



Finance

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ADDENDUM NUMBER 1

Masonboro Loop Road Phase II MUP From Parsley Elementary to Andrews Reach Development

MUP-STE-0724

July 11, 2024

To all holders of Bid Documents, please be advised to the following:

The line item can't be revised from lump sum to unit cost as the NCDOT has approved the bid document.

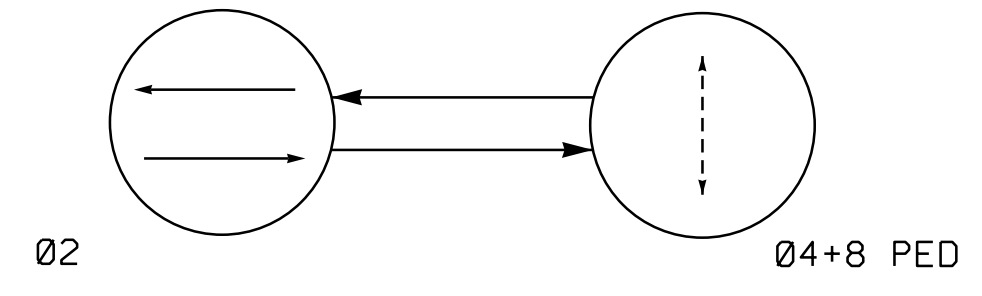
Attached are the updated pedestrian hybrid beacon plans.

Acknowledge receipt of this Addendum in the space provided in the Proposal. Failure to do so may disqualify the Bidder.

All other terms and conditions remain unchanged.

Daryle L. Parker, Purchasing Manager
Purchasing Division
END OF ADDENDUM ONE

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

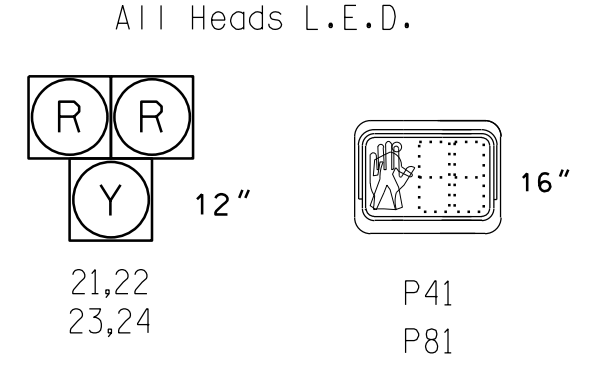
TABLE OF OPERATION

| SIGNAL FACE | PHASE | | | | | |
|-------------|---------|------------|---------------|--------------|---------------------|--------|
| | Ø2 DARK | ACTIVATION | STEADY YELLOW | Ø4+8 ALL RED | Ø4+8 PED WALK CLEAR | FLASH |
| 21,22 | DRK | FY | Y | R | R | FR* Y |
| 23,24 | DRK | FY | Y | R | R | FR* Y |
| P41 | DW | DW | DW | DW | W | FDWDRK |
| P81 | DW | DW | DW | DW | W | FDWDRK |

* ALTERNATING FLASH

Y- STEADY YELLOW
 FY- FLASHING YELLOW
 R- STEADY RED
 FR- FLASHING RED
 W- WALK
 DW- DON'T WALK
 FDW- FLASHING DON'T WALK
 DRK- DARK

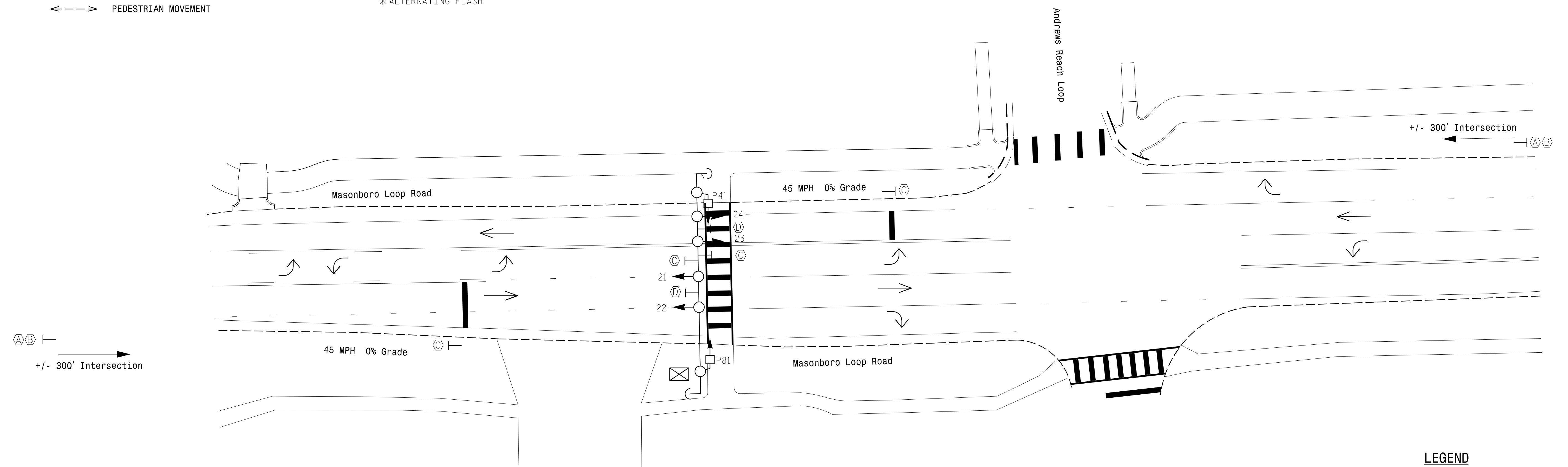
SIGNAL FACE I.D.



2 Phase Pedestrian Hybrid Beacon (Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
3. Enable Ped Yellow Clear for phase 4 + 8.



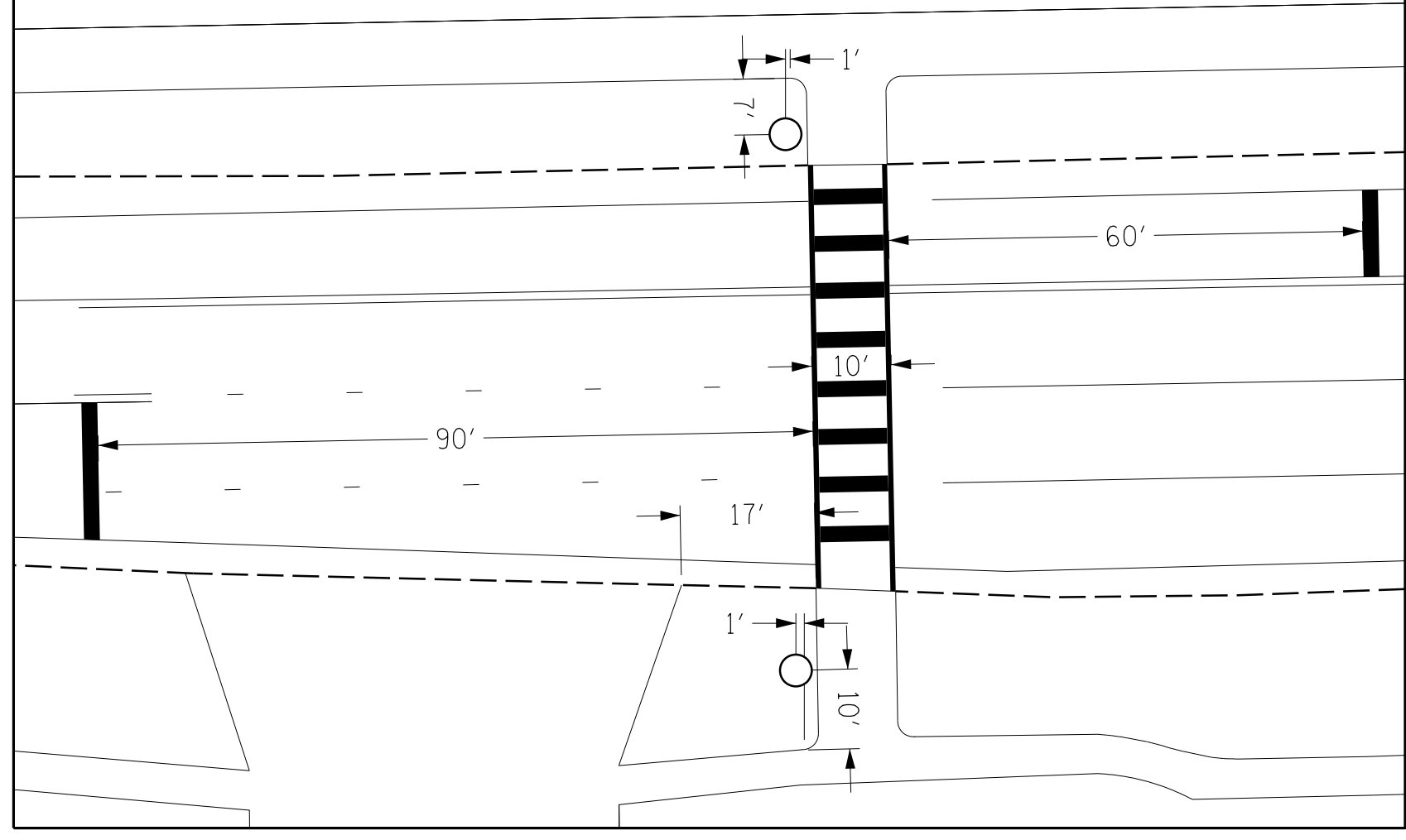
OASIS 2070 TIMING CHART

| FEATURE | PHASE | | | |
|-------------------------|------------|-------|-------|-----|
| | 2 | 4 PED | 8 PED | OLA |
| Min Green 1 * | 10 | 7 | 7 | 5 |
| Extension 1 * | 0.0 | 0.0 | 0.0 | |
| Max Green 1 * | 30 | 0 | 0 | |
| Yellow Clearance | 5.0 | 3.0 | 3.0 | 3.8 |
| Red Clearance | 2.0 | 0.0 | 0.0 | 5.0 |
| Walk 1 * | - | 7 | 7 | |
| Don't Walk 1 | - | 12 | 12 | |
| Seconds Per Actuation * | - | - | - | |
| Max Variable Initial * | - | - | - | |
| Time Before Reduction * | - | - | - | |
| Time To Reduce * | - | - | - | |
| Minimum Gap | - | - | - | |
| Recall Mode | MAX RECALL | - | - | |
| Vehicle Call Memory | - | - | - | |
| Dual Entry | - | - | - | |
| Simultaneous Gap | ON | ON | ON | |

Serves as Flashing Yellow Time

← Serves as Steady Yellow Clearance Time
 ← Serves as All Red Clearance Time

CROSSWALK, STOP BAR, POLE LOCATIONS



LEGEND

| PROPOSED | EXISTING | PROPOSED | EXISTING |
|----------|----------|--|-------------------------|
| ○→ | ●→ | Traffic Signal Head | Modified Signal Head |
| □→ | ■→ | Pedestrian Signal Head With Push Button & Sign | Signal Pole with Guy |
| ○→ | ●→ | Signal Pole with Sidewalk Guy | Inductive Loop Detector |
| □→ | ■→ | Controller & Cabinet | Junction Box |
| □→ | ■→ | 2-in Underground Conduit | Right of Way |
| □→ | ■→ | Directional Arrow | Curb Ramp |

SIGNS

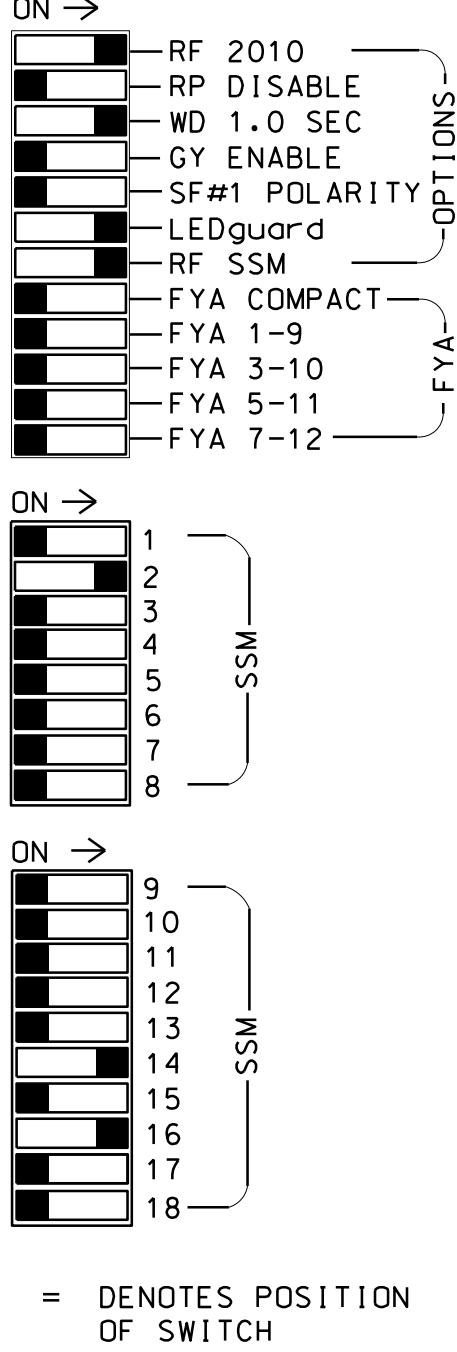
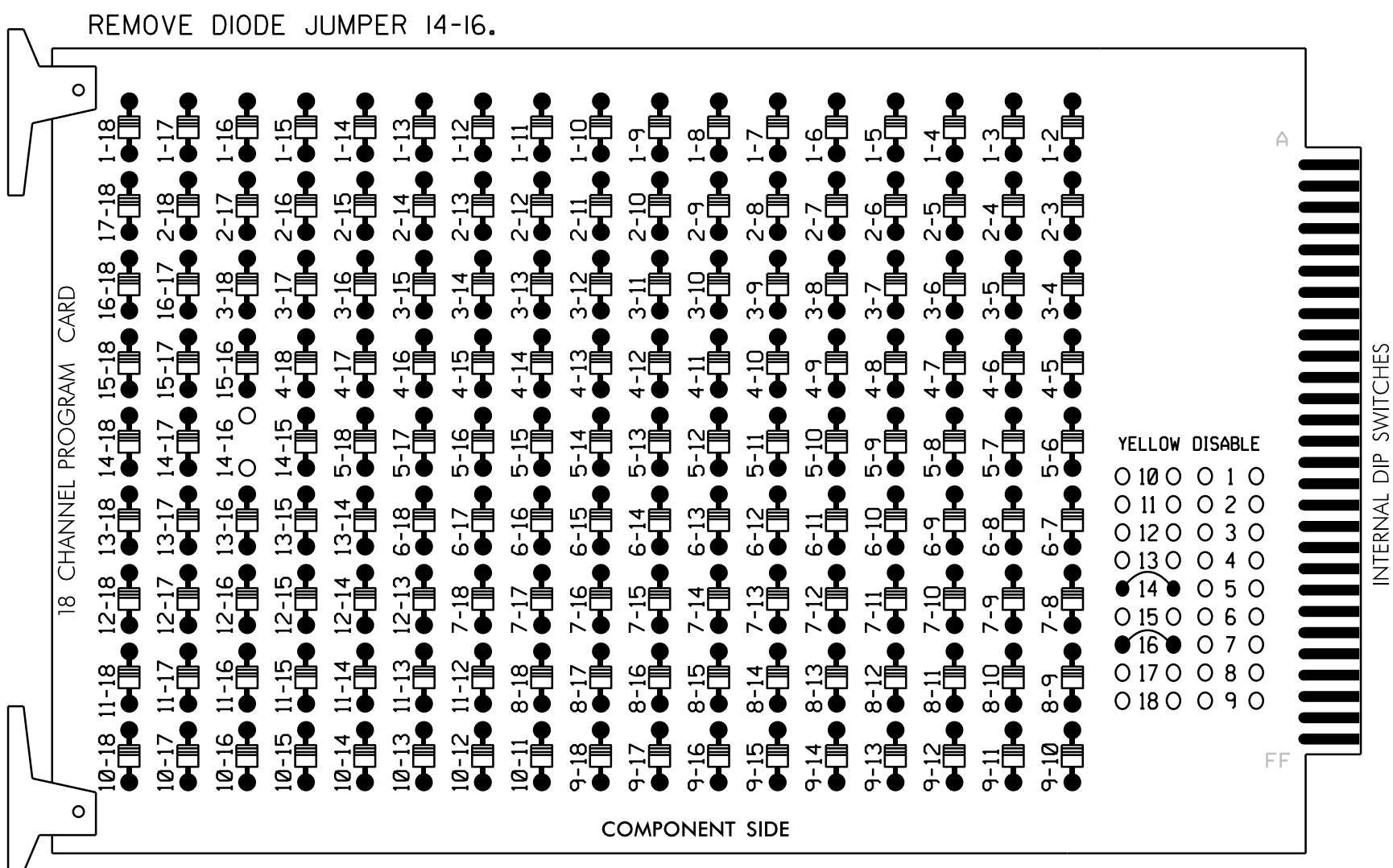
| PROPOSED | EXISTING |
|----------|----------|
| (A) | (A) |
| (B) | (B) |
| (C) | (C) |
| (D) | (D) |

New Installation

| | | | |
|---|---|-------------------------------|---|
| | Masonboro Loop Road at Mid Block Crosswalk North of Jasper Place | | |
| | Division 3 New Hanover County Wilmington | | |
| PLAN DATE: April 2022 PREPARED BY: ZM Esposito | REVIEWED BY: WJ Hamilton RKA PROJ. NO.: 20303 (040) | SCALE: 1" = 20' REVISIONS: | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL SIGNATURE: William J. Hamilton DATE: 4/25/2022 SIG. INVENTORY NO.: N/A |

EDI MODEL 2018ECL-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. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.
5. Be sure to install YELLOW DISABLE JUMPER for channel 14 (4 PED) and channel 16 (PED).

INPUT FILE POSITION LAYOUT

(front view)

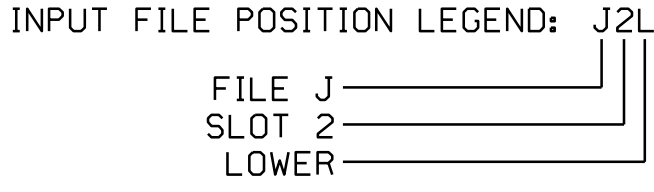
| | | | | | | | | | | | | | | |
|----------|---|---|---|---|---|---|---|---|---|----|----|----|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| FILE "I" | U | U | U | U | U | U | U | U | U | U | U | S | NOT USED | FS |
| | U | U | U | U | U | U | U | U | U | U | U | U | DC ISOLATOR | DC ISOLATOR |
| FILE "J" | U | U | U | U | U | U | U | U | U | U | U | U | DC ISOLATOR | 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. | INPUT ASSIGNMENT NO. | DETECTOR NO. | NEMA PHASE | CALL | EXTEND | FULL TIME DELAY | STRETCH TIME | DELAY TIME |
|----------|---------------|-----------------|---------|----------------------|--------------|------------|------|--------|-----------------|--------------|------------|
| P41 | T88-5,6 | I12L | 69 | 31 | PED 4 | 4 PED | | | | | |
| P81 | T88-8,9 | I13L | 70 | 32 | PED 8 | 8 PED | | | | | |

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



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 PED YELLOW CLEAR.
3. Program phase 2 for STARTUP IN GREEN.
4. Program phases 4 and 8 for STARTUP PED CALL.
5. Program phase 2 for YELLOW FLASH.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S6,S12
 PHASES USED.....2,*4,4 PED,*8,8 PED
 OVERLAP "A".....2**
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

** Denotes used to control clearance intervals.
 * Phase used for timing purposes only.

OPERATIONAL NOTES

1. In order for controller to perform the "Pedestrian Hybrid Beacon" (aka. HAWK signal) sequence, special logic and output programming is necessary. See programming details on sheet 2 of this electrical detail.
 2. This sequence uses PHASE 2 YELLOW to produce "flashing yellow clearance" and also uses overlap "A" assigned as phase 2 to provide "steady yellow" clearance interval. Time for this interval shall be implemented in "OLA YELLOW CLEAR" timing. See signal plan for timing.
 3. Phase 2 YELLOW CLEARANCE and OLA GREEN EXTENSION times must be equal. This is necessary so that when flashing yellow clear ends, the steady yellow clear begins.
- Phase 4 and 8 RED CLEAR time must be set to 0.0 sec.

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

```

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:      12345678910111213141516
VEH OVL PARENTS:  X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:  X
STARTUP COLOR:  _ RED _ YELLOW _ GREEN
FLASH COLORS:   _ RED _ YELLOW _ GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC).....5
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...3.8
RED CLEAR (0=PARENT,0.1-25.5 SEC)...5.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
    
```

NOTICE TIMING INTERVALS

OVERLAP PROGRAMMING COMPLETE

TIMING INTERVAL SCHEDULE

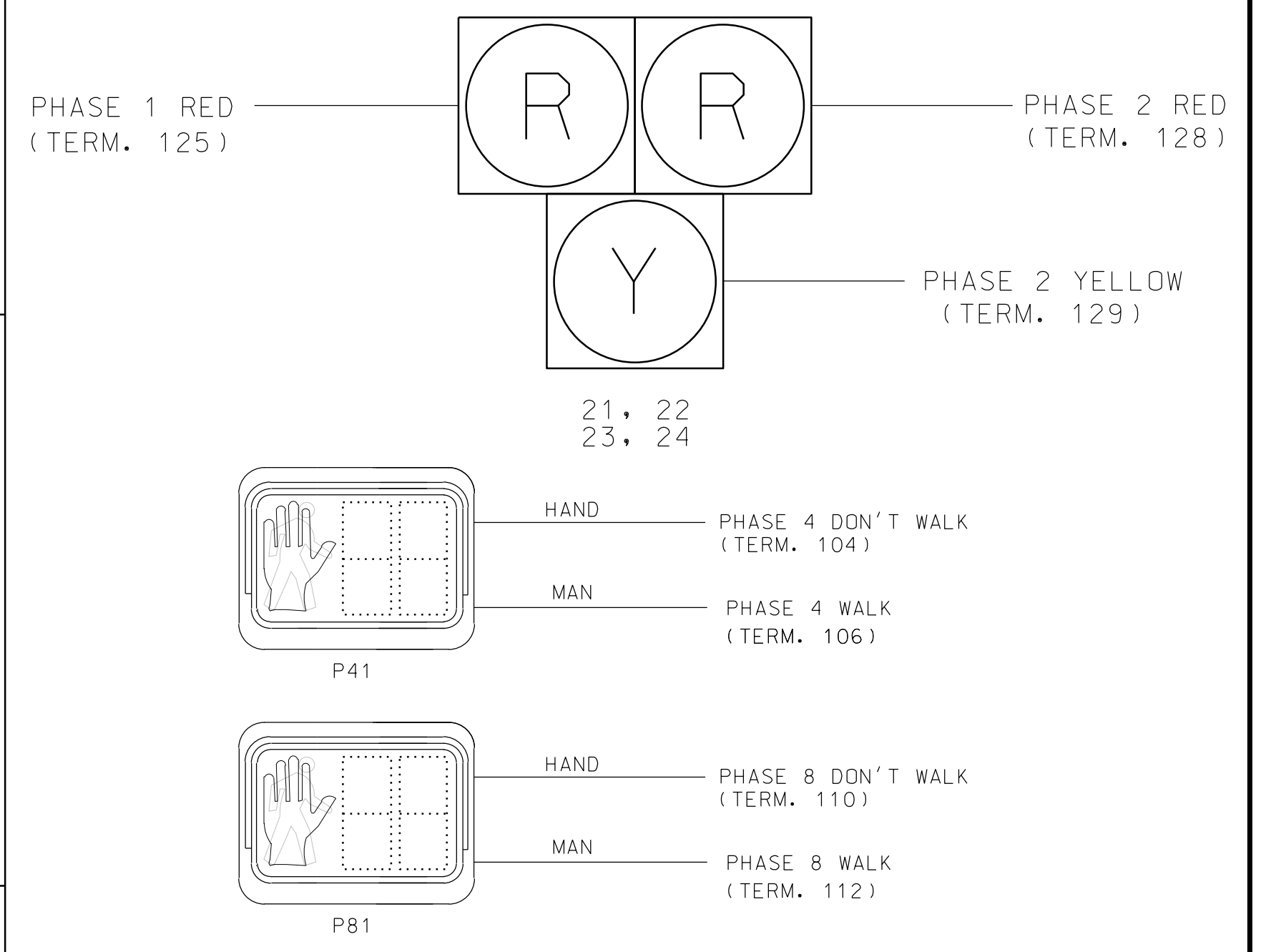
PHASE 2 YELLOW CLEAR TIME = FLASHING YELLOW CLEARANCE INTERVAL
 OVERLAP "A" YELLOW CLEAR TIME = STEADY YELLOW CLEARANCE INTERVAL
 OVERLAP "A" RED CLEAR TIME = ALL RED CLEARANCE INTERVAL

NOTE: Phase 2 YELLOW CLEARANCE and OLA GREEN EXTENSION times must be equal.



SIGNAL HEAD WIRING DETAIL

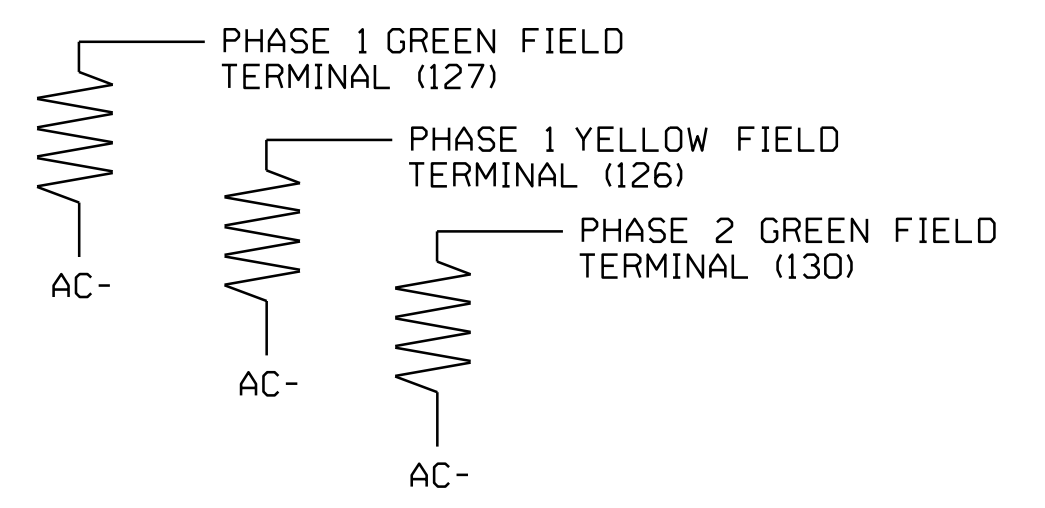
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Electrical Detail - Sheet 1 of 2

| | | | | |
|--|---|--|---|--|
| | Masonboro Loop Road at Mid Block Crosswalk North of Jasper Place Division 3 New Hanover County Wilmington | | DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |
| | PLAN DATE: April 2022 PREPARED BY: ZM Esposito | REVIEWED BY: WJ Hamilton RKA PROJ. NO.: 20303 (040) | | SIGNATURE: <i>William J. Hamilton</i> DATE: 4/25/2022 |
| | REVISIONS: _____ INIT.: _____ DATE: _____ | SIGNATURE: _____ DATE: _____ | | SIG. INVENTORY NO. N/A |
| | ELECTRICAL AND PROGRAMMING DETAILS FOR: | | | |

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL PEDESTRIAN HYBRID BEACON SEQUENCE

(program controller as shown below)

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

```

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF PED CLEAR ON PHASE #4 IS ON
AND OUTPUT ASSIGNMENT #1 IS ON

      ↓
      SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #11 OFF
  
```

NOTE: LOGIC TO WIG-WAG THE RED INDICATIONS ON HEADS 21, 22, 23 & 24 DURING PHASE 4 PED CLEAR.

```

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF PED CLEAR ON PHASE #4 IS ON
AND OUTPUT ASSIGNMENT #1 IS OFF

      ↓
      SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #14 OFF
  
```

NOTE: LOGIC TO WIG-WAG THE RED INDICATIONS ON HEADS 21, 22, 23 & 24 DURING PHASE 4 PED CLEAR.

```

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF VEH CALL ON PHASE #4 IS ON
OR VEH CALL ON PHASE #8 IS ON

      ↓
      SCROLL DOWN

THEN:
SET INPUT ASSIGNMENT #31 ON
  
```

NOTE: LOGIC TO ENSURE THAT PHASE 4 PED IS ALWAYS SERVED WITH PHASE 4 VEHICLE.

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

IO REFERENCE SCHEDULE

OUTPUT 1 = PHASE 4 DON'T WALK
OUTPUT 4 = PHASE 4 YELLOW
OUTPUT 11 = OLA RED
OUTPUT 14 = OLA RED (DUPLICATE)
INPUT 31 = PHASE 4 & 8 PED CALL

Outputs 11 and 14 have been remapped. See detail on this sheet.

OUTPUT REMAPPING DETAIL FOR SPECIAL PEDESTRIAN HYBRID BEACON SEQUENCE

(program controller as shown)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). WITH CURSOR IN "OUTPUT ASSIGNMENT#" POSITION, ENTER "11"

```

PAGE:1 C1 PIN:12 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....11
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
  
```

THIS OUTPUT IS DEFAULTED AS A VEHICLE PHASE. THIS SETTING WILL REMAIN UNTIL CHANGE IS MADE.

ENTER A "Y" FOR VEHICLE OVERLAP.

```

PAGE:1 C1 PIN:12 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1,P=16)...1
SELECT COLOR(O=RED,1=YEL,2=GRN).....0
  
```

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

NOTE: THIS CHANGE REMAPS OVERLAP "A" RED TO DRIVE LOAD SWITCH S2 RED.

PRESS "+" KEY TO ADVANCE TO OUTPUT 12

```

PAGE:1 C1 PIN:13 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....12
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...50
MODE (0=SOLID,1=FLASH)...1
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
  
```

MODIFY DATA AS SHOWN TO MAKE OUTPUT 12 A FLASHING OUTPUT

NOTE: THIS MODIFIES THE PHASE 2 YELLOW LOAD SWITCH DRIVER TO FLASH, WHICH WILL PROVIDE THE FLASHING YELLOW CLEARANCE INTERVAL.

PRESS "+" KEY TWICE TO ADVANCE TO OUTPUT 14

```

PAGE:1 C1 PIN:16 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....14
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
  
```

THIS OUTPUT IS DEFAULTED AS A VEHICLE PHASE. THIS SETTING WILL REMAIN UNTIL CHANGE IS MADE.

ENTER A "Y" FOR VEHICLE OVERLAP.

```

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

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

NOTE: THIS CHANGE REMAPS OVERLAP "A" RED TO DRIVE LOAD SWITCH S1 RED.

PRESS "+" KEY TO MULTIPLE TIMES TO ADVANCE TO OUTPUT 51

CHANGE C1 PIN NUMBER FROM 98 TO 13 AS SHOWN

```

PAGE:1 C1 PIN:13 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....51
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
  
```

NOTE: THIS CHANGE REMAPS THE OVERLAP "A" YELLOW DRIVER TO THE SAME PIN AS PHASE 2 YELLOW, WHICH WILL PROVIDE THE OUTPUT FOR THE STEADY YELLOW CLEARANCE.

OUTPUT PROGRAMMING COMPLETE

PEDESTRIAN DETECTOR ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN '2' (PEDESTRIAN DETECTOR ASSIGNMENTS). PRESS '+' UNTIL PED DETECTOR #4 IS REACHED.

```

PED DETECTOR #4 SETTINGS (+/- DET)
PHASE# | 12345678910111213141516
PHASES ASSIGNED | X X
SETTING: (Y/N)
ENABLE DETECTOR.....Y
ENABLE LOGGING.....Y
ENABLE DIAGNOSTICS.....N
RECALL IF FAILED.....Y
MAX CALLS/MINUTE (0-255).....255
MAX CALLS/DIAG PERIOD (0-255).....0
MAX OCCUPANCY % (0-100%).....100
  
```


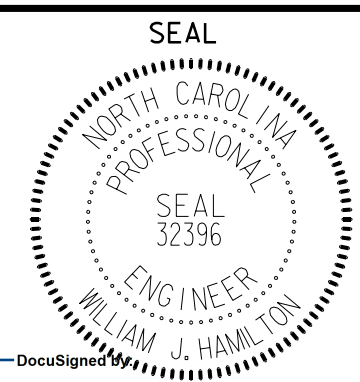
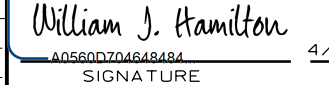
PRESS '+' FOUR TIMES

```

PED DETECTOR #8 SETTINGS (+/- DET)
PHASE# | 12345678910111213141516
PHASES ASSIGNED | X X
SETTING: (Y/N)
ENABLE DETECTOR.....Y
ENABLE LOGGING.....Y
ENABLE DIAGNOSTICS.....N
RECALL IF FAILED.....Y
MAX CALLS/MINUTE (0-255).....255
MAX CALLS/DIAG PERIOD (0-255).....0
MAX OCCUPANCY % (0-100%).....100
  
```

PROGRAMMING COMPLETE

Electrical Detail - Sheet 2 of 2

|  | <p>Masonboro Loop Road at Mid Block Crosswalk North of Jasper Place</p> <p>Division 3 New Hanover County Wilmington</p> <p>PLAN DATE: April 2022 REVIEWED BY: WJ Hamilton PREPARED BY: ZM Esposito RKA PROJ. NO.: 20303 (040)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table> | REVISIONS | INIT. | DATE | | | | <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <div style="text-align: center;">  <p>SEAL WILLIAM J. HAMILTON ENGINEER 32396</p> </div> <p>DocuSign  DATE: 4/25/2022 SIGNATURE DATE SIG. INVENTORY NO. N/A</p> |
|---|--|-----------|-------|------|--|--|--|---|
| REVISIONS | INIT. | DATE | | | | | | |
| | | | | | | | | |