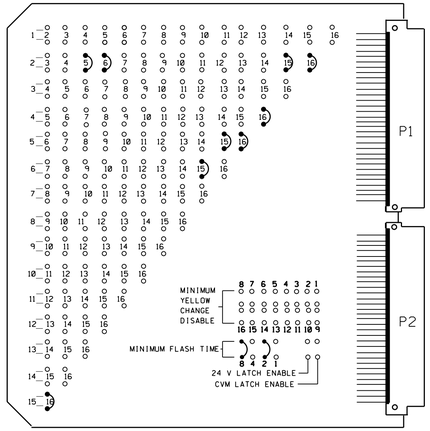
PROJECT REFERENCE NO.	SHEET NO.
I-5700	Sig. 24.1

EDI MODEL MMU2-16LEip MALFUNCTION MANAGEMENT UNIT PROGRAMMING DETAIL

(program card and tables as shown below)



MMU PROGRAMMING CARD

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

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

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

MMU PROGRAMMING NOTE

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

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 1,3,7,8,9,10,11,12,13, and 14 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 Green and 6 Green.
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 detectors in accordance with the manufacturer's instructions to accomplish the detection schemes shown on the signal design plans.
7. Program detector call delay and extension timing on the controller, unless otherwise specified.
8. Set all detector card unit channels to "presence" mode.
9. Program phases 2 and 6 for volume density operation.
10. The cabinet and controller are a part of the Cary Signal System.

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	NU	41	51★	61,62 63	NU	NU	NU	NU	NU	NU	NU	NU	51★	52,53
RED		2R			✳	6R										16R
YELLOW		2Y			✳	6Y										
GREEN		2G				6G										
RED ARROW				4R											15R	
YELLOW ARROW				4Y											15Y	16Y
FLASHING YELLOW ARROW															15G	
GREEN ARROW				4G	5G											16G

NU = Not Used

★ See pictorial of head wiring detail this sheet.

✳ Denotes install load resistor. See load resistor installation detail on sheet 2.

DETECTOR RACK SET-UP DETAIL

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

RACK #1	BIU	CH1 L3 Ø4	CH1 L1 Ø2 **	CH1 L7 Ø5	CH1 L5 Ø5	SLOT EMPTY	CH1 L9 Ø5	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
		CH2 L4 NOT USED	CH2 L2 Ø2 **	CH2 L8 Ø5	CH2 L6 Ø2 *		CH2 L10 NOT USED					

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

LOOP NO.	LOOP PANEL TERMINALS
2A	L1A,L1B
2B	L2A,L2B
4A	L3A,L3B
NU	L4A,L4B
5A	L5A,L5B
	L6A,L6B
5B	L7A,L7B
5C	L8A,L8B
5D	L9A,L9B
NU	L10A,L10B
NU	L11A,L11B
NU	L12A,L12B
NU	L13A,L13B
NU	L14A,L14B
NU	L15A,L15B
NU	L16A,L16B

ADD JUMPERS FROM: L5A TO L6A, AND L5B TO L6B

PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING FEATURE	TIMING TIME(SEC)
** 1	Ø2		
** 2	Ø2		
3	Ø4		
4			
5	Ø5	DELAY	15
* 6	Ø2	DELAY	3
7	Ø5	DELAY	15
8	Ø5	DELAY	15
9	Ø5	DELAY	15
10			
11			
12			
13			
14			
15			
16			

* Detector Type - G (remove delay from existing detector card)

** Detector Type - N

SPECIAL DETECTOR NOTE

Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans for zones 6A, 6B, and 6C.

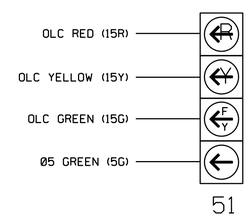
EQUIPMENT INFORMATION

CONTROLLER.....2070EN2
CABINET NC-8 TS-2
SOFTWARE .....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
LOADBAY POSITIONS.....16
LOAD SWITCHES USED.....2,4,5,6,15,16
PHASES USED.....2,4,5,6
OLA.....NOT USED
OLB.....NOT USED
OLC.....*
OLD.....4+5

* SEE OVERLAP PROGRAMMING DETAIL ON SHEET 2

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



LOAD SWITCH ASSIGNMENT DETAIL

(program controller according to schedule in chart below)

LOAD SWITCH NUMBER	FUNCTION
1	Ø1
2	Ø2
3	Ø3
4	Ø4
5	Ø5
6	Ø6
7	Ø7
8	Ø8
9	Ø2 PED
10	Ø4 PED
11	Ø6 PED
12	Ø8 PED
13	OLA
14	OLB
15	OLC
16	OLD

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1906T1
DESIGNED: March 2019
SEALED: 7/24/2019
REVISED: N/A

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
7800 N. Glenwood Ave. Raleigh, Garner, NC: 27529

SR 3015 (Airport Blvd.)
at
SR 1789
(Pleasant Grove Church Rd.)

Division 5 Wake County Cary

PLAN DATE: November 2015	REVIEWED BY:
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough E30320FAA2654C3 8/1/2019 DATE

SIG. INVENTORY NO. 05-1906T1

28-JUL-2019 09:40
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