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ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN... > TIMING PLAN...
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
  
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
 - Set delay time to "0".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "26".
 - Set assigned phase to "0".

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "5".
 - Set delay time to "0".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "22".
 - Set assigned phase to "0".

```

VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

ENSURE PHASE IS SET TO "0"

END PROGRAMMING

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..... 1
  
```

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..... 5
  
```

END PROGRAMMING

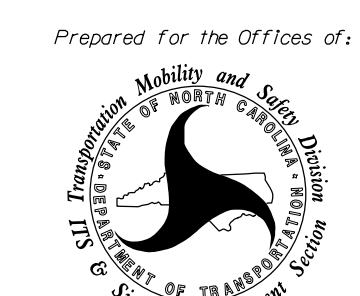
THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0115
 DESIGNED: April 2018
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 13:15 D:\Consolidation\Traffic\Task\00056469 U-6015 B-G Sig System\Task 05_11_Signal\Des\gn\wfr\Inq07-0115E.dgn ALEX3361 AT LUS210649

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical AND PROGRAMMING DETAILS FOR: US 70 (S. Church Street) at SR 1301 (S. Williamson Avenue/ St. Marks Church Road)

Prepared for the Offices of: 

Division 7 Alamance County Burlington

PLAN DATE: April 2018 REVIEWED BY: PL Alexander

PREPARED BY: JA Wiles REVIEWED BY:

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

Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023489 PAMELA L. ALEXANDER

Designed by: Pamela Alexander DATE: 6/9/2018

SIG. INVENTORY NO. 07-0115

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 AND 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 AND 5.

| PHASING | VEH DET PLAN | SF BITS ENABLED |
|--|--------------|-----------------|
| ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u> | 1 | NONE |
| ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u> | 2 | 1, 5 |

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

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1 AND 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BITS 1,5: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

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

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

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

- From Main Menu select **5. TIME BASE**
- From TIME BASE Submenu select **2. ACTION PLAN**

```

ACTION PLAN...[ 1]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY  NO
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  X  .  .  .  X  .  .  .  (1-8)
AUX FCT  .  .  .  (1-3)
  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .

```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0115
DESIGNED: April 2018
SEALED: 6/7/2018
REVISED: N/A

Electrical Detail - Sheet 3 of 3

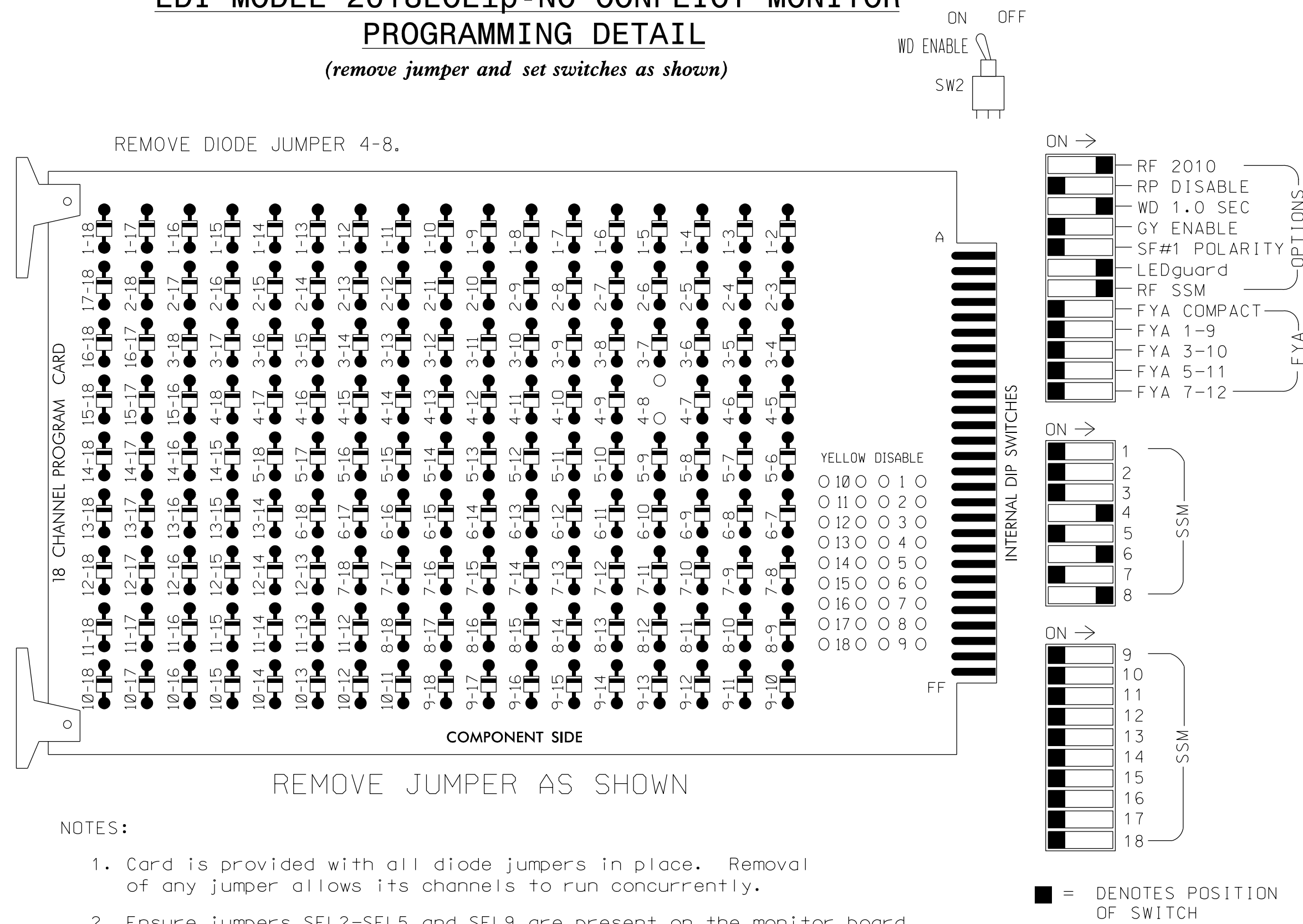
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| | | | |
|--|--|---|--|
| | US 70 (S. Church Street) at SR 1301 (S. Williamson Avenue/ St. Marks Church Road) Division 7 Alameda County Burlington | | |
| | Prepared for the Offices of: | PLAN DATE: April 2018 PREPARED BY: JA Wiles | |
| 1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEEES #F-0326 | | REVISIONS: _____ INIT. DATE _____ _____ INIT. DATE _____ _____ INIT. DATE _____ | Designed by: Pamela Alexander 6/9/2018 Checked by: _____ DATE _____ SIG. INVENTORY NO. 07-0115 |

09-JUN-2018 13:15
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ALEX3361 AT LUS210649

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 6 Green.
3. The cabinet and controller are part of the Burlington-Graham Signal System.

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------|----|----|-------|----|-------------|-------|----|-------------|-------|-----|-------|-------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | NU | NU | NU | 41,42 43 | NU | NU | 61,62 63 | NU | NU | 81,82 | NU |
| RED | | | | | 101 | | | 134 | | | 107 | |
| YELLOW | | | | | 102 | | | 135 | | | 108 | |
| GREEN | | | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

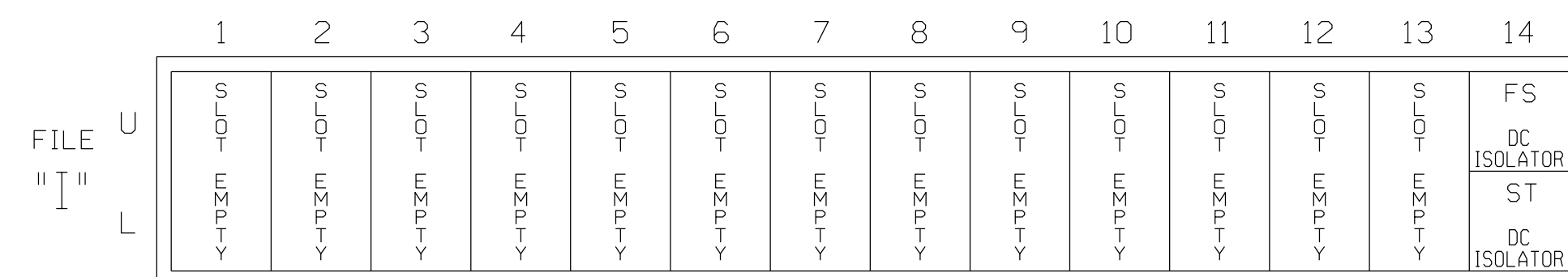
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S5,S8,S11
 PHASES USED.....4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0121
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

13--JUN--2018 17:34
 R:\66015\Traf\ek\signal\design\wiring\07-0121e.dgn
 KANDERSON AT CHA-KANDERSON



Electrical Detail

Electrical and Programming Details For: US 70-NC 62 (N. Fisher Street) at W. Trade Street

Prepared for the Offices of:

Division 7 Alamance County Burlington

PLAN DATE: November 2017 REVIEWED BY: LM Moon

PREPARED BY: AJ Davis REVIEWED BY:

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

DocuSigned by: Lisa M. Moon 6/13/2018

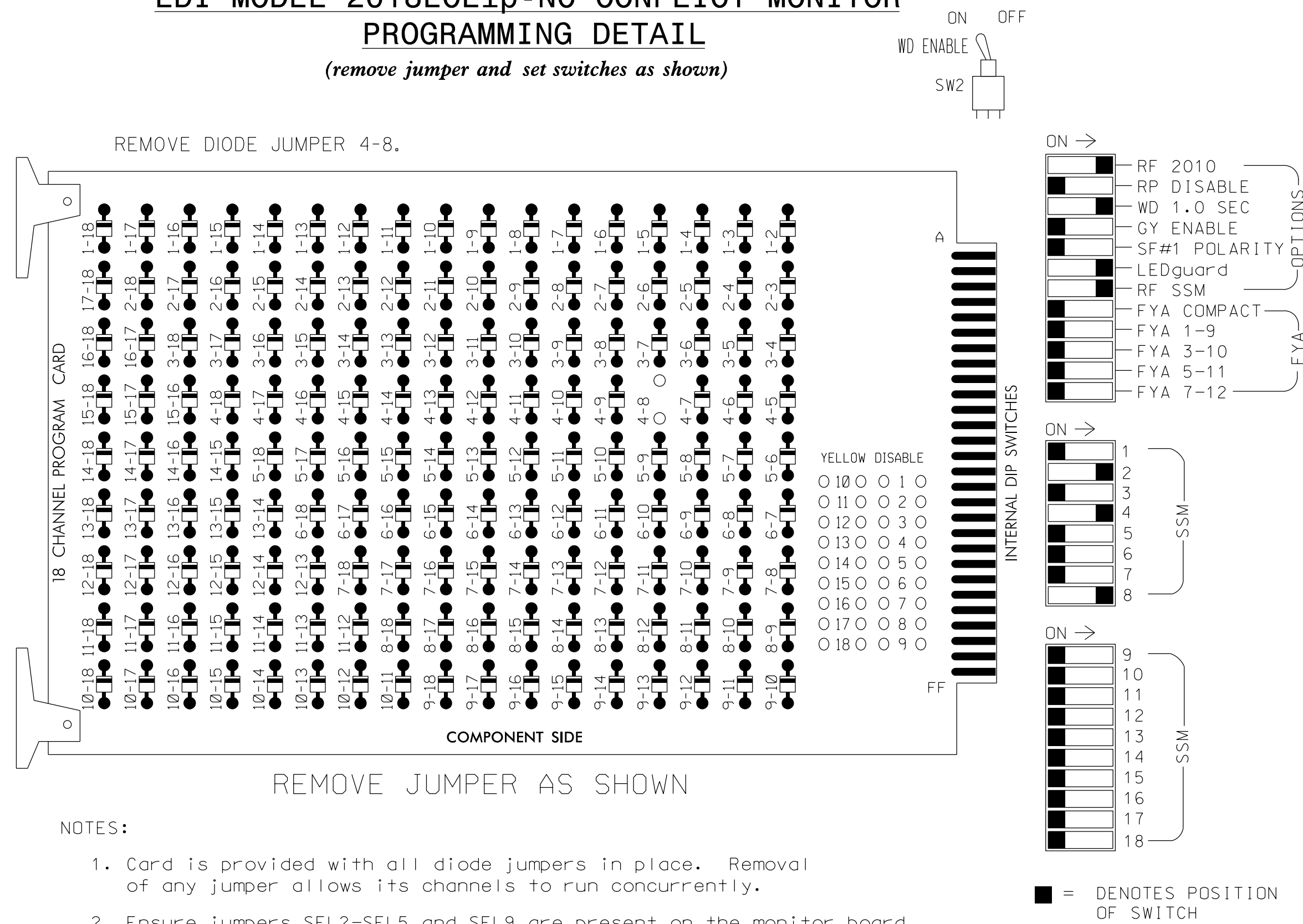
SIG. INVENTORY NO. 07-0121

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER LISA M. MOON 022516

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



NOTES

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

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------|----|-----------|-------|----|-------|-------|----|----|-------|-----|-------|-------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22, 23 | NU | NU | 41,42 | NU | NU | NU | NU | NU | 81,82 | NU |
| RED | | 128 | | | 101 | | | | | | 107 | |
| YELLOW | | 129 | | | 102 | | | | | | 108 | |
| GREEN | | 130 | | | 103 | | | | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

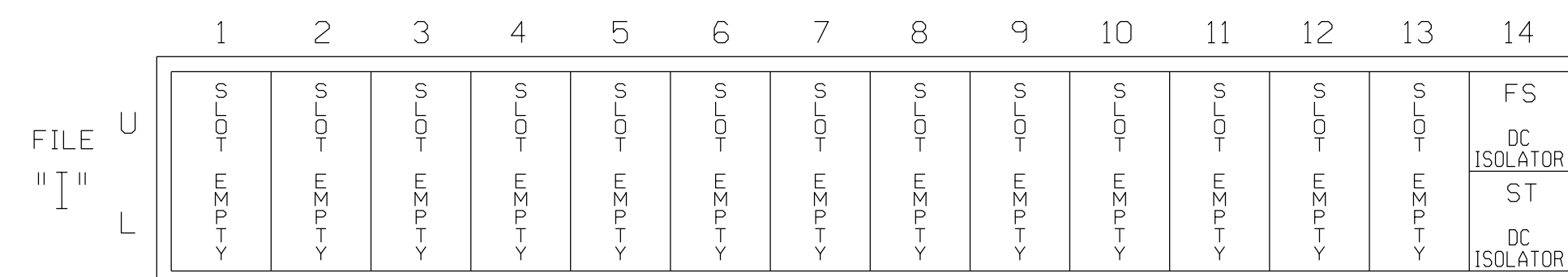
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S11
 PHASES USED.....2,4,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

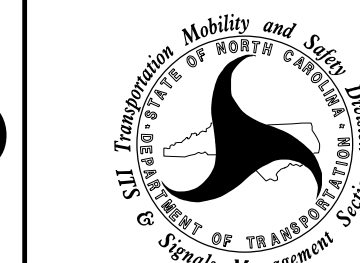
FS = FLASH SENSE
 ST = STOP TIME

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0125
 DESIGNED: NOVEMBER-2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:

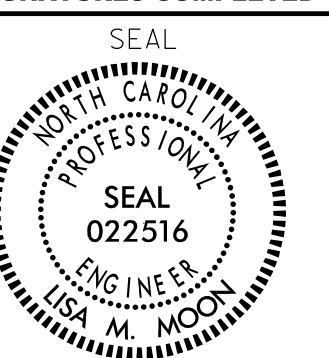


750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

US 70 (N. Church Street) at Fonville Street

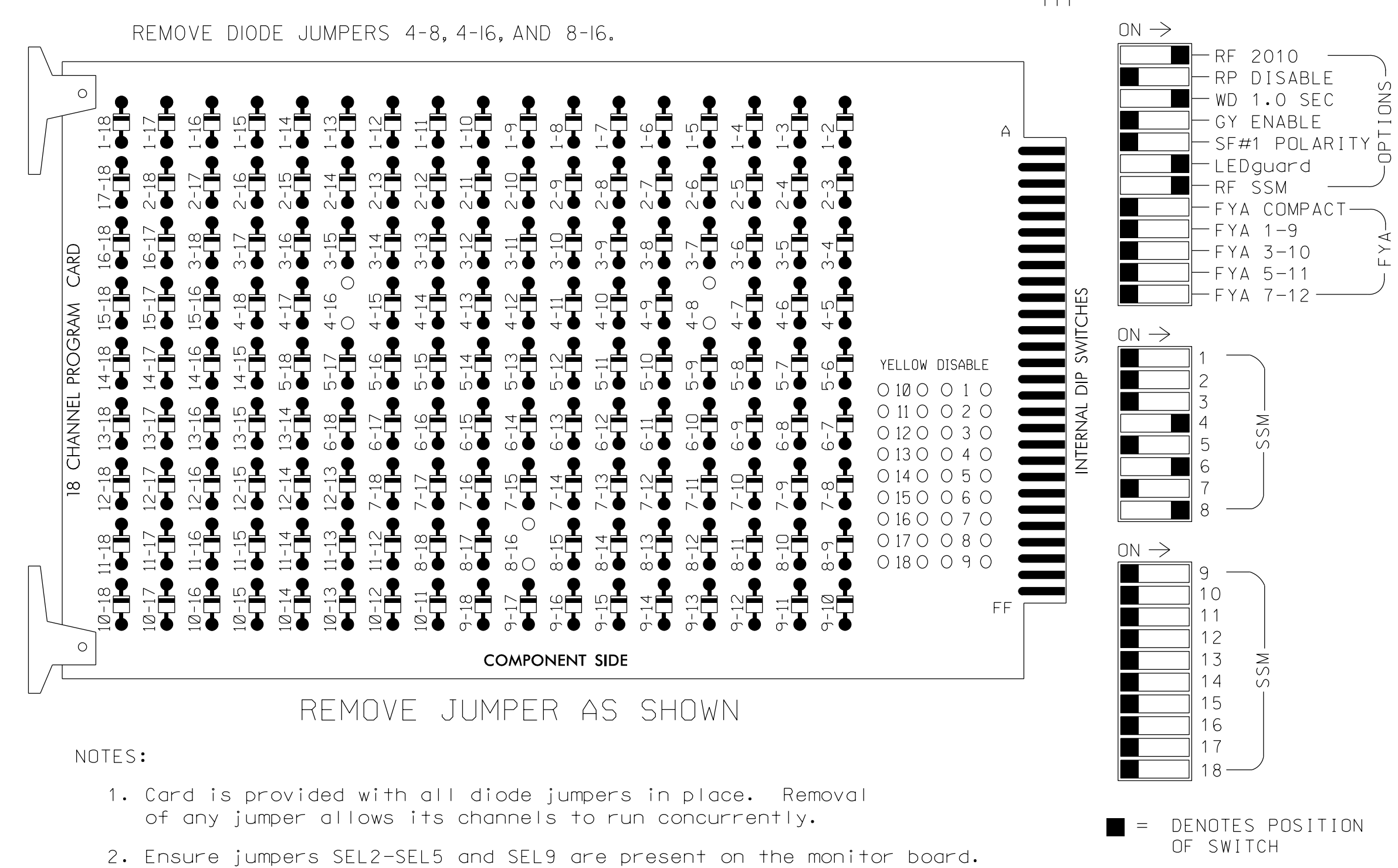
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|--------------------------|----------------------|------------|
| Division 7 | Alamance County | Burlington |
| PLAN DATE: November 2017 | REVIEWED BY: LM Moon | |
| PREPARED BY: AJ Davis | REVIEWED BY: | |
| REVISIONS | INIT. | DATE |
| | | |
| | | |



DocuSigned by: Lisa M. Moon 6/13/2018
 SIGNED BY: Lisa M. Moon
 DATE: 6/13/2018
 SIG. INVENTORY NO. 07-0125

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 phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 6 Green.
4. The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S5,S8,S11,S12
 PHASES USED.....4,6,8,8PED
 OVERLAPS.....NONE

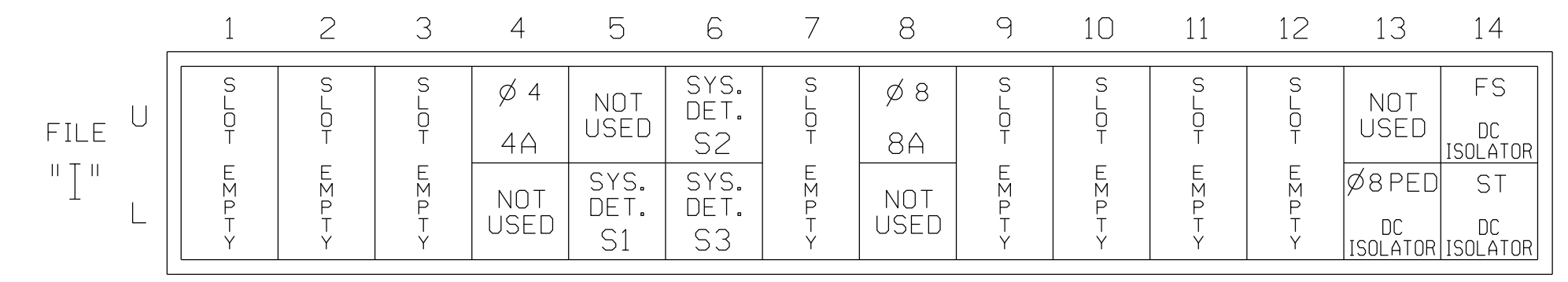
SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------|----|----|-------|----|-------|-------|----|----------|-------|-----|-------|----------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | NU | NU | NU | 41,42 | NU | NU | 61,62,63 | NU | NU | 81,82 | P81, P82 |
| RED | | | | | 101 | | | 134 | | | 107 | |
| YELLOW | | | | | 102 | | | 135 | | | 108 | |
| GREEN | | | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |
| | | | | | | | | | | | 110 | |
| | | | | | | | | | | | | 112 |

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



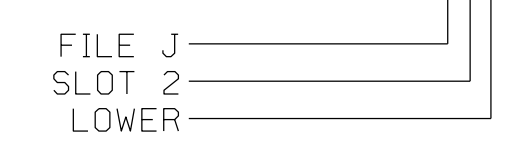
INPUT FILE CONNECTION & PROGRAMMING CHART

| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|-------------------|---------------|
| 4A | TB21-7,8 | I4U | 41 | 4 | 4 | YES | | 10 | | S |
| * S1 | TB23-9,10 | I5L | 48 | 26 | SYS | NO | | | | N |
| * S2 | TB21-11,12 | I6U | 40 | 6 | SYS | NO | | | | N |
| * S3 | TB23-11,12 | I6L | 44 | 16 | SYS | NO | | | | N |
| 8A | TB22-1,2 | I8U | 42 | 8 | 8 | YES | | 3 | | S |
| PED PUSH BUTTONS | | | | | | | | | | |
| P81,P82 | TB24-11,12 | I13L | 70 | PED 8 | 8 PED | | | | | |

NOTE:
INSTALL DC ISOLATOR IN INPUT FILE SLOT 113.

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



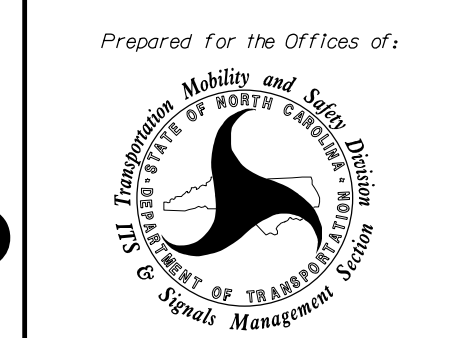
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0126
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



US 70 (N. Fisher Street) at N. Ireland Street

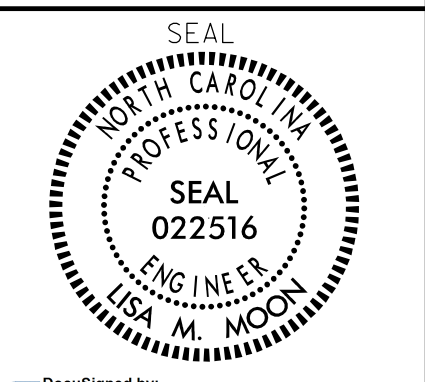
Division 7 Alamance County Burlington

PLAN DATE: November 2017 REVIEWED BY: LM Moon

PREPARED BY: AJ Davis REVIEWED BY:

REVISIONS INIT. DATE

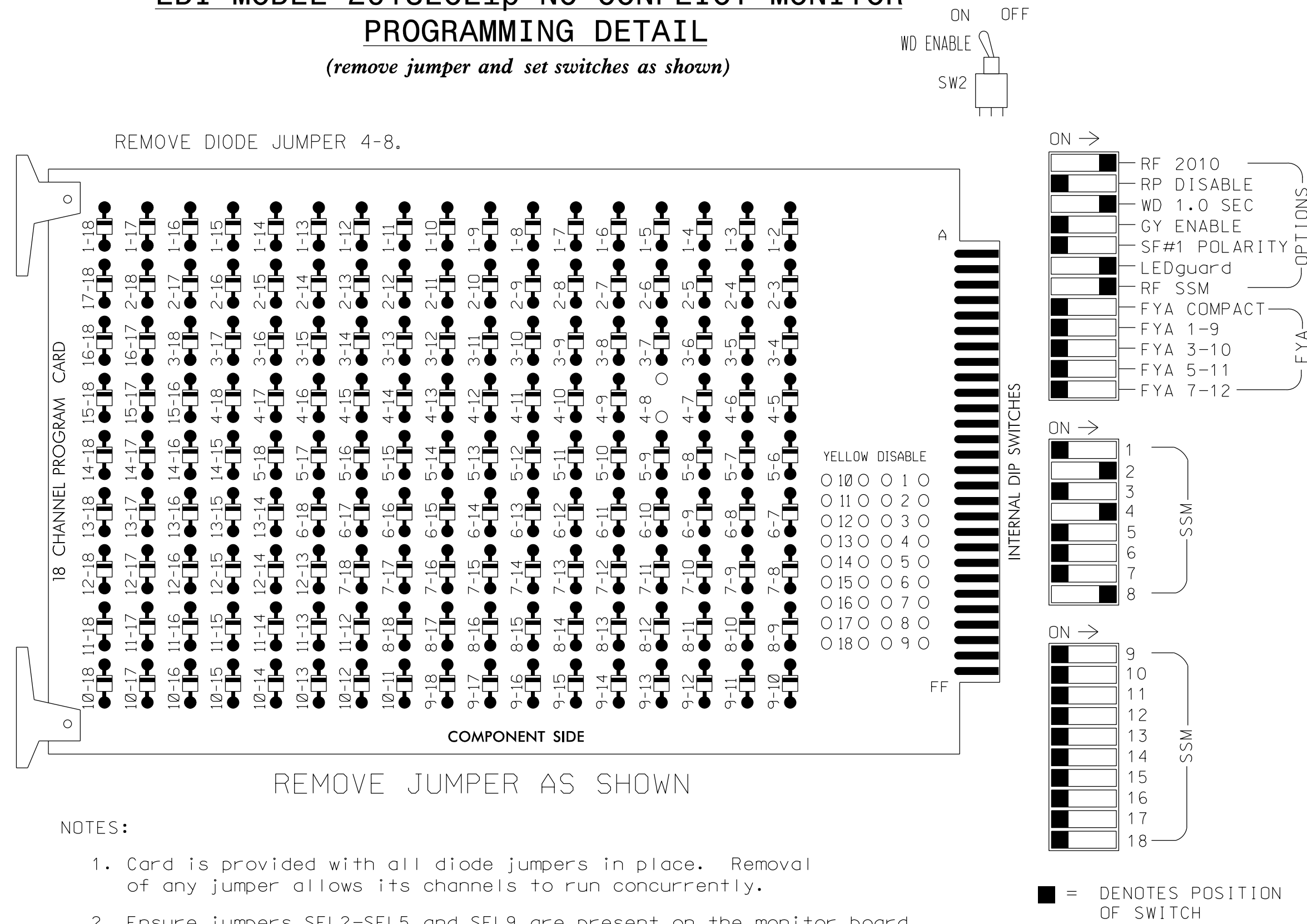
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by: Lisa M. Moon 6/13/2018
 SCS0880300421 DATE
 SIG. INVENTORY NO. 07-0126

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



NOTES

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

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------|----|-----------|-------|----|-------|-------|----|----|-------|-----|-------|-------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | 21,22, 23 | NU | NU | 41,42 | NU | NU | NU | NU | NU | 81,82 | NU |
| RED | | 128 | | | 101 | | | | | | 107 | |
| YELLOW | | 129 | | | 102 | | | | | | 108 | |
| GREEN | | 130 | | | 103 | | | | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

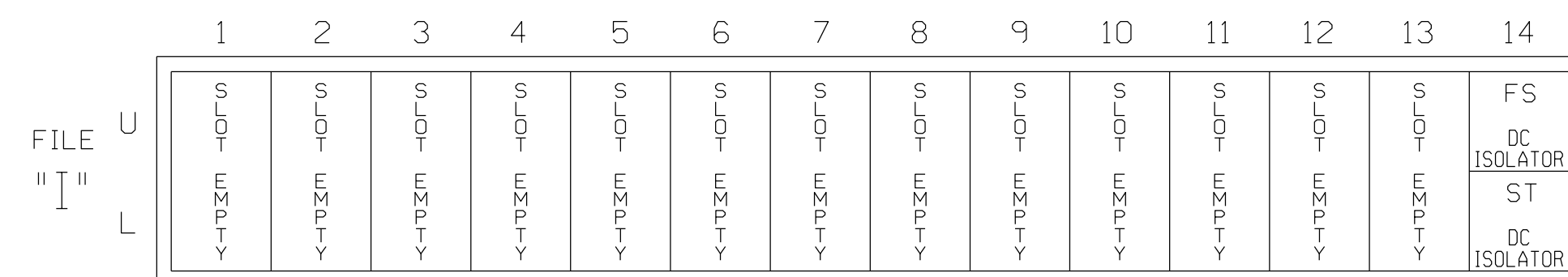
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S11
 PHASES USED.....2,4,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



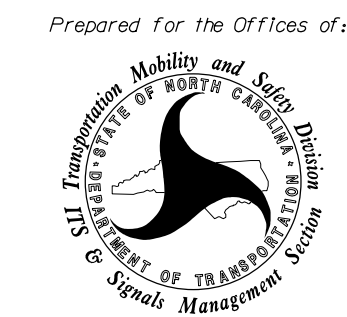
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0127
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



Plans Prepared By:
DRMP
 DRMP, Inc.
 8000 Regency Parkway, Suite 175
 Cary, NC 27518
 NC License No. C-2213 (919) 650-1038

US 70 (N. Church Street) at N. Ireland Street

Division 7 Alamance County Burlington

PLAN DATE: November 2017 REVIEWED BY: LM Moon

PREPARED BY: AJ Davis REVIEWED BY:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

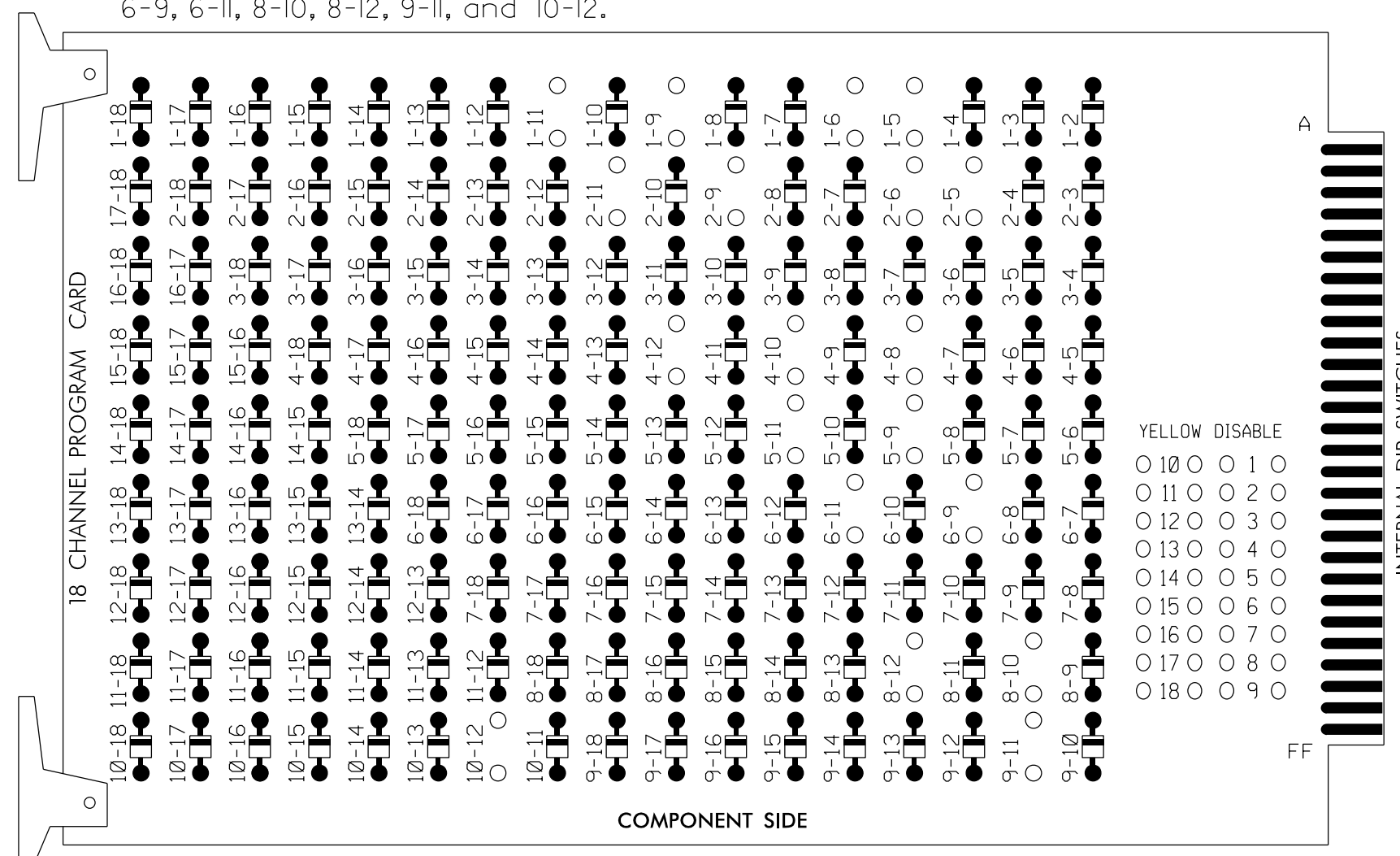


DocuSigned by:
 Lisa M. Moon
 6/13/2018
 DATE
 SIG. INVENTORY NO. 07-0127

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, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 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 the Burlington-Graham Signal System.

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 | 21,22 | NU | 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 | | | | | | | | | | |

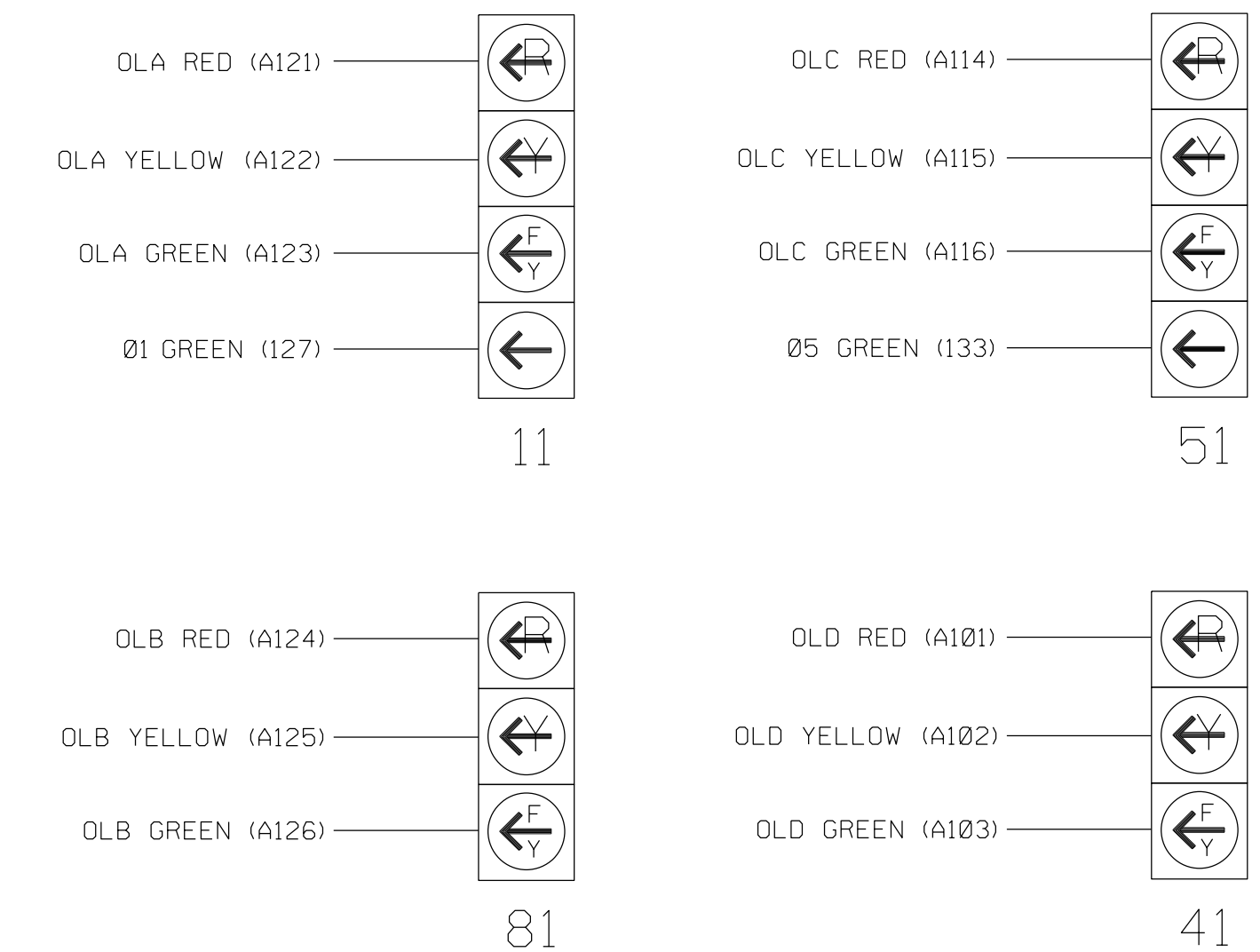
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

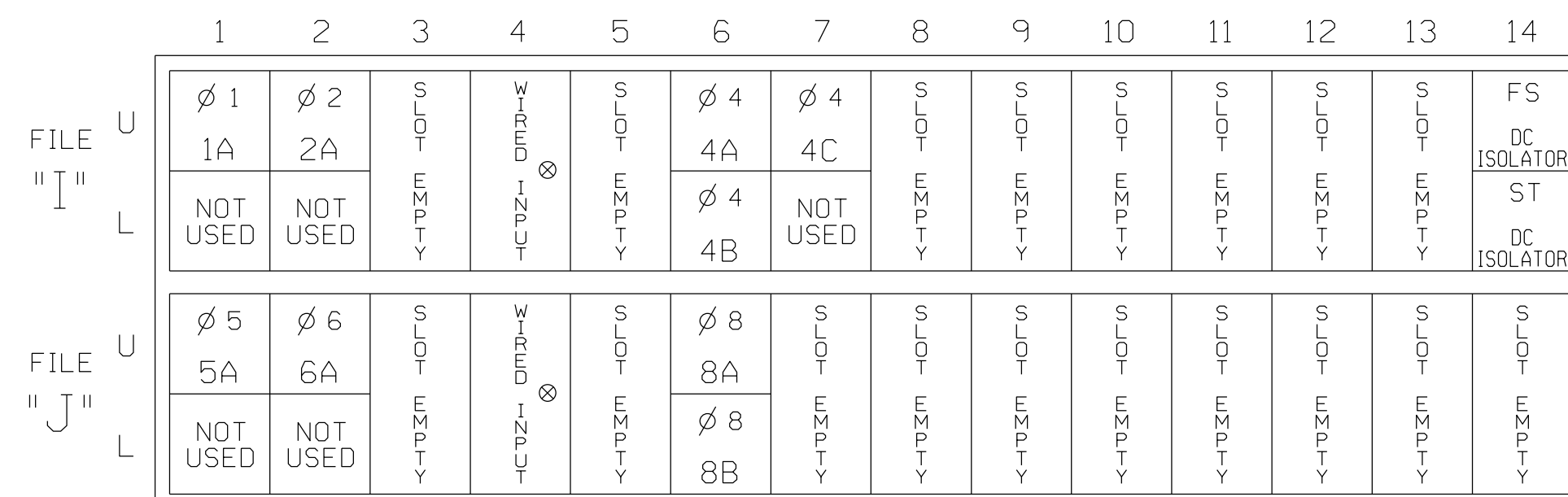
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



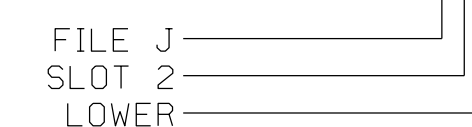
EX.: 1A, 2A, ETC. = LOOP NO.'S
 * Wired Input - Do not populate slot with detector card
 FS = FLASH SENSE
 ST = STOP TIME

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 ¹ | TB2-1,2 | I1U | 56 | 1 | 1 | YES | | 15 | | S |
| | - | J4U | 48 | 26 | 6 | YES | | | | S |
| 2A | TB2-5,6 | I2U | 39 | 2 | 2 | YES | | | | S |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | 3 | | S |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | | | S |
| 4C | TB6-1,2 | I7U | 65 | 34 | 4 | YES | | 10 | | S |
| 5A ² | TB3-1,2 | J1U | 55 | 5 | 5 | YES | | 15 | | S |
| | - | I4U | 47 | 22 | 2 | YES | | | | S |
| 6A | TB3-5,6 | J2U | 40 | 6 | 6 | YES | | | | S |
| 8A | TB5-9,10 | J6U | 42 | 8 | 8 | YES | | 3 | | S |
| 8B | TB5-11,12 | J6L | 46 | 18 | 8 | YES | | 10 | | S |

- 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.

INPUT FILE POSITION LEGEND: J2L

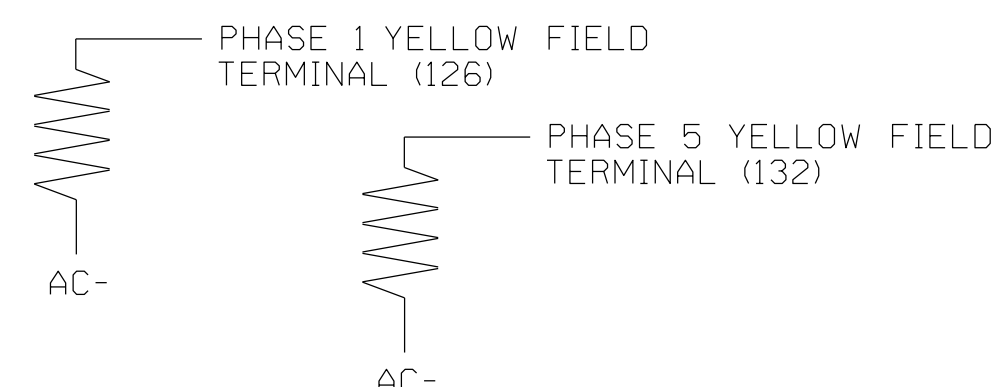


LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

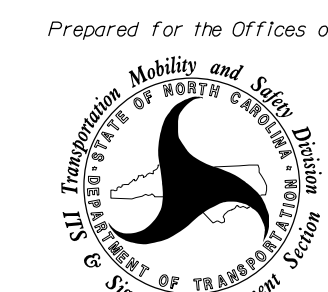
ACCEPTABLE VALUES

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



Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:



SR 1363 (S. Mebane Street) at Maple Avenue

Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: AJ Davis

PREPARED BY: DJ White REVIEWED BY: LM Moon

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by: Lisa M. Moon 6/13/2018

SIG. INVENTORY NO. 07-0128

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 Twice

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
    
```

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
    
```

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 . . . . . 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

FLASHER CIRCUIT MODIFICATION DETAIL

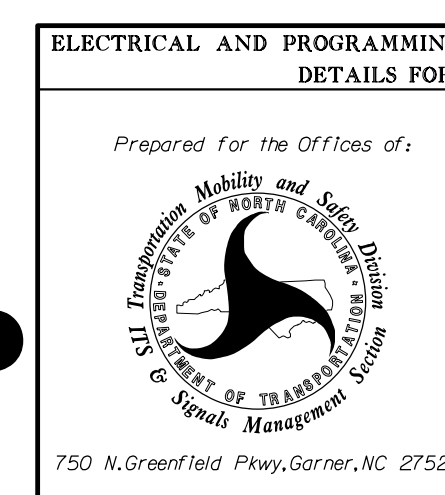
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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.

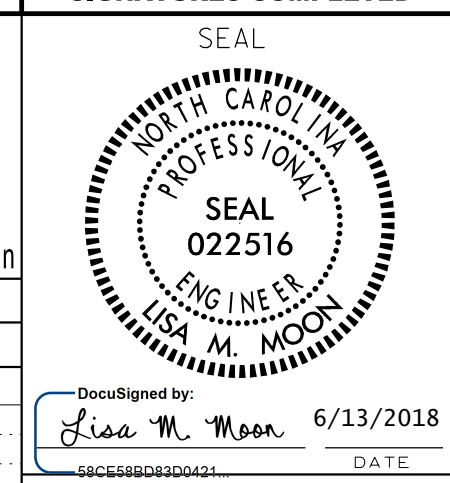
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0128
DESIGNED: DECEMBER 2017
SEALED: 06-13-2018
REVISED: N/A

Electrical Detail - Sheet 2 of 2



| | |
|---|----------------------------|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: | |
| Prepared for the Offices of: | |
| SR 1363 (S. Mebane Street) at Maple Avenue | |
| Division 7 | Alamance County Burlington |
| PLAN DATE: December 2017 | REVIEWED BY: AJ Davis |
| PREPARED BY: DJ White | REVIEWED BY: LM Moon |
| REVISIONS | INIT. DATE |
| | |
| | |
| | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

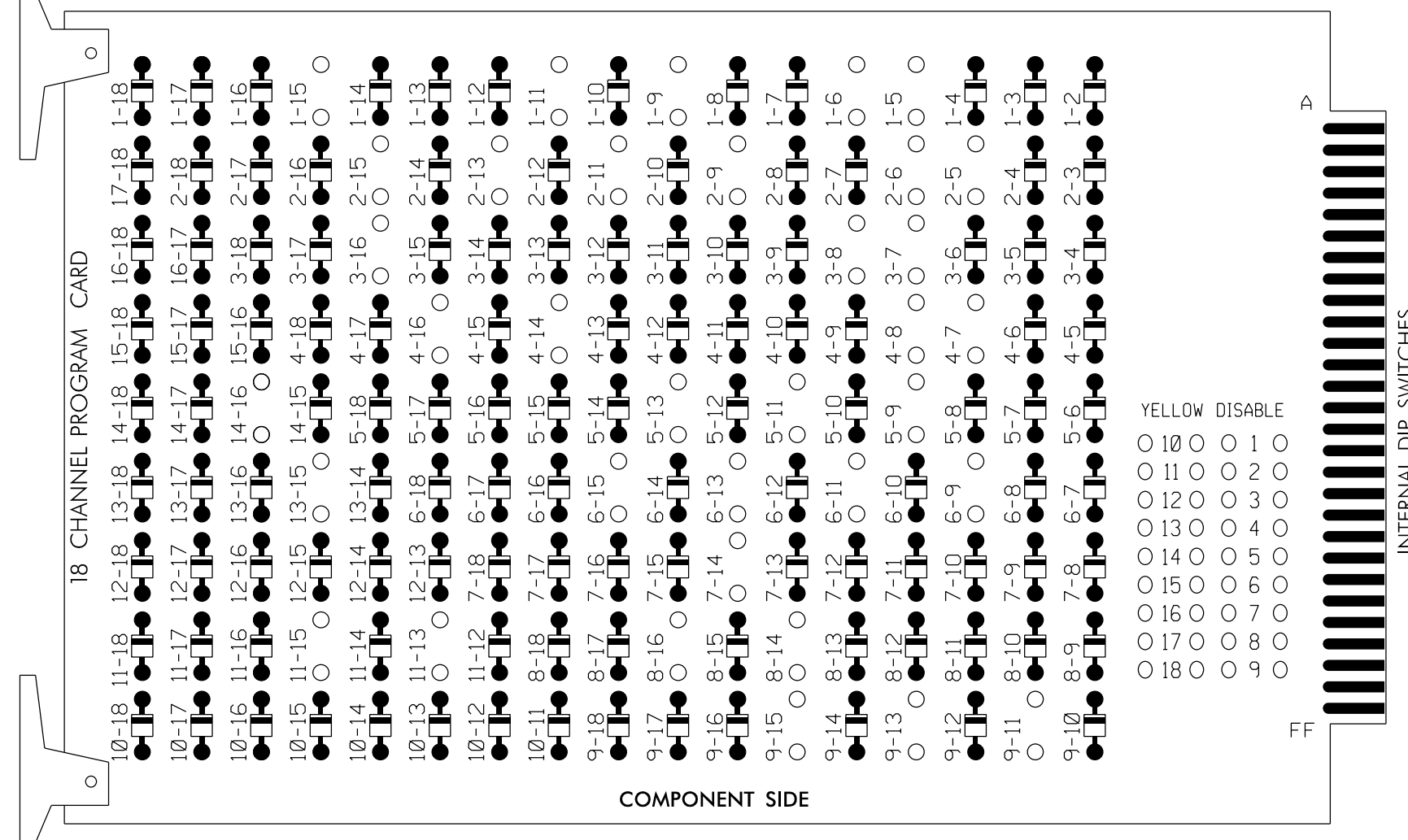


DocuSigned by:
Lisa M. Moon 6/13/2018
SIG. INVENTORY NO. 07-0128

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, 2-13, 2-15, 3-7, 3-8, 3-16, 4-7, 4-8, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-14, 8-14, 8-16, 9-11, 9-13, 9-15, 11-13, 11-15, 13-15 and 14-16.



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 Walk and 6 Walk.
- The cabinet and controller are part of the Burlington-Graham Signal System.

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,S4,S5,S6,S7,S8,S9,S10,S11,S12,AUX S1,AUX S4
 PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED,6PED,8PED
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

| | |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| U-6015 | Sig. 59.1 |

SIGNAL HEAD HOOK-UP CHART

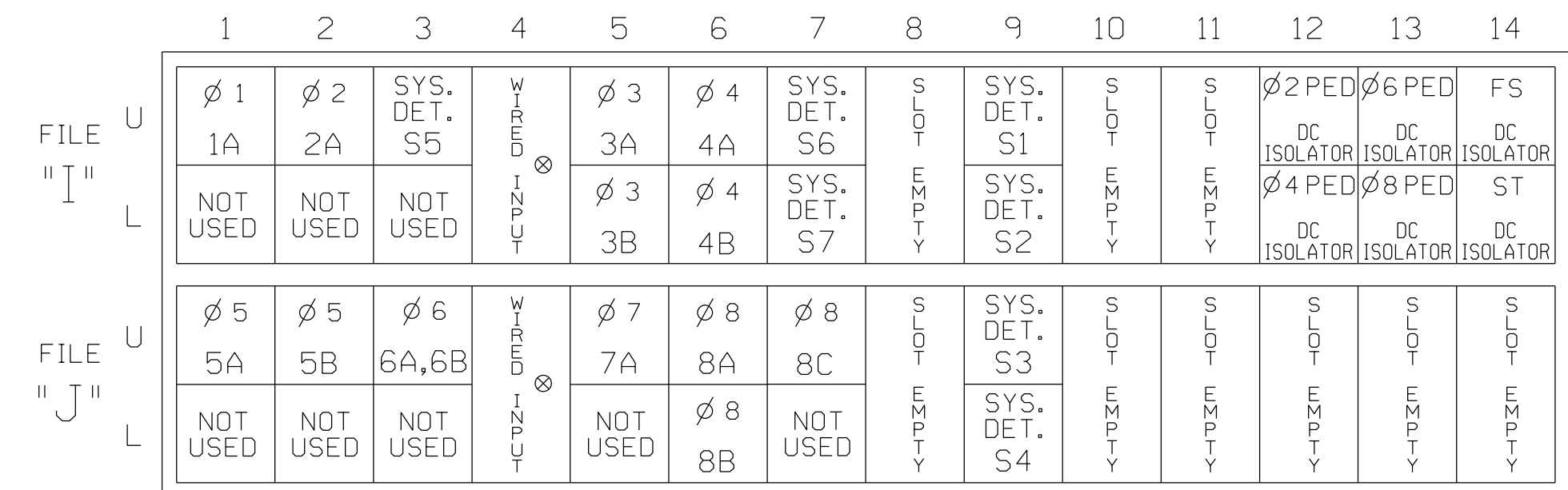
| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 | |
|-----------------------|-----|----------|----------|-----|-------|-------|----------|-----|-------|----------|----------|-------|--------|----------|--------|--------|--------|--------|----|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 | |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE | |
| SIGNAL HEAD NO. | 11 | 21,22,23 | P21, P22 | 22 | 31,32 | 41,42 | P41, P42 | 42 | 51 | 61,62,63 | P61, P62 | 71 | 81,82 | P81, P82 | 11 | NU | NU | 51 | NU |
| RED | | 128 | | | | 101 | | * | 134 | | | 107 | | | | | | | |
| YELLOW | * | 129 | | | | 102 | | | 135 | | | 108 | | | | | | | |
| GREEN | | 130 | | | | 103 | | | 136 | | | 109 | | | | | | | |
| RED ARROW | | | | 116 | | | | | | | | 122 | | A121 | | | | A114 | |
| YELLOW ARROW | | | | 117 | 117 | | | 132 | | | | 123 | | A122 | | | | A115 | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | A123 | | | | A116 | |
| GREEN ARROW | 127 | | | 118 | 118 | | | 133 | 133 | | | 124 | | | | | | | |
| Hand icon | | | 113 | | | | | 104 | | | | 119 | | | | | | 110 | |
| Walking person icon | | | 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.

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.

INPUT FILE POSITION LAYOUT (front view)



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

FS = FLASH SENSE
 ST = STOP TIME

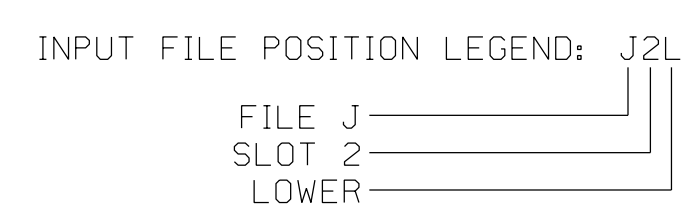
⊗ Wired Input - Do not populate slot with detector card

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 | | S |
| | - | J4U | 48 | 26 | 6 | YES | | | | S |
| 2A | TB2-5,6 | I2U | 39 | 2 | 2 | YES | | | | S |
| * S5 | TB2-9,10 | I3U | 63 | 32 | SYS | NO | | | | N |
| 3A | TB4-5,6 | I5U | 58 | 3 | 3 | YES | | | | S |
| 3B | TB4-7,8 | I5L | 50 | 28 | 3 | YES | | | | S |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | | | S |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | | | S |
| * S6 | TB6-1,2 | I7U | 65 | 34 | SYS | NO | | | | N |
| * S7 | TB6-3,4 | I7L | 78 | 44 | SYS | NO | | | | N |
| * S1 | TB6-9,10 | I9U | 60 | 11 | SYS | NO | | | | N |
| * S2 | TB6-11,12 | I9L | 62 | 13 | SYS | NO | | | | N |
| 5A ² | TB3-1,2 | J1U | 55 | 5 | 5 | YES | | 15 | | S |
| | - | I4U | 47 | 22 | 2 | YES | | | | S |
| 5B | TB3-5,6 | J2U | 40 | 6 | 5 | YES | | 15 | | S |
| 6A,6B | TB3-9,10 | J3U | 64 | 36 | 6 | YES | | | | S |
| 7A | TB5-5,6 | J5U | 57 | 7 | 7 | YES | | | | S |
| 8A | TB5-9,10 | J6U | 42 | 8 | 8 | YES | | | | S |
| 8B | TB5-11,12 | J6L | 46 | 18 | 8 | YES | | 10 | | S |
| 8C | TB7-1,2 | J7U | 66 | 38 | 8 | YES | | 15 | | S |
| * S3 | TB7-9,10 | J9U | 59 | 15 | SYS | NO | | | | N |
| * S4 | TB7-11,12 | J9L | 61 | 17 | 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 | | | | | |

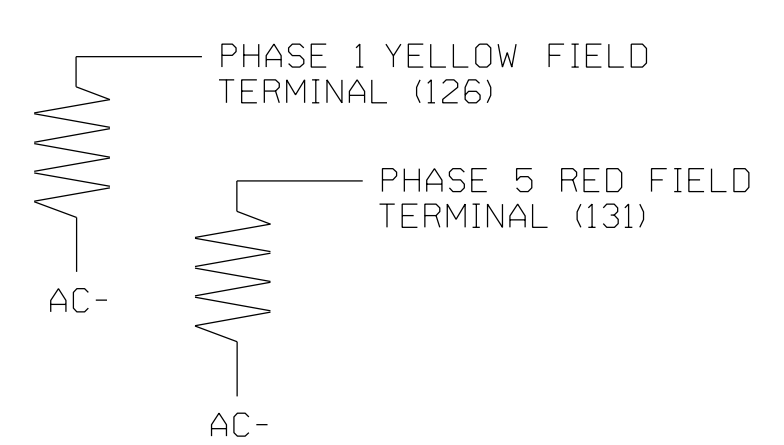
NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- 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.

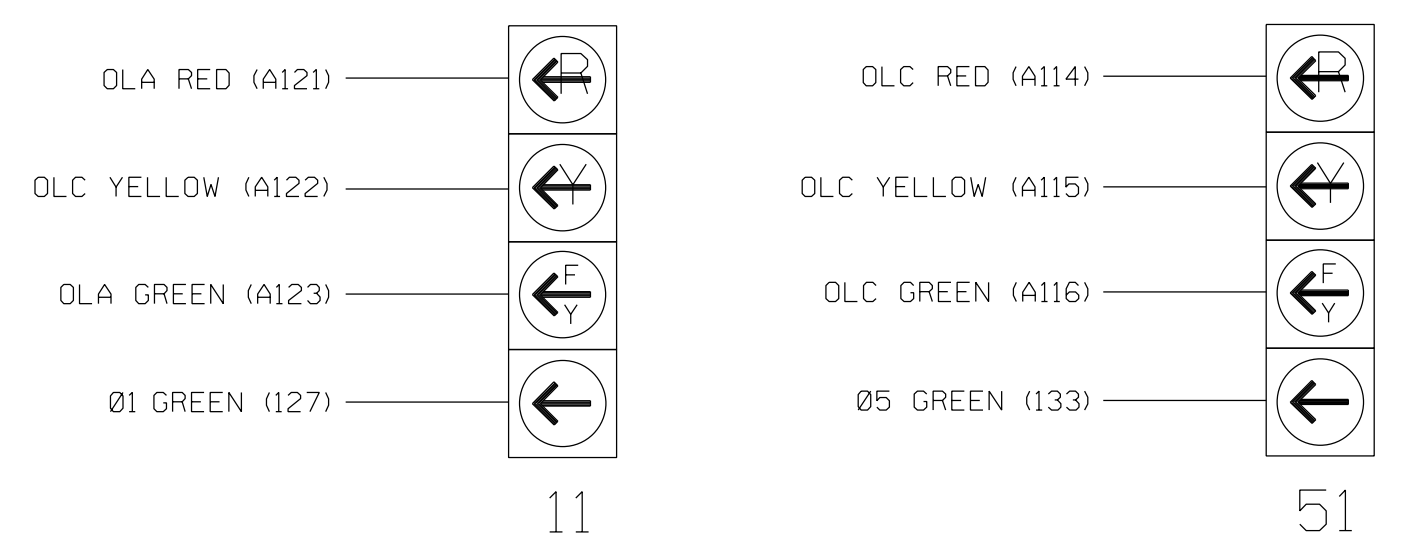


LOAD RESISTOR INSTALLATION DETAIL (install resistors as shown)

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



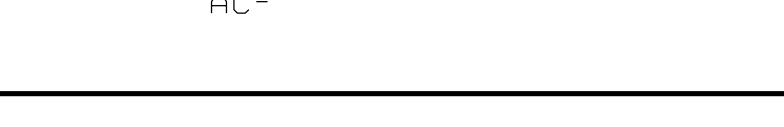
FYA SIGNAL WIRING DETAIL (wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0133
 DESIGNED: OCTOBER 2017
 SEALED: 6/7/2018
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL (install resistors as shown)

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



Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
 ALL Transportation Mobility and Safety Programs
 DIVISION OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION & TRAFFIC MANAGEMENT

750 N. Greenfield Pkwy, Garner, NC 27529

NC 62 (Alamance Road) at SR 1306/SR 1363 (S. Mebane Street)
 Division 7 Alamance County Burlington

PLANNING DATE: October 2017 REVIEWED BY: AM Encarnacion
 PREPARED BY: JA Wiles REVIEWED BY: PL Alexander

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

Seal: PAMELA L. ALEXANDER, ENGINEER, SEAL 023489
 Date: 6/9/2018
 Signature: Pamela Alexander
 Date: _____
 S/G. INVENTORY NO. 07-0133

09-JUN-2018 13:15 D:\Transportation\tr-office\curr*00056469 U-6015 B-G Sig Sigs*task 05-11-15\signal\040as\gn\wfr\ing07-0133E-dgn ALEX3361 AT LUS34069

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 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

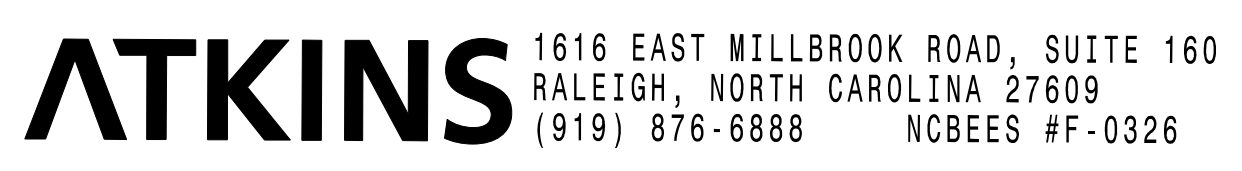
DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0133
 DESIGNED: OCTOBER 2017
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 13:15
 D:\Transportation\tr-office\curr\100056469 U-6015 B-s Sig Sys\Task 05-11-SIGNALS\04as\gn\WIF.rng\07-0133E.dgn
 ALEX3561 AT LUS240619

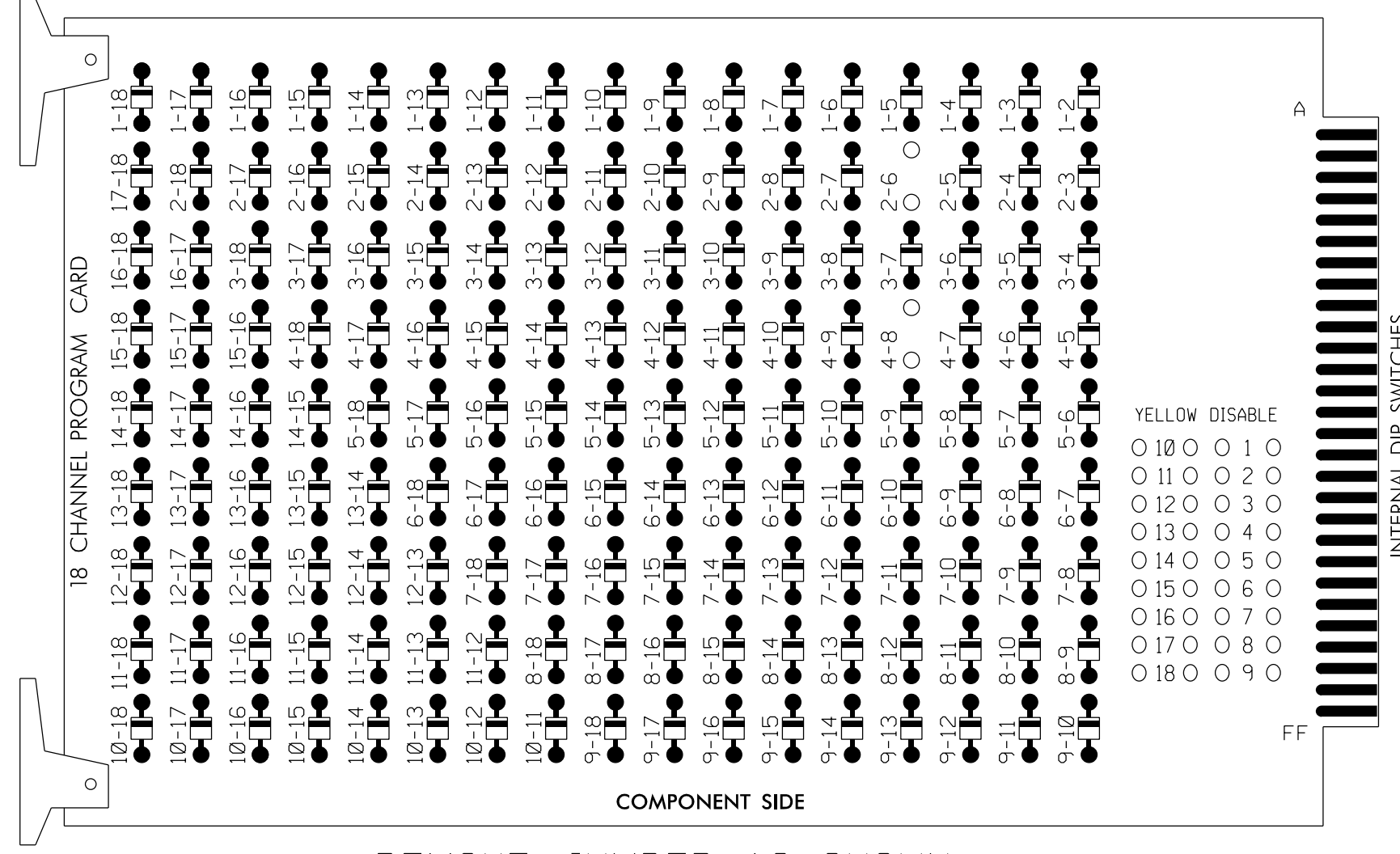


| Electrical Detail - Sheet 2 of 2 | | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | | | | | | | | |
|--|---|---|-----------|-------|------|--|--|--|--|--|
| ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: | NC 62 (Alamance Road) at SR 1306/SR 1363 (S. Mebane Street) Division 7 Alamance County Burlington | SEAL SEAL 023489 ENGINEER PAMELA L. ALEXANDER | | | | | | | | |
| PREPARED BY: JA Wiles REVIEWED BY: AM Encarnacion | | Date Signed by: <u>Pamela Alexander</u> 6/9/2018 DATE: _____ SIG. INVENTORY NO. 07-0133 | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">REVISIONS</th> <th style="width: 20%;">INIT.</th> <th style="width: 20%;">DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | | | REVISIONS | INIT. | DATE | | | | | |
| REVISIONS | INIT. | DATE | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)

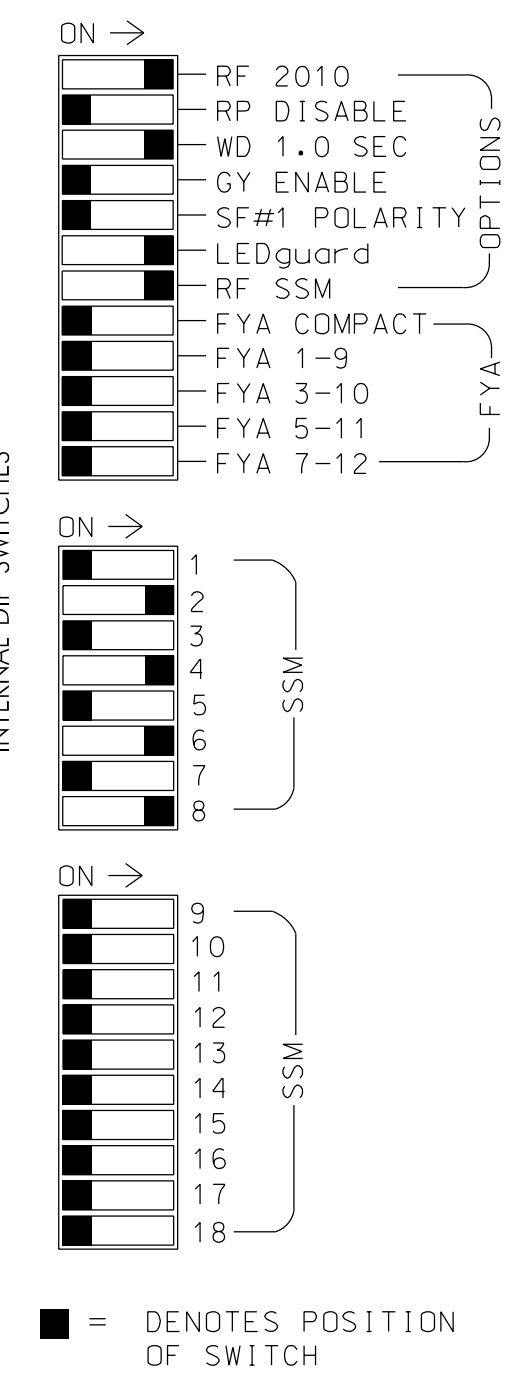
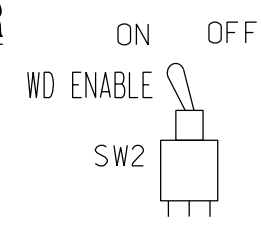
REMOVE DIODE JUMPERS 2-6 AND 4-8.



REMOVE JUMPER 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 the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....POLE MOUNTED
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

| | |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| U-6015 | Sig. 60.1 |

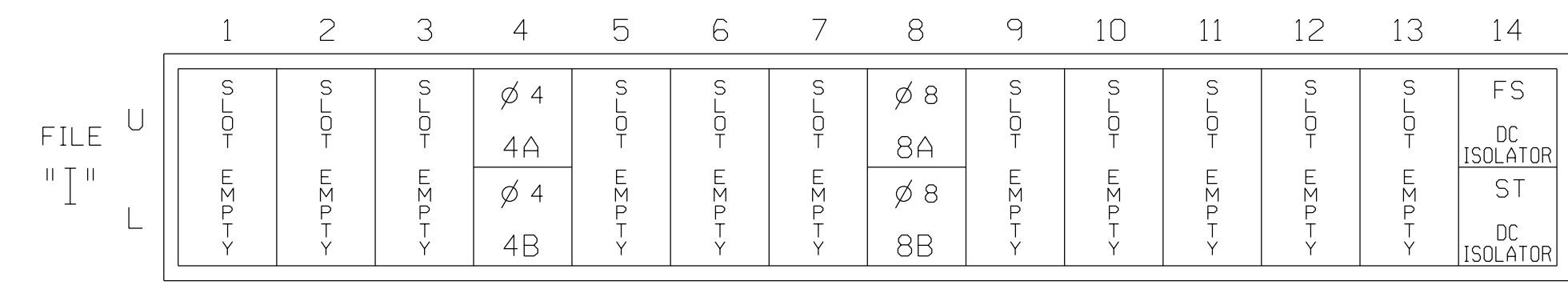
SIGNAL HEAD HOOK-UP CHART

| 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

INPUT FILE POSITION LAYOUT

(front view)



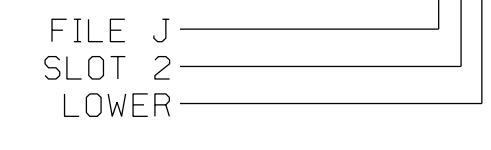
EX. : 1A, 2A, ETC. = LOOP NO.'S

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 | 14U | 41 | 4 | 4 | YES | | 3 | | S |
| 4B | TB23-7,8 | 14L | 45 | 14 | 4 | YES | | 10 | | S |
| 8A | TB22-1,2 | 18U | 42 | 8 | 8 | YES | | 3 | | S |
| 8B | TB24-1,2 | 18L | 46 | 18 | 8 | YES | | 10 | | S |

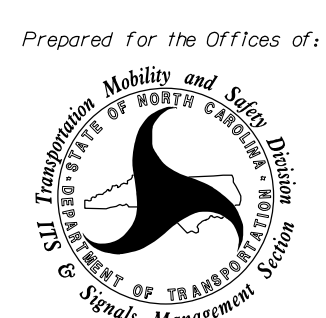
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0148
 DESIGNED: January 2018
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



Prepared for the Offices of:
NC 87-100 (W. Webb Avenue)
 at
SR 1523 (Glen Raven Road)/
Shopping Center Entrance
 Division 7 Alamance County Burlington
 PLAN DATE: January 2018 REVIEWED BY: AM Encarnacion
 PREPARED BY: NA Ptak REVIEWED BY: PL Alexander

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



750 N. Greenfield Pkwy, Garner, NC 27529

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEES #F-0326

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

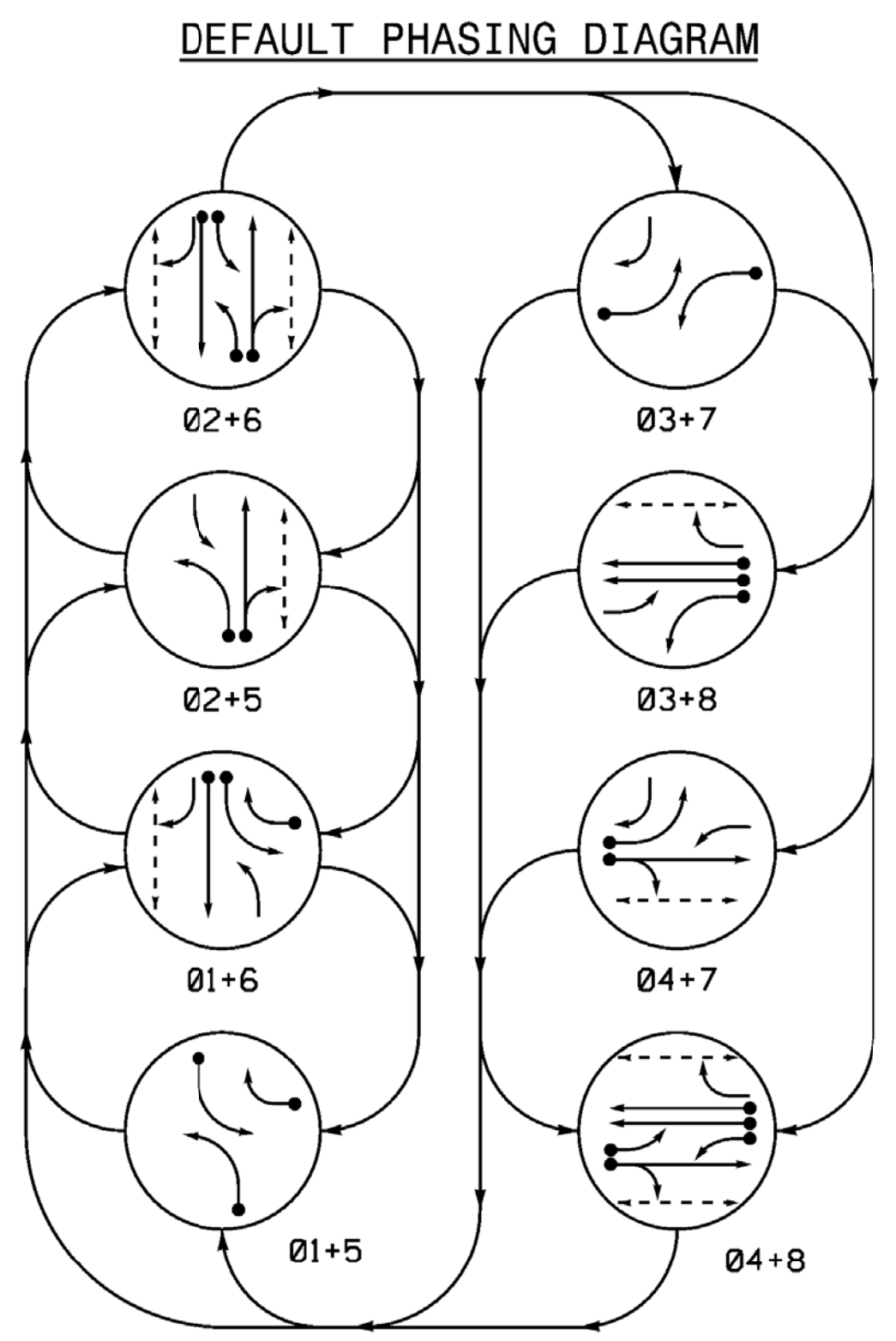
6/9/2018
 Pamela Alexander
 DATE

SIG. INVENTORY NO. 07-0148

8 Phase Fully Actuated (Burlington-Graham Signal System)

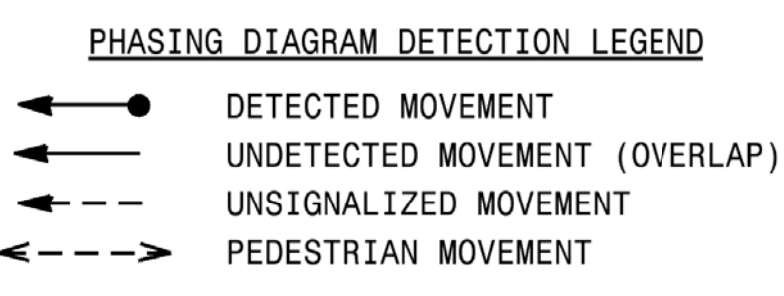
NOTES

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 phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. The City Traffic Engineer will determine the hours of use for each phasing plan.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

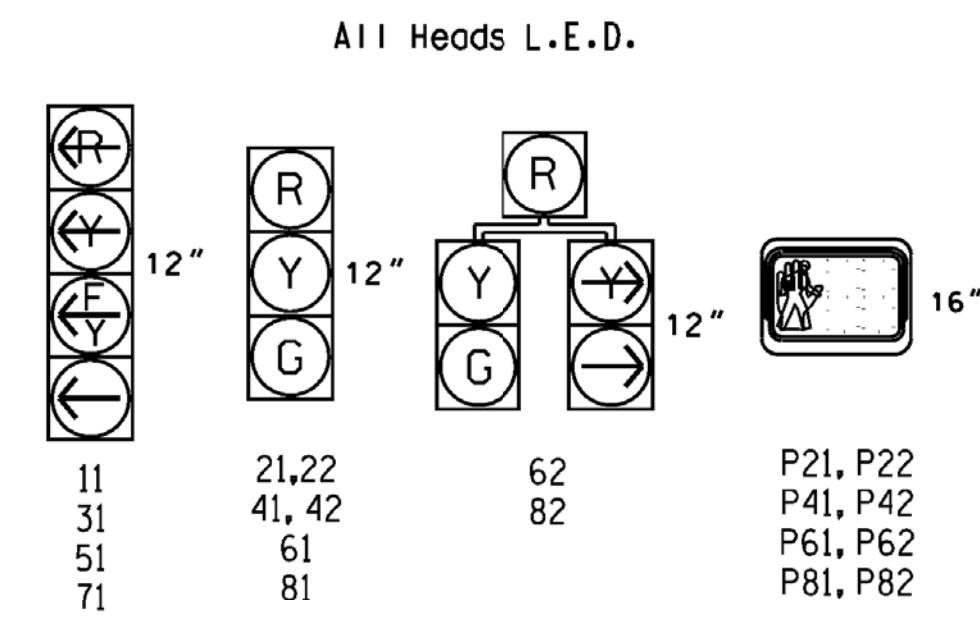


DEFAULT TABLE OF OPERATION

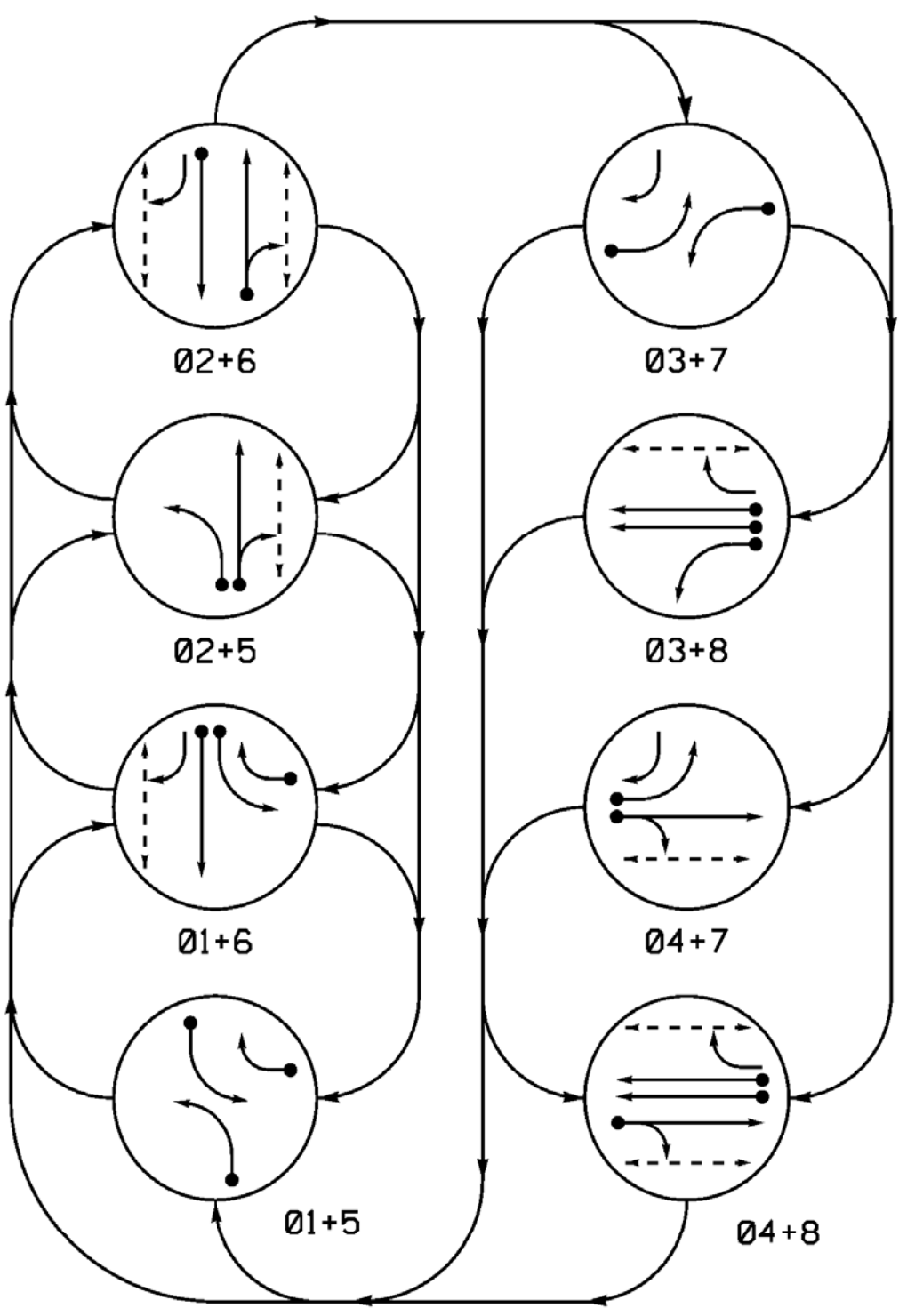
| SIGNAL FACE | PHASE | | | | | | | | FLASH |
|-------------|-------|------|------|------|------|------|------|------|-------|
| | 01+5 | 02+6 | 03+7 | 04+8 | 01+6 | 02+5 | 03+8 | 04+7 | |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 21, 22 | R | R | G | G | R | R | R | R | Y |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 41, 42 | R | R | R | R | R | R | G | G | R |
| 51 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 61 | R | G | R | G | R | R | R | R | Y |
| 62 | R | G | R | G | R | R | R | R | Y |
| 71 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 81 | R | R | R | R | R | G | R | G | R |
| 82 | R | R | R | R | R | G | R | G | R |
| P21, P22 | DW | DW | W | W | DW | DW | DW | DW | DRK |
| P41, P42 | DW | DW | DW | DW | DW | DW | W | W | DRK |
| P61, P62 | DW | W | DW | W | DW | DW | DW | DW | DRK |
| P81, P82 | DW | DW | DW | DW | W | DW | W | DW | DRK |



SIGNAL FACE I.D.

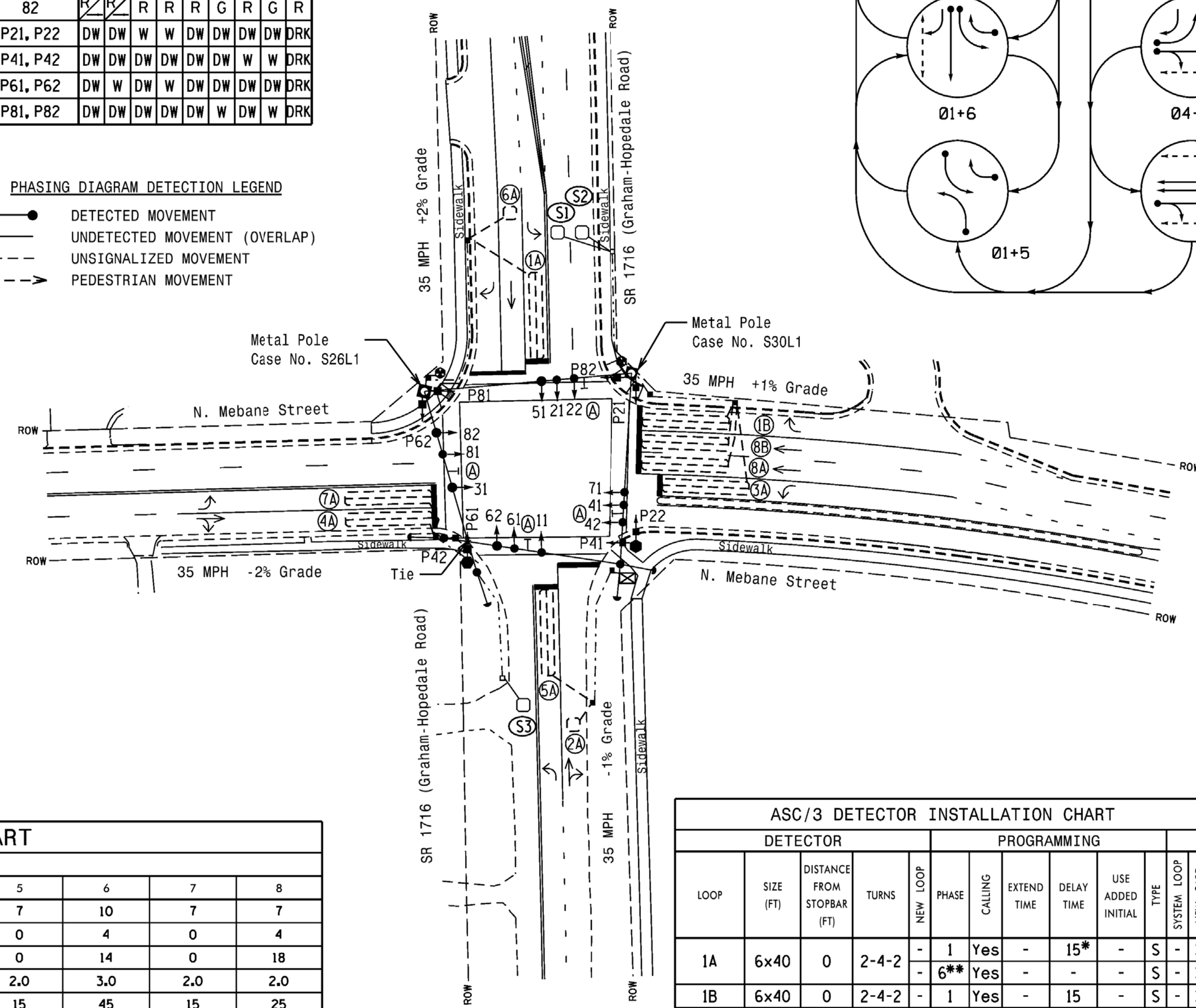
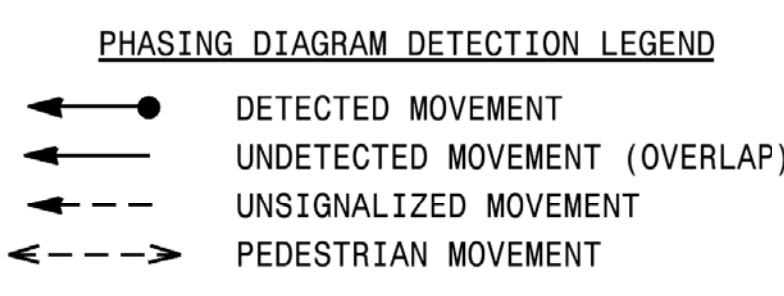


ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | | | | FLASH |
|-------------|-------|------|------|------|------|------|------|------|-------|
| | 01+5 | 02+6 | 03+7 | 04+8 | 01+6 | 02+5 | 03+8 | 04+7 | |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 21, 22 | R | R | G | G | R | R | R | R | Y |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 41, 42 | R | R | R | R | R | R | G | G | R |
| 51 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 61 | R | G | R | G | R | R | R | R | Y |
| 62 | R | G | R | G | R | R | R | R | Y |
| 71 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 81 | R | R | R | R | R | G | R | G | R |
| 82 | R | R | R | R | R | G | R | G | R |
| P21, P22 | DW | DW | W | W | DW | DW | DW | DW | DRK |
| P41, P42 | DW | DW | DW | DW | DW | DW | W | W | DRK |
| P61, P62 | DW | W | DW | W | DW | DW | DW | DW | DRK |
| P81, P82 | DW | DW | DW | DW | W | DW | W | DW | DRK |



ASC/3 TIMING CHART

| FEATURE | PHASE | | | | | | | |
|-------------------------|-------|-------------|-----|-----|-----|-------------|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Min Green * | 7 | 10 | 7 | 7 | 7 | 10 | 7 | 7 |
| Walk * | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 4 |
| Ped Clear | 0 | 17 | 0 | 16 | 0 | 14 | 0 | 18 |
| Veh. Extension * | 2.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 | 2.0 |
| Max I * | 15 | 45 | 15 | 25 | 15 | 45 | 15 | 25 |
| Yellow | 3.0 | 3.9 | 3.0 | 4.0 | 3.0 | 3.9 | 3.0 | 4.0 |
| Red Clear | 2.8 | 2.1 | 2.4 | 1.7 | 2.3 | 2.1 | 2.6 | 1.7 |
| Actuations B4 Add * | - | - | - | - | - | - | - | - |
| Seconds / Actuation * | - | - | - | - | - | - | - | - |
| Max Initial * | - | - | - | - | - | - | - | - |
| Time Before Reduction * | - | - | - | - | - | - | - | - |
| Time To Reduce * | - | - | - | - | - | - | - | - |
| Minimum Gap | - | - | - | - | - | - | - | - |
| Locking Detector | - | X | - | - | - | X | - | - |
| Recall Position | - | VEH. RECALL | - | - | - | VEH. RECALL | - | - |
| Dual Entry | - | - | - | X | - | - | - | X |
| Simultaneous Gap | X | X | X | X | X | X | X | X |

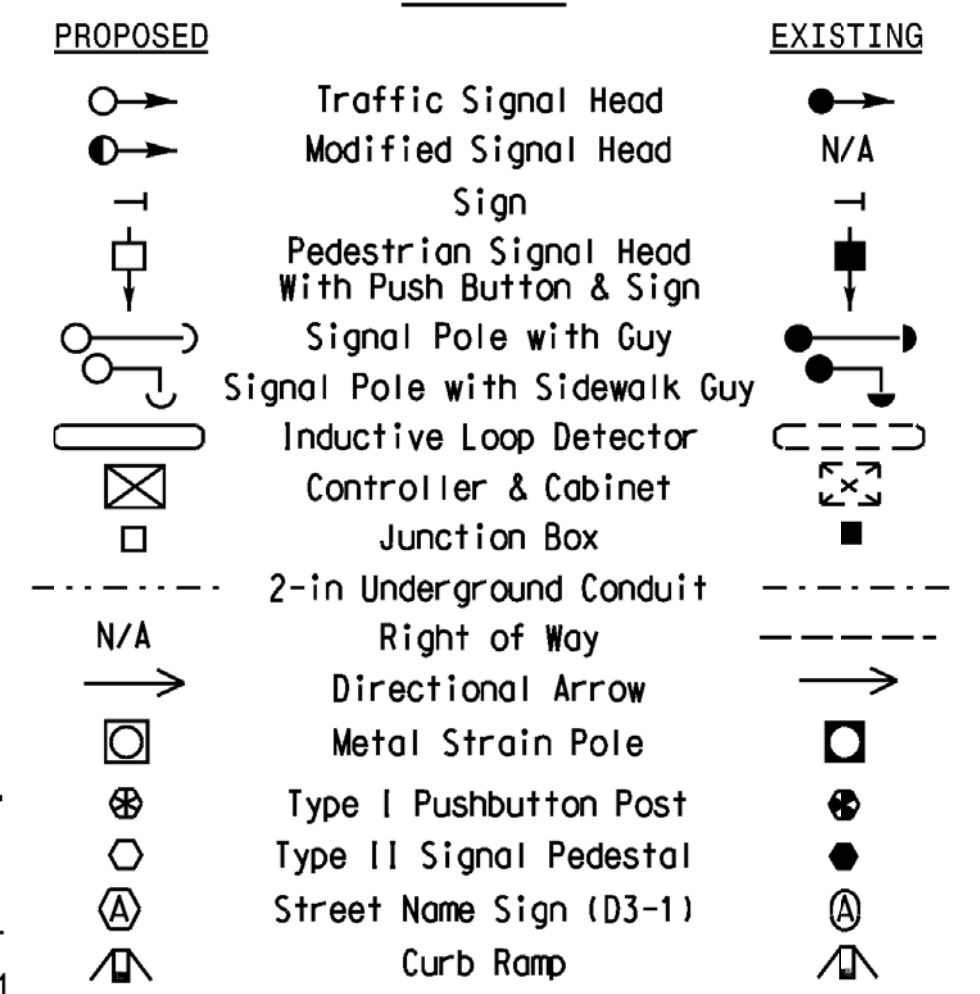
ASC/3 DETECTOR INSTALLATION CHART

| 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 |
| 1A | 6x40 | 0 | 2-4-2 | - | 1 | Yes | - | 15* | - | S | - | X |
| 1B | 6x40 | 0 | 2-4-2 | - | 1 | Yes | - | 15 | - | S | - | X |
| 2A | 6x6 | 70 | 3 | - | 2 | Yes | - | - | - | S | - | X |
| 3A | 6x40 | 0 | 2-4-2 | - | 3 | Yes | - | 15* | - | S | - | X |
| 4A | 6x40 | 0 | 2-4-2 | - | 4 | Yes | - | 10 | - | S | - | X |
| 5A | 6x40 | 0 | 2-4-2 | - | 5 | Yes | - | 15* | - | S | - | X |
| 6A | 6x6 | 70 | 4 | - | 6 | Yes | - | - | - | S | - | X |
| 7A | 6x40 | 0 | 2-4-2 | - | 7 | Yes | - | 15* | - | S | - | X |
| 8A | 6x40 | 0 | 2-4-2 | - | 8 | Yes | - | - | - | S | - | X |
| 8B | 6x40 | 0 | 2-4-2 | - | 8 | Yes | - | - | - | S | - | X |
| S1 | 6x6 | +150 | 4 | X | - | No | - | - | - | N | X | X |
| S2 | 6x6 | +150 | 4 | X | - | No | - | - | - | N | X | X |
| S3 | 6x6 | +150 | 4 | X | - | No | - | - | - | N | 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.

* Disable Delay During Alternate Phasing Operation.
** Disable Phase 2/4/6/8 Call for Loop 5A/7A/1A/3A during Alternate Phasing Operation.

LEGEND



Mattern & Craig
ENGINEERS • SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

Signal Upgrade

Prepared for the Offices of:
SR 1716 (Graham-Hopedale Road) at N. Mebane Street

Division 7 Alamance County Burlington
PLAN DATE: April 2018 REVIEWED BY: JB Voso
PREPARED BY: SE Greene REVIEWED BY:
REVISIONS INIT. DATE

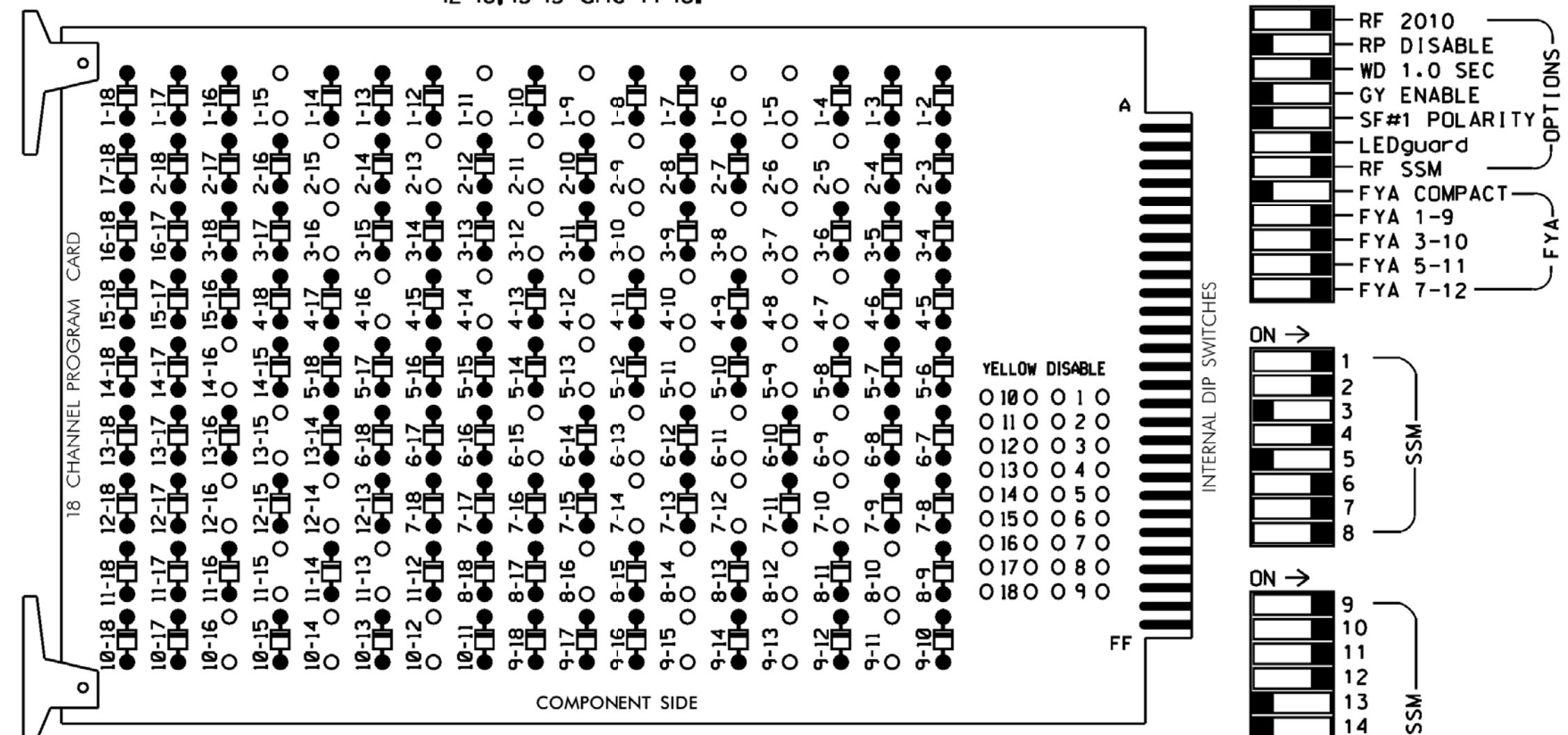
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
JAMES B. VOSS
022599
6/13/2018
DATE
SIG. INVENTORY NO. 07-0149

*****SYTIME*****
*****BUSINESS*****

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



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 Walk and 6 Walk.
- The cabinet and controller are part of the Burlington-Graham Signal System.

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,S4,S5,S6,S7,S8,S9,
 S10,S11,S12,AUX S1,AUX S2,
 AUX S4,AUX S5
 PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED,
 6PED,8PED

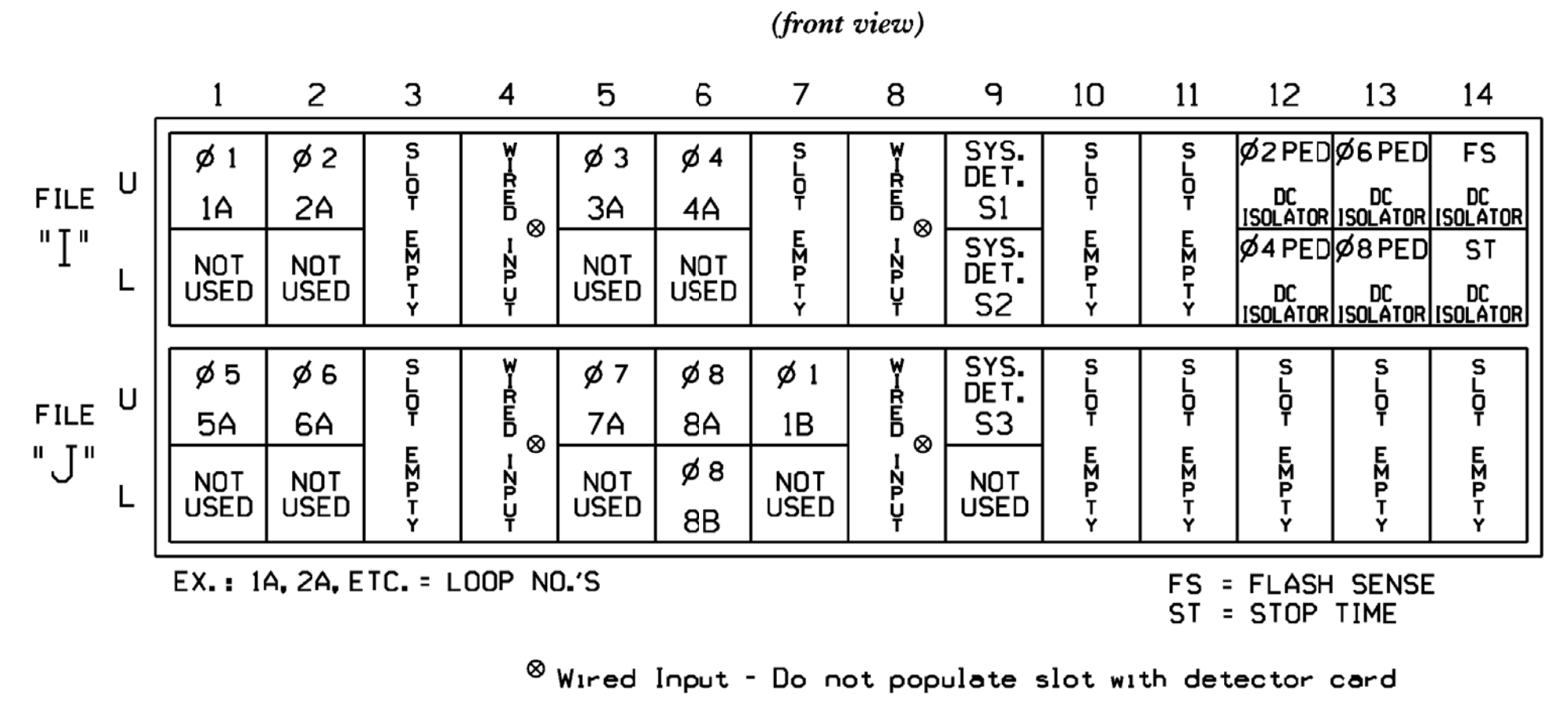
OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

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 | 2PED | 3 | 4 | 4PED | 5 | 6 | 6PED | 7 | 8 | 8PED | OLA | OLB | SPARE | OLC | OLD | SPARE | |
| SIGNAL HEAD NO. | 11 | 82 | 21,22 | P21, P22 | 31 | 41,42 | P41, P42 | 51 | 61,62 | P61, P62 | 62 | 71 | 81,82 | P81, P82 | 11 | 31 | NU | 51 | 71 |
| RED | * | 128 | | | 101 | | | 134 | | * | 107 | | | | | | | | |
| YELLOW | | 129 | | * | 102 | | * | 135 | | | 108 | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | 109 | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | A121 | A124 | | A114 | A101 | | |
| YELLOW ARROW | | 126 | | | | | | | | 123 | | | A122 | A125 | | A115 | A102 | | |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | A123 | A126 | | A116 | A103 | | |
| GREEN ARROW | 127 | 127 | | | 118 | | | 133 | | 124 | 124 | | | | | | | | |
| Hand | | | | 113 | | | 104 | | 119 | | | 110 | | | | | | | |
| Foot | | | | | | | 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

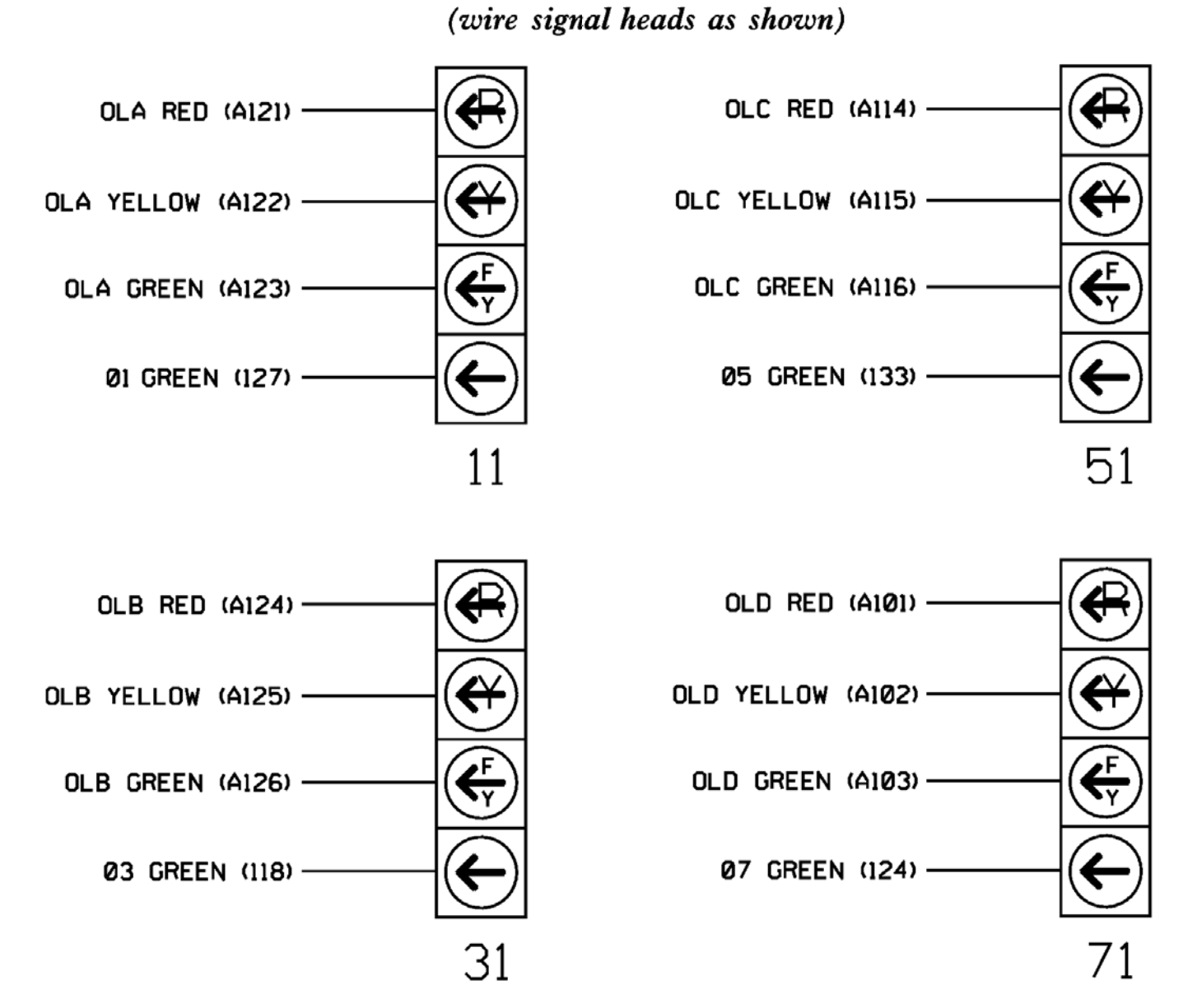


INPUT FILE CONNECTION & PROGRAMMING CHART

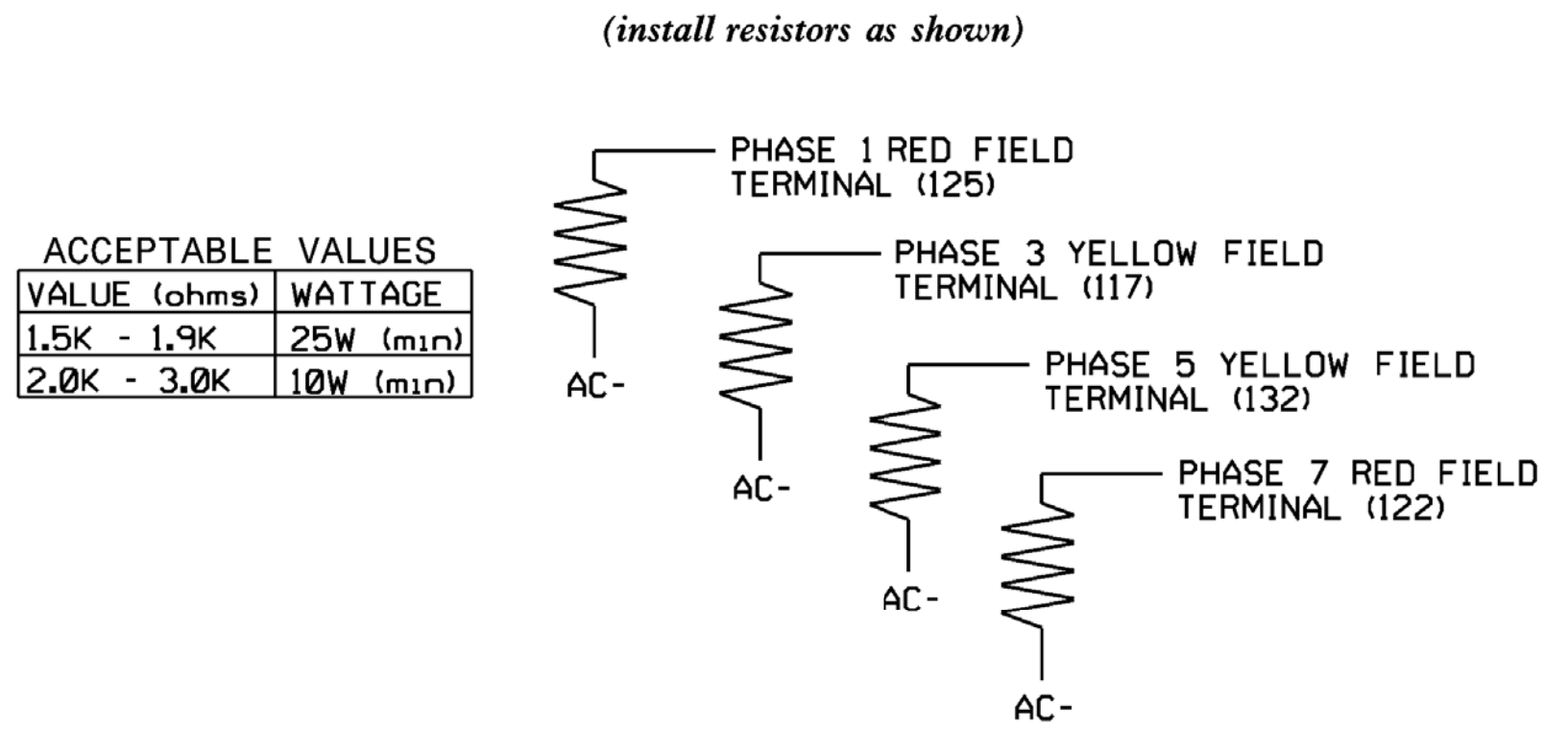
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|-------|-------------|------------|---------------|---------------|
| 1A ¹ | TB2-1,2 | I1U | 56 | 1 | ★ | 1 YES | | 15 | | S |
| | | J4U | 48 | 26 | ★ | 6 YES | | | | S |
| 1B | TB7-1,2 | J7U | 66 | 38 | | 1 YES | | 15 | | S |
| 2A | TB2-5,6 | I2U | 39 | 2 | | 2 YES | | | | S |
| 3A ² | TB4-5,6 | I5U | 58 | 3 | ★ | 3 YES | | 15 | | S |
| | | J8U | 50 | 28 | ★ | 8 YES | | 3 | | G |
| 4A | TB4-9,10 | I6U | 41 | 4 | | 4 YES | | 10 | | S |
| | | J4U | 47 | 22 | ★ | 2 YES | | | | S |
| 5A ³ | TB3-1,2 | J1U | 55 | 5 | ★ | 5 YES | | 15 | | S |
| | | J2U | 40 | 6 | | 6 YES | | | | S |
| 6A | TB3-5,6 | J2U | 40 | 6 | | 6 YES | | | | S |
| 7A ⁴ | TB5-5,6 | J5U | 57 | 7 | ★ | 7 YES | | 15 | | S |
| | | I8U | 49 | 24 | ★ | 4 YES | | 3 | | G |
| 8A | TB5-9,10 | J6U | 42 | 8 | | 8 YES | | | | S |
| 8B | TB5-11,12 | J6L | 46 | 18 | | 8 YES | | | | S |
| * S1 | TB6-9,10 | I9U | 60 | 11 | SYS | NO | | | | N |
| * S2 | TB6-11,12 | I9L | 62 | 13 | SYS | NO | | | | N |
| * S3 | TB7-9,10 | J9U | 59 | 15 | 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 112 AND 113.
- 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.
- * For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheet 3.
 * System detector only. Remove any assigned vehicle phase.

FYA SIGNAL WIRING DETAIL



LOAD RESISTOR INSTALLATION DETAIL



Electrical Detail - Sheet 1 of 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Management

SR 1716 (Graham-Hopedale Road) at N. Mebane Street

Division 7 Alamance County Burlington

PLAN DATE: April 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS

| NO. | INIT. | DATE |
|-----|-------|------|
| | | |

SEAL
 JAMES B. VOSO
 PROFESSIONAL ENGINEER
 No. 022599
 6/13/2018

SIG. INVENTORY NO. 07-0149



12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

*****SYTIME*****
 *****D*****
 *****USER*****

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..... 1

← NOTICE ACTION PLAN SF BIT "1"

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..... 3

← NOTICE ACTION PLAN SF BIT "3"

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..... 5

← NOTICE ACTION PLAN SF BIT "5"

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..... 7

← NOTICE ACTION PLAN SF BIT "7"

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.

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.

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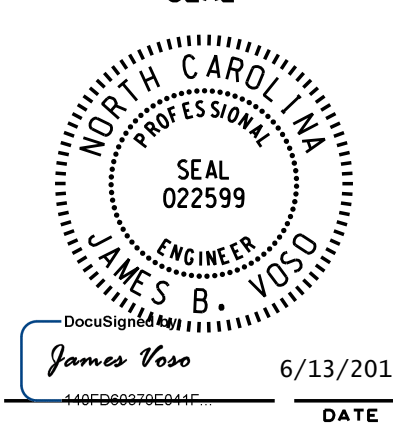
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0149

DESIGNED: April 2018

SEALED: 6/13/2018

REVISED: NA

Electrical Detail - Sheet 2 of 4

| | | |
|---|--|---|
|  <small>Prepared for the Offices of: Department of Transportation, Mobility and Traffic Division STATE OF NORTH CAROLINA Department of Signal Management</small> <small>750 N. Greenfield Pkwy, Corner, NC 27529</small> | SR 1716 (Graham-Hopedale Road) at N. Mebane Street | SEAL  SEAL 022599 JAMES B. VOSO ENGINEER 6/13/2018 DATE |
| | Division 7 Alamance County Burlington PLAN DATE: April 2018 REVIEWED BY: JB Voso PREPARED BY: SE Greene REVIEWED BY: | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED |

2:39:29 PM
 1:43789 - Burlington Graham Signal System06 Working Folders with NCDOT File Structure if Working on NCDOT Project.Mwg or DgnW07-0149M4.2 3 4 070149 final.ele.dgn
 jbvoso

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 5A, 3A, 7A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select **8. UTILITIES**
2. From UTILITIES Submenu select **1. COPY/CLEAR**
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN... > TIMING PLAN...
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
    
```

4. From Main Menu select **6. DETECTORS**
5. From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

```

VEH DETECTOR [ 1 ]  VEH DET PLAN [ 2 ]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

```

VEH DETECTOR [26]  VEH DET PLAN [ 2 ]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "0".

```

VEH DETECTOR [ 5 ]  VEH DET PLAN [ 2 ]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

- Place cursor in VEH DETECTOR [] position and enter "22".
- Set assigned phase to "0".

```

VEH DETECTOR [22]  VEH DET PLAN [ 2 ]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

- Place cursor in VEH DETECTOR [] position and enter "3".
- Set delay time to "0".

```

VEH DETECTOR [ 3 ]  VEH DET PLAN [ 2 ]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
3 3
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

- Place cursor in VEH DETECTOR [] position and enter "28".
- Set assigned phase to "0".

```

VEH DETECTOR [28]  VEH DET PLAN [ 2 ]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
28 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

- Place cursor in VEH DETECTOR [] position and enter "7".
- Set delay time to "0".

```

VEH DETECTOR [ 7 ]  VEH DET PLAN [ 2 ]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
7 7
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

- Place cursor in VEH DETECTOR [] position and enter "24".
- Set assigned phase to "0".

```

VEH DETECTOR [24]  VEH DET PLAN [ 2 ]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
24 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

END PROGRAMMING

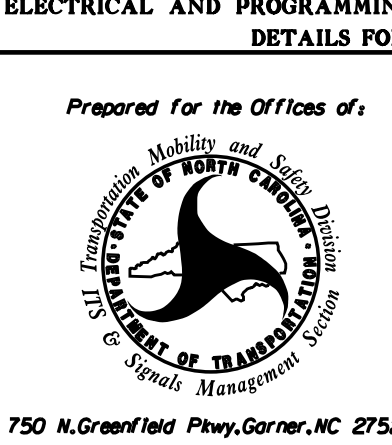
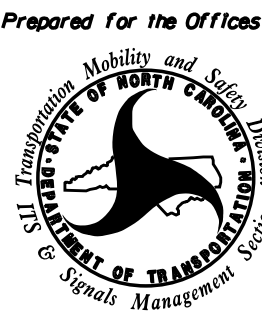
2:39:57 PM 1:43:19 - Burlington Graham Signal System06 Working Folders (Replace Sub-folders with NCDOT File Structure if Working on NCDOT Project)Wing or DgnW07-0149#4.2 3 4 070149 final.ele.dgn jbvoso



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THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0149
DESIGNED: April 2018
SEALED: 6/13/2018
REVISED: NA

Electrical Detail - Sheet 3 of 4

| | | |
|---|--|--|
|  | ELECTRICAL AND PROGRAMMING DETAILS FOR: | |
| | SR 1716 (Graham-Hopedale Road) at N. Mebane Street | |
| Prepared for the Offices of:  | Division 7 Alamance County Burlington | SEAL NORTH CAROLINA PROFESSIONAL ENGINEER JAMES B. VOSSO 022599 |
| PLAN DATE: April 2018 PREPARED BY: SE Greene | REVIEWED BY: JB Vosso REVIEWED BY: | DATE: 6/13/2018 |
| REVISIONS | INIT. | DATE |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JAMES B. VOSSO
 022599
 DATE: 6/13/2018
 SIG. INVENTORY NO. 07-0149

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1, 3, 5, and 7.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1, 3, 5, and 7.

| PHASING | VEH DET PLAN | SF BITS ENABLED |
|--|--------------|-----------------|
| ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u> | 1 | NONE |
| ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u> | 2 | 1, 3, 5, 7 |

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

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1, 3, 5, AND 7 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BITS 1,3,5,7: Modifies overlap parent phases for heads 11, 31, 51, and 71 to run protected turns only.

VEH DET PLAN 2:

- Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.
- Disables phase 8 call on loop 3A and reduces delay time for phase 3 call on loop 3A to 0 seconds.
- Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.
- Disables phase 4 call on loop 7A and reduces delay time for phase 7 call on loop 7A to 0 seconds.

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN...[1]

PATTERN.....AUTO SYS OVERRIDE.... NO

TIMING PLAN..... 0 SEQUENCE..... 0

VEH DETECTOR PLAN.. 2 DET LOG.....NONE

FLASH..... -- RED REST..... NO

VEH DET DIAG PLN... 0 PED DET DIAG PLN..0

DIMMING ENABLE.. NO PRIORITY RETURN. NO

PED PR RETURN.. NO QUEUE DELAY..... NO

PMT COND DELAY NO

| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------|---|---|---|-------|---|---|---|---|---|---|-------|---|---|---|---|---|
| PED RCL | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| WALK 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| VEX 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| VEH RCL | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| MAX RCL | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| MAX 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| MAX 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| CS INH | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| OMIT | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| SPC FCT | X | . | X | . | X | . | X | . | X | . | (1-8) | . | . | . | . | . |
| AUX FCT | . | . | . | (1-3) | . | . | . | . | . | . | . | . | . | . | . | . |
| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | |
| LP 1-15 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 16-30 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 31-45 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 46-60 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 61-75 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 76-90 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 91-100 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

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THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0149

DESIGNED: April 2018

SEALED: 6/13/2018

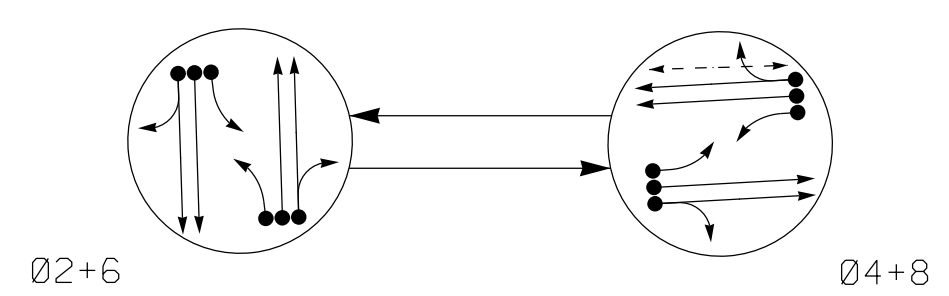
REVISED: NA

Electrical Detail - Sheet 4 of 4

| <p style="font-size: small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared for the Offices of:</p> <p style="font-size: x-small;">750 N. Greenfield Pkwy, Corner, NC 27529</p> | <p>SR 1716 (Graham-Hopedale Road) at N. Mebane Street</p> <p style="font-size: x-small;">Division 7 Alamance County Burlington</p> <p style="font-size: x-small;">PLAN DATE: April 2018 REVIEWED BY:</p> <p style="font-size: x-small;">PREPARED BY: SE Greene REVIEWED BY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="font-size: x-small;">REVISIONS</th> <th style="font-size: x-small;">INIT.</th> <th style="font-size: x-small;">DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | REVISIONS | INIT. | DATE | | | | <p style="font-size: x-small;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p style="text-align: center; font-size: x-small;">SEAL</p> <p style="font-size: x-small;">James Voss 6/13/2018</p> <p style="font-size: x-small;">DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-0149</p> |
|--|---|-----------|-------|------|--|--|--|---|
| REVISIONS | INIT. | DATE | | | | | | |
| | | | | | | | | |

2:40:44 PM 11-13-18 - Burlington Graham Signal System06 Working Folders with NCDOT File Structure if Working on NCDOT Project\dwg or Dgn\07-0149\4.2.3.4.070149_Final\ele.dgn

PHASING DIAGRAM

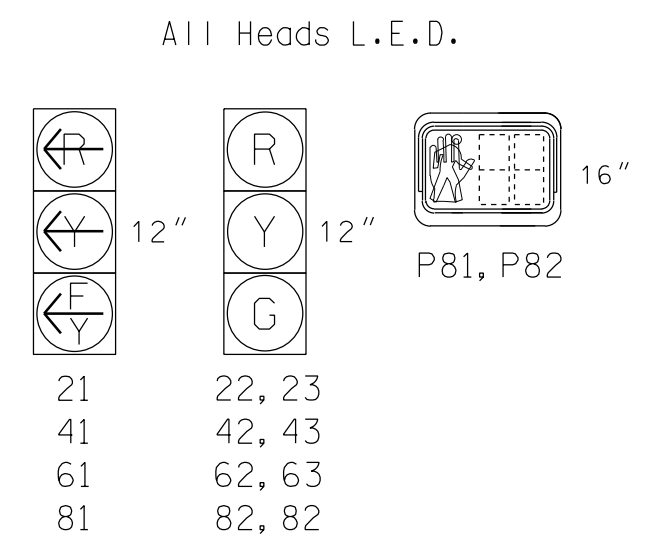


PHASING DIAGRAM DETECTION LEGEND
 ● DETECTED MOVEMENT
 ◀ UNDETECTED MOVEMENT (OVERLAP)
 - - - UNSIGNALIZED MOVEMENT
 ⚡ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|-----------|
| | 02+6 | 04+8 | F L S A H |
| 21 | F | R | Y |
| 22, 23 | G | R | Y |
| 41 | R | F | Y |
| 42, 43 | R | G | R |
| 61 | F | R | Y |
| 62, 63 | G | R | Y |
| 81 | R | F | R |
| 82, 83 | R | G | R |
| P81, P82 | DW | W | DRK |

SIGNAL FACE I.D.



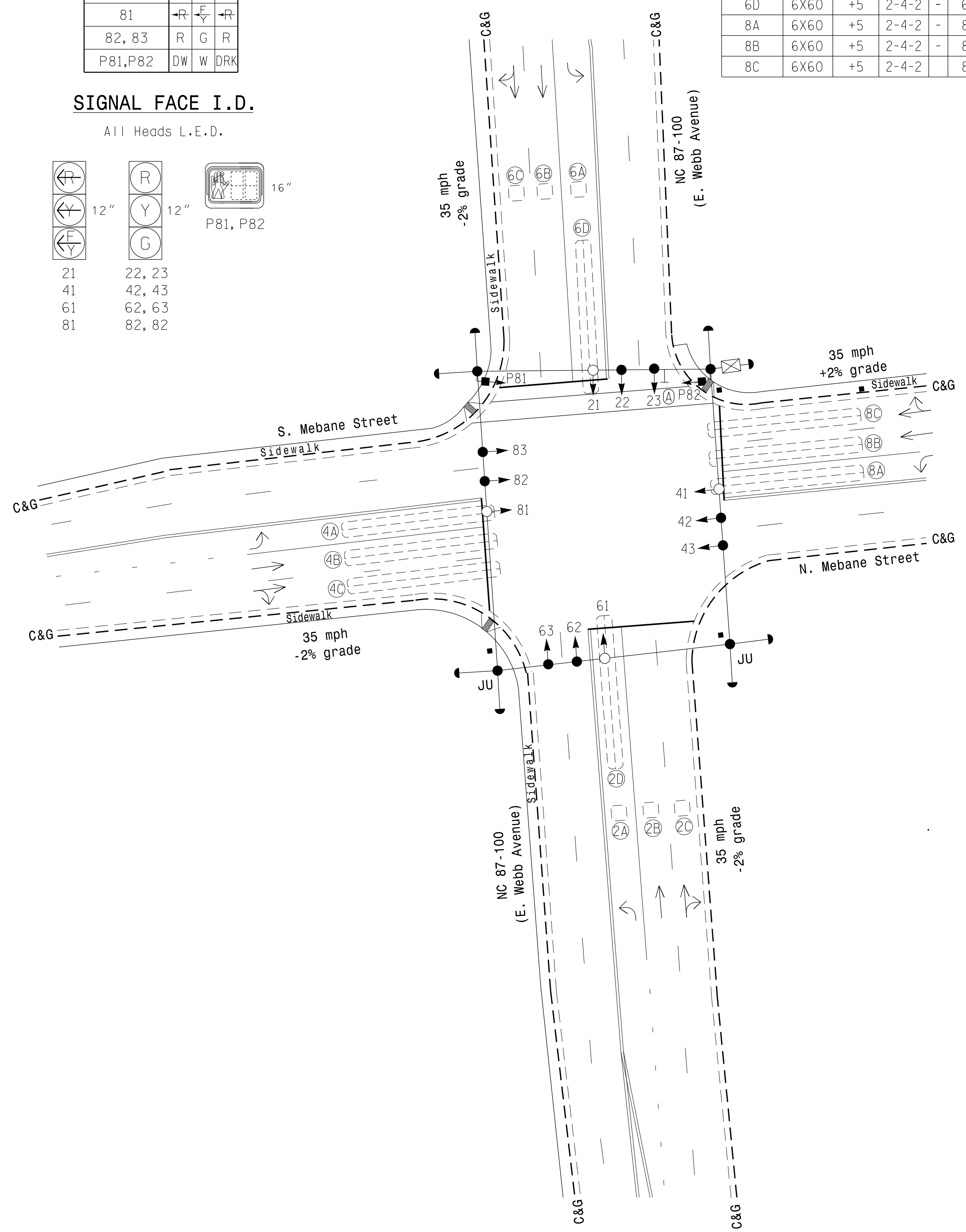
ASC/3 DETECTOR INSTALLATION CHART

| 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,2B,2C | 6X6 | 70 | EXIST | - | 2 | Yes | - | - | - | S | - | X |
| 2D | 6X60 | +5 | 2-4-2 | - | 2 | Yes | - | - | - | S | - | X |
| 4A | 6X60 | +5 | 2-4-2 | - | 4 | Yes | - | 3 | - | S | - | X |
| 4B | 6X60 | +5 | 2-4-2 | - | 4 | Yes | - | - | - | S | - | X |
| 4C | 6X60 | +5 | 2-4-2 | - | 4 | Yes | - | 10 | - | S | - | X |
| 6A,6B,6C | 6X6 | 70 | EXIST | - | 6 | Yes | - | - | - | S | - | X |
| 6D | 6X60 | +5 | 2-4-2 | - | 6 | Yes | - | - | - | S | - | X |
| 8A | 6X60 | +5 | 2-4-2 | - | 8 | Yes | - | 3 | - | S | - | X |
| 8B | 6X60 | +5 | 2-4-2 | - | 8 | Yes | - | - | - | S | - | X |
| 8C | 6X60 | +5 | 2-4-2 | - | 8 | Yes | - | 10 | - | S | - | X |

2 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

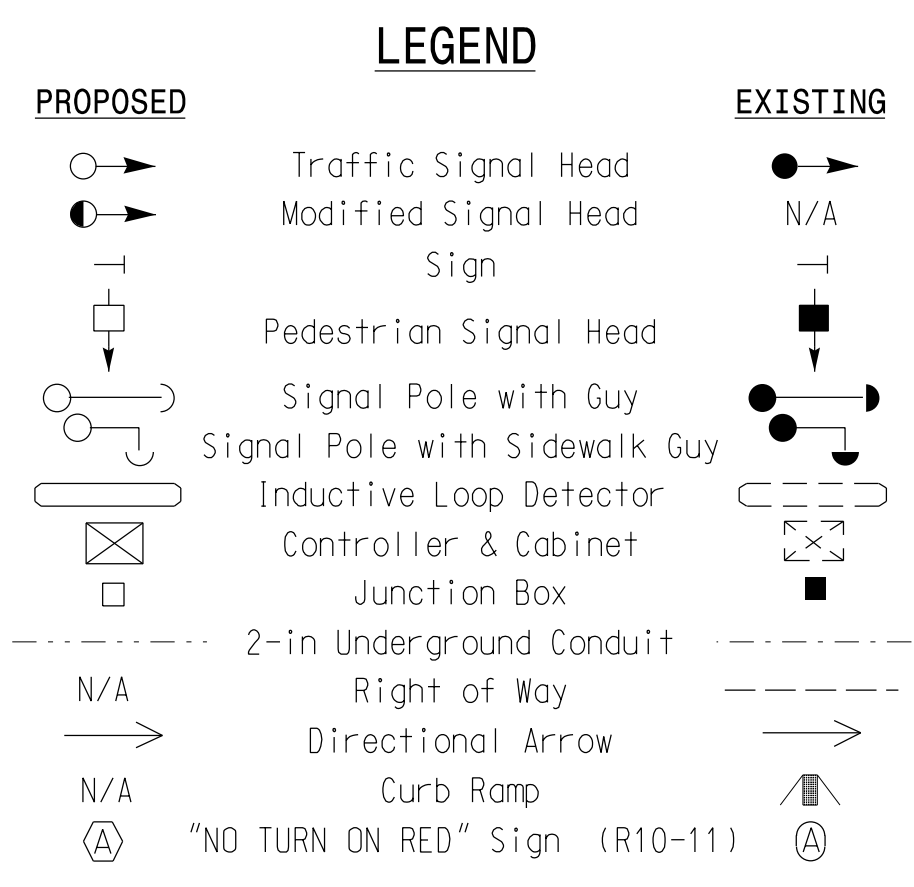
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition existing signal heads numbered 42, 43, 82 and 83.
- Remove existing Left Arrow "Only" Signs.
- 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.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- 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 | | | |
|-------------------------|-------------|-----|-------------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 0 | 0 | 0 | 4 |
| Ped Clear | 0 | 0 | 0 | 19 |
| Veh. Extension * | 3.0 | 1.0 | 3.0 | 1.0 |
| Max 1 * | 45 | 45 | 45 | 45 |
| Yellow | 4.0 | 4.0 | 4.0 | 3.7 |
| Red Clear | 1.7 | 1.6 | 1.6 | 1.7 |
| Actions B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | X | - | X | - |
| Recall Position | VEH. RECALL | - | VEH. 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.



Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
 TRANSPORTATION MOBILITY AND SAFETY DIVISION
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 87-100 (E. Webb Avenue) at Mebane Street

Division Alamance County Burlington

PLAN DATE: July 2018 REVIEWED BY: MB Toth

PREPARED BY: PL Alexander REVIEWED BY:

REVISIONS

SCALE 1"=30'

1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 023489

7/11/2018

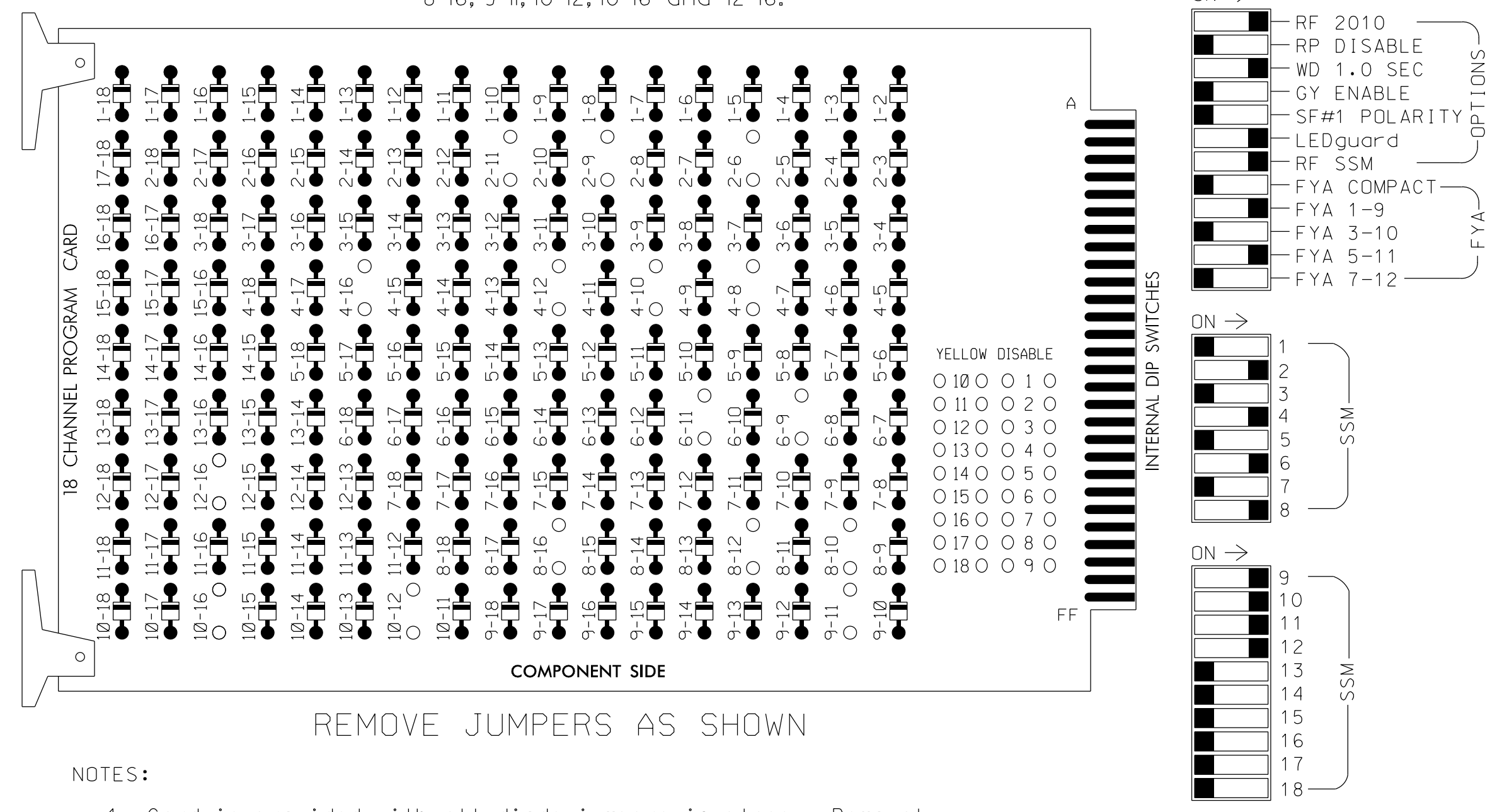
SIG. INVENTORY NO. 07-0150

11-JUL-2018 17:03
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 JLC23561 - AT US40649

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-6, 2-9, 2-11, 4-8, 4-10, 4-12, 4-16, 6-9, 6-11, 8-10, 8-12, 8-16, 9-11, 10-12, 10-16 and 12-16.



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 the Burlington-Graham Signal System.

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,S8,S11,S12,AUX S1,
 AUX S2,AUX S4,AUX S5
 PHASES USED.....2,4,6,8,8PED
 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. | NU | 22,23 | NU | NU | 42,43 | NU | NU | 62,63 | NU | NU | 82,83 | P81, P82 | 61 | 81 | NU | 21 | 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 | | | | | | | | | | | | | | | | | | | |
| Hand icon | | | | | | | | | | | | | 110 | | | | | | |
| Person icon | | | | | | | | | | | | | 112 | | | | | | |

NU = Not Used

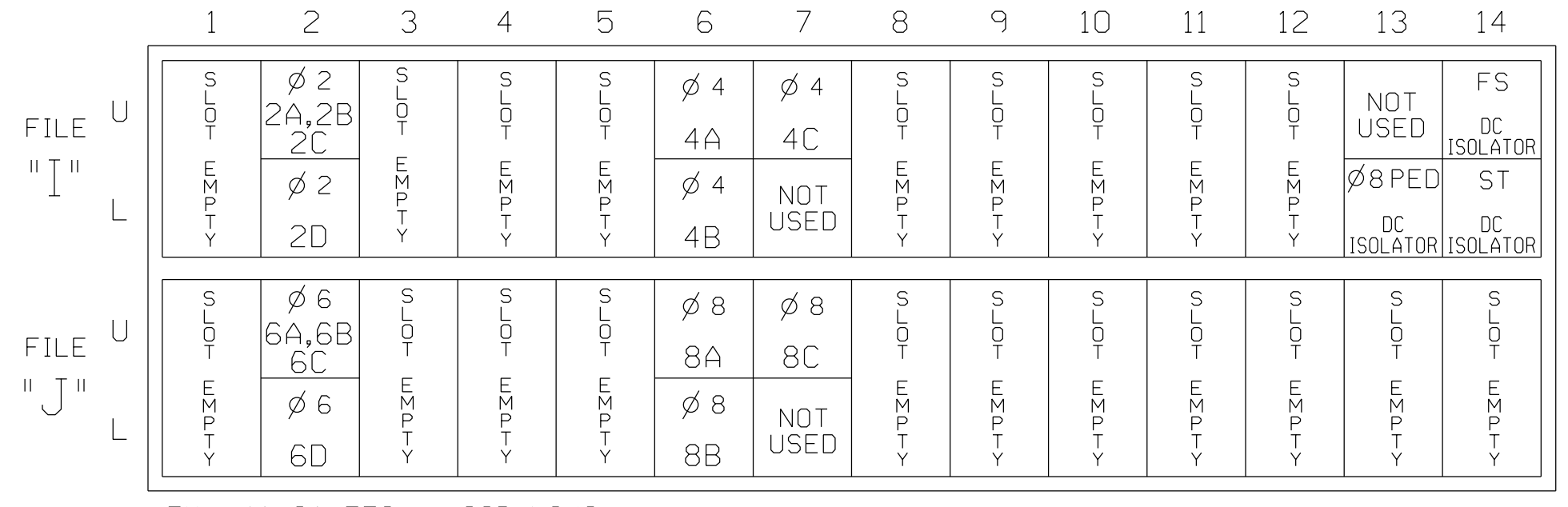
★ See pictorial of head wiring in detail this sheet.

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.

INPUT FILE POSITION LAYOUT

(front view)



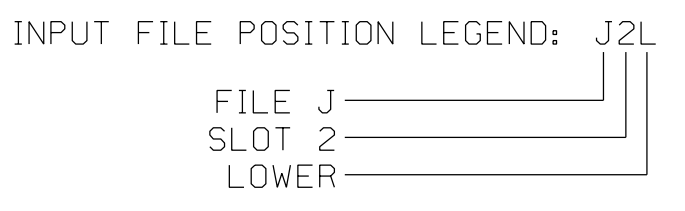
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

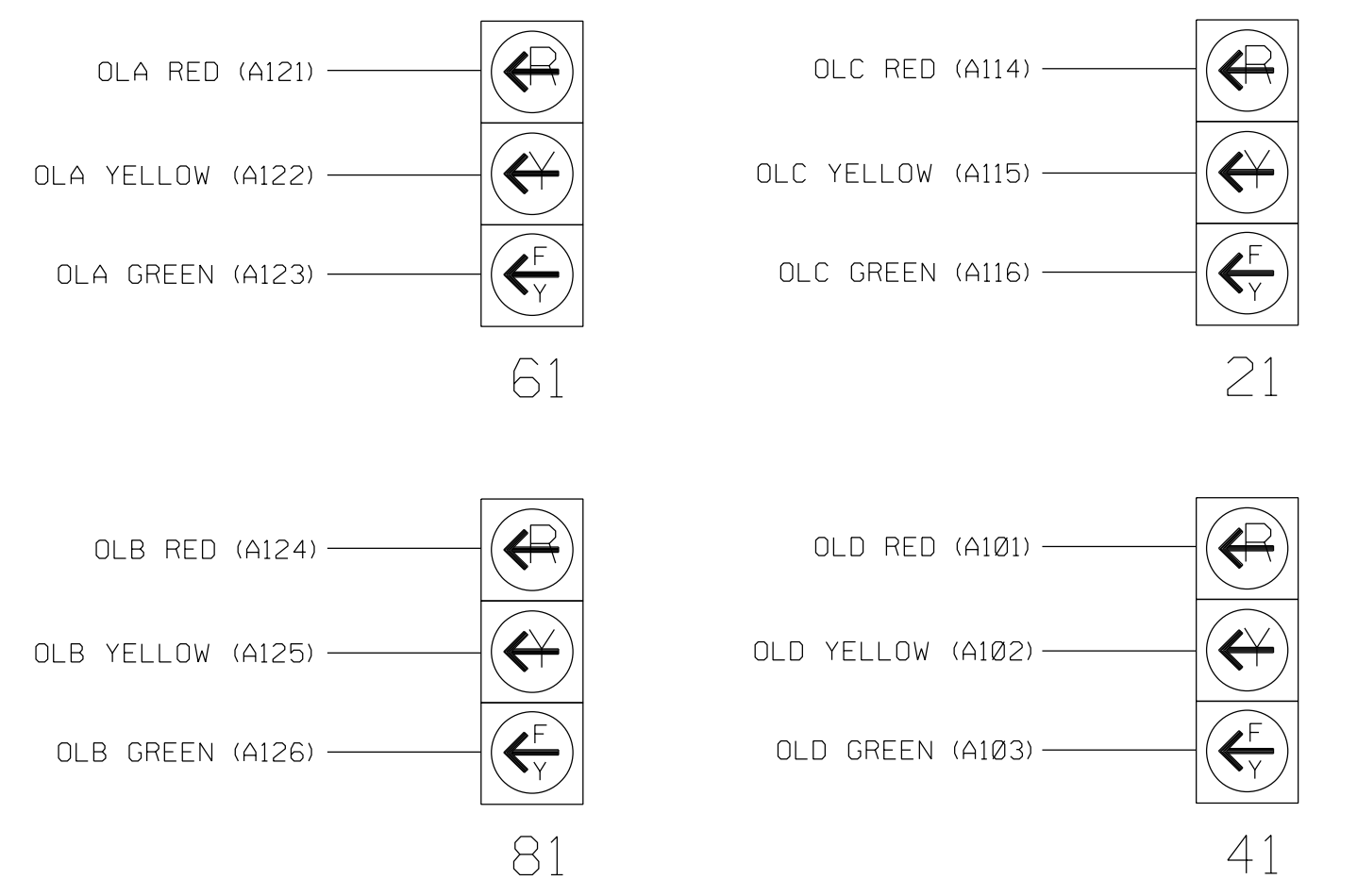
| LOOP NO. | LOOP TERMINAL | INPUT FILE POS. | PIN NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND TIME | DELAY TIME | ADDED INITIAL | DETECTOR TYPE |
|------------------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 2A,2B,2C | TB2-5,6 | I2U | 39 | 2 | 2 | YES | | | | S |
| 2D | TB2-7,8 | I2L | 43 | 12 | 2 | YES | | | | S |
| 4A | TB4-9,10 | I6U | 41 | 4 | 4 | YES | | 3 | | S |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | | | S |
| 4C | TB6-1,2 | I7U | 65 | 34 | 4 | YES | | 10 | | S |
| 6A,6B,6C | TB3-5,6 | J2U | 40 | 6 | 6 | YES | | | | S |
| 6D | TB3-7,8 | J2L | 44 | 16 | 6 | YES | | | | S |
| 8A | TB5-9,10 | J6U | 42 | 8 | 8 | YES | | 3 | | S |
| 8B | TB5-11,12 | J6L | 46 | 18 | 8 | YES | | | | S |
| 8C | TB7-1,2 | J7U | 66 | 38 | 8 | YES | | 10 | | S |
| PED PUSH BUTTONS | | | | | | | | | | |
| P81,P82 | TB8-8,9 | I13L | 70 | PED 8 | 8 PED | | | | | |

NOTE:
 INSTALL DC ISOLATOR IN INPUT FILE SLOT 113.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0150
 DESIGNED: July 2018
 SEALED: 7/11/2018
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

| | | | |
|--|---|------------------------------|--|
| | ELECTRICAL AND PROGRAMMING DETAILS FOR: NC 87-100 (E. Webb Avenue) at Mebane Street | | |
| | Division 7 Alamance County Burlington | Prepared for the Offices of: | |
| | PLAN DATE: July 2018 PREPARED BY: PL Alexander | REVIEWED BY: MB Toth | |
| | REVISIONS: | INIT. DATE: | |

11-JUL-2018 17:26
 ***work (ns.com)ect\M5RL\AKT\transportation\Traffic\Cur**\00056469 U-6015 B-C S1g Sys*ask_05-11\Signa\Design\wir (mg)07-0150E.dgn
 JLC23361 - AT U5540649

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 '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 '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
    
```

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 . . . . . 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

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

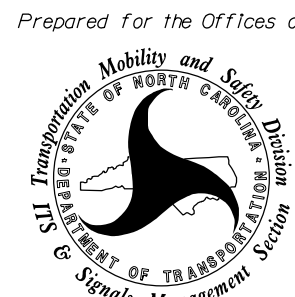
THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0150
 DESIGNED: July 2018
 SEALED: 7/11/2018
 REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING
 DETAILS FOR:

Prepared for the Offices of:

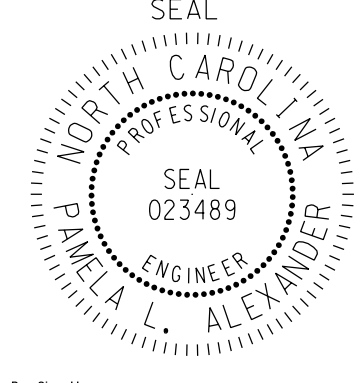


750 N. Greenfield Pkwy, Garner, NC 27529

NC 87-100 (E. Webb Avenue)
 at
 Mebane Street

| | | |
|---------------------------|----------------------|------------|
| Division 7 | Alamance County | Burlington |
| PLAN DATE: July 2018 | REVIEWED BY: MB Toth | |
| PREPARED BY: PL Alexander | REVIEWED BY: | |
| REVISIONS | INIT. | DATE |
| | | |

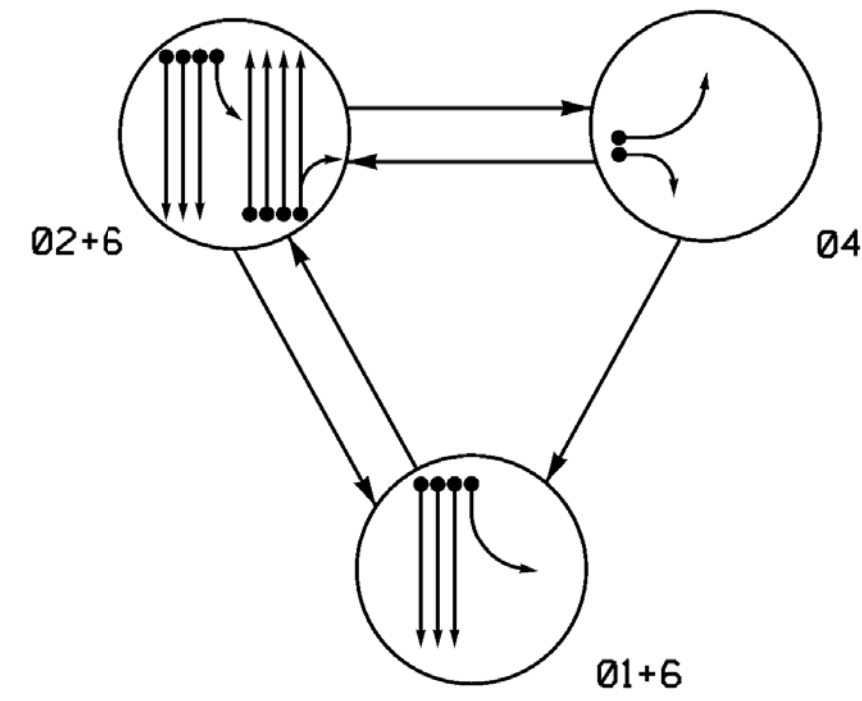
SEAL



SEAL
 023489
 ENGINEER
 PAMELA L. ALEXANDER

Designed by: Pamela Alexander 7/11/2018
 DATE

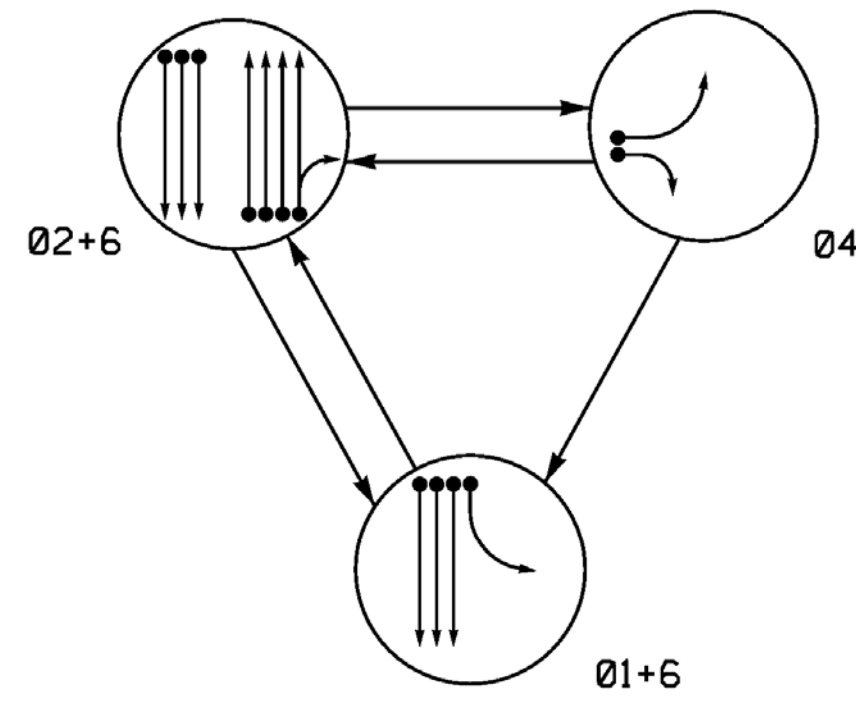
DEFAULT PHASING DIAGRAM



DEFAULT TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|------|----|-------|
| | 01+6 | 02+6 | 04 | FLASH |
| 11 | — | — | — | — |
| 21,22,23,24 | R | G | R | Y |
| 41,42,43 | R | R | G | R |
| 61,62 | G | G | R | Y |

ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | |
|-------------|-------|------|----|-------|
| | 01+6 | 02+6 | 04 | FLASH |
| 11 | — | — | — | — |
| 21,22,23,24 | R | G | R | Y |
| 41,42,43 | R | R | G | R |
| 61,62 | G | G | R | Y |

ASC/3 DETECTOR INSTALLATION CHART

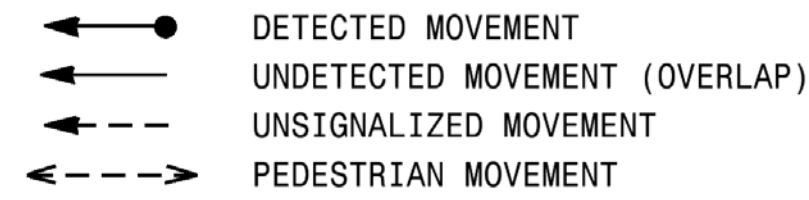
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PROGRAMMING | | | | | | TYPE | SYSTEM LOOP | NEW CARD |
|-------|-----------|----------------------------|--------|----------|-------------|---------|-------------|------------|-------------------|---|------|-------------|----------|
| | | | | | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | | | | |
| 1A | 6x60 | +5 | EXIST. | - | 1 | Yes | - | 15* | - | S | - | X | |
| 2A | 6x46 | 70 | EXIST. | - | 2 | Yes | - | - | - | S | - | X | |
| 4A,4B | 6x60 | +5 | EXIST. | - | 4 | Yes | - | - | - | S | - | X | |
| 4C | 6x40 | 0 | 2-4-2 | - | 4 | Yes | - | 10 | - | S | - | X | |
| 6A | 6x44 | 70 | EXIST. | - | 6 | Yes | - | - | - | S | - | X | |
| S1 | 6x6 | +125 | EXIST. | - | - | No | - | - | - | N | X | X | |
| S2 | 6x6 | +125 | EXIST. | - | - | No | - | - | - | N | X | X | |
| S3 | 6x6 | +125 | 4 | X | - | No | - | - | - | N | X | X | |
| S4 | 6x6 | +125 | 4 | X | - | No | - | - | - | N | X | X | |

3 Phase Fully Actuated (Burlington-Graham Signal System)

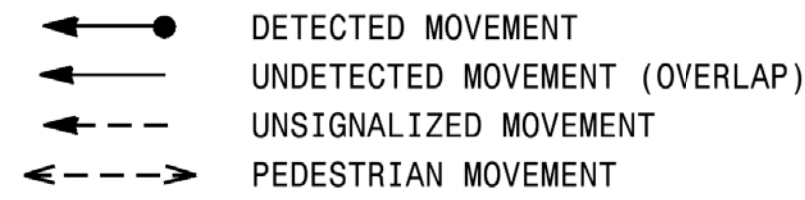
NOTES

- 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 may be lagged.
- 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.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- The City Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

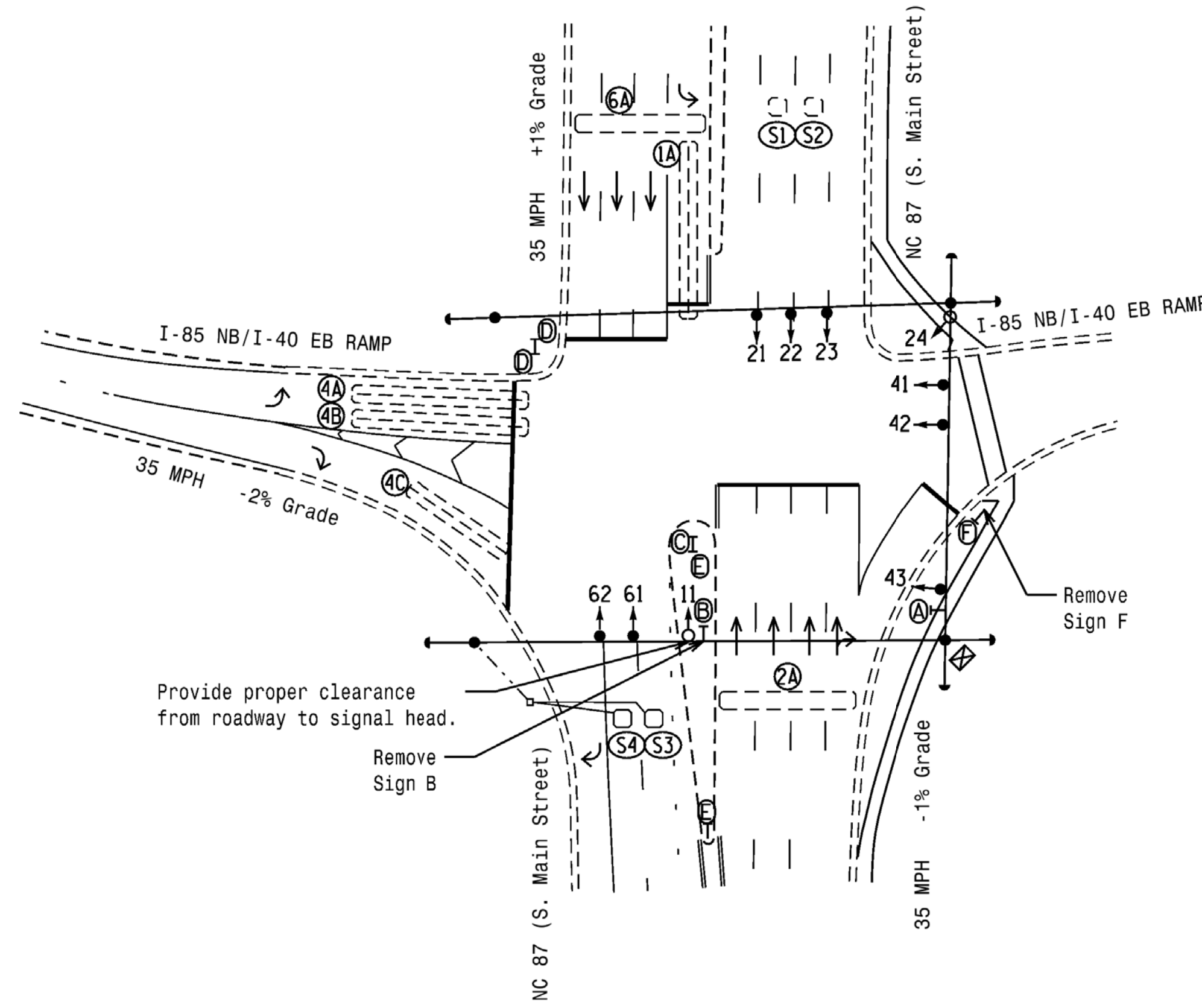
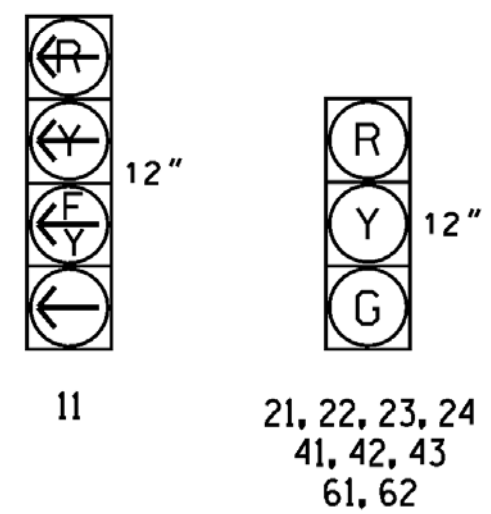


PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.

All Heads L.E.D.

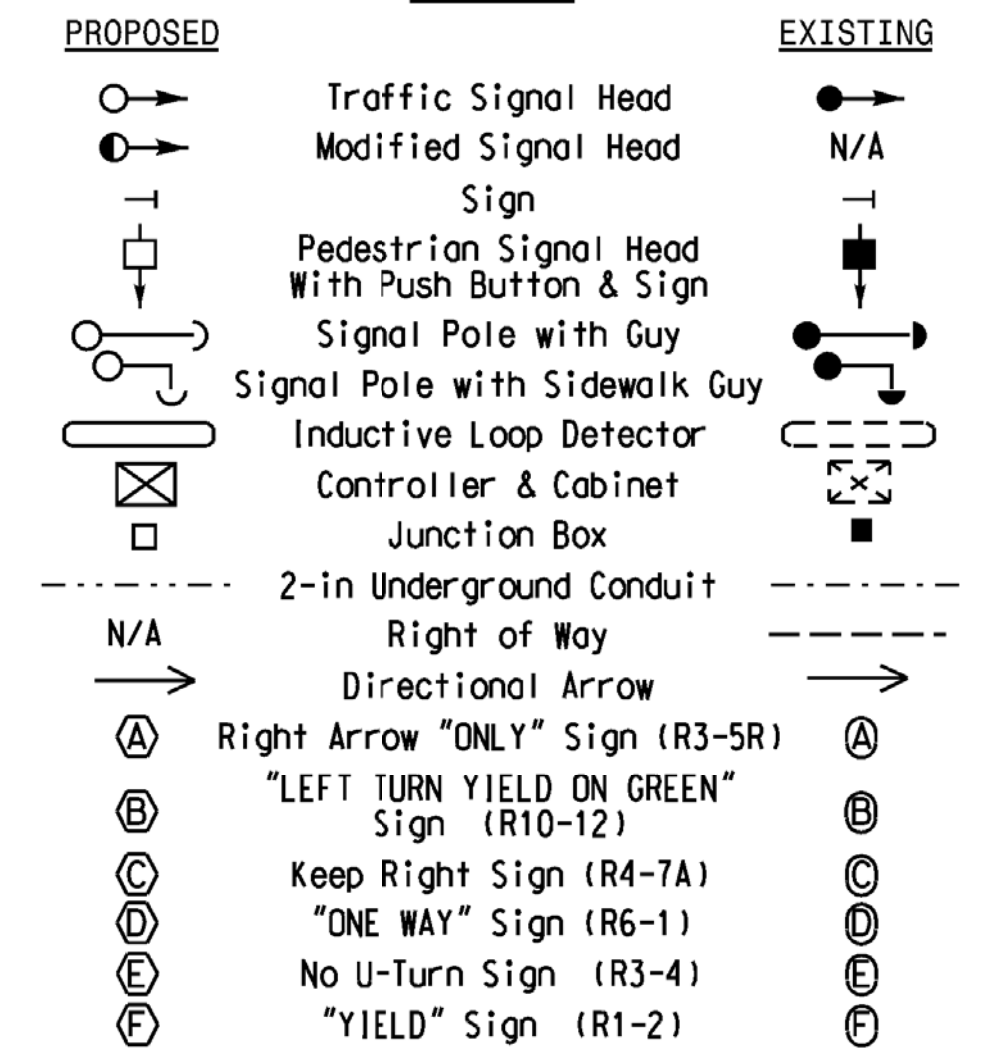


ASC/3 TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|-------|-------------|-----|-------------|
| | 1 | 2 | 4 | 6 |
| Min Green * | 7 | 10 | 7 | 10 |
| Walk * | 0 | 0 | 0 | 0 |
| Ped Clear | 0 | 0 | 0 | 0 |
| Veh. Extension * | 1.0 | 3.0 | 2.0 | 3.0 |
| Max 1 * | 15 | 50 | 20 | 50 |
| Yellow | 3.0 | 3.9 | 3.0 | 3.9 |
| Red Clear | 3.5 | 2.7 | 2.6 | 2.7 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| 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



Mattern & Craig ENGINEERS • SURVEYORS

12 BROAD STREET ASHEVILLE, NORTH CAROLINA 28801 (828) 254-2201 FAX (828) 254-4562 NC LIC. NO. C-1154

Signal Upgrade

Prepared for the Offices of: NC 87 (S. Main Street) at I-85 NB/I-40 EB Ramps

Division 7 Alamance County Graham

PLAN DATE: March 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS: INIT. DATE

SCALE: 1"=40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL: JAMES B. VOSO, ENGINEER, No. 022599

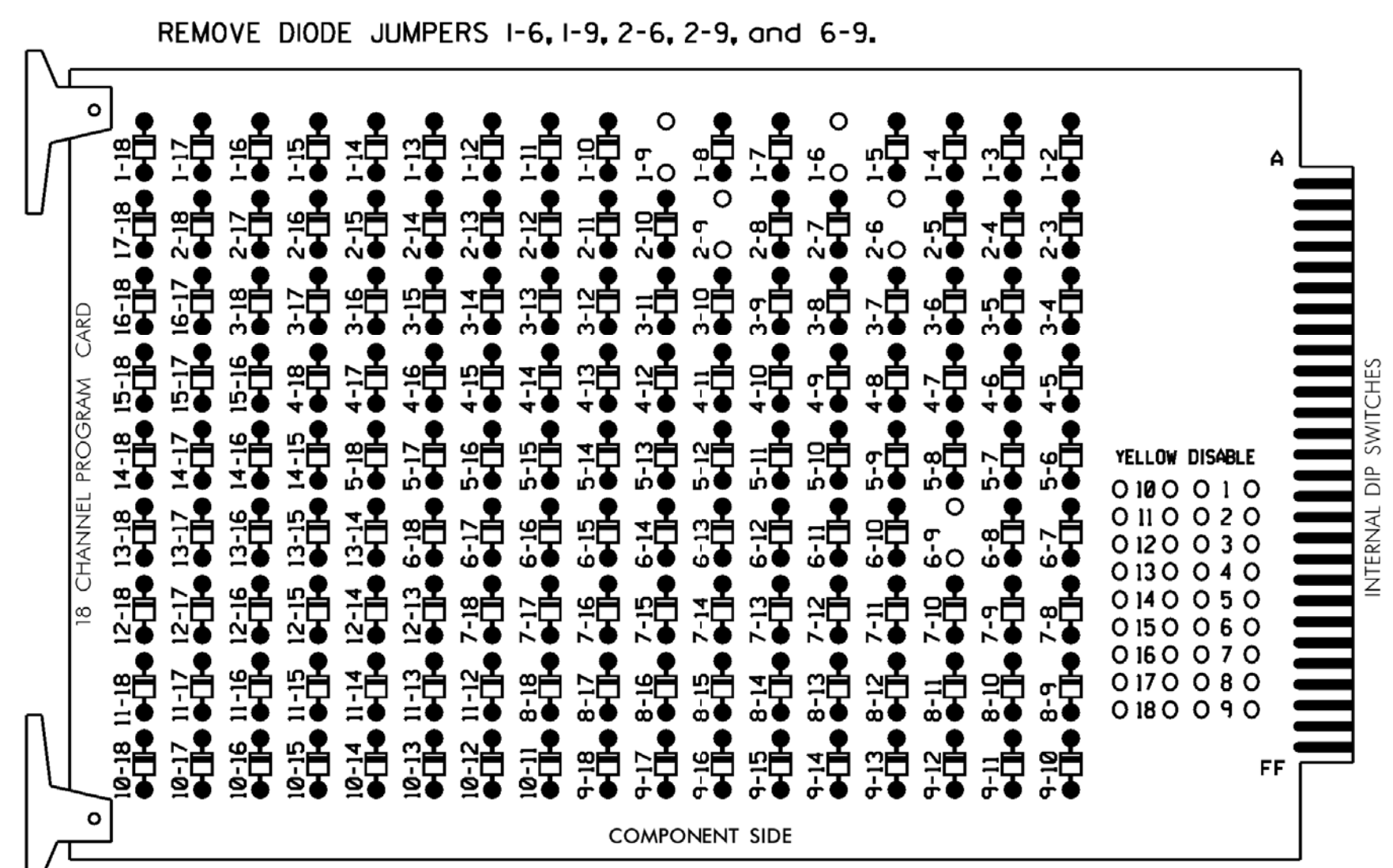
SIGNATURE: James B. Voso DATE: 6/13/2018

SIG. INVENTORY NO. 07-0155

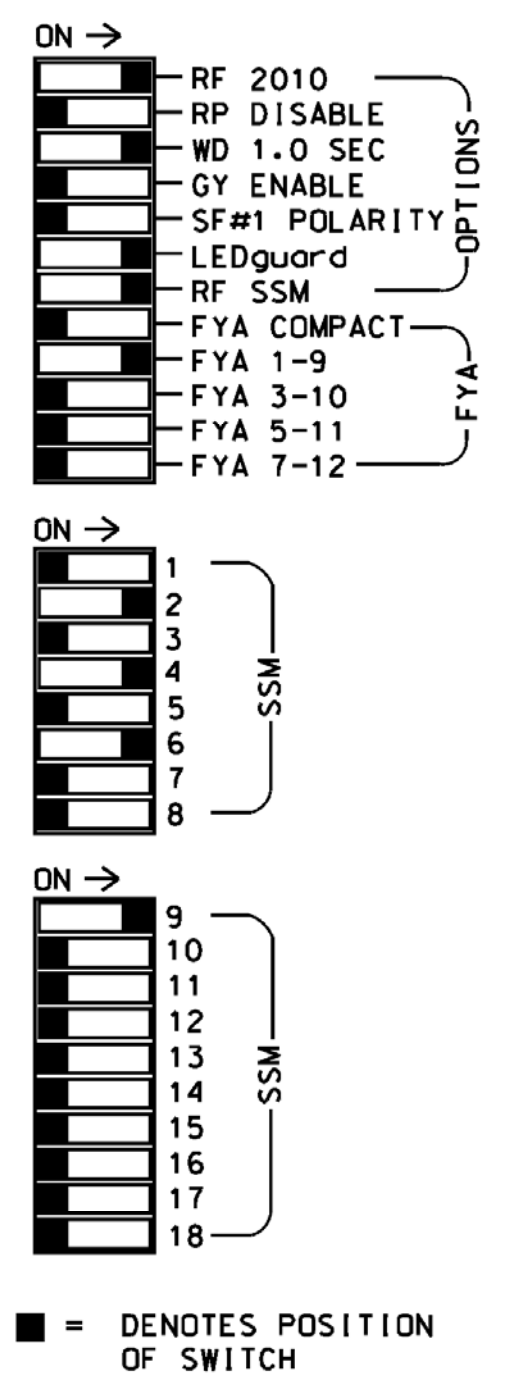
*****SYTIME*****
*****BUSINESS*****

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 the Burlington-Graham Signal System.

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,S8,AUX S1
 PHASES USED.....1,2,4,6
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

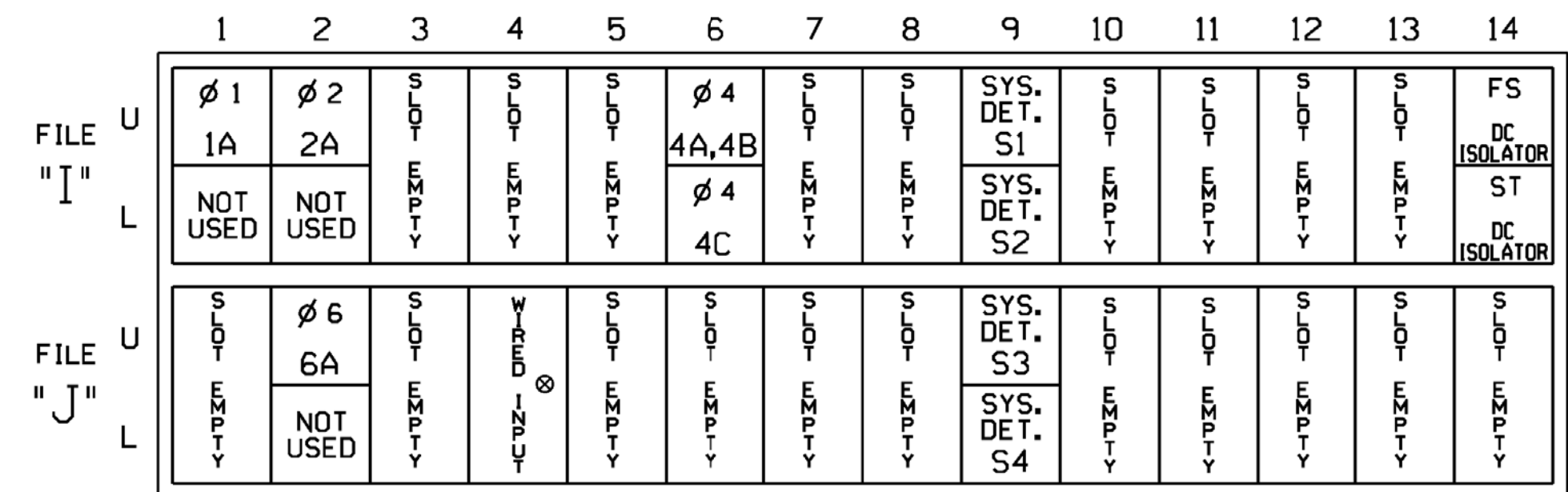
SIGNAL HEAD HOOK-UP CHART

| 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 | |
| P-HASE | 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 | 21,22,23,24 | NU | NU | 41,42,43 | NU | NU | 61,62 | NU | NU | NU | NU | 11 | NU | NU | NU | NU | NU | |
| RED | | 128 | | | 101 | | | 134 | | | | | | | | | | | |
| YELLOW | * | 129 | | | 102 | | | 135 | | | | | | | | | | | |
| GREEN | | 130 | | | 103 | | | 136 | | | | | | | | | | | |
| RED ARROW | | | | | | | | | | | | | | | | | | A121 | |
| YELLOW ARROW | | | | | | | | | | | | | | | | | | | A122 |
| FLASHING YELLOW ARROW | | | | | | | | | | | | | | | | | | | A123 |
| GREEN ARROW | 127 | | | | | | | | | | | | | | | | | | |

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)



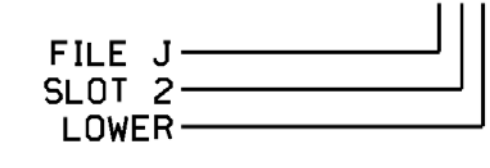
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card

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 | | S |
| | | J4U | 48 | 26 | ★ | 6 YES | | | | S |
| 2A | TB2-5,6 | I2U | 39 | 2 | | 2 YES | | | | S |
| 4A,4B | TB4-9,10 | I6U | 41 | 4 | | 4 YES | | | | S |
| 4C | TB4-11,12 | I6L | 45 | 14 | | 4 YES | | 10 | | S |
| * S1 | TB6-9,10 | I9U | 60 | 11 | SYS | NO | | | | N |
| * S2 | TB6-11,12 | I9L | 62 | 13 | SYS | NO | | | | N |
| 6A | TB3-5,6 | J2U | 40 | 6 | | 6 YES | | | | S |
| * S3 | TB7-9,10 | J9U | 59 | 15 | SYS | NO | | | | N |
| * S4 | TB7-11,12 | J9L | 61 | 17 | SYS | NO | | | | N |

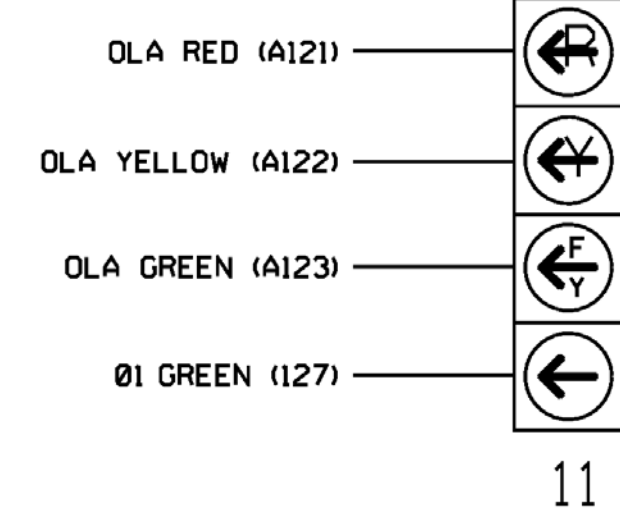
* System detector only. Remove any assigned vehicle phase.
¹Add jumper from I1-W to J4-W, on rear of input file.
 * For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheet 3.

INPUT FILE POSITION LEGEND: J2L



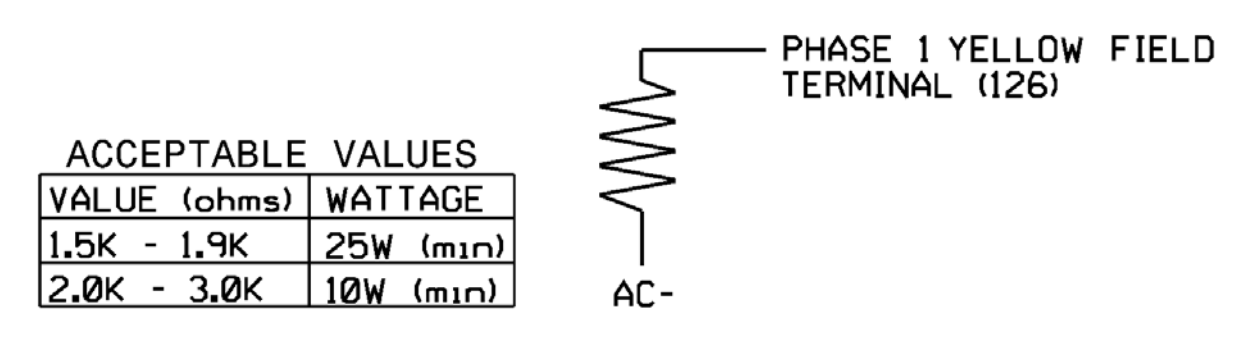
FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)



Electrical Detail - Sheet 1 of 4

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0155
 DESIGNED: March 2018
 SEALED: 6/13/2018
 REVISED: NA

Mattern & Craig
 ENGINEERS • SURVEYORS

12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:

150 N. Greenfield Pkwy, Corner, NC 27529

NC 87 (S. Main Street) at I-85 NB/I-40 EB Ramps

Division 7 Alamance County Graham

PLAN DATE: March 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

James Voso
 6/13/2018
 DATE

SIG. INVENTORY NO. 07-0155

*****SYTIME*****
 *****D*****
 *****USER*****

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

| PHASING | VEH DET PLAN | SF BITS ENABLED |
|--|--------------|-----------------|
| ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u> | 1 | NONE |
| ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u> | 2 | 1 |

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

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 1 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BIT 1: Modifies overlap parent phases for head 11 to run protected turns only.

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

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

ACTION PLAN... [1]

PATTERN.....AUTO SYS OVERRIDE.... NO

TIMING PLAN..... 0 SEQUENCE..... 0

VEH DETECTOR PLAN.. 2 DET LOG.....NONE

FLASH..... -- RED REST..... NO


VEH DET DIAG PLN... 0 PED DET DIAG PLN..0

DIMMING ENABLE.. NO PRIORITY RETURN. NO

PED PR RETURN.. NO QUEUE DELAY..... NO

PMT COND DELAY NO

| | | | | | | | | | | | | | | | | |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| PED RCL | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| WALK 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| VEX 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| VEH RCL | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| MAX RCL | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| MAX 2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| MAX 3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| CS INH | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| OMIT | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| SPC FCT | X | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| AUX FCT | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| LP 1-15 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 16-30 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 31-45 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 46-60 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 61-75 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 76-90 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| LP 91-100 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |




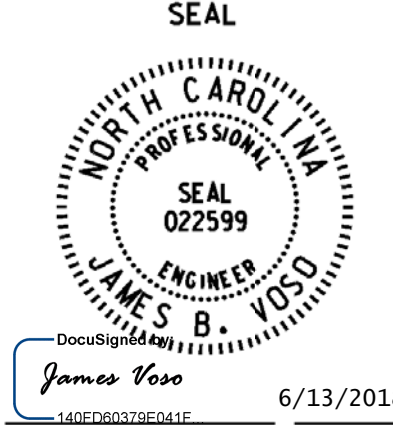
Mattern & Craig
ENGINEERS • SURVEYORS

12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0155
DESIGNED: March 2018
SEALED: 6/13/2018
REVISED: NA

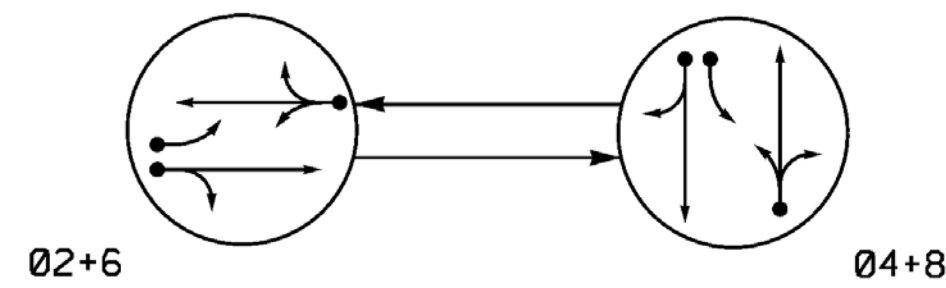
Electrical Detail - Sheet 4 of 4

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

| <p style="font-size: x-small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared for the Offices of:</p>  <p style="font-size: x-small;">150 N. Greenfield Hwy, Garner, NC 27529</p> | <p>NC 87 (S. Main Street) at I-85 NB/I-40 EB Ramps</p> <p style="font-size: x-small;">Division 7 Alamance County Graham</p> <p style="font-size: x-small;">PLAN DATE: March 2018 REVIEWED BY: JB Voso</p> <p style="font-size: x-small;">PREPARED BY: SE Greene REVIEWED BY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="font-size: x-small;">REVISIONS</th> <th style="font-size: x-small;">INIT.</th> <th style="font-size: x-small;">DATE</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"> </td> <td> </td> <td> </td> </tr> </tbody> </table> | REVISIONS | INIT. | DATE | | | | <p style="font-size: x-small;">SEAL</p>  <p style="font-size: x-small;">James Voso 6/13/2018</p> <p style="font-size: x-small;">140EP00378041E DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-0155</p> |
|---|--|-----------|-------|------|--|--|--|--|
| REVISIONS | INIT. | DATE | | | | | | |
| | | | | | | | | |

*****SYSTEMS*****
*****USER*****

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

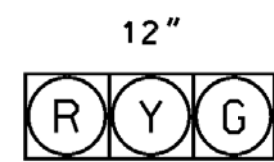
- ◄● detected MOVEMENT
- ◄◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄-- UNSIGNALIZED MOVEMENT
- ◄- - - PEDESTRIAN MOVEMENT

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.



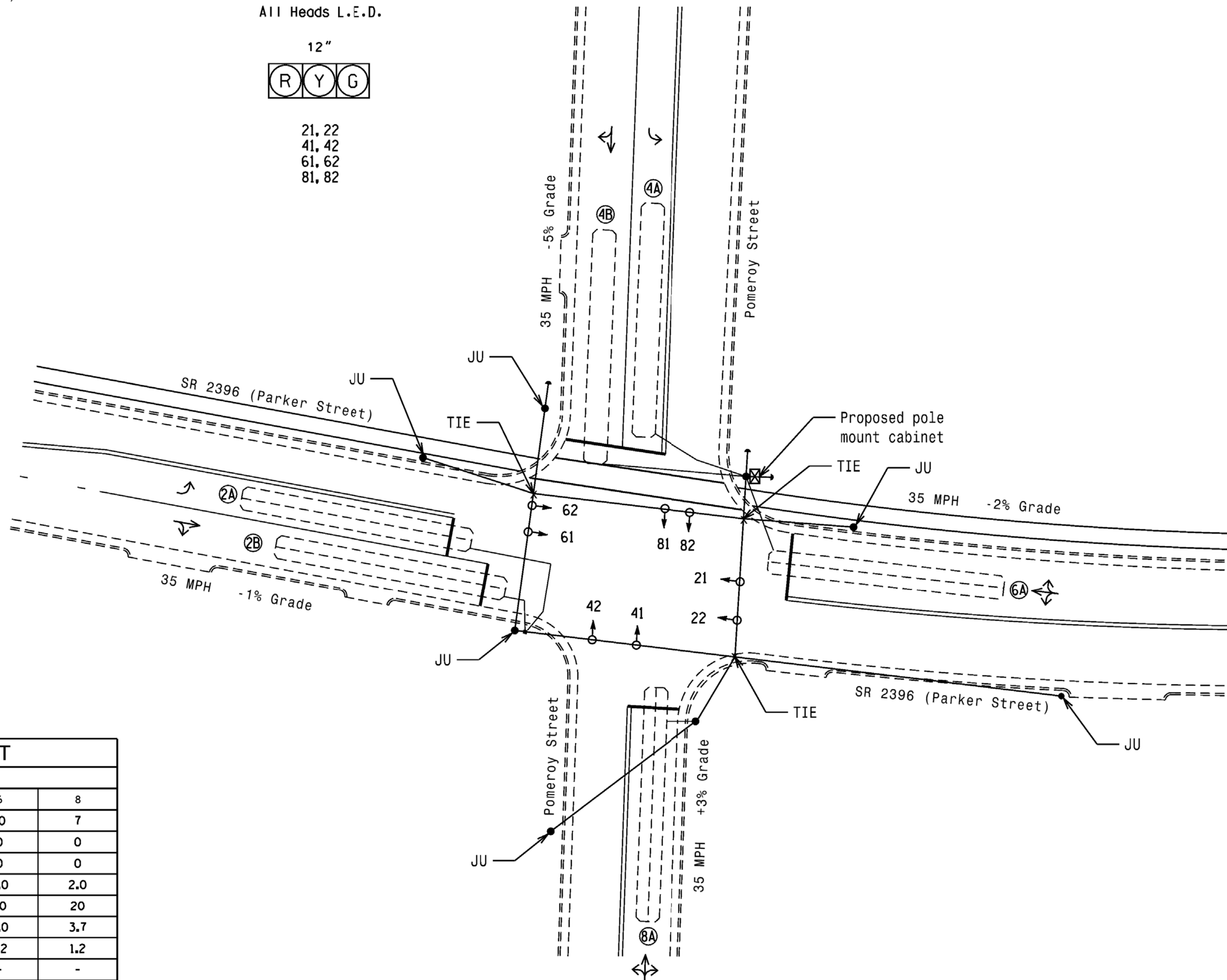
21, 22
41, 42
61, 62
81, 82

| ASC/3 DETECTOR INSTALLATION CHART | | | | | | | | | | | |
|-----------------------------------|-----------|----------------------------|--------|----------|-------|-------------|-------------|------------|-------------------|------|----------|
| DETECTOR | | | | | | PROGRAMMING | | | | | |
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | USE ADDED INITIAL | TYPE | NEW CARD |
| 2A | 6x60 | +5 | 2-4-2 | - | 2 | Yes | - | - | - | S | X |
| 2B | 6x60 | +5 | 2-4-2 | - | 2 | Yes | - | - | - | S | X |
| 4A | 6x60 | 0 | EXIST. | - | 4 | Yes | - | 3 | - | S | X |
| 4B | 6x60 | +5 | EXIST. | - | 4 | Yes | - | 10 | - | S | X |
| 6A | 6x60 | +5 | 2-4-2 | - | 6 | Yes | - | - | - | S | X |
| 8A | 6x60 | +5 | 2-4-2 | - | 8 | Yes | - | 5 | - | S | X |

2 Phase Fully Actuated (Burlington-Graham Signal System)

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.
- 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.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- 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 | | | |
|-------------------------|-------------|-----|-------------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 10 | 7 | 10 | 7 |
| Walk * | 0 | 0 | 0 | 0 |
| Ped Clear | 0 | 0 | 0 | 0 |
| Veh. Extension * | 2.0 | 2.0 | 2.0 | 2.0 |
| Max I * | 20 | 20 | 20 | 20 |
| Yellow | 3.9 | 4.2 | 4.0 | 3.7 |
| Red Clear | 1.1 | 1.0 | 1.2 | 1.2 |
| Actuations B4 Add * | - | - | - | - |
| Seconds / Actuation * | - | - | - | - |
| Max Initial * | - | - | - | - |
| Time Before Reduction * | - | - | - | - |
| Time To Reduce * | - | - | - | - |
| Minimum Gap | - | - | - | - |
| Locking Detector | - | - | - | - |
| Recall Position | VEH. RECALL | - | VEH. 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 With Push Button & Sign | - |
| ⊥ Signal Pole with Guy | ⊥ Signal Pole with Sidewalk Guy |
| ⊥ Inductive Loop Detector | ⊥ Controller & Cabinet |
| ⊥ Junction Box | ⊥ Junction Box |
| ⊥ 2-in Underground Conduit | ⊥ Right of Way |
| → Directional Arrow | → Directional Arrow |

***** SYSTEM *****
 ***** USER *****



12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

Signal Upgrade

Prepared for the Offices of:
 TRANSPORTATION MOBILITY AND SAFETY DIVISION
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section
 750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE 1"=20'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SR 2396 (Parker Street) at Pomeroy Street

Division 7 Alamance County Graham

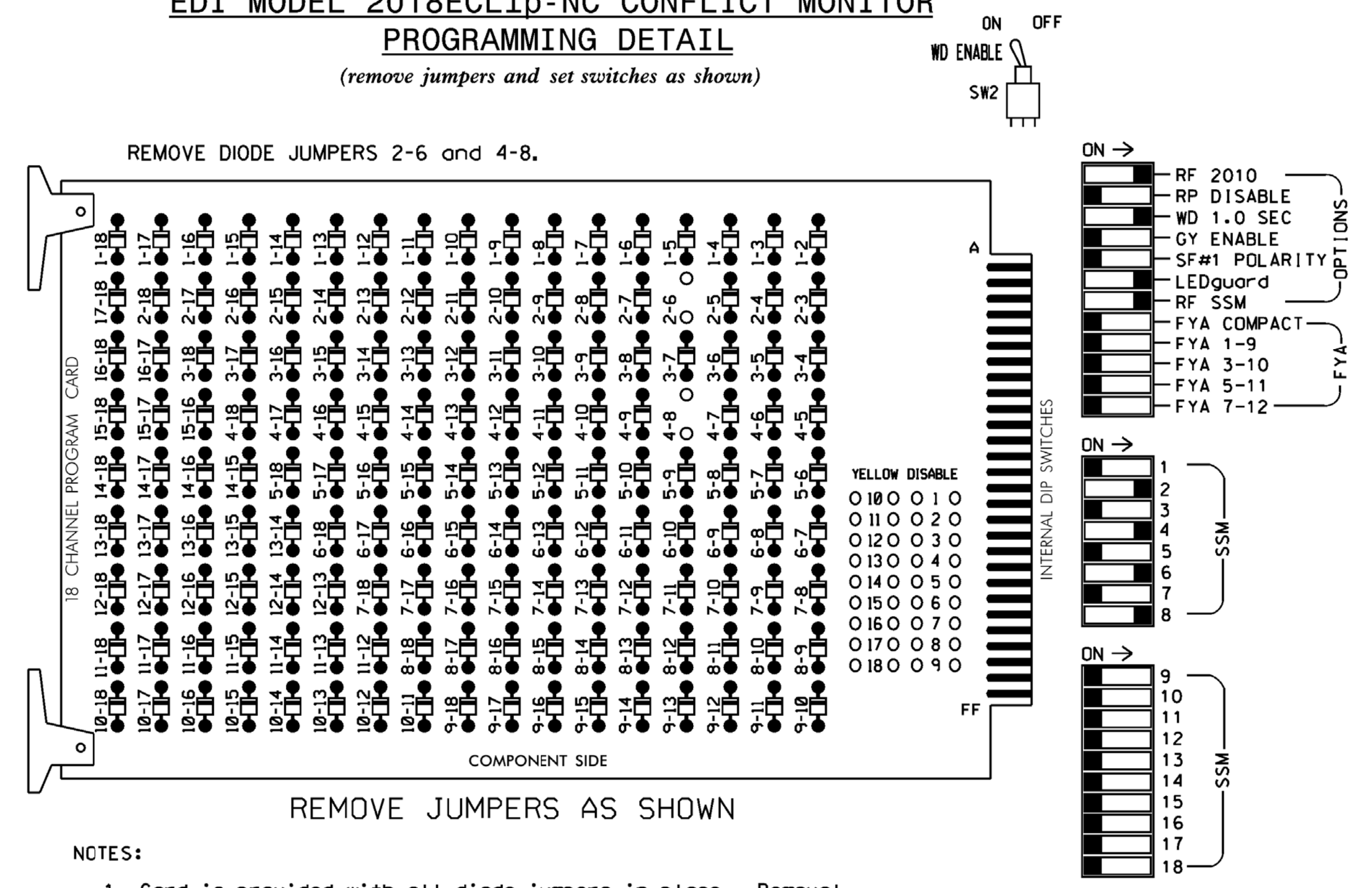
PLAN DATE: January 2018 REVIEWED BY: JB Voso
 PREPARED BY: SE Greene REVIEWED BY:

REVISIONS INIT. DATE

SEAL
 MATTEN & CRAIG
 PROFESSIONAL ENGINEER
 JAMES B. VOSO
 SEAL 022599
 6/13/2018
 SIGNATURE DATE
 SIG. INVENTORY NO. 07-0156

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 the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONOLITE 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

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

INPUT FILE POSITION LAYOUT

(front view)

| FILE | U | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|------|---|-----|-----|-----|-----|-----|----------|-----|----------|----------|----------|----------|----------|----------|--|
| U | | ∅ 2 | ∅ 2 | ∅ 4 | ∅ 4 | ∅ 6 | ∅ 6 | ∅ 8 | ∅ 8 | ∅ 8 | ∅ 8 | ∅ 8 | ∅ 8 | ∅ 8 | ∅ 8 |
| L | | 2A | 2B | 4A | 4B | 6A | NOT USED | 8A | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | FS DC ISOLATOR ST DC ISOLATOR |

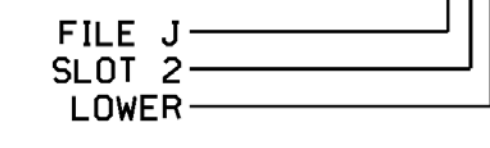
EX.: 1A, 2A, ETC. = LOOP NO.'S

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 | TB21-3,4 | I2U | 39 | 2 | 2 | YES | | | | S |
| 2B | TB23-3,4 | I2L | 43 | 12 | 2 | YES | | | | S |
| 4A | TB21-7,8 | I4U | 41 | 4 | 4 | YES | | | | S |
| 4B | TB23-7,8 | I4L | 45 | 14 | 4 | YES | | 3 | | S |
| 6A | TB21-11,12 | I6U | 40 | 6 | 6 | YES | | 5 | | S |
| 8A | TB22-1,2 | I8U | 42 | 8 | 8 | YES | | | | S |

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0156
 DESIGNED: January 2018
 SEALED: 6/13/2018
 REVISED: NA

*****SYSTEM*****
 *****DIALOG*****
 *****USER*****



12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



SR 2396 (Parker Street)
 at
 Pomeroy Street

Division 7 Alamance County Graham
 PLAN DATE: January 2018 REVIEWED BY: JB Voso
 PREPARED BY: SE Greene REVIEWED BY:

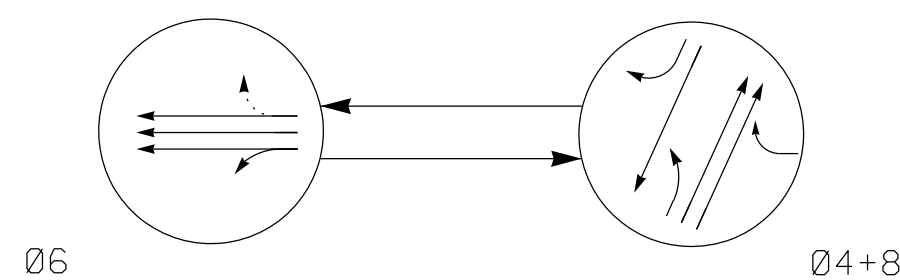
| REVISIONS | INIT. | DATE |
|-----------|-------|------|
| | | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JAMES B. VOSO
 License No. 022599
 6/13/2018
 DATE

SIG. INVENTORY NO. 07-0156

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

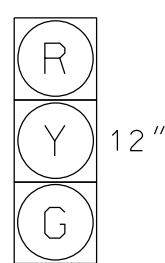
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ← → PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|-------|-----------|
| | Ø 6 | Ø 4+8 | F L HEADS |
| 41, 42 | R | G | R |
| 61, 62, 63 | G | R | Y |
| 81, 82 | R | G | R |

SIGNAL FACE I.D.

All Heads L.E.D.

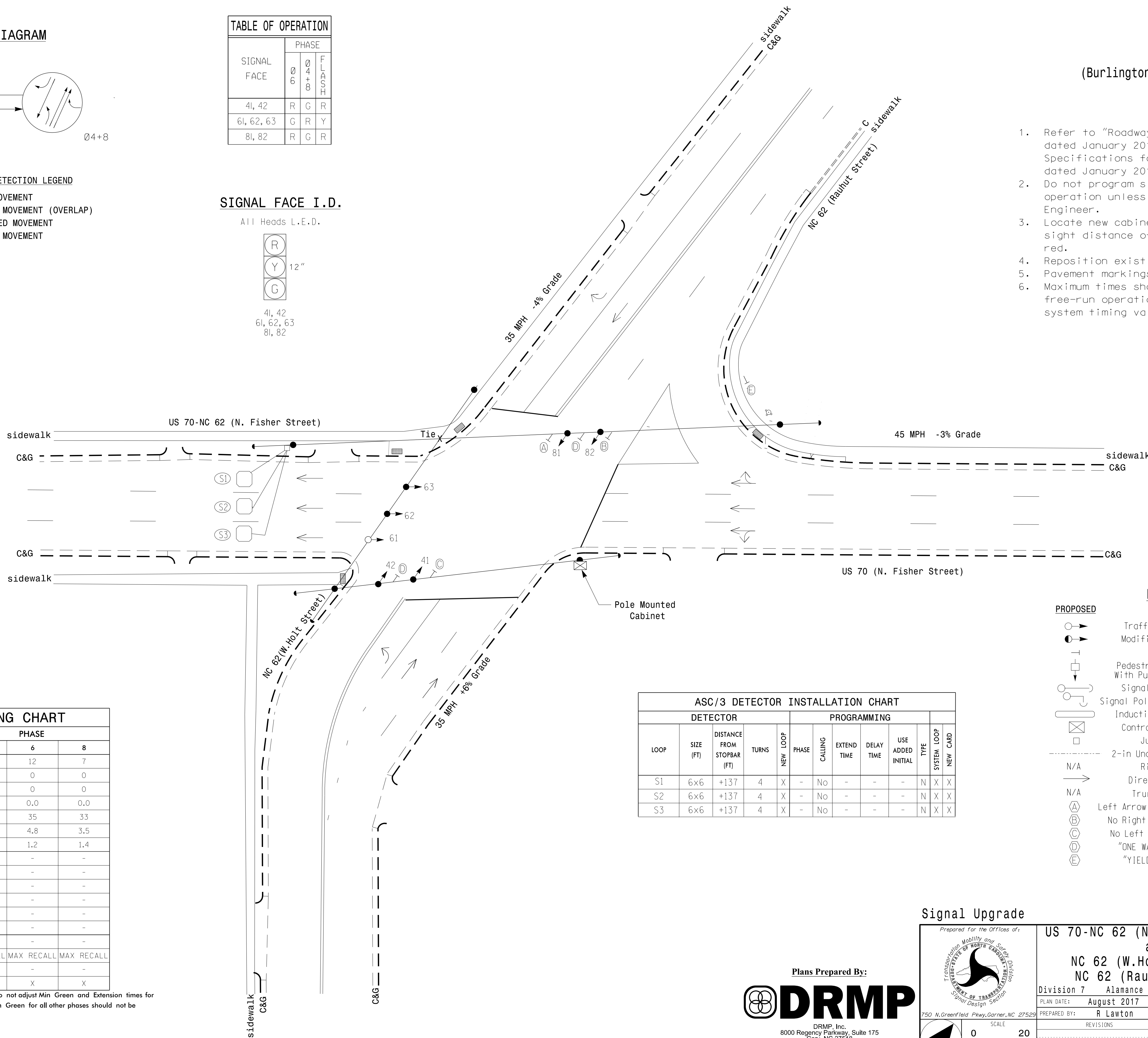


41, 42
61, 62, 63
81, 82

**2 Phase
Pretimed
(Burlington-Graham Signal System)**

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.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Reposition existing signal heads numbered 62 & 63.
- 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 | | |
|-------------------------|------------|------------|------------|
| | 4 | 6 | 8 |
| Min Green * | 7 | 12 | 7 |
| Walk * | 0 | 0 | 0 |
| Ped Clear | 0 | 0 | 0 |
| Veh. Extension * | 0.0 | 0.0 | 0.0 |
| Max I * | 33 | 35 | 33 |
| Yellow | 4.1 | 4.8 | 3.5 |
| Red Clear | 1.4 | 1.2 | 1.4 |
| Actuations B4 Add * | - | - | - |
| Seconds /Actuation * | - | - | - |
| Max Initial * | - | - | - |
| Time Before Reduction * | - | - | - |
| Time To Reduce * | - | - | - |
| Minimum Gap | - | - | - |
| Locking Detector | - | - | - |
| Recall Position | MAX RECALL | MAX RECALL | MAX RECALL |
| Dual Entry | - | - | - |
| Simultaneous Gap | X | X | X |

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

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 | |
| S1 | 6x6 | +137 | 4 | X | - | No | - | - | - | - | N | X | X |
| S2 | 6x6 | +137 | 4 | X | - | No | - | - | - | - | N | X | X |
| S3 | 6x6 | +137 | 4 | X | - | No | - | - | - | - | N | X | X |

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 |
| → | → Directional Arrow |
| N/A | ▒ Truncated Domes |
| (A) | (A) Left Arrow "ONLY" Sign (R3-5L) |
| (B) | (B) No Right Turn Sign (R3-1) |
| (C) | (C) No Left Turn Sign (R3-2) |
| (D) | (D) "ONE WAY" Sign (R6-1) |
| (E) | (E) "YIELD" Sign (R1-2) |

13-JUN-2018 17:40
 R:\66015\17\off\caks\gnals\06sig\gnals\07-0157.dgn
 KANDERSON AT CHA-Y.ANDERSON

Plans Prepared By:

DRMP
 8000 Regency Parkway, Suite 175
 Cary, NC 27518
 NC License No. C-2213 (919) 650-1038

Signal Upgrade

750 N. Greenfield Pkwy, Garner, NC 27529

**US 70-NC 62 (N.Fisher Street)
at
NC 62 (W.Holt Street)/
NC 62 (Rauhut Street)**

Division 7 Alamance County Burlington

PLAN DATE: August 2017 REVIEWED BY: A Davis

PREPARED BY: R Lawton REVIEWED BY: L Moon

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

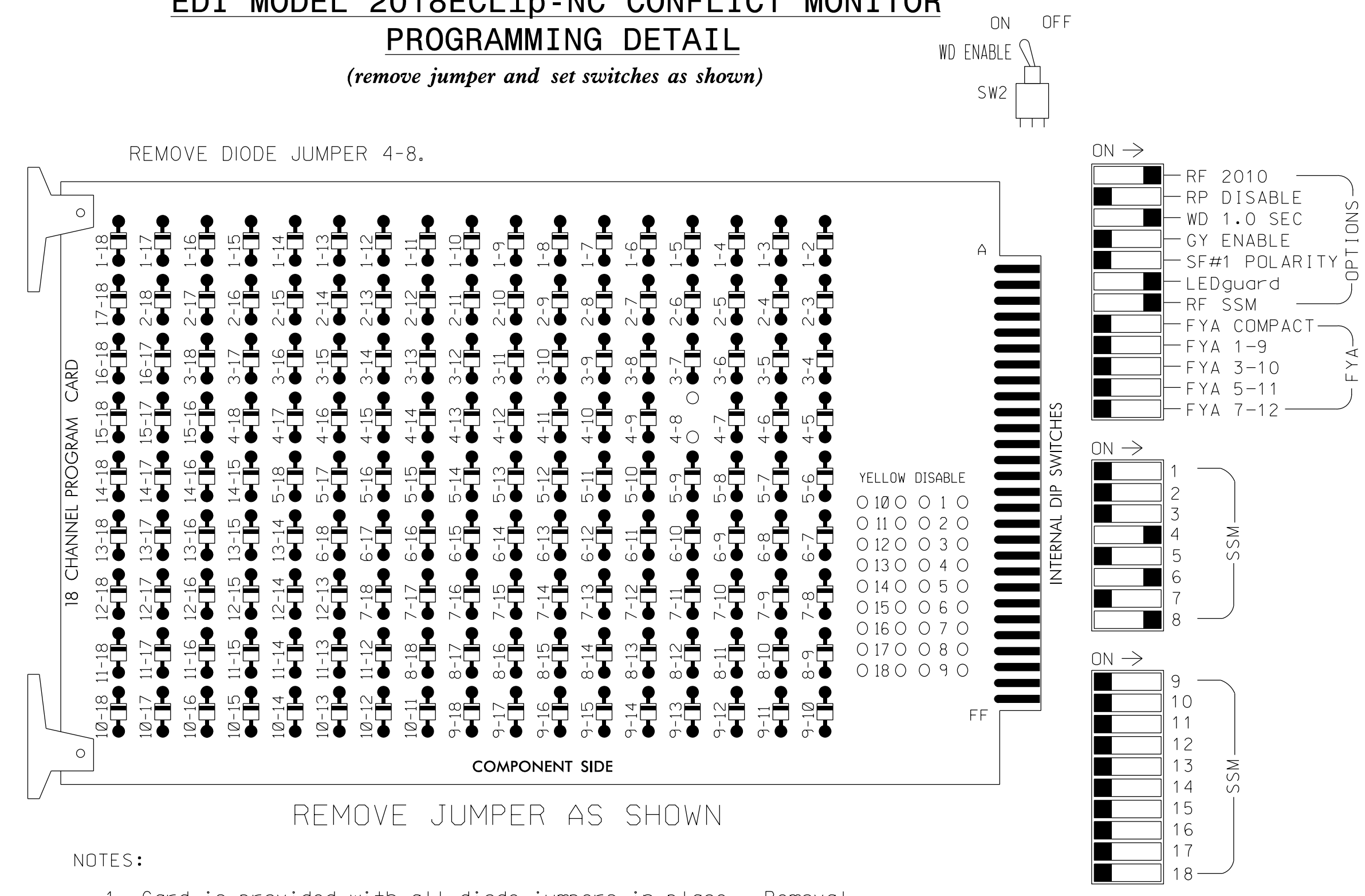
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

SEAL

DocuSigned by:
Lisa M. Moon 6/13/2018
 58C568D3D0421
 SIGNATURE DATE
 SIG. INVENTORY NO. 07-0157

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 6 Green.
3. The cabinet and controller are part of the Burlington-Graham Signal System.

SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 |
|-----------------|----|----|-------|----|-------|-------|----|----------|-------|-----|-------|-------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED |
| SIGNAL HEAD NO. | NU | NU | NU | NU | 41,42 | NU | NU | 61,62,63 | NU | NU | 81,82 | NU |
| RED | | | | | 101 | | | 134 | | | 107 | |
| YELLOW | | | | | 102 | | | 135 | | | 108 | |
| GREEN | | | | | 103 | | | 136 | | | 109 | |
| RED ARROW | | | | | | | | | | | | |
| YELLOW ARROW | | | | | | | | | | | | |
| GREEN ARROW | | | | | | | | | | | | |

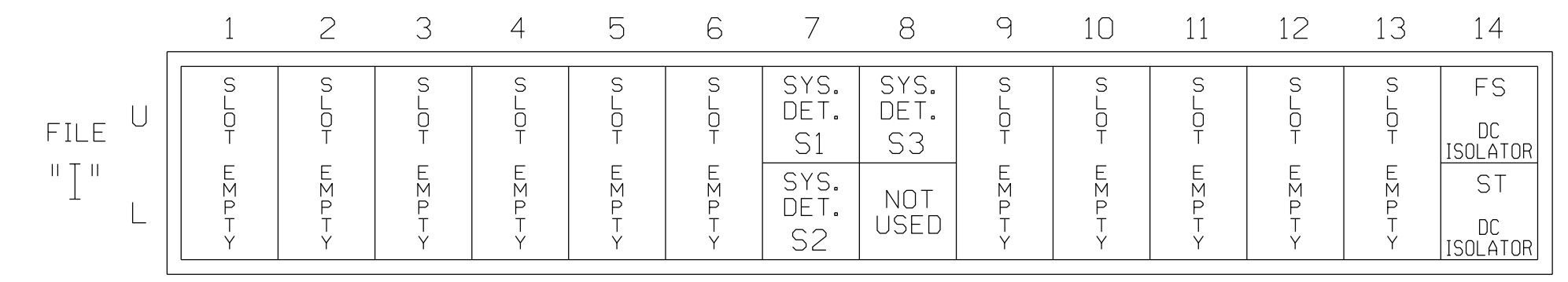
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S5,S8,S11
 PHASES USED.....4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

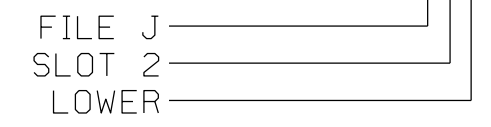
FS = FLASH SENSE
 ST = STOP TIME

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 |
|----------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| * S1 | TB21-13,14 | 17U | 57 | 7 | SYS | NO | | | | N |
| * S2 | TB23-13,14 | 17L | 50 | 28 | SYS | NO | | | | N |
| * S3 | TB22-1,2 | 18U | 42 | 8 | SYS | NO | | | | N |

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0157
 DESIGNED: August 2017
 SEALED: 06-13-2018
 REVISED: N/A

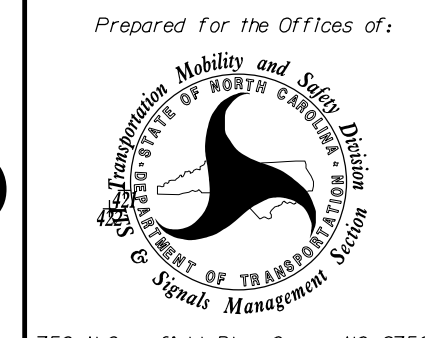
103:LIN-2018_17:40
 R:\660157\off\ek\signal\design\w1r\ing\07-0157e.dgn
 KANDERSON AT CHA-KANDERSON

Plans Prepared By:

DRMP Inc.
 8000 Regency Parkway, Suite 175
 Cary, NC 27518
 NC License No. C-2213 (919) 650-1038

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



US 70-NC 62 (N.Fisher Street) at NC 62 (W.Holt Street)/ NC 62 (Rauhut Street)

Division 7 Alamance County Burlington

PLAN DATE: September 2017 REVIEWED BY: LM Moon

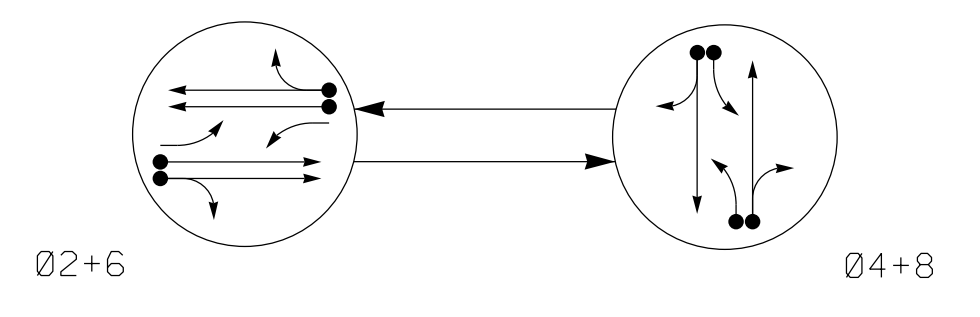
PREPARED BY: AJ Davis REVIEWED BY:

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

DocuSigned by: Lisa M. Moon 6/13/2018
 SIG. INVENTORY NO. 07-0157

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

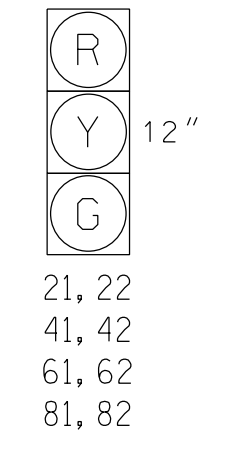
- ◄●► DETECTED MOVEMENT
- ◄◄◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄◄◄ UNSIGNALIZED MOVEMENT
- ◄◄◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

| SIGNAL FACE | PHASE | | |
|-------------|-------|------|-------|
| | 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.



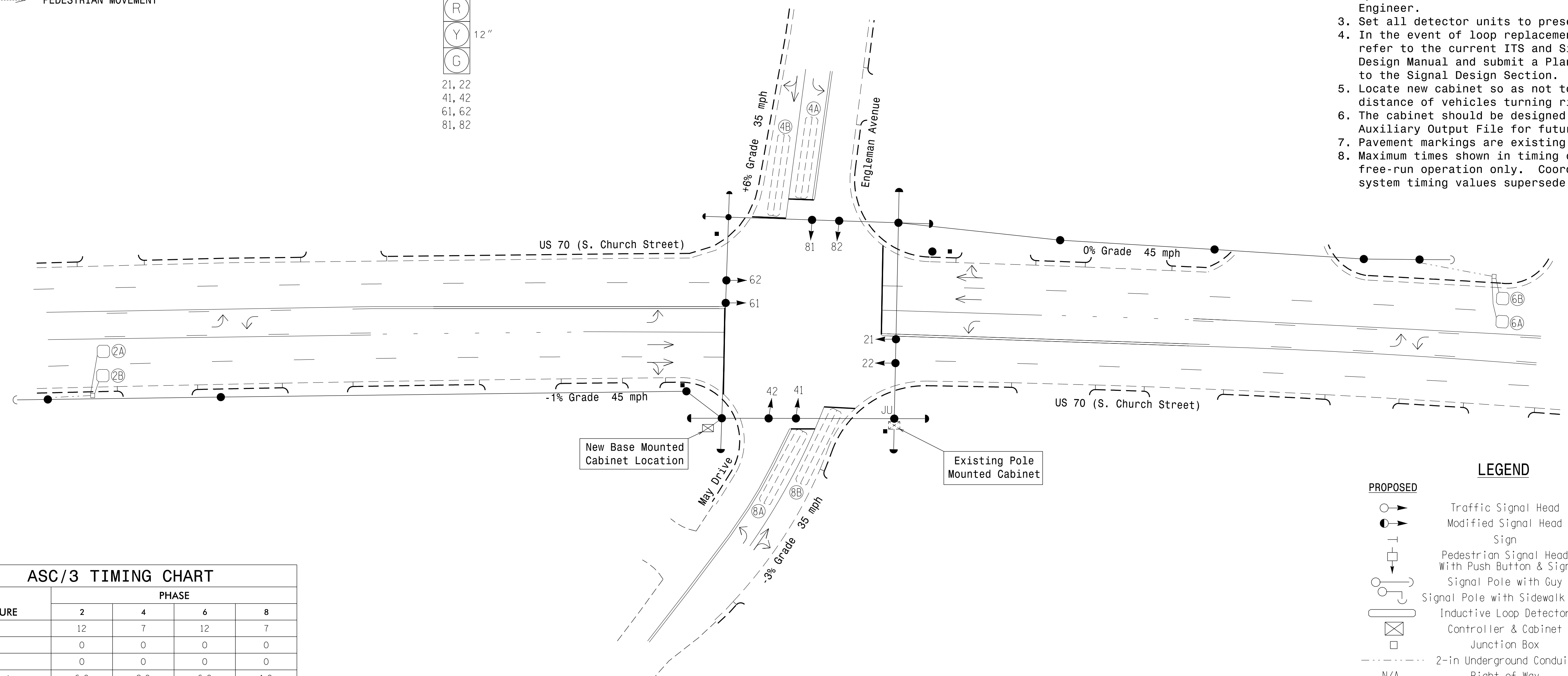
ASC/3 DETECTOR INSTALLATION CHART

| 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 | |
| 2A | 6X6 | 300 | 5 | X | 2 | Yes | - | - | X | N | - | X |
| 2B | 6X6 | 300 | 5 | X | 2 | Yes | - | - | X | N | - | X |
| 4A | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | 3 | - | S | - | X |
| 4B | 6X40 | 0 | 2-4-2 | - | 4 | Yes | - | 10 | - | S | - | X |
| 6A | 6X6 | 300 | 5 | X | 6 | Yes | - | - | X | N | - | X |
| 6B | 6X6 | 300 | 5 | X | 6 | Yes | - | - | X | N | - | X |
| 8A | 6X40 | 0 | 2-4-2 | - | 8 | Yes | - | 3 | - | S | - | X |
| 8B | 6X40 | 0 | 2-4-2 | - | 8 | Yes | - | 10 | - | S | - | X |

2 Phase Fully Actuated Burlington-Graham Signal System

NOTES

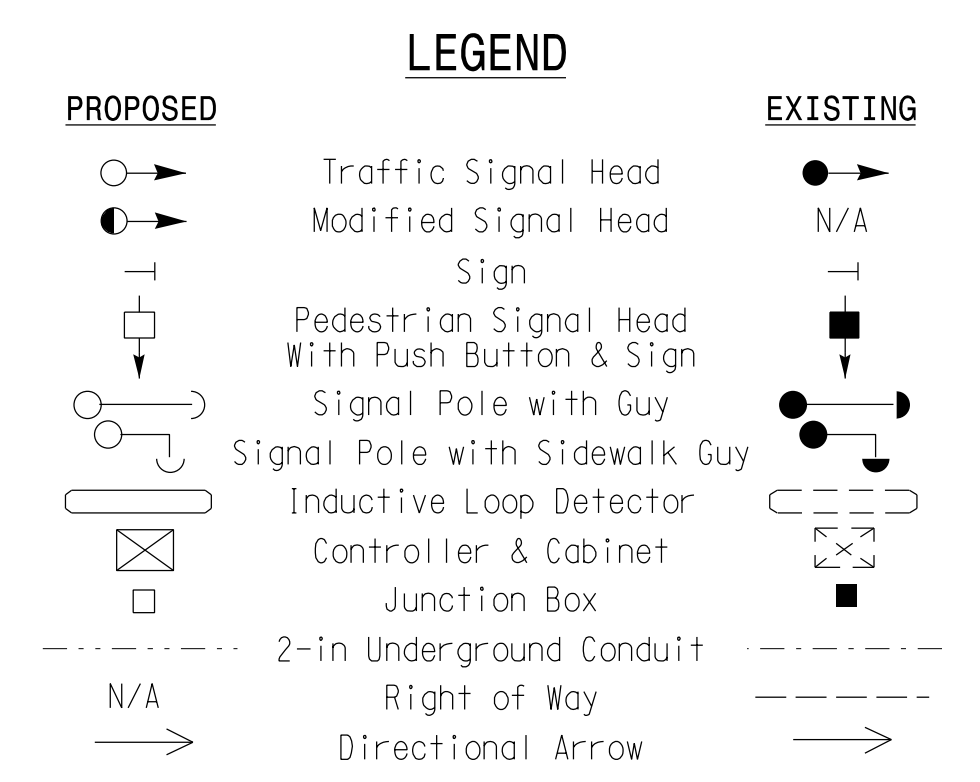
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by Engineer.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- The cabinet should be designed to include an Auxiliary Output File for future use.
- 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 | | | |
|-------------------------|-------------|-----|-------------|-----|
| | 2 | 4 | 6 | 8 |
| Min Green * | 12 | 7 | 12 | 7 |
| Walk * | 0 | 0 | 0 | 0 |
| Ped Clear | 0 | 0 | 0 | 0 |
| Veh. Extension * | 6.0 | 2.0 | 6.0 | 1.0 |
| Max 1 * | 90 | 25 | 90 | 25 |
| Yellow | 4.6 | 3.5 | 4.5 | 4.1 |
| Red Clear | 1.0 | 2.1 | 1.0 | 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 | - | 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.



07-JUN-2018 11:11 ***SIGNALING CONSULTANT*** U-6015 B-0 Stg Sigs*Task 05-11-15 Signal is 0605 0907-0158-dgn ALEX3361 AT LUS210649

Signal Upgrade

Prepared for the Offices of:

US 70 (S. Church Street) at May Drive/Engleman Avenue

Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: MB Toth

PREPARED BY: PL Alexander REVIEWED BY:

REVISIONS: INIT. DATE

SCALE: 1"=30'

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 023489

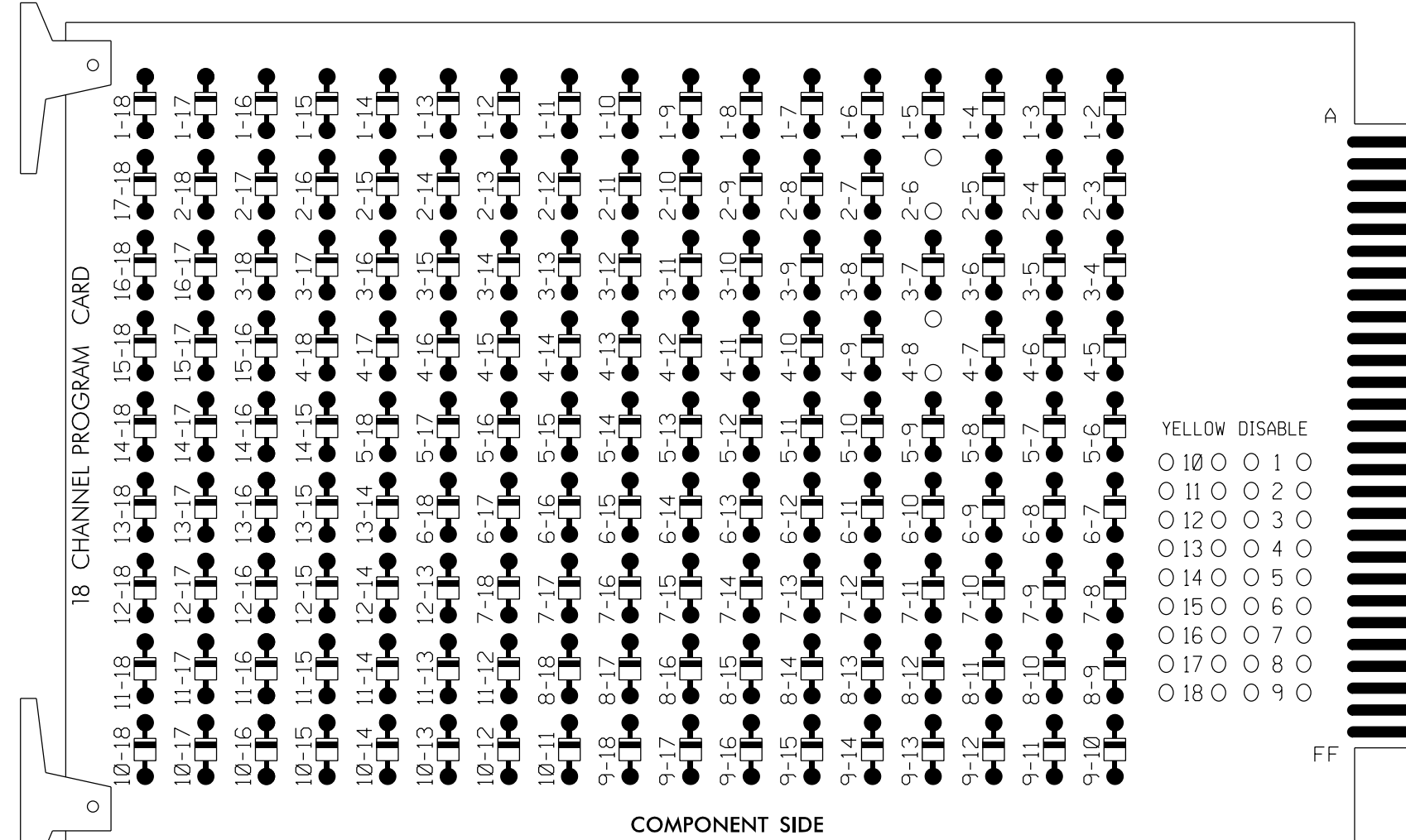
6/7/2018

SIG. INVENTORY NO. 07-0158

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

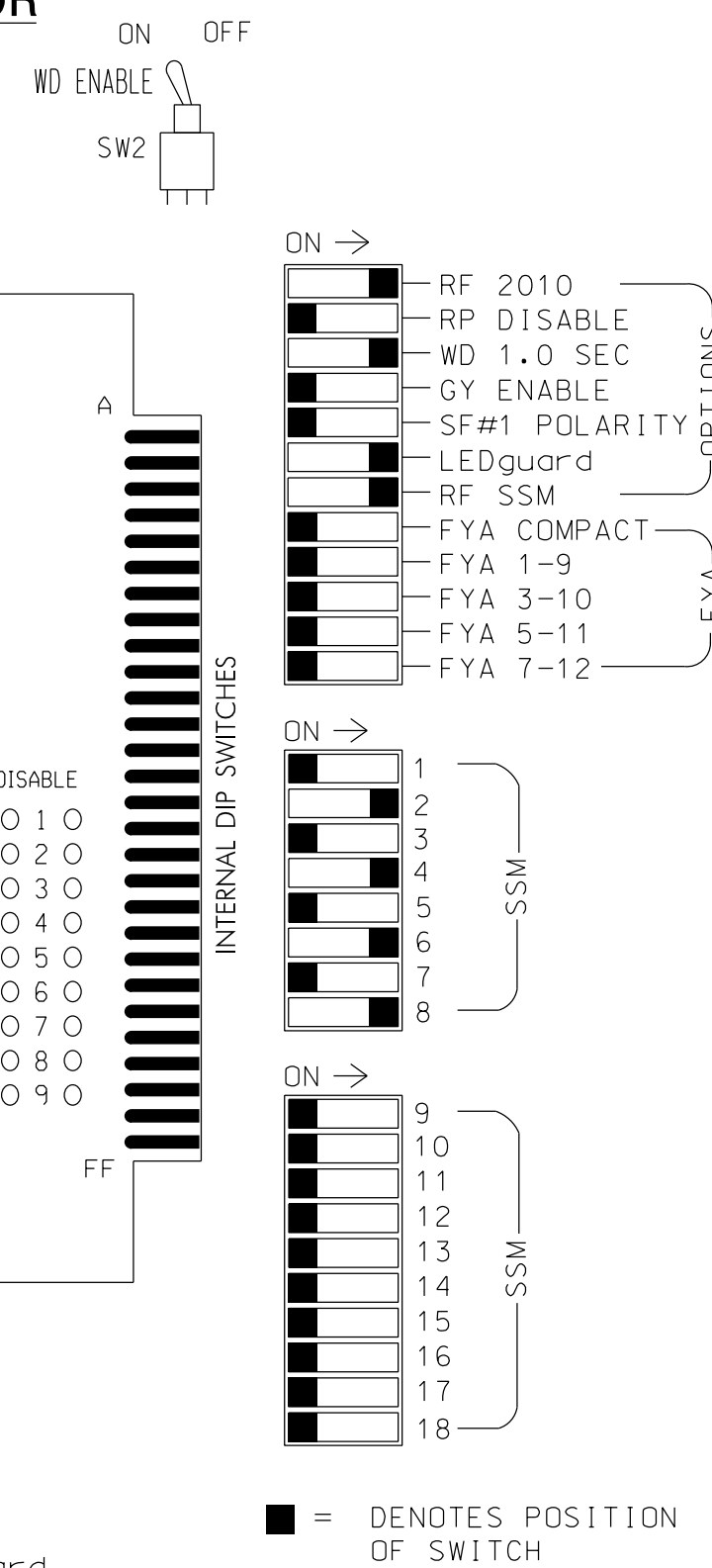
REMOVE DIODE JUMPERS 2-6 and 4-8.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that 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 the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

| | |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| U-6015 | Sig. 66.1 |

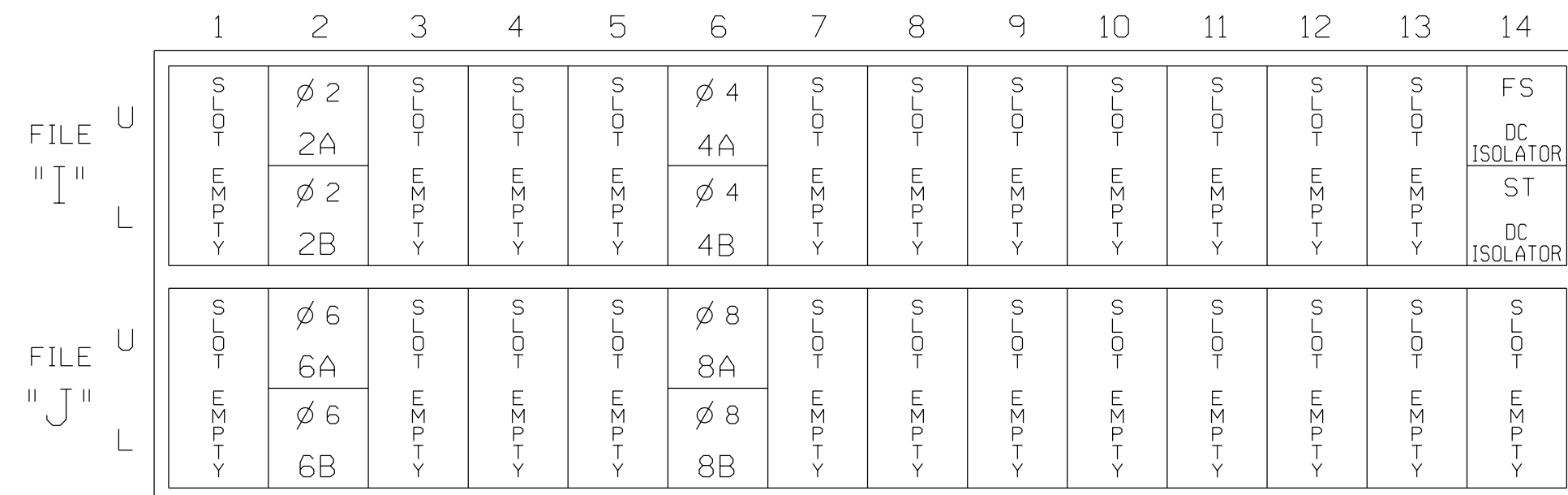
SIGNAL HEAD HOOK-UP CHART

| LOAD SWITCH NO. | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | AUX S1 | AUX S2 | AUX S3 | AUX S4 | AUX S5 | AUX S6 |
|-----------------|----|-------|-------|----|-------|-------|----|-------|-------|-----|-------|-------|--------|--------|--------|--------|--------|--------|
| CMU CHANNEL NO. | 1 | 2 | 13 | 3 | 4 | 14 | 5 | 6 | 15 | 7 | 8 | 16 | 9 | 10 | 17 | 11 | 12 | 18 |
| PHASE | 1 | 2 | 2 PED | 3 | 4 | 4 PED | 5 | 6 | 6 PED | 7 | 8 | 8 PED | OLA | OLB | SPARE | OLC | OLD | SPARE |
| SIGNAL HEAD NO. | NU | 21,22 | NU | NU | 41,42 | NU | NU | 61,62 | NU | NU | 81,82 | NU | NU | NU | NU | NU | NU | 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

INPUT FILE POSITION LAYOUT

(front view)



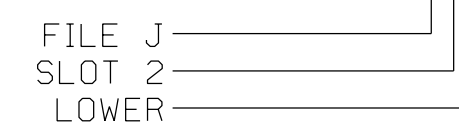
EX. : 1A, 2A, ETC. = LOOP NO.'S

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 |
|----------|---------------|-----------------|---------|--------------|------------|------|-------------|------------|---------------|---------------|
| 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 | | S |
| 4B | TB4-11,12 | I6L | 45 | 14 | 4 | YES | | 10 | | S |
| 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 | | S |
| 8B | TB5-11,12 | J6L | 46 | 18 | 8 | YES | | 10 | | S |

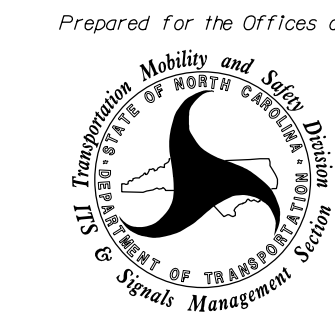
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0158
 DESIGNED: December 2017
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

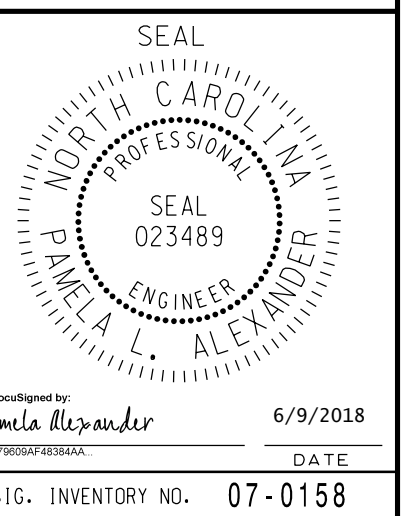


US 70 (S. Church Street) at May Drive/Engleman Avenue

Division 7 Alamance County Burlington
 PLAN DATE: December 2017 REVIEWED BY: MB Toth
 PREPARED BY: PL Alexander REVIEWED BY:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SIG. INVENTORY NO. 07-0158

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEES #F-0326

750 N. Greenfield Pkwy, Garner, NC 27529