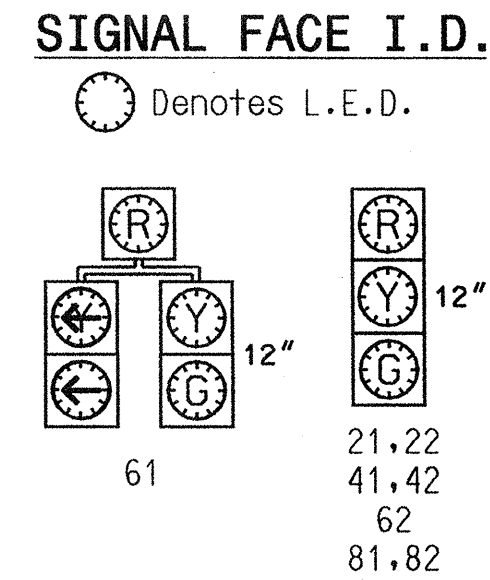


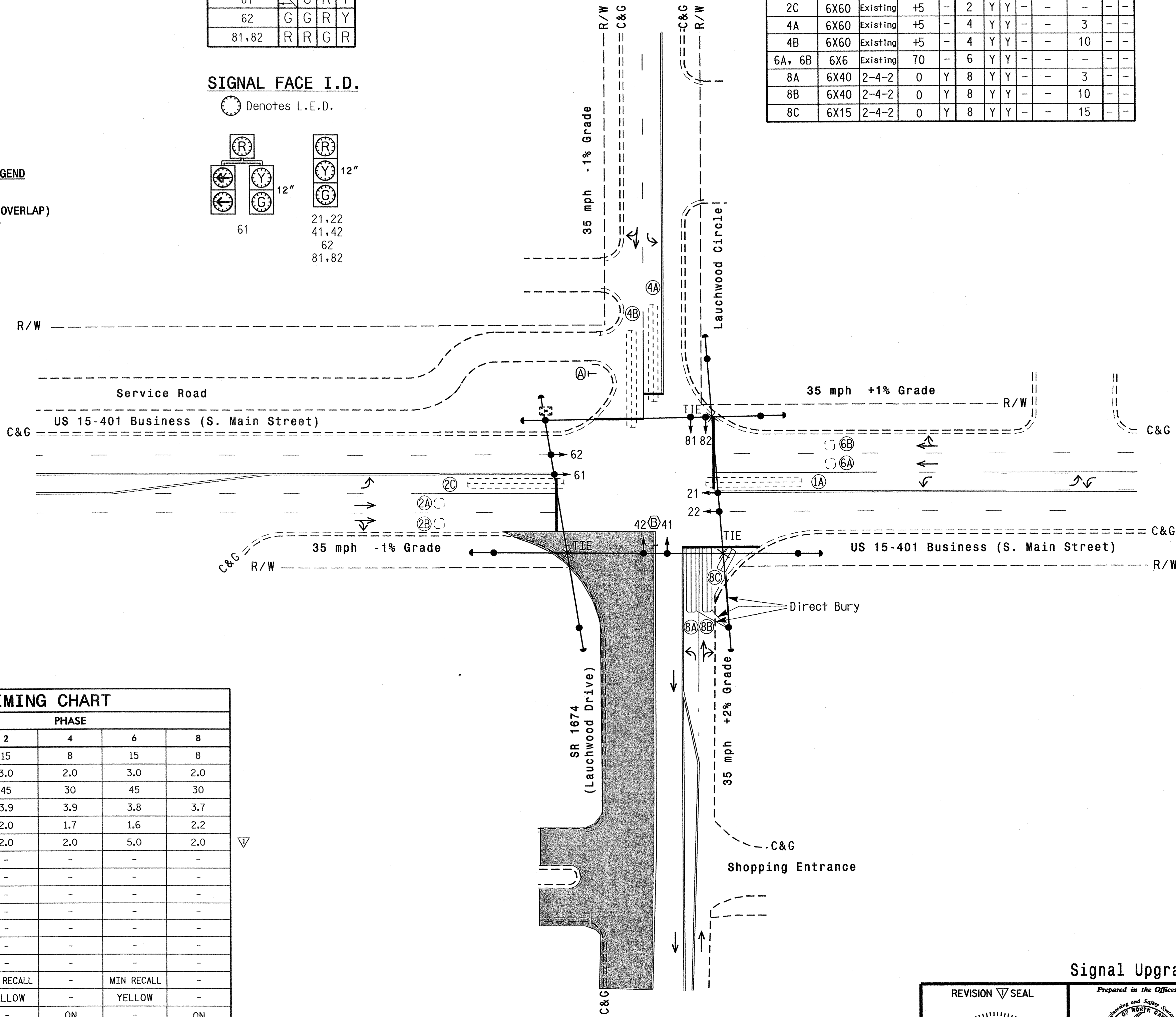
SIGNAL FACE	PHASE			
	Ø 1 + 6	Ø 2 + 6	Ø 4 + 8	F
21,22	R	G	R	Y
41,42	R	R	G	R
61	G	G	R	Y
62	G	G	R	Y
81,82	R	R	G	R



2070L LOOP & DETECTOR INSTALLATION											
LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	STRETCH TIME			DELAY TIME
1A	6X60	Existing	+5	-	1	Y	Y	-	15	-	-
					6	Y	Y	-	-	-	-
2A, 2B	6X6	Existing	70	-	2	Y	Y	-	-	-	-
2C	6X60	Existing	+5	-	2	Y	Y	-	-	-	-
4A	6X60	Existing	+5	-	4	Y	Y	-	3	-	-
4B	6X60	Existing	+5	-	4	Y	Y	-	10	-	-
6A, 6B	6X6	Existing	70	-	6	Y	Y	-	-	-	-
8A	6X40	2-4-2	0	Y	8	Y	Y	-	3	-	-
8B	6X40	2-4-2	0	Y	8	Y	Y	-	10	-	-
8C	6X15	2-4-2	0	Y	8	Y	Y	-	15	-	-

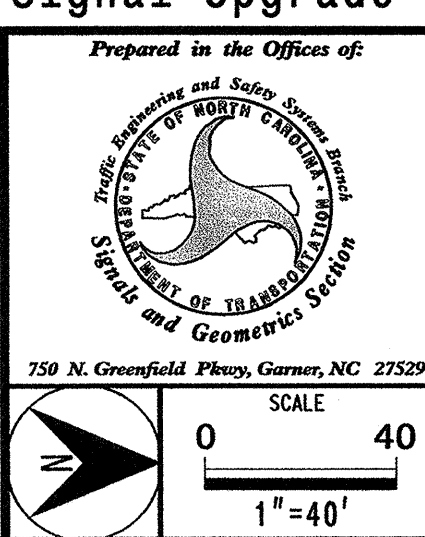
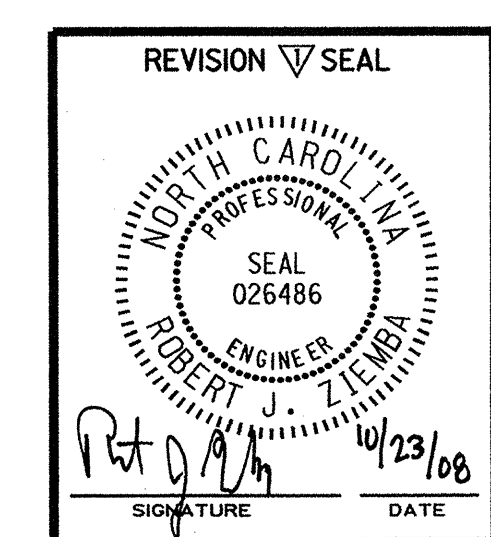
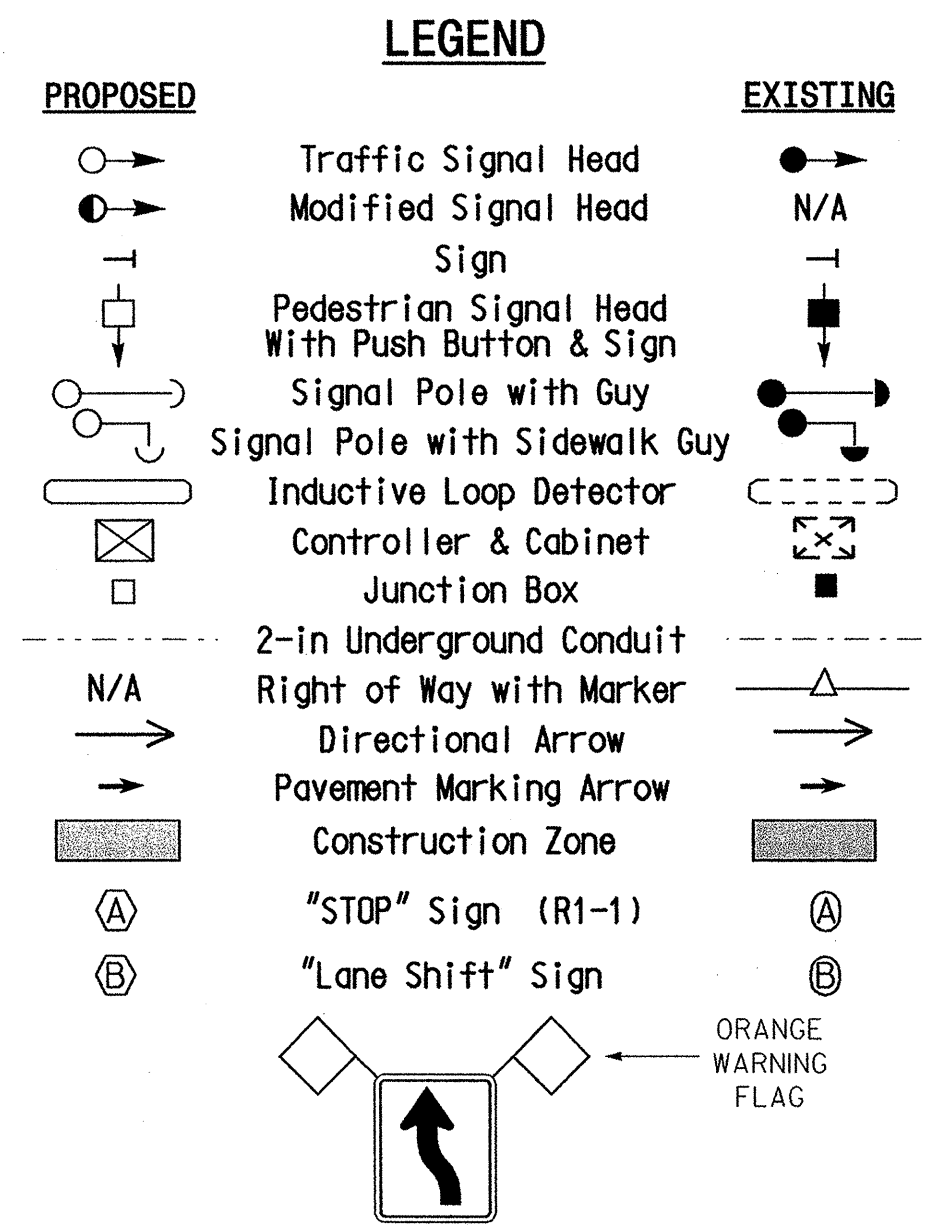
3 Phase Fully Actuated (Laurinburg Closed Loop System)

- NOTES**
- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
  - Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
  - Enable backup protect for phase 6 to allow controller to clear from phase 2+6 to phase 1+6 by progressing through all red display.
  - Reposition existing signal heads numbered 41, 42, 81 and 82.
  - Set all detector units to presence mode.
  - Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
  - Closed loop system data: Controller Asset #: 0360.



FEATURE	2070L TIMING CHART				
	PHASE				
Min Green 1*	7	15	8	15	8
Extension 1*	2.0	3.0	2.0	3.0	2.0
Max Green 1*	20	45	30	45	30
Yellow Clearance	3.0	3.9	3.9	3.8	3.7
Red Clearance	1.6	2.0	1.7	1.6	2.2
Red Revert	2.0	2.0	2.0	5.0	2.0
Walk 1*	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation*	-	-	-	-	-
Max Variable Initial*	-	-	-	-	-
Time Before Reduction*	-	-	-	-	-
Time To Reduce*	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	YELLOW	-
Dual Entry	-	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

\* 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 - Temporary Design 1	
US 15-401 Business (S. Main Street) at SR 1674 (Lauchwood Drive)/ Lauchwood Circle	
Division 8	Scotland County Laurinburg
PLAN DATE: October 2006	REVIEWED BY: I.O. Umozurike
PREPARED BY: Luhr	REVIEWED BY:
REVISIONS	INIT. DATE
Added Red Revert.	CS 10/23/06

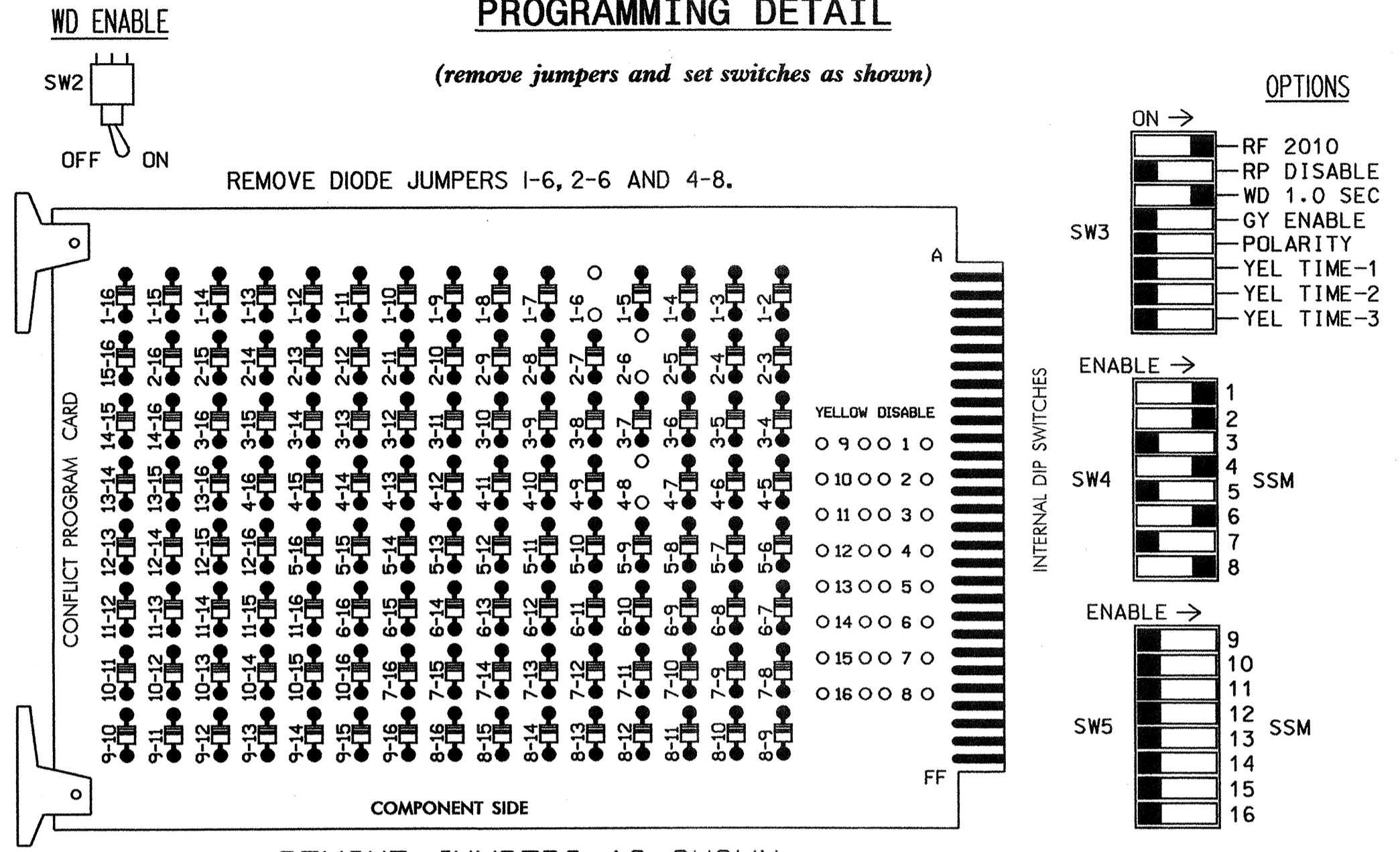
Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by Timothy J. Williams, PE, #24393, on 11/21/06. This document is only certified as to the revisions.

23-OCT-2008 16:10 s:\p115\_s\signal\2070loop\2070loop.dgn



### EDI MODEL 2010ECL CONFLICT MONITOR

#### PROGRAMMING DETAIL



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
  - Make sure jumpers SEL1-SEL5 are present on the monitor board.

#### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- The cabinet and controller are part of the Laurinburg Closed Loop System.

#### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61	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	126											
GREEN ARROW	127											

NU = Not Used  
 \* Denotes install load resistor. See load resistor installation detail this sheet.

#### EQUIPMENT INFORMATION

CONTROLLER.....EAGLE 2070L  
 CABINET.....SAFETRAN 332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S4,S6,S8  
 PHASES USED.....1,2,4,6,8  
 OVERLAPS.....NONE

#### INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 2	∅ 2	∅ 2	∅ 2	∅ 2	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	FS
L	2A,2B	2C				4A	4B							DC ISOLATOR
U	∅ 1	∅ 6	∅ 6	∅ 6	∅ 6	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	ST
L	1A	6A,6B	6C	6C	6C	8A	8B							DC ISOLATOR

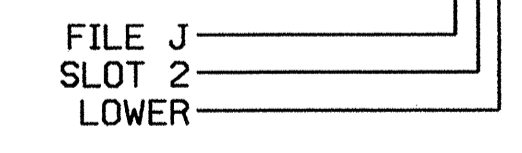
EX.: 1A, 2A, ETC. = LOOP NO.'S  
 FS = FLASH SENSE  
 ST = STOP TIME

#### 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
1A <sup>1</sup>	TB3-5,6	J2U	40	2	6	1	Y	Y			15
	TB3-7,8	J2L	44	6	16	6	Y	Y			
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
2C	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A,6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
8C	TB3-11,12	J3L	77	39	46	8	Y	Y			15

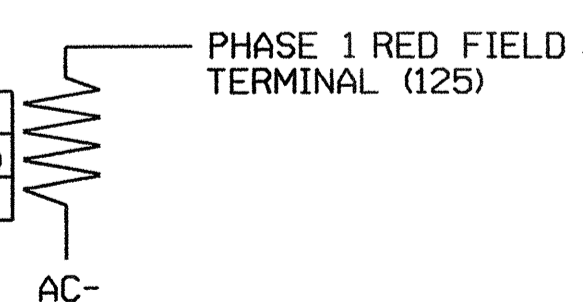
<sup>1</sup>Add jumpers from TB3-5 to TB3-7, and from TB3-6 to TB3-8.

#### INPUT FILE POSITION LEGEND: J2L



#### LOAD RESISTOR INSTALLATION DETAIL

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



NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

#### DYNAMIC BACK-UP CONTROL PROGRAMMING

(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 Dynamic/Backup Control Function 1.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

DYNAMIC/BACKUP CONTROL FUNCTION #01  
 OVERLAPS: ABCDEFGHIJKLMNOP  
 IF OVERLAPS ARE ACTIVE !  
 OR PHASES: 12345678910111213141516  
 IF PHASES ARE ON: X  
 OMIT PHASES: X  
 CALL PHASES: X

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
 THE SIGNAL DESIGN: 08-0360 T1  
 DESIGNED: October 2006  
 SEALED: 11/21/06  
 REVISED: 10/23/08

#### Signal Upgrade - Temporary Design 1

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 15-401 Business (S. Main Street) at SR 1674 (Lauchwood Drive)/Lauchwood Circle

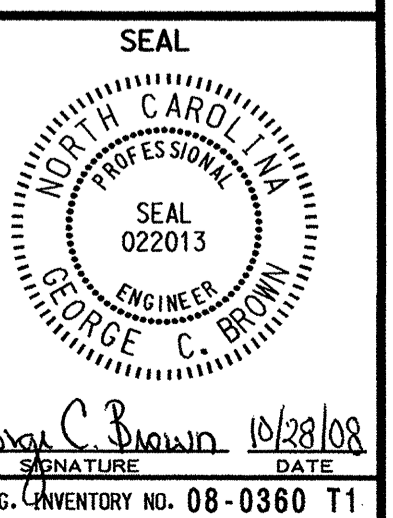
Division 8, Scotland County, Laurinburg

PLAN DATE: November 2006, REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland, REVIEWED BY:

REVISIONS: DISABLE DYNAMIC BACK-UP CONTROL FUNCTION 1, AND ENABLE BACKUP PROTECTION PHASE 6. REV. 10/21/08

Signature: George C. Brown, Date: 10/28/08



#### BACKUP PROTECTION NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 6 for 'Backup Protect'. Make sure the Red Revet times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.



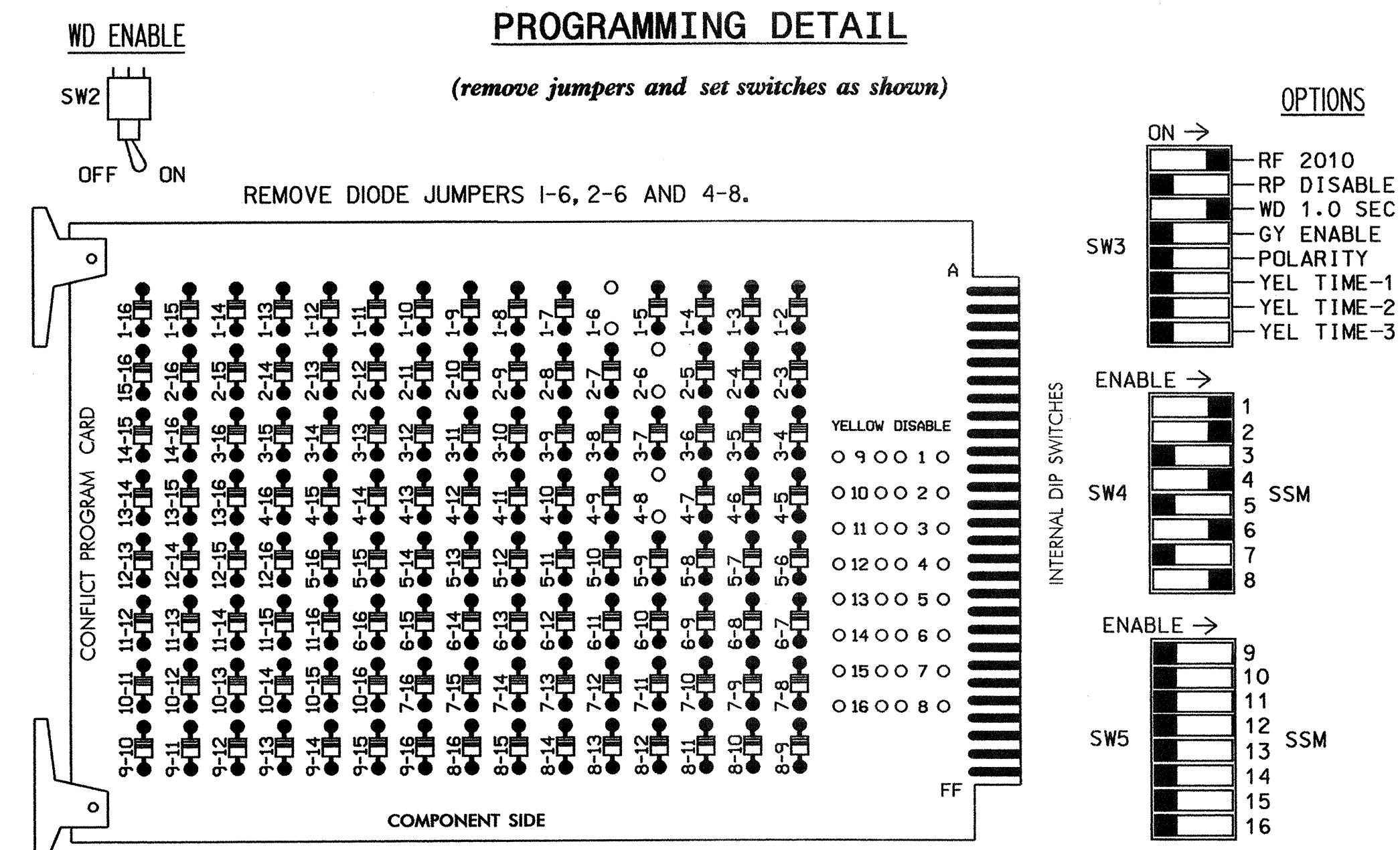




**EDI MODEL 2010ECL CONFLICT MONITOR**

**PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL1-SEL5 are present on the monitor board.

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- The cabinet and controller are part of the Laurinburg Closed Loop System.

**EQUIPMENT INFORMATION**

CONTROLLER.....EAGLE 2070L  
CABINET.....SAFETRAN 332  
SOFTWARE.....ECONOLITE OASIS  
CABINET MOUNT.....BASE  
OUTPUT FILE POSITIONS...12  
LOAD SWITCHES USED.....S1,S2,S4,S6,S8  
PHASES USED.....1,2,4,6,8  
OVERLAPS.....NONE

**INPUT FILE POSITION LAYOUT**

(front view)

FILE U	1	2	3	4	5	6	7	8	9	10	11	12	13	14	FS
"I"	∅ 2	∅ 2	∅ 2	∅ 2	∅ 2	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	DC ISOLATOR
L	2C	2C	2C	2C	2C	4B	4B	4B	4B	4B	4B	4B	4B	4B	DC ISOLATOR
FILE U	∅ 1	∅ 6	∅ 6	∅ 6	∅ 6	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	ST
"J"	1A	6A,6B	6A,6B	6A,6B	6A,6B	8A	8A	8A	8A	8A	8A	8A	8A	8A	DC ISOLATOR
L	1A	NOT USED	NOT USED	NOT USED	NOT USED	8B	8B	8B	8B	8B	8B	8B	8B	8B	DC ISOLATOR

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

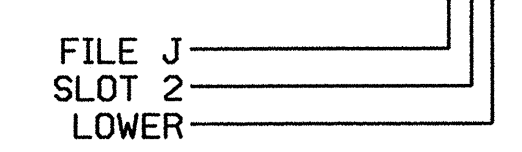
FS = FLASH SENSE  
ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

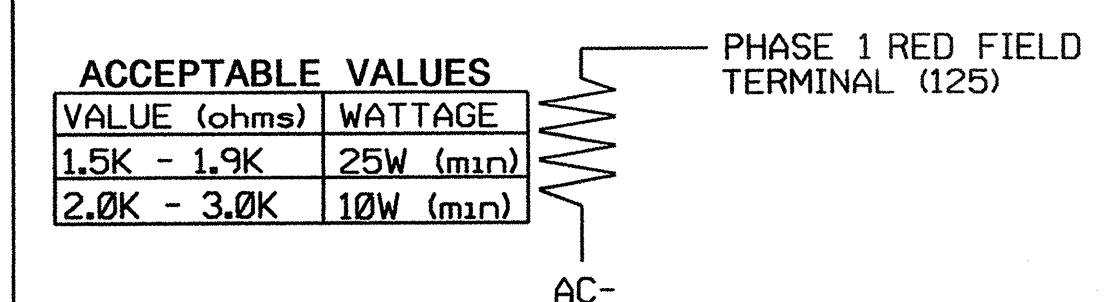
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A <sup>1</sup>	TB3-5,6	J2U	40	2	6	1	Y	Y			15
	TB3-7,8	J2L	44	6	16	6	Y	Y			
2C	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A,6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10

<sup>1</sup>Add jumpers from TB3-5 to TB3-7, and from TB3-6 to TB3-8.

INPUT FILE POSITION LEGEND: J2L



**LOAD RESISTOR INSTALLATION DETAIL**



NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

**BACKUP PROTECTION NOTE**

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61	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	126											
GREEN ARROW	127											

NU = Not Used

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

**DYNAMIC BACK-UP CONTROL PROGRAMMING**

(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 Dynamic/Backup Control Function 1.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

DYNAMIC/BACKUP CONTROL FUNCTION #01  
OVERLAPS: ABCDEFGHIJKLMNPO  
IF OVERLAPS ARE ACTIVE :  
OR PHASES: 12345678910111213141516  
IF PHASES ARE ON: X  
OMIT PHASES : X  
CALL PHASES : X

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 08-0360 T2  
DESIGNED: October 2006  
SEALED: 11/21/06  
REVISED: 10/23/08

Signal Upgrade - Temporary Design 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 15-401 Business (S. Main Street) at SR 1674 (Lauchwood Drive)/Lauchwood Circle

Division 8 Scotland County Laurinburg

PLAN DATE: November 2006 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS

NO.	DESCRIPTION	INIT.	DATE
1	Disable Dynamic Backup Control Function 1 and enable Backup Protection Phase 6	CS	10/21/08
2			

750 N. Greenfield Pkwy, Garner, NC 27525

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN

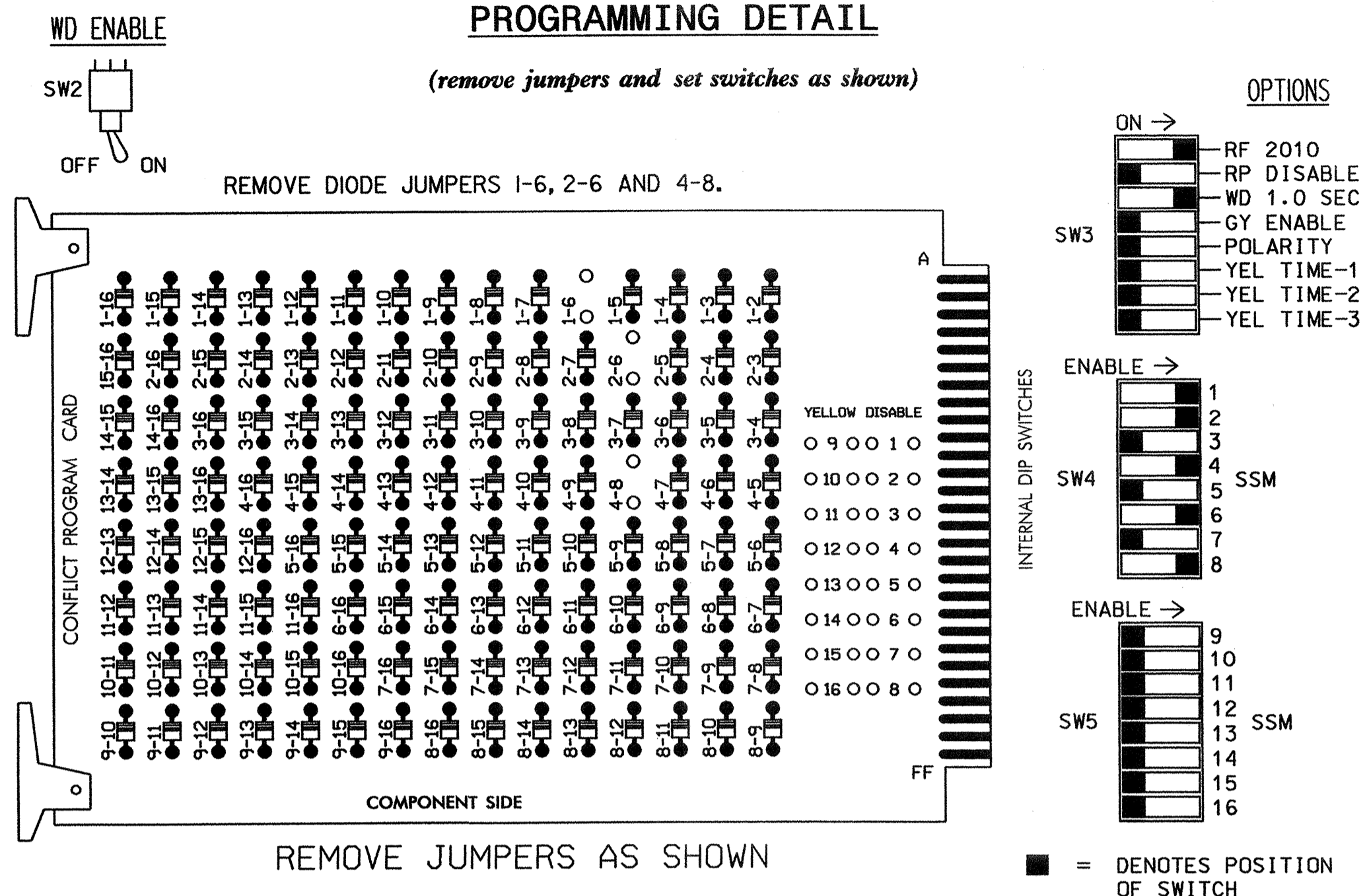
SIG. INVENTORY NO. 08-0360 T2





### EDI MODEL 2010ECL CONFLICT MONITOR

#### PROGRAMMING DETAIL



**NOTES:**

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL1-SEL5 are present on the monitor board.

#### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- The cabinet and controller are part of the Laurinburg Closed Loop System.

#### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61	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	126											
GREEN ARROW	127											

NU = Not Used

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

#### EQUIPMENT INFORMATION

CONTROLLER.....EAGLE 2070L  
 CABINET.....SAFETRAN 332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S4,S6,S8  
 PHASES USED.....1,2,4,6,8  
 OVERLAPS.....NONE

#### INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	∅ 2	∅ 2	∅ 2	∅ 2	∅ 2	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4
L	2A,2B	2C				4A	4B							FS DC ISOLATOR
FILE "J" U	∅ 1	∅ 6	∅ 6	∅ 6	∅ 6	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8
L	1A	6A,6B	6C	6C	6C	8A	8B							FS DC ISOLATOR

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

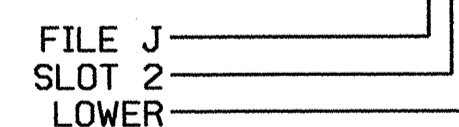
FS = FLASH SENSE  
 ST = STOP TIME

#### 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
1A <sup>1</sup>	TB3-5,6	J2U	40	2	6	1	Y	Y			15
	TB3-7,8	J2L	44	6	16	6	Y	Y			
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
2C	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A,6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
8C	TB3-11,12	J3L	77	39	46	8	Y	Y			15

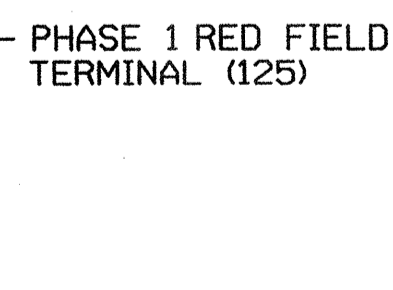
<sup>1</sup>Add jumpers from TB3-5 to TB3-7, and from TB3-6 to TB3-8.

INPUT FILE POSITION LEGEND: J2L



#### LOAD RESISTOR INSTALLATION DETAIL

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



NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

#### DYNAMIC BACK-UP CONTROL PROGRAMMING

(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 Dynamic/Backup Control Function 1.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

DYNAMIC/BACKUP CONTROL FUNCTION #01  
 OVERLAPS: ABCDEFGHIJKLMNOP  
 IF OVERLAPS ARE ACTIVE :  
 OR PHASES: 12345678910111213141516  
 IF PHASES ARE ON: X  
 OMIT PHASES : X  
 CALL PHASES : X

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
 THE SIGNAL DESIGN: 08-0360 T3  
 DESIGNED: October 2006  
 SEALED: 11/21/06  
 REVISED: 10/23/08

Signal Upgrade - Temporary Design 3

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 15-401 Business (S. Main Street) at

SR 1674 (Lauchwood Drive)/ Lauchwood Circle

Division 8 Scotland County Laurinburg

PLAN DATE: November 2006 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

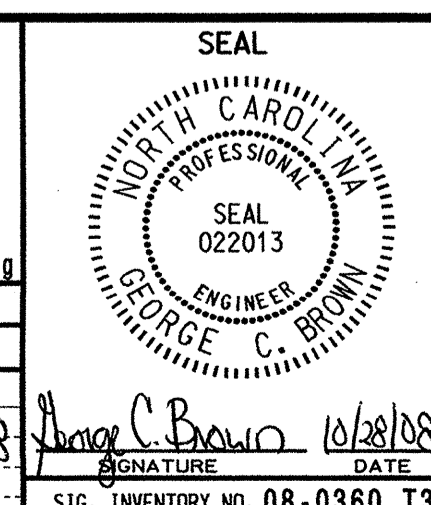
REVISIONS INIT. DATE

Disable Dynamic Back-Up Control Function 1 and enable Backup Protection phase 6. SES 10/21/08

10/23/08

10/23/08

750 N. Greenfield Pkwy, Garner, NC 27529



SIG. INVENTORY NO. 08-0360 T3

#### BACKUP PROTECTION NOTE

(program controller as shown below)

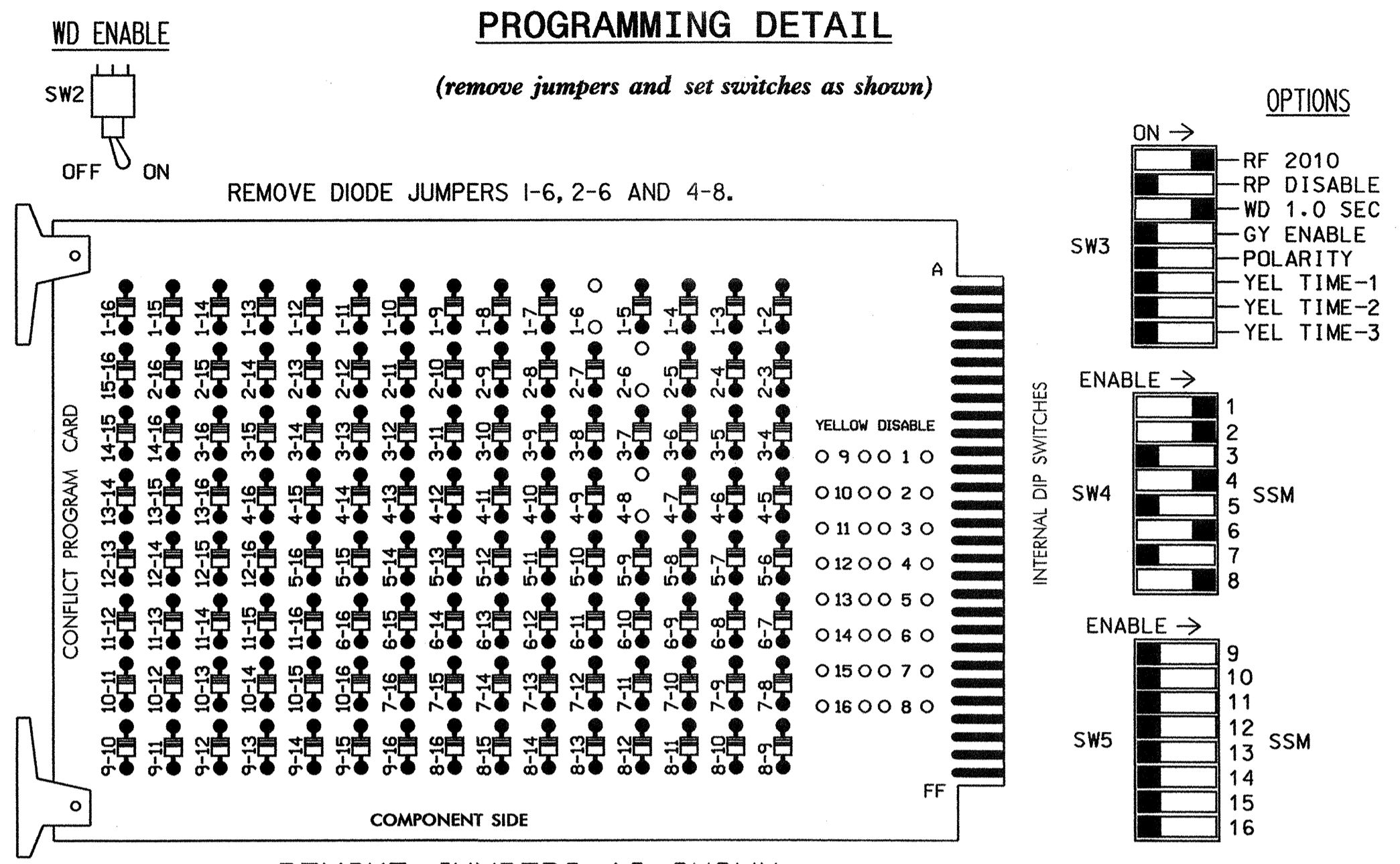
From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.





**EDI MODEL 2010ECL CONFLICT MONITOR**

**PROGRAMMING DETAIL**



- NOTES:**
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
  - Make sure jumpers SEL1-SEL5 are present on the monitor board.

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- The cabinet and controller are part of the Laurinburg Closed Loop System.

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61	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	126											
GREEN ARROW	127											

NU = Not Used  
 \* Denotes install load resistor. See load resistor installation detail this sheet.

**EQUIPMENT INFORMATION**

CONTROLLER.....EAGLE 2070L  
 CABINET.....SAFETRAN 332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S4,S6,S8  
 PHASES USED.....1,2,4,6,8  
 OVERLAPS.....NONE

**INPUT FILE POSITION LAYOUT**

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 2	∅ 2	∅ 2	∅ 2	∅ 2	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	FS
L	2A,2B	2C				4A	4B							DC ISOLATOR
U	∅ 1	∅ 6	∅ 6	∅ 6	∅ 6	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	ST
L	1A	6A,6B	1A	1A	1A	8A	8B							DC ISOLATOR

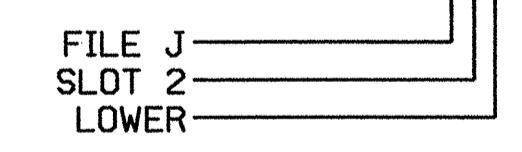
EX.: 1A, 2A, ETC. = LOOP NO.'S  
 FS = FLASH SENSE  
 ST = STOP TIME

**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
1A <sup>1</sup>	TB3-5,6	J2U	40	2	6	1	Y	Y			15
	TB3-7,8	J2L	44	6	16	6	Y	Y			
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
2C	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A,6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			

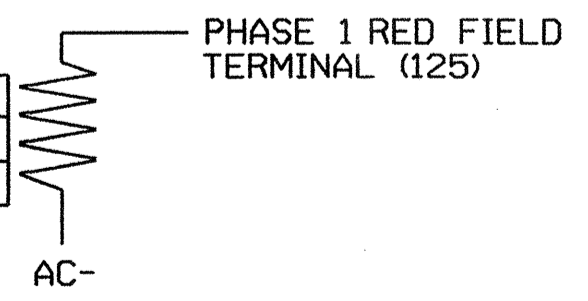
<sup>1</sup>Add jumpers from TB3-5 to TB3-7, and from TB3-6 to TB3-8.

**INPUT FILE POSITION LEGEND: J2L**



**LOAD RESISTOR INSTALLATION DETAIL**

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



NOTE: The purpose of this resistor is to load the channel red monitor input in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

**DYNAMIC BACK-UP CONTROL PROGRAMMING**

(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 Dynamic/Backup Control Function 1.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

DYNAMIC/BACKUP CONTROL FUNCTION #01  
 OVERLAPS: ABCDEFGHIJKLMNOP  
 IF OVERLAPS ARE ACTIVE :  
 OR PHASES: 12345678910111213141516  
 IF PHASES ARE ON: X  
 OMIT PHASES : X  
 CALL PHASES : X

BACKUP PROTECTION PROGRAMMING COMPLETE

**BACKUP PROTECTION NOTE**

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

Signal Upgrade - Final Design

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 15-401 Business (S. Main Street) at SR 1674 (Lauchwood Drive)/ Lauchwood Circle

Division 8 Scotland County Laurinburg  
 PLAN DATE: November 2006 REVIEWED BY: T. Joyce  
 PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS: 1. Disable Dynamic Backup Control Function 1 and enable Backup Protection phase 6... CES 10/27/08

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL: GEORGE C. BRUNN, PROFESSIONAL ENGINEER, 022013

SIG. INVENTORY NO. 08-0360