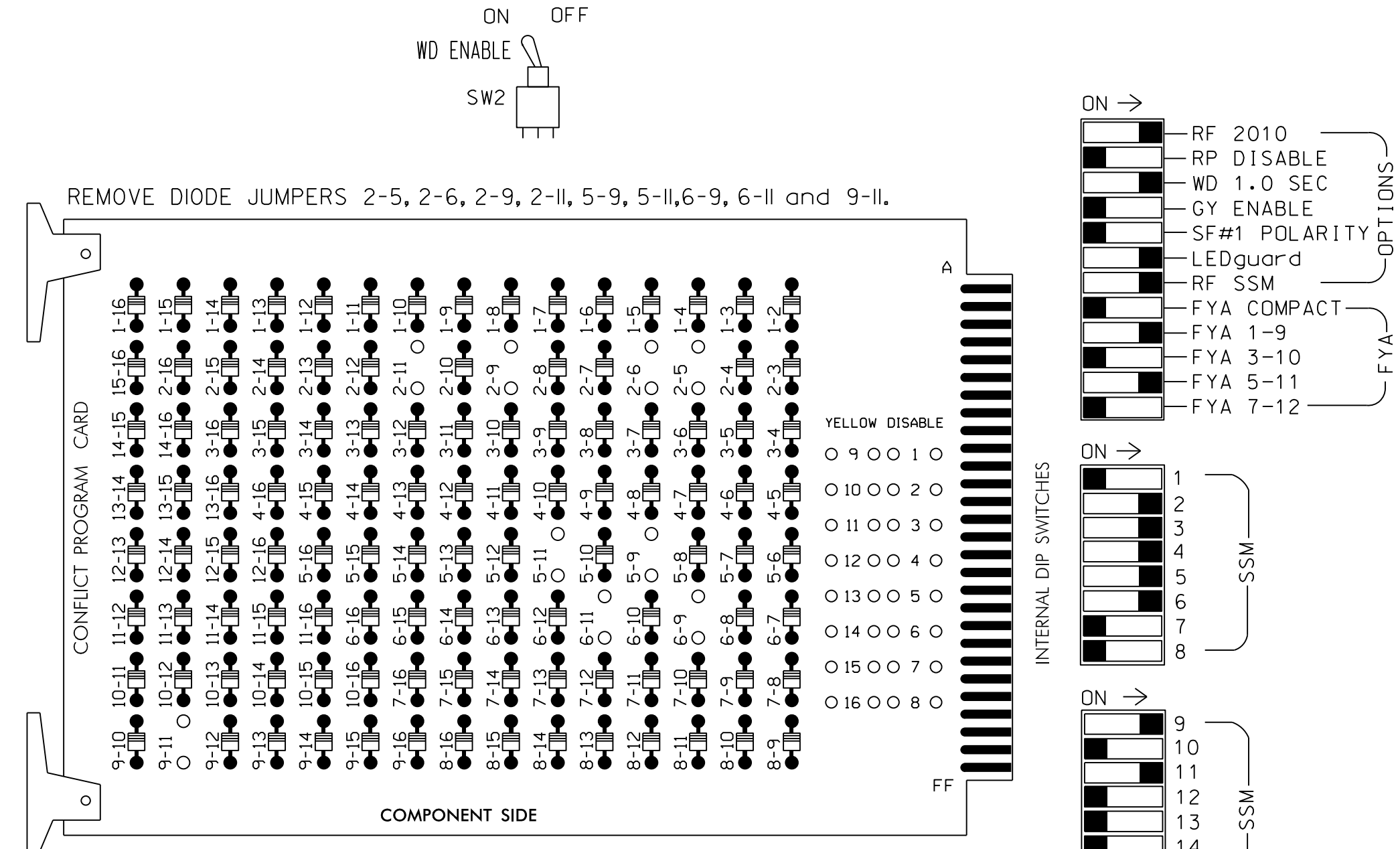
US 701 (James B. White Highway) at Columbus Corners Drive
 Division 6 Columbus County Whiteville
 PLAN DATE: November 2012 REVIEWED BY:
 PREPARED BY: Jeff Spence REVIEWED BY:
 REVISIONS: Controller changed to ASC/3
 INIT. DATE: GGM 05/14/20

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 SIGNATURE DATE
 SIG. INVENTORY NO. 06-1251

SEPI Engineering & Construction, Inc.
 1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



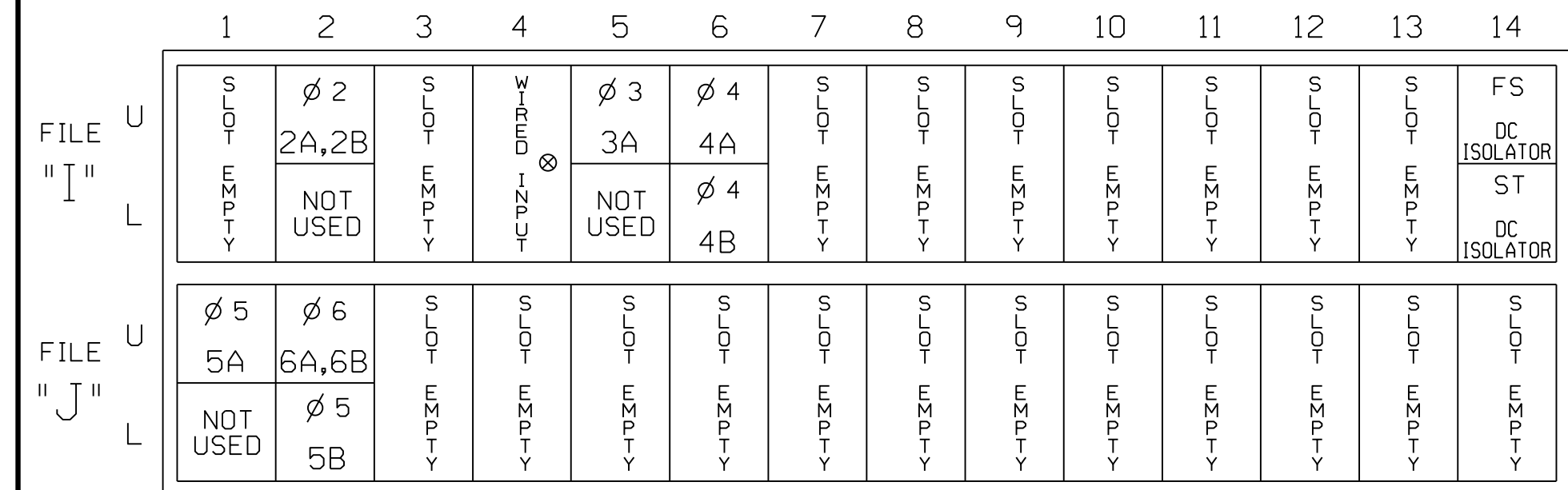
NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

REMOVE JUMPERS AS SHOWN

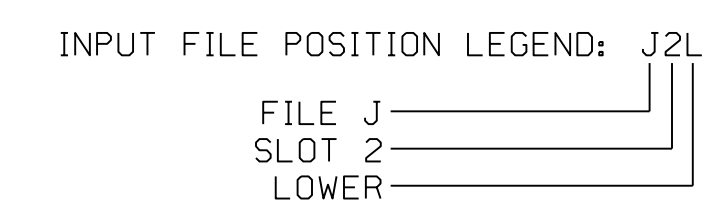
INPUT FILE POSITION LAYOUT

(front view)



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

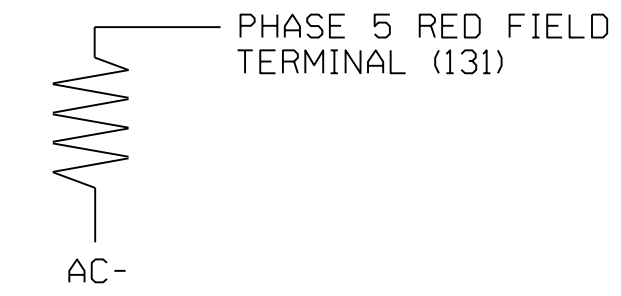
⊗ Wired Input - Do not populate slot with detector card



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



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 controller to start up in phase 2 Green and 6 Green.
3. The cabinet and controller are part of the Signal System # 10605.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070LX
 CABINET.....EXISTING McCAIN 332 /W/ AUX
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S3,S4,S5,S6,S9,S12.
 PHASES USED.....2,3,4,5,6.
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

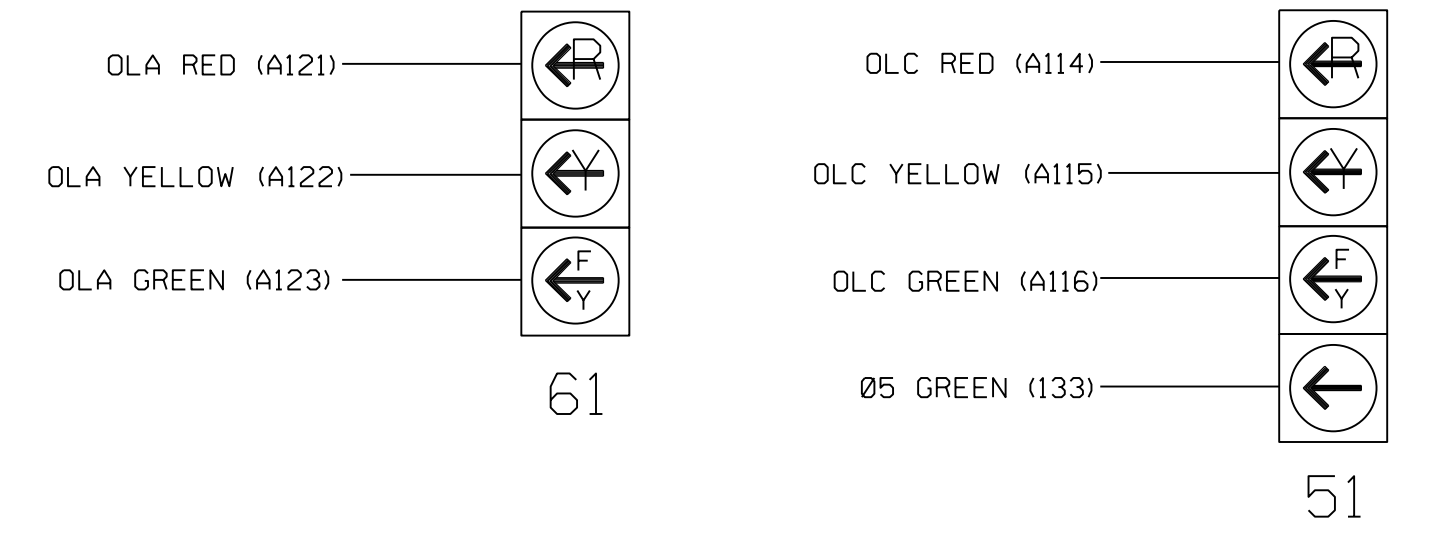
SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|-----------------------|----|-------|-------|---------|---------|-------|-------|-------|-------|----|----|-------|-----|-----|-------|------|-----|-------|
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | DLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | 31 32 | 41 42 | 63 | 51 42 | 62,63 | NU | NU | NU | NU | 61 | NU | NU | 51 | NU | NU |
| RED | | 128 | | 116 116 | 101 101 | | * | 134 | | | | | | | | | | |
| YELLOW | | 129 | | 117 117 | 102 102 | | | 135 | | | | | | | | | | |
| GREEN | | 130 | | 118 118 | 103 103 | | | 136 | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | | A121 | | A114 |
| YELLOW ARROW | | | | | | 102 | | 132 | | | | | | | | A122 | | A115 |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | | A123 | | A116 |
| GREEN ARROW | | | | 118 | 103 | 103 | 133 | 133 | | | | | | | | | | |

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



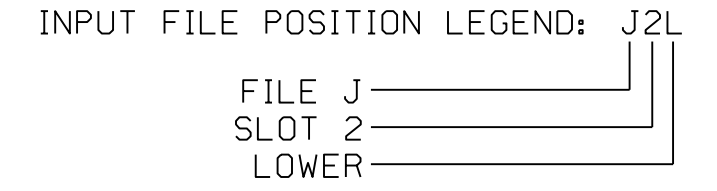
NOTE

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

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|-----------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 2A,2B | TB2-5,6 | I2U | 39 | 2 | 2 | YES | | | X | N |
| 3A | TB4-5,6 | I5U | 58 | 3 | 3 | YES | | 10 | | N |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | 3 | | N |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | | | N |
| 5A ¹ | TB3-1,2 | J1U | 55 | 5 | 5 | YES | | 15 | | N |
| | - | I4U | 47 | 22 | 2 | YES | | 3 | | G |
| 6A,6B | TB3-5,6 | J2U | 40 | 6 | 6 | YES | | | X | N |
| 5B | TB3-7,8 | J2L | 44 | 16 | 5 | YES | | 15 | | N |

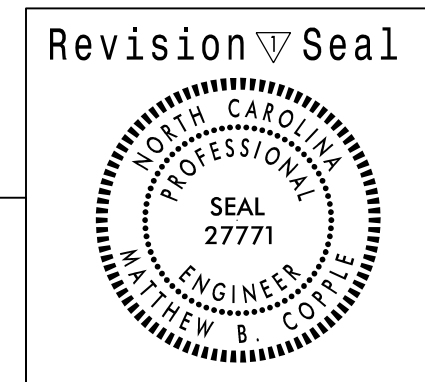
¹Add jumper from J1-W to I4-W, on rear of input file.



If present, remove jumpers from TB3-9 to TB3-11, and from TB3-10 to TB3-12.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1251
 DESIGNED: November 2012
 SEALED: 12-18-12
 REVISED: 05/14/2020

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 License: C-2197



ELECTRICAL DETAIL SHEET 1 OF 2

US 701 (James B. White Highway) at Columbus Corners Drive

Division 06 Columbus County Whiteville

PLAN DATE: 12-06-12 REVIEWED BY:

PREPARED BY: D. H. Spaulding REVIEWED BY:

REVISIONS: CONTROLLER CHANGED TO ASC/3 MBC 05/14/20

SIGNATURE DATE

SIG. INVENTORY NO. 06-1251

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▽ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

```

OVERLAP A
Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'
TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE
  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

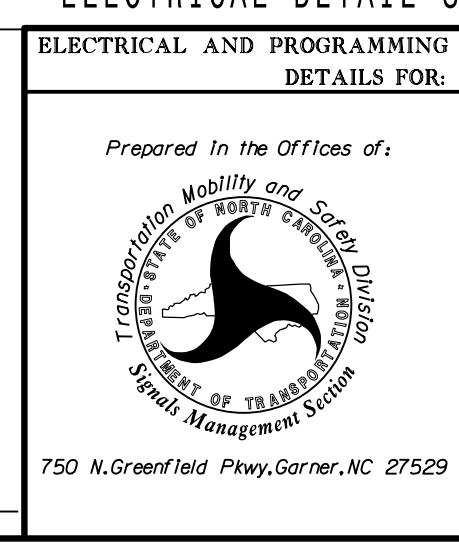
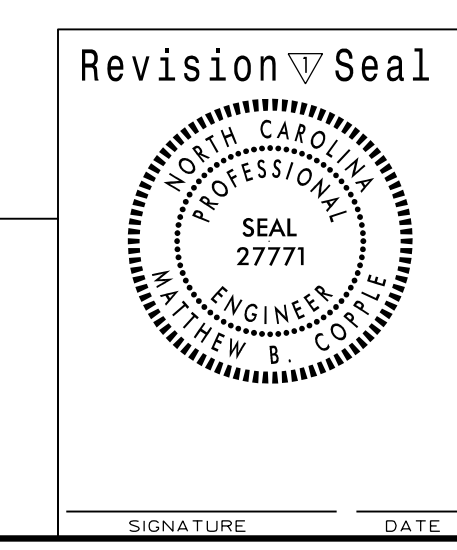
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
Toggle Twice
OVERLAP C
Select TMG VEH OVLP [C] and 'PPLT FYA'
TMG VEH OVLP...[C] TYPE: . . . . .PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
END PROGRAMMING
  
```

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-1251
DESIGNED: November 2012
SEALED: 12-18-12
REVISED: 05/14/2020

ELECTRICAL DETAIL SHEET 2 OF 2

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



| | | | |
|--|--------------|---|------|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: | | US 701 (James B. White Highway) at Columbus Corners Drive | |
| Division 06 | | Columbus County Whiteville | |
| PLAN DATE: 12-06-12 | REVIEWED BY: | | |
| PREPARED BY: D. H. Spaulding | REVIEWED BY: | | |
| REVISIONS | INIT. | DATE | |
| ▽ Controller changed to ASC/3 | MBC | 05/14/20 | |
| SIGNATURE | DATE | SIGNATURE | DATE |
| | | | |

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SIGNATURE DATE
SIG. INVENTORY NO. 06-1251

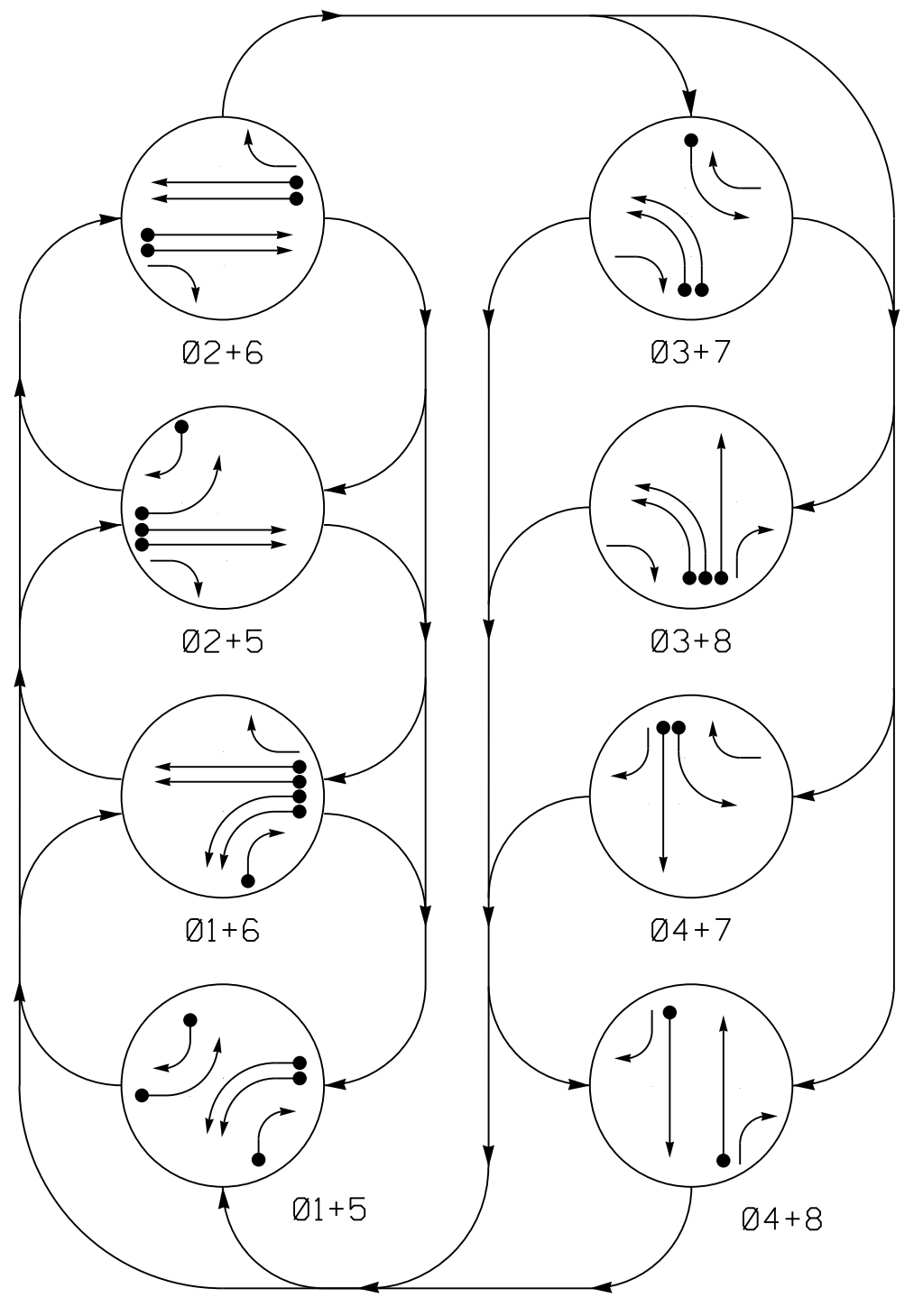
1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

8 Phase Fully Actuated System #10605

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.

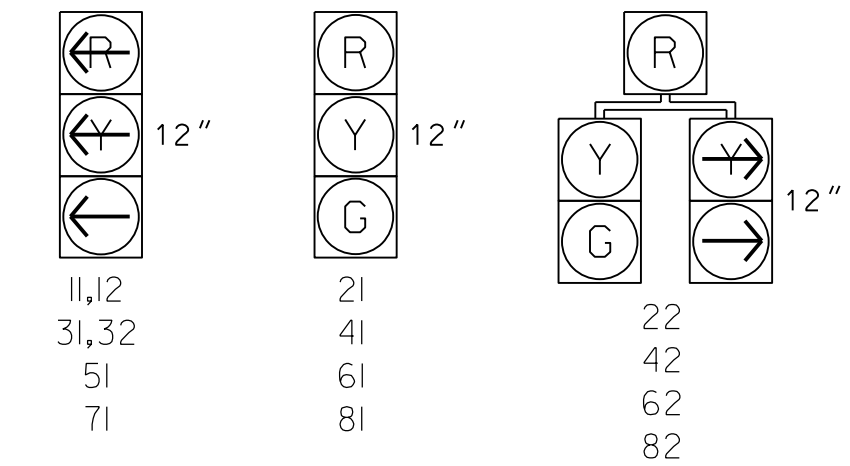
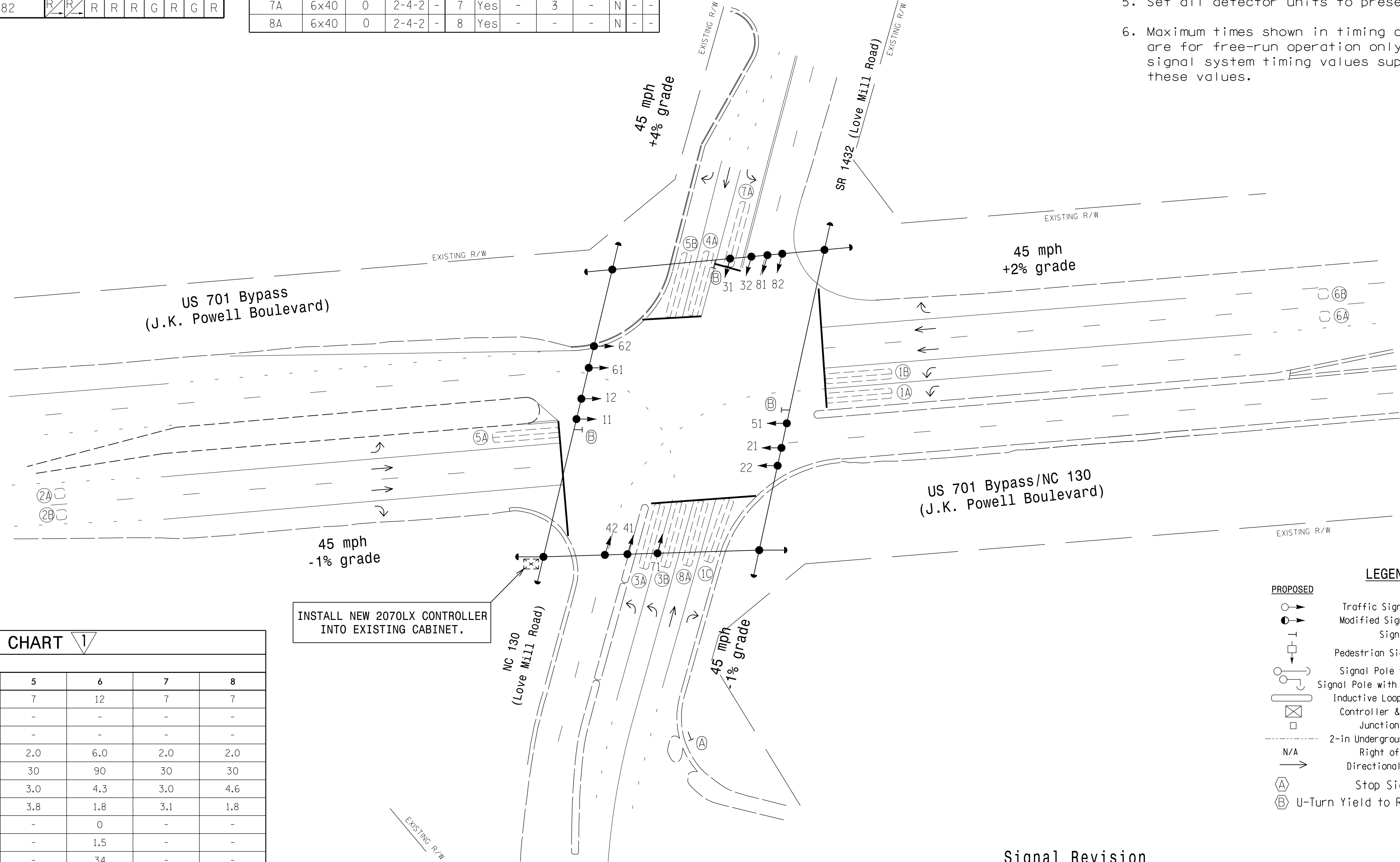


TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | |
|-------------|-------|------|------|------|------|------|------|------|
| | 01+5 | 01+6 | 02+5 | 02+6 | 03+7 | 03+8 | 04+7 | 04+8 |
| 11,12 | ← | ← | ← | ← | ← | ← | ← | ← |
| 21 | R | R | G | G | R | R | R | Y |
| 22 | R | R | G | G | R | R | R | Y |
| 31,32 | ← | ← | ← | ← | ← | ← | ← | ← |
| 41 | R | R | R | R | R | R | G | G |
| 42 | R | R | R | R | R | R | G | G |
| 51 | ← | ← | ← | ← | ← | ← | ← | ← |
| 61 | R | G | R | G | R | R | R | Y |
| 62 | R | G | R | G | R | R | R | Y |
| 71 | ← | ← | ← | ← | ← | ← | ← | ← |
| 81 | R | R | R | R | R | G | R | G |
| 82 | R | R | R | R | R | G | R | G |

ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP |
| 1A | 6x40 | 0 | 2-4-2 | - | 1 | Yes | - | - | - | N | - |
| 1B | 6x40 | 0 | 2-4-2 | - | 1 | Yes | - | - | - | N | - |
| 1C | 6x40 | 0 | 2-4-2 | - | 1 | Yes | - | 15 | - | N | - |
| 2A | 6x6 | 300 | EXIST | - | 2 | Yes | - | - | X | N | - |
| 2B | 6x6 | 300 | EXIST | - | 2 | Yes | - | - | X | N | - |
| 3A | 6x40 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - |
| 3B | 6x40 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - |
| 4A | 6x40 | 0 | 2-4-2 | - | 4 | Yes | - | - | - | N | - |
| 5A | 6x40 | 0 | 2-4-2 | - | 5 | Yes | - | - | - | N | - |
| 5B | 6x40 | 0 | 2-4-2 | - | 5 | Yes | - | 15 | - | N | - |
| 6A | 6x6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | - |
| 6B | 6x6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | - |
| 7A | 6x40 | 0 | 2-4-2 | - | 7 | Yes | - | 3 | - | N | - |
| 8A | 6x40 | 0 | 2-4-2 | - | 8 | Yes | - | - | - | N | - |



INSTALL NEW 2070LX CONTROLLER INTO EXISTING CABINET.

ASC/3 TIMING CHART

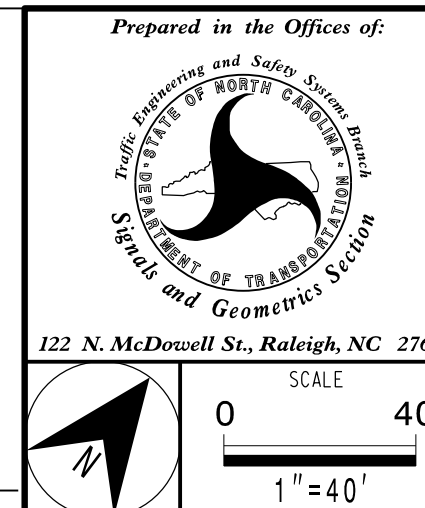
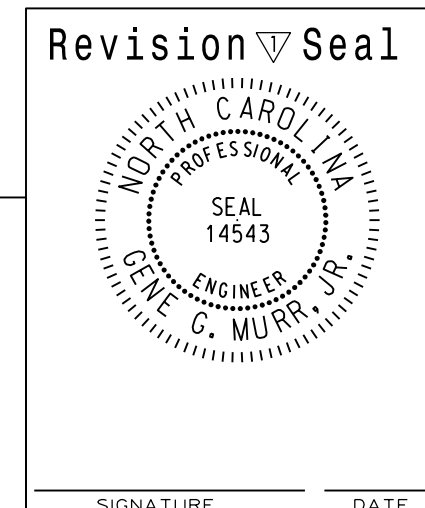
| | PHASE | | | | | | | |
|-------------------------|-------|-------------|-----|-----|-----|-------------|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Min Green * | 7 | 12 | 7 | 7 | 7 | 12 | 7 | 7 |
| Walk * | - | - | - | - | - | - | - | - |
| Ped Clear | - | - | - | - | - | - | - | - |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 2.0 | 6.0 | 2.0 | 2.0 |
| Max 1 * | 30 | 90 | 30 | 30 | 30 | 90 | 30 | 30 |
| Yellow | 3.0 | 4.6 | 3.0 | 4.3 | 3.0 | 4.3 | 3.0 | 4.6 |
| Red Clear | 4.0 | 1.8 | 3.2 | 1.7 | 3.8 | 1.8 | 3.1 | 1.8 |
| Actuations B4 Add * | - | 0 | - | - | - | 0 | - | - |
| Seconds / Actuation * | - | 1.5 | - | - | - | 1.5 | - | - |
| Max Initial * | - | 34 | - | - | - | 34 | - | - |
| Time Before Reduction * | - | 15 | - | - | - | 15 | - | - |
| Time To Reduce * | - | 30 | - | - | - | 30 | - | - |
| Minimum Gap | - | 3.0 | - | - | - | 3.0 | - | - |
| Locking Detector | - | X | - | - | - | X | - | - |
| Recall Position | - | VEH. RECALL | - | - | - | VEH. RECALL | - | - |
| Dual Entry | - | - | - | - | - | - | - | - |
| Simultaneous Gap | X | X | X | X | X | X | X | X |

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

LEGEND

- PROPOSED Traffic Signal Head
- EXISTING Modified Signal Head
- PROPOSED Pedestrian Signal Head
- EXISTING Signal Pole with Guy
- PROPOSED Signal Pole with Sidewalk Guy
- EXISTING Inductive Loop Detector
- PROPOSED Controller & Cabinet
- EXISTING Junction Box
- PROPOSED 2-in Underground Conduit
- EXISTING Right of Way
- PROPOSED Directional Arrow
- EXISTING Directional Arrow
- PROPOSED Stop Sign (R1-1)
- EXISTING U-Turn Yield to Right Turn (R10-16)

Signal Revision



US 701 Bypass and US 701 Business at NC 130 and SR 1432 (Love Mill Road)

Division 6 Columbus County Whiteville

PLAN DATE: June 2008 REVISIONS: Controller changed to ASC/3

PREPARED BY: BK Scott REVIEWED BY: MR Cooney

INIT. DATE: GGM 05/14/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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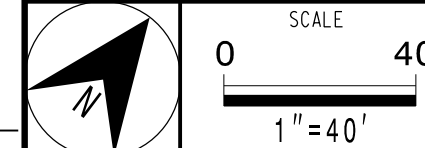
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SIGNATURE DATE

SIG. INVENTORY NO. 06-0257

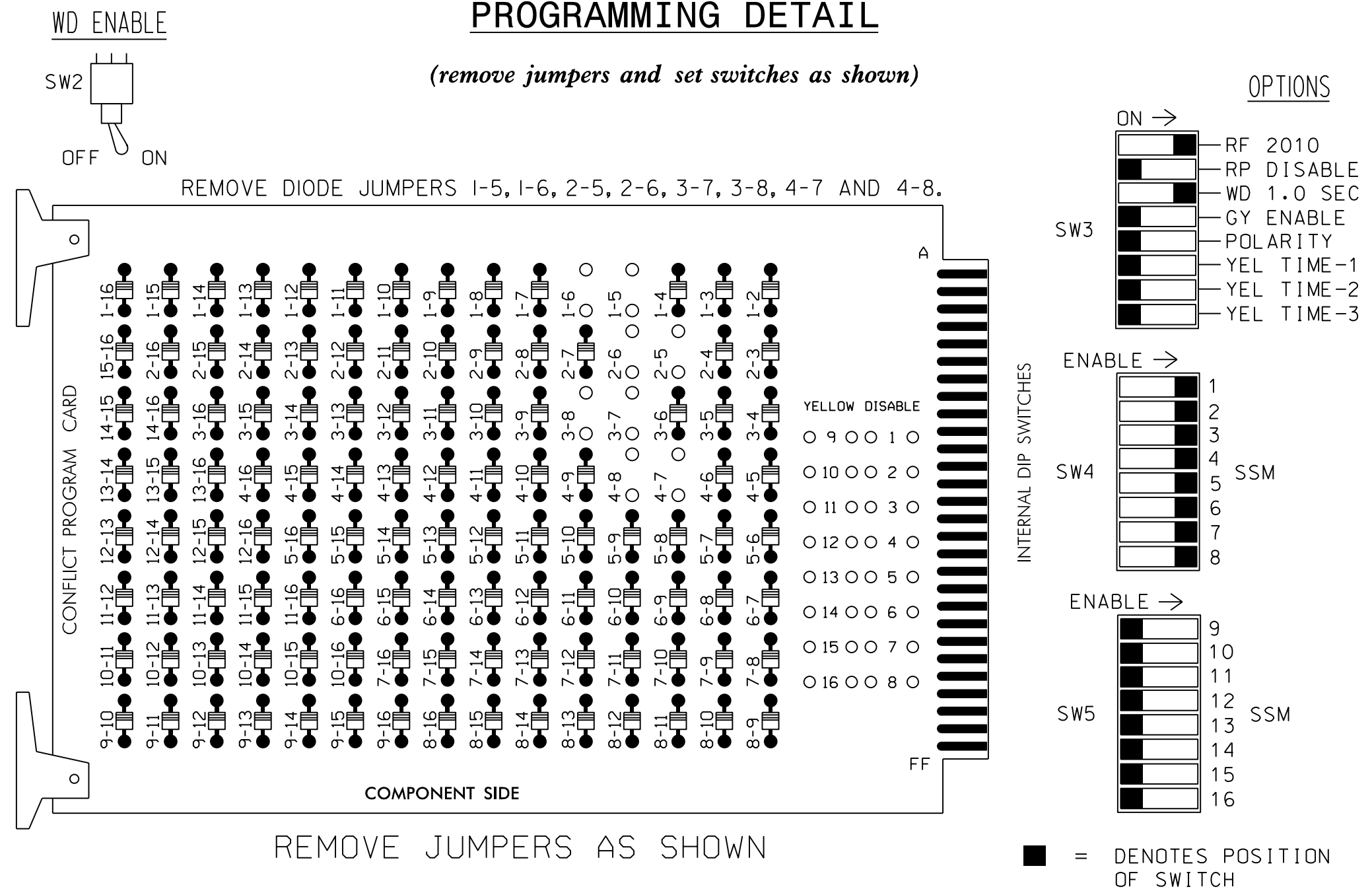
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Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197



EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



NOTES:

- CARD IS PROVIDED WITH ALL DIODE JUMPERS IN PLACE. REMOVAL OF ANY JUMPER ALLOWS ITS CHANNELS TO RUN CONCURRENTLY.
- MAKE SURE JUMPERS SEL2-SEL5 ARE PRESENT ON THE MONITOR BOARD.

FIELD CONNECTION HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 |
|-----------------|-------|-----|-------|-----|-------|-------|-------|-----|-------|-----|-------|-------|-----|-----|-------|-----|-----|-------|
| 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. | 11,12 | 82 | 21,22 | NU | 31,32 | 22 | 41,42 | NU | 51 | 42 | 61,62 | NU | 71 | 62 | 81,82 | NU | NU | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | | | | | | | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | 125 | | | 116 | | | 131 | | | 122 | | | | | | | | |
| YELLOW ARROW | 126 | 126 | | 117 | 117 | | 132 | 132 | | 123 | 123 | | | | | | | |
| GREEN ARROW | 127 | 127 | | 118 | 118 | | 133 | 133 | | 124 | 124 | | | | | | | |
| Hand icon | | | | | | | | | | | | | | | | | | |
| Person icon | | | | | | | | | | | | | | | | | | |

NU = NOT USED

EQUIPMENT INFORMATION

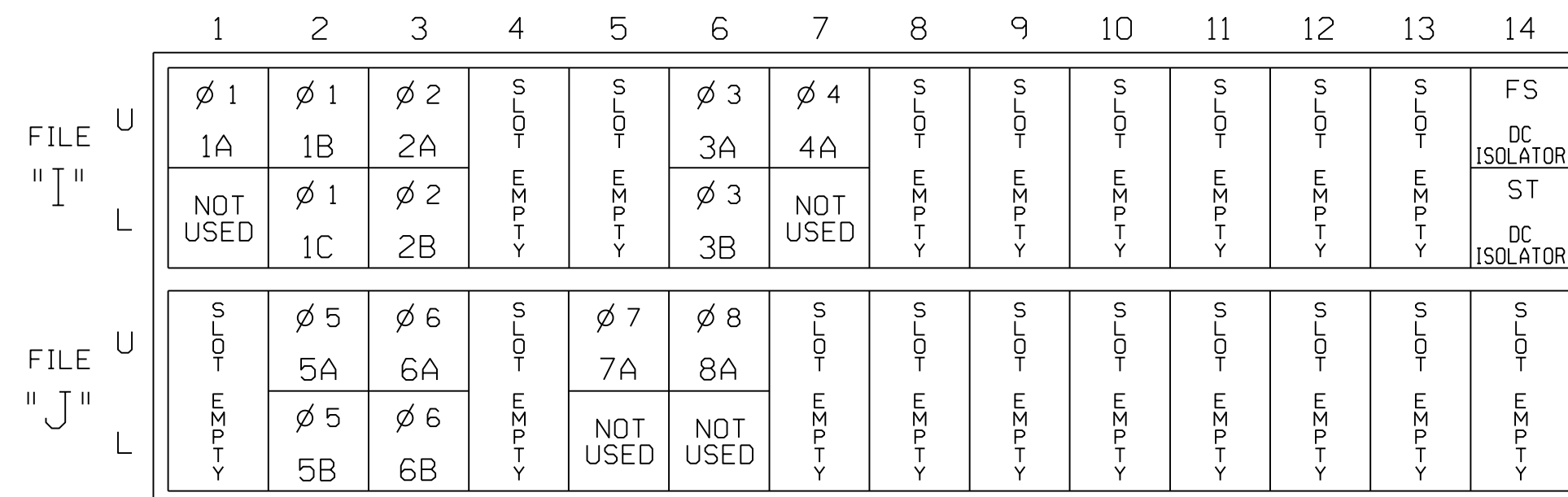
- CONTROLLER.....CONTRACTOR SUPPLIED 2070LX CABINETEXISTING EAGLE 332 w/ AUX
- SOFTWAREECONOLITE ASC/3-2070 CABINET MOUNT.....BASE
- OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
- LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
- PHASES USED.....1,2,3,4,5,6,7,8
- OVERLAPS.....NONE

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Signal System # 10605.

INPUT FILE POSITION LAYOUT

(front view)



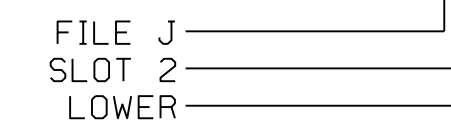
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|----------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 1A | TB2-1,2 | 11U | 56 | 1 | 1 | YES | | | | N |
| 1B | TB2-5,6 | 12U | 39 | 2 | 1 | YES | | | | N |
| 1C | TB2-7,8 | 12L | 43 | 12 | 1 | YES | | 15 | | N |
| 2A | TB2-9,10 | 13U | 63 | 32 | 2 | YES | | | X | N |
| 2B | TB2-11,12 | 13L | 76 | 42 | 2 | YES | | | X | N |
| 3A | TB4-9,10 | 16U | 41 | 4 | 3 | YES | | | | N |
| 3B | TB4-11,12 | 16L | 45 | 14 | 3 | YES | | | | N |
| 4A | TB6-1,2 | 17U | 65 | 34 | 4 | YES | | | | N |
| 5A | TB3-5,6 | J2U | 40 | 6 | 5 | YES | | | | N |
| 5B | TB3-7,8 | J2L | 44 | 16 | 5 | YES | | 15 | | N |
| 6A | TB3-9,10 | J3U | 64 | 36 | 6 | YES | | | X | N |
| 6B | TB3-11,12 | J3L | 77 | 46 | 6 | YES | | | X | N |
| 7A | TB5-5,6 | J5U | 57 | 7 | 7 | YES | | 3 | | N |
| 8A | TB5-9,10 | J6U | 42 | 8 | 8 | YES | | | | N |

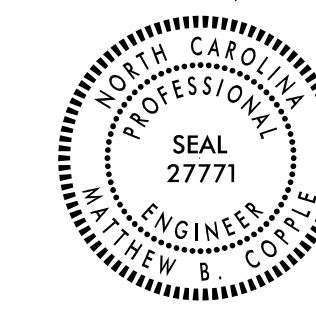
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0257
DESIGNED: June 2008
SEALED: June 13, 2008
REVISED: 05/14/202

Electrical Detail

Revision Seal



SEPI
Engineering & Construction, Inc.

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This document shall not be considered a certified document.

US 701 BYPASS and US 701 BUSINESS at NC 130 and SR 1432 (LOVE MILL ROAD)

DIVISION 06 COLUMBUS COUNTY WHITEVILLE

PLAN DATE: June 2008 REVIEWED BY: MR Cooney

PREPARED BY: LM Moon REVIEWED BY:

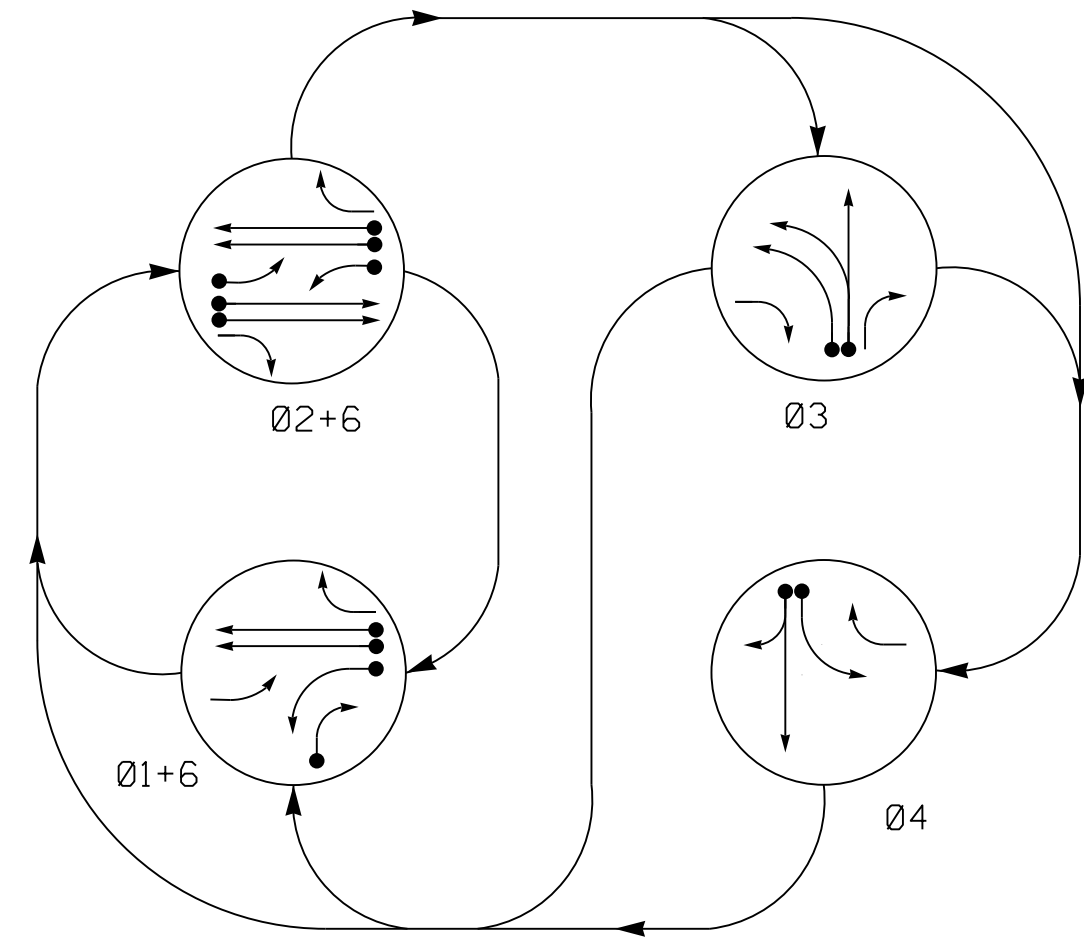
REVISIONS INIT. DATE

Controller changed to ASC/3... MBC 05/14/20

SIGNATURE DATE

SIG. INVENTORY NO. 06-0257

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

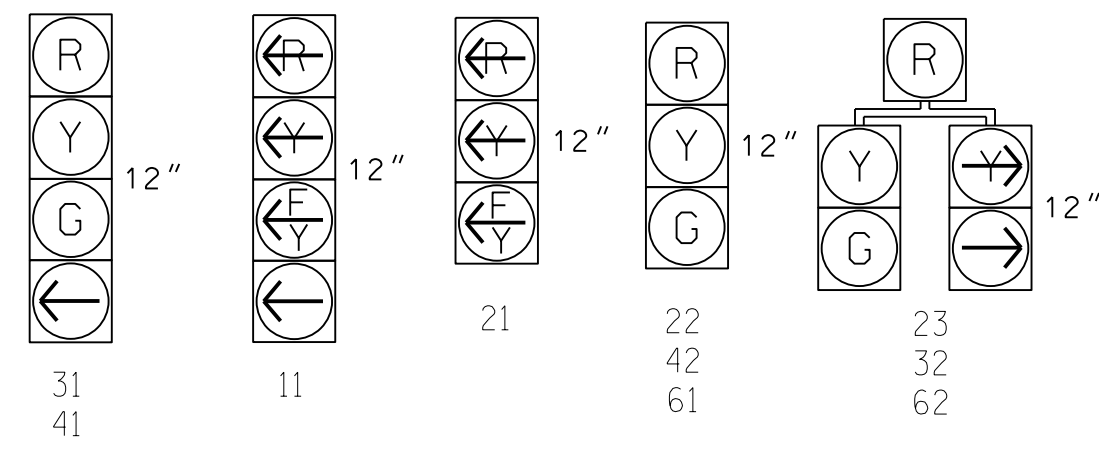
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ⇄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | FL |
|-------------|-------|-------|-----|-----|----|
| | Ø 1+6 | Ø 2+6 | Ø 3 | Ø 4 | |
| 11 | ← | ← | ← | ← | ← |
| 21 | ← | ← | ← | ← | ← |
| 22 | R | G | R | R | Y |
| 23 | R | G | R | R | Y |
| 31 | R | R | G | R | R |
| 32 | R | R | G | R | R |
| 41 | R | R | R | G | R |
| 42 | R | R | R | G | R |
| 61 | G | G | R | R | Y |
| 62 | G | G | R | R | Y |

SIGNAL FACE I.D.

All Heads L.E.D.



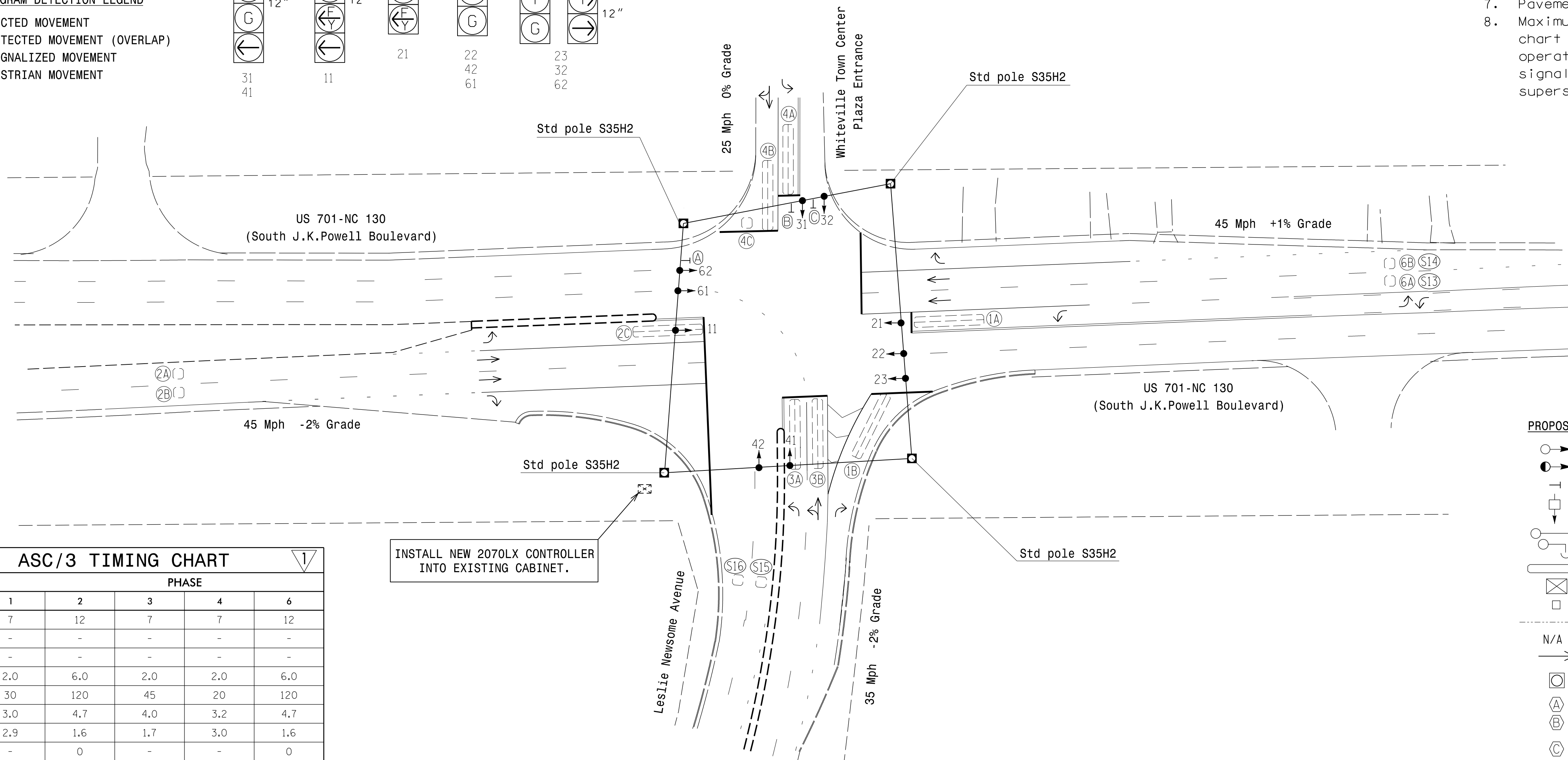
ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | | |
|--------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 1A | 6x40 | 0 | 2-4-2 | - | 1 | Yes | - | 15 | - | N | - | - |
| 1B | 6x40 | 0 | 2-4-2 | - | 6 | Yes | - | 3 | - | G | - | - |
| 2A | 6x6 | 300 | EXIST | - | 1 | Yes | - | 15 | - | N | - | - |
| 2B | 6x6 | 300 | EXIST | - | 2 | Yes | - | - | - | X | N | - |
| 2C | 6x40 | 0 | 2-4-2 | - | 2 | Yes | - | 3 | - | N | - | - |
| 3A | 6x40 | 0 | 2-4-2 | - | 3 | Yes | - | 3 | - | N | - | - |
| 3B | 6x40 | 0 | 2-4-2 | - | 3 | Yes | - | - | - | N | - | - |
| 4A | 6x40 | 0 | 2-4-2 | - | 4 | Yes | - | 2 | - | N | - | - |
| 4B | 6x40 | 0 | 2-4-2 | - | 4 | Yes | - | 5 | - | N | - | - |
| 4C | 6x6 | 0 | EXIST | - | 4 | Yes | - | 15 | - | N | - | - |
| 6A/S13 | 6x6 | 300 | EXIST | - | 6 | Yes | - | - | - | X | N | X |
| 6B/S14 | 6x6 | 300 | EXIST | - | 6 | Yes | - | - | - | X | N | X |
| S15 | 6x6 | +190 | EXIST | - | - | - | - | - | - | N | X | - |
| S16 | 6x6 | +190 | EXIST | - | - | - | - | - | - | N | X | - |

4 Phase Fully Actuated System #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Disable Backup Protect for phase 6.
- Phase 1 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | |
|-------------------------|-------|-------------|-----|-----|-------------|
| | 1 | 2 | 3 | 4 | 6 |
| Min Green * | 7 | 12 | 7 | 7 | 12 |
| Walk * | - | - | - | - | - |
| Ped Clear | - | - | - | - | - |
| Veh. Extension * | 2.0 | 6.0 | 2.0 | 2.0 | 6.0 |
| Max 1 * | 30 | 120 | 45 | 20 | 120 |
| Yellow | 3.0 | 4.7 | 4.0 | 3.2 | 4.7 |
| Red Clear | 2.9 | 1.6 | 1.7 | 3.0 | 1.6 |
| Actuations B4 Add * | - | 0 | - | - | 0 |
| Seconds / Actuation * | - | 1.5 | - | - | 1.5 |
| Max Initial * | - | 34 | - | - | 34 |
| Time Before Reduction * | - | 15 | - | - | 15 |
| Time To Reduce * | - | 30 | - | - | 30 |
| Minimum Gap | - | 3.2 | - | - | 3.2 |
| Locking Detector | - | X | - | - | X |
| Recall Position | - | VEH. RECALL | - | - | VEH. RECALL |
| Dual Entry | - | - | - | - | - |
| Simultaneous Gap | X | X | X | X | X |

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

INSTALL NEW 2070LX CONTROLLER INTO EXISTING CABINET.

LEGEND

- | PROPOSED | EXISTING |
|--|--|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ○ → Modified Signal Head | ○ → Modified Signal Head |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Pedestrian Signal Head With Push Button & 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 |
| → Right of Way | → Right of Way |
| → Directional Arrow | → Directional Arrow |
| ○ Metal Strain Pole | ○ Metal Strain Pole |
| ⊙ Right Arrow "ONLY" Sign (R3-5R) | ⊙ Right Arrow "ONLY" Sign (R3-5R) |
| ⊙ Left Arrow "ONLY" Sign (R3-5L) | ⊙ Left Arrow "ONLY" Sign (R3-5L) |
| ⊙ Combined Through and Left Arrow Sign (R3-6L) | ⊙ Combined Through and Left Arrow Sign (R3-6L) |

Signal Revision

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Revision Seal

Prepared for:

US 701-NC 130
 (South J.K. Powell Blvd.) at
 Leslie Newsome Ave. /
 Whiteville Town Centre Entrance
 Division 06 Columbus County Whiteville

PLAN DATE: February 2013 REVIEWED BY:
 PREPARED BY: Jeff Spence REVIEWED BY:
 REVISIONS: Controller changed to ASC/3
 SCALE: 1" = 40'

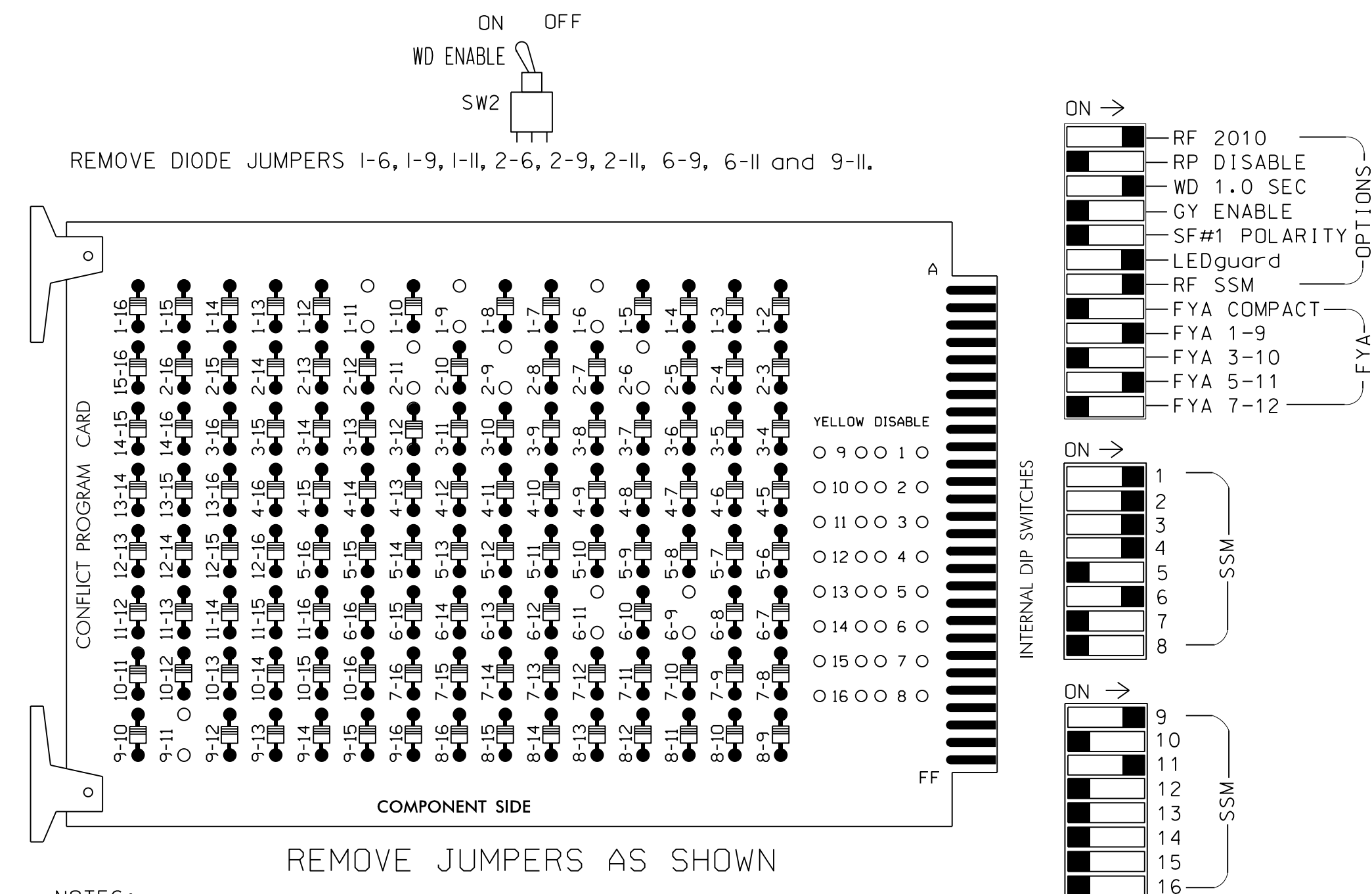
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 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197

EDI MODEL 2010ECL-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.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Signal System # 10605.

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S2P | S3 | S4 | S4P | S5 | S6 | S6P | S7 | S8 | S8P | S9 | S10 | S11 | S12 | S13 | S14 | | | |
|-----------------------|-----|-----|-------|-----|-----|-------|-----|-----|-------|----|----|-------|-----|-----|-------|------|-----|-------|----|------|----|
| 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. | 11 | 32 | 22,23 | 31 | 32 | 23 | 41 | 42 | 62 | NU | NU | 61,62 | NU | NU | NU | 11 | NU | NU | 21 | NU | NU |
| RED | * | 128 | | 116 | 116 | | 101 | 101 | | | | 134 | | | | | | | | | |
| YELLOW | | 129 | | 117 | 117 | | 102 | 102 | | | | 135 | | | | | | | | | |
| GREEN | | 130 | | 118 | 118 | | 103 | 103 | | | | 136 | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | | A121 | | | | A114 | |
| YELLOW ARROW | | 126 | | | | | 117 | | 102 | | | | | | | A122 | | | | A115 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | | A123 | | | | A116 | |
| GREEN ARROW | 127 | 127 | | 118 | 118 | 103 | 103 | | | | | | | | | | | | | | |

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

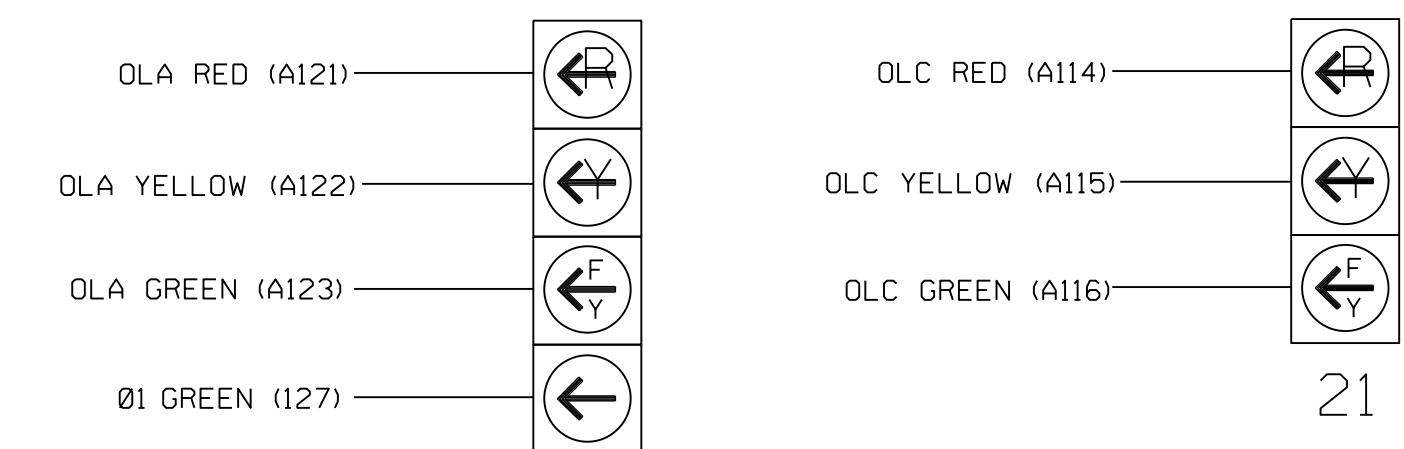
EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070LX
 CABINET.....EXISTING EAGLE 332 /W/ AUX
 SOFTWARE.....EXISTING ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S6,S9,S12.
 PHASES USED.....1,2,3,4,6.
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

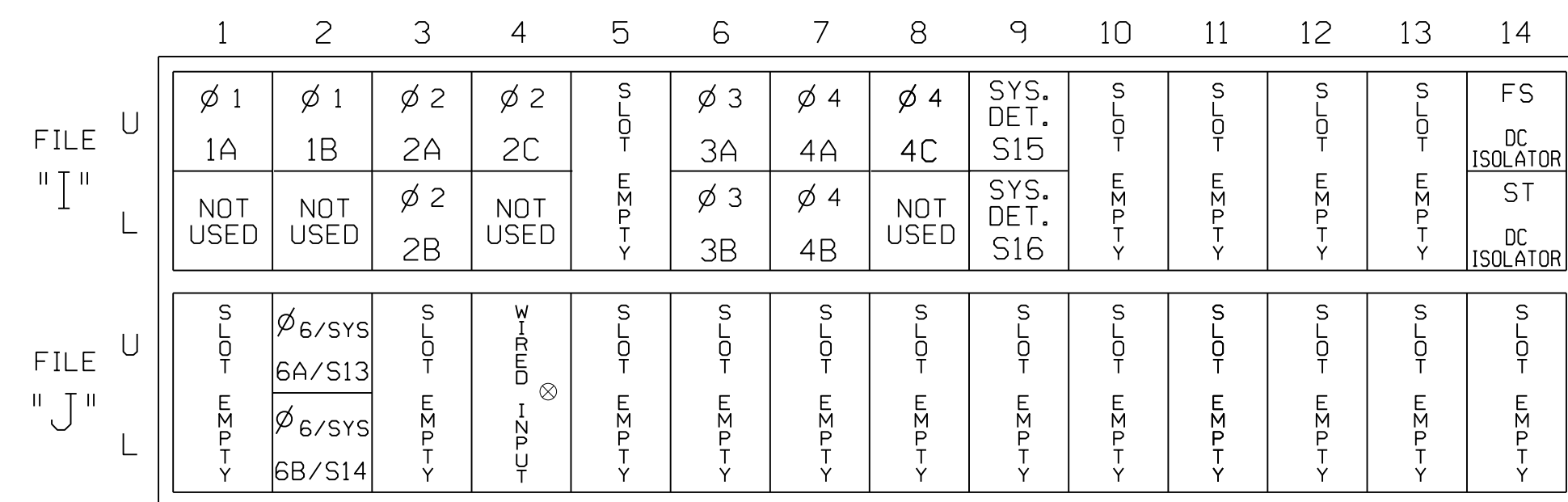
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



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

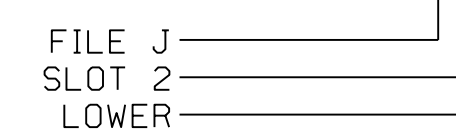
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|-----------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 1A ¹ | TB2-1,2 | I1U | 56 | 1 | 1 | YES | | 15 | | N |
| | - | J4U | 48 | 26 | 6 | YES | | 3 | | G |
| 1B | TB2-5,6 | I2U | 39 | 2 | 1 | YES | | 15 | | N |
| | TB2-9,10 | I3U | 63 | 32 | 2 | YES | | | X | N |
| 2B | TB2-11,12 | I3L | 76 | 42 | 2 | YES | | | X | N |
| | TB4-1,2 | I4U | 47 | 22 | 2 | YES | | 3 | | G |
| 3A | TB4-9,10 | I6U | 41 | 4 | 3 | YES | | 3 | | N |
| | TB4-11,12 | I6L | 45 | 14 | 3 | YES | | | | N |
| 4A | TB6-1,2 | I7U | 65 | 34 | 4 | YES | | 2 | | N |
| | TB6-3,4 | I7L | 78 | 44 | 4 | YES | | 5 | | N |
| 4C | TB6-5,6 | I8U | 49 | 24 | 4 | YES | | 15 | | N |
| | TB6-9,10 | I9U | 60 | 11 | SYS | NO | | | | N |
| * S16 | TB6-11,12 | I9L | 62 | 13 | SYS | NO | | | | N |
| 6A/S13 | TB3-5,6 | J2U | 40 | 6 | 6/SYS | YES | | | X | N |
| 6B/S14 | TB3-7,8 | J2L | 44 | 16 | 6/SYS | YES | | | X | N |

* System detector only. Remove any assigned vehicle phase.

¹Add jumper from I1-W to J4-W, on rear of input file.

If present, remove jumpers from TB2-5 to TB2-7, and from TB2-6 to TB2-8.

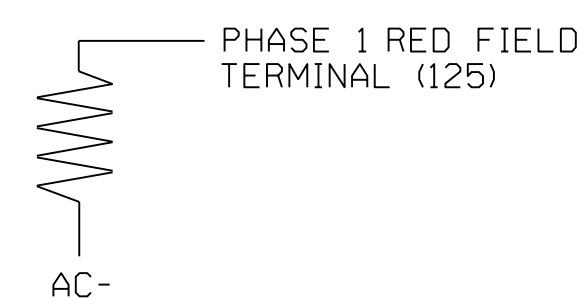
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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

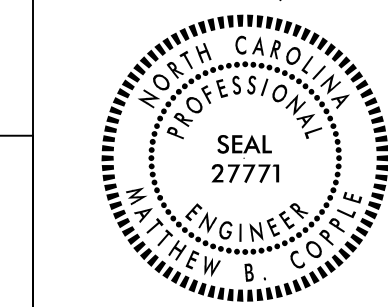


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1271
 DESIGNED: February 2013
 SEALED: 3-15-13
 REVISED: 05/14/2020



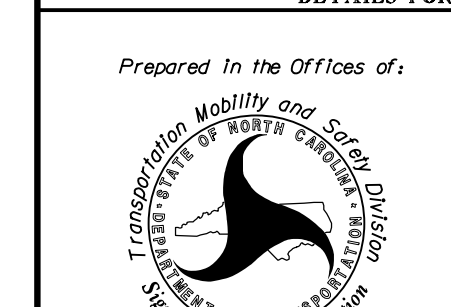
1 Glenwood Avenue
 Raleigh, NC 27603
 Tel:919.789.9977
 Fax:919.789.9591
 License: C-2197

Revision Seal



ELECTRICAL DETAIL SHEET 1 OF 2

Prepared In the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 701-NC 130
 (South J.K. Powell Blvd.) at
 Leslie Newsome Ave. /
 Whiteville Town Centre Entrance

Division 06 Columbus County Whiteville

PLAN DATE: 3-13-13 REVIEWED BY:

PREPARED BY: D.H. Spaulding REVIEWED BY:

REVISIONS INIT. DATE

✓ Controller changed to ASC/3 MGC 05/14/20

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 on (3/19/13)
 This document shall not be considered a certified document.

SIGNATURE DATE

SIG. INVENTORY NO. 06-1271

1 ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 2. CONTROLLER
- From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: .....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[C] TYPE: OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-1271
 DESIGNED: February 2013
 SEALED: 3-15-13
 REVISED: 05/14/2020

ELECTRICAL DETAIL SHEET 2 OF 2


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/2020
 ...061271.sm.e.le_20130319.dgn
 USER:MCDDP/le

SEPI
 Engineering & Construction, Inc.

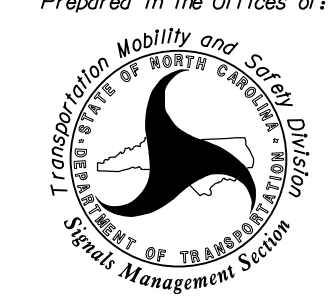
1 Glenwood Avenue
 Raleigh, NC 27603
 Tel:919.789.9977
 Fax:919.789.9591
 License: C-2197

Revision Seal



ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared In the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 701-NC 130
 (South J.K. Powell Blvd.) at
 Leslie Newsome Ave. /
 Whiteville Town Centre Entrance

Division 06 Columbus County Whiteville

PLAN DATE: 3-13-13 REVIEWED BY:

PREPARED BY: D.H. Spaulding REVIEWED BY:

| REVISIONS | INIT. | DATE |
|-----------------------------|-------|----------|
| Controller changed to ASC/3 | MBC | 05/14/20 |

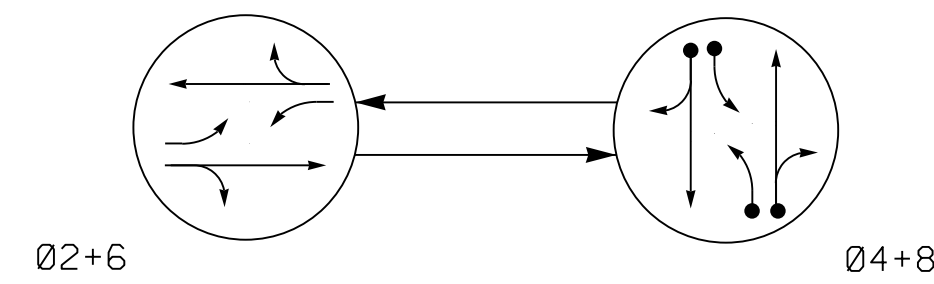
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SIG. INVENTORY NO. 06-1271

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

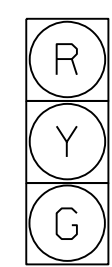
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|-------|
| | 02+6 | 04+8 | FLASH |
| 21, 22 | G | R | Y |
| 41, 42 | R | G | R |
| 61, 62 | G | R | Y |
| 81, 82 | R | G | R |

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42
61, 62
81, 82

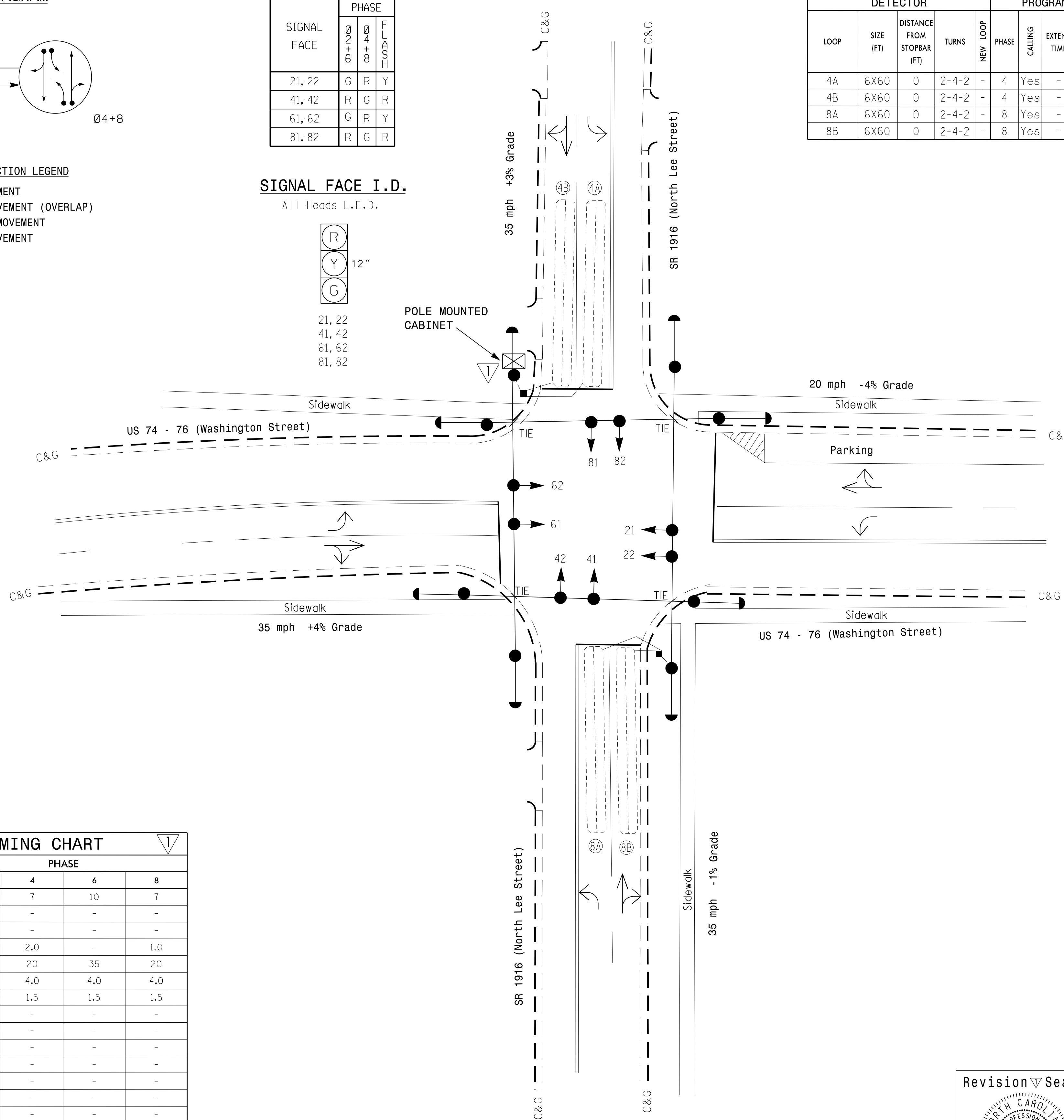
ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | |
|------|-----------|----------------------------|-------|----------|-------------|---------|-------------|------------|-------------------|------|-------------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | 3 | - | N | - |
| 4B | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | 10 | - | N | - |
| 8A | 6X60 | 0 | 2-4-2 | - | 8 | Yes | - | 3 | - | N | - |
| 8B | 6X60 | 0 | 2-4-2 | - | 8 | Yes | - | 10 | - | N | - |

2 Phase
Semi-Actuated
System #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Set all detector units to presence mode.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|------------|-----|------------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | - | - | - | - |
| Ped Clear | - | - | - | - |
| Veh. Extension * | - | 2.0 | - | 1.0 |
| Max I * | 35 | 20 | 35 | 20 |
| Yellow | 4.0 | 4.0 | 4.0 | 4.0 |
| Red Clear | 1.5 | 1.5 | 1.5 | 1.5 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | MAX RECALL | - | MAX RECALL | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

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

LEGEND

- | | |
|--|--|
| PROPOSED | EXISTING |
| ○ Traffic Signal Head | ● Traffic Signal Head |
| ● Modified Signal Head | N/A |
| □ Sign | □ Sign |
| □ Pedestrian Signal Head With Push Button & Sign | □ Pedestrian Signal Head With Push Button & 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 |
| → Pavement Marking Arrow | → Pavement Marking Arrow |

Signal Revision

Revision Seal

Prepared for:

US 74-76 Business (Washington Street) at SR 1916 (North Lee Street)
 Division 6 Columbus County Whiteville
 PLAN DATE: July 2003 REVIEWED BY: R.J. Ziemba
 PREPARED BY: Hanbright REVIEWED BY:
 REVISIONS: Controller changed to ASC/3 with new cabinet. GGM 05/15/20
 SCALE: 1"=20'
 SIGNATURE: DATE:

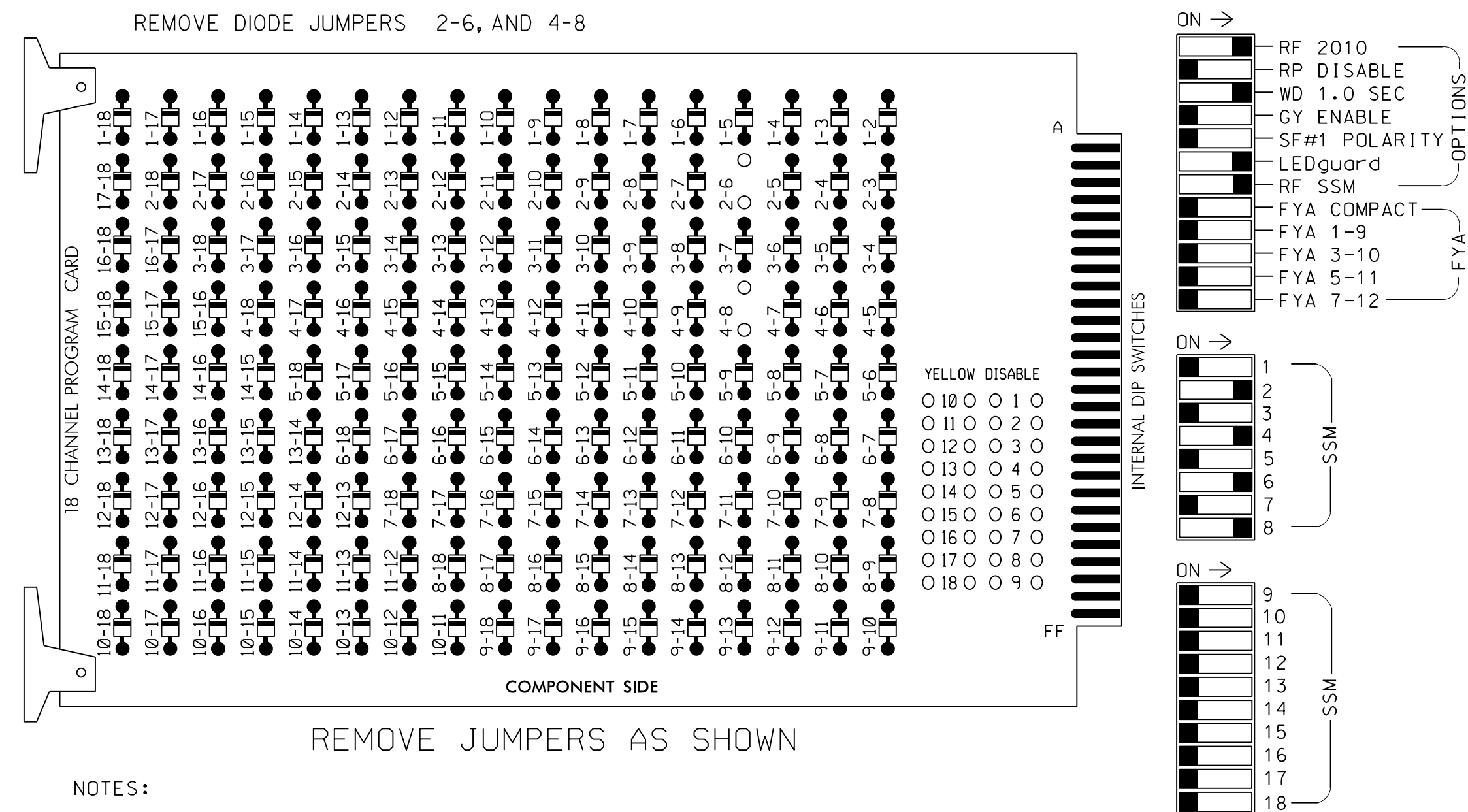
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 SIGNATURE: DATE: SIG. INVENTORY NO. 06-0080

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 Fax: 919.789.9591
 License: C-2197

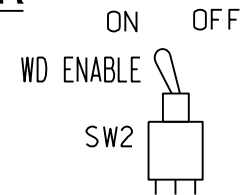
EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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.



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. Program controller to start up in phase 2 Green and 6 Green.
4. The cabinet and controller are part of Signal System # 10605.

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 | NU | NU | 61,62 | NU | NU | 81,82 | NU |
| RED | | 128 | | | 101 | | | 134 | | | 107 | |
| YELLOW | | 129 | | | 102 | | | 135 | | | 108 | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

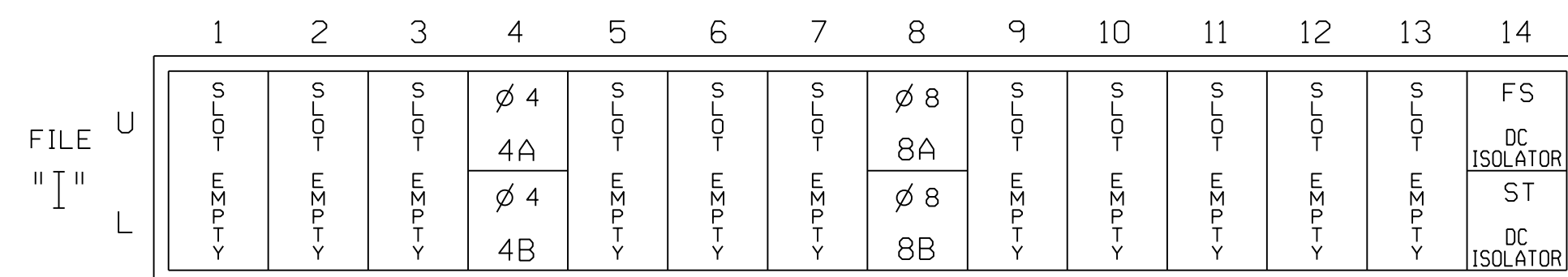
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET336
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



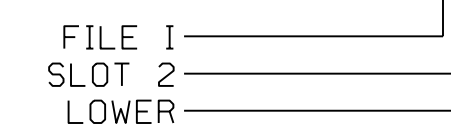
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

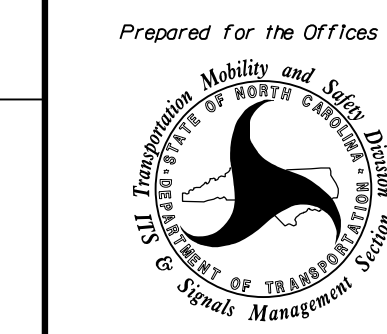
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|----------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 4A | TB21-7,8 | I4U | 41 | 4 | 4 | YES | | 3 | | N |
| 4B | TB23-7,8 | I4L | 45 | 14 | 4 | YES | | 10 | | N |
| 8A | TB22-1,2 | I8U | 42 | 8 | 8 | YES | | 3 | | N |
| 8B | TB24-1,2 | I8L | 46 | 18 | 8 | YES | | 10 | | N |

INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0080
 DESIGNED: JULY 2003
 SEALED: 05/15/20
 REVISED:

ELECTRICAL AND PROGRAMMING DETAILS FOR:



1 Glenwood Avenue
 Raleigh, NC 27603
 Tel:919.789.9977
 Fax:919.789.9591
 License: C-2197

750 N. Greenfield Pkwy, Garner, NC 27529

US 74-76 BUSINESS (WASHINGTON STREET)
 at
 SR 1916 (NORTH LEE STREET)

DIVISION 06 COLUMBUS COUNTY WHITEVILLE

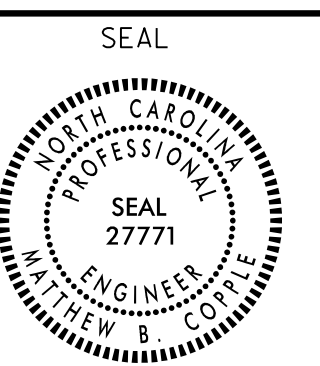
PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe

PREPARED BY: M. Copple REVIEWED BY:

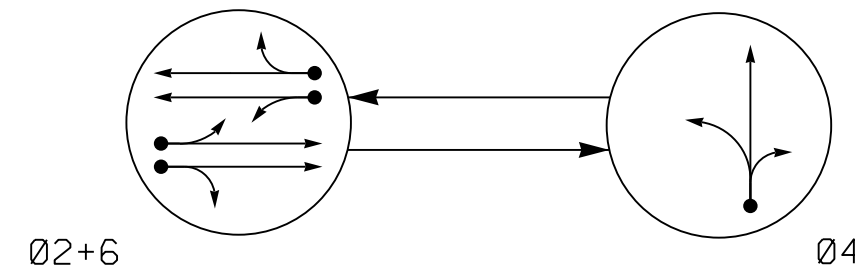
REVISIONS INIT. DATE

SIGNATURE DATE

SIG. INVENTORY NO. 06-0080



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

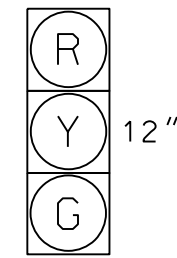
- ← DETECTED MOVEMENT
- ◐ ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ← - - - → PEDESTRIAN MOVEMENT

TABLE OF OPERATION

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

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42
61, 62

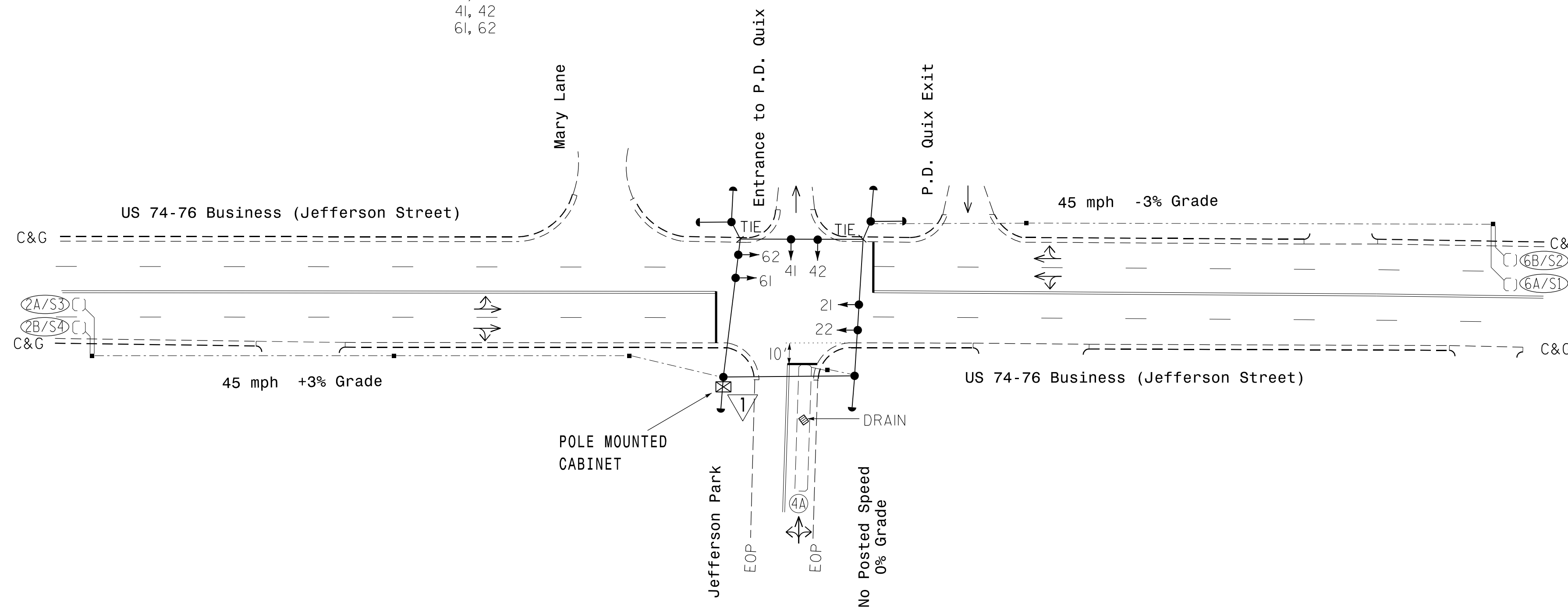
ASC/3 DETECTOR INSTALLATION CHART

| DETECTOR | | | | PROGRAMMING | | | | | | | | |
|----------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|-------------------|------|-------------|---------------|
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | LOOP SYSTEM | LOOP NEW CARD |
| 2A/S3 | 6X6 | 300 | EXIST | - | 2 | Yes | - | - | X | N | X | - |
| 2B/S4 | 6X6 | 300 | EXIST | - | 2 | Yes | - | - | X | N | X | - |
| 4A | 6X60 | 0 | EXIST | - | 4 | Yes | - | 10 | - | N | - | - |
| 6A/S1 | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | X | - |
| 6B/S2 | 6X6 | 300 | EXIST | - | 6 | Yes | - | - | X | N | X | - |

2 Phase Fully Actuated System #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Pavement markings are existing, unless otherwise shown on plan.
- Remove existing crosswalk and pedestrian signal heads.
- Reposition existing signal heads numbered 41 and 42.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free run operation only. Coordinated signal system timing values shall supersede these values.



ASC/3 TIMING CHART

| FEATURE | PHASE | | |
|-------------------------|-------------|-----|-------------|
| | 2 | 4 | 6 |
| Min Green * | 12 | 7 | 12 |
| Walk * | - | - | - |
| Ped Clear | - | - | - |
| Veh. Extension * | 6.0 | 1.0 | 6.0 |
| Max I * | 90 | 20 | 90 |
| Yellow | 4.7 | 4.0 | 4.7 |
| Red Clear | 1.5 | 1.5 | 1.5 |
| Actuations B4 Add * | 0 | - | 0 |
| Seconds / Actuation * | 1.8 | - | 1.8 |
| Max Initial * | 34 | - | 34 |
| Time Before Reduction * | 15 | - | 15 |
| Time To Reduce * | 45 | - | 45 |
| Minimum Gap | 3.0 | - | 3.0 |
| Locking Detector | X | - | X |
| Recall Position | VEH. RECALL | - | VEH. RECALL |
| Dual Entry | - | - | - |
| Simultaneous Gap | X | X | X |

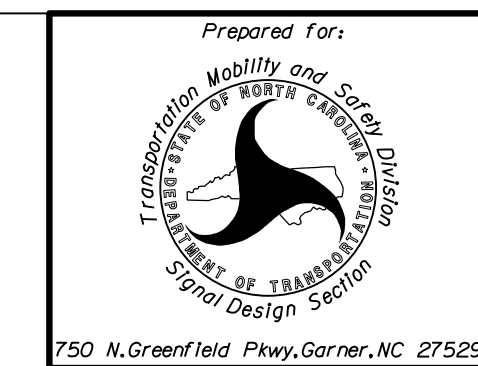
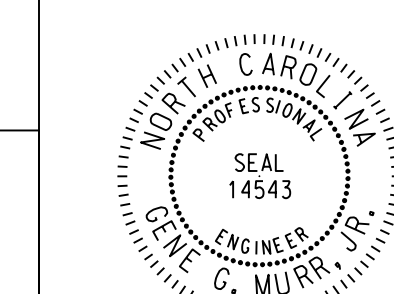
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | PROPOSED | EXISTING |
|--|---------------------------------|
| ○ → Traffic Signal Head | ● → N/A |
| ◐ → Modified Signal Head | — Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Signal Pole with Guy |
| ⊥ Signal Pole with Guy | ⊥ Signal Pole with Sidewalk Guy |
| ⊥ Inductive Loop Detector | ⊥ Controller & Cabinet |
| ⊥ Junction Box | ⊥ 2-in Underground Conduit |
| — N/A Right of Way | → Directional Arrow |
| → Pavement Marking Arrow | → |

Signal Revision

Revision Seal



US 74-76 Business (Jefferson Street) at Jefferson Park

Division 6 Columbus County Whiteville

PLAN DATE: August 2003 REVIEWED BY: C.E. Carter

REVISIONS: Controller changed to ASC/3 with new cabinet. INIT. DATE: GGM 05/15/20

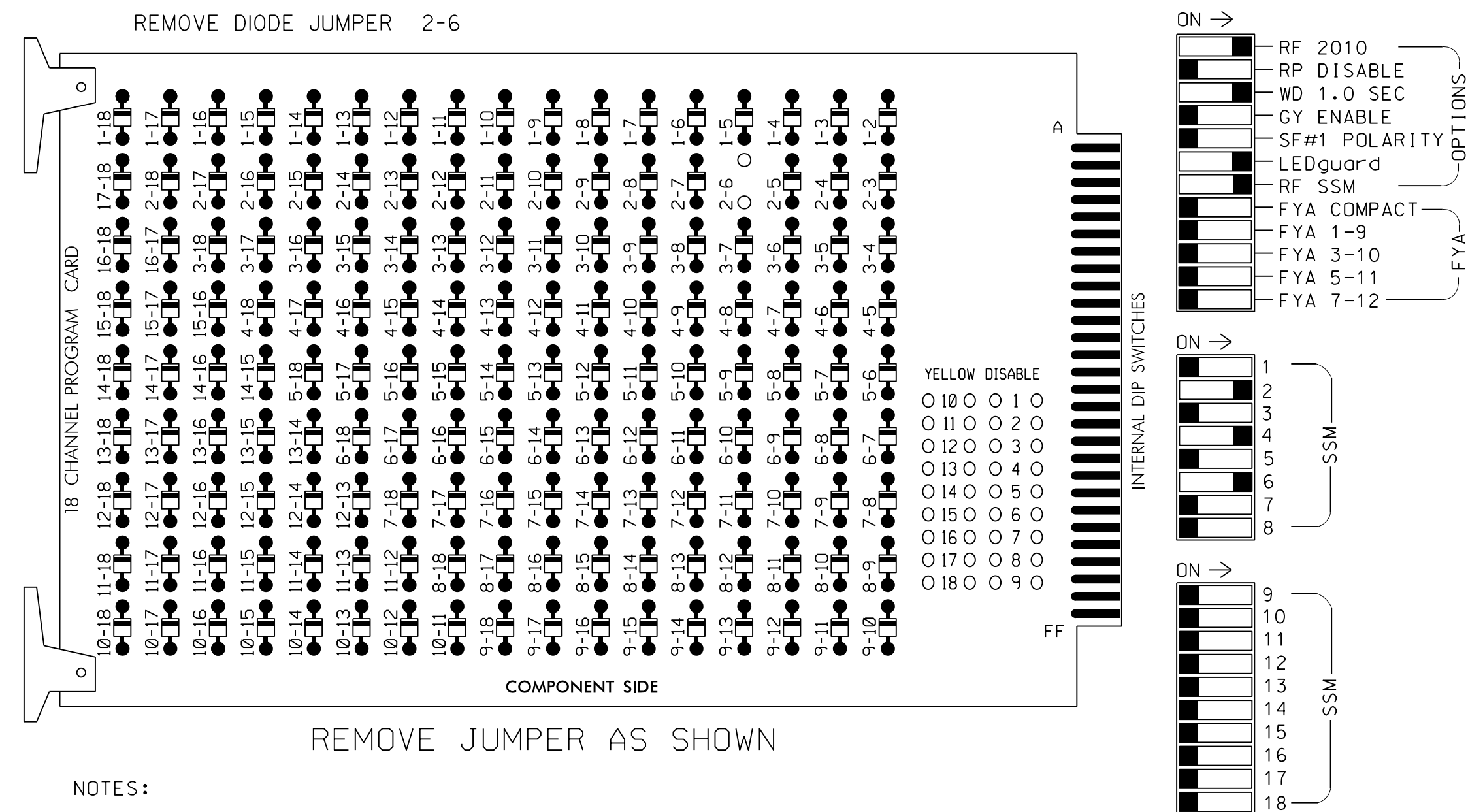
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Raleigh, NC 27603
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Fax: 919.789.9591
License: C-2197

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. Program controller to start up in phase 2 Green and 6 Green.
3. The cabinet and controller are part of Signal System # 10605.

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 | 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

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET336
 SOFTWAREECONOLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8
 PHASES USED.....2,4,6
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

| FILE | U | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|-------|---|--------|--------|----------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| "I" = | L | ∅2/sys | ∅2/sys | ∅2/sys | ∅4 | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys |
| | | 2A/S3 | 2A/S3 | 2B/S4 | 4A | 6A/S1 | 6A/S1 | 6A/S1 | 6A/S1 | 6A/S1 | 6A/S1 | 6A/S1 | 6A/S1 | 6A/S1 | 6A/S1 |
| | | ∅2/sys | ∅2/sys | NOT USED | NOT USED | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys | ∅6/sys |
| | | 2B/S4 | 2B/S4 | NOT USED | NOT USED | 6B/S2 | 6B/S2 | 6B/S2 | 6B/S2 | 6B/S2 | 6B/S2 | 6B/S2 | 6B/S2 | 6B/S2 | 6B/S2 |

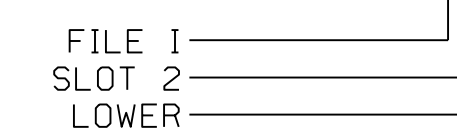
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|----------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 2A/S3 | TB21-3,4 | I2U | 39 | 2 | 2/SYS | YES | | | X | N |
| 2B/S4 | TB23-3,4 | I2L | 43 | 12 | 2/SYS | YES | | | X | N |
| 4A | TB21-7,8 | I4U | 41 | 4 | 4 | YES | | 10 | | N |
| 6A/S1 | TB21-11,12 | I6U | 40 | 6 | 6/SYS | YES | | | X | N |
| 6B/S2 | TB23-11,12 | I6L | 44 | 16 | 6/SYS | YES | | | X | N |

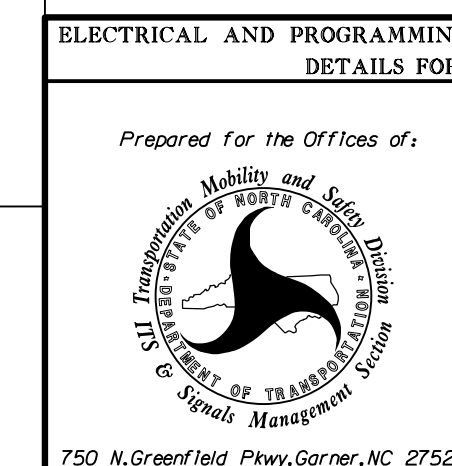
INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0110
 DESIGNED: AUGUST 2003
 SEALED: 05/15/20
 REVISED:



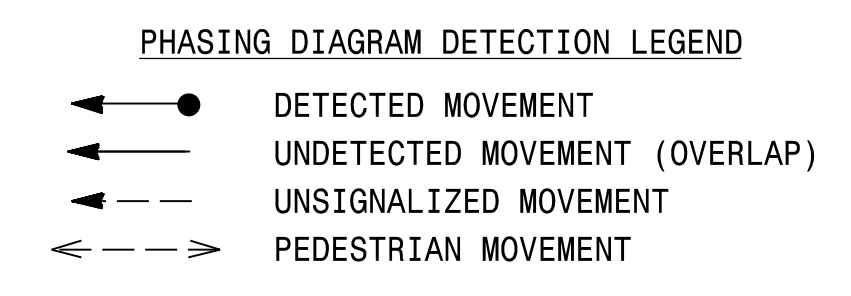
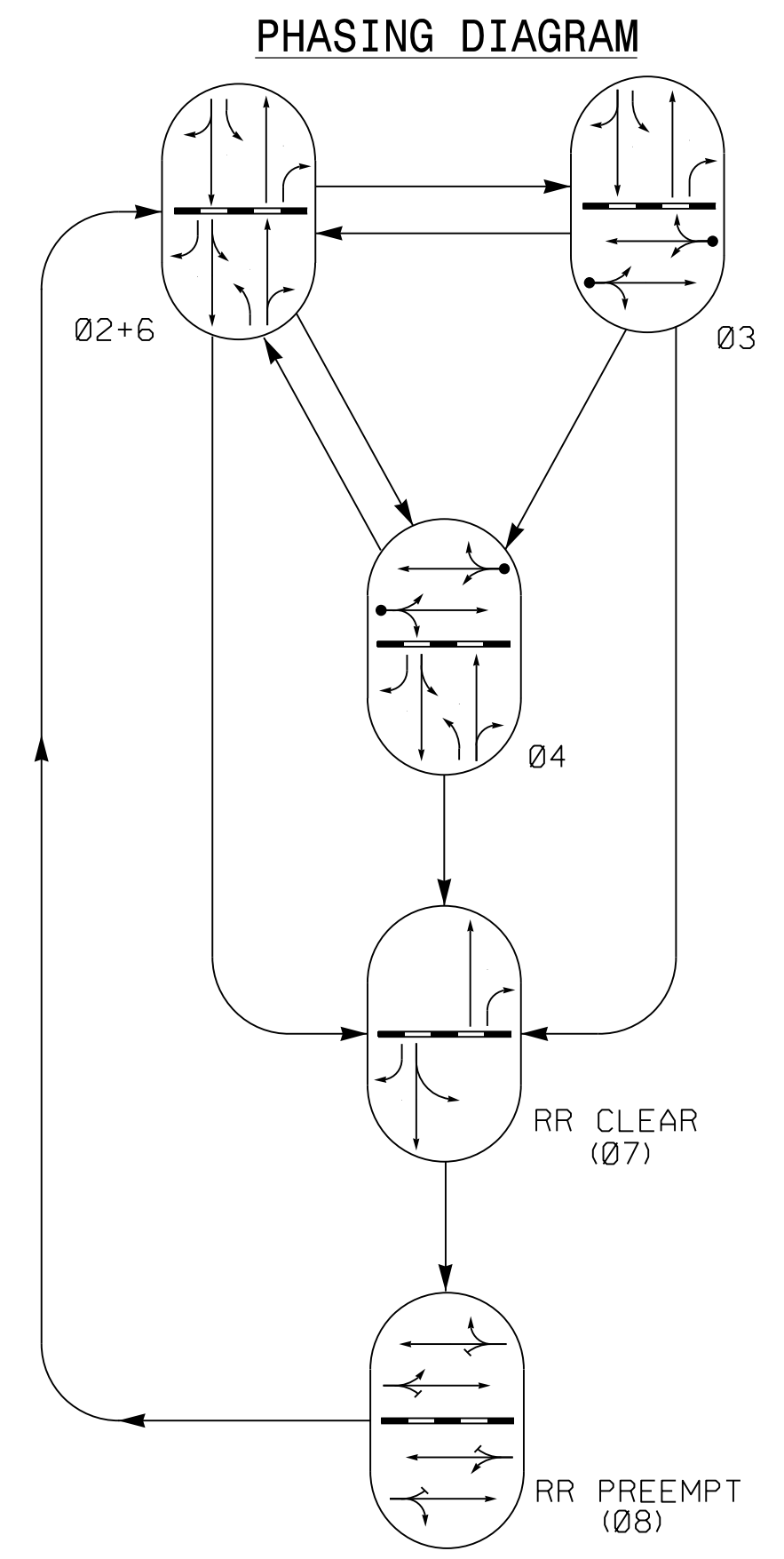
1 Glenwood Avenue
 Raleigh, NC 27603
 Tel: 919.789.9977
 Fax: 919.789.9591
 License: C-2197



US 74-76 BUSINESS (JEFFERSON STREET)
 at
 JEFFERSON PARK

| | | | | |
|--------------|------------|-----------------|---------|------------|
| DIVISION 06 | | COLUMBUS COUNTY | | WHITEVILLE |
| PLAN DATE: | APRIL 2020 | REVIEWED BY: | J. Rowe | |
| PREPARED BY: | M. Copple | REVIEWED BY: | | |
| REVISIONS | INIT. | DATE | | |
| | | | | |
| | | | | |

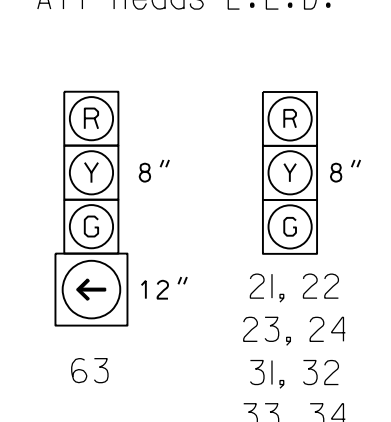
| | |
|--------------------|---------|
| SIGNATURE | DATE |
| | |
| SIG. INVENTORY NO. | 06-0110 |



| SIGNAL FACE | PHASE | | | | | |
|-------------|-------|-----|-----|----------|------------|-------|
| | 02+6 | 03 | 04 | RR CLEAR | RR PREEMPT | FLASH |
| 21, 22 | G | R | G | R | R | Y |
| 23, 24 | G | G | R | G | R | Y |
| 31, 32 | R | G | R | R | G | R |
| 33, 34 | R | G | R | R | G | R |
| 41, 42 | R | R | G | R | G | R |
| 43, 44 | R | R | G | R | G | R |
| 61, 62, 65 | G | G | R | R | R | Y |
| 63 | G | R | G | R | R | Y |
| 64 | G | R | G | R | R | Y |
| SIGN B | OFF | OFF | OFF | ON | ON | * |
| SIGN C | OFF | OFF | OFF | ON | ON | * |

*SEE NOTE 6.

SIGNAL FACE I.D.

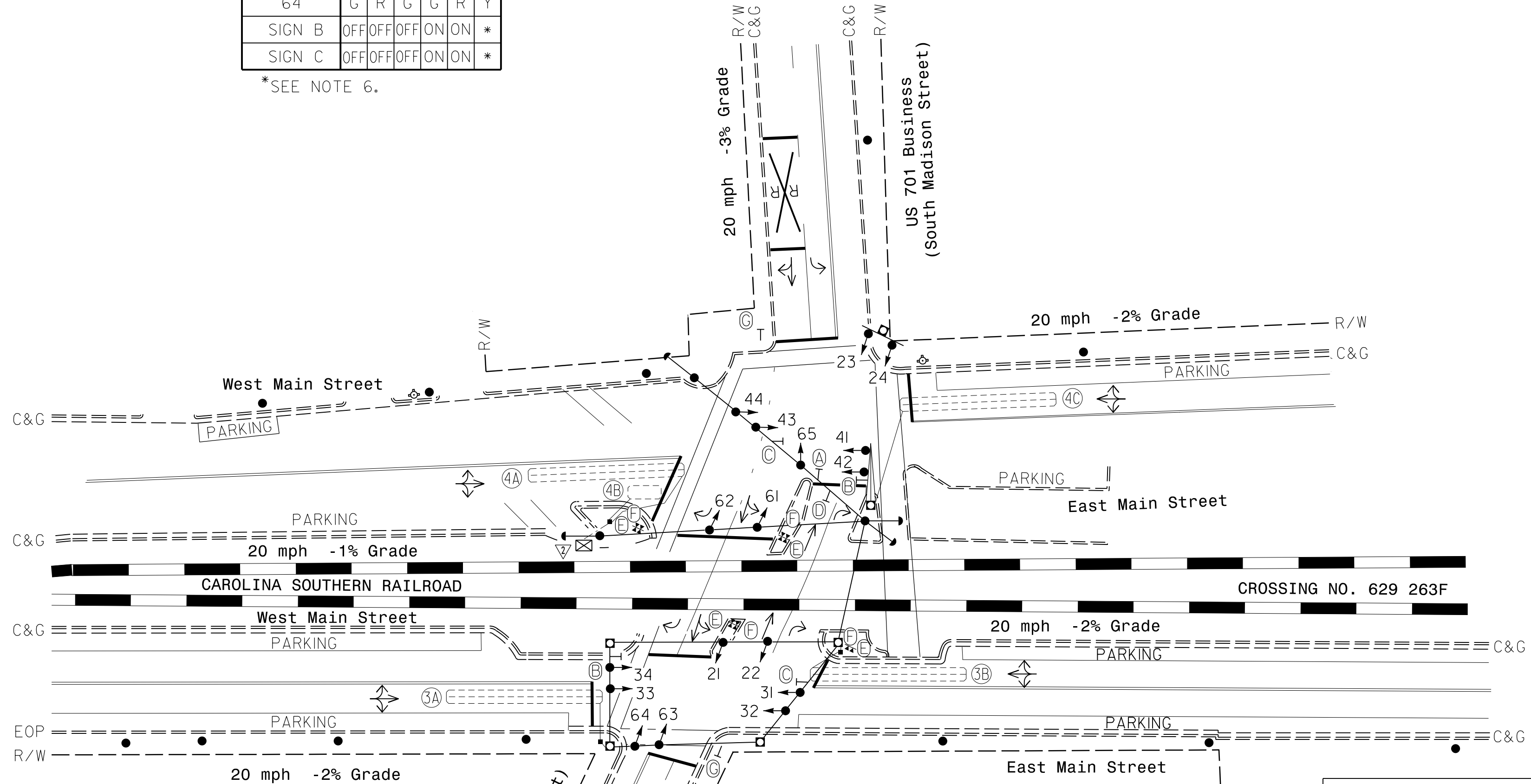


| ASC/3 DETECTOR INSTALLATION CHART | | | | | | | | | | | | |
|-----------------------------------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|-------------------|------|-------------|----------|
| DETECTOR | | | | PROGRAMMING | | | | | | | | |
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 3A | 6X70 | +5 | 2-4-2 | - | 3 | Yes | - | 10 | - | N | - | - |
| 3B | 6X70 | +5 | 2-4-2 | - | 3 | Yes | - | 10 | - | N | - | - |
| 4A | 6X70 | +5 | 2-4-2 | - | 4 | Yes | - | 10 | - | N | - | - |
| 4B | 6X15 | 0 | EXIST | - | 4 | Yes | - | 15 | - | N | - | - |
| 4C | 6X70 | +5 | 2-4-2 | - | 4 | Yes | - | 10 | - | N | - | - |

2/3 Phase Semi-Actuated w/ Railroad Preempt System #10605

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- During coordination, the order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Ensure flashing operation does not alter operation of blankout signs.
- Sign (E) to be installed by Railroad Personnel.
- This location contains railroad preemption phasing. Do not program signal for late night flashing operation.



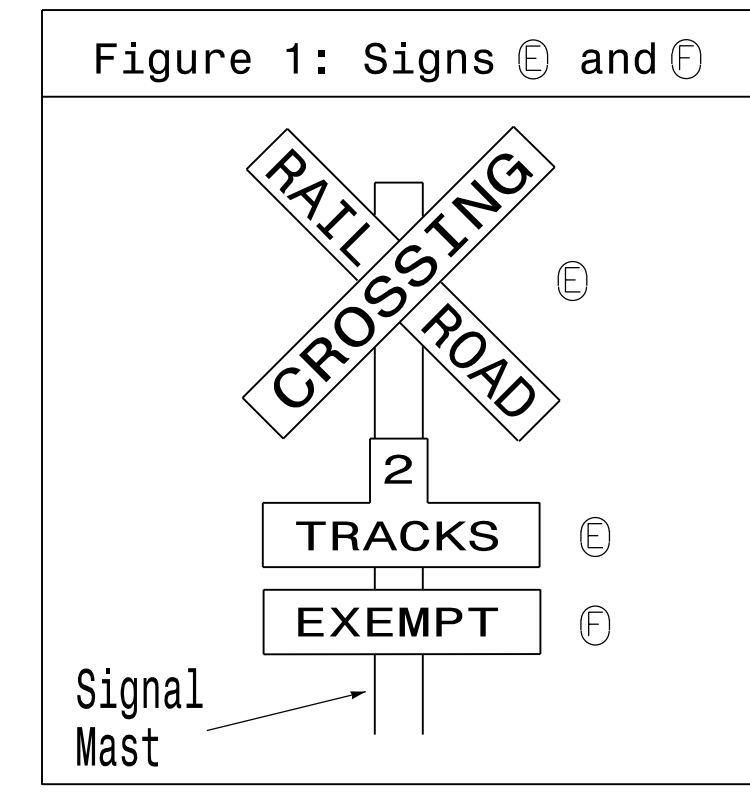
| FEATURE | ASC/3 TIMING CHART | | | | | |
|-------------------------|--------------------|-----|-----|------------|-----|-----|
| | 2 | 3 | 4 | 6 | 7 | 8 |
| Min Green * | 12 | 7 | 7 | 12 | 19 | 7 |
| Walk * | - | - | - | - | - | - |
| Ped Clear | - | - | - | - | - | - |
| Veh. Extension * | - | 1.0 | 1.0 | - | - | - |
| Max 1 * | 30 | 20 | 20 | 30 | - | - |
| Yellow | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Red Clear | 2.0 | 2.5 | 2.5 | 2.0 | 2.0 | 2.5 |
| Actuations B4 Add * | - | - | - | - | - | - |
| Seconds / Actuation * | - | - | - | - | - | - |
| Max Initial * | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - | - |
| Minimum Gap | - | - | - | - | - | - |
| Locking Detector | - | - | - | - | - | - |
| Recall Position | MAX RECALL | - | - | MAX RECALL | - | - |
| Dual Entry | - | - | - | - | - | - |
| Simultaneous Gap | X | X | X | X | - | - |

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

| ASC/3 RR PREEMPT | |
|---------------------------|-------|
| FUNCTION | PRE 1 |
| Exit Phase(s) | 2+6 |
| Preempt Override | ON |
| Delay Time | 0 |
| Ped Clear Through Yellow | N |
| Terminate Phases | N |
| Track Clear Reserve | Y |
| Entrance Walk | 0 |
| Entrance Ped Clear | 0 |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 25.5* |
| Entrance Red Clear | 25.5* |
| Track Clear Min Green | 19 |
| Track Clear Yellow Change | 4.0 |
| Track Clear Red Clear | 2.0 |
| Min Dwell Time | 7 |
| Exit Yellow Change | 25.5* |
| Exit Red Clear | 25.5* |

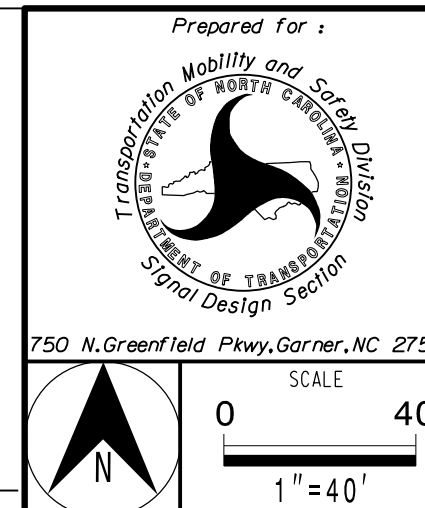
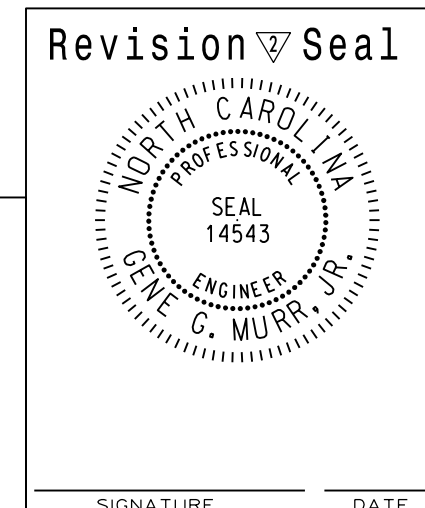
* Clearance time defaults to time used for phase during normal operation.

This intersection is designed for Simultaneous Preemption



| LEGEND | |
|----------|--|
| PROPOSED | EXISTING |
| | Traffic Signal Head |
| | Modified Signal Head |
| | Pedestrian Signal Head With Push Button & Sign |
| | Signal Pole with Guy |
| | Signal Pole with Sidewalk Guy |
| | Inductive Loop Detector |
| | Controller & Cabinet |
| | Junction Box |
| | 2-in Underground Conduit |
| | Right of Way |
| | Directional Arrow |
| | Pavement Marking Arrow |
| | Railroad Tracks |
| | Railroad Mast and Flasher |
| | Metal Strain Pole |
| | Metal Pole with Mastarm |
| | Fire Hydrant |
| | Left Arrow "ONLY" Sign (R3-5L) |
| | "NO RIGHT TURN - TRAIN" L.E.D. Blankout Sign |
| | "NO LEFT TURN - TRAIN" L.E.D. Blankout Sign |
| | No Left Turn Sign (R3-2) |
| | Highway-Rail Grade Crossing (Crossbuck) Sign (R15-1) with Number of Tracks Sign (R15-2) (See Figure 1) |
| | "EXEMPT" Sign (R15-3) (See Figure 1) |
| | "DO NOT BLOCK INTERSECTION" Sign (R10-7) |

Signal Revision



| | |
|---|--------------------------|
| US 701 Business (South Madison Street) at East Main Street and West Main Street | |
| Division 6 | Columbus County |
| Whiteville | |
| PLAN DATE: August 2003 | REVIEWED BY: R.J. Ziembe |
| PREPARED BY: C.E. Carter | REVIEWED BY: |
| REVISIONS | INIT. DATE |
| ✓ REVISE TIMING CHART FOR PHASES 7 & 8 - RJZ | TJW 11/16/04 |
| ✓ Controller changed to ASC/3 with new cabinet | GM 05/15/20 |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

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SIGNATURE DATE

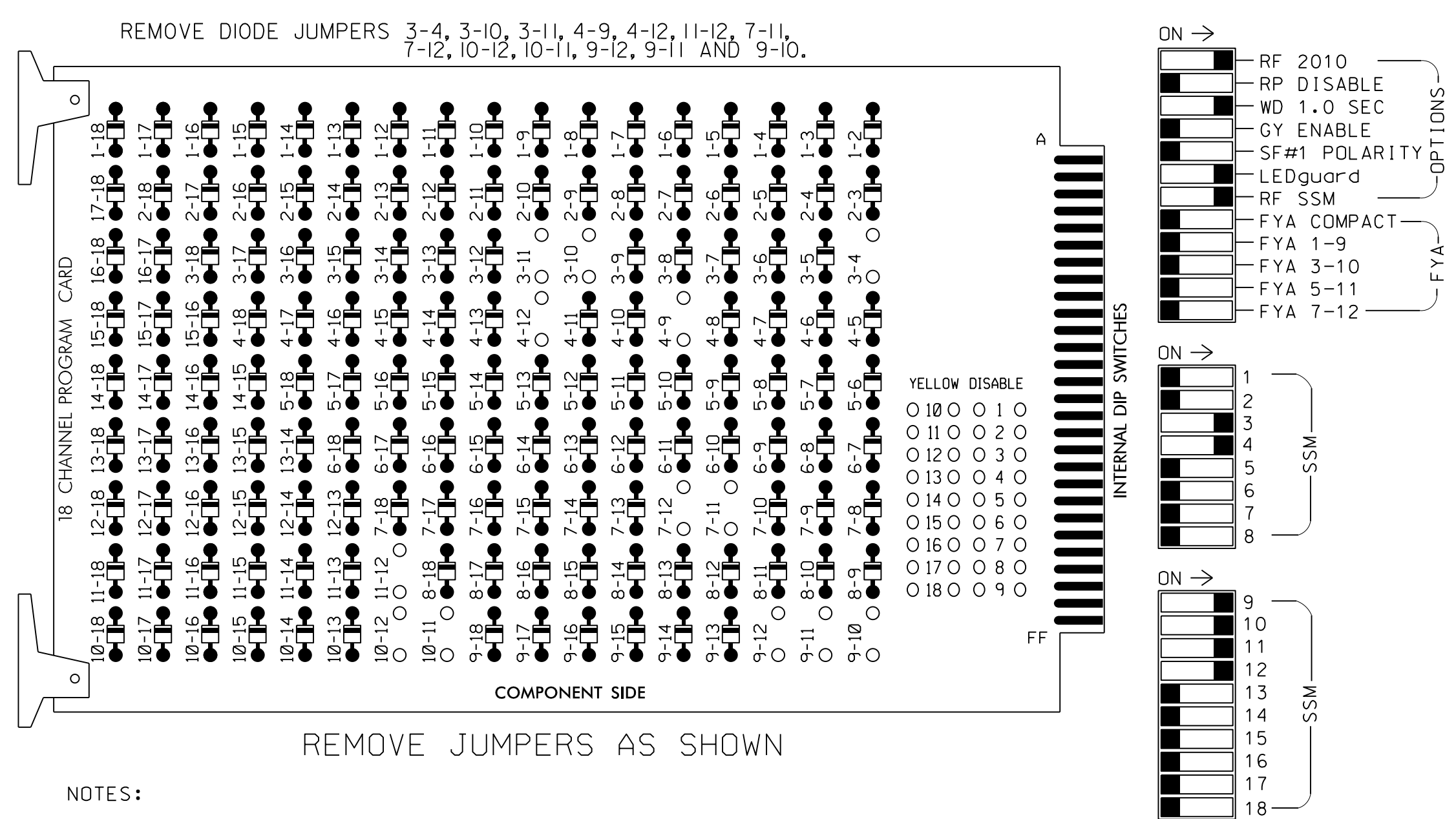
SIG. INVENTORY NO. 06-0111

SEPI Engineering & Construction, Inc.

1 Glenwood Avenue
Raleigh, NC 27603
Tel: 919.789.9977
Fax: 919.789.9591
License: C-2197

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.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of Signal System # 10605.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S4,S5,S10,AUX S1,AUX S2,
 AUX S4,AUX S5
 PHASES USED.....2,3,4,6,7*,8**
 OVERLAP "A".....2+4
 OVERLAP "B".....3+6
 OVERLAP "C".....2+3+7
 OVERLAP "D".....4+6+7
 OVERLAP "G".....3+8
 OVERLAP "H".....4+8

* USED IN RR CLEAR ONLY
 ** USED IN RR PREEMPT ONLY

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 | OLG | OLH | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | NC | NU | 31,32,33,34 | 41,42,43,44 | NU | NU | NC | NU | 63 | NC | NU | 21,22 | 61,62,65 | NU | 23,24 | 63,64 | NU |
| RED | | | | 116 | 101 | | | | | | | | A121 | A124 | | A114 | A101 | |
| YELLOW | | | | 117 | 102 | | | | | * | | | A122 | A125 | | A115 | A102 | |
| GREEN | | | | 118 | 103 | | | | | | | | A123 | A126 | | A116 | A103 | |
| RED ARROW | | | | | | | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | 124 | | | | | | | | |

NC = NO CONNECTION; HOWEVER, PHASE IS USED FOR TIMING PURPOSES.
 NU = Not Used

* DENOTES INSTALL LOAD RESISTOR, SEE LOAD RESISTOR INSTALLATION DETAIL THIS SHEET.

ECONOLITE ASC/3-2070 LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

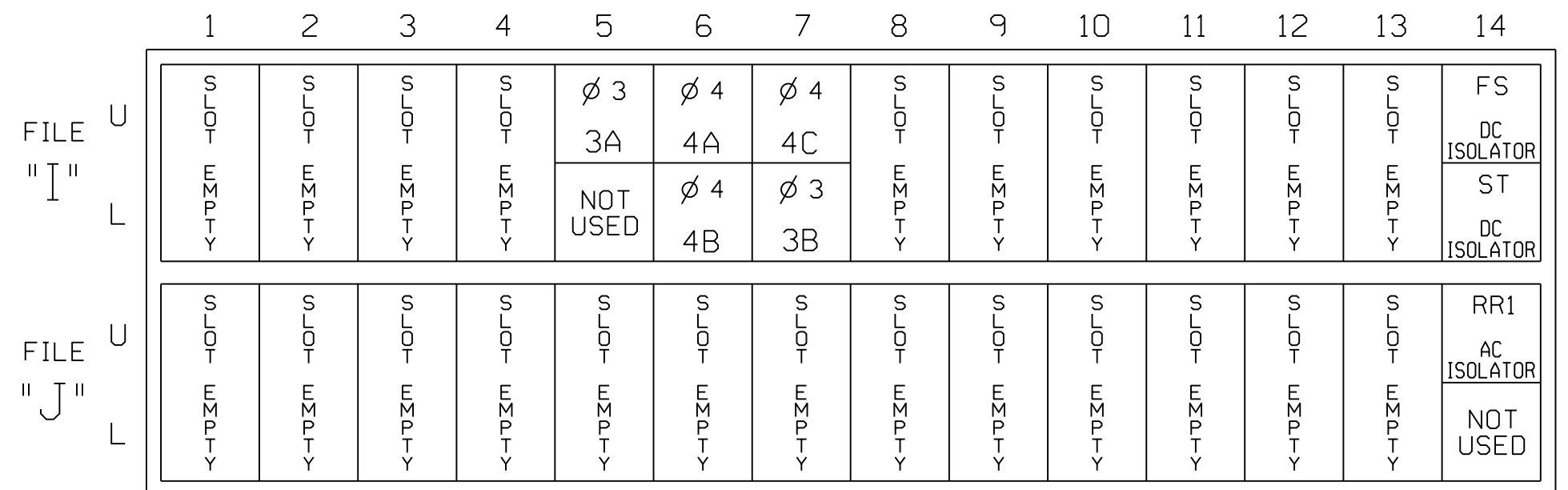
To assign load switches S4 and S5 as OLG and OLH, program LD SWITCH 3 as OVLP '7' TYPE '0' and LD SWITCH 4 as OVLP '8' TYPE '0' as shown below.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **3. LOAD SW ASSIGN**

| LD SWITCH ASSIGN | PHASE | DIMMING | ---FLASH--- |
|------------------|-------|---------|---------------|
| /OVLP | TYPE | R Y G D | PWR AUT TGR |
| 1 | 1 | V | . . . + A R X |
| 2 | 2 | V | . . . + A Y . |
| 3 | 7 | 0 | . . . + A R X |
| 4 | 8 | 0 | . . . + A R . |
| 5 | 5 | V | . . . - A R . |
| 6 | 6 | V | . . . - A Y X |
| 7 | 7 | V | . . . - A R . |
| 8 | 8 | V | . . . - A R X |
| 9 | 1 | 0 | . . . + A Y X |
| 10 | 2 | 0 | . . . + A Y X |
| 11 | 3 | 0 | . . . - A Y . |
| 12 | 4 | 0 | . . . - A Y . |
| 13 | 2 | P | . . . + A . . |
| 14 | 4 | P | . . . - A . . |
| 15 | 6 | P | . . . + A . . |
| 16 | 8 | P | . . . - A . . |

INPUT FILE POSITION LAYOUT

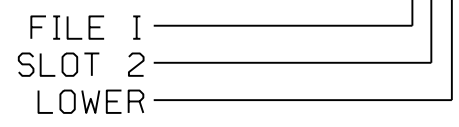
(front view)



INPUT FILE CONNECTION & PROGRAMMING CHART

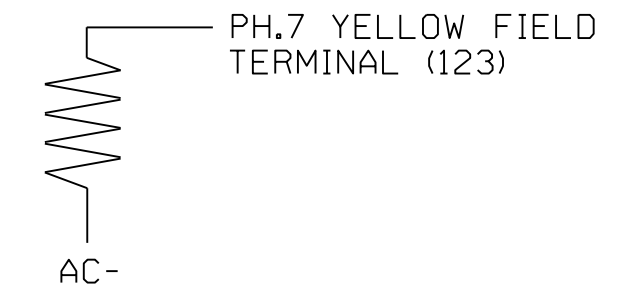
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|----------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 3A | TB4-5,6 | 15U | 58 | 3 | 3 | YES | | 10 | | N |
| 3B | TB6-3,4 | 17L | 78 | 44 | 3 | YES | | 10 | | N |
| 4A | TB4-9,10 | 16U | 41 | 4 | 4 | YES | | 10 | | N |
| 4B | TB4-11,12 | 16L | 45 | 14 | 4 | YES | | 15 | | N |
| 4C | TB6-1,2 | 17U | 65 | 34 | 4 | YES | | 10 | | N |

INPUT FILE POSITION LEGEND: I2L



LOAD RESISTOR INSTALLATION DETAIL

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0111
 DESIGNED: AUGUST 2003
 SEALED: 11/4/03
 1 REVISED: 11/16/04
 2 REVISED: 05/15/20

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 Fax: 919.789.9591
 License: C-2197

ELECTRICAL DETAIL - SHEET 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 701 BUSINESS (SOUTH MADISON STREET) at EAST MAIN STREET and WEST MAIN STREET

Prepared for the Offices of: **STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**

DIVISION 06 COLUMBUS COUNTY WHITEVILLE

PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe

PREPARED BY: M. Copple REVIEWED BY:

REVISIONS INIT. DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 27771
 M. COPPLE

SIGNATURE DATE
 SIG. INVENTORY NO. 06-0111

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

OVERLAP A
 Select TMG VEH OVLP [A] and 'NORMAL'
 TMG VEH OVLP...[A] TYPE:**NORMAL**
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . X . X
 LAG GRN 0.0 YEL 0.0 RED 0.0

Toggle Once

OVERLAP B
 Select TMG VEH OVLP [B] and 'NORMAL'
 TMG VEH OVLP...[B] TYPE:**NORMAL**
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . X . . X
 LAG GRN 0.0 YEL 0.0 RED 0.0

Toggle Once

OVERLAP C
 Select TMG VEH OVLP [C] and 'NORMAL'
 TMG VEH OVLP...[C] TYPE:**NORMAL**
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . X X . . . X
 LAG GRN 0.0 YEL 0.0 RED 0.0

Toggle Once

OVERLAP D
 Select TMG VEH OVLP [D] and 'NORMAL'
 TMG VEH OVLP...[D] TYPE:**NORMAL**
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . . X . X X
 LAG GRN 0.0 YEL 0.0 RED 0.0

Toggle Thrice

OVERLAP G
 Select TMG VEH OVLP [G] and 'NORMAL'
 TMG VEH OVLP...[G] TYPE:**NORMAL**
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . X X
 LAG GRN 0.0 YEL 0.0 RED 0.0

Toggle Once

OVERLAP H
 Select TMG VEH OVLP [H] and 'NORMAL'
 TMG VEH OVLP...[H] TYPE:**NORMAL**
 PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 INCLUDED . . . X . . . X
 LAG GRN 0.0 YEL 0.0 RED 0.0

END PROGRAMMING

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL FOR PREEMPT ONLY PHASE OMIT

(program controller as shown)

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **2. LOGIC STATEMENTS**

ENTER A "1" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 1 COPY FROM: 1 ACTIVE: M (T/F)
IF PMT PREEMPT ACTIVE 1 IS OFF
THEN CTR OMIT PHASE 7 ON
      CTR OMIT PHASE 8 ON
ELSE
  
```

LOGIC FOR OMITTING PHASES 7 AND 8 AT STARTUP AND/OR WHEN NOT IN PREEMPT

END PROGRAMMING

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **8. LOGIC PROCESSOR**
- From LOGIC PROCESSOR Submenu select **1. LOGIC STATEMENT CONTROL**

ENABLE LOGIC PROCESSOR STATEMENTS 1 BY POSITIONING THE CURSOR OVER THE FIELD SHOWN BELOW AND USING THE TOGGLE KEY TO ENABLE IT.

```

LOGIC STATEMENT CONTROL
      1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15 E . . . . .
LP 16-30 . . . . .
LP 31-45 . . . . .
LP 46-60 . . . . .
LP 61-75 . . . . .
LP 76-90 . . . . .
  
```

END PROGRAMMING

ECONOLITE ASC/3-2070 CONTROLLER SEQUENCE PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **1. CONTROLLER SEQ**
- From CONTROLLER SEQUENCE Submenu select **1. PHASE RING SEQUENCE AND ASSIGNMENT**

```

CONTROLLER SEQUENCE [ 1 ]
SEQUENCE COMMANDS . HW ALT SEQ ENA. NO.
      01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
BC-B - B - B - - - - -
R1-01 02 03 04 07 08 . . . . .
R2-05 06 . . . . .
R3- . . . . .
R4- . . . . .

R1-R4=RING 1-4, DATA ENTRY, PHASES 1-16
BC=BARRIER CONTROL, VALUES: B,C
B=BARRIER MODE
C=COMPATIBILITY MODE
  
```

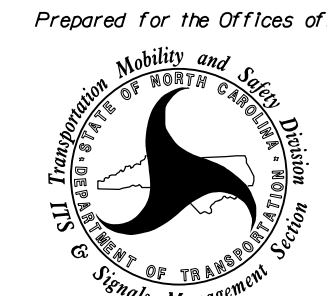
END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0111
 DESIGNED: AUGUST 2003
 SEALED: 11/4/03
 1 REVISED: 11/16/04
 2 REVISED: 05/15/20

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ELECTRICAL DETAIL - SHEET 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 701 BUSINESS (SOUTH MADISON STREET) at EAST MAIN STREET and WEST MAIN STREET

Prepared for the Offices of: 

DIVISION 06 COLUMBUS COUNTY WHITEVILLE

PLAN DATE: APRIL 2020 REVIEWED BY: J. Rowe

PREPARED BY: M. Copple REVIEWED BY:

REVISIONS INIT. DATE

SIGNATURE DATE

SIG. INVENTORY NO. 06-0111

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEERS
 SEAL 27771
 MATTHEW B. COPPLE

5/15/2020
 11:46:01 AM
 USER: MCopple

ECONOLITE ASC/3-2070 RAILROAD PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **4. PREEMPTOR/TSP**
- From PREEMPTOR/TSP/SCP Submenu select **1. PREEMPT PLAN 1-10**

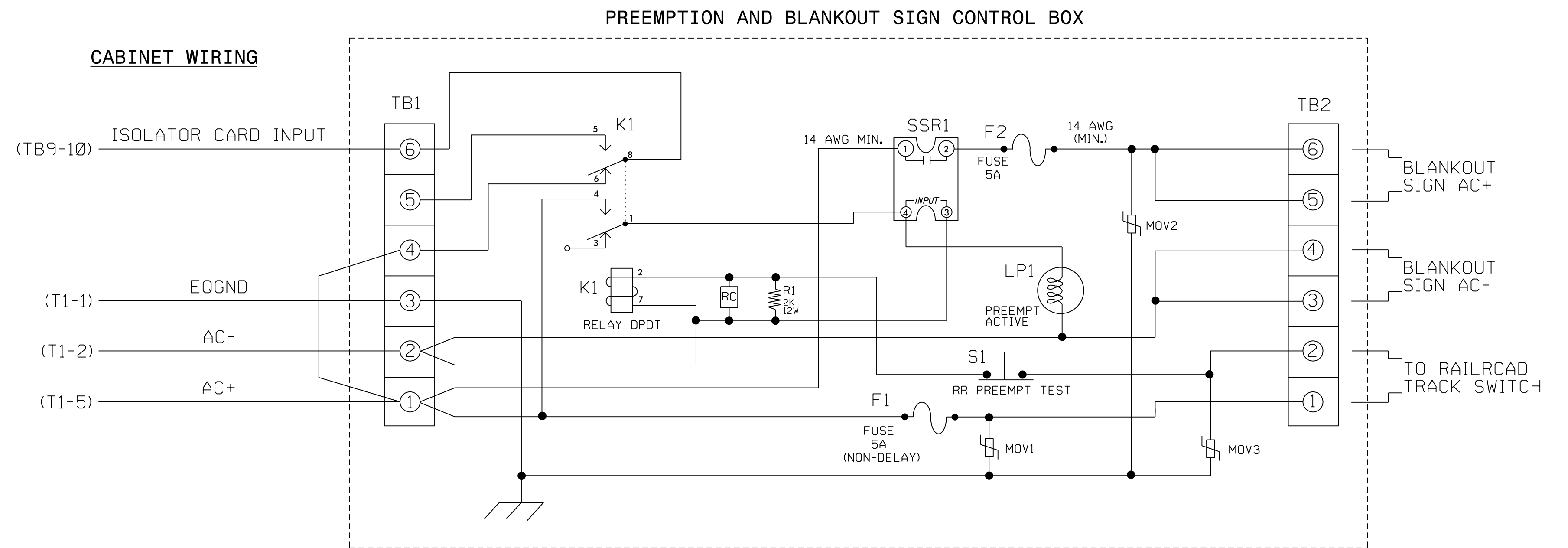
Place cursor in [] next to Preempt Plan and press 1. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Preempt #1.

| | |
|---|---------------|
| PREEMPT PLAN [1] | ENABLE....YES |
| VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 | |
| OVERLAP A B C D E F G H I J K L M N O P | |
| TRKCLR V X | |
| TRKCLR D . . X X | |
| ENA TRL | |
| DWEL VEH X | |
| DWEL PED | |
| DWEL OLP X X | |
| CYC VEH | |
| CYC PED | |
| CYC OLP | |
| EXIT PH . X X | |
| EXIT CAL | |
| SP FUNC | |

| | | | |
|------------------|------------------------|---------------------|---------------|
| ENABLE... YES | IPMT | OVRIDE..X | INTERLOCK..NO |
| DET LOCK... X | IDELAY.. | OINHIBIT... 0 | |
| OVERIDE FL. . | IDURATION | OICLR-GRN... NO | |
| TERM OLP. . | NOIPC>YEL | NOITERM PH NO | |
| PED DARK.. | NOITC RESRV | YESIDWELL FL OFF | |
| LINK PMT.... | OIX FLCOLR | REDIEXIT OPT. OFF | |
| X TMG PLN...O | IRE-SERV.. | OIFLT TYPE.HARD | |
| FREE DUR PMT | IR1 NOIR2 | NOIR3 NOIR4 NO | |
| --TIMING---- | WALKIPED | CLIMN GRI YELI RED | |
| ENTRANCE TM. . | 01 | 01 | 1125.5125.5 |
| -----MIN | GRIEXT | GRIMX GRI YELI RED | |
| TRACK CLEAR | 191 | 01 | 01 4.01 2.0 |
| -----MIN | DLIPMTEXT | IMX TMI YELI RED | |
| DWL/CYC-EXIT | 71 | 0.01 | 0125.5125.5 |
| PMT ACTIVE OUT.. | ON | PMT ACT DWELL...NO | |
| OTHER - PRI | PMT.OFF | NON-PRI PMT....OFF | |
| INH EXT TIME... | 0.0 | PED PR RETURN...OFF | |
| PRIORITY RETURN. | OFF | QUEUE DELAY.... OFF | |
| COND DELAY..... | OFF | | |
| PHASES | 1 2 3 4 5 6 7 8 | | |
| PR RTN% | 0 0 0 0 0 0 0 0 | | |
| PHASES | 9 10 11 12 13 14 15 16 | | |
| PR RTN% | 0 0 0 0 0 0 0 0 | | |

RAILROAD PREEMPTION WIRING DETAIL

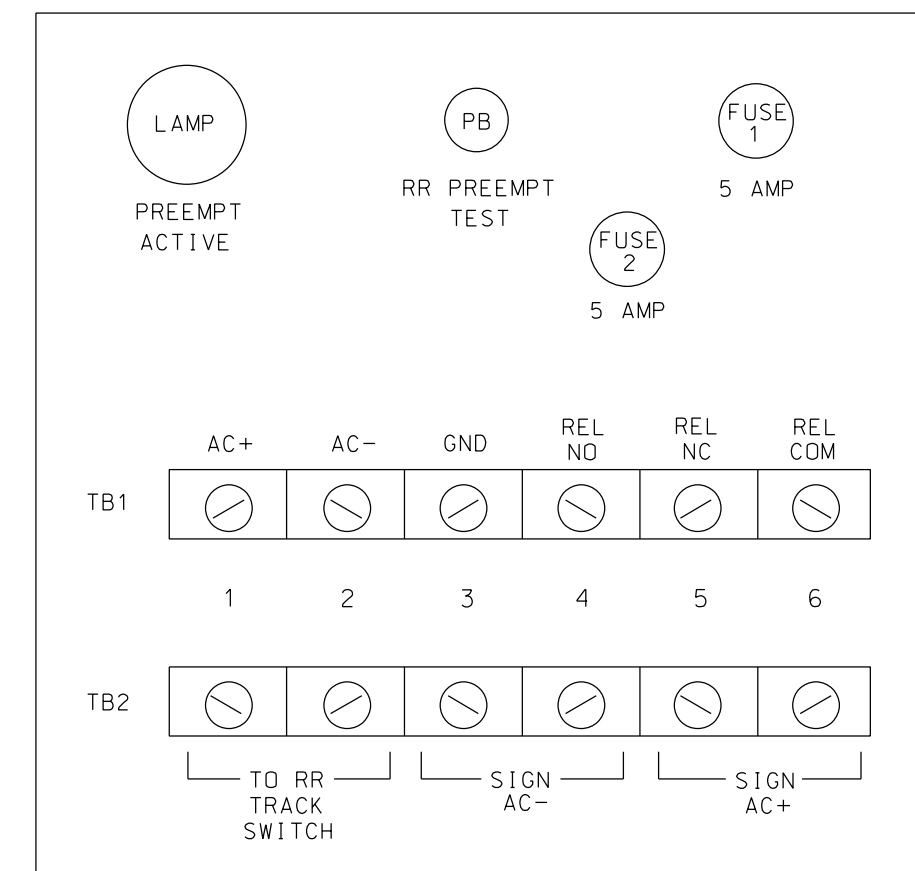
(wire as shown below)



NOTES

- Relay K1 is shown in the energized (Preempt not active) normal operation state.
- Relay K1 is a DPDT with 120VAC coil with octal base.
- Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output.
- AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
- IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0111
 DESIGNED: AUGUST 2003
 SEALED: 11/4/03
 1 REVISED: 11/16/04
 2 REVISED: 05/15/20

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ELECTRICAL DETAIL - SHEET 3 of 3

US 701 BUSINESS (SOUTH MADISON STREET)
 at
 EAST MAIN STREET and
 WEST MAIN STREET

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEERS
 AT THEW B. COPPLE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEERS
 AT THEW B. COPPLE

750 N. Greenfield Pkwy, Garner, NC 27529

PREPARED BY: M. Copple
 REVIEWED BY: J. Rowe

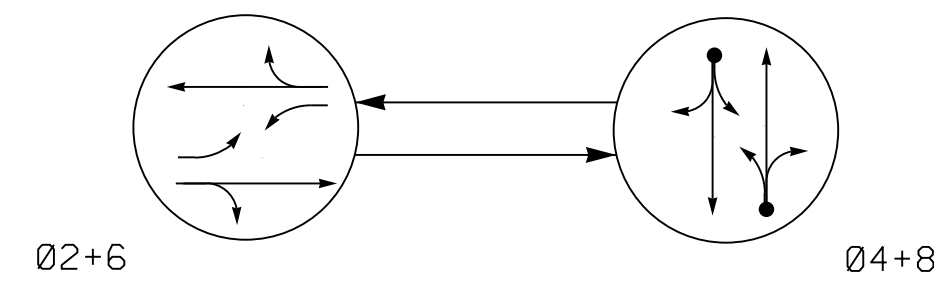
DATE: APRIL 2020

REVISIONS: INIT. DATE

SIGNATURE: DATE

SIG. INVENTORY NO. 06-0111

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

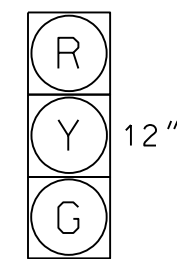
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ← → PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|-------|
| | 02+6 | 04+8 | FLASH |
| 21, 22 | G | R | Y |
| 41, 42 | R | G | R |
| 61, 62 | G | R | Y |
| 81, 82 | R | G | R |

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42
61, 62
81, 82

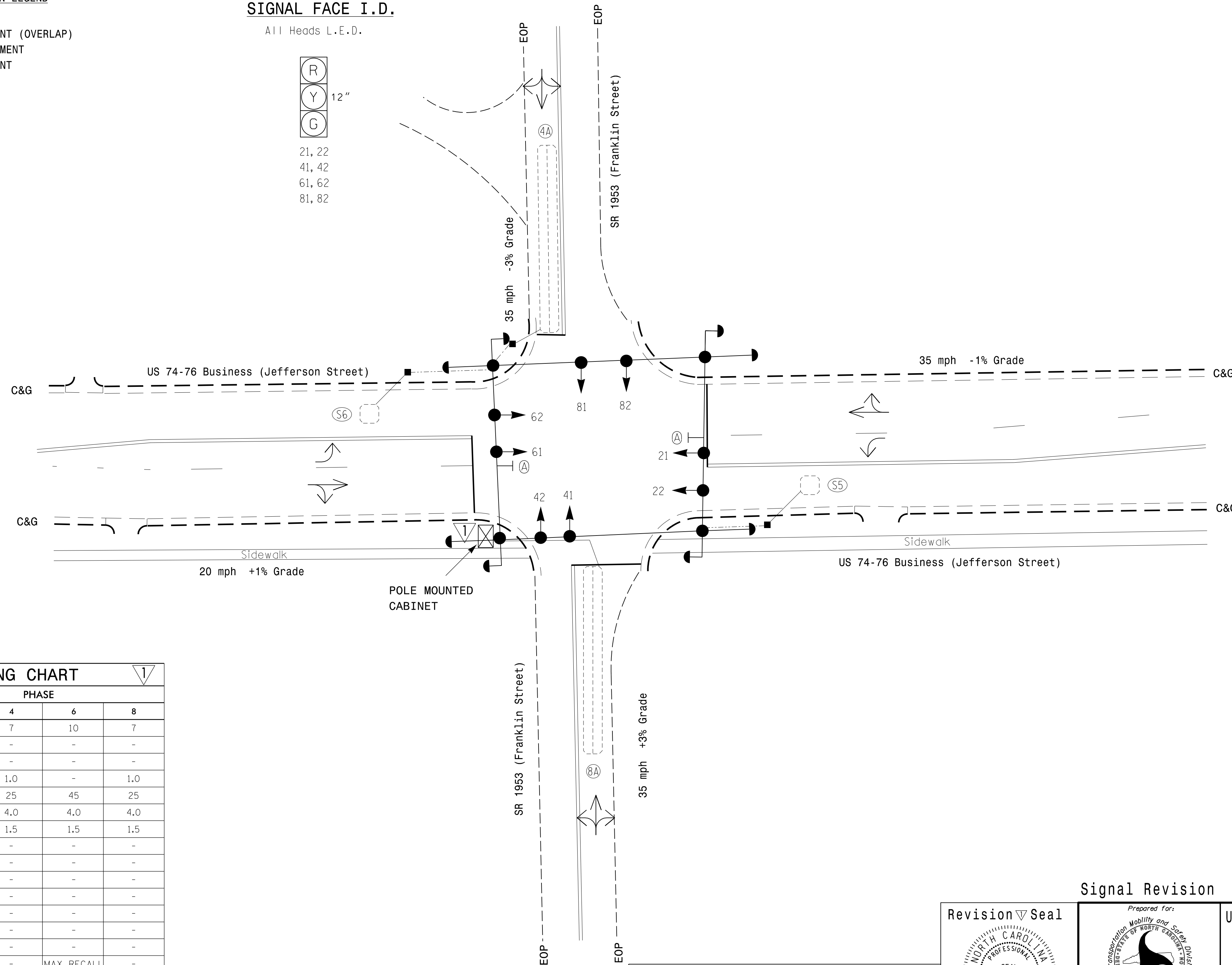
ASC/3 DETECTOR INSTALLATION CHART

| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | PROGRAMMING | | | | | | | | |
|------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|-------------------|------|-------------|----------|
| | | | | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | SYSTEM LOOP | NEW CARD |
| 4A | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | 10 | - | N | - | - |
| 8A | 6X60 | 0 | 2-4-2 | - | 8 | Yes | - | 10 | - | N | - | - |
| S5 | 6X6 | +105 | EXIST | - | - | No | - | - | - | N | X | - |
| S6 | 6X6 | +105 | EXIST | - | - | No | - | - | - | N | X | - |

2 Phase Semi-Actuated System #10605

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2002 and "Standard Specifications for Roads and Structures" dated January 2002.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Pavement markings are existing.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
5. Set all detector units to presence mode.



ASC/3 TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|------------|-----|------------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | - | - | - | - |
| Ped Clear | - | - | - | - |
| Veh. Extension * | - | 1.0 | - | 1.0 |
| Max I * | 45 | 25 | 45 | 25 |
| Yellow | 4.0 | 4.0 | 4.0 | 4.0 |
| Red Clear | 1.5 | 1.5 | 1.5 | 1.5 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | MAX RECALL | - | MAX RECALL | - |
| Dual Entry | - | X | - | X |
| Simultaneous Gap | X | X | X | X |

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

LEGEND

| PROPOSED | EXISTING |
|----------------------------------|-----------------------------------|
| ○ → Traffic Signal Head | ● → N/A |
| ● → Modified Signal Head | — Sign |
| ⊥ Pedestrian Signal Head | ⊥ Sign |
| ⊥ With Push Button & Sign | ⊥ Signal Pole with Guy |
| ○ ⊥ Signal Pole with Guy | ● ⊥ Signal Pole with Sidewalk Guy |
| ⊥ Inductive Loop Detector | ⊥ Junction Box |
| ⊥ Controller & Cabinet | ⊥ 2-in Underground Conduit |
| ⊥ Junction Box | — Right of Way |
| → Directional Arrow | → Pavement Marking Arrow |
| ⊙ Left Arrow "ONLY" Sign (R3-5L) | ⊙ |

Signal Revision

Revision Seal

US 74-76 Business (Jefferson Street) at SR 1953 (Franklin Street)

Division 6 Columbus County Whiteville

PLAN DATE: July 2003 REVIEWED BY: R.J. Ziemba

PREPARED BY: Carter/Hambright REVIEWED BY:

REVISIONS

| NO. | DESCRIPTION | INIT. | DATE |
|-----|--|-------|----------|
| 1 | Controller changed to ASC/3 with new cabinet | GGM | 05/15/20 |

SEAL

Not a certified document. This document originally issued and sealed by Timothy J. Williams, PE, no. 24393 on 11/04/03. This document shall not be considered a certified document.

SIGNATURE DATE

SIG. INVENTORY NO. 06-0114

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SCALE 0 20
1"=20'