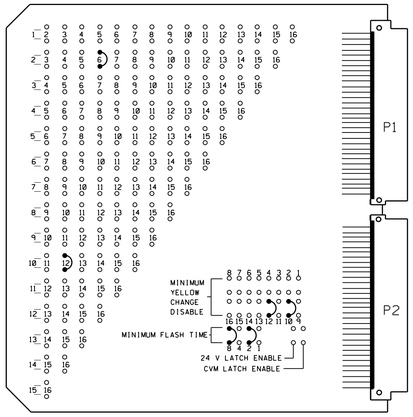
PROJECT REFERENCE NO.	SHEET NO.
HL-0033	Sig. 2.1

16 CHANNEL IP MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown)



MMU PROGRAMMING CARD

FIELD CHECK ENABLE DUAL IND ENABLE RED FAIL ENABLE	
CHANNEL NUMBER	ENABLE/ DISABLE
1	DISABLE
* 2	ENABLE
3	DISABLE
4	DISABLE
5	DISABLE
6	DISABLE
7	DISABLE
8	DISABLE
9	DISABLE
10	ENABLE
11	DISABLE
12	ENABLE
13	DISABLE
14	DISABLE
15	DISABLE
16	DISABLE

UNIT OPTIONS	
OPTION	SETTING
RECURRENT PULSE	ON
WALK DISABLE	OFF
LOG CVM FAULTS	ON
EXTERN WATCHDOG	OFF
24V-2=12VDC	OFF
PGM CARD MEMORY	ON
LEDguard	ON
FORCE TYPE 16	OFF
TYPE12-SDLC	OFF
VM 3x/Day Latch	ON

FLASHING YELLOW ARROW	
CONFIG MODE	B
ENABLE CHANNEL PAIR, FYA	
CH 1-13	OFF
CH 3-14	OFF
CH 5-15	OFF
CH 7-16	OFF
RED/YEL INPUT ENABLE	
CH 1	OFF
CH 3	OFF
CH 5	OFF
CH 7	OFF
FLASH RATE FAULT	OFF
FYA TRAP DETECT	OFF

MMU PROGRAMMING NOTE

ENSURE YELLOW CHANGE PLUS RED CLEARANCE MONITORING IS ENABLED FOR ALL CHANNELS.

* Only enable R-Y Dual Indication for this channel. During the Flashing Yellow Clearance interval, channel 2 Green will be active at the same time the logic is instructed to turn on channel 2 Yellow (a G-Y Dual Indication). Enableing G-Y Dual Indication would result in a self made flash condition.

ECONOLITE ASC/3-2070 PEDESTRIAN DETECTOR PHASE ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select [6. DETECTORS]
2. From DETECTOR Submenu select [3. PED DETECTOR INPUT ASSIGNMENT]
3. Press the TOGGLE key to select [ECONOLITE MODE] and press ENTER.

```
PED DET PHASE ASSIGNMENT MODE:ECONOLITEv
PHASE  1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
  D  1 X . . . . . . . . . . . . . . .
  E  2 . X . . . . . . . . . . . . . .
  T  3 . . X . . . . . . . . . . . . .
  E  4 . . . X . . . X . . . . . . . .
  C  5 . . . . X . . . . . . . . . . .
  T  6 . . . . . X . . . . . . . . . .
  O  7 . . . . . . X . . . . . . . . .
  R  8 . . . X . . . X . . . . . . . .
     9 . . . . . . . . X . . . . . . .
    10 . . . . . . . . . X . . . . . .
    11 . . . . . . . . . . X . . . . .
    12 . . . . . . . . . . . X . . . .
    13 . . . . . . . . . . . . X . . .
    14 . . . . . . . . . . . . . X . .
    15 . . . . . . . . . . . . . . X .
    16 . . . . . . . . . . . . . . . X
```

"." = No assignment, disabled
X = Assigns Pedestrian Push Button (PPB) to call the phase or phases
2 = Call for Ped timing 2
B = Allows for the PPB to call for Min Green 2 (BIKE GREEN)

NOTES

1. To prevent "flash-conflict" problems, wire all unused load switches to flash red. Verify that signal heads flash in accordance with the signal plans.
2. To prevent red failures on unused monitor channels, tie unused load switch red outputs 1,3,4,5,7,8,9,11,13,14,15, and 16 to load switch AC+ by inserting a jumper plug in the unused load switch socket from pin 1 (LS AC+) to pin 3 (RED out). Make sure all flash transfer relays are in place.
3. Program controller to start up in phase 2 Walk and 6 Walk.
4. Set power-up flash time to 10 seconds and implement on the Malfunction Management Unit. Set controller power-up flash time to 0 seconds.
5. Enable simultaneous gap-out feature for all phases.
6. Program phases 2 and 6 for Rest in Walk.
7. Program phase 2 and 6 for Ped Recall.
8. Program phases 4 and 8 for PED CLR > RED.
9. The cabinet and controller are a part of the Cary Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LXN2
CABINET TS-2
SOFTWARE .....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....2, 6, 10, 12
PHASES USED.....2,2 PED*,4*,4 PED,6,
6 PED*,8*,8 PED
OVERLAPS.....NONE

* Used for timing purposes only.

OPERATIONAL NOTES

1. In order for the controller to perform the Pedestrian Hybrid Beacon (HAWK signal) sequence, special logic programming is necessary. Refer to sheet 2 for the Econolite ASC/3-2070 Logic Processor Programming Detail.
2. For operational purposes, Phase 2 and Phase 6 both run dummy pedestrian phases that are required to produce the correct HAWK signal sequence. There are no Phase 2 or Phase 6 pedestrian heads.
3. The only Phase 6 load switch output that is being used drives one of the red signal faces of each signal head.
4. The Logic Processor flashes Phase 2 Yellow during the Phase 2 pedestrian clearance phase, and Phase 2 Yellow drives the solid Yellow signal faces during Phase 2 vehicle Yellow clear.
5. The Phase 2 and Phase 6 Red outputs drive the solid Red displays during Phase 2 and 6 Red. The Logic Processor flashes the Phase 2 and Phase 6 Red outputs in a wig-wag pattern during Phase 4+8 Ped Clear and thru Phase 4+8 vehicle Yellow and Red clear.
6. The controller must be programmed for Ped Clear Thru Red for Pedestrian Phases 4 and 8 so that the Red displays continue to flash during Phases 4 and 8 Yellow Clear and Red clear.
7. Make sure that all Phase 2 and Phase 6 timings match each other, and that all Phase 4 and Phase 8 timings match each other.
8. The Ped 4 push button is programmed to call Ped 4 and Ped 8, and the Ped 8 push button is programmed to call Ped 8 and Ped 4.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1243
DESIGNED: October 2025
SEALED: 10/28/2025
REVISED: N/A

SIGNAL HEAD HOOK-UP CHART

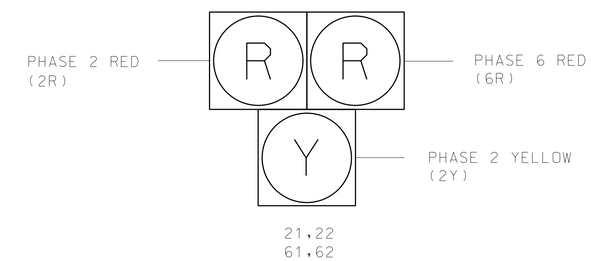
PHASE	1	2	3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED	OLA	OLB	OLC	OLD
SIGNAL HEAD NO.	NU	21,22 61,62	NU	NC	NU	21,22 61,62	NU	NC	NC	P41	NC	P81	NU	NU	NU	NU
RED		2R				6R										
YELLOW		2Y				*										
GREEN		*				*										
RED ARROW																
YELLOW ARROW																
FLASHING YELLOW ARROW																
GREEN ARROW																
✋										10R		12R				
🚶										10G		12G				

* Denotes install load resistor. See Load Resistor Installation Detail on this sheet.

NU = Not Used
NC = Not Connected

SIGNAL HEAD WIRING DETAIL

(wire signal heads as shown)

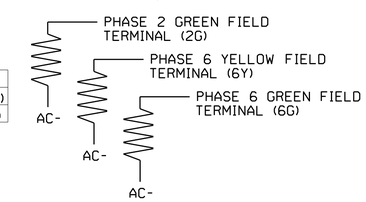


LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES

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



Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 3126 (Airport Boulevard) at Indian Creek Greenway

Division 5 Wake County Morrisville

PLAN DATE: October 2025 REVIEWED BY:
PREPARED BY: S.Kirkpatrick REVIEWED BY:

REVISIONS	INIT.	DATE

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

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 10/28/2025
DOCUSIGNED BY: DATE

SIG. INVENTORY NO. 05-1243

28-OCT-2025 13:27
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sgkirkpatrick