STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5016	1	

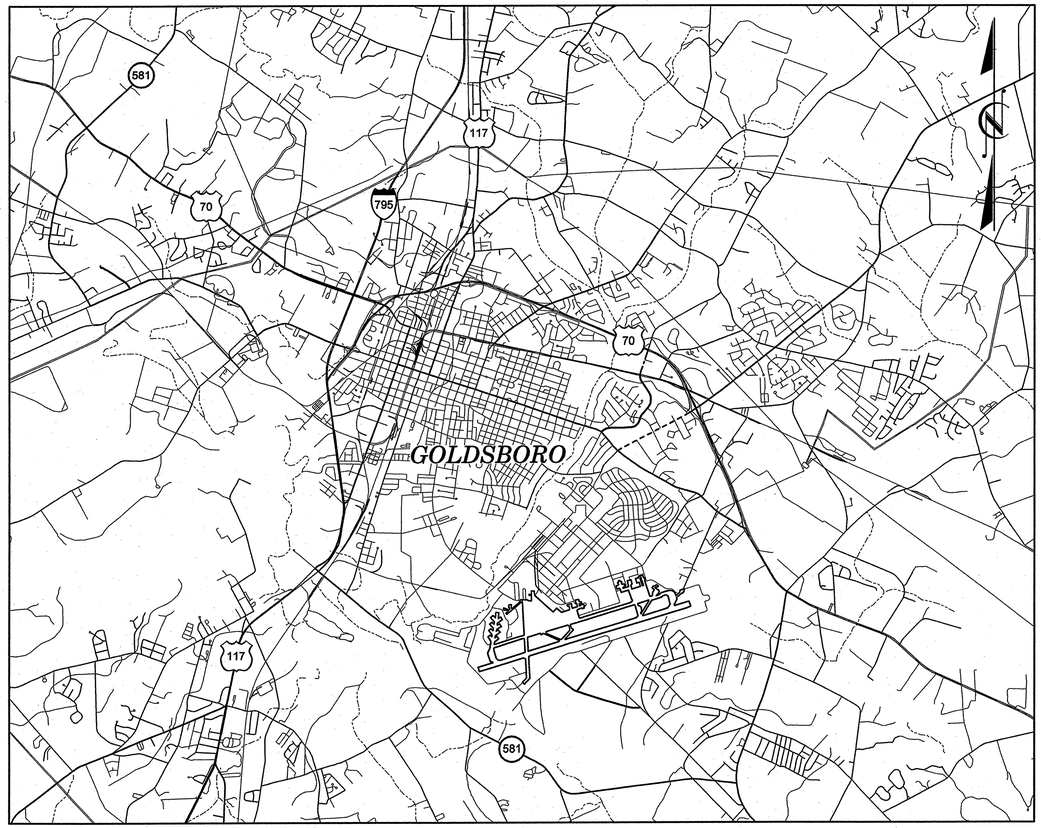
41502.1.1		P.E.
41502.3.ST1	STM-0414(4)	CONST.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

GOLDSBORO

COMPUTERIZED TRAFFIC SIGNAL SYSTEM



FINAL PLANS

TIP PROJECT: U-5016

CONTRACT: C202130

VOLUME 3 OF 3

PLANS PREPARED BY:

Kimley-Horn and Associates, Inc.
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

5/28/2009
K:\RAL_TPTO_ITS\011746016 Goldsboro Signal System\Plans\sht_001_Vol3.dgn

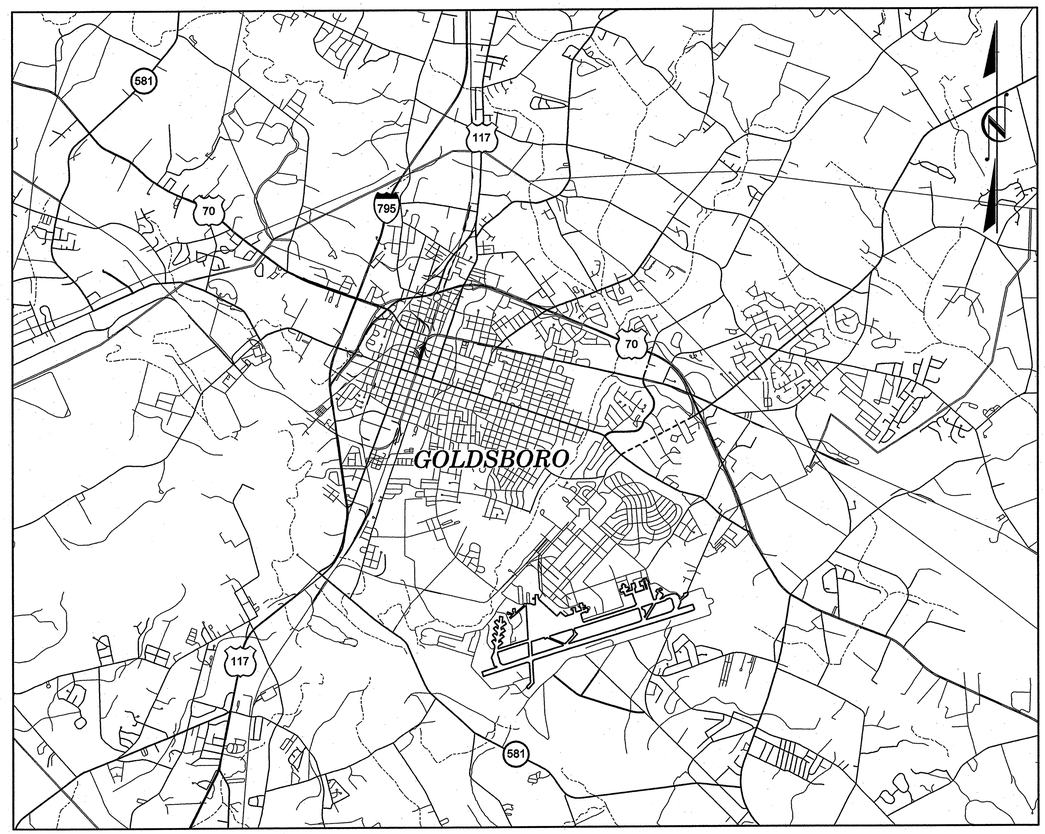
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5016	1A	
41502.1.1		P.E.	
41502.3.ST1	STM-0414(4)	CONST.	

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

GOLDSBORO

COMPUTERIZED TRAFFIC SIGNAL SYSTEM



FINAL PLANS

TIP PROJECT: U-5016

CONTRACT: C202130

VOLUME 3 OF 3

INDEX OF SHEETS

SHEET NUMBER	*DESCRIPTION*
1	*TITLE SHEET*
1A	*INDEX OF SHEETS*
SIG.1-SIG.163	*TRAFFIC SIGNAL DESIGN AND ELECTRICAL PLANS*

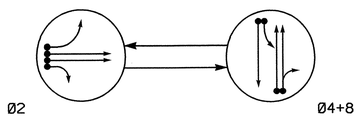
PLANS PREPARED BY:

Kimley-Horn and Associates, Inc.
P.O. Box 33068
Raleigh, NC 27636
(919) 677-2000

5/28/2009
K:\RAL_TPTO_ITS\011746016 Goldsboro SignalSystem\Plans\sht_001A_Vol3.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

21, 22
41, 42
81, 82

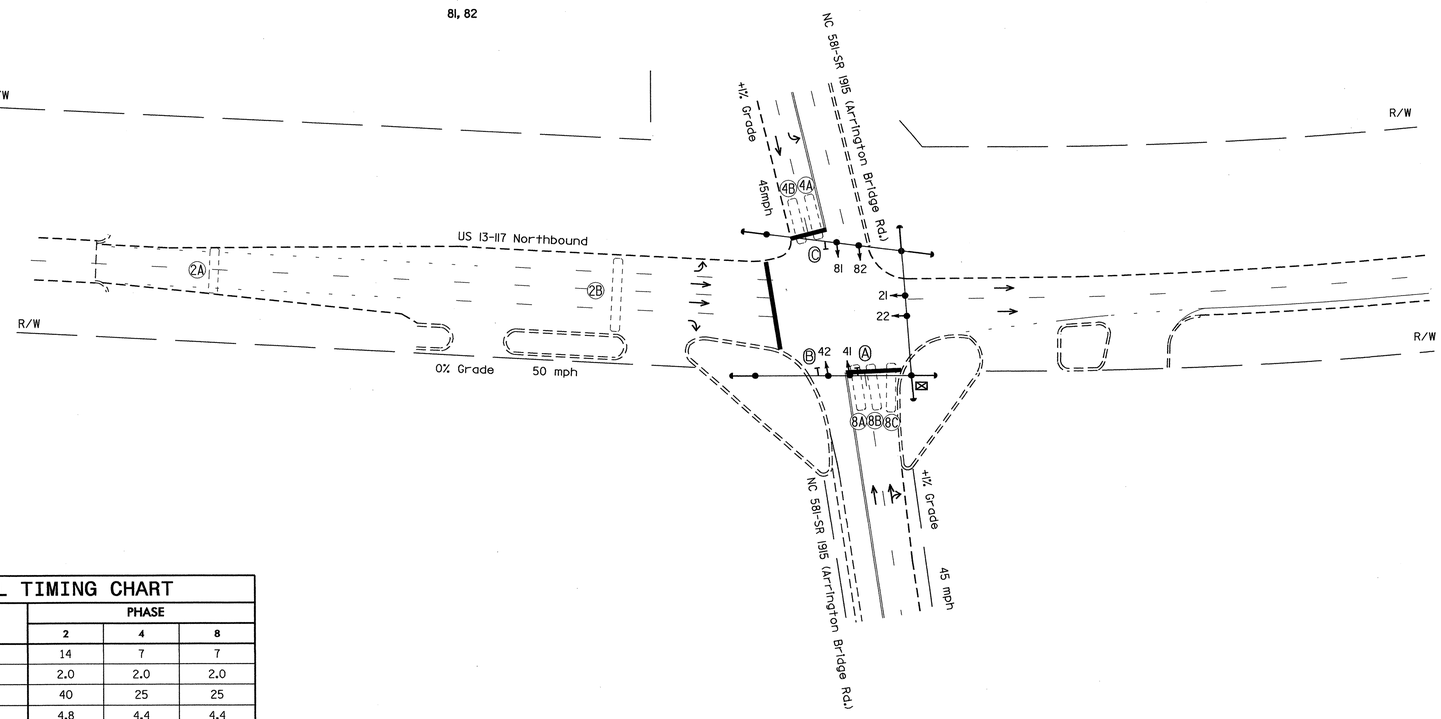
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X30	365	2	-	2	Y	Y	-	2	-	-	Y
2B	6X48	100	2	-	2	Y	Y	-	-	-	-	Y
4A	6X30	+5	2	-	4	Y	Y	-	-	3	-	Y
4B	6X30	+5	2	-	4	Y	Y	-	-	-	-	Y
8A,8B	6X30	+5	2	-	8	Y	Y	-	-	-	-	Y
8C	6X32	+5	2	-	8	Y	Y	-	-	5	-	Y

2 Phase
Fully Actuated
Goldsboro City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset# 0219



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	
N/A	Left Arrow "ONLY" Sign (R3-5L)	Ⓐ
N/A	No Right Turn Sign (R3-1)	Ⓑ
N/A	No Left Turn Sign (R3-2)	Ⓒ

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 8
Min Green 1 *	14	7	7
Extension 1 *	2.0	2.0	2.0
Max Green 1 *	40	25	25
Yellow Clearance	4.8	4.4	4.4
Red Clearance	1.0	1.1	1.1
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	MIN RECALL	-	-
Vehicle Call Memory	YELLOW	-	-
Dual Entry	-	ON	ON
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

US 13-117 Northbound
at
NC 581 - SR 1915
(Arrington Bridge Road)
Division 4 Wayne County Goldsboro

PLAN DATE: November 2008	REVIEWED BY:
PREPARED BY: N. Bitting	REVIEWED BY:

REVISIONS	INIT.	DATE

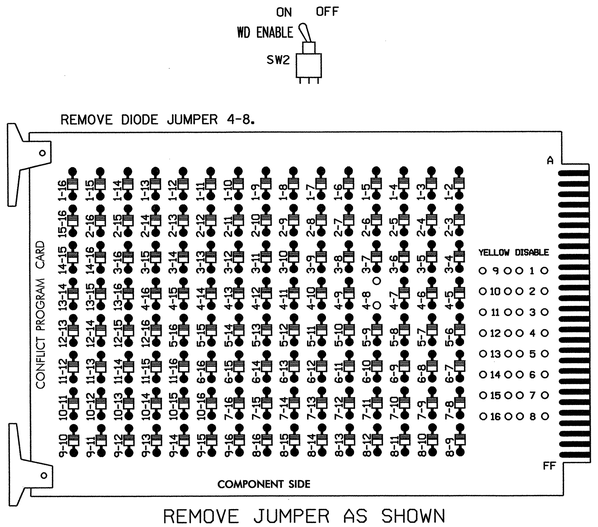
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA R. MCALEXANDER
SIGNATURE 1/13/09 DATE
SIG. INVENTORY NO. 04-0219

13-JAN-2009 14:27
s:\traffic\signals\signal design sections\eastern regions\div-04\goldsboro city systems\signal designs\04-0219\04-0219_sig_dsn_2008mmdd.dgn
nbitting

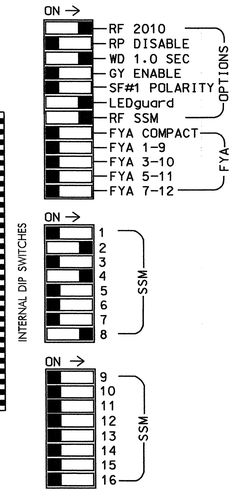
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 2

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



REMOVE JUMPER AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 1,3, 5,6,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phase 2, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S8
PHASES USED.....2,4,8
OVERLAPS.....NONE

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.	NU	21,22	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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		ø2 2B				ø4 4B								ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø8 8A,8B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L						ø8 8C								

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y		2.0	
2B	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			
8A,8B	TB5-9,10	J6U	42	4	8	8	Y	Y			
8C	TB5-11,12	J6L	46	8	18	8	Y	Y			5

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0219
DESIGNED: November 2008
SEALED: 01-13-09
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 13-117 Northbound
at
NC 581 - SR 1915
(Arrington Bridge Road)

Division 04 | Wayne County | Goldsboro

PLAN DATE: December 2008 | REVIEWED BY: T. Jaga
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

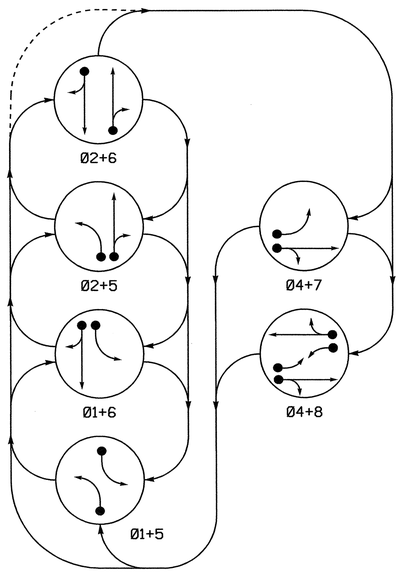
George C. Brown 1/15/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0219

14-JAN-2009 07:34
s:\its signals\workgroups\sig management\040219_sm_e16_xxx.dgn
samstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+7	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	Y
41	R	R	R	R	G	G	R
42	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	Y
81,82	R	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

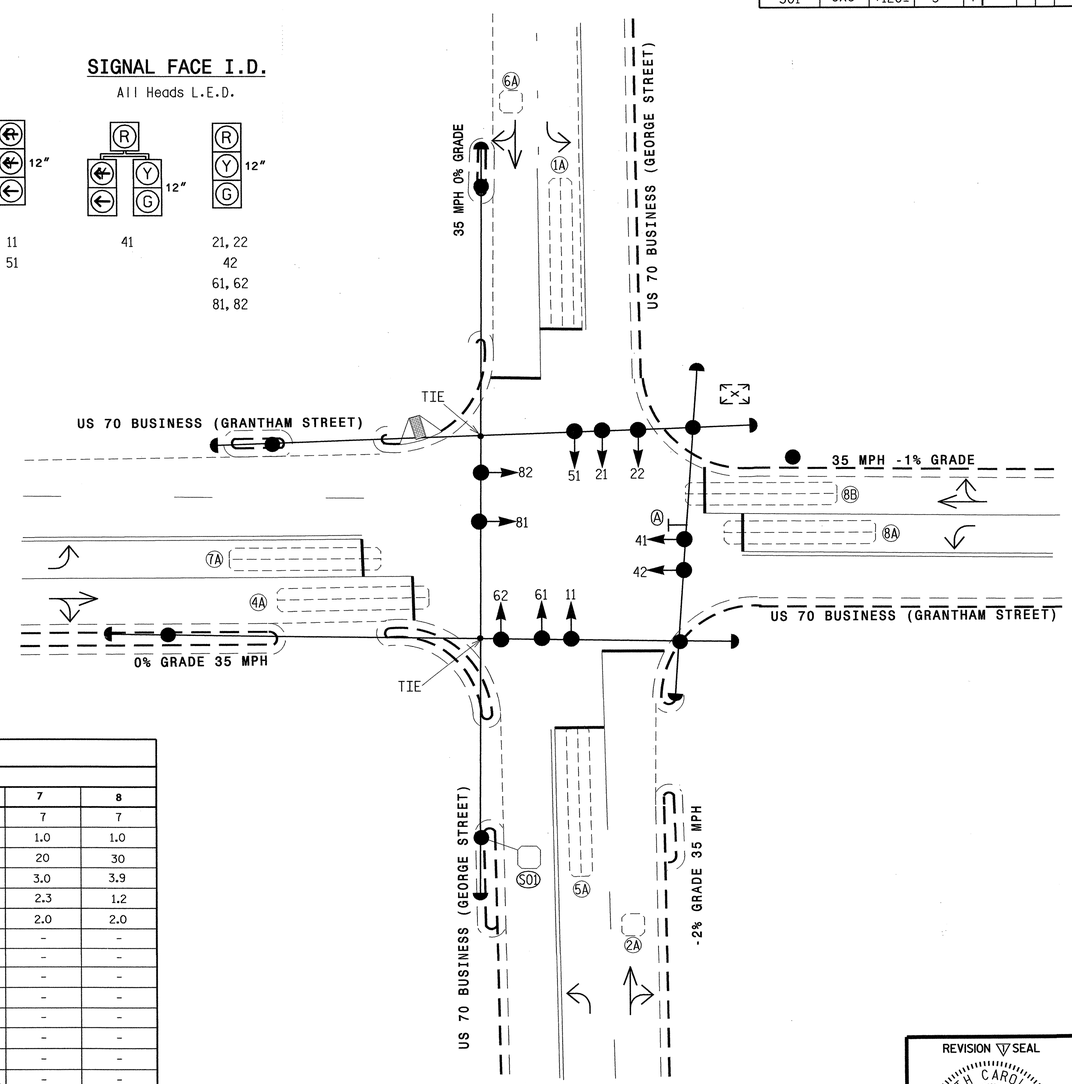
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Y	Y	—	—	3	—	—
2A	6X6	70	3	-	2	Y	Y	—	—	—	—	—
4A	6X40	+5	2-4-2	-	4	Y	Y	—	—	10	—	—
5A	6X40	0	2-4-2	-	5	Y	Y	—	—	3	—	—
6A	6X6	70	3	-	6	Y	Y	—	—	—	—	—
7A	6X40	+5	2-4-2	-	7	Y	Y	—	—	3	—	—
8A	6X40	+5	2-4-2	-	8	Y	Y	—	—	3	—	—
8B	6X40	+5	2-4-2	-	8	Y	Y	—	—	10	—	—
S01	6X6	+120±	3	Y	-	-	-	—	—	—	Y	Y

6 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 4 to allow the controller to clear from phase 4+8 to phase 4+7 by progressing through an all red display.
4. Phase 1 or phase 5 may be lagged.
5. Set all detector units to presence mode.
6. Existing "Left Turn Yield on Green" ball sign (R10-12) may be removed at the discretion of the Regional Traffic Engineer.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0233.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	A

2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	7	8
Min Green 1 *	7	10	7	7	10	7	7
Extension 1 *	1.0	3.0	1.0	1.0	3.0	1.0	1.0
Max Green 1 *	20	110	30	25	110	20	30
Yellow Clearance	3.0	4.0	3.8	3.0	3.8	3.0	3.9
Red Clearance	2.4	1.0	1.5	2.1	1.3	2.3	1.2
Red Revert	2.0	2.0	5.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-
Recall Mode	-	SOFT RECALL	-	-	SOFT RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-	-
Dual Entry	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	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 REVISION

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA G. ALEXANDER

SIGNATURE — DATE 12/19/08

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signals and Geometrics Section, Traffic Engineering Division, Department of Transportation, State of North Carolina

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 20 1"=20'

US 70 Business (George Street) at US 70 Business (Grantham Street)

Division 4 Wayne County Goldsboro

PLAN DATE: 4-21-05 REVIEWED BY: M Mahbooba

PREPARED BY: EM Minshew REVIEWED BY:

REVISIONS	INIT.	DATE
▽ Install system detector and revise clearance times.	DA	12/19/08

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Boniface Madu, PE. # 25475 on 5/23/05. This document is only certified as to the revisions.

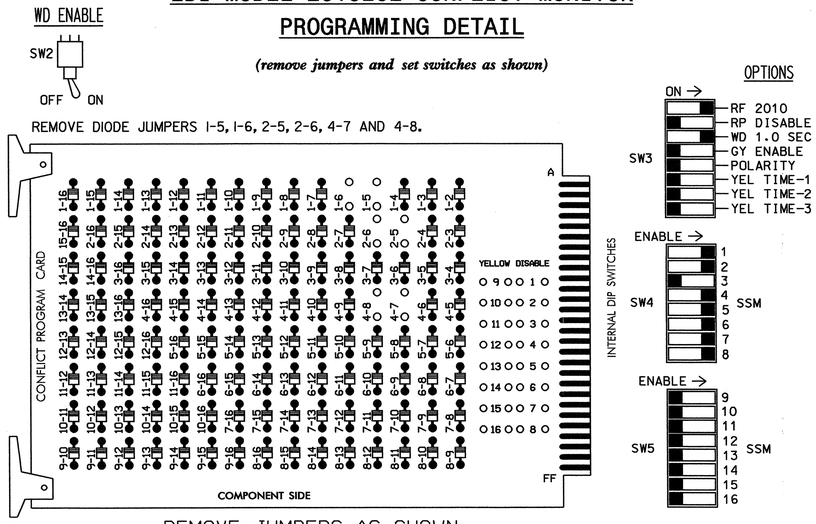
SIG. INVENTORY NO. 04-0233

19-DEC-2008 13:17
s:##ts signals#signal design section#eastern region#div-04#goldsboro city systems#signal designs#04-0233#04-0233_sig_dsn_20081219.dgn
pateander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 4

EDI MODEL 2010ECL 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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED				NOT USED			NOT USED					ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A	SLOT EMPTY	SLOT EMPTY	Ø7 7A	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED			NOT USED	Ø8 8B								

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
✱SØ1	TB6-9,10	I9U	60	22	11	SYS					
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10

✱ SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

NOTES

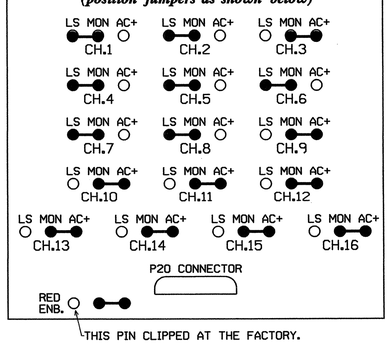
1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG. NO. 9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S7,S8
PHASES USED.....1,2,4,5,6,7,8
OVERLAPS.....NONE

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



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.	11	21,22	NU	NU	41,42	NU	51	61,62	NU	41	81,82	NU
RED		128			101			134		✱	107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132			123		
GREEN ARROW	127						133			124		

NU = Not Used

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

BACKUP PROTECTION NOTE

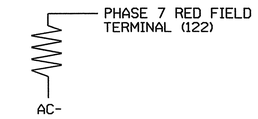
(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 4 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0233
DESIGNED: 04/21/2005
SEALED: 05/23/2005
REVISED: 12/19/2008

Signal Revision

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

John T. Rowe Jr. 1-20-09
SIGNATURE DATE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Parkway, Garner, NC 27529

US 70 Business (George Street) at US 70 Business (Grantham Street)

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY:
PREPARED BY: K. McDaniel | REVIEWED BY:

REVISIONS	INIT.	DATE
Change to a base mounted cabinet and add a system detector. JTR	JTR	1-20-09

SEAL

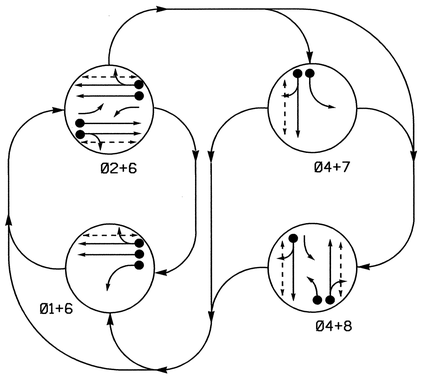
Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by George C. Brown, #022013, on 06/02/2005.
This document is only certified as to the revisions.

SIGNATURE DATE
SIG. INVENTORY NO. 04-0233

12-JAN-2009 15:03
S:*ITS Signals*Workgroups*Sig Mgmt*McDaniels*Files2*79_04-0233(79-96)WO04033_sm_ele_xxx.dgn
kimcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.5

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø4+7	Ø4+8	FLASH
21, 22	R	G	R	R	Y
41	R	R	G	G	R
42	R	R	G	G	R
61	G	G	R	R	Y
62	G	G	R	R	Y
81, 82	R	R	R	G	R
P21, P22	DW	W	DW	DW	DRK
P41, P42	DW	DW	W	W	DRK
P61, P62	W	W	DW	DW	DRK
P81, P82	DW	DW	DW	W	DRK

W - Walk
DW - Don't Walk
DRK - Dark

SIGNAL FACE I.D.

All Heads L.E.D.

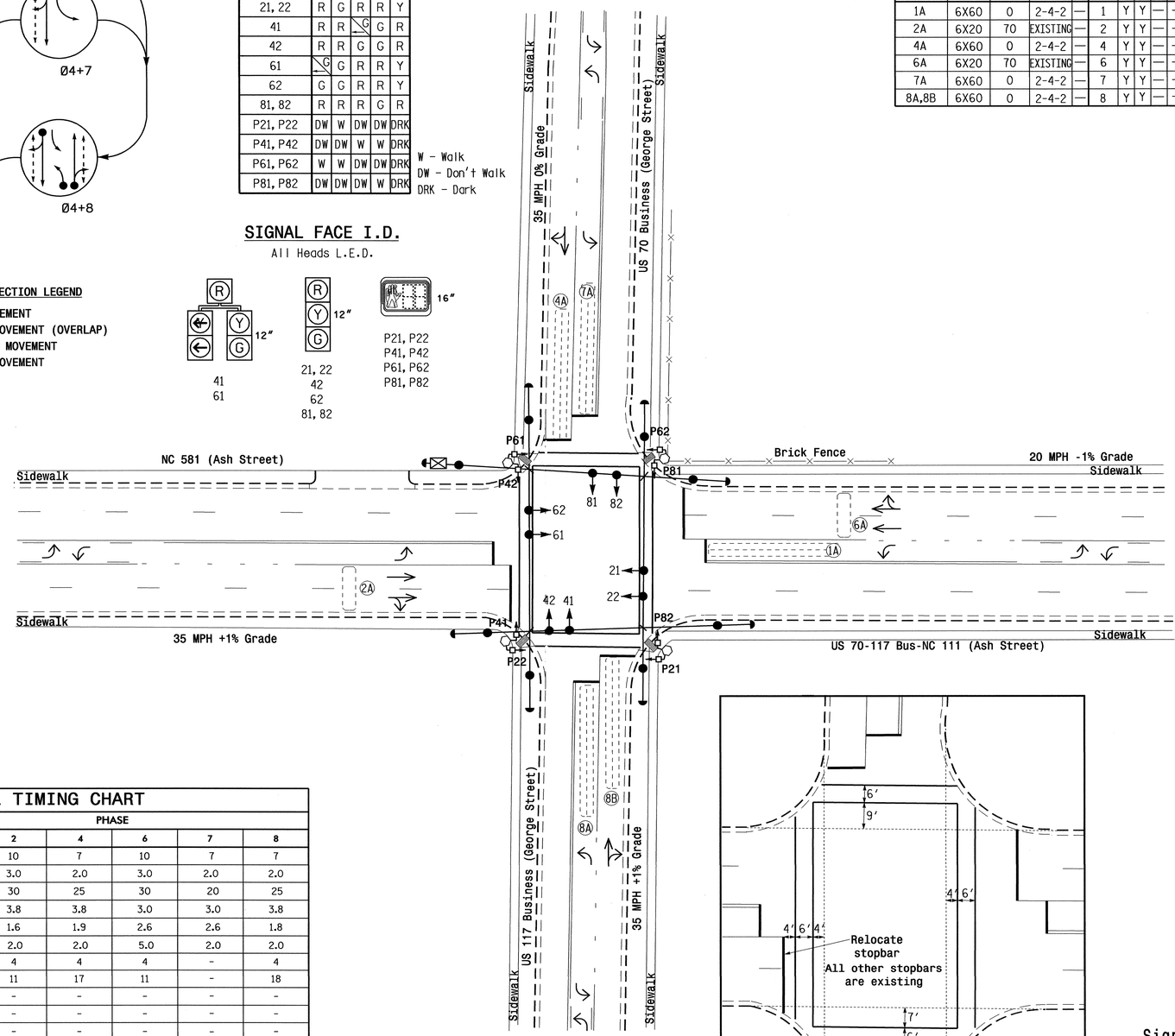
2070L LOOP & DETECTOR INSTALLATION

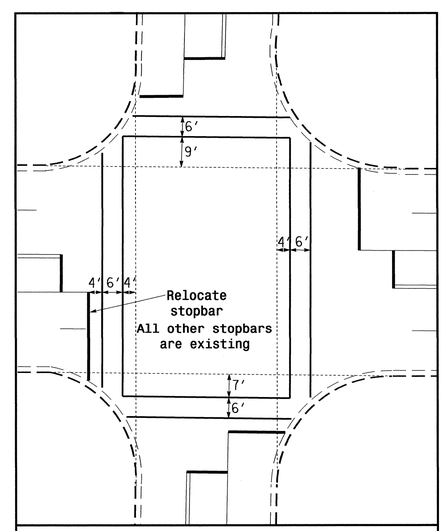
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	—	1	Y	Y	—	—	15	—	Y
2A	6X20	70	EXISTING	—	2	Y	Y	—	—	—	—	Y
4A	6X60	0	2-4-2	—	4	Y	Y	—	—	—	—	Y
6A	6X20	70	EXISTING	—	6	Y	Y	—	—	—	—	Y
7A	6X60	0	2-4-2	—	7	Y	Y	—	—	15	—	Y
8A,8B	6X60	0	2-4-2	—	8	Y	Y	—	—	—	—	Y

4 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Omit phase 7 during phase 8 on.
4. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #0234.





Crosswalk and Stopbar Locations (NTS)

2070L TIMING CHART

FEATURE	PHASE 1	2	4	6	7	8
Min Green 1 *	7	10	7	10	7	7
Extension 1 *	2.0	3.0	2.0	3.0	2.0	2.0
Max Green 1 *	20	30	25	30	20	25
Yellow Clearance	3.0	3.8	3.8	3.0	3.0	3.8
Red Clearance	2.6	1.6	1.9	2.6	2.6	1.8
Red Revert	2.0	2.0	2.0	5.0	2.0	2.0
Walk 1 *	-	4	4	4	-	4
Don't Walk 1	-	11	17	11	-	18
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	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.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Wheelchair Ramp	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	
	Pedestrian Signal Pedestal	

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 70-117 Bus-NC 111/NC 581 (Ash St)
at
US 70/US 117 Bus (George St)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: P Alexander, PE
PREPARED BY: EM Winshew REVIEWED BY:

SCALE 0 30 1"=30'

REVISIONS	INIT.	DATE

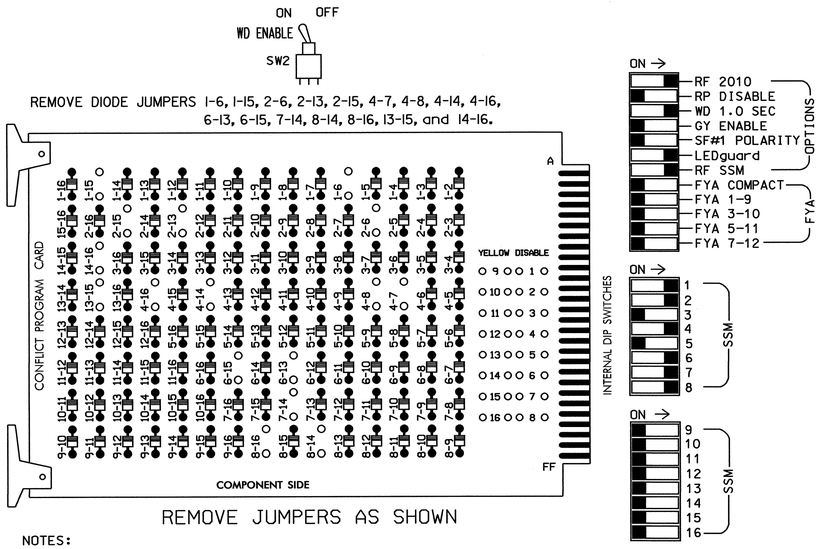
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA G. ALEXANDER
SIGNATURE DATE 2/20/09
SIG. INVENTORY NO. 04-0234

20-FEB-2009 15:41
s:##ts signals\signal design sections\eastern region\div-04\04-0234\04234_sig.dsn_2009mmdd.dgn
palexander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 6

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-6, 1-15, 2-6, 2-13, 2-15, 4-7, 4-8, 4-14, 4-16, 6-13, 6-15, 7-14, 8-14, 8-16, 13-15, and 14-16.

REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
7. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S2P,S4,S4P,S6,S6P,S7,S8,S8P
PHASES USED.....1,2,2 PED,4,4 PED,6,6 PED,7,8,8 PED
OVERLAPS.....NONE

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	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	41	81,82	P81, P82
RED	*	128			101			134		*	107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW	126									123		
GREEN ARROW	127									124		
✋			113			104			119			110
🚶			115			106			121			112

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
	L	NOT USED	Ø4 4A										Ø4 PED DC ISOLATOR	Ø8 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø8 8A,8B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø7 7A				NOT USED								

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	TB2-1,2	I1U	56	18	1	1	Y	Y			15
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB2-7,8	I2L	43	5	12	4	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
7A	TB3-7,8	J2L	44	6	16	7	Y	Y			15
8A,8B	TB5-9,10	J6U	42	4	8	8	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

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

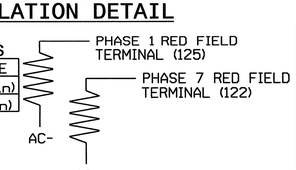
```
DYNAMIC/BACKUP CONTROL FUNCTION #01
                 OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE   ¦
OR        PHASES:¦123456789101112131415 16
IF PHASES ARE ON ¦        X
OMIT PHASES      ¦       X
CALL PHASES      ¦
```

BACKUP PROTECTION PROGRAMMING COMPLETE

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 these resistors is to load the channel red monitor inputs 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.

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: 04-0234
DESIGNED: November 2008
SEALED: 02-20-09
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 70-117 Bus-NC 111/NC 581 (Ash St)
at
US 70/US 117 Bus (George St)

Division 04 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY: T. Lyon
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

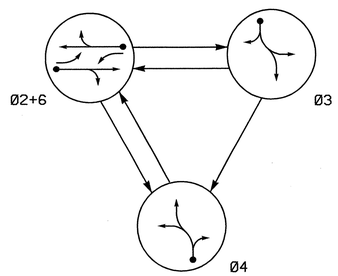
Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 016286 ENGINEER MILTON L. DEAN
Milton L. Dean 2/20/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0234

26-FEB-2009 08:49
s:\traffic\signals\workgroups\sig management\040234_sm_ela.xxx.dgn
samstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 7

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø3	PHASE Ø4	FLASH
21,22	G	R	R	Y
31,32	R	G	R	R
41,42	R	R	G	R
61,62	G	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.

21,22
31,32
41,42
61,62

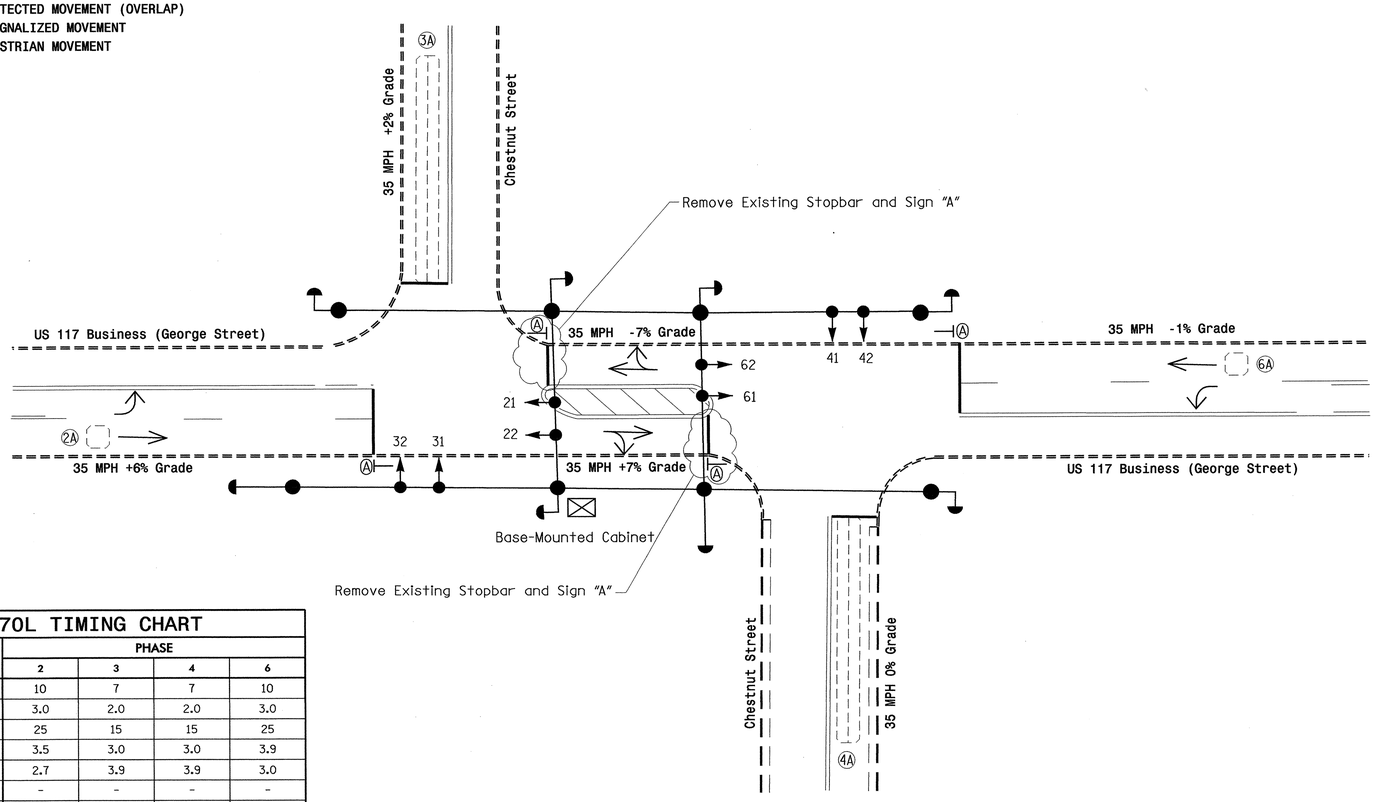
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	5	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	5	-	Y
6A	6X6	70	4	-	6	Y	Y	-	-	-	-	Y

3 Phase
Fully Actuated
Goldsboro City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0237.



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 3	PHASE 4	PHASE 6
Min Green 1 *	10	7	7	10
Extension 1 *	3.0	2.0	2.0	3.0
Max Green 1 *	25	15	15	25
Yellow Clearance	3.5	3.0	3.0	3.9
Red Clearance	2.7	3.9	3.9	3.0
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	-	-	-	-
Simultaneous Gap	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.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	
	"Stop Here on Red" Sign (R10-6)	

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety System Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 20 1"=20'

US 117 Business (George Street) At Chestnut Street

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: PLA
PREPARED BY: JPG REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 11/18/08 DATE
SIG. INVENTORY NO. 04-0237

19-DEC-2008 11:09
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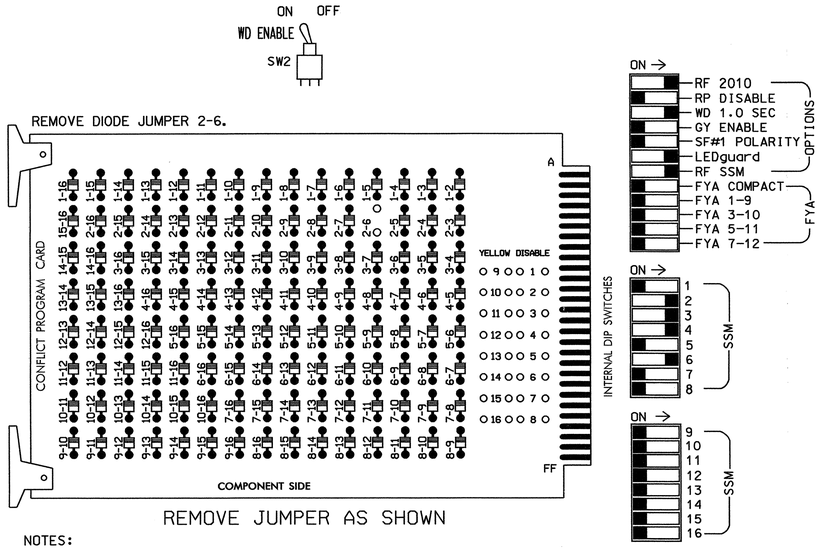
emmisaw

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 8

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,5,7, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S3,S4,S6
PHASES USED.....2,3,4,6
OVERLAPS.....NONE

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.	NU	21,22	NU	31,32	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128		116	101			134				
YELLOW		129		117	102			135				
GREEN		130		118	103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	Ø2 / 2A	SLOT	SLOT	SLOT	Ø3 / 3A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS / DC ISOLATOR
	L	EMPTY	Ø6 / 6A	EMPTY	EMPTY	EMPTY	Ø4 / 4A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST / DC ISOLATOR
FILE "J"	U	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB4-9,10	I6U	41	3	4	3	Y	Y			5
4A	TB4-11,12	I6L	45	7	14	4	Y	Y			5
6A	TB2-7,8	I2L	43	5	12	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0237
DESIGNED: November 2008
SEALED: 11/18/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 117 Business (George Street) at Chestnut Street

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: T. Jyle
PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

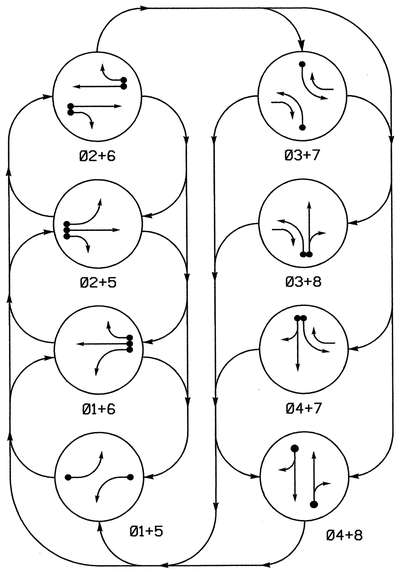
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 12/18/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0237

08-DEC-2008 09:41
s:\ts_signals\working\groups\sig mcmastrick\landa\04\0237_sm_ele_xxx.dgn
castrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	SIG. 9

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	↚	↚	R̸	R̸	R̸	R̸	R̸	R̸	R̸
21	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R̸	R̸	R	R	Y
31	R̸	R̸	R̸	R̸	↚	↚	R̸	R̸	R̸
41,42	R	R	R	R	R	R	G	G	R
51	↚	R̸	↚	R̸	R̸	R̸	R̸	R̸	R̸
61	R	G	R	G	R	R	R	R	Y
62	R	G	R	G	R̸	R	R̸	R	Y
71	R̸	R̸	R̸	R̸	↚	R̸	↚	R̸	R̸
81,82	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

ALL L.E.D. HEADS

11, 31, 51, 71 — 21, 41,42, 61, 81,82 — 22, 62

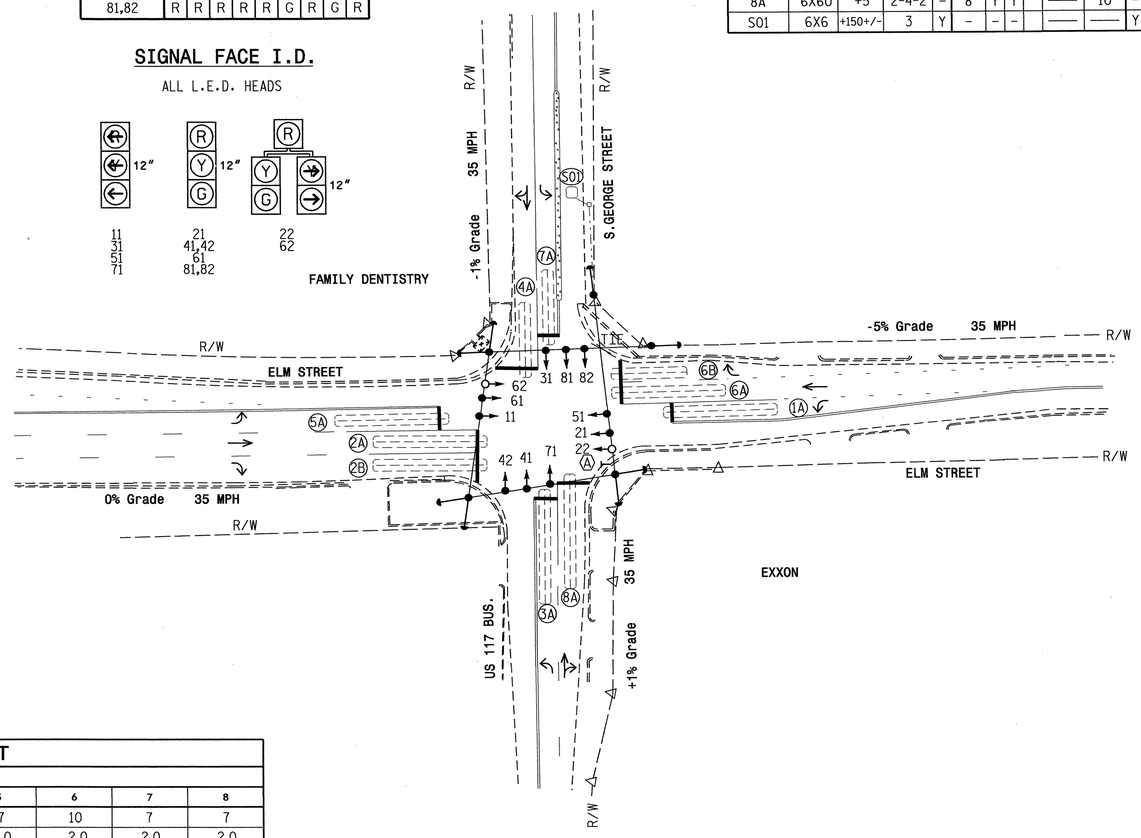
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	–	1	Y	Y		——	——	–	–
2A	6X60	+5	2-4-2	–	2	Y	Y		——	——	–	–
2B	6X60	+5	2-4-2	–	2	Y	Y		——	——	–	–
3A	6X60	+5	2-4-2	–	3	Y	Y		——	——	–	–
4A	6X40	+5	2-4-2	–	4	Y	Y		——	10	–	–
5A	6X60	+5	2-4-2	–	5	Y	Y		——	——	–	–
6A	6X60	+5	2-4-2	–	6	Y	Y		——	——	–	–
6B	6X40	+5	2-4-2	–	6	Y	Y		——	——	–	–
7A	6X40	+5	2-4-2	–	7	Y	Y		——	——	–	–
8A	6X60	+5	2-4-2	–	8	Y	Y		——	10	–	–
S01	6X6	+150+/-	3	Y	–	–	–		——	——	Y	Y

8-PHASE FULLY ACTUATED (GOLDSBORO CITY SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0239



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way with Marker	
	Directional Arrow	
	Pavement Marking Arrow	
	Right Arrow "ONLY" Sign (R3-5R)	

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	10	7	7	7	10	7	7
Extension 1 *	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Max Green 1 *	30	25	15	60	10	25	15	60
Yellow Clearance	3.1	3.8	3.0	3.9	3.0	4.2	3.0	3.8
Red Clearance	2.7	1.2	2.0	1.0	2.4	1.2	1.9	1.1
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	–	–	–	–	–	–	–	–
Dual Entry	–	–	–	–	–	–	–	–
Simultaneous Gap	ON	ON	ON	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 REVISION:

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 25463 ENGINEER NATHANIEL BITTING

SIGNATURE — 12/29/08 DATE

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signals and Geometrics Section, Division of Highways, N.C. Department of Transportation, 750 Greenfield Parkway, Garner N.C., 27529

SCALE 0 40 1"=40'

US 117 BUS. (GEORGE STREET) AT ELM STREET

DIVISION 04 WAYNE COUNTY GOLDSBORO

PLAN DATE:	07/27/88	REVIEWED BY:	
PREPARED BY:	PDP	REVIEWED BY:	

REVISIONS	INIT.	DATE
Re-calculate clearance times; add systems loop S01; upgrade signal heads, and add "Right Arrow Only" sign.	NB	12/29/08

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Carlton Goode, PE 12973 on 09/09/1988 This document is only certified as to the revisions.

SIG. INVENTORY NO. 04-0239

02-JAN-2009 10:25
s#116 signals#signal design section#eastern region#div-04#goldsboro city systems#signal designs#04-0239#04-0239_sig-dsn_20060113.dgn
BBitting

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 10

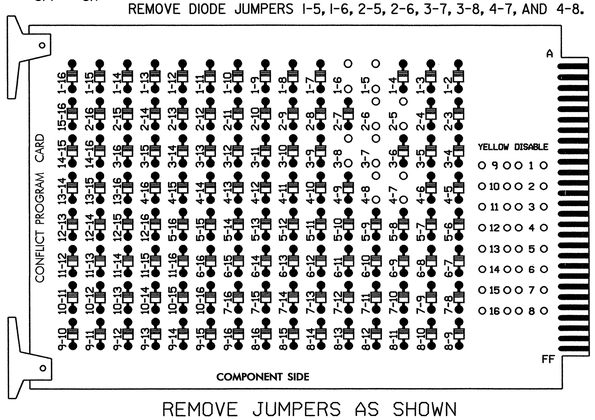
EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

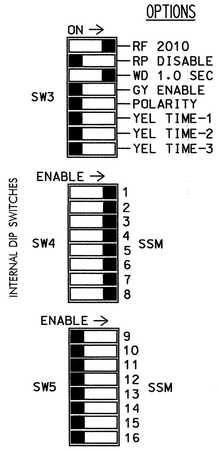
WD ENABLE

SW2 — OFF ON

REMOVE DIODE JUMPERS 1-5, 1-6, 2-5, 2-6, 3-7, 3-8, 4-7, AND 4-8.



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3		S4	S4P	S5	S6	S6P	S7		S8	S8P	S9	S10	S11	S12	S13	S14
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	22	31	41,42	NU	51	61,62	NU	62	71	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	125				116			131				122								
YELLOW ARROW	126			117	117			132			123	123								
GREEN ARROW	127			118	118			133			124	124								
✋																				
🚶																				

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	Ø2 2B	SLOT EMPTY	Ø3 3A	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED	NOT USED		NOT USED	NOT USED			NOT USED					ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A	Ø6 6B	SLOT EMPTY	Ø7 7A	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	NOT USED		NOT USED	NOT USED								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

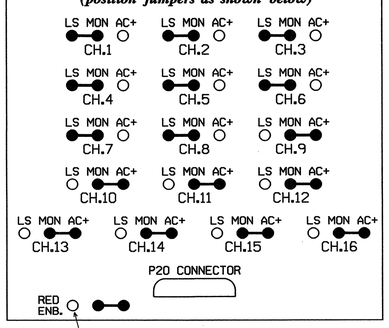
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-9,10	I3U	63	25	32	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
* SØ1	TB6-9,10	I9U	60	22	11	SYS					

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



This pin clipped at the factory.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0239
DESIGNED: 07-27-88
ORIGINALLY SEALED: 09-09-1988
REVISED: 12-29-08

Signal Revision

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 117 Bus. (George Street)
at
Elm Street

Division 04 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY: T. Jga
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

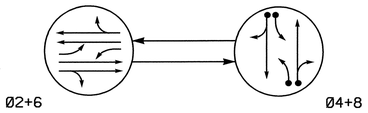
Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 1/7/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0239

07-JAN-2009 11:28
s:*its signals\working\groups\sig management\04-0239_sm_ele_xxx.dgn
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.11

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

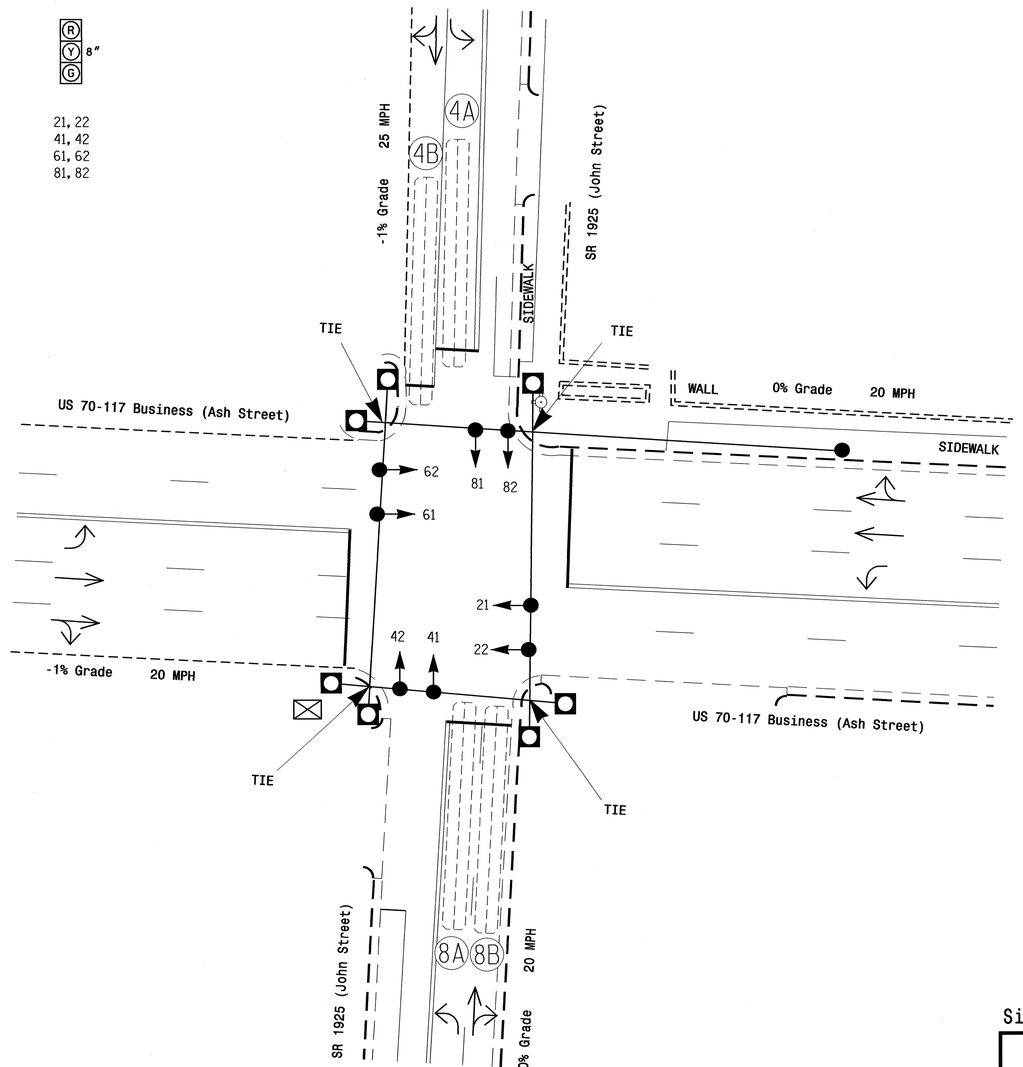
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+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 L.E.D. Heads

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



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
4A,4B	6X60	+5	2-4-2	-	4	Y	Y	-	-	5	-	Y
8A,8B	6X60	+5	2-4-2	-	8	Y	Y	-	-	5	-	Y

5 Phase
Semi-Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Remove existing heads 11 and 51.
4. Abandon existing loops 1A and 5A.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset # 0242.

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	-	1.0	-	1.0
Max Green 1 *	35	22	35	22
Yellow Clearance	3.0	3.2	3.0	3.0
Red Clearance	1.8	2.2	1.8	2.6
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MAX RECALL	-	MAX RECALL	-
Vehicle Call Memory	-	-	-	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	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.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signal and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

US 70-117 Business (Ash Street)
at
John Street

Division 4 Wayne County Goldsboro

PLAN DATE: February 2009 REVIEWED BY: J P Galloway
PREPARED BY: P L Alexander REVIEWED BY:

SCALE 0 20 1"=20'

REVISIONS	INIT.	DATE

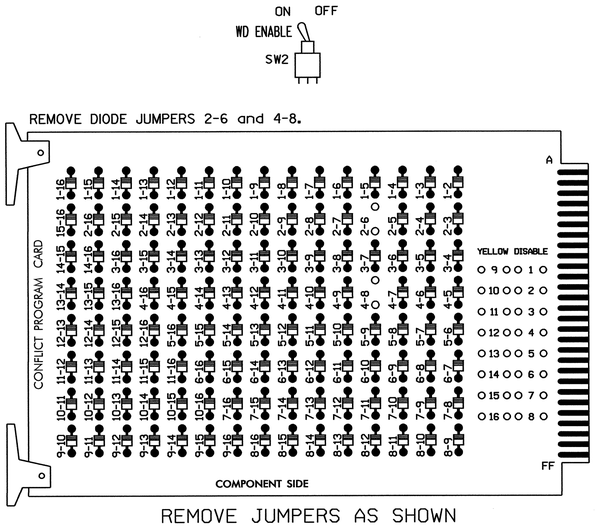
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA L. ALEXANDER
SIGNATURE DATE 2/16/09
SIG. INVENTORY NO. 04-0242

15-FEB-2009 12:03
S:\TEB_Signals\signal design sections\eastern region\div-04\04-0242\04024 2_sig_dsn_200902xx.dgn
palexander

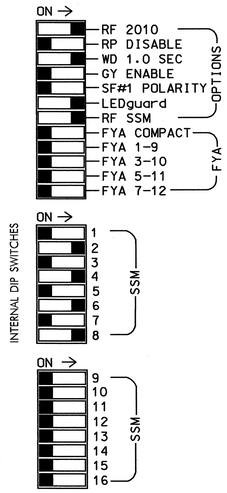
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 12

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 1,3,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

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

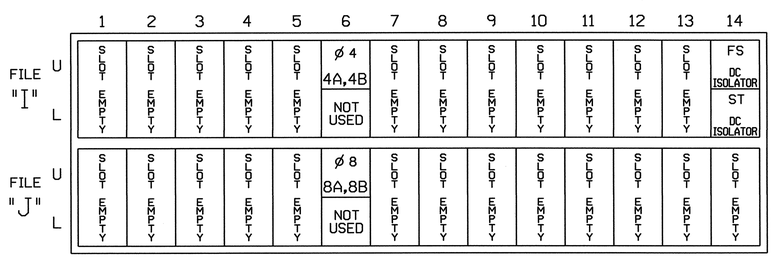
SIGNAL HEAD HOOK-UP CHART

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.	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
4A,4B	TB4-9,10	I6U	41	3	4	4	Y	Y			5
8A,8B	TB5-9,10	J6U	42	4	8	8	Y	Y			5

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0242
DESIGNED: February 2009
SEALED: 02/16/09
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 70-117 Business (Ash Street) at John Street

Division 4 | Wayne County | Goldsboro

PLAN DATE: February 2009 | REVIEWED BY: T. Jeffers
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

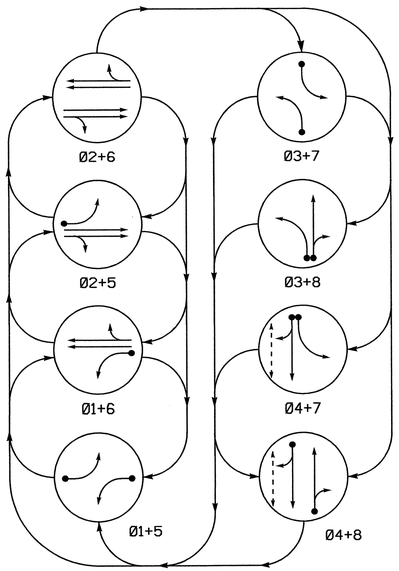
George C. Brown 2/17/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0242

16-FEB-2009 15:43
s:\traffic\signals\workgroups\sig management\04-0242_sm_sig_xxx.dgn
cassrl@ncdot.org

PROJECT REFERENCE NO.	SHEET NO.
U-5016	SIG.13

PHASING DIAGRAM ▽



PHASING DIAGRAM DETECTION LEGEND

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

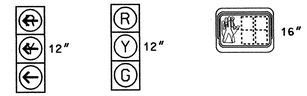
TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41,42	R	R	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	R	Y
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81,82	R	R	R	R	R	G	R	G	R
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK

W - Walk
DW - Don't Walk
DRK - Dark

SIGNAL FACE I.D.

All Heads L.E.D.



11
31
51
71

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

P41, P42

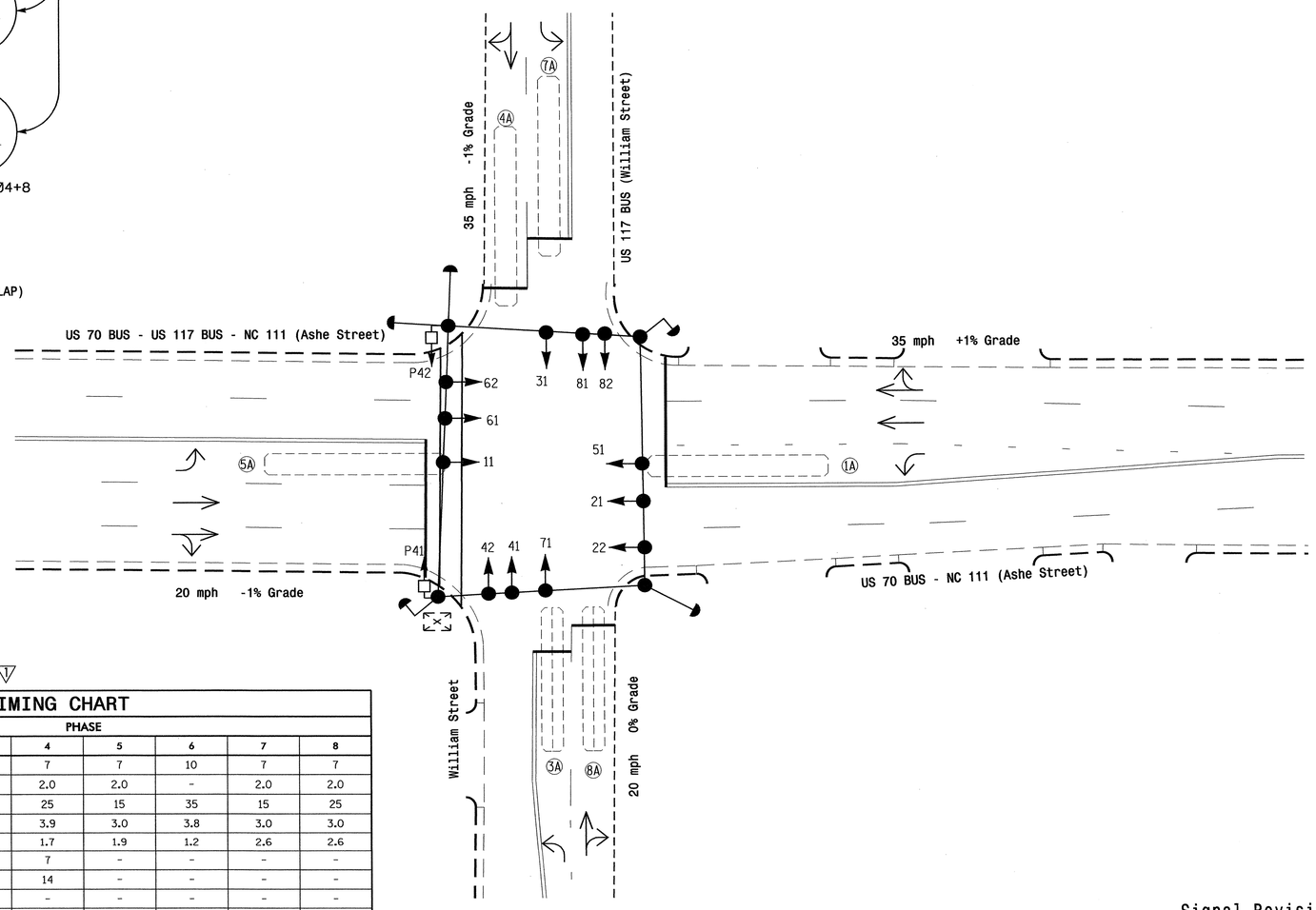
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6x50	EXISTING	+5	-	1	Y	Y	-	-	3	-	-
3A	6x40	EXISTING	+10	-	3	Y	Y	-	-	3	-	-
4A	6x50	EXISTING	+5	-	4	Y	Y	-	-	10	-	-
5A	6x50	EXISTING	+5	-	5	Y	Y	-	-	3	-	-
7A	6x40	EXISTING	+5	-	7	Y	Y	-	-	3	-	-
8A	6x50	EXISTING	+5	-	8	Y	Y	-	-	10	-	-

8 Phase
Semi-Actuated
Goldsboro City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0243.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

▽

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	10	7	7	7	10	7	7
Extension 1 *	2.0	-	2.0	2.0	2.0	-	2.0	2.0
Max Green 1 *	15	35	15	25	15	35	15	25
Yellow Clearance	3.0	3.0	3.0	3.9	3.0	3.8	3.0	3.0
Red Clearance	1.9	1.9	2.4	1.7	1.9	1.2	2.6	2.6
Walk 1 *	-	-	-	7	-	-	-	-
Don't Walk 1	-	-	-	14	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Recall Mode	-	MAX RECALL	-	-	-	MAX RECALL	-	-
Vehicle Call Memory	-	-	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	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 Revision

Revision ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY

SIGNATURE 11/18/08 DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 20 1"=20'

US 70 BUS - US 117 BUS - NC 111 (Ashe St.) at US 117 BUS/William St.

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: PLA
PREPARED BY: JPG REVIEWED BY:

REVISIONS	INIT.	DATE
▽ Switched phases 2 & 6 and 4 & 8; revised clearance times, new countdown peds P41 & P42	JPG	11/18/08

SEAL
Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by P.L. Alexander, PE 23489 on December 2, 2002 This document is only certified as to the revisions.

SIGNATURE DATE

SIG. INVENTORY NO. 04-0243

18-DEC-2008 16:18
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emmisher

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 14

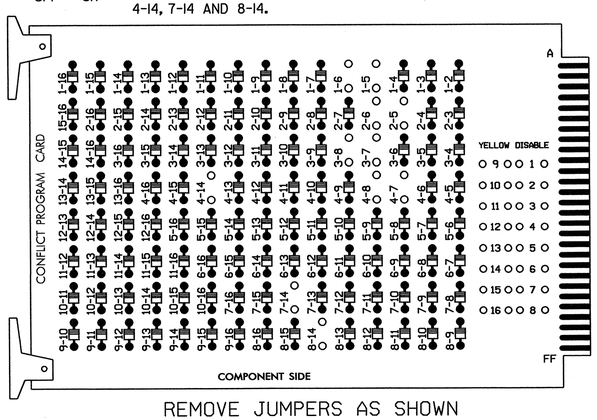
EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

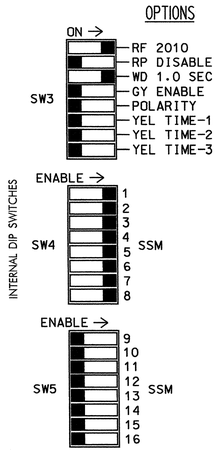
WD ENABLE

SW2 — OFF / ON

1 REMOVE DIODE JUMPERS I-5, I-6, 2-5, 2-6, 3-7, 3-8, 4-7, 4-8, 4-14, 7-14 AND 8-14.



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. 1 Program phase 4 for 'STARTUP PED CALL'.
6. 1 The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES (DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
1 LOAD SWITCHES USED.....S1,S2,S3,S4,S4P,S5,S6,S7,S8
PHASES USED.....1,2,3,4,4 PED,5,6,7,8
OVERLAPS.....NONE

1 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.	11	21,22	NU	31	41,42	P41, P42	51	61,62	NU	71	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125			116			131			122		
YELLOW ARROW	126			117			132			123		
GREEN ARROW	127			118			133			124		
✋						104						
🚶						106						

NU = Not Used

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.

1 INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12 (1)	13 (1)	14
FILE "I"	U	ø1 1A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø3 3A	ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	NOT USED	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED				NOT USED	NOT USED						ø4 PED DC ISOLATOR		ST DC ISOLATOR
FILE "J"	U	ø5 5A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø7 7A	ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED				NOT USED	NOT USED								

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

FS = FLASH SENSE
ST = STOP TIME

1 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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					

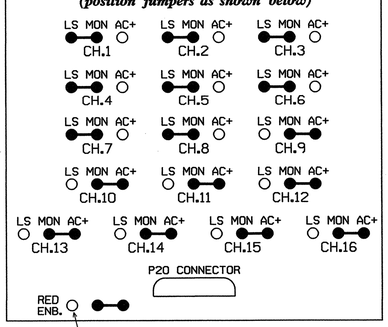
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOT I12.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0243
DESIGNED: November 2008
SEALED: 12/2/2002
1 REVISED: 11/18/2008

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



This pin clipped at the factory.

Signal Revision

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 70 Bus - US 117 Bus - NC 111 (Ashe St) at US 117 Bus /William St.

Division 4 | Wayne County | Goldsboro

PLAN DATE: December 2008 | REVIEWED BY:

PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE
1 Rewire Signal Heads, Loops and PEDs per switched phases 2&6 and 4&8. CES 11/26/08 OTJ 12/9/08	NCB	12/18/08

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signal Management Section, Division of Highways, State of North Carolina, Department of Transportation

122 N. McDowell St., Raleigh, NC 27603

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE | DATE: 12/18/08

SIG. INVENTORY NO. 04-0243

10-DEC-2008 11:35
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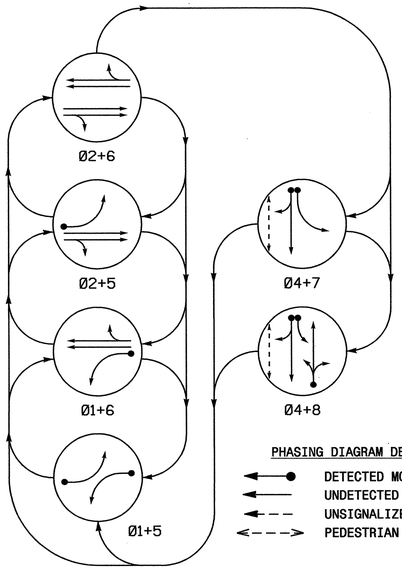
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 15

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

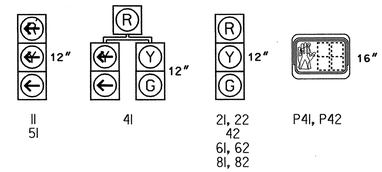
TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+7	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	Y
41	R	R	R	R	G	G	R
42	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	Y
81, 82	R	R	R	R	R	G	R
P41, P42	DW	DW	DW	DW	W	W	DRK

W - Walk
DW - Don't Walk
DRK - Dark

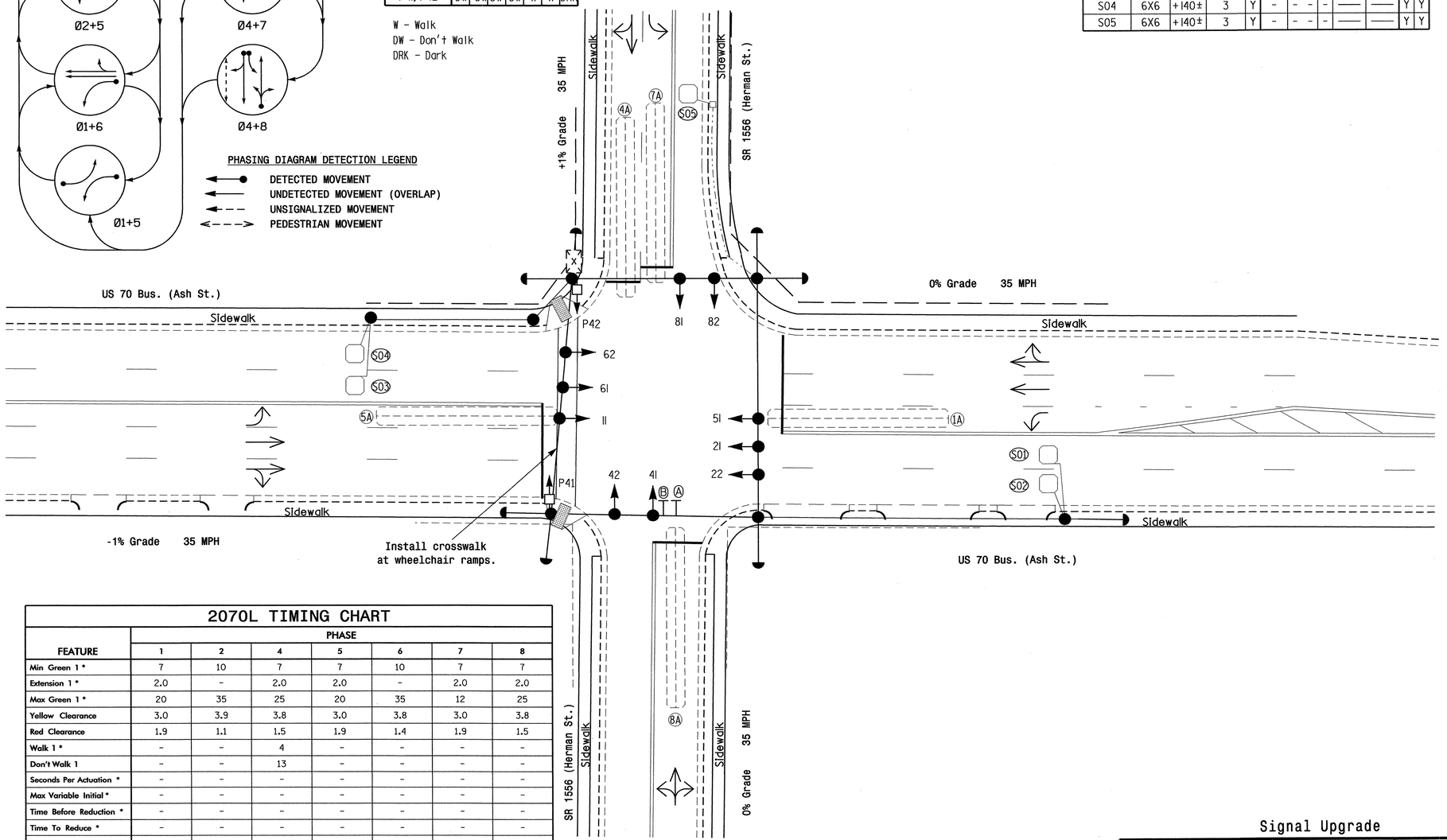
SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	-	1	Y	Y	-	——	——	-	-
4A	6X60	+5	2-4-2	-	4	Y	Y	-	——	10	-	-
5A	6X60	+5	2-4-2	-	5	Y	Y	-	——	——	-	-
7A	6X60	+5	2-4-2	-	7	Y	Y	-	——	3	-	-
8A	6X60	+5	2-4-2	-	8	Y	Y	-	——	5	-	-
S01	6X6	+160±	4	Y	-	-	-	-	——	——	Y	Y
S02	6X6	+160±	4	Y	-	-	-	-	——	——	Y	Y
S03	6X6	+140±	3	Y	-	-	-	-	——	——	Y	Y
S04	6X6	+140±	3	Y	-	-	-	-	——	——	Y	Y
S05	6X6	+140±	3	Y	-	-	-	-	——	——	Y	Y



2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	7	8
Min Green 1 *	7	10	7	7	10	7	7
Extension 1 *	2.0	-	2.0	2.0	-	2.0	2.0
Max Green 1 *	20	35	25	20	35	12	25
Yellow Clearance	3.0	3.9	3.8	3.0	3.8	3.0	3.8
Red Clearance	1.9	1.1	1.5	1.9	1.4	1.9	1.5
Walk 1 *	-	-	4	-	-	-	-
Don't Walk 1	-	-	13	-	-	-	-
Seconds Per Actuation *	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-
Recall Mode	-	MAX RECALL	-	-	MAX RECALL	-	-
Vehicle Call Memory	-	-	-	-	-	-	-
Dual Entry	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	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.

6 Phase Semi-Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Omit phase 7 during phase 8 on.
4. Phase 1 or phase 5 may be lagged.
5. Run all lead-in cable overhead on existing utility poles where possible.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #0245.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	Left Arrow "ONLY" Sign (R3-5L)	A
B	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	B
N/A	Wheelchair Ramp	

Signal Upgrade

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA J. WATSON

SIGNATURE 1/6/09 DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 20 1"=20'

US 70 Bus. (Ash Street) at SR 1556 (Herman Street)

Division 4	Wayne County	Goldsboro
PLAN DATE: 9-24-82	REVIEWED BY: SLH	
PREPARED BY: SLH	REVIEWED BY:	

REVISIONS	INIT.	DATE
Revise clearance timings, Install system detectors, switch phases 2 and 6, switch phases 4 and 8, odd ped heads	JC	1/6/09

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by William J.Watson,PE, #3982 on 12/13/82 This document is only certified as to the revisions.

SIG. INVENTORY NO. 04-0245

07-JAN-2009 08:59
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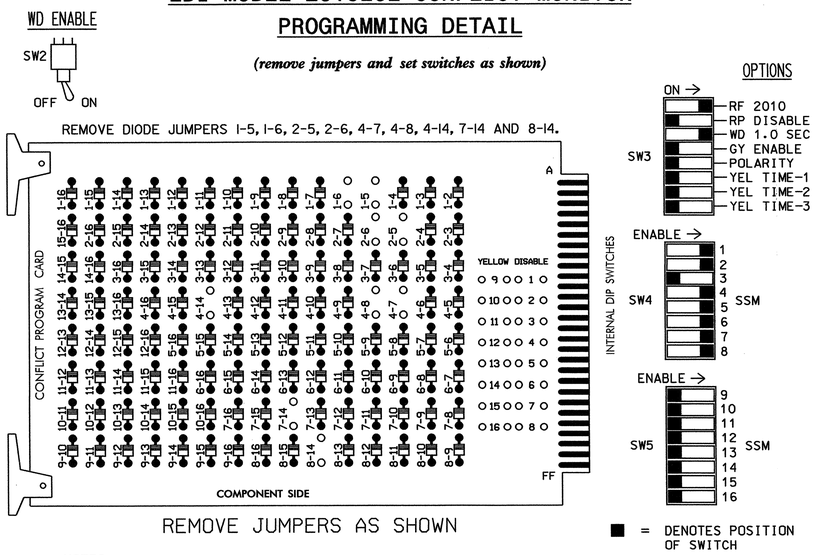
pdixander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 16

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phase 4 for 'STARTUP PED CALL'.
7. The cabinet and controller are part of the Goldsboro City Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S4P,S5,S6,S7,S8
PHASES USED.....1,2,4,4 PED,5,6,7,8
OVERLAPS.....NONE

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.	11	21,22	NU	NU	41,42	P41, P42	51	61,62	NU	41	81,82	NU
RED		128			101			134		*	107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132			123		
GREEN ARROW	127						133			124		
✋						104						
🚶						106						

NU = Not Used

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

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

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

```
DYNAMIC/BACKUP CONTROL FUNCTION #01
              OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE ¦
OR          PHASES:¦1234567891011121314 1516
IF PHASES ARE ON¦        X
OMIT PHASES     ¦        X
CALL PHASES     ¦
```

BACKUP PROTECTION PROGRAMMING COMPLETE

Remove phases 3 & 4 from Dynamic/Backup Control Function #01 if present.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	SLOT	SLOT	SLOT	SLOT	Ø4 4A	SLOT	SLOT	SYS. DET. SØ1	SLOT	SLOT	NOT USED	SLOT	FS DC ISOLATOR
	L	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	SYS. DET. SØ5	EMPTY	EMPTY	SYS. DET. SØ2	EMPTY	EMPTY	Ø4 PED DC ISOLATOR	EMPTY	ST DC ISOLATOR
FILE "J"	U	Ø5 5A	SLOT	SLOT	SLOT	Ø7 7A	Ø8 8A	SLOT	SLOT	SYS. DET. SØ3	SLOT	SLOT	SLOT	SLOT	SLOT
	L	NOT USED	EMPTY	EMPTY	EMPTY	NOT USED	NOT USED	EMPTY	EMPTY	SYS. DET. SØ4	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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	TB2-1,2	I1U	56	18	1	1	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			5
*SØ1	TB6-9,10	I9U	60	22	11	SYS					
*SØ2	TB6-11,12	I9L	62	24	13	SYS					
*SØ3	TB7-9,10	J9U	59	21	15	SYS					
*SØ4	TB7-11,12	J9L	61	23	17	SYS					
*SØ5	TB4-11,12	I6L	45	7	14	SYS					

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

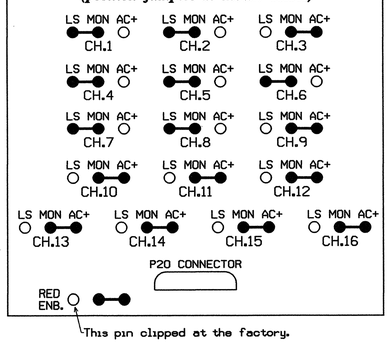
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)

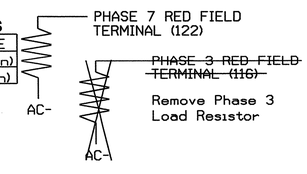


This pin clipped at the factory.

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: Ø4-0245
DESIGNED: 9-24-82
SEALED: 12/13/82
REVISED: Ø1/Ø6/09

THIS ELECTRICAL DETAIL SUPERSEDES THE DETAIL SEALED ON 09/30/08

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety System Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pwky, Garner, NC 27529

US 70 Bus. (Ash Street)
at
SR 1556 (Herman Street)

Division 4 | Wayne County | Goldsboro

PLAN DATE: December 2008 | REVIEWED BY: T. Igel
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

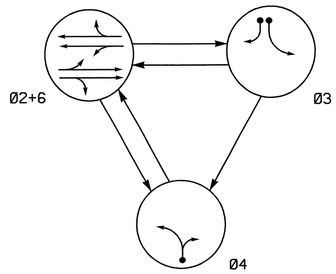
George C. Brown 1/13/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0245

12-JAN-2009 14:21
s:\ts_signals\sworkgroups\sig mon\strickland\dw040245_smele_xxx.dgn
castrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.17

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

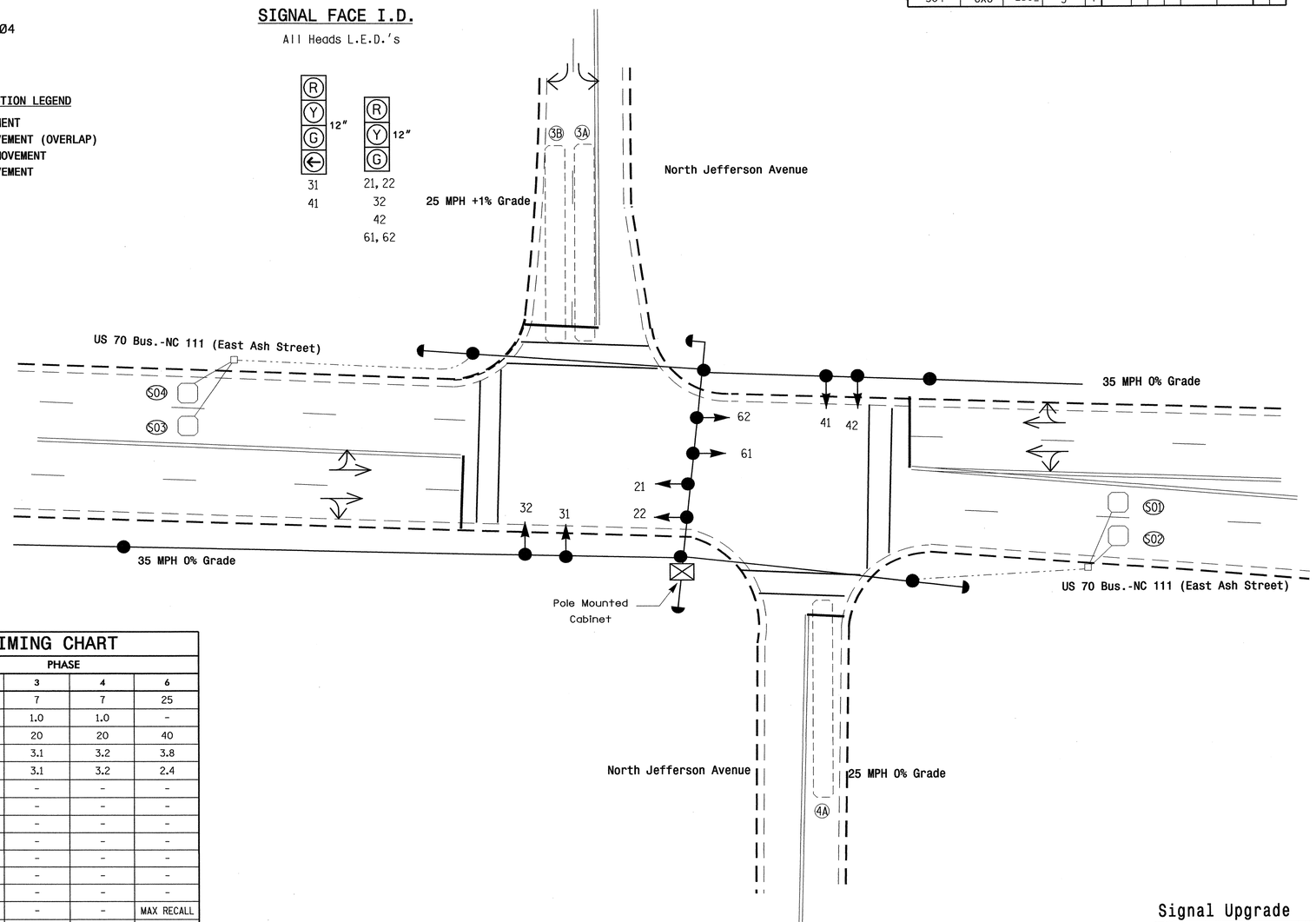
SIGNAL FACE	PHASE Ø2+6	PHASE Ø3	PHASE Ø4	FLASH
21, 22	G	R	R	Y
31	R	G	R	R
32	R	G	R	R
41	R	R	G	R
42	R	R	G	R
61, 62	G	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.'s

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
3A, 3B	6X60	+5	1	-	3	Y	Y	-	-	-	-	Y
4A	6X60	+5	1	-	4	Y	Y	-	-	-	-	Y
S01	6X6	+160±	3	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+160±	3	Y	-	-	-	-	-	-	Y	Y
S03	6X6	+250±	3	Y	-	-	-	-	-	-	Y	Y
S04	6X6	+250±	3	Y	-	-	-	-	-	-	Y	Y



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 3	PHASE 4	PHASE 6
Min Green 1 *	25	7	7	25
Extension 1 *	-	1.0	1.0	-
Max Green 1 *	40	20	20	40
Yellow Clearance	3.8	3.1	3.2	3.8
Red Clearance	2.3	3.1	3.2	2.4
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MAX RECALL	-	-	MAX RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	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.

3 Phase
Semi-Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Run new signal cable to heads 61 and 62.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0248.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 Greenfield Pkwy., Garner, NC 27529

SCALE 0 20 1"=20'

US 70 Bus. - NC 111
(East Ash Street)
at
North Jefferson Avenue

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: Larry Blount
PREPARED BY: Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

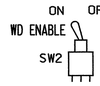
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER ALEX MOORE
12/15/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0248

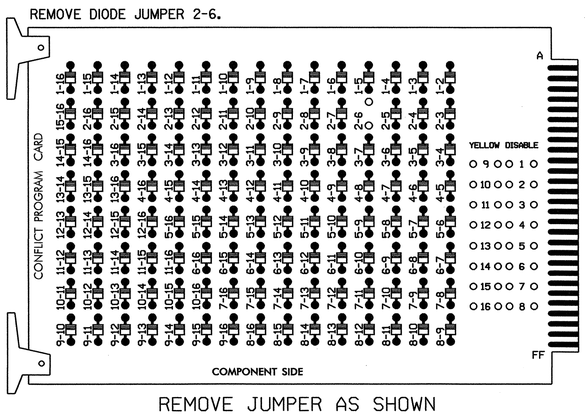
15-DEC-2008 13:24
S:\ITS Signals\Signal design sections\eastern region\div-04\goldsboro city systems\signal designs\04-0248\04-0248_sig_dsn_20081215.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 18

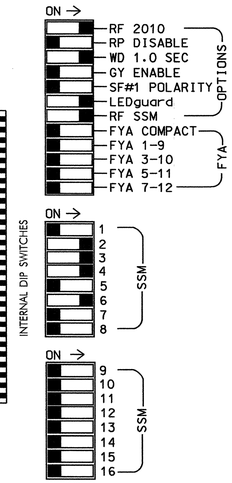
EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)





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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	SYS. DET. SØ1	SYS. DET. SØ3	Ø 3 3A,3B	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
FILE "I" L	SYS. DET. SØ2	SYS. DET. SØ4	NOT USED	NOT USED										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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
* SØ1	TB21-1,2	I1U	56	18	1	SYS					
* SØ2	TB23-1,2	I1L	47	9	22	SYS					
* SØ3	TB21-3,4	I2U	39	1	2	SYS					
* SØ4	TB23-3,4	I2L	43	5	12	SYS					
3A,3B	TB21-5,6	I3U	58	2Ø	3	3	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: I2L

FILE I
SLOT 2
LOWER

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. 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 1,5,7, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S3,S4,S6
PHASES USED.....2,3,4,6
OVERLAPS.....NONE

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.	NU	21,22	NU	31	32	41	42	NU	NU	61,62	NU	NU	NU	NU
RED		128		116	116	101	101			134				
YELLOW		129		117	117	102	102			135				
GREEN		130		118	118	103	103			136				
RED ARROW														
YELLOW ARROW														
GREEN ARROW				118		103								

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0248
DESIGNED: September 2008
SEALED: 12/15/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 70 Bus. - NC 111
(East Ash Street)
at
North Jefferson Avenue

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: JP
PREPARED BY: K. McDaniel | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.

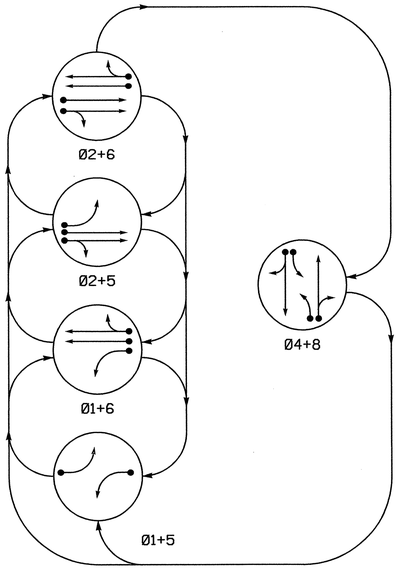
John T. Rowe Jr. 12-31-08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0248

29-DEC-2008 10:37
S:\#ITS\Signals\WorkGroups\Sig Mgmt\McDaniels\#Files2\71_04-0248_cat71-771\WO04248_sm_ele_xxx.dgn
smccarter

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 19

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R

SIGNAL FACE I.D.

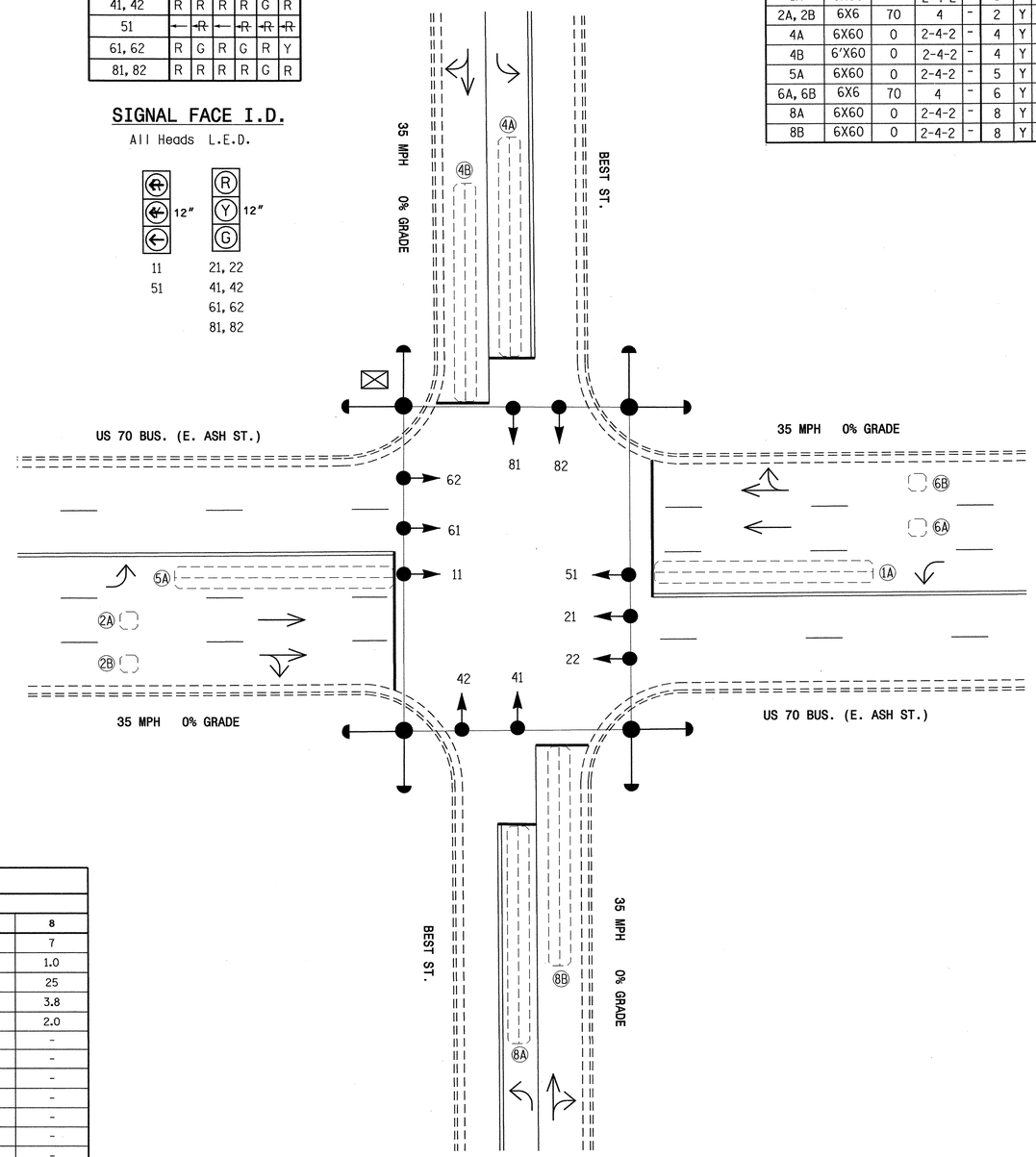
All Heads L.E.D.

11
51

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

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A, 2B	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6'X60	0	2-4-2	-	4	Y	Y	-	-	10	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	3	-	Y
6A, 6B	6X6	70	4	-	6	Y	Y	-	-	-	-	Y
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	3	-	Y
8B	6X60	0	2-4-2	-	8	Y	Y	-	-	10	-	Y



2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	10	7	7	10	7
Extension 1 *	1.0	3.0	1.0	1.0	3.0	1.0
Max Green 1 *	15	45	25	15	45	25
Yellow Clearance	3.0	3.8	3.8	3.0	3.8	3.8
Red Clearance	1.9	1.0	1.6	1.9	1.2	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	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.

5 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. ~~Closed loop system data~~: Controller Asset #0250.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 70 Bus. (Ash St.)
at
Best Street

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY:
PREPARED BY: L. Blount REVIEWED BY:

SCALE 0 20 1"=20'

REVISIONS	INIT.	DATE

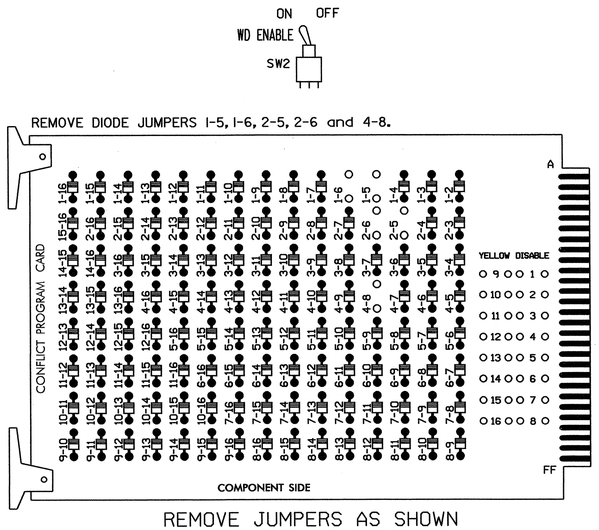
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL E. ALEXANDER
SIGNATURE DATE 12/5/08
SIG. INVENTORY NO. 04-0250

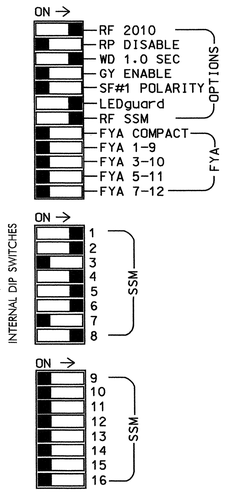
05-DEC-2008 11:10
s:##ts\signals##signal design sections\eastern regional\div-04\goldsboro city systems\signal designs\04-0250\04-0250H04-0250.dgn
jeffrey.lovett

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 20

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

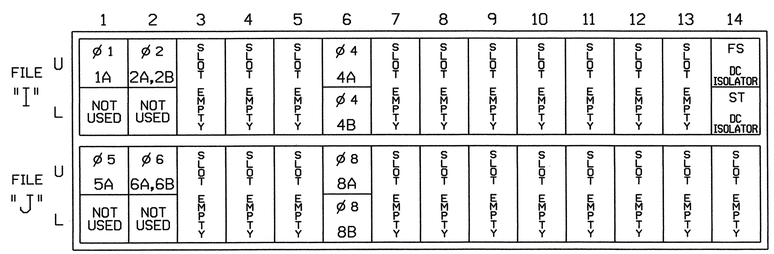
SIGNAL HEAD HOOK-UP CHART

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.	11	21,22	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132					
GREEN ARROW	127						133					

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

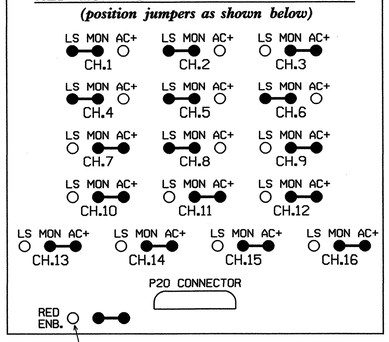
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A,6B	TB3-5,6	J2U	40	2	6	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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0250
DESIGNED: September 2008
SEALED: 12-05-08
REVISED: N/A

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Public Education and Safety Comes Passed
Department of Transportation
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 70 Bus. (Ash St.)
at
Best Street

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: XLGH
PREPARED BY: James Peterson REVIEWED BY:

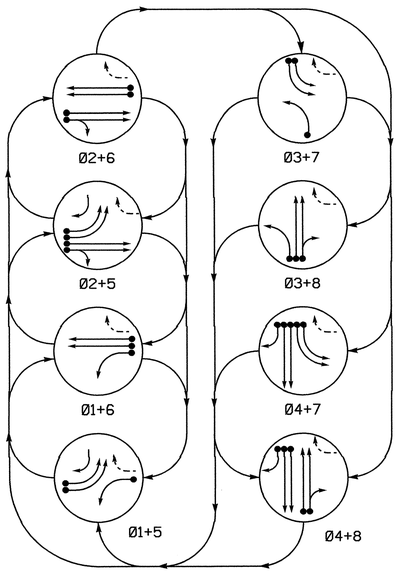
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 12-10-08 DATE
SIG. INVENTORY NO. 04-0250

09-DEC-2008 13:31
S:\Its Signals\workgroups\sig mon\petersonm\04250_smu\ele_xxx.dgn
jpeterson

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 21

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

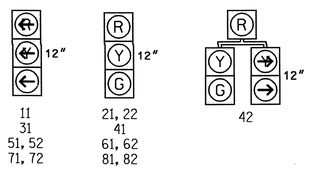
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41	R	R	R	R	R	R	G	G	R
42	R/→	R	R/→	R	R	R	G	G	R
51, 52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	Y
71, 72	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81, 82	R	R	R	R	R	G	R	G	R

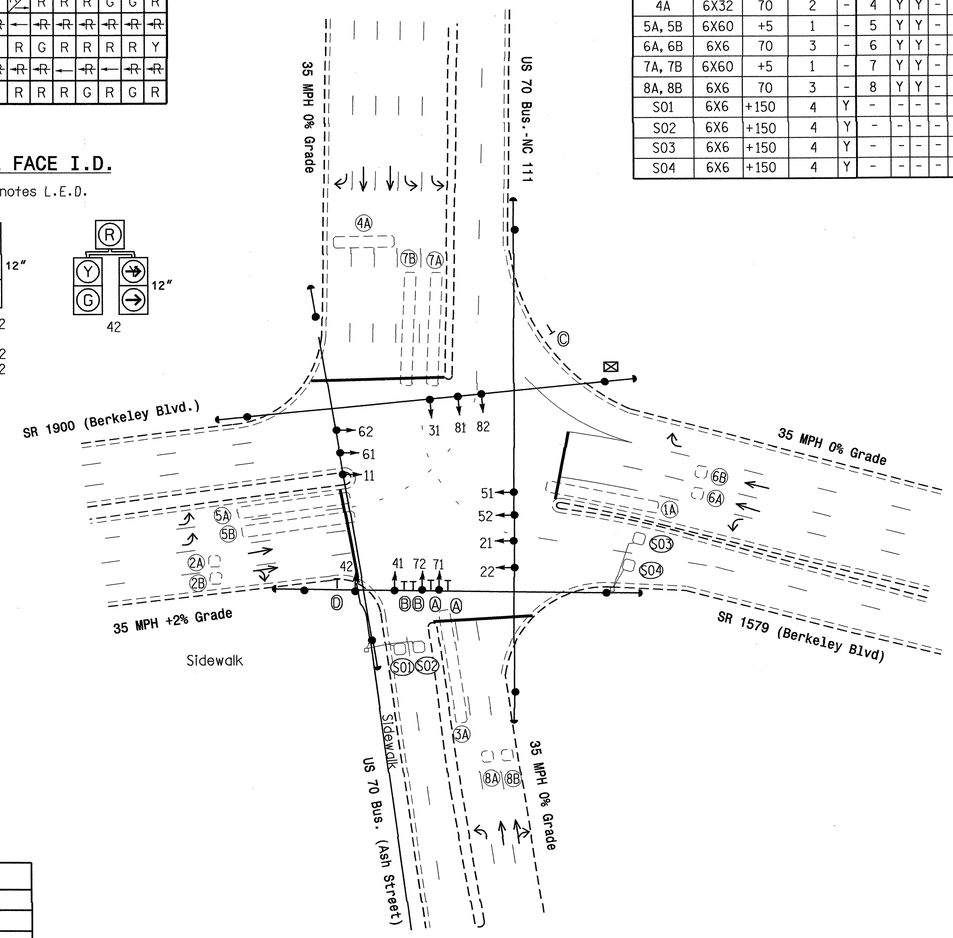
SIGNAL FACE I.D.

Denotes L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	1	-	1	Y	Y	-	-	-	-	Y
2A, 2B	6X6	70	3	-	2	Y	Y	-	-	-	-	Y
3A	6X60	+5	1	-	3	Y	Y	-	-	-	-	Y
4A	6X32	70	2	-	4	Y	Y	-	-	-	-	Y
5A, 5B	6X60	+5	1	-	5	Y	Y	-	-	-	-	Y
6A, 6B	6X6	70	3	-	6	Y	Y	-	-	-	-	Y
7A, 7B	6X60	+5	1	-	7	Y	Y	-	-	-	-	Y
8A, 8B	6X6	70	3	-	8	Y	Y	-	-	-	-	Y
S01	6X6	+150	4	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+150	4	Y	-	-	-	-	-	-	Y	Y
S03	6X6	+150	4	Y	-	-	-	-	-	-	Y	Y
S04	6X6	+150	4	Y	-	-	-	-	-	-	Y	Y

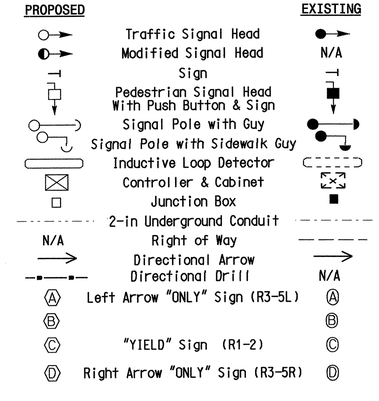


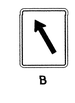
8 Phase Fully Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Remove existing "Right Turn Signal" sign-(R10-10R).
9. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #0251.

LEGEND





2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max Green 1 *	25	40	20	30	25	40	20	30
Yellow Clearance	3.0	3.8	3.0	3.8	3.0	3.9	3.0	4.0
Red Clearance	3.1	1.7	3.3	2.1	3.1	2.3	3.3	2.1
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	-	YELLOW	-	YELLOW
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1579/SR 1900 (Berkeley Blvd.) at US 70 Bus. (Ash Street)

Division 4 Wayne County Goldsboro

PLAN DATE:	October 2008	REVIEWED BY:	Larry Blount
PREPARED BY:	AB Hambright	REVIEWED BY:	

SCALE 1"=40' (0 – 40)

REVISIONS	INIT.	DATE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 25489 ENGINEER PAUL E. ALEXANDER

SIGNATURE DATE 1/13/09

SIG. INVENTORY NO. 04-0251

13-JAN-2009 14:22
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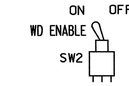
carylblount

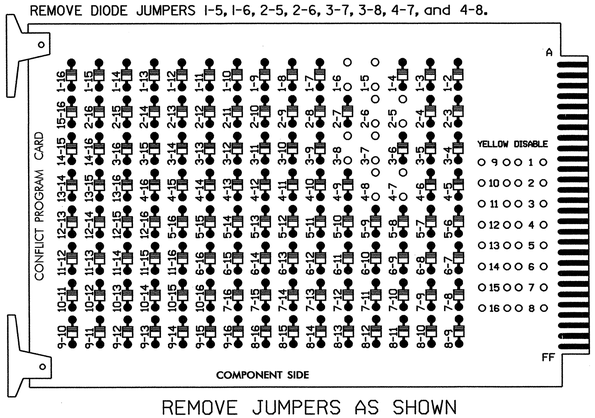
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 22

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

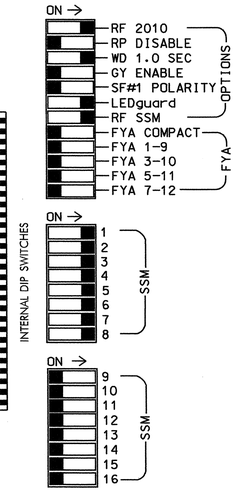
(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 2-5, 2-6, 3-7, 3-8, 4-7, 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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAPS.....NONE

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.	11	21,22	NU	31	41,42	NU	42	51,52	61,62	NU	71,72	81,82	NU
RED		128			101				134			107	
YELLOW		129			102				135			108	
GREEN		130			103				136			109	
RED ARROW	125			116				131			122		
YELLOW ARROW	126			117			132	132			123		
GREEN ARROW	127			118			133	133			124		
✋													
🚶													

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	Ø 1 1A	SLOT	SLOT	SLOT	Ø 3 3A	SLOT	SLOT	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	EMPTY	Ø 2 2A,2B	EMPTY	EMPTY	EMPTY	Ø 4 4A	EMPTY	EMPTY	SYS. DET. SØ2	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	SLOT	Ø 5 5A,5B	SLOT	SLOT	SLOT	Ø 7 7A,7B	SLOT	SLOT	SYS. DET. SØ3	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	Ø 6 6A,6B	EMPTY	EMPTY	EMPTY	Ø 8 8A,8B	EMPTY	EMPTY	SYS. DET. SØ4	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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	TB2-5,6	I2U	39	1	2	1	Y	Y			
2A,2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-9,10	I6U	41	3	4	3	Y	Y			
4A	TB4-11,12	I6L	45	7	14	4	Y	Y			
5A,5B	TB3-5,6	J2U	40	2	6	5	Y	Y			
6A,6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A,7B	TB5-9,10	J6U	42	4	8	7	Y	Y			
8A,8B	TB5-11,12	J6L	46	8	18	8	Y	Y			
✱SØ1	TB6-9,10	I9U	60	22	11	SYS					
✱SØ2	TB6-11,12	I9L	62	24	13	SYS					
✱SØ3	TB7-9,10	J9U	59	21	15	SYS					
✱SØ4	TB7-11,12	J9L	61	23	17	SYS					

✱ SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: Ø4-0251
DESIGNED: October 2008
SEALED: Ø1-13-Ø9
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1579/SR 1900 (Berkeley Blvd.)
at
US 70 Bus. (Ash Street)

Division 04 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY: T. Jgu
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/15/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0251

14-JAN-2009 08:26
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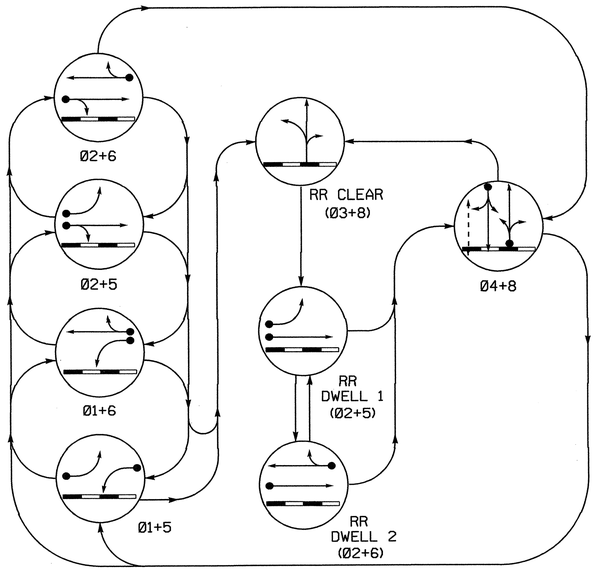
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 23

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

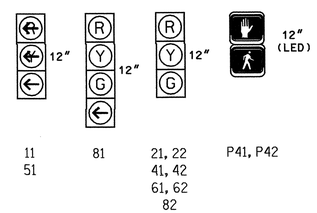
SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+8	RR CLEAR	RR DWELL 1	RR DWELL 2	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	G	G	Y
41,42	R	R	R	R	G	R	R	R	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	←	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	G	Y
81	R	R	R	R	G	G ←	R	R	R
82	R	R	R	R	G	G	R	R	R
P41, P42	DW	DW	DW	DW	W	DW	DW	DW	DRK
Sign "A"	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	*

*See note 9

W-Walk
DW-Don't Walk
DRK-Dark

SIGNAL FACE I.D.

All heads L.E.D.



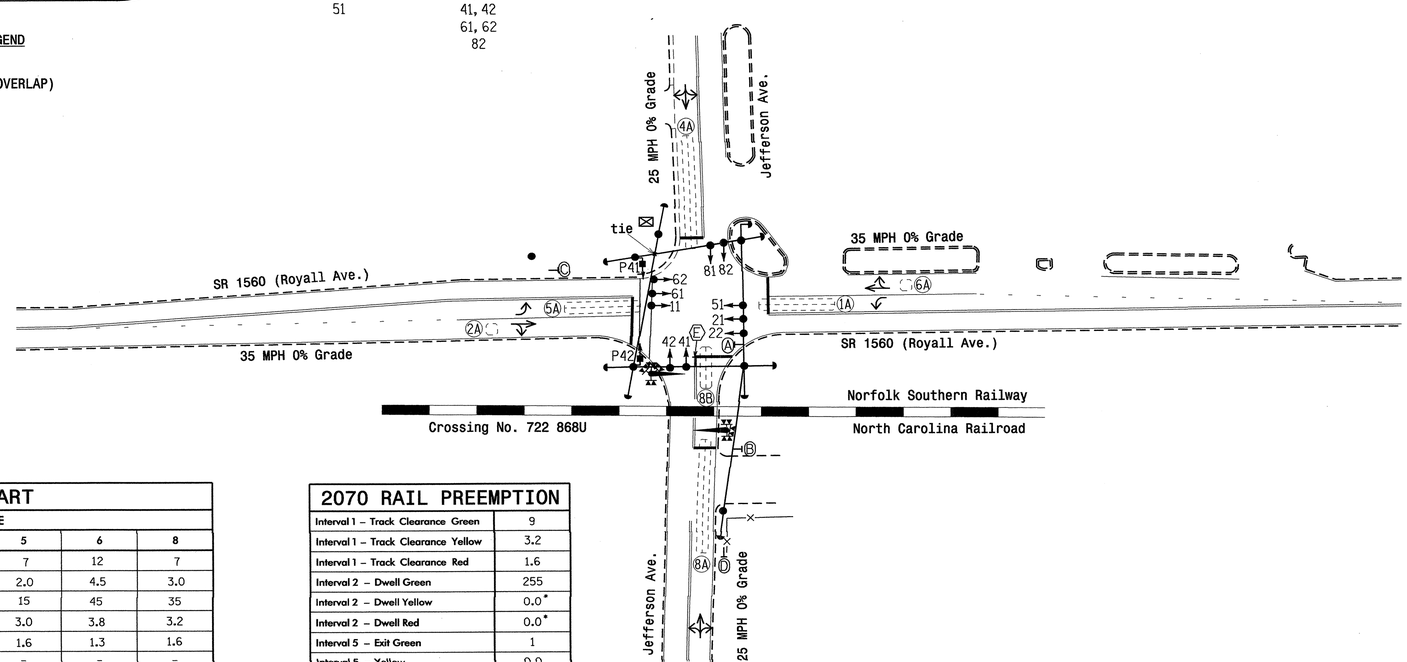
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	+5	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	10	-	Y
5A	6X40	+5	2-4-2	-	5	Y	Y	-	-	3	-	Y
6A	6X6	70	4	-	6	Y	Y	-	-	-	-	Y
8A	6X60	+5	2-4-2	-	8	Y	Y	-	-	10	-	Y
8B	6X20	+5	2-4-2	-	8	Y	Y	-	-	10	-	Y

5 Phase
Fully Actuated w/RR Preemption
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Phase 1 or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
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. Pavement markings are existing.
9. Ensure flashing operation does not alter operation of blankout signs.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #0265.
12. Program Parent phases for overlap "P" for all phases used in normal operation.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
N/A	Railroad Tracks	
N/A	Rail Road Gate With Flashers	
Ⓐ	"NO RIGHT TURN - TRAIN" Fiber Optic Blankout Sign	Ⓐ
Ⓑ	"STOP" Sign (R1-1)	Ⓑ
Ⓒ	Pedestrian Crossing Sign W/ Flashers	Ⓒ
Ⓓ	"DO NOT STOP ON TRACKS" Sign (R8-8)	Ⓓ
Ⓔ	"ONCOMING TRAFFIC MAY HAVE EXTENDED GREEN" Sign (W25-2)	Ⓔ

2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	4.5	3.0	2.0	4.5	3.0
Max Green 1 *	15	45	35	15	45	35
Yellow Clearance	3.0	3.8	3.2	3.0	3.8	3.2
Red Clearance	1.6	1.0	1.5	1.6	1.3	1.6
Walk 1 *	-	-	7.0	-	-	-
Don't Walk 1	-	-	7.0	-	-	-
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	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.

2070 RAIL PREEMPTION

Interval 1 – Track Clearance Green	9
Interval 1 – Track Clearance Yellow	3.2
Interval 1 – Track Clearance Red	1.6
Interval 2 – Dwell Green	255
Interval 2 – Dwell Yellow	0.0*
Interval 2 – Dwell Red	0.0*
Interval 5 – Exit Green	1
Interval 5 – Yellow	0.0
Interval 5 – Red	0.0
Delay Time	0
Min Green Before Pre	1
Ped Clear Before Pre	1
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
Dwell Min Time	7
Ped Clear Through Yellow	Y
Omit Overlaps	P

* Time defaults to time used for phase during normal operation.

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SR 1560 (Royall Avenue) at Jefferson Avenue

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY: PL Alexander, PE

PREPARED BY: AB Hambright/Emm REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE 0 40 1"=40'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
SIGNATURE 1/22/09 DATE
SIG. INVENTORY NO. 04-0265

22-JAN-2009 11:26
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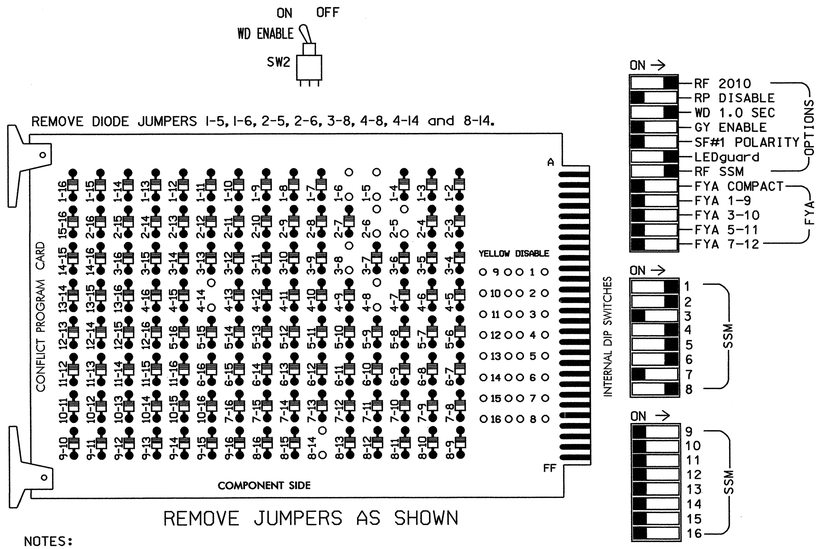
tarryblount

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 24

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 3,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Program phases 2 and 6, on the controller unit, for Yellow Flash.
5. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
6. Program phases 4 and 8, on the controller unit, for Dual Entry.
7. Program phase 4 for 'STARTUP PED CALL'.
8. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS 3.02.20
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S4P,S5,S6,S8
PHASES USED.....1,2,*3,4,4 PED,5,6,8
OVERLAP P.....1+2+4+5+6+8

*USED ONLY DURING RR PREEMPTION

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.	11	21,22	NU	81	41,42	P41, P42	51	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129		*	102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132					
GREEN ARROW	127			118			133					
✋						104						
🚶						106						

NU = Not Used

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

PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 3 for 'Omit Phase' and Phases 1, 2, 4, 5, 6 and 8 for 'Startup Calls'. This is to prevent Phase 3 from being served when not in Preempt.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	NOT USED	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED				NOT USED						Ø4 PED DC ISOLATOR		ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	PRE1 AC ISOLATOR
	L	NOT USED	NOT USED				Ø8 8B								NOT USED

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOT I12.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

OVERLAP 'P' PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press '8' (Overlaps), then '1' (Vehicle Overlap Settings).

PRESS '-' ONCE

```
 PAGE 1: VEHICLE OVERLAP 'P' SETTINGS
 PHASE:          ;123456789101112131415 16
VEH OVL PARENTS:;XX XXX X
VEH OVL NOT VEH:;
VEH OVL NOT PED:;
VEH OVL GRN EXT:;
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

The utilization of overlap P ensures consistent clearance timing during transition to preemption

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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

PHASE 3 YELLOW FIELD TERMINAL (117)

AC-

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0265
DESIGNED: October 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1560 (Royall Avenue) at Jefferson Avenue

Division 4 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY: T. Jyg
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 1/27/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0265

23-JAN-2009 10:27
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cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 25

RAILROAD PREEMPTION PROGRAMMING DETAIL

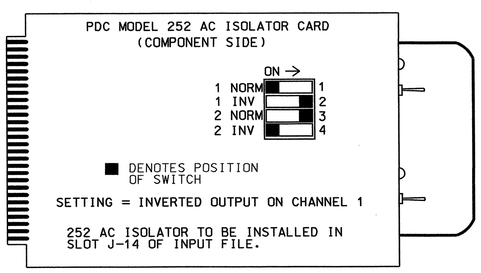
(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions).

```
   PREEMPTION  #1  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1   9  3.2  1.6 ¦  X   X
2 255  0.0  0.0 ¦ X  XX
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   1  0.0  0.0 ¦    X   X
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............HIGH
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....1
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......Y
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦               X
```

PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)

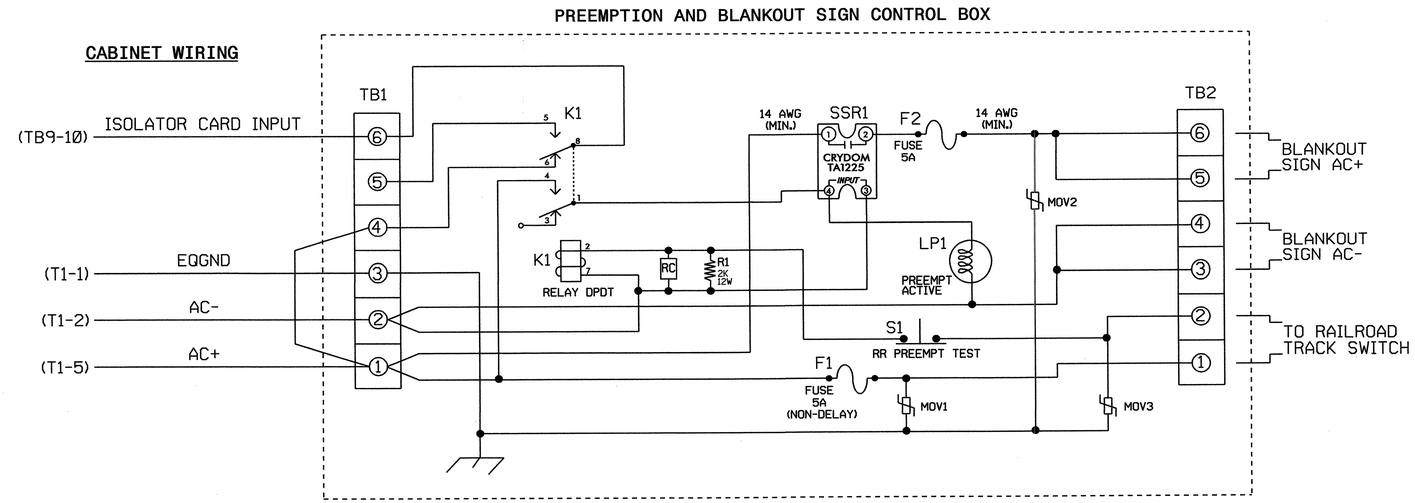


NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

RAILROAD PREEMPTION WIRING DETAIL

(wire as shown below)

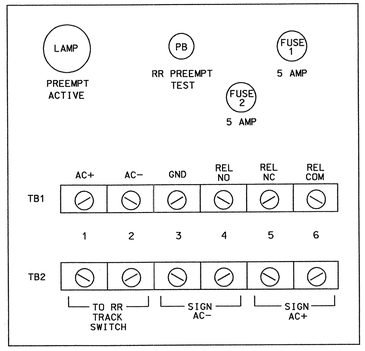
CABINET WIRING



NOTES

1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay K1 is a DPDT with 120VAC coil. Potter & Brumfield KRP11AG with octal base or approved equivalent.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output. Crydom TA1225 or approved equivalent.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
5. Resistor is valued at 2K ohm, 12 watt. Clarostat part no. VPR10F-2K or approved equivalent.
6. RC network is valued at .1 microfarad, 100 ohm.
7. If replacement movs are needed, GE part no. V150LA20A may be used.
8. Preemption and Blankout Sign Control Box is a Control Technologies part no. 2299-101 or approved equivalent.
9. IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0265
DESIGNED: October 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1560 (Royall Avenue)
at
Jefferson Avenue

Division 4 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/27/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0265

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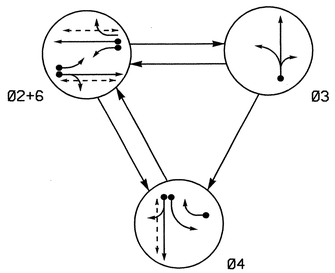
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 26

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

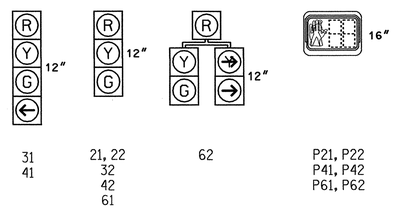
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø3	PHASE Ø4	FLASH
21, 22	G	R	R	Y
31	R	G ←	R	R
32	R	G	R	R
41	R	R	G ←	R
42	R	R	G	R
61	G	R	R	Y
62	G	R	R ↗	Y
P21, P22	W	DW	DW	DRK
P41, P42	DW	DW	W	DRK
P61, P62	W	DW	DW	DRK

W–Walk
DW–Don't Walk
DRK– Dark

SIGNAL FACE I.D.

All Heads L.E.D.



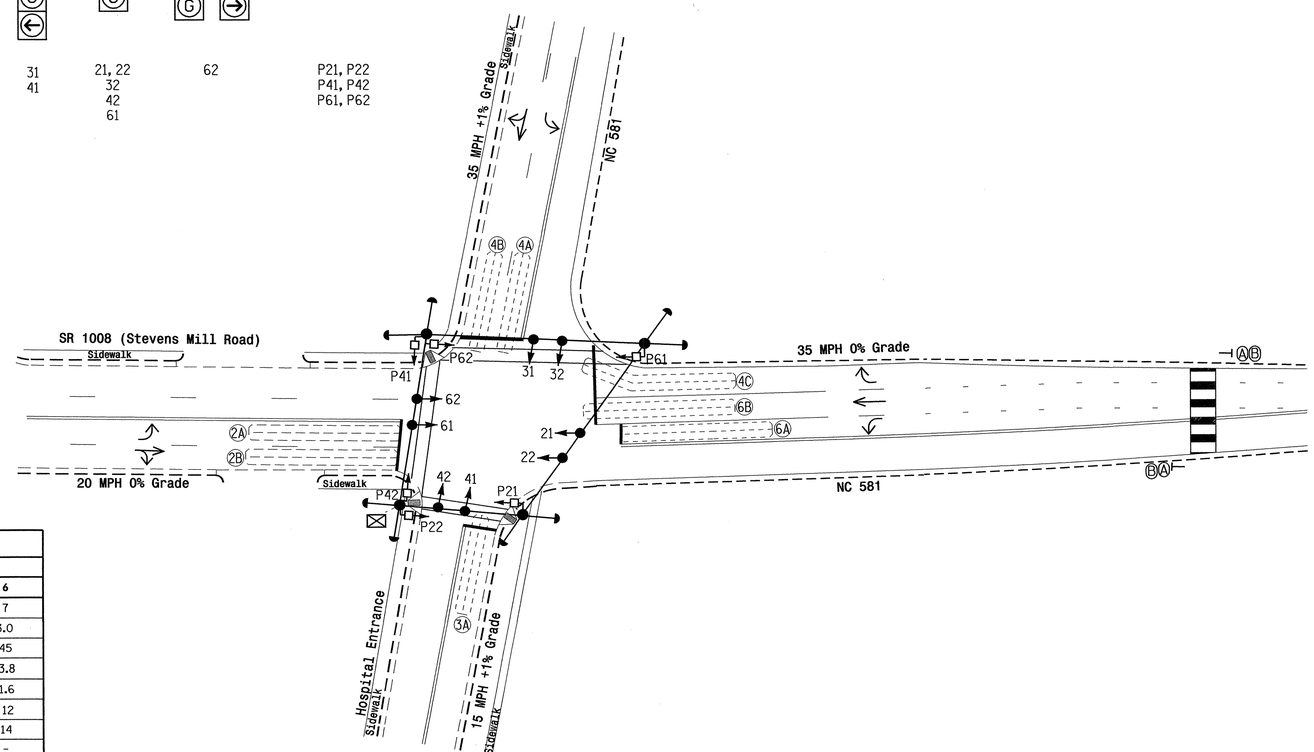
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X60	0	2-4-2	-	2	Y	Y	-	-	-	-	Y
2B	6X60	0	2-4-2	-	2	Y	Y	-	-	-	-	Y
3A	6X40	+5	2-4-2	-	3	Y	Y	-	-	5	-	Y
4A	6X40	+5	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X40	+5	2-4-2	-	4	Y	Y	-	-	10	-	Y
4C	6X60	+5	2-4-2	-	4	Y	Y	-	-	-	-	Y
6A	6X60	0	2-4-2	-	6	Y	Y	-	-	-	-	Y
6B	6X60	+5	2-4-2	-	6	Y	Y	-	-	-	-	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
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. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #0270.



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 3	PHASE 4	PHASE 6
Min Green 1 *	7	7	7	7
Extension 1 *	3.0	0	2.0	3.0
Max Green 1 *	45	25	35	45
Yellow Clearance	3.0	3.0	3.8	3.8
Red Clearance	2.0	3.1	1.3	1.6
Walk 1 *	12	-	12	12
Don't Walk 1	6	-	9	14
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	-	-	-	-
Simultaneous Gap	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.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
N/A	Wheel Chair Ramp	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
A	"Pedestrian Crossing" Sign (W11-2)	A
B	"Left Diagonal Arrow Plaque" Sign (W16-7PL)	B

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

NC 581 at SR 1008 (Stevens Mill Road)/ Hospital Entrance

Division 04 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: EM Minshew
PREPARED BY: A Hambright/Emm REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
SIGNATURE 1/6/09 DATE
SIG. INVENTORY NO. 04-0270

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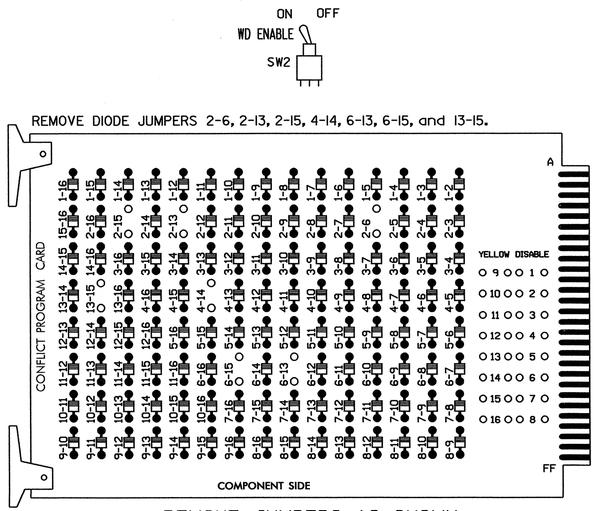
smminshew

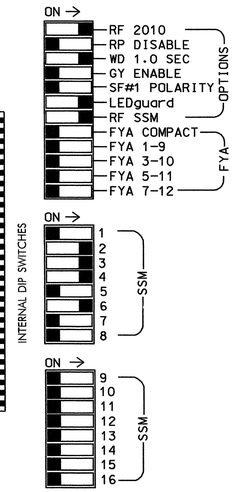
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 27

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,5, 7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2, 4, and 6 for 'STARTUP PED CALL'.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S2P,S3,S4,S4P,S6,S6P
PHASES USED.....2,2 PED,3,4,4 PED,6,6 PED
OVERLAPS.....NONE

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.	NU	21,22	P21, P22	31	32	41	42	62	P41, P42	NU	61,62	P61, P62	NU	NU	NU
RED		128		116	116	101	101				134				
YELLOW		129		117	117	102	102				135				
GREEN		130		118	118	103	103				136				
RED ARROW															
YELLOW ARROW								102							
GREEN ARROW				118		103		103							
✋			113						104			119			
🚶			115						106			121			

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	SLOT EMPTY	Ø3 3A	Ø4 4A	Ø4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
	L		Ø2 2B			NOT USED	Ø4 4B	NOT USED					Ø4 PED DC ISOLATOR	NOT USED	ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø6 6B												

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			5
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-0270
DESIGNED: November 2008
SEALED: 01-06-09
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 581 at SR 1008 (Stevens Mill Road)/ Hospital Entrance

Division 04 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY: T. Jogu
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/13/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0270

07-JAN-2009 10:49
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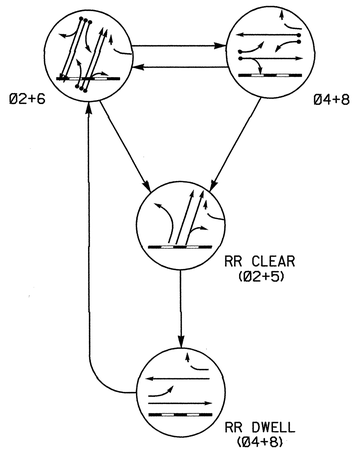
sarmstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.28

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

2070 RAIL PREEMPTION

Interval 1 – Track Clearance Green	10
Interval 1 – Track Clearance Yellow	3.8
Interval 1 – Track Clearance Red	2.1
Interval 2 – Dwell Green	255
Interval 2 – Dwell Yellow	0.0*
Interval 2 – Dwell Red	0.0*
Interval 5 – Exit Green	1
Interval 5 – Yellow	0.0
Interval 5 – Red	0.0
Delay Time	0
Min Green Before Pre	1
Ped Clear Before Pre	0
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
Dwell Min Time	7
Ped Clear Through Yellow	N
Omit Overlaps	P

* Time defaults to time used for phase during normal operation.

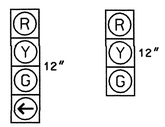
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	Ø4+8	CLEARANCE	DWELL	FLASH
21	G	R	G	R	Y
22	G	R	G	R	Y
41,42	R	G	R	G	R
61,62	G	R	R	R	Y
81,82	R	G	R	G	R
SIGNS A,B	OFF	OFF	ON	ON	*

* See note #5

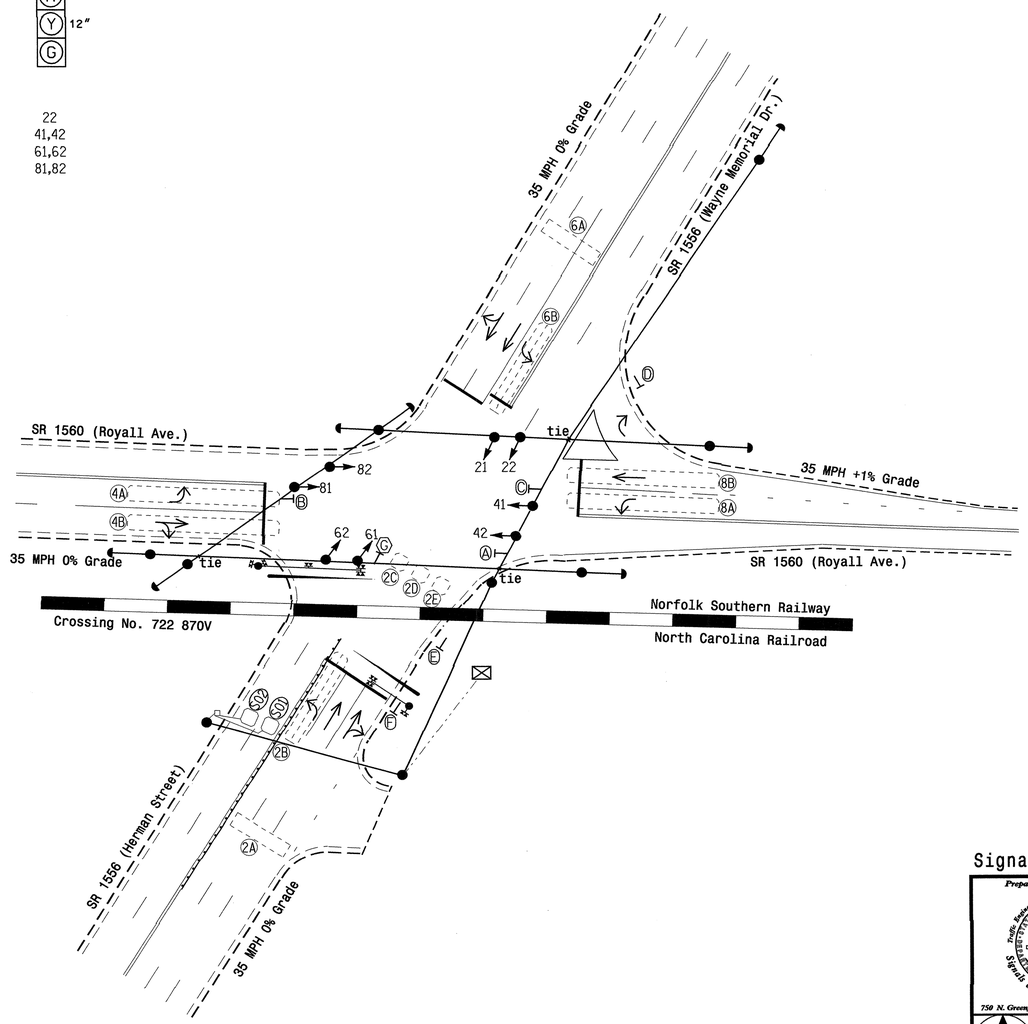
SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X26	70	2	-	2	Y	Y	-	-	-	-	Y
2B	6X40	+5	2-4-2	-	2	Y	Y	-	-	-	-	Y
2C	6X6	+22	5	-	2	Y	Y	-	-	-	-	Y
2D,2E	6X6	+22	5	-	2	Y	Y	-	-	-	-	Y
4A	6X60	+5	1	-	4	Y	Y	-	-	2	-	Y
4B	6X60	+5	1	-	4	Y	Y	-	-	5	-	Y
6A	6X26	70	2	-	6	Y	Y	-	-	-	-	Y
6B	6X40	+5	2-4-2	-	6	Y	Y	-	-	-	-	Y
8A	6X60	+5	1	-	8	Y	Y	-	-	2	-	Y
8B	6X60	+5	1	-	8	Y	Y	-	-	2	-	Y
S01	6X6	+160±	4	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+160±	4	Y	-	-	-	-	-	-	Y	Y



2070L TIMING CHART

FEATURE	PHASE 2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	4.0	2.0	4.0	2.0
Max Green 1 *	40	35	40	35
Yellow Clearance	3.8	3.8	3.8	3.8
Red Clearance	2.1	2.0	1.5	2.3
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

* 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.

2 Phase
Fully Actuated
W/Railroad Preempt
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Set all detector units to presence mode.
4. Pavement markings are existing.
5. Ensure flashing operation does not alter operation of blankout signs.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset #0277.
8. Program Parent phases for overlap "P" for all phases used in normal operation.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
N/A	Railroad Cantilever	
N/A	Railroad Gate and Flasher	
N/A	Railroad Tracks	
A	"NO RIGHT TURN – TRAIN" Fiber Optic Blankout Sign	A
B	"NO LEFT TURN – TRAIN" Fiber Optic Blankout Sign	B
C	Left Arrow "ONLY" Sign (R3-5L)	C
D	"YIELD" Sign (R1-2)	D
E	"DO NOT STOP ON TRACKS" Sign (R8-8)	E
F	"STOP HERE ON RED" Sign (R10-6)	F
G	"ONCOMING TRAFFIC MAY HAVE EXTENDED GREEN" Sign (W25-2)	G

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1556 (Wayne Memorial Drive/ Herman Street) at SR 1560 (Royall Avenue)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: PL Alexander, PE

PREPARED BY: AB Hambright/Emm REVIEWED BY:

SCALE 1"=30' (0 – 30)

REVISIONS	INIT.	DATE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA L. ALEXANDER

SIGNATURE 1/22/09 DATE

SIG. INVENTORY NO. 04-0277

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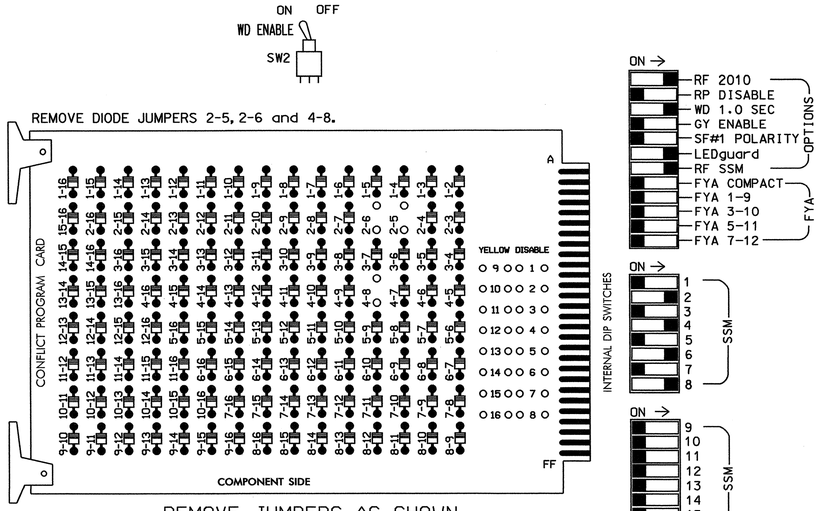
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 29

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Program phases 2 and 6, on the controller unit, for Yellow Flash.
5. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
6. Program phases 4 and 8, on the controller unit, for Dual Entry.
7. The cabinet and controller are part of the Goldsboro City 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.	NU	21,22	NU	NU	41,42	NU	21	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							133					

NU = Not Used

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

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS 3.02.20
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S5,S6,S8
PHASES USED.....2,4,*5,6,8
OVERLAP P.....2+4+6+8

*USED ONLY DURING RR PREEMPTION

PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 5 for 'Omit Phase' and Phases 2, 4, 6, and 8 for 'Startup Calls'. This is to prevent Phase 5 from being served when not in Preempt.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø2 2A	Ø2 2C	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		Ø2 2B	Ø2 2D,2E			Ø4 4B			SYS. DET. SØ2					ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	PRE1 AC ISOLATOR
	L		Ø6 6B				Ø8 8B								NOT USED

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
2D,2E	TB2-11,12	I3L	76	38	42	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			2
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			5
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			2
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			2
* SØ1	TB6-9,10	I9U	60	22	11	SYS					
* SØ2	TB6-11,12	I9L	62	24	13	SYS					

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

OVERLAP 'P' PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press '8' (Overlaps), then '1' (Vehicle Overlap Settings).

PRESS '-' ONCE

```
PAGE 1: VEHICLE OVERLAP 'P' SETTINGS
PHASE:          :123456789101112131415 16
VEH OVL PARENTS:: X X X X
VEH OVL NOT VEH::
VEH OVL NOT PED::
VEH OVL GRN EXT::
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

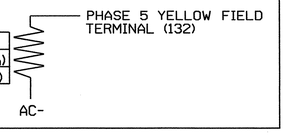
OVERLAP PROGRAMMING COMPLETE

The utilization of overlap P ensures consistent clearance timing during transition to preemption

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0277
DESIGNED: September 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1556 (Wayne Memorial Drive/ Herman Street) at SR 1560 (Royall Avenue)

Division 4 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY:
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/29/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0277

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PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 30

RAILROAD PREEMPTION PROGRAMMING DETAIL

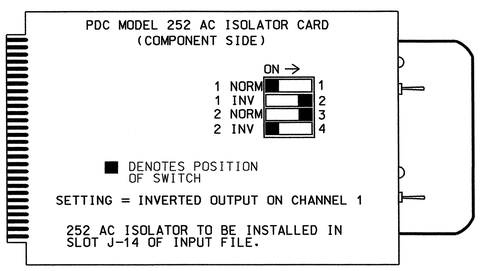
(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions).

```
   PREEMPTION  #1  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1  10  3.8  2.1 ¦ X  X
2 255  0.0  0.0 ¦   X   X
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   1  0.0  0.0 ¦ X   X
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............HIGH
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦                X
```

PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)

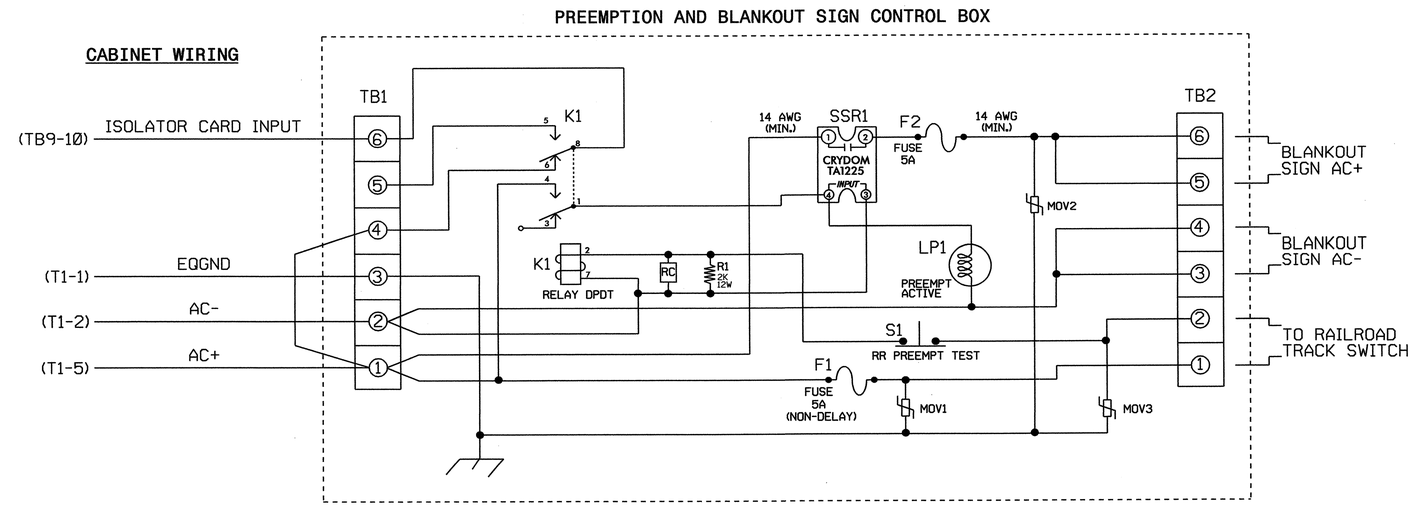


NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

RAILROAD PREEMPTION WIRING DETAIL

(wire as shown below)

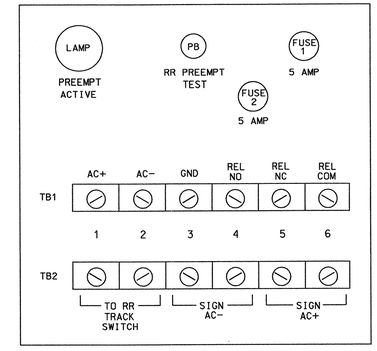
CABINET WIRING



NOTES

1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay K1 is a DPDT with 120VAC coil. Potter & Brumfield KRP11AG with octal base or approved equivalent.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output. Crydom TA1225 or approved equivalent.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
5. Resistor is valued at 2K ohm, 12 watt. Clarostat part no. VPR10F-2K or approved equivalent.
6. RC network is valued at .1 microfarad, 100 ohm.
7. If replacement movs are needed, GE part no. V150LA20A may be used.
8. Preemption and Blankout Sign Control Box is a Control Technologies part no. 2299-101 or approved equivalent.
9. IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0277
DESIGNED: September 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1556 (Wayne Memorial Drive/ Herman Street) at SR 1560 (Royall Avenue)

Division 4 Wayne County Goldsboro

PLAN DATE: January 2009 REVIEWED BY: T. Jap

PREPARED BY: C. strickland REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/29/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0277

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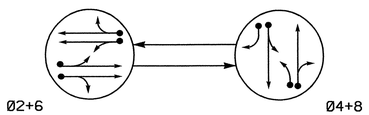
cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

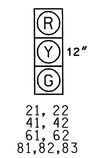
SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81,82,83	R	G	R

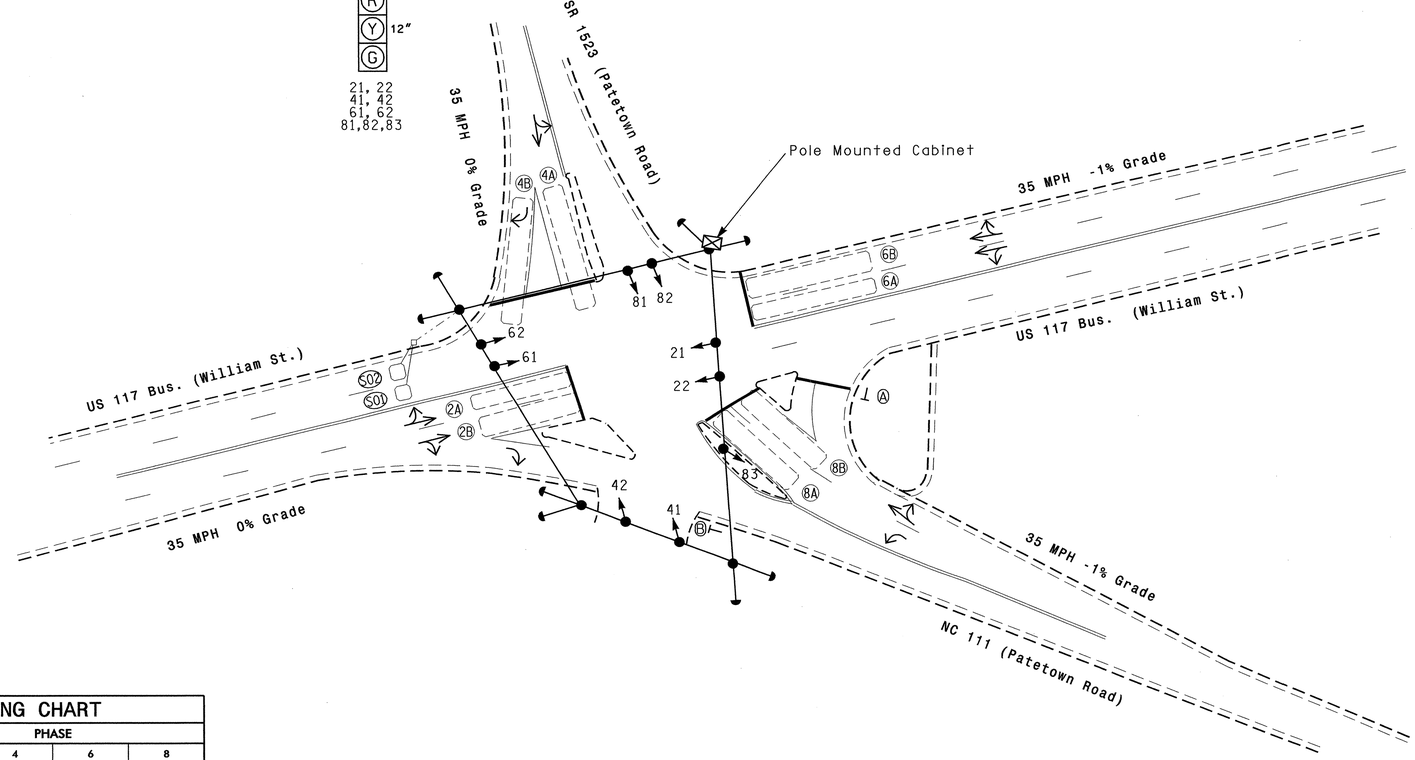
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A, 2B	6X40	0	Existing	-	2	Y	Y	-	-	-	-	Y
4A, 4B	8X50	0	Existing	-	4	Y	Y	-	-	-	-	Y
6A	6X50	0	Existing	-	6	Y	Y	-	-	-	-	Y
6B	8X50	0	Existing	-	6	Y	Y	-	-	-	-	Y
8A	8X50	0	Existing	-	8	Y	Y	-	-	-	-	Y
8B	8X50	0	Existing	-	8	Y	Y	-	-	-	-	Y
S01	6X6	+140±	3	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+140±	3	Y	-	-	-	-	-	-	Y	Y

SIGNAL FACE I.D.

All Heads L.E.D.





2 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0280.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"STOP" Sign (R1-1)	Ⓐ
Ⓑ	"YIELD" Sign (R1-2)	Ⓑ

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	2.0	3.0	2.0	3.0
Max Green 1 *	30	25	30	25
Yellow Clearance	3.8	3.8	3.9	3.9
Red Clearance	1.3	1.5	2.0	1.8
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	-	-	-	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 30 1"=30'

US 117 Bus.-NC 111 (William St.)
at
NC 111/SR 1523 (Patetown Rd.)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY:
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

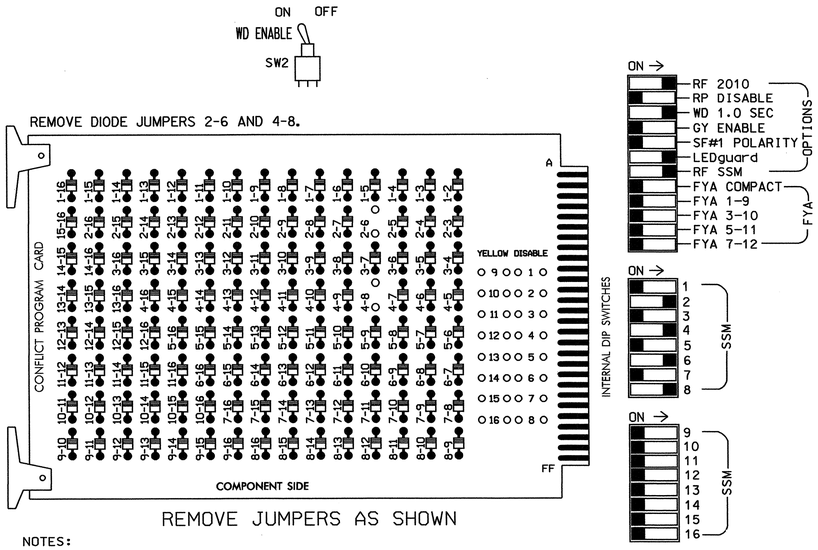
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
SIGNATURE 12/19/08 DATE
SIG. INVENTORY NO. 04-0280

19-DEC-2008 12:45
s:\its signals\signal design sections\eastern regions\div-04\goldsboro city systems\signal designs\04-0280\04-0280.dgn
palexander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.32

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SYS. DET. SØ1	Ø2 2A,2B	SLOT	Ø4 4A,4B	SLOT	Ø6 6A	SLOT	Ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
L	SYS. DET. SØ2	NOT USED	EMPTY	NOT USED	EMPTY	Ø6 6B	EMPTY	Ø8 8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
* SØ1	TB21-1,2	I1U	56	18	1	SYS					
* SØ2	TB23-1,2	I1L	47	9	22	SYS					
2A,2B	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A,4B	TB21-7,8	I4U	41	3	4	4	Y	Y			
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82,83	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0280
DESIGNED: September 2008
SEALED: 12/19/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 117 Bus. - NC 111 (William St.)
at
NC 111/SR 1523 (Patetown Rd.)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: OTP
PREPARED BY: K. McDaniel REVIEWED BY:

REVISIONS INIT. DATE

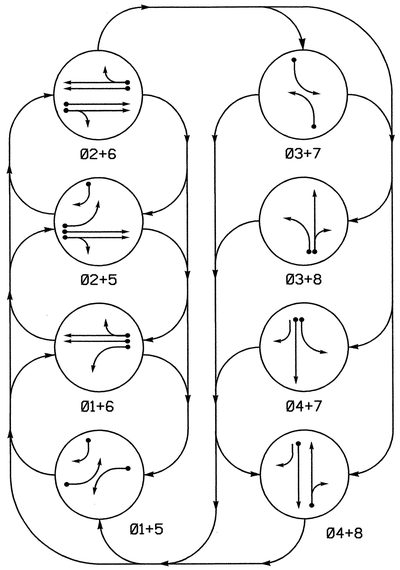
Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE DATE 1-20-09
SIG. INVENTORY NO. 04-0280

12-JAN-2009 15:03
S:*ATS Signal*Workgroups*Sig Mgmt*McDaniels*Files2*80_04-0280(79-86)*040280_sm_ele_xxx.dgn
kmcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 33

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41	R	R	R	R	R	R	G	G	R
42	R/→	R	R/→	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	R	Y
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81,82	R	R	R	R	R	G	R	G	R

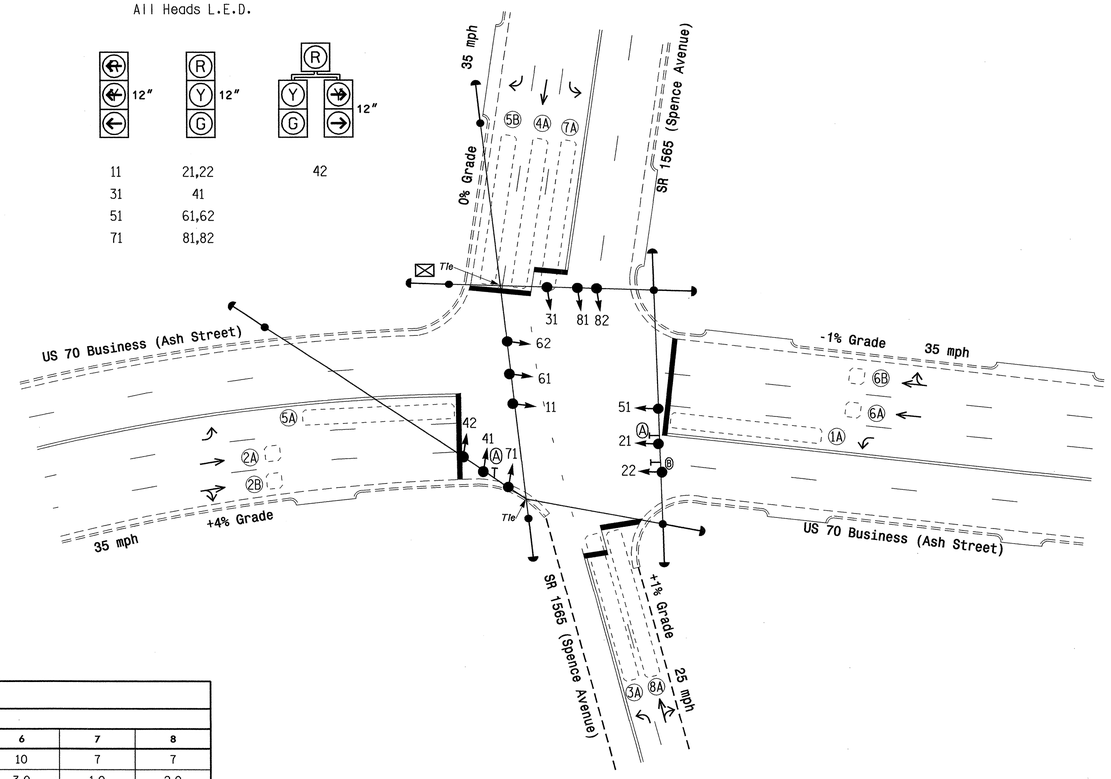
SIGNAL FACE I.D.

All Heads L.E.D.

11	21,22	42
31	41	
51	61,62	
71	81,82	

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	1	-	1	Y	Y	-	-	-	-	Y
2A, 2B	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
3A	6X60	+5	1	-	3	Y	Y	-	-	-	-	Y
4A	6X60	0	1	-	4	Y	Y	-	-	-	-	Y
5A	6X60	0	1	-	5	Y	Y	-	-	-	-	Y
5B	6X60	0	1	-	5	Y	Y	-	-	15	-	Y
6A, 6B	6X6	70	4	-	6	Y	Y	-	-	-	-	Y
7A	6X60	+5	1	-	7	Y	Y	-	-	-	-	Y
8A	6X60	0	1	-	8	Y	Y	-	-	10	-	Y



8 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. ~~Closed loop system data:~~ Controller Asset #0359.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Through Arrow "ONLY" Sign (R3-5A)	Ⓐ
Ⓑ	Combined Through and Right Arrow Sign (R3-6R)	Ⓑ

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	10	7	7	7	10	7	7
Extension 1 *	1.0	3.0	1.0	2.0	2.0	3.0	1.0	2.0
Max Green 1 *	15	60	15	30	35	60	15	30
Yellow Clearance	3.0	3.6	3.0	3.8	3.0	3.9	3.0	3.1
Red Clearance	1.8	1.2	3.1	1.5	2.1	1.7	2.4	2.2
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	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

US 70 Business (Ash Street)
at
SR 1565 (Spence Avenue)

Division 4 Wayne County Goldsboro

PLAN DATE:	October 2008	REVIEWED BY:	L. Blount
PREPARED BY:	AB Hambright	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
12/5/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0359

05-DEC-2008 10:41
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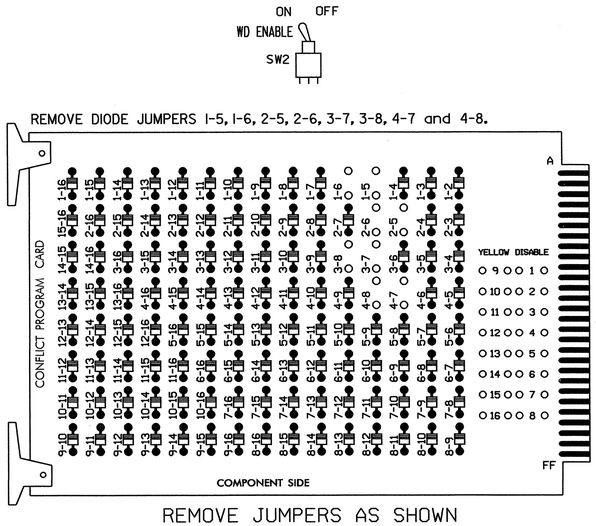
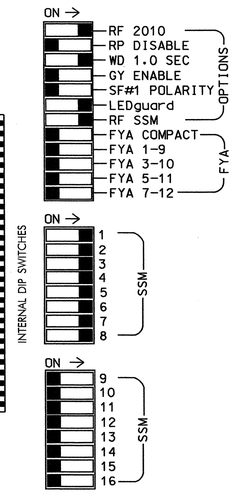
larryblount

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.34

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAPS.....NONE

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.	11	21,22	NU	31	41,42	NU	42	51	61,62	NU	71	81,82	NU
RED		128			101				134			107	
YELLOW		129			102				135			108	
GREEN		130			103				136			109	
RED ARROW	125			116				131			122		
YELLOW ARROW	126			117			132	132			123		
GREEN ARROW	127			118			133	133			124		

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1	Ø2	SLOT	SLOT	Ø3	Ø4	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS
		1A	2A,2B	EMPTY	EMPTY	3A	4A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	DC ISOLATOR
	L	NOT USED	NOT USED			NOT USED	NOT USED								ST
															DC ISOLATOR
FILE "J"	U	SLOT	Ø5	Ø6	SLOT	Ø7	Ø8	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
		EMPTY	5A	6A,6B	EMPTY	7A	8A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
	L		Ø5 5B	NOT USED		NOT USED	NOT USED								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

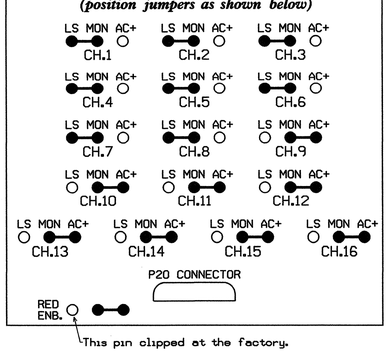
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			15
6A,6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0359
DESIGNED: October 2008
SEALED: 12-05-08
REVISED: N/A

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



This pin clipped at the factory.

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 70 Business (Ash Street) at SR 1565 (Spence Avenue)

Division 4 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY: YWA
PREPARED BY: James Peterson REVIEWED BY:

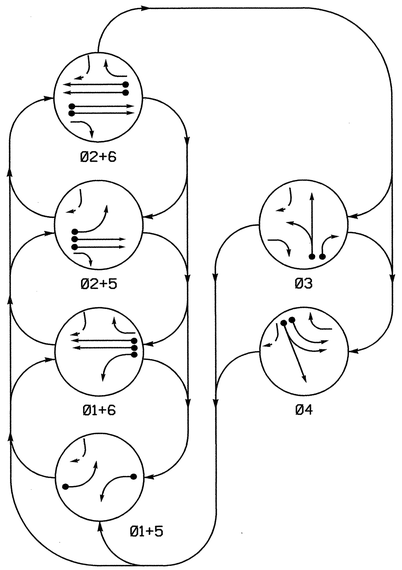
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 12-11-08 DATE
SIG. INVENTORY NO. 04-0359

09-DEC-2008 13:48
s:\its\signals\workgroups\sig mompeterson\040359_smele_xxx.dgn
jtpeterson

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 35

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03	04	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	Y
22	R	R	G	G	R/←	R	Y
31	R	R	R	R	G ←	R	R
32	R	R	R	R	G	R	R
41	R	R	R	R	R	←	R
42	R	R	R	R	R	G ←	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61	R	G	R	G	R	R	Y
62	R	G	R	G	R	R/←	Y

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	-	1	Y	Y	-	—	3	-	Y
2A,2B	6X6	405	4	-	2	Y	Y	-	—	—	-	Y
3A	6X60	+5	2-4-2	-	3	Y	Y	-	—	—	-	Y
3B	6X60	+5	2-4-2	-	3	Y	Y	-	—	15	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	—	—	-	Y
4B	6X60	+5	2-4-2	-	4	Y	Y	-	—	—	-	Y
5A	6X60	+5	2-4-2	-	5	Y	Y	-	—	3	-	Y
6A,6B	6X6	405	4	-	6	Y	Y	-	—	—	-	Y

SIGNAL FACE I.D.

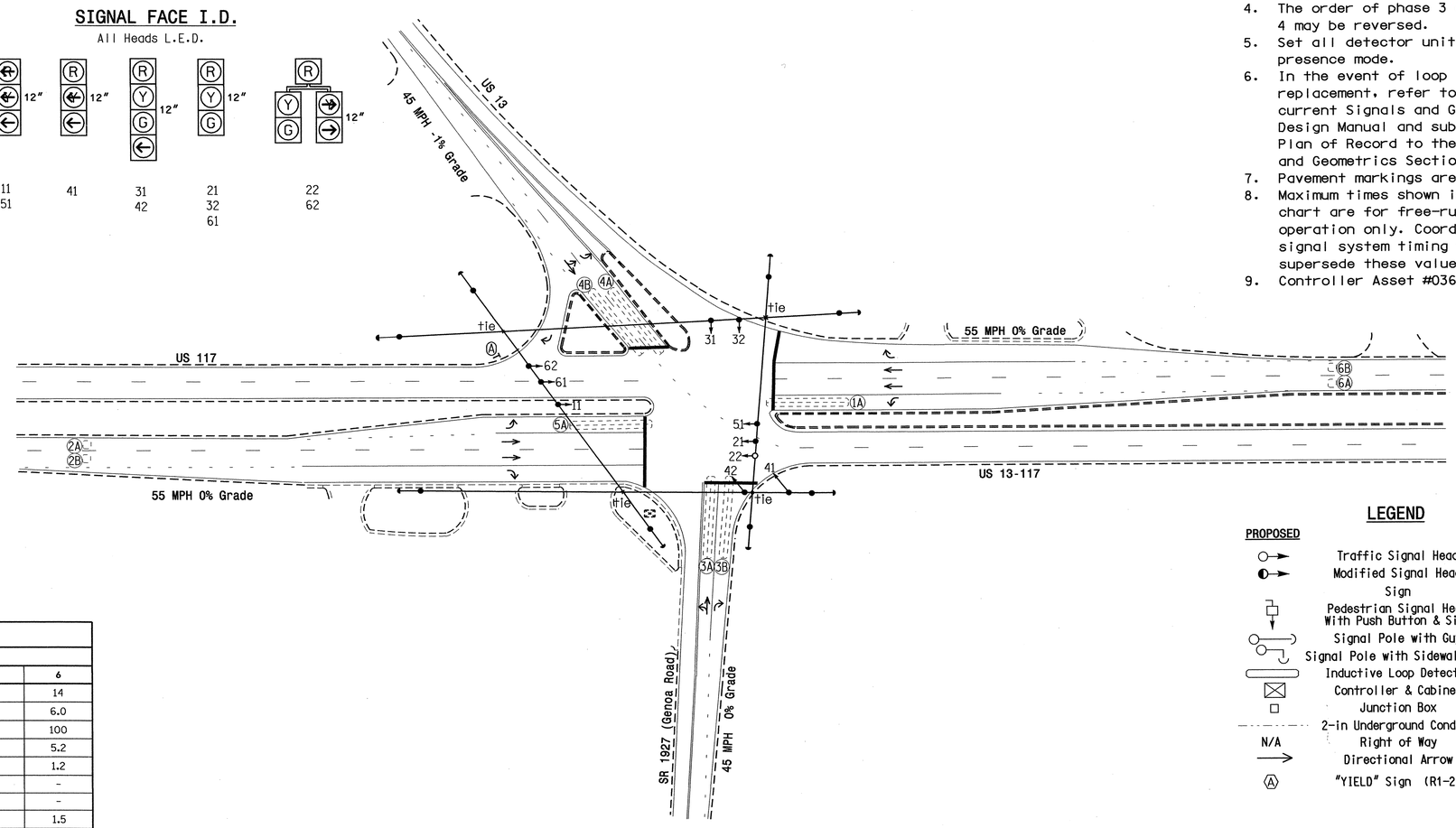
All Heads L.E.D.

11, 51 | 41 | 31, 42 | 21, 32, 61 | 22, 62

6 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0360.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Min Green 1 *	7	14	7	7	7	14
Extension 1 *	2.0	6.0	2.0	2.0	3.0	6.0
Max Green 1 *	20	100	25	30	40	100
Yellow Clearance	3.0	5.2	4.5	4.6	3.0	5.2
Red Clearance	2.9	1.0	1.6	1.7	2.8	1.2
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5
Max Variable Initial *	-	45	-	-	-	45
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.4	-	-	-	3.4
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	ON	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 Revision

Revision Seal

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER K. E. MILLAM

SIGNATURE 1/6/09 DATE

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section

750 North Greenfield Pkwy., Garner, NC 27529

SCALE 0 50 1"=50'

US 117/US 13-117 at US 13/SR 1927 (Genoa Road)

Division 4 Wayne County S. of Goldsboro

PLAN DATE:	12-85	REVIEWED BY:	JBH
PREPARED BY:	WW	REVIEWED BY:	

REVISIONS	INIT.	DATE
1 Revise extension/gap times	RJZ	4/28/06
2 Update timing, revise to volume density, switch phase 2 and 6, upgrade head 22	dla	1/6/09

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by K.E.Millam,PE. # 9007 on 2/24/1986. This document is only certified as to the revisions.

SIG. INVENTORY NO. 04-0360

06-JAN-2009 12:09
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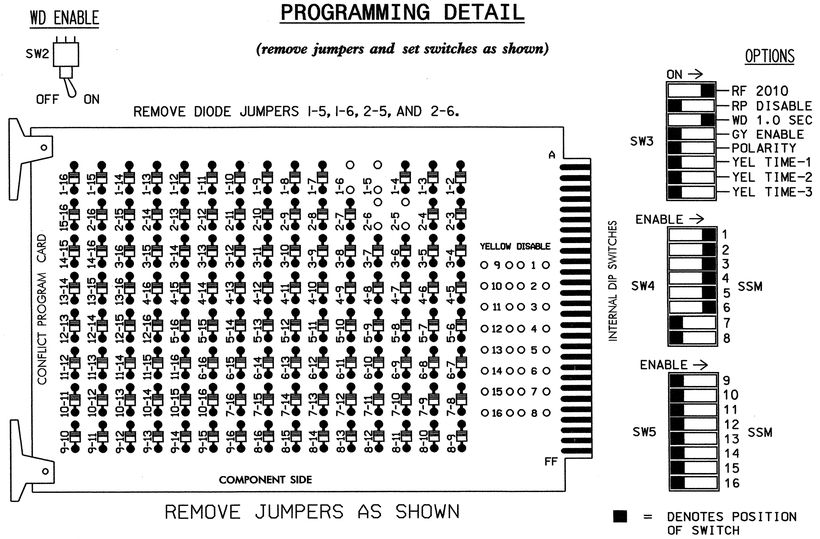
emmishew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.36

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6
PHASES USED.....1,2,3,4,5,6
OVERLAPS.....NONE

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.	11	21,22	NU	22	31	32	41	42	62	NU	51	61,62	NU	NU	NU	NU
RED		128			116	116	101	101				134				
YELLOW		129			117	117		102				135				
GREEN		130			118	118		103				136				
RED ARROW	125										131					
YELLOW ARROW	126			117			102		102		132					
GREEN ARROW	127			118	118		103	103	103		133					
✋																
🚶																

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A,2B	SLOT EMPTY	SLOT EMPTY	Ø3 3A	Ø4 4A	Ø3 3B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED			NOT USED	Ø4 4B	NOT USED							ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A,6B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED												

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

FS = FLASH SENSE
ST = STOP TIME

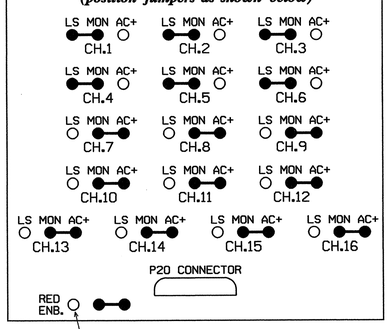
INPUT FILE CONNECTION & PROGRAMMING CHART

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
3B	TB6-1,2	I7U	65	27	34	3	Y	Y			15
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



This pin clipped at the factory.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0360
DESIGNED: 12-85
ORIGINALLY SEALED: 02-24-1986
REVISED: 01-06-09

Signal Revision

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 117/US 13-117
at
US 13/SR 1927 (Genoa Road)

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

Division 04 Wayne County S. of Goldsboro
PLAN DATE: December 2008 REVIEWED BY: T. Jay
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 1/15/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0360

13-JAN-2009 12:04
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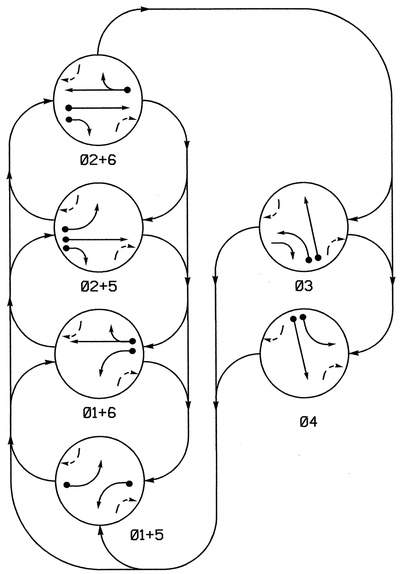
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.37

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

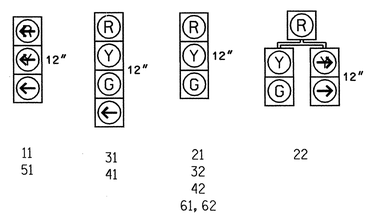
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03	04	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	Y
22	R	R	G	G	R/G	R	Y
31	R	R	R	R	G	R	R
32	R	R	R	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



11
51

31
41

21
32
42
61, 62

22

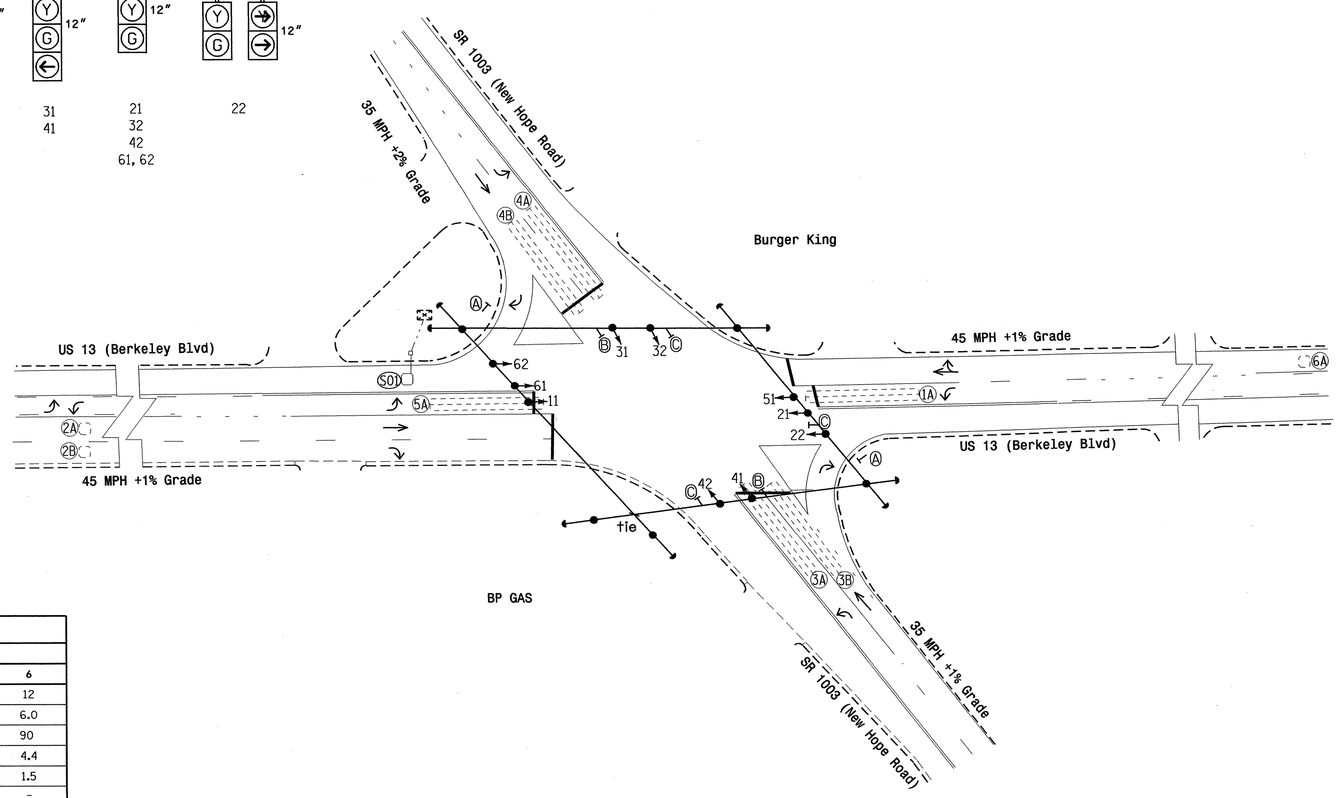
2070L LOOP & DETECTOR INSTALLATION

	INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
	LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
	1A	6X60	+5	2-4-2	-	1	Y	Y	-	-	3	-	-
	2A	6X6	330	3	-	2	Y	Y	-	-	-	-	-
	2B	6X6	330	3	-	2	Y	Y	-	-	-	-	-
	3A	6X60	+5	2-4-2	-	3	Y	Y	-	-	3	-	-
	3B	6X60	+5	2-4-2	-	3	Y	Y	-	-	3	-	-
	4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	3	-	-
	4B	6X60	+5	2-4-2	-	4	Y	Y	-	-	3	-	-
	5A	6X60	+5	2-4-2	-	5	Y	Y	-	-	3	-	-
	6A	6X6	330	3	-	6	Y	Y	-	-	-	-	-
1	S01	6X6	+200±	3	Y	-	-	-	-	-	-	Y	Y

5 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. ~~Closed loop system data:~~ Controller Asset #0367.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
Ⓑ	Left Arrow "ONLY" Sign (R3-5L)	Ⓑ
Ⓒ	Through Arrow "ONLY" Sign (R3-5A)	Ⓒ

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Min Green 1 *	7	12	7	7	7	12
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0
Max Green 1 *	30	90	30	30	15	90
Yellow Clearance	3.0	4.4	3.8	3.7	3.0	4.4
Red Clearance	2.5	1.7	2.4	2.6	2.6	1.5
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	2.5
Max Variable Initial *	-	37	-	-	-	37
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	ON	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 Revision

Revision Seal

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA R. ALEXANDER

SIGNATURE 11/21/08 DATE

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40 1"=40'

US 13 (Berkeley Blvd) at SR 1003 (New Hope Road)

Division 4 Wayne County Goldsboro

PLAN DATE: 1/4/82 REVIEWED BY:

PREPARED BY: EB REVIEWED BY:

REVISIONS	INIT.	DATE
1 Update Clearance Timings. Install system loops.	CCA	11/21/08

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Charlie C. Seessoms Jr., PE no. 3496 on 3/29/82 This document is only certified as to the revisions.

SIG. INVENTORY NO. 04-0367

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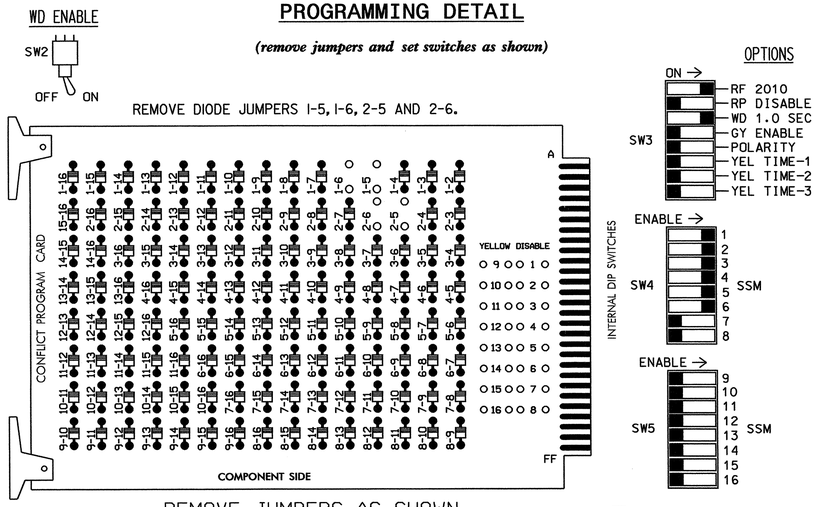
emminshaw

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 38

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 7,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE 2070L
CABINET.....McCAIN 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6
PHASES USED.....1,2,3,4,5,6
OVERLAPS.....NONE

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.	11	21,22	NU	22	31	32	41	42	NU	51	61,62	NU	NU	NU	NU
RED		128			116	116	101	101			134				
YELLOW		129			117	117	102	102			135				
GREEN		130			118	118	103	103			136				
RED ARROW	125									131					
YELLOW ARROW	126			117						132					
GREEN ARROW	127			118	118		103			133					
✋															
🚶															

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	Ø 3 3A	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B				Ø 4 4B	Ø 3 3B		NOT USED					ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED												

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB6-1,2	I7U	65	27	34	3	Y	Y			3
3B	TB6-3,4	I7L	78	40	44	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			3
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
* SØ1	TB6-9,10	I9U	60	22	11	SYS					

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: Ø4-Ø367
DESIGNED: Ø1-Ø4-82
ORIGINALLY SEALED: Ø3-29-1982
REVISED: 11-21-Ø8

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 13 (Berkeley Road) at SR 1003 (New Hope Road)

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY:

PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE | DATE 12/4/08

SIG. INVENTORY NO. 04-0367

04-DEC-2008 09:35
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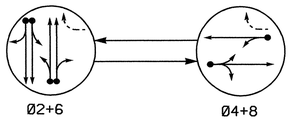
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 39

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21,22	G	R	Y
41,42	R	G	R
61,62	G	R	Y
81,82	R	G	R

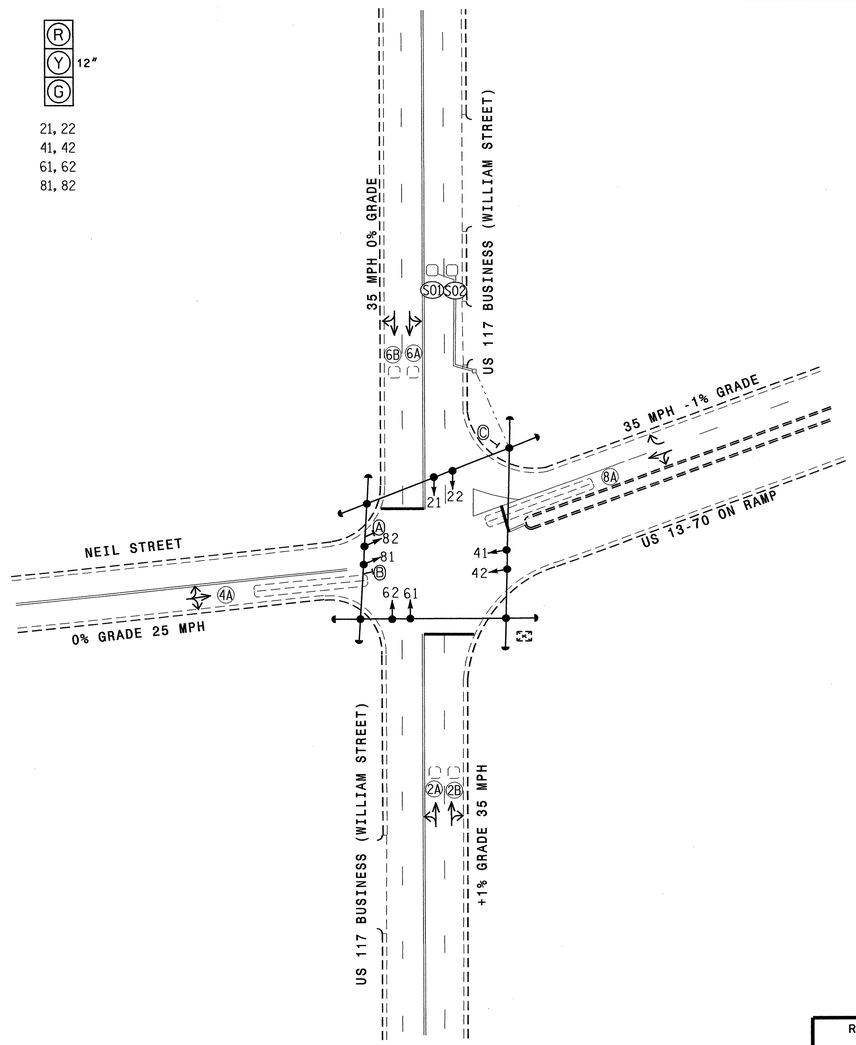
SIGNAL FACE I.D.

All Heads L.E.D.

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

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A, 2B	6X6	70	3	-	2	Y	Y	-	-	-	-	-
4A	6X60	+10	2-4-2	-	4	Y	Y	-	-	-	-	-
6A, 6B	6X6	70	3	-	6	Y	Y	-	-	-	-	-
8A	6X60	+10	2-4-2	-	8	Y	Y	-	-	-	-	-
S01	6X6	+190	3	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+190	3	Y	-	-	-	-	-	-	Y	Y



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	12	7	12	7
Extension 1 *	2.0	2.0	2.0	2.0
Max Green 1 *	35	20	35	20
Yellow Clearance	3.8	3.2	3.8	3.9
Red Clearance	1.1	1.8	1.0	1.4
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

* 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. See note 6

Two Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. ~~Closed loop system data:~~ Controller Asset # 0371.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Right Arrow "ONLY" Sign (R3-5R)	Ⓐ
Ⓑ	Combined Through and Left Arrow Sign (R3-6L)	Ⓑ
Ⓒ	"YIELD" Sign (R1-2)	Ⓒ

Signal Revision

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER CHARLIE C. SESSOMS, JR.

SIGNATURE 11/21/08 DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40 1"=40'

US 117 BUSINESS (WILLIAM STREET)
AT
NEIL STREET/US 13-70 OFF/ON RAMPS

DIVISION 4 WAYNE COUNTY IN GOLDSBORO

PLAN DATE: 5-81 REVIEWED BY:
PREPARED BY: RBH REVIEWED BY:

REVISIONS	INIT.	DATE
▽ Update Clearance timings and Install system loops.	do	11/21/08

SEAL
Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Charlie C.Sessoms Jr. PE, # 3496 on (9-28-81) This document is only certified as to the revisions.

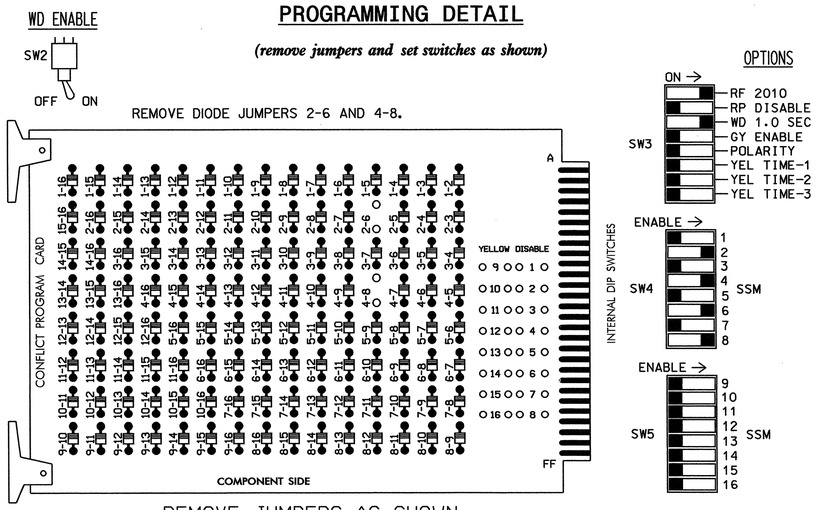
SIGNATURE DATE
SIG. INVENTORY NO. 04-0371

31-DEC-2008 15:17
s:\wits signals\signal design section\eastern region\div-04\goldsboro city systems\signal designs\04-0371\04037l_sig_dsn_2008xxxx.dgn
pstexander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 40

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES (DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

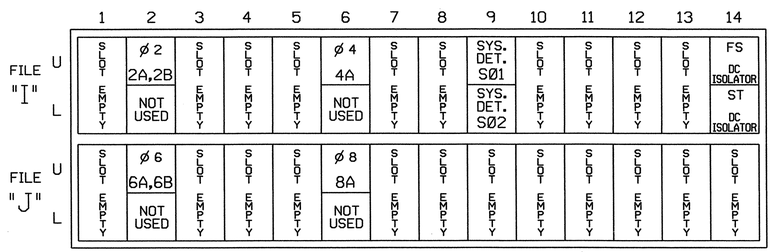
SIGNAL HEAD HOOK-UP CHART

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.	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

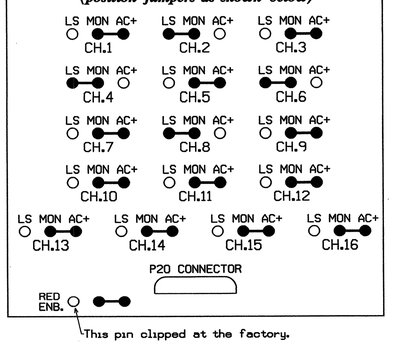
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
* SØ1	TB6-9,10	I9U	60	22	11	SYS					
* SØ2	TB6-11,12	I9L	62	24	13	SYS					

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0371
DESIGNED: 05-81
ORIGINALLY SEALED: 09-28-1981
REVISED: 11-21-08

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 117 Business (William Street) at Neil Street/US 13-70 Off/On Ramps

Division 4 | Wayne County | In Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Jga
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 12/14/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0371

24-NOV-2008 07:22
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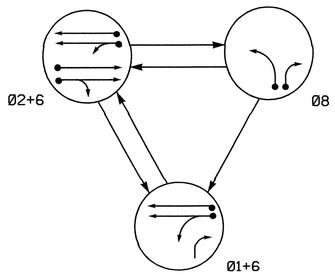
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 4

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

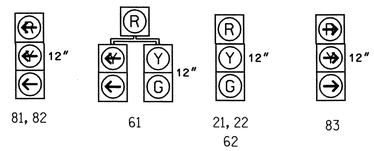
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø8	FLASH
21, 22	R	G	R	Y
61	G	G	R	Y
62	G	G	R	Y
81, 82	R	R	←	R
83	→	R	→	R

SIGNAL FACE I.D.

All Heads L.E.D.



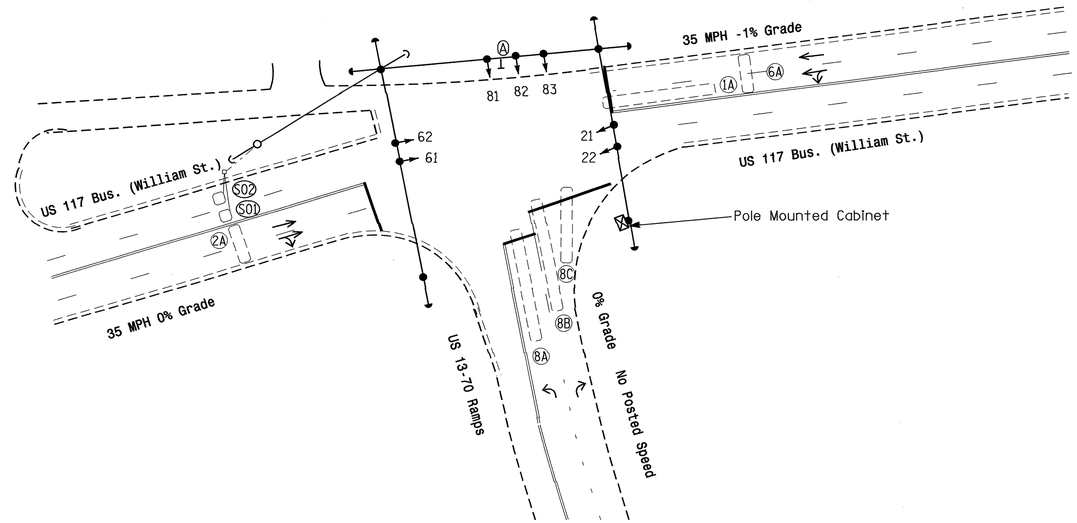
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	3	–	1	Y	Y	–	–	5	–	Y
2A	6X20	70	3	–	2	Y	Y	–	–	–	–	Y
6A	6X20	70	3	–	6	Y	Y	–	–	–	–	Y
8A,8B,8C	6X60	+5	1	–	8	Y	Y	–	–	5	–	Y
S01	6X6	+210±	4	Y	–	–	–	–	–	–	Y	Y
S02	6X6	+210±	4	Y	–	–	–	–	–	–	Y	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. ~~Closed loop system data:~~ Controller Asset # 0372.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Left Arrow "ONLY" Sign (R3-5L)	

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	10	10	7
Extension 1 *	1.0	2.0	2.0	1.0
Max Green 1 *	30	40	40	30
Yellow Clearance	3.0	3.8	3.9	3.0
Red Clearance	2.9	2.0	2.0	1.9
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	–	–	–	–
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

US 117 Bus. (N. William St.) at US 13-70 Ramps

Division 4 Wayne County Goldsboro

PLAN DATE:	October 2008	REVIEWED BY:	L. Blount
PREPARED BY:	AB Hambright	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA G. KEMPER
SIGNATURE 11/21/08 DATE
SIG. INVENTORY NO. 04-0372

19-DEC-2008 11:08
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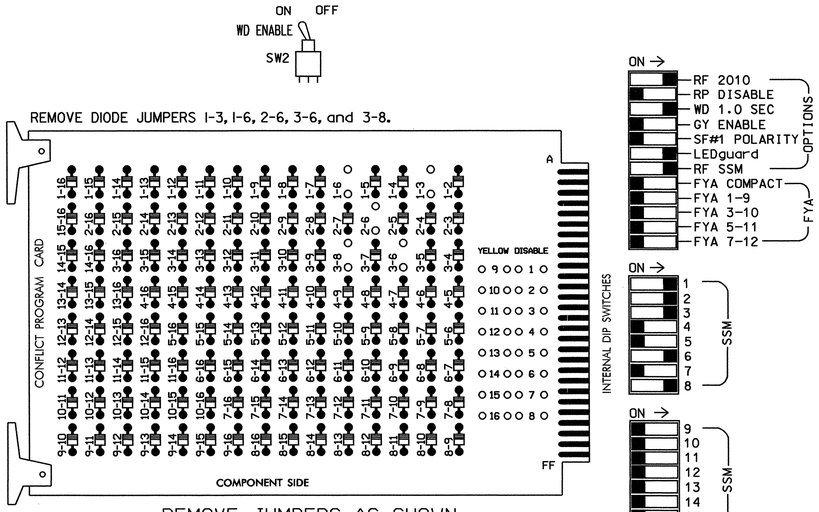
kemperlocal

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 42

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 4,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City 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	OLA	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61	21,22	NU	83	NU	NU	NU	61,62	NU	NU	81,82	NU
RED	*	128						134				
YELLOW		129						135				
GREEN		130						136				
RED ARROW				116							107	
YELLOW ARROW	126			117							108	
GREEN ARROW	127			118							109	
✋												
🚶												

NU = Not Used

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

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S6,S8
PHASES USED.....1,2,6,8
OVERLAP A.....1+8

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	ø1 1A	ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø6 6A	SLOT EMPTY	ø8 8A,8B,8C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L	NOT USED	NOT USED				SYS. DET. S01		SYS. DET. S02						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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB21-1,2	I1U	56	18	1	1	Y	Y			5
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A,8B,8C	TB22-1,2	I8U	42	4	8	8	Y	Y			5
* S01	TB23-11,12	I6L	44	6	16	SYS					
* S02	TB24-1,2	I8L	46	8	18	SYS					

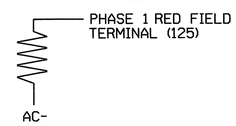
* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0372
DESIGNED: October 2008
SEALED: 11-21-08
REVISED: N/A

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:          ¦123456789101112131415 16
VEH OVL PARENTS:¦X       X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....3
```

OVERLAP PROGRAMMING COMPLETE

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 117 Bus. (N. William St.)
at
US 13-70 Ramps

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Joyce
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 12/4/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0372

25-NOV-2008 11:38
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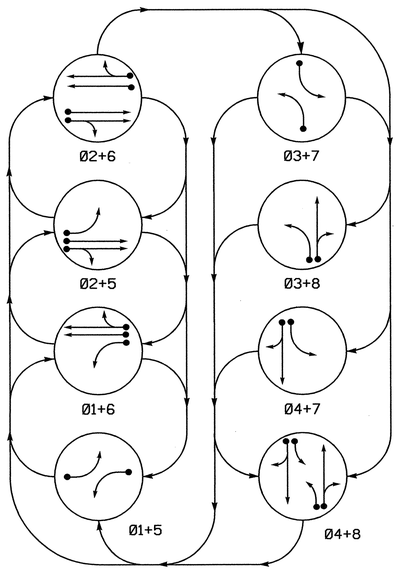
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.43

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

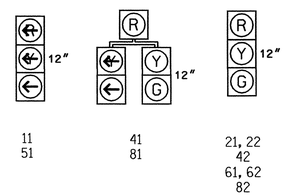
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+05	01+06	02+05	02+06	03+07	03+08	04+07	04+08	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	R	R	Y
41	R	R	R	R	↖R	R	↘G	G	R
42	R	R	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	Y
81	R	R	R	R	↖R	↘G	R	G	R
82	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



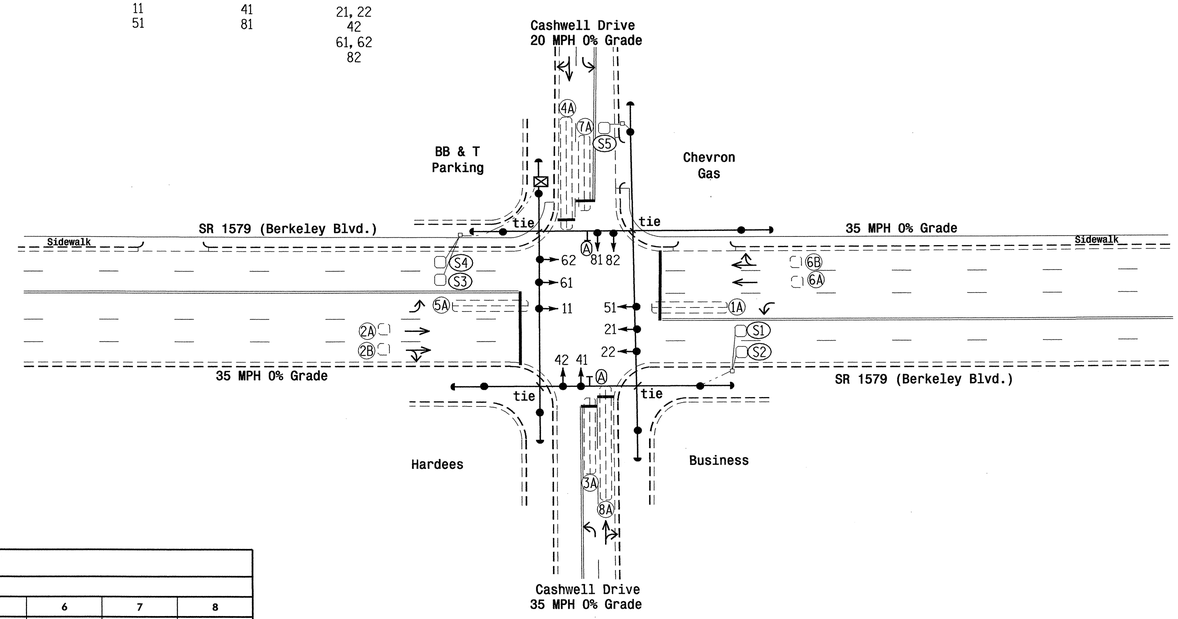
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	+5	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A,2B	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
3A	6X40	+5	2-4-2	-	3	Y	Y	-	-	3	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	10	-	Y
5A	6X40	+5	2-4-2	-	5	Y	Y	-	-	3	-	Y
6A,6B	6X6	70	4	-	6	Y	Y	-	-	-	-	Y
7A	6X40	+5	2-4-2	-	7	Y	Y	-	-	3	-	Y
8A	6X60	+5	2-4-2	-	8	Y	Y	-	-	10	-	Y
S01	6X6	+120±	4	Y	—	-	-	-	—	—	Y	Y
S02	6X6	+120±	4	Y	—	-	-	-	—	—	Y	Y
S03	6X6	+120±	3	Y	—	-	-	-	—	—	Y	Y
S04	6X6	+120±	3	Y	—	-	-	-	—	—	Y	Y
S05	6X6	+140±	3	Y	—	-	-	-	—	—	Y	Y

8 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Omit phase 3 during phase 4 on.
4. Omit phase 7 during phase 8 on.
5. Phase 1 or phase 5 may be lagged.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
8. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
9. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. ~~Closed loop system data:~~ Controller Asset #0373.
12. Existing sign R10-12 may be removed at the discretion of the Regional Traffic Engineer.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	10	7	7	7	10	7	7
Extension 1 *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max Green 1 *	15	50	20	25	15	50	15	25
Yellow Clearance	3.0	3.8	3.0	3.0	3.0	3.8	3.0	3.8
Red Clearance	1.9	1.0	2.3	2.6	1.9	1.1	2.4	1.6
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	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40 1"=40'

SR 1579 (Berkeley Blvd.) at Cashwell Drive

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: EM Minshew

PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA L. MATTHEWS-ALEXANDER

SIGNATURE 11/21/08 DATE

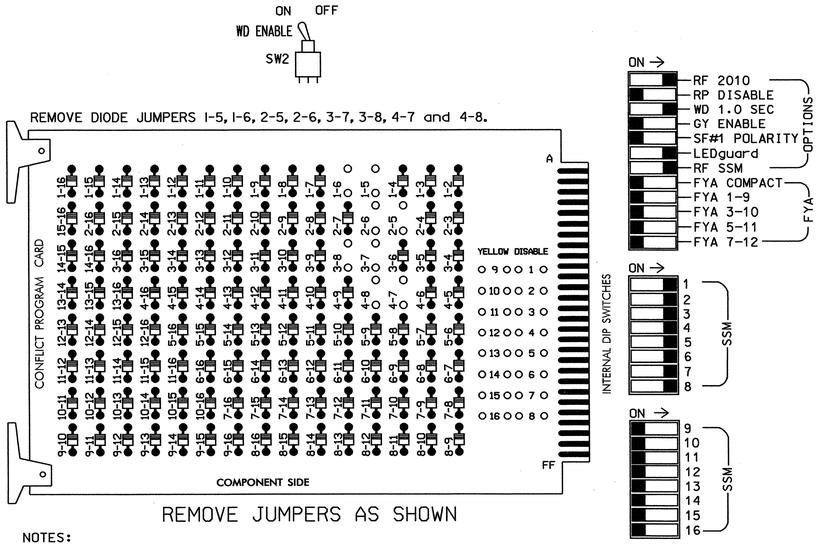
SIG. INVENTORY NO. 04-0373

20-NOV-2008 12:33
S:\ITS\Signals\Signal Design Section\Eastern Region\U-5016\Goldsboro City System\Signal Designs\04-0373\040373_sig_dsn_2008mdd.dgn
abhambright

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.44

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

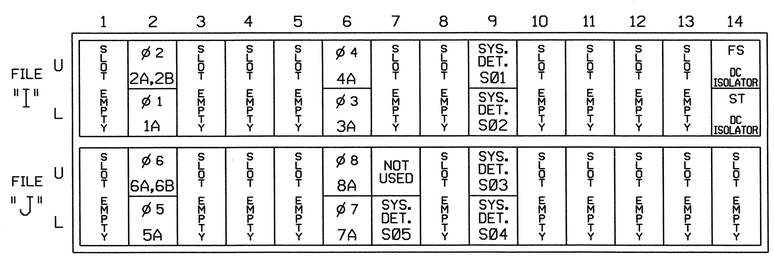
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21,22	NU	81	41,42	NU	51	61,62	NU	41	81,82	NU
RED		128		*	101			134		*	107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126			117			132			123		
GREEN ARROW	127			118			133			124		

NU = Not Used

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

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-7,8	I2L	43	5	12	1	Y	Y			3
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB4-11,12	I6L	45	7	14	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A	TB3-7,8	J2L	44	6	16	5	Y	Y			3
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
7A	TB5-11,12	J6L	46	8	18	7	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
*SØ1	TB6-9,10	I9U	60	22	11	SYS					
*SØ2	TB6-11,12	I9L	62	24	13	SYS					
*SØ3	TB7-9,10	J9U	59	21	15	SYS					
*SØ4	TB7-11,12	J9L	61	23	17	SYS					
*SØ5	TB7-3,4	J7L	79	41	48	SYS					

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

1. From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Functions 1 and 2.
2. From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

```
DYNAMIC/BACKUP CONTROL FUNCTION #01
              OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE ¦
OR        PHASES:¦1234567891011121314 1516
IF PHASES ARE ON¦   X
OMIT PHASES     ¦  X
CALL PHASES     ¦
```

PRESS 'NEXT'

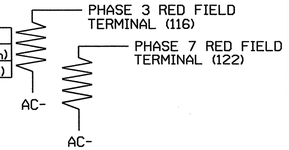
```
DYNAMIC/BACKUP CONTROL FUNCTION #02
              OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE ¦
OR        PHASES:¦1234567891011121314 1516
IF PHASES ARE ON¦      X
OMIT PHASES     ¦     X
CALL PHASES     ¦
```

BACKUP PROTECTION PROGRAMMING COMPLETE

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 these resistors is to load the channel red monitor inputs 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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0373
DESIGNED: September 2008
SEALED: 11/21/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
Electrical Section
Signals Management Section
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

750 N. Greenfield Pwky, Garner, NC 27529

SR 1579 (Berkeley Blvd.)
at
Cashwell Drive

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Uger
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

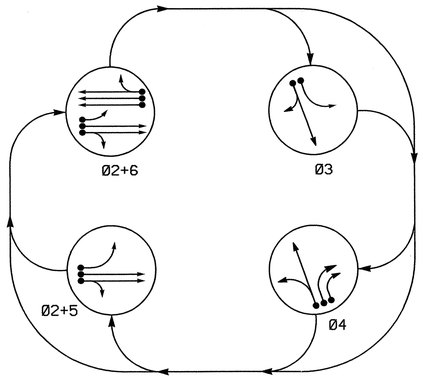
SIGNATURE | DATE 12/16/08

SIG. INVENTORY NO. 04-0373

25-NOV-2008 08:50
s:*ts_sig\ns\workgroups\sig manager\cklandm040373_sm_ele_xxx.dgn
cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 45

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

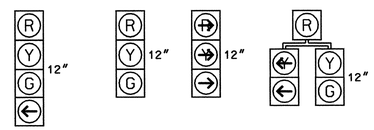
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 02+5	PHASE 02+6	PHASE 03	PHASE 04	PHASE FLASH
21	G	G	R	R	Y
22	G	G	R	R	Y
31	R	R	G	R	R
32	R	R	G	R	R
41	R	R	R	G	R
42	R	R	R	G	R
43,44	~~R~~	~~R~~	~~R~~	→	~~R~~
61, 62	R	G	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



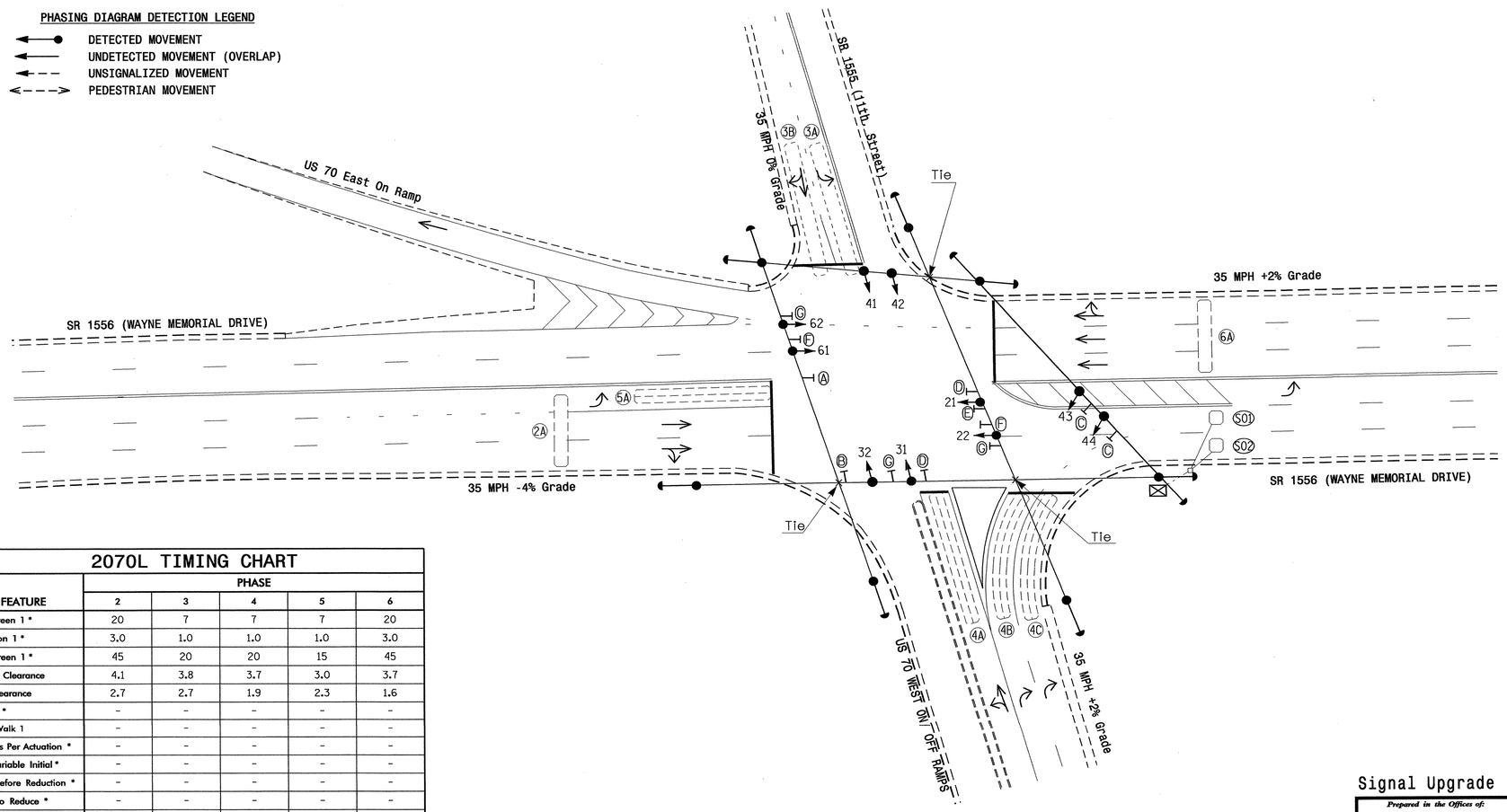
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X32	90	2	-	2	Y	Y	-	-	-	-	Y
3A	6X60	+5	1	-	3	Y	Y	-	-	3	-	Y
3B	6X60	+5	1	-	3	Y	Y	-	-	10	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	10	-	Y
4C	6X60	0	2-4-2	-	4	Y	Y	-	-	10	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	Y
6A	6X32	90+	2	-	6	Y	Y	-	-	-	-	Y
S01	6X6	+200±	3	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+200±	3	Y	-	-	-	-	-	-	Y	Y

4 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Existing "Left Turn Yield on Green" ball sign (R10-12) may be removed at the discretion of the Regional Traffic Engineer.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0395.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	No Left Turn Sign (R3-2)	Ⓐ
Ⓑ	"NO TURN ON RED" Sign (R10-11)	Ⓑ
Ⓒ	Right Arrow "ONLY" Sign (R3-5R)	Ⓒ
Ⓓ	Left Arrow "ONLY" Sign (R3-5L)	Ⓓ
Ⓔ	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	Ⓔ
Ⓕ	Through Arrow "ONLY" Sign (R3-5A)	Ⓕ
Ⓖ	Combined Through and Right Arrow Sign (R3-6R)	Ⓖ

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6
Min Green 1 *	20	7	7	7	20
Extension 1 *	3.0	1.0	1.0	1.0	3.0
Max Green 1 *	45	20	20	15	45
Yellow Clearance	4.1	3.8	3.7	3.0	3.7
Red Clearance	2.7	2.7	1.9	2.3	1.6
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	-	-	-	-	-
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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

SR 1556 (Wayne Memorial Drive) at US 70 West On/Off Ramps and SR 1555 (11th Street)

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY:
PREPARED BY: L. Blount REVIEWED BY:

REVISIONS	INIT.	DATE

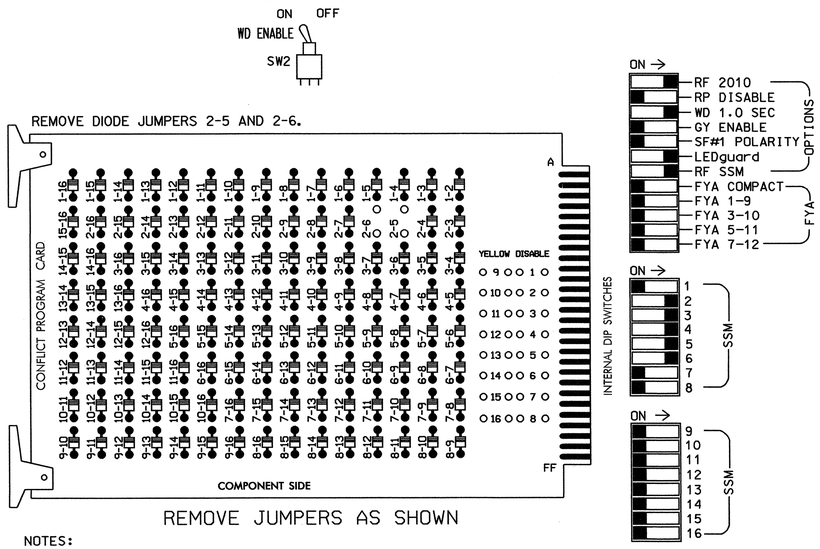
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL ALEXANDER
12/22/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0395

22-DEC-2008 10:11
s:#its signals#signal design sections#eastern region#div-04#goldsboro city systems#signal designs#04-0395#04-0395_sig_dsn_20081222.dgn
palexander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.46

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,7,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City 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.	NU	21,22	NU	31	32	41	42	43,44	NU	21	61,62	NU	NU	NU	NU
RED		128		116	116	101	101			*	134				
YELLOW		129		117	117	102	102				135				
GREEN		130		118	118	103	103				136				
RED ARROW								101							
YELLOW ARROW								102		132					
GREEN ARROW				118		103		103		133					

NU = Not Used

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

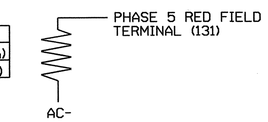
EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S3,S4,S5,S6
PHASES USED.....2,3,4,5,6
OVERLAPS.....NONE

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.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	Ø2 2A	SLOT	SLOT	SLOT	Ø3 3A	Ø4 4A	Ø4 4C	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	Ø3 3B	Ø4 4B	NOT USED	SYS. DET. SØ2	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	NOT USED	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB4-9,10	I6U	41	3	4	3	Y	Y			3
3B	TB4-11,12	I6L	45	7	14	3	Y	Y			10
4A	TB6-1,2	I7U	65	27	34	4	Y	Y			
4B	TB6-3,4	I7L	78	40	44	4	Y	Y			10
4C	TB6-5,6	I8U	49	11	24	4	Y	Y			10
*SØ1	TB6-9,10	I9U	60	22	11	SYS					
*SØ2	TB6-11,12	I9L	62	24	13	SYS					
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0395
DESIGNED: October 2008
SEALED: 12/22/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pwky, Garner, NC 27529

SR 1556 (Wayne Memorial Drive)
at
US 70 West On/Off Ramps
and SR 1555 (11th Street)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: JP
PREPARED BY: K. McDaniel REVIEWED BY:

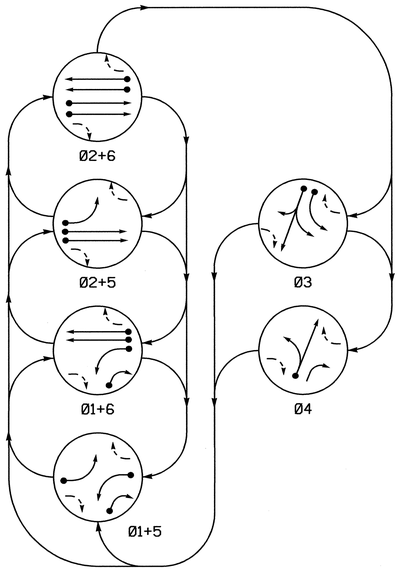
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
John T. Rowe, Jr. 1-20-09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0395

12-JAN-2009 15:02
S:\TS\Traffic Control\Work\groups\Sig Man\McDaniel\Files2\01_04-0395\79-86\H04-0395.sm.ele.xxx.dgn
kmcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.47

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	PHASE 01+6	PHASE 02+5	PHASE 02+6	PHASE 03	PHASE 04	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22, 23	R	R	G	G	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	~~R~~
32	R	R	R	R	G	R	R
33	R	R	R	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
43	→	→	~~R~~	~~R~~	~~R~~	→	~~R~~
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61, 62, 63	R	G	R	G	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.

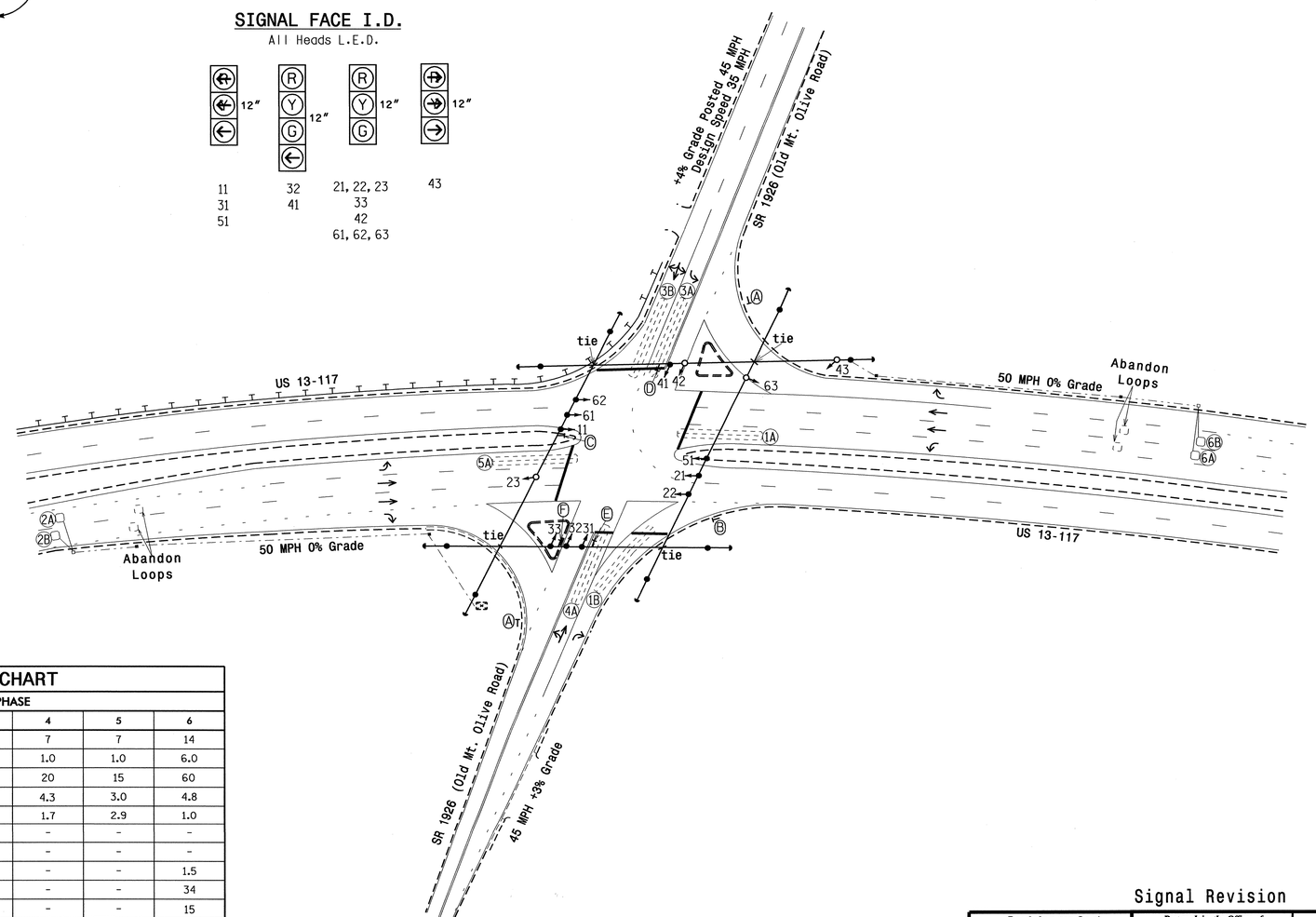
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	—	1	Y	Y	—	—	—	—	—
1B	6X60	+5	2-4-2	—	1	Y	Y	—	—	10	—	—
2A	6X6	355	4	Y	2	Y	Y	—	—	—	—	—
2B	6X6	355	4	Y	2	Y	Y	—	—	—	—	—
3A	6X60	+5	2-4-2	—	3	Y	Y	—	—	3	—	—
3B	6X60	+5	2-4-2	—	3	Y	Y	—	—	10	—	—
4A	6X60	+5	2-4-2	—	4	Y	Y	—	—	3	—	—
5A	6X60	+5	2-4-2	—	5	Y	Y	—	—	—	—	—
6A	6X6	355	5	Y	6	Y	Y	—	—	—	—	—
6B	6X6	355	5	Y	6	Y	Y	—	—	—	—	—

6 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Before installing signal heads 23, 43, and 63 contact the Division Traffic Office at 252-237-6164 to assist with field location of signal heads. Coil sufficient signal cable beside signal heads 23, 43, and 63 to accommodate field adjustments.
4. Phase 1 or phase 5 may be lagged.
5. The order of phase 3 and phase 4 may be reversed.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0403.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Guard Rail	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
Ⓑ	"Stop Here On Red" Sign (R10-6)	Ⓑ
Ⓒ	U-Turn "MUST YIELD" Sign (R3-27)	Ⓒ
Ⓓ	Combined Through and Left Arrow Sign (R3-6L)	Ⓓ
Ⓔ	Left Arrow "ONLY" Sign (R3-5L)	Ⓔ
Ⓕ	Combined Through Left and Right Arrow Sign (R3-8b)	Ⓕ

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6
Min Green 1 *	7	14	0	7	7	14
Extension 1 *	1.0	6.0	1.0	1.0	1.0	6.0
Max Green 1 *	30	60	30	20	15	60
Yellow Clearance	3.0	4.8	3.6	4.3	3.0	4.8
Red Clearance	2.8	1.0	2.2	1.7	2.9	1.0
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5
Max Variable Initial *	-	34	-	-	-	34
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	ON	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 Revision

Revision ▽ Seal

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL A. ALEXANDER

SIGNATURE 2/23/09 DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal and Geometric Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

US 13-117
AT
SR 1926 (OLD Mt. OLIVE ROAD)

DIVISION 4 WAYNE COUNTY S OF GOLDSBORO

PLAN DATE: March 1997 REVIEWED BY:
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE
▽ Revise clearance timing & notes	BAM	6/19/06
▽ Change to volume density. Install new loops for phases 2 & 6. Install new heads 23, 42, 43, and 63.		2/23/09

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Kenneth E.Milam,PE no.9007 on 4/28/97 This document is only certified as to the revisions.

SIG. INVENTORY NO. 04-0403

23-FEB-2009 12:35
S:\traffic\Signals\Signal design section\Western region\div-04\04-0403\04403rev_sig_dsn_2009mdd.dgn
palexander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.48

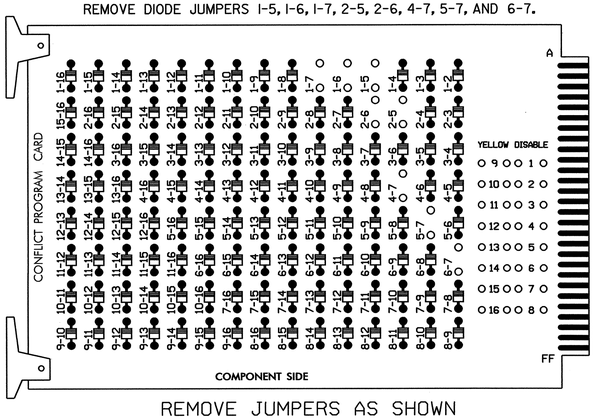
EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

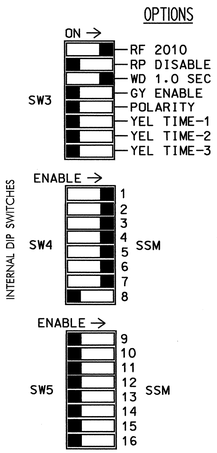
WD ENABLE

SW2 — OFF ON

REMOVE DIODE JUMPERS I-5, I-6, I-7, 2-5, 2-6, 4-7, 5-7, AND 6-7.



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7
PHASES USED.....1,2,3,4,5,6
OVERLAP E.....1+4

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	OLE	8	8 PED
SIGNAL HEAD NO.	11	21,22 23	NU	31	32	33	41	42	NU	51	61,62 63	NU	43	NU	NU
RED		128			116	116	101	101			134				
YELLOW		129			117	117	102	102			135				
GREEN		130			118	118	103	103			136				
RED ARROW	125			116						131			122		
YELLOW ARROW	126			117						132			123		
GREEN ARROW	127			118	118		103			133			124		
✋															
🚶															

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

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

FS = FLASH SENSE
ST = STOP TIME

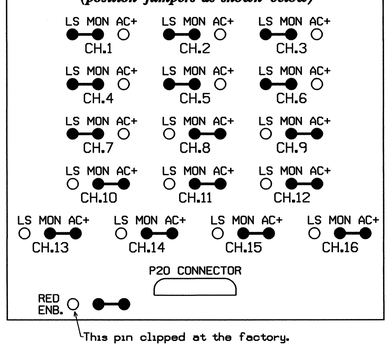
INPUT FILE CONNECTION & PROGRAMMING CHART

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	TB2-1,2	I1U	56	18	1	1	Y	Y			
1B	TB4-11,12	I6L	45	7	14	1	Y	Y			10
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
3B	TB5-5,6	J5U	57	19	7	3	Y	Y			10
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PRESS '+' FOUR TIMES

```
PAGE 1: VEHICLE OVERLAP 'E' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦X   X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED   _ YELLOW   _ GREEN
FLASH COLORS:  _ RED   _ YELLOW   _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:    (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....7
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0403
DESIGNED: March 1997
ORIGINALLY SEALED: 04-28-97
REVISED1: 06-19-06
REVISED2: 02-23-09

1

Signal Revision

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 13-117
at
SR 1926 (Old Mt. Olive Road)

Division 04 Wayne County S. of Goldsboro

PLAN DATE: February 2009 REVIEWED BY:
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE
1 Volume density, new loops, and new heads added to the signal plan. (WSA) DTJ 2/26/09	MBD	2/26/09

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 016286 ENGINEER MILTON I. DEAN

Milton I. Dean 2/26/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0403

26-FEB-2009 08:51
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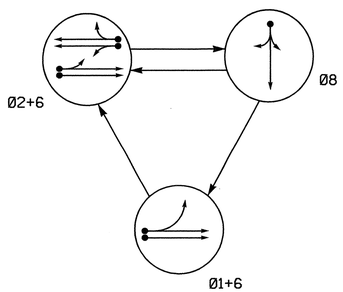
smstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.49

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

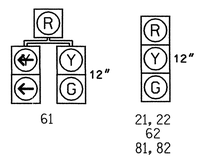
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 0 1 + 6	PHASE 0 2 + 6	PHASE 0 8	FLASH
21, 22	R	G	R	Y
61	G	G	R	Y
62	G	G	R	Y
81, 82	R	R	G	R

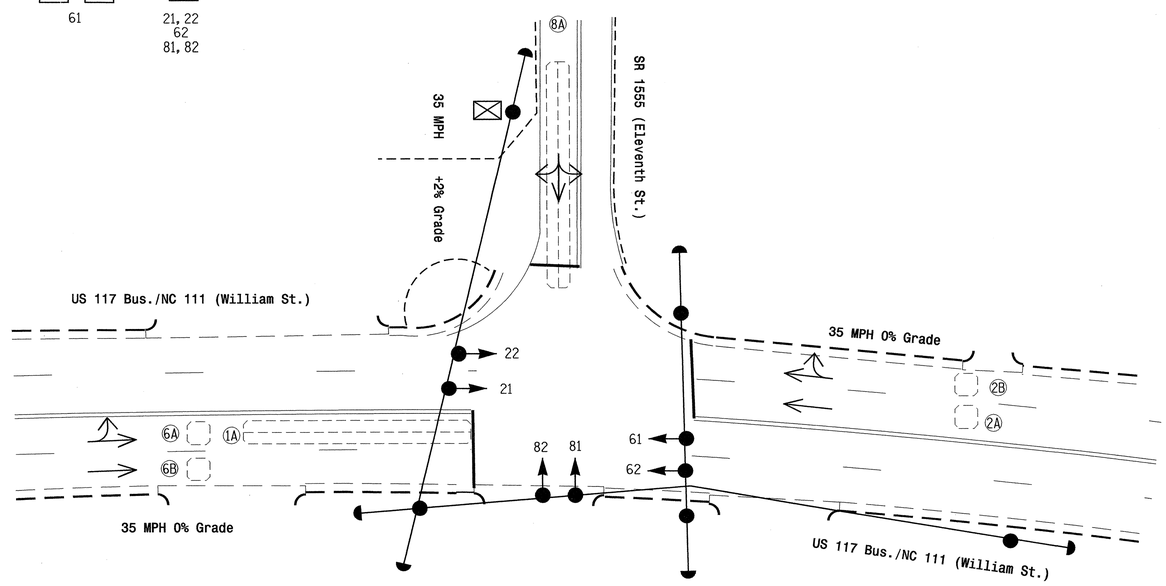
SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
					6	Y	Y	-	-	-	-	Y
2A, 2B	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
6A, 6B	6X60	70	4	-	6	Y	Y	-	-	-	-	Y
8A	6X6	+5	2-4-2	-	8	Y	Y	-	-	10	-	Y



3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Omit phase 1 during phase 2 on.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. ~~Closed loop system data:~~ Controller Asset # 0414.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	10	10	7
Extension 1 *	1.0	3.0	3.0	1.0
Max Green 1 *	20	45	45	30
Yellow Clearance	3.0	3.8	3.8	3.0
Red Clearance	1.4	1.0	1.0	1.6
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	-	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 20 1"=20'

US 117 Bus./NC 111 (William St.)
at
SR 1555 (Eleventh St.)

Division 4 Wayne County Goldsboro

PLAN DATE:	October 2008	REVIEWED BY:	L. Blount
PREPARED BY:	AB Hambright	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
11/21/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0414

20-NOV-2008 14:33
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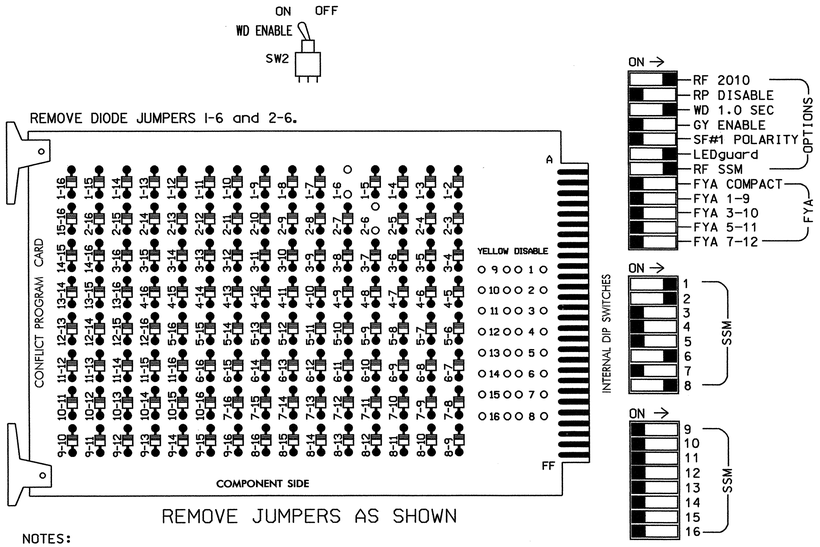
terryblount

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.50

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 3,4, 5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

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

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	NU	NU	NU	61,62	NU	NU	81,82	NU
RED	*	128						134			107	
YELLOW		129						135			108	
GREEN		130						136			109	
RED ARROW												
YELLOW ARROW	126											
GREEN ARROW	127											
✋												
🚶												

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A,2B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED												ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A,6B	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		NOT USED				NOT USED								

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y			
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10

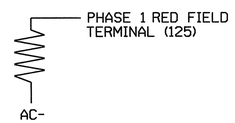
[1] Add jumper from I1-W to J4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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)

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

```
DYNAMIC/BACKUP CONTROL FUNCTION #01
                OVERLAPS:¦ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE ¦
OR        PHASES:¦123456789101112131415 16
IF PHASES ARE ON¦ X
OMIT PHASES     ¦X
CALL PHASES     ¦
```

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0414
DESIGNED: October 2008
SEALED: 11-21-08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 117 Bus./NC 111 (William St.)
at
SR 1555 (Eleventh St.)

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Jones
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 12/4/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0414

24-NOV-2008 07:46
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armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.61

PHASING DIAGRAM

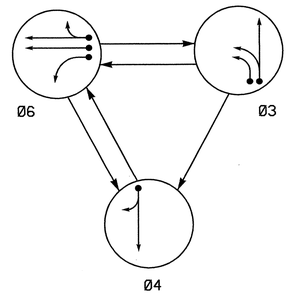
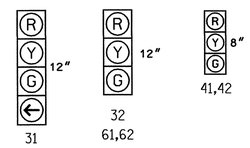


TABLE OF OPERATION

SIGNAL FACE	PHASE Ø3	PHASE Ø4	PHASE Ø6	PHASE FLASH
31	G	R	R	R
32	G	R	R	R
41,42	R	G	R	R
61,62	R	R	G	Y

SIGNAL FACE I.D.

All Heads L.E.D.

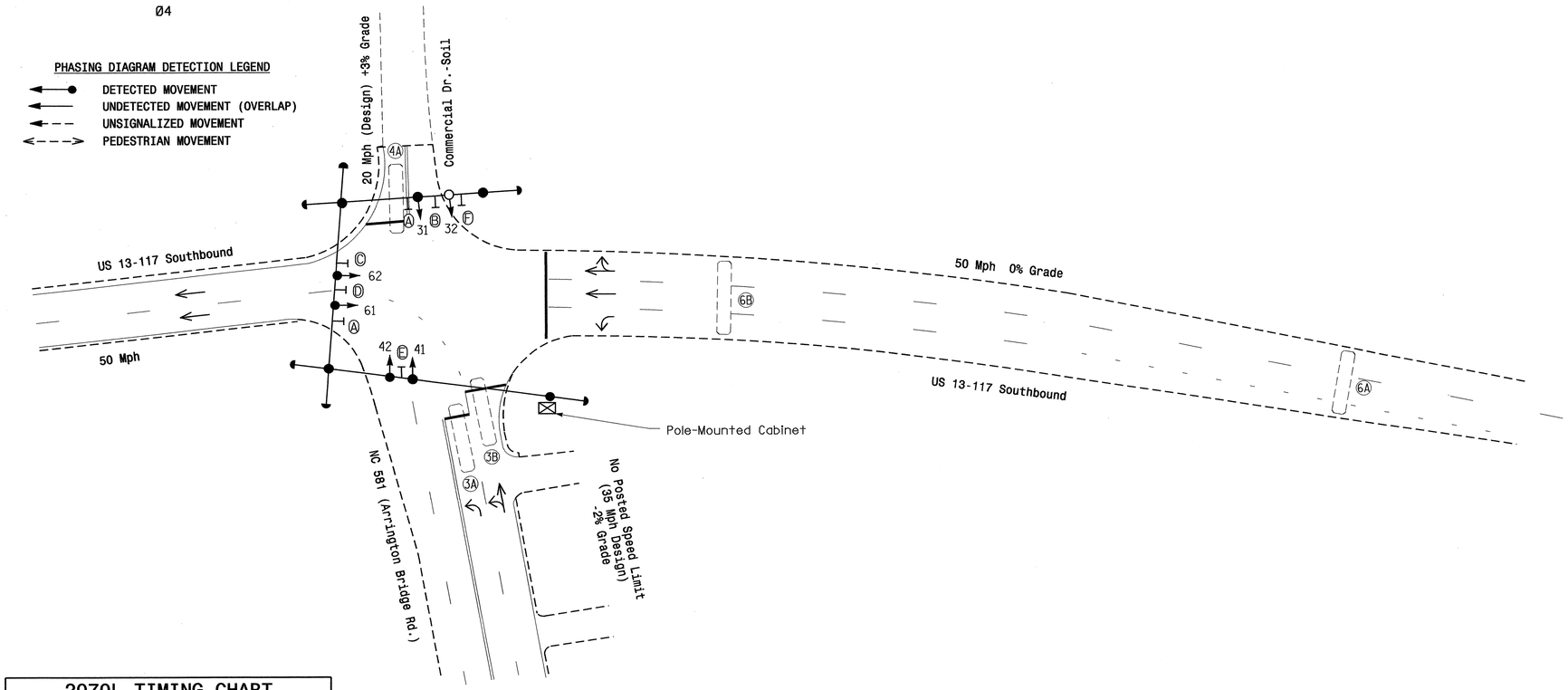


2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
3A,3B	6X30	+5	2	-	3	Y	Y	-	-	3	-	Y
4A	6X30	+5	2	-	4	Y	Y	-	-	15	-	Y
6A	6X28	365	2	-	6	Y	Y	-	2.0	-	-	Y
6B	6X32	100	2	-	6	Y	Y	-	-	-	-	Y

PHASING DIAGRAM DETECTION LEGEND

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



2070L TIMING CHART

FEATURE	PHASE 3	PHASE 4	PHASE 6
Min Green 1 *	7	7	12
Extension 1 *	2.0	2.0	2.0
Max Green 1 *	30	10	60
Yellow Clearance	4.0	3.0	4.8
Red Clearance	1.4	1.8	1.1
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	-	-	MIN RECALL
Vehicle Call Memory	-	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	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.

3 Phase
Fully Actuated
Goldsboro City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. The order of phase 3 and phase 4 may be reversed.
4. Reposition existing signal heads numbered 31.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset # 0417.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Left Arrow "ONLY" Sign (R3-5L)	Ⓐ
Ⓑ	Combined Through and Left Arrow Sign (R3-6L)	Ⓑ
Ⓒ	Combined Through and Right Arrow Sign (R3-6R)	Ⓒ
Ⓓ	Through Arrow "ONLY" Sign (R3-5A)	Ⓓ
Ⓔ	No Left Turn Sign (R3-2)	Ⓔ
Ⓕ	No Right Turn Sign (R3-1)	Ⓕ

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

US 13-117 Southbound
at
NC 581
(Arrington Bridge Road)

Division 04 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: PLA
PREPARED BY: JPG REVIEWED BY:

REVISIONS	INIT.	DATE

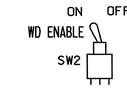
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE DATE 11/18/08
SIG. INVENTORY NO. 04-0417

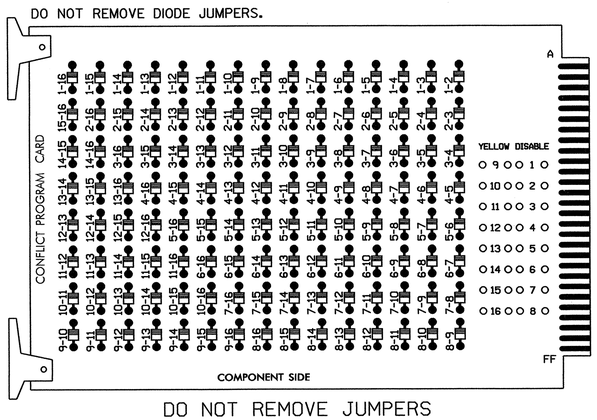
10-DEC-2008 11:48
s:##ts signals#signal design section#eastern region#div-04#goldsboro city systems#signal designs#04-0417#040417_sig_dsn_2008mdd.dgn
mdd22ef8

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.52

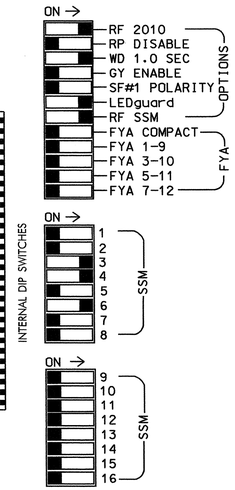
EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(set switches as shown)





DO NOT REMOVE JUMPERS



NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,2,5, 7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phase 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S3,S4,S6
PHASES USED.....3,4,6
OVERLAPS.....NONE

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.	NU	NU	NU	31	32	41,42	NU	NU	61,62	NU	NU	NU	NU
RED				116	116	101			134				
YELLOW				117	117	102			135				
GREEN				118	118	103			136				
RED ARROW													
YELLOW ARROW													
GREEN ARROW				118									

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT EMPTY	SLOT EMPTY	Ø3 3A,3B	SLOT EMPTY	SLOT EMPTY	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L			Ø4 4A			Ø6 6B								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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
3A,3B	TB21-5,6	I3U	58	20	3	3	Y	Y			3
4A	TB23-5,6	I3L	49	11	24	4	Y	Y			15
6A	TB21-11,12	I6U	40	2	6	6	Y	Y		2.0	
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0417
DESIGNED: November 2008
SEALED: 11/18/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 13-117 Southbound
at
NC 581
(Arrington Bridge Road)

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Jyg
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

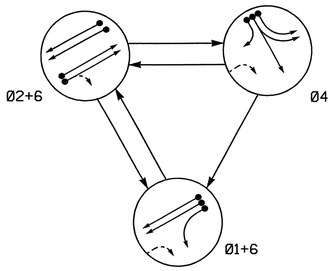
George C. Brown 12/18/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0417

08-DEC-2008 13:30
s:\its_signals\workgroups\sig management\cindy\04-0417_sel_ele_xxx.dgn
cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.53

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

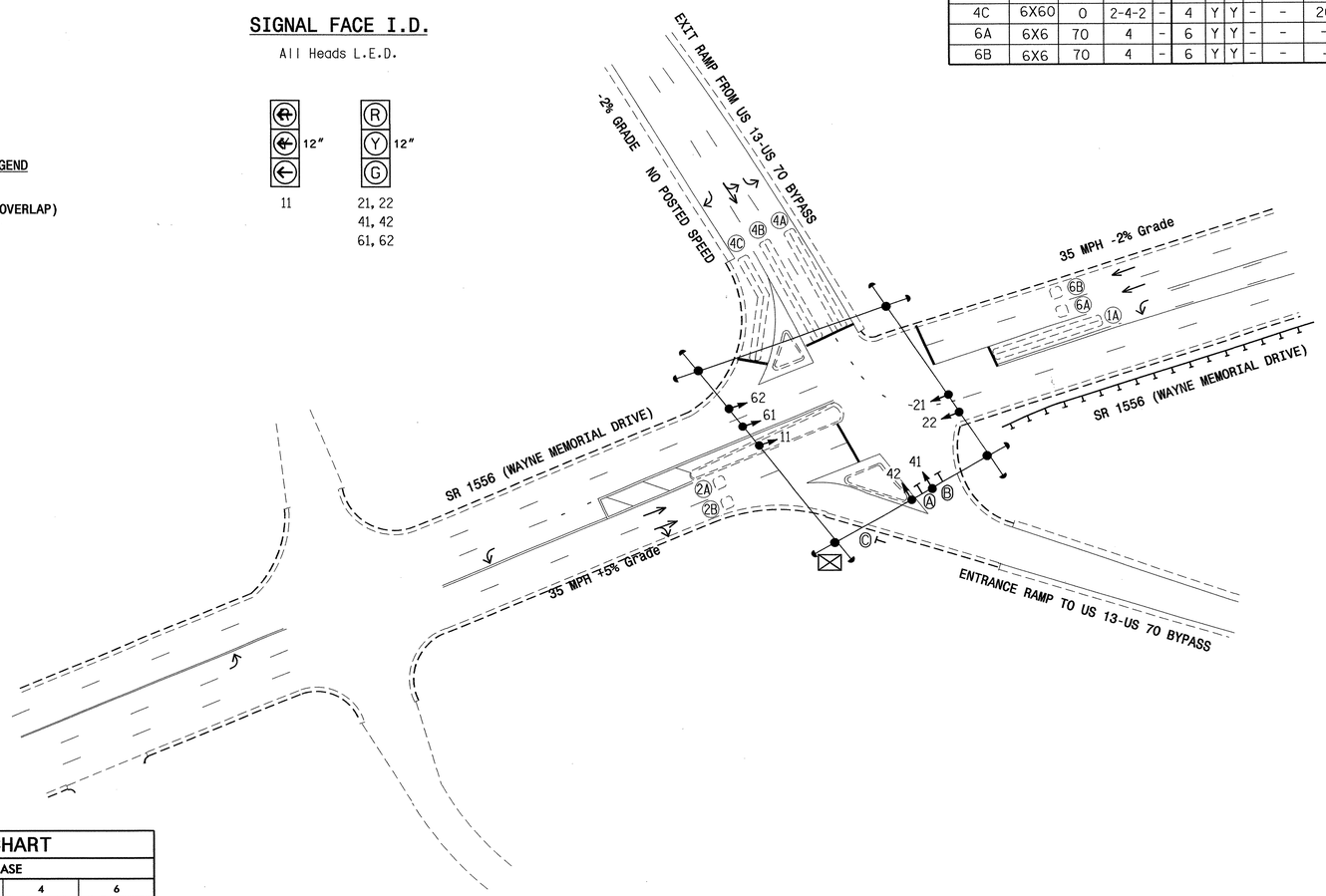
SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 04	FLASH
11	~~←~~	~~R~~	~~R~~	~~R~~
21, 22	R	G	R	Y
41, 42	R	R	G	R
61, 62	G	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
2B	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4C	6X60	0	2-4-2	-	4	Y	Y	-	-	20	-	Y
6A	6X6	70	4	-	6	Y	Y	-	-	-	-	Y
6B	6X6	70	4	-	6	Y	Y	-	-	-	-	Y



2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	7	10	7	10
Extension 1 *	1.0	3.0	1.0	3.0
Max Green 1 *	30	60	25	60
Yellow Clearance	3.0	3.6	4.0	4.0
Red Clearance	2.3	1.2	1.9	1.8
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	-	-	-	-
Simultaneous Gap	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.

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. ~~Closed loop system data:~~ Controller Asset # 0422.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Combined Through and Left Arrow Sign (R3-6L)	Ⓐ
Ⓑ	Left Arrow "ONLY" Sign (R3-5L)	Ⓑ
Ⓒ	"YIELD" Sign (R1-2)	Ⓒ

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40 1"=40'

US 13-70 Bypass EB Ramps
at
SR 1556 (Wayne Memorial Drive)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY:
PREPARED BY: L Blount REVIEWED BY:

REVISIONS	INIT.	DATE

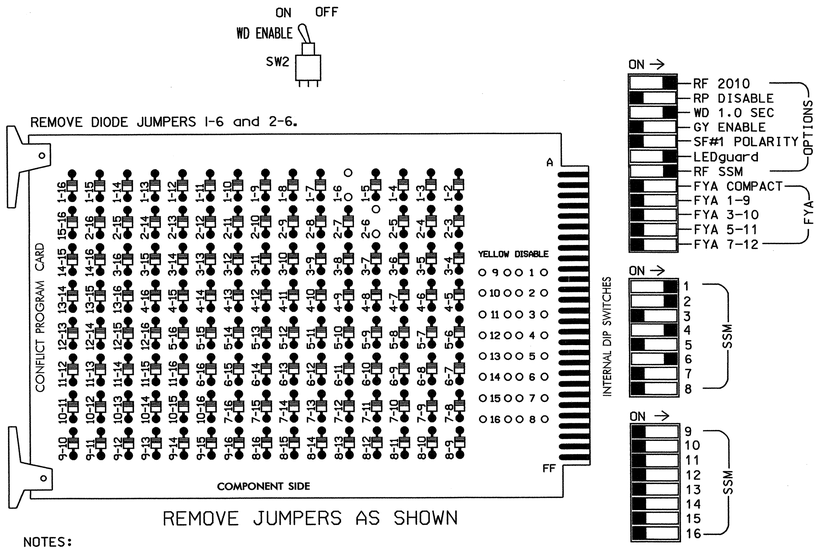
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA ALEXANDER
SIGNATURE 11/21/08 DATE
SIG. INVENTORY NO. 04-0422

20-NOV-2008 14:35
s#its signals\signal design section\eastern region\div-04\goldsboro city system\signal designs\04-0422\04\0422.dgn
terryblount

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.54

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

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

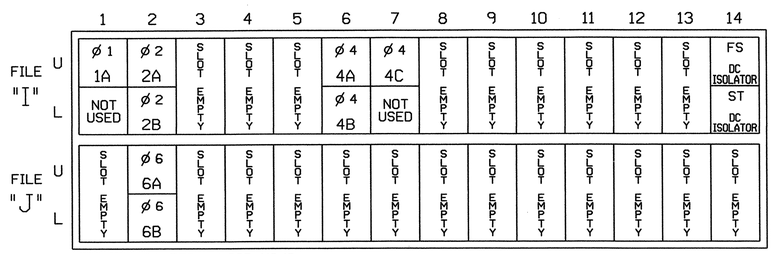
SIGNAL HEAD HOOK-UP CHART

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.	11	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW	125											
YELLOW ARROW	126											
GREEN ARROW	127											

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			20
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0422
DESIGNED: September 2008
SEALED: 11/21/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pwky, Garner, NC 27529

US 13-70 Bypass EB Ramps
at
SR 1556 (Wayne Memorial Drive)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: T. Ingram

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

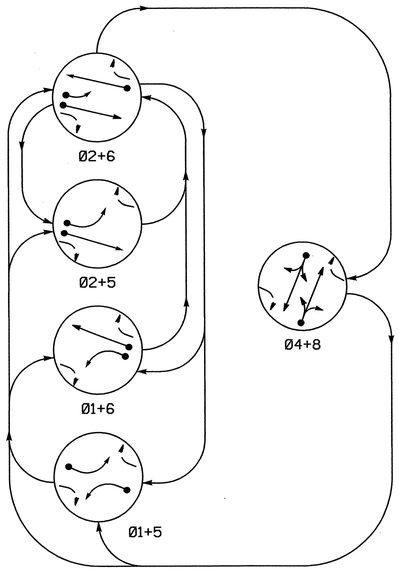
George C. Brown 12/15/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0422

25-NOV-2008 09:07
s:\traffic\signals\workgroups\sig mgmt\tr1ckl\cnd\0404422_sm.dl8_xxx.dgn
$$$$USERTOKENS

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.55

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

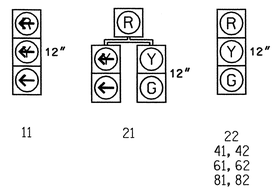
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+8	FLASH
11	~~←~~	~~←~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	Y
22	R	R	G	G	R	Y
41,42	R	R	R	R	G	R
61,62	R	G	R	G	R	Y
81,82	R	R	R	R	G	R

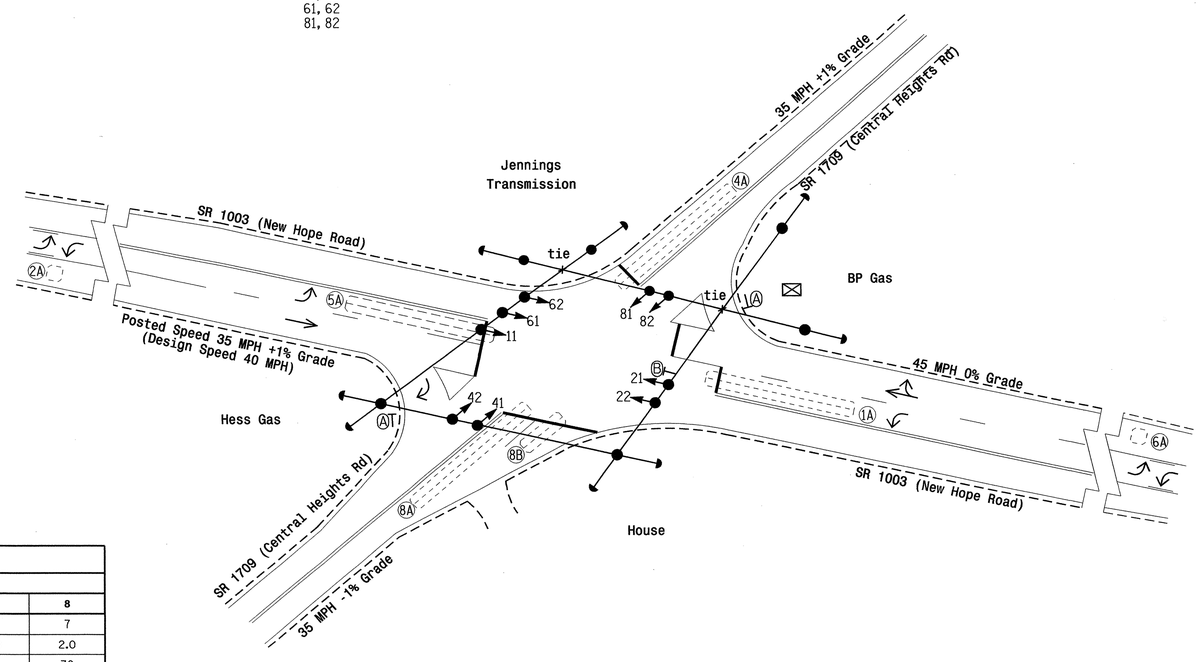
SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	-	-	Y
5A	6X60	+5	2-4-2	-	5	Y	Y	-	-	10	-	Y
					2	Y	Y	Y	-	3	-	Y
6A	6X6	300	4	-	6	Y	Y	-	-	-	-	Y
8A	6X60	+5	2-4-2	-	8	Y	Y	-	-	-	-	Y
8B	6X20	+5	2-4-2	-	8	Y	Y	-	-	15	-	Y



2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	25	90	30	20	90	30
Yellow Clearance	3.0	4.1	3.8	3.0	4.5	3.9
Red Clearance	2.8	1.0	1.3	1.9	1.0	1.1
Red Revert	2.0	2.0	2.0	2.0	5.0	2.0
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	2.5	-	-	2.5	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	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.

5 Phase Fully Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Remove existing "Left Turn Signal" sign (R10-10L).
8. Existing "Left Turn Yield on Green" ball sign (R10-12) may be removed at the discretion of the Regional Traffic Engineer.
9. Pavement markings are existing.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Controller Asset #0423.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	"YIELD" Sign (R1-2)	A
B	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	B

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

SR 1003 (New Hope Road) at SR 1709 (Central Heights Road)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: EM Minshew

PREPARED BY: A Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

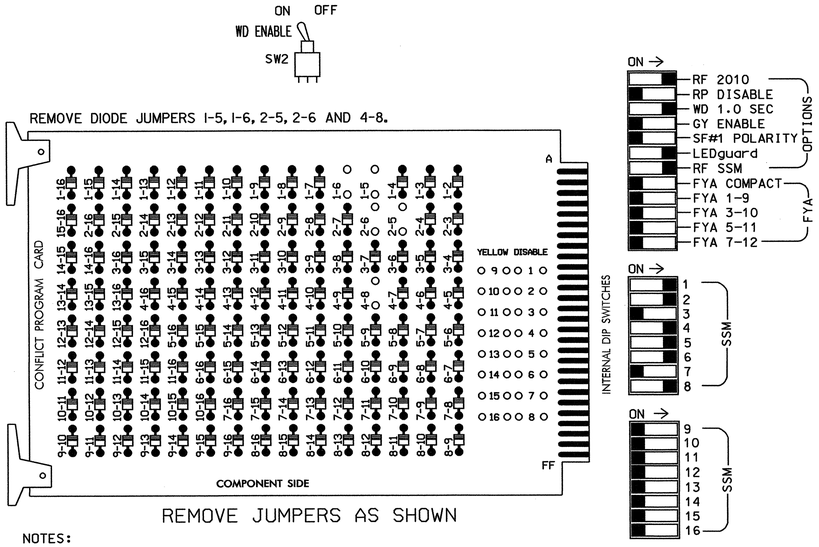
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
12/22/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0423

22-DEC-2008 14:28
s:\traffic\signals\signal design section\eastern region\div-04\goldsboro city systems\signal designs\04-0423\040423_sig_dsn_2008mmdd.dgn
emminshew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 56

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 3,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
7. The cabinet and controller are part of the Goldsboro City 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.	11	21,22	NU	NU	41,42	NU	21	61,62	NU	NU	81,82	NU
RED		128			101		*	134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125											
YELLOW ARROW	126						132					
GREEN ARROW	127						133					

NU = Not Used

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

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

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.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED				NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED				Ø8 8B								

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
5A[1]	TB3-1,2	J1U	55	17	5	5	Y	Y			10
	-	I4U	47	9	22	2	Y	Y	Y		3
6A	TB3-5,6	J2U	40	2	6	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			15

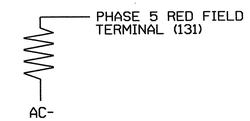
[1] Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0423
DESIGNED: September 2008
SEALED: 12/22/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1003 (New Hope Road)
at
SR 1709 (Central Heights Road)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY:
PREPARED BY: K. McDaniel REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 1-20-09 DATE
SIG. INVENTORY NO. 04-0423

12-JAN-2009 15:02
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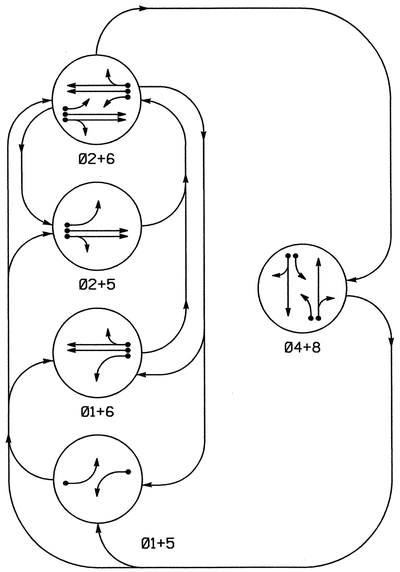
smcdanie01

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.57

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

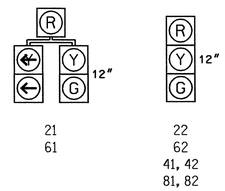
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+8	FLASH
21	R	R	G	G	R	Y
22	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
61	R	G	R	G	R	Y
62	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



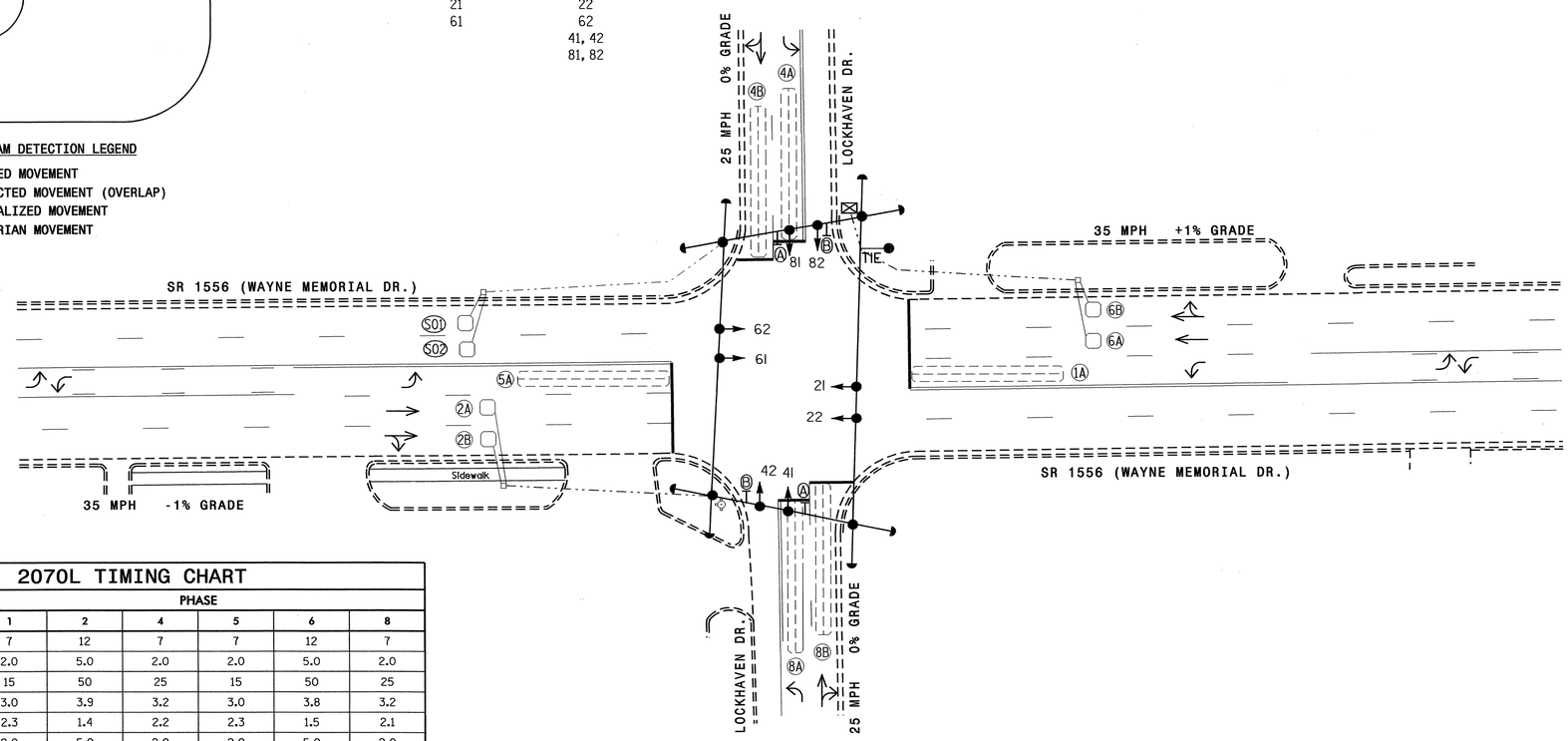
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
					6	Y	Y	-	-	-	-	Y
2A,2B	6X6	70	4	Y	2	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	10	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	Y
					2	Y	Y	-	-	-	-	Y
6A,6B	6X6	70	4	Y	6	Y	Y	-	-	-	-	Y
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	3	-	Y
8B	6X60	0	2-4-2	-	8	Y	Y	-	-	10	-	Y
S01	6X6	+170	4	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+170	4	Y	-	-	-	-	-	-	Y	Y

5 Phase Fully Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 2+6 to allow the controller to clear from phase 2+6 to phase 1 and/or 5 by progressing through an all red display.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0446



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	Left Arrow "ONLY" Sign (R3-5L)	A
B	Combined Through and Right Arrow Sign (R3-6R)	B

2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	5.0	2.0	2.0	5.0	2.0
Max Green 1 *	15	50	25	15	50	25
Yellow Clearance	3.0	3.9	3.2	3.0	3.8	3.2
Red Clearance	2.3	1.4	2.2	2.3	1.5	2.1
Red Revert	2.0	5.0	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	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 30 1"=30'

SR 1556 (Wayne Memorial Drive) at Lockhaven Drive

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY:
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

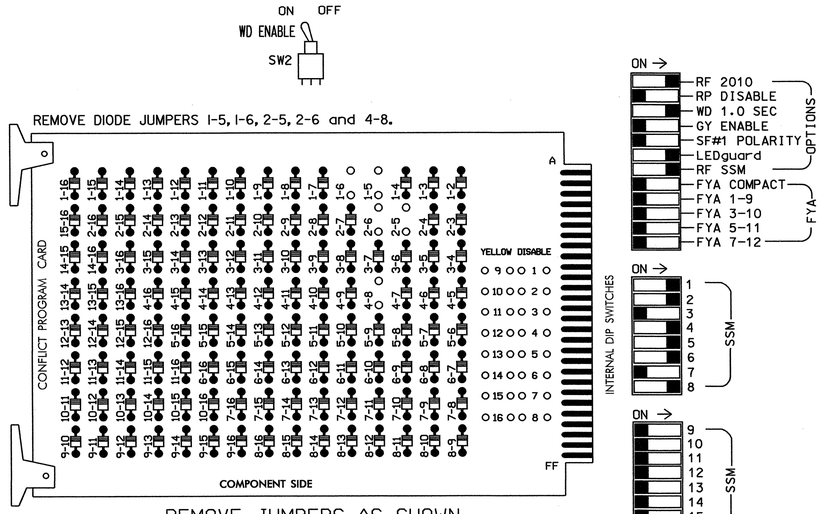
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA G. BONDER
SIGNATURE 12/5/08 DATE
SIG. INVENTORY NO. 04-0446

02-JAN-2009 11:19
s:\traffic\Signals\design sections\eastern regional\U-5016goldsboro city systems\signal designs\04-0446\04046 0446.dgn
Stephenson

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.58

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City 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	21	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						132					
GREEN ARROW	127						133					

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

BACKUP PROTECTION NOTE

(program controller as shown below)

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1	Ø 2	SLOT	WIRED INPUT ⊗	SLOT	Ø 4	SLOT	SLOT	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	1A	2A,2B	EMPTY		EMPTY	4A	EMPTY	EMPTY	SYS. DET. SØ2	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
		NOT USED	NOT USED				Ø 4 4B								
FILE "J"	U	Ø 5	Ø 6	SLOT	WIRED INPUT ⊗	SLOT	Ø 8	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	5A	6A,6B	EMPTY		EMPTY	8A	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
		NOT USED	NOT USED				Ø 8 8B								

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y			
2A,2B	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
* SØ1	TB6-9,10	I9U	60	22	11	SYS					
* SØ2	TB6-11,12	I9L	62	24	13	SYS					
5A[2]	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y			
6A,6B	TB3-5,6	J2U	40	2	6	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

[1] Add jumper from I1-W to J4-W, on rear of input file.
[2] Add jumper from J1-W to I4-W, on rear of input file.

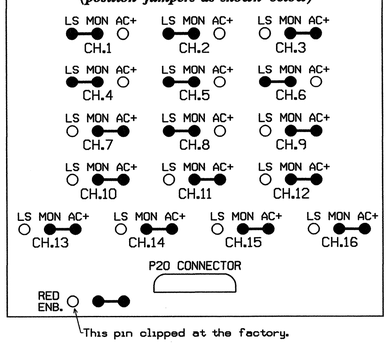
* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0446
DESIGNED: October 2008
SEALED: 12-05-08
REVISED: N/A

RED MONITOR BOARD PROGRAMMING

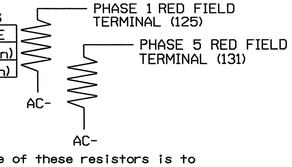
(position jumpers as shown below)



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 these resistors is to load the channel red monitor inputs 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.

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety System Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1556 (Wayne Memorial Drive) at Lockhaven Drive

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: AWH
PREPARED BY: James Peterson | REVIEWED BY:

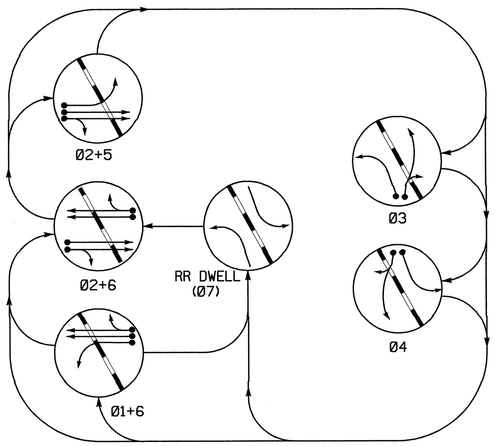
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
John T Rowe Jr 12-11-08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0446

09-DEC-2008 13:51
s:\its signals\workgroups\sig mon\petersonm\04046.sm.ele.xxx.dgn
jtpeterson

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.59

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

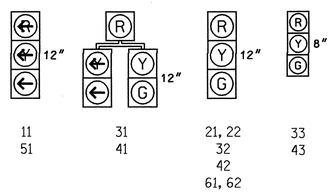
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	RR DWELL	FLASH
11	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	G	G	R	R	R	Y
31	R	R	R	G	R	R	R
32	R	R	R	G	R	R	R
33	R	R	R	G	R	R	R
41	R	R	R	R	G	R	R
42	R	R	R	R	G	R	R
43	R	R	R	R	G	R	R
51	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62	G	R	G	R	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



2070 RAIL PREEMPTION

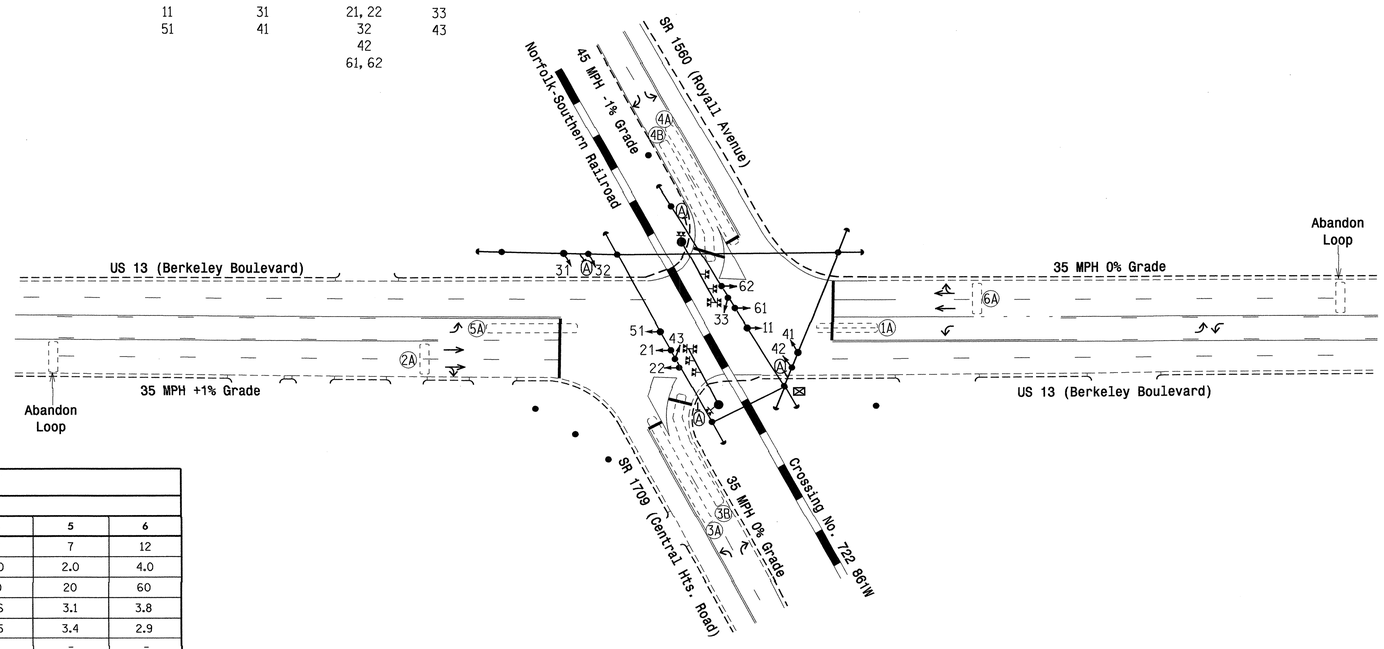
Interval 1 – Track Clearance Green	0
Interval 1 – Track Clearance Yellow	0
Interval 1 – Track Clearance Red	0
Interval 2 – Dwell Green	255
Interval 2 – Dwell Yellow	0.0*
Interval 2 – Dwell Red	0.0*
Interval 5 – Exit Green	1
Interval 5 – Yellow	0.0
Interval 5 – Red	0.0
Delay Time	0
Min Green Before Pre	1
Ped Clear Before Pre	0.0
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
Dwell Min Time	7
Ped Clear Through Yellow	N
Omit Overlaps	P

* Time defaults to time used for phase during normal operation.

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Min Green 1 *	7	12	7	7	7	12
Extension 1 *	2.0	4.0	2.0	3.0	2.0	4.0
Max Green 1 *	25	60	25	30	20	60
Yellow Clearance	3.2	3.8	3.5	3.6	3.1	3.8
Red Clearance	3.6	2.7	2.3	2.5	3.4	2.9
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	-	-	-	-	-	-
Simultaneous Gap	ON	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.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	+10	2-4-2	–	1	Y	Y	–	–	–	–	Y
2A	6X20	90	2	–	2	Y	Y	–	–	–	–	Y
3A,3B	6X80	+5	1	–	3	Y	Y	–	–	–	–	Y
4A,4B	6X90	+5	1	–	4	Y	Y	–	–	–	–	Y
5A	6X60	+10	1	–	5	Y	Y	–	–	–	–	Y
6A	6X20	90	2	–	6	Y	Y	–	–	–	–	Y

5 Phase W/RR Preempt
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Phase 1 or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0556.
11. Program parent phases for overlap "P" for all phases used in normal operation.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
	Inductive Loop Detector	
N/A	Railroad Cantilever	
N/A	Railroad Track	
N/A	Right of Way	
	Directional Arrow	
	"NO TURN ON RED" Sign (R10-11)	

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
759 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

US 13 (Berkeley Blvd.)
at
SR 1560 (Royall Ave.) &
SR 1709 (Central Hts. Rd.)

Division 4 Wayne County Goldsboro

PLAN DATE:	September 2008	REVIEWED BY:	P Alexander, PE
PREPARED BY:	EM Minshew	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
SIGNATURE 1/22/09 DATE
SIG. INVENTORY NO. 04-0556

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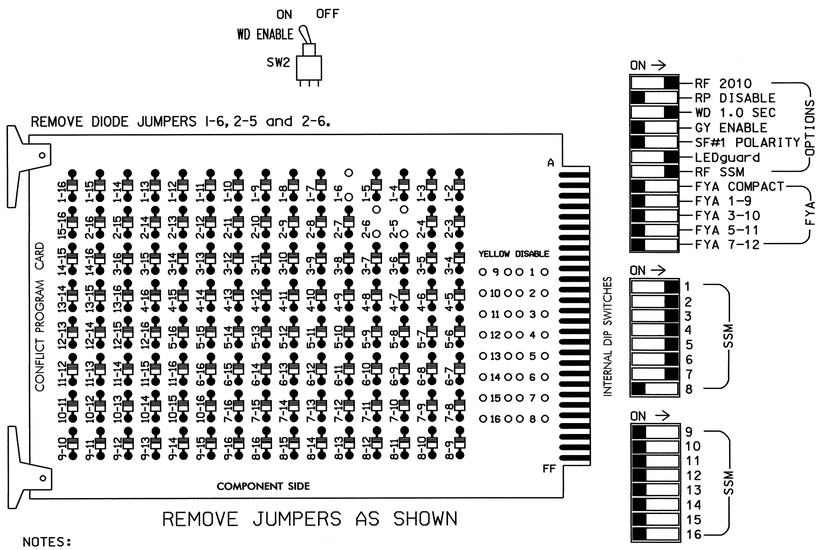
emilyshew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.60

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 8,9, 10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Program phases 2 and 6, on the controller unit, for Yellow Flash.
5. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS 3.02.20
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7
PHASES USED.....1,2,3,4,5,6,*7
OVERLAP P.....1+2+3+4+5+6

*USED ONLY DURING PREEMPTION

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.	11	21,22	NU	31, 32,33	41, 42,43	NU	51	61,62	NU	31,41	NU	NU
RED		128		116	101			134		*		
YELLOW		129		117	102			135				
GREEN		130		118	103			136				
RED ARROW	125						131					
YELLOW ARROW	126						132			123		
GREEN ARROW	127						133			124		

NU = Not Used

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

PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phase 7 for 'Omit Phase' and Phases 1, 2, 3, 4, 5 and 6 for 'Startup Calls'. This is to prevent Phase 7 from being served when not in Preempt.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	ø1 1A	ø2 2A	SLOT EMPTY	SLOT EMPTY	ø3 3A,3B	ø4 4A,4B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED			NOT USED	NOT USED								ST DC ISOLATOR
FILE "J"	U	ø5 5A	ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	PRE1 AC ISOLATOR
	L	NOT USED	NOT USED												NOT USED

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

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	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A,3B	TB4-5,6	I5U	58	20	3	3	Y	Y			
4A,4B	TB4-9,10	I6U	41	3	4	4	Y	Y			
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

OVERLAP 'P' PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press '8' (Overlaps), then '1' (Vehicle Overlap Settings).

PRESS '-' ONCE

```
PAGE 1: VEHICLE OVERLAP 'P' SETTINGS
PHASE:          ¦123456789101112131415 16
VEH OVL PARENTS:¦XXXXXX
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?....N
GREEN EXTENSION (0-255 SEC)..........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

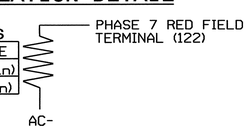
OVERLAP PROGRAMMING COMPLETE

The utilization of overlap P ensures consistent clearance timing during transition to preemption

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.

PHASE SEQUENCE PROGRAMMING DETAIL

(program controller as shown below)

FROM OASIS LOCAL CONTROLLER MAIN MENU
SELECT: 4 PHASE SEQUENCE

PHASE SEQUENCE: PAGE 1 NEXT: PAGES)

RNG	LEAD	BARRIER 1		X-LAG	LEAD	BARRIER 2		X-LAG	LEAD	BARRIER 3		X-LAG
1	1	2	0	0	3	4	0	0	7	0	0	0
2	0	6	0	5	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0556
DESIGNED: September 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 13 (Berkeley Blvd.) at SR 1560 (Royall Ave.) & SR 1709 (Central Hts. Rd.)

Division 4 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY: T. J. [illegible]
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signals Management Section, Division of Highways, State of North Carolina, Department of Transportation
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 2/17/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0556

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jeff.sloan@dot.state.nc.us
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PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 61

RAILROAD PREEMPTION PROGRAMMING DETAIL

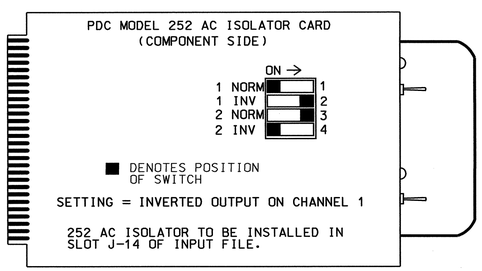
(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions).

```
   PREEMPTION  #1  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1   0  0.0  0.0 ¦
2 255  0.0  0.0 ¦       X
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   1  0.0  0.0 ¦ X   X
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............HIGH
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦                X
```

PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)

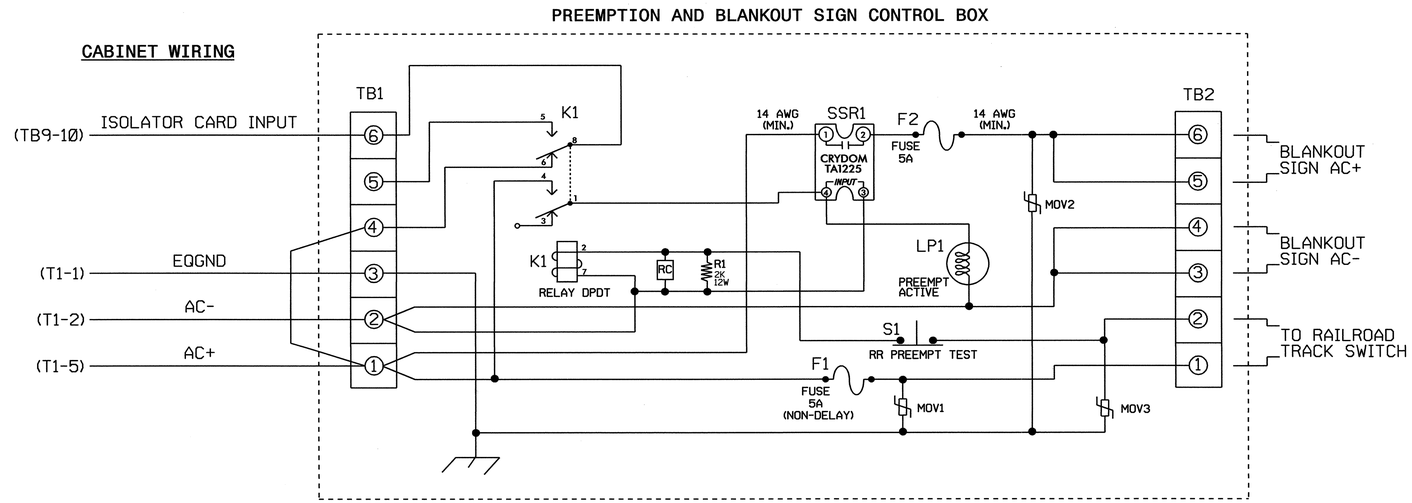


NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

RAILROAD PREEMPTION WIRING DETAIL

(wire as shown below)

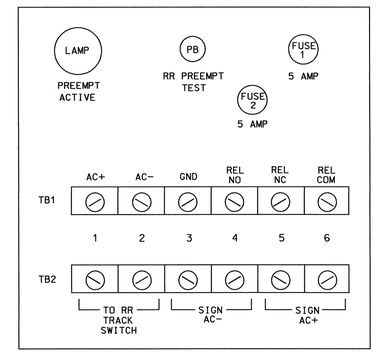
CABINET WIRING



NOTES

1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay K1 is a DPDT with 120VAC coil. Potter & Brumfield KRP11AG with octal base or approved equivalent.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output. Crydom TA1225 or approved equivalent.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
5. Resistor is valued at 2K ohm, 12 watt. Clarostat part no. VPR10F-2K or approved equivalent.
6. RC network is valued at .1 microfarad, 100 ohm.
7. If replacement movs are needed, GE part no. V150LA20A may be used.
8. Preemption and Blankout Sign Control Box is a Control Technologies part no. 2299-101 or approved equivalent.
9. IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0556
DESIGNED: September 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 13 (Berkeley Blvd.)
at
SR 1560 (Royall Ave.) &
SR 1709 (Central Hts. Rd.)

Division 4 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY: T. Vigil
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C Brown 2/17/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0556

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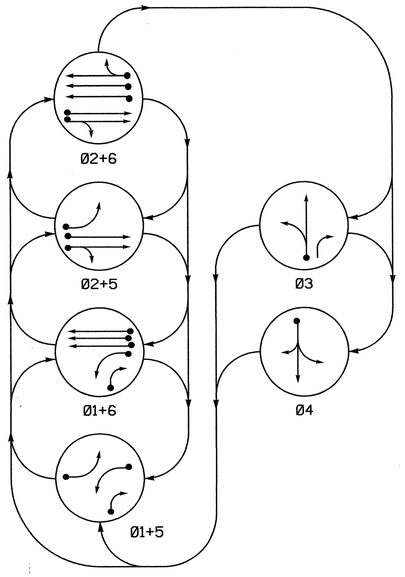
cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 62

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

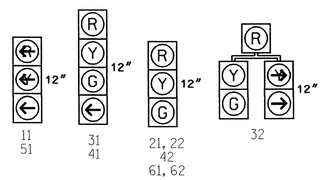
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03	04	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	R	Y
31	R	R	R	R	G ←	R	R
32	R/←	R/←	R	R	G	R	R
41	R	R	R	R	G ←	R	R
42	R	R	R	R	G	R	G
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



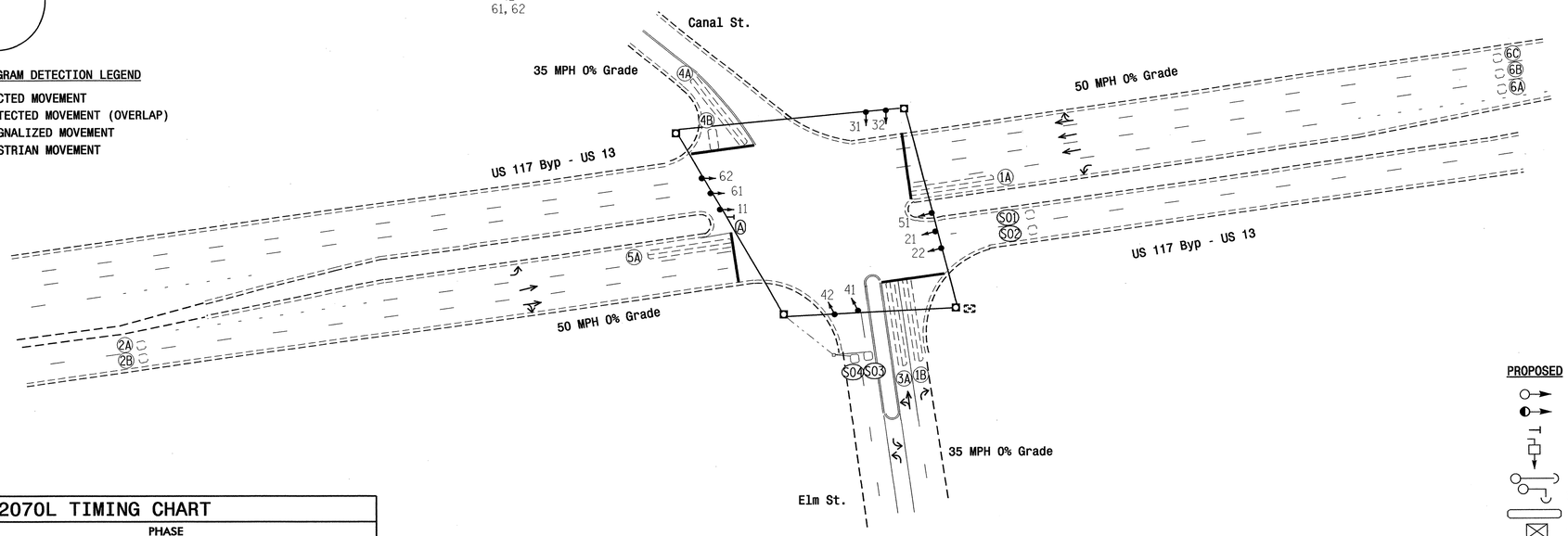
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	–	1	Y	Y	–	–	–	–	–
1B	6X60	0	2-4-2	–	1	Y	Y	–	–	15	–	–
2A	6X6	420	6	–	2	Y	Y	–	–	–	–	–
2B	6X6	420	6	–	2	Y	Y	–	–	–	–	–
3A	6X60	0	2-4-2	–	3	Y	Y	–	–	–	–	–
4A	6X60	0	2-4-2	–	4	Y	Y	–	–	3	–	–
4B	6X15	0	4	–	4	Y	Y	–	–	15	–	–
5A	6X60	0	2-4-2	–	5	Y	Y	–	–	–	–	–
6A	6X6	420	6	–	6	Y	Y	–	–	–	–	–
6B	6X6	420	6	–	6	Y	Y	–	–	–	–	–
6C	6X6	420	6	–	6	Y	Y	–	–	–	–	–
S01	6X6	+210	3	–	–	–	–	–	–	–	Y	–
S02	6X6	+210	3	–	–	–	–	–	–	–	Y	–
S03	6X6	+160±	3	Y	–	–	–	–	–	–	Y	Y
S04	6X6	+160±	3	Y	–	–	–	–	–	–	Y	Y

6 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0557.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	U-Turn "MUST YIELD" Sign (R3-27)	Ⓐ

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Min Green 1 *	7	14	7	7	7	14
Extension 1 *	1.0	6.0	1.0	1.0	1.0	6.0
Max Green 1 *	15	100	25	10	15	100
Yellow Clearance	3.0	4.8	3.8	3.8	3.0	4.8
Red Clearance	2.4	1.8	3.1	3.1	2.4	2.0
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5
Max Variable Initial *	-	40	-	-	-	40
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	50	-	-	-	50
Minimum Gap	-	3.0	-	-	-	3.0
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	ON	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 Revision

REVISION ▽ SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA R. MORTON

1/6/09
SIGNATURE DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1" = 50'

US 117 Byp./US 13 at SR 2052 (Elm St.) & (Canal St.)

Division 4 Wayne County Goldsboro

PLAN DATE:	06-15-02	REVIEWED BY:	D. Morton
PREPARED BY:	J. Cole	REVIEWED BY:	

REVISIONS	INIT.	DATE
▽ Revise clearance times, add system loops S03 and S04.	dw	1/6/09

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by DW.Morton.PE # 19798 on 9/3/02. This document is only certified as to the revisions.

SIG. INVENTORY NO. 04-0557

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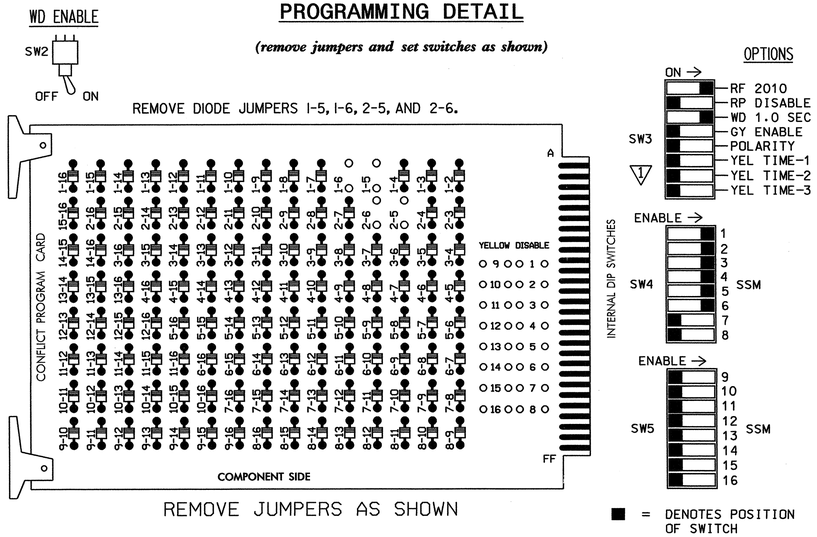
terryblount

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.63

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.
3. ⚠1 Make sure YEL TIME-1, YEL TIME-2, and YEL TIME-3 switches are set to "OFF".

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. 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 7,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE 2070L
CABINET.....EAGLE 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6
PHASES USED.....1,2,3,4,5,6
OVERLAPS.....NONE

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.	11	32	21,22	NU	31	32	41	42	NU	51	61,62	NU	NU	NU	NU
RED			128		116	116	101	101			134				
YELLOW			129		117	117	102	102			135				
GREEN			130		118	118	103	103			136				
RED ARROW	125									131					
YELLOW ARROW	126	126								132					
GREEN ARROW	127	127			118		103			133					
✋															
🚶															

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1 1A	Ø 2 2A	Ø 1 1B	SLOT EMPTY	Ø 3 3A	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø 2 2B	NOT USED		NOT USED	Ø 4 4B								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 6 6A	Ø 6 6C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SYS. DET. SØ3	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø 6 6B	NOT USED				SYS. DET. SØ2		SYS. DET. SØ4					

EX.: 1A, 2A, ETC. = LOOP NO.'S ⚠1

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	TB2-1,2	I1U	56	18	1	1	Y	Y			
1B	TB2-9,10	I3U	63	25	32	1	Y	Y			15
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	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			15
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
6C	TB3-9,10	J3U	64	26	36	6	Y	Y			
✱SØ1	TB7-1,2	J7U	66	28	38	SYS					
✱SØ2	TB7-3,4	J7L	79	41	48	SYS					
✱SØ3	TB7-9,10	J9U	59	21	15	SYS					
✱SØ4	TB7-11,12	J9L	61	23	17	SYS					

⚠1

✱ SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0557
DESIGNED: 06-15-02
ORIGINALLY SEALED: 09-03-02
REVISED: 01-06-09

⚠1

Signal Revision

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 117 Byp./US 13
at
SR 2052 (Elm St.) & (Canal St.)

Division 04 Wayne County Goldsboro

PLAN DATE: August 2002 REVIEWED BY: R. Hinshaw
PREPARED BY: James Peterson REVIEWED BY:

REVISIONS	INIT.	DATE
⚠1 Added system loops SØ3 & SØ4; revised monitor switch settings. (WSA) ORI 1/8/09	KCB	4/13/09

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

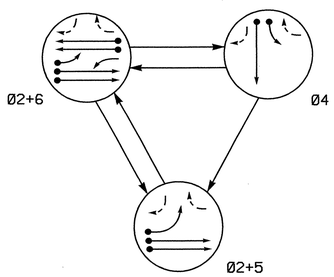
George C. Brown 4/13/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0557

07-JAN-2009 11:45
s:\#ts signals\workgroups\sig management\wsa\040557_sm_ele_xxx.dgn
gcarmstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 64

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

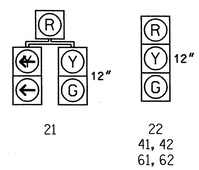
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø4	FLASH
21	G	G	R	Y
22	G	G	R	Y
41,42	R	R	G	R
61,62	R	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

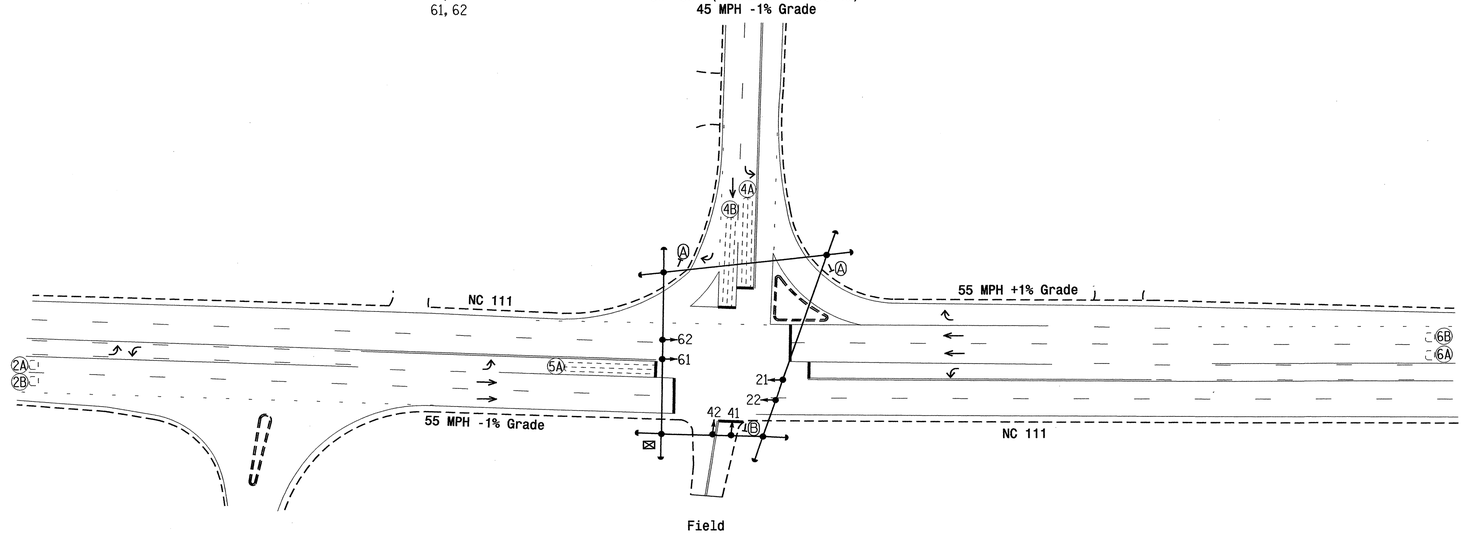
INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A, 2B	6X6	420	5	-	2	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	5	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	Y
				-	2	Y	Y	Y	-	3	-	Y
6A, 6B	6X6	420	5	-	6	Y	Y	-	-	-	-	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0588.

SR 1961 (Sheridan Forest Rd)
45 MPH -1% Grade



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
Ⓑ	"STOP" Sign (R1-1)	Ⓑ

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Min Green 1 *	14	7	7	14
Extension 1 *	6.0	2.0	1.0	6.0
Max Green 1 *	110	20	15	110
Yellow Clearance	5.2	4.6	3.0	5.2
Red Clearance	1.0	1.2	2.6	1.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.0	-	-	2.0
Max Variable Initial *	46	-	-	46
Time Before Reduction *	20	-	-	20
Time To Reduce *	40	-	-	40
Minimum Gap	3.4	-	-	3.4
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 50 1"=50'

NC 111
at
SR 1961 (Sheridan Forest Rd)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: P. Alexander, PE
PREPARED BY: AB Hambright/Emm REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER P. ALEXANDER
12/17/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0588

17-DEC-2008 09:38
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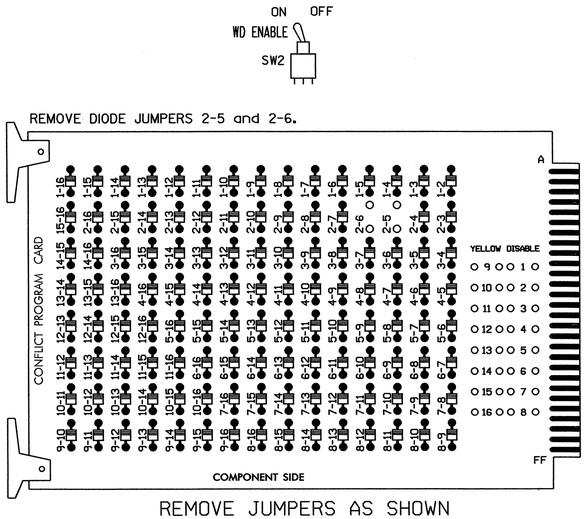
emminshaw

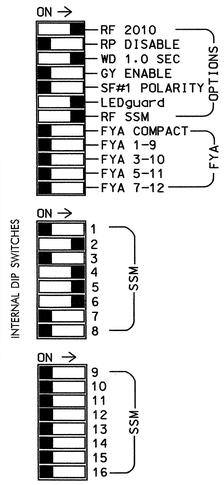
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.65

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 1,3,7, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City 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.	NU	21,22	NU	NU	41,42	NU	21	61,62	NU	NU	NU	NU
RED		128			101		*	134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW							132					
GREEN ARROW							133					

NU = Not Used

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

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S5,S6
PHASES USED.....2,4,5,6
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	SLOT	Ø2 2A,2B	SLOT	WBS ⊗	SLOT	Ø4 4A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	EMPTY	NOT USED	EMPTY	INPUT	EMPTY	Ø4 4B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A,6B	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	NOT USED	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			5
5A[1]	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y	Y		3
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			

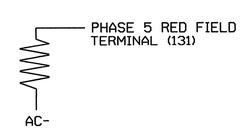
[1] Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0588
DESIGNED: September 2008
SEALED: 12/17/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pwky, Garner, NC 27529

NC 111
at
SR 1961 (Sheridan Forest Rd.)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: JTP
PREPARED BY: K. McDaniel REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE DATE 12-31-08
SIG. INVENTORY NO. 04-0588

23-DEC-2008 08:07
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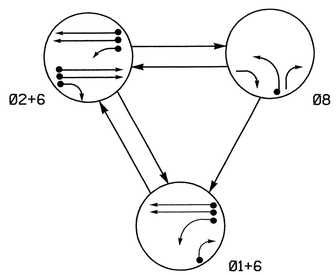
kmmcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig 66

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

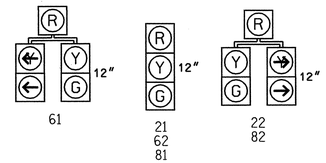
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 08	FLASH
21	R	G	R	Y
22	R	G	R/G	Y
61	G/R	G	R	Y
62	G	G	R	Y
81	R	R	G	R
82	R/G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



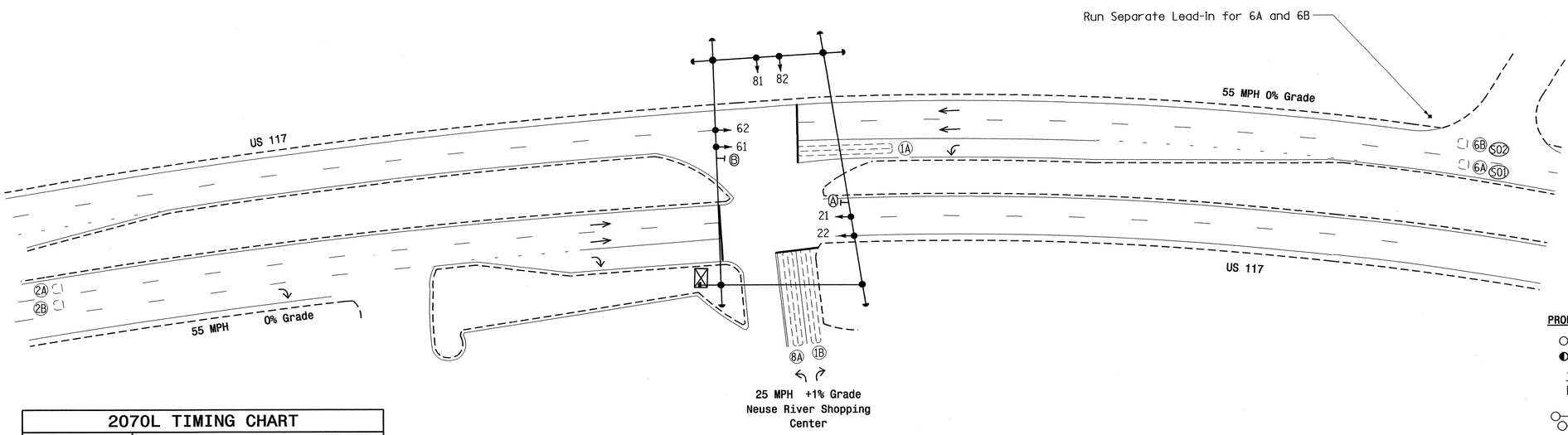
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
					6	Y	Y	Y	-	3	-	Y
1B	6X60	0	2-4-2	-	1	Y	Y	-	-	20	-	Y
2A,2B	6X6	420	5	-	2	Y	Y	-	-	-	-	Y
6A/S01	6X6	420	5	-	6	Y	Y	-	-	-	Y	Y
6B/S02	6X6	420	5	-	6	Y	Y	-	-	-	Y	Y
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	3	-	Y

3 Phase
Fully Actuated
Goldsboro City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Existing "Left Turn Yield on Green" ball sign(s)-(R10-12) may be removed at the discretion of the Regional Traffic Engineer.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0597.



2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	14	14	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	15	120	120	15
Yellow Clearance	3.0	5.2	5.2	3.0
Red Clearance	2.8	1.0	1.0	2.3
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	2.0	1.5	-
Max Variable Initial *	-	42	42	-
Time Before Reduction *	-	20	20	-
Time To Reduce *	-	35	35	-
Minimum Gap	-	3.4	3.4	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	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.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	No U-Turn Sign (R3-4)	A
B	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	B

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

US 117
at
Main Entrance for
Neuse River Shopping Center

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008	REVIEWED BY: PLA
PREPARED BY: JPG	REVIEWED BY:

REVISIONS	INIT.	DATE

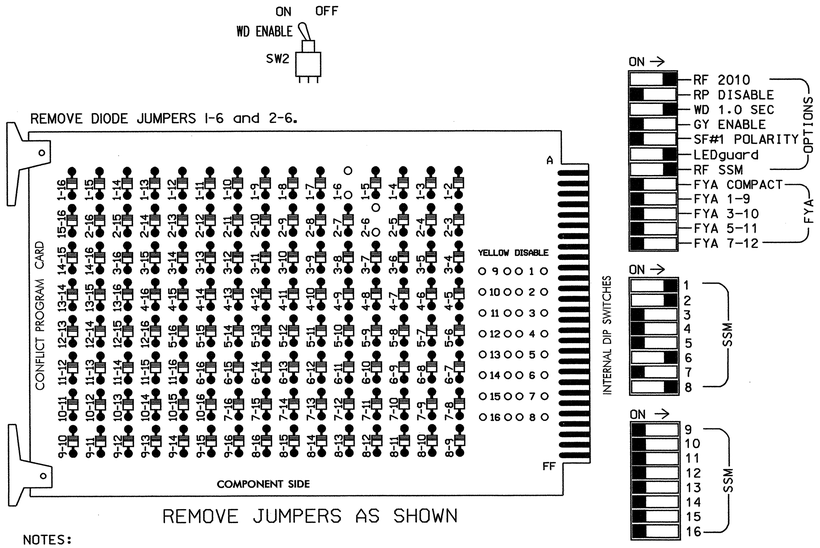
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 29904 ENGINEER JASON P. GALLOWAY
SIGNATURE 11/18/08 DATE
SIG. INVENTORY NO. 04-0597

19-DEC-2008 11:12
s:\its signals\signal design section\eastern region\div-04\goldsboro city system\signal designs\04-0597\04-0597_sig_dsn_2008mmdd.dgn
emminshaw

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 67

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 3,4,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City 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.	61,82	21,22	NU	NU	NU	NU	NU	61,62	NU	NU	22	81,82	NU
RED	✳	128						134				107	
YELLOW		129						135				108	
GREEN		130						136				109	
RED ARROW													
YELLOW ARROW	126										108		
GREEN ARROW	127										109		

NU = Not Used

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

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S6,S8
PHASES USED.....1,2,6,8
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	Ø 1 / 1A	Ø 1 / 1B	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS / DC ISOLATOR
	L	NOT USED	Ø 2 / 2A,2B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST / DC ISOLATOR
FILE "J"	U	SLOT	Ø6/SYS / 6A/S01	SLOT	WIRED INPUT ⊗	SLOT	Ø 8 / 8A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	Ø6/SYS / 6B/S02	EMPTY		EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			20
2A,2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
6A/S01	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S02	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3

[1] Add jumper from I1-W to J4-W. on rear of input file.

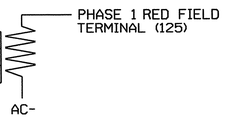
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0597
DESIGNED: September 2008
SEALED: 11/18/08
REVISED: N/A

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.

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 117
at
Main Entrance for
Neuse River Shopping Center

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Lupe
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 12/18/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0597

08-DEC-2008 13:38
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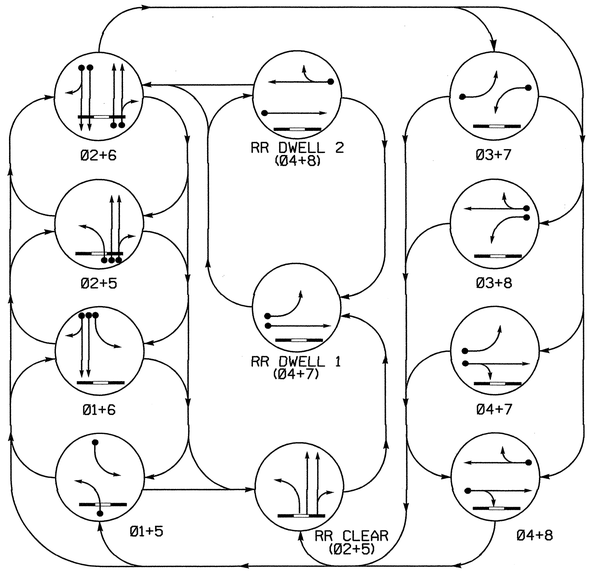
cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 68

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	RR CLR	RR DWELL 1	RR DWELL 2	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	G	R	R	Y	
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
41,42	R	R	R	R	R	R	G	G	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	R	R	R	R	Y
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~	←	~~R~~	~~R~~
81,82	R	R	R	R	R	G	R	G	R	R	G	R
Sign "A"	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	*

* See Note 8

SIGNAL FACE I.D.

All Heads L.E.D.

11	21, 22
31	41, 42
51	61, 62
71	81, 82

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	+5	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A	6X6	200	4	-	2	Y	Y	-	-	-	-	Y
2B	6X6	200	4	-	2	Y	Y	-	-	-	-	Y
3A	6X40	+5	2-4-2	-	3	Y	Y	-	-	3	-	Y
4A	6X40	+5	2-4-2	-	4	Y	Y	-	-	-	-	Y
5A	6X40	+5	2-4-2	-	5	Y	Y	-	-	3	-	Y
6A	6X6	300	5	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	300	5	Y	6	Y	Y	-	-	-	-	Y
7A	6X40	+5	2-4-2	-	7	Y	Y	-	-	3	-	Y
8A	6X40	+5	2-4-2	-	8	Y	Y	-	-	5	-	Y
S01	6X6	+200	EXISTING	-	-	-	-	-	-	-	Y	Y
S02	6X6	+200	EXISTING	-	-	-	-	-	-	-	Y	Y

8 Phase W/RR Preempt
Fully Actuated
(Goldsboro City System)

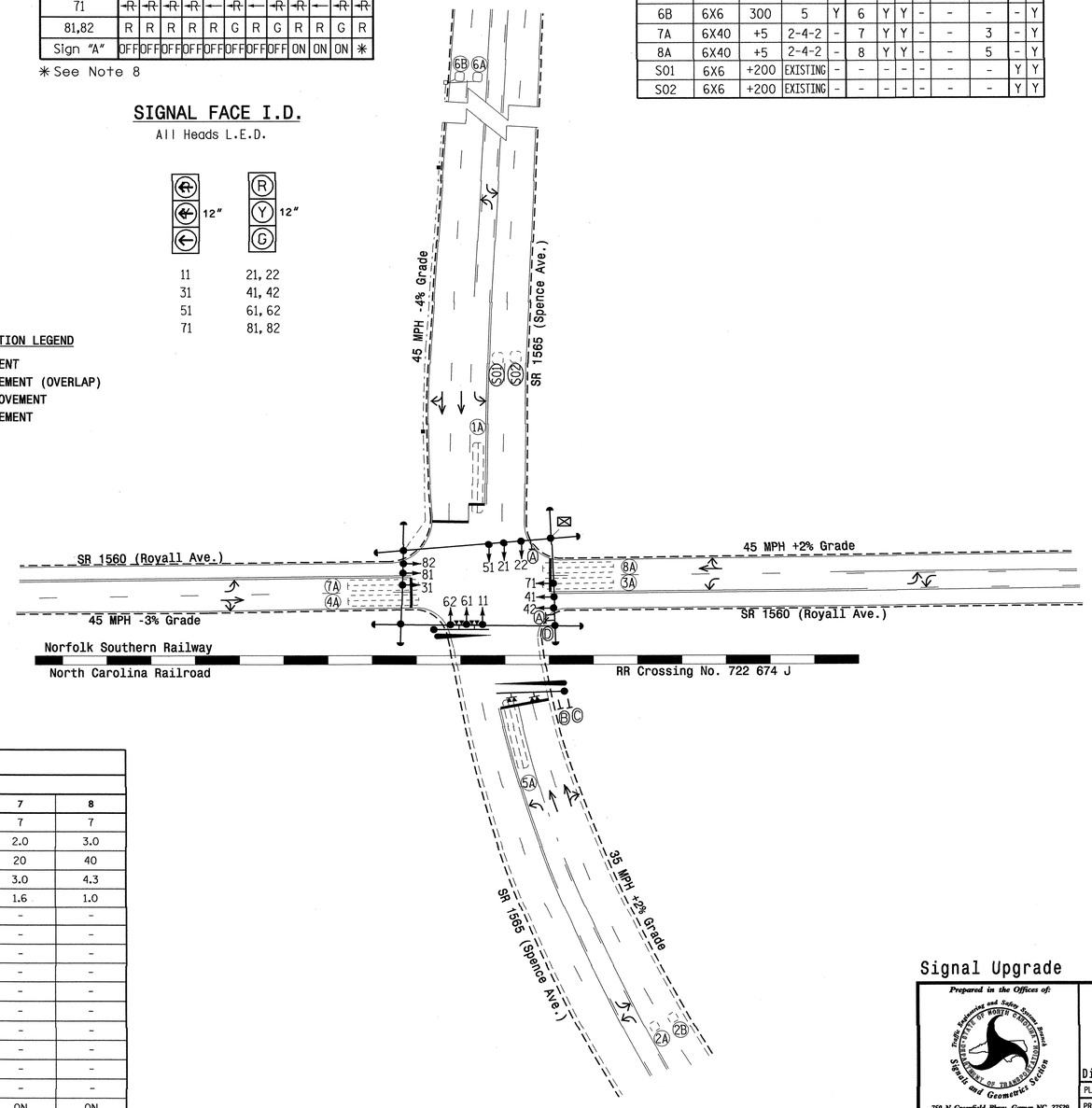
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 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. Pavement markings are existing.
8. Ensure flashing operation does not alter operation of blankout signs.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0598.
11. Program parent phases for overlap "P" for all phases used in normal operation.

2070 RAIL PREEMPTION

Interval 1 – Track Clearance Green	11
Interval 1 – Track Clearance Yellow	3.7
Interval 1 – Track Clearance Red	2.2
Interval 2 – Dwell Green	255
Interval 2 – Dwell Yellow	0.0*
Interval 2 – Dwell Red	0.0*
Interval 5 – Exit Green	1
Interval 5 – Yellow	0.0
Interval 5 – Red	0.0
Delay Time	0
Min Green Before Pre	1
Ped Clear Before Pre	0.0
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
Dwell Min Time	7
Ped Clear Through Yellow	N
Omit Overlaps	P

* Time defaults to time used for phase during normal operation.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
N/A	Railroad Gate	
N/A	Railroad Cantelevor	
N/A	Railroad Track	
	Directional Arrow	
Ⓐ	"NO TURN ON RED" Sign (R10-11)	Ⓐ
Ⓑ	"STOP HERE ON RED" Sign (R10-6)	Ⓑ
Ⓒ	"DO NOT STOP ON TRACKS" Sign (R8-8)	Ⓒ
Ⓓ	"NO RIGHT TURN - TRAIN" Fiber Optic Blankout Sign	Ⓓ

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	4	12	7	7
Extension 1 *	2.0	6.0	2.0	3.0	2.0	6.0	2.0	3.0
Max Green 1 *	20	120	20	40	25	120	20	40
Yellow Clearance	3.0	3.7	3.0	4.8	3.0	4.9	3.0	4.3
Red Clearance	2.3	1.7	1.8	1.1	2.9	1.0	1.6	1.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	24	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	50	-	-	-	50	-	-
Minimum Gap	-	2.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1560 (Royall Ave.) at SR 1565 (Spence Ave.)

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY: PL Alexander, PE

PREPARED BY: AB Hambright/Emm REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE 0 40 1"=40'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL L. ALEXANDER

SIGNATURE DATE 1/22/09

SIG. INVENTORY NO. 04-0598

22-JAN-2009 09:31
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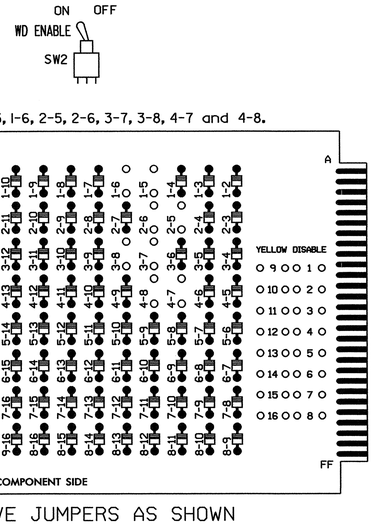
emhinshaw

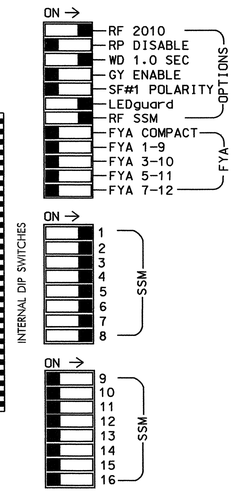
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 69

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Program phases 2 and 6, on the controller unit, for Yellow Flash.
5. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
6. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
7. The cabinet and controller are part of the Goldsboro City 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.	11	21,22	NU	31	41,42	NU	51	61,62	NU	71	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125			116			131			122		
YELLOW ARROW	126			117			132			123		
GREEN ARROW	127			118			133			124		

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS 3.02.20
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAP P.....1+2+3+4+5+6+7+8

OVERLAP 'P' PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press '8' (Overlaps), then '1' (Vehicle Overlap Settings).

PRESS '-' ONCE

```
PAGE 1: VEHICLE OVERLAP 'P' SETTINGS
PHASE:              ;123456789101112131415 16
VEH OVL PARENTS:    ;XXXXXXXX
VEH OVL NOT VEH:    ;
VEH OVL NOT PED:    ;
VEH OVL GRN EXT:    ;
STARTUP COLOR:  _ RED  _ YELLOW  _ GREEN
FLASH COLORS:   _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:    (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

The utilization of overlap P ensures consistent clearance timing during transition to preemption

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	SLOT EMPTY	SLOT EMPTY	Ø3 3A	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø2 2B			NOT USED	NOT USED			SYS. DET. SØ2					ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A	SLOT EMPTY	SLOT EMPTY	Ø7 7A	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	PRE1 AC ISOLATOR
	L	NOT USED	Ø6 6B			NOT USED	NOT USED								NOT USED

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			5
* SØ1	TB6-9,10	I9U	60	22	11	SYS					
* SØ2	TB6-11,12	I9L	62	24	13	SYS					

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0598
DESIGNED: October 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1560 (Royall Ave.)
at
SR 1565 (Spence Ave.)

Division 4 Wayne County Goldsboro

PLAN DATE: January 2009	REVIEWED BY: T. Jaya		
PREPARED BY: C. Strickland	REVIEWED BY:		
REVISIONS		INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 1/26/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0598

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cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.7O

RAILROAD PREEMPTION PROGRAMMING DETAIL

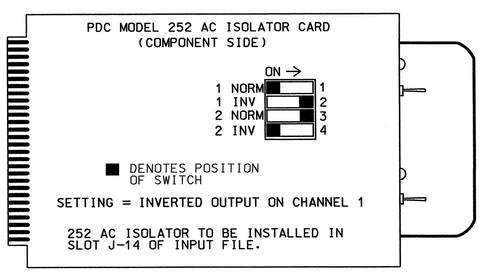
(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions).

```
   PREEMPTION  #1  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED   ¦123456789101112131415 16
1  11  3.7  2.2  ¦ X  X
2 255  0.0  0.0  ¦   X  XX
3   0  0.0  0.0  ¦
4   0  0.0  0.0  ¦
5   1  0.0  0.0  ¦ X   X
EXIT CALLS       ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............HIGH
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦                X
```

PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)

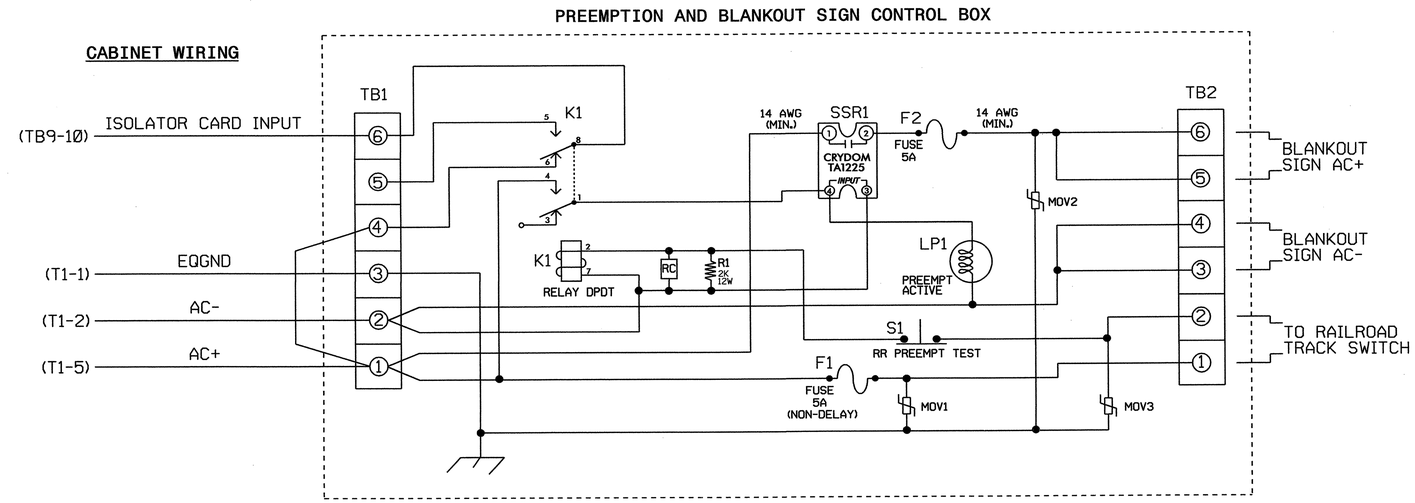


NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

RAILROAD PREEMPTION WIRING DETAIL

(wire as shown below)

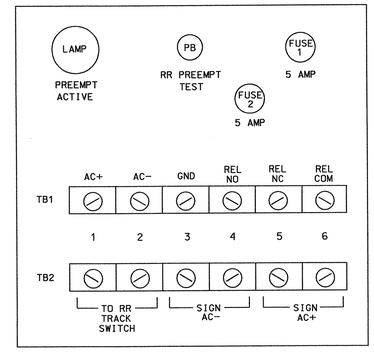
CABINET WIRING



NOTES

1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay K1 is a DPDT with 120VAC coil. Potter & Brumfield KRP11AG with octal base or approved equivalent.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output. Crydom TA1225 or approved equivalent.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
5. Resistor is valued at 2K ohm, 12 watt. Clarostat part no. VPR10F-2K or approved equivalent.
6. RC network is valued at .1 microfarad, 100 ohm.
7. If replacement movs are needed, GE part no. V150LA20A may be used.
8. Preemption and Blankout Sign Control Box is a Control Technologies part no. 2299-101 or approved equivalent.
9. IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0598
DESIGNED: October 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1560 (Royall Ave.)
at
SR 1565 (Spence Ave.)

Division 4 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY: T. Jag
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

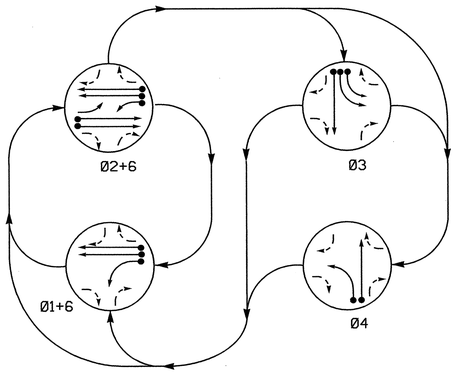
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/26/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0598

23-JAN-2009 11:19
s:*ts_signals\workgroups\sig management\strickland\04059B_sm_010_xxx.dgn
cbstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 7l

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

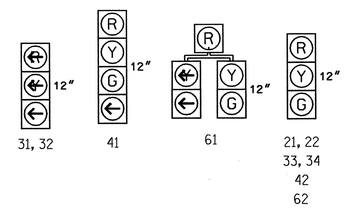
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø3	Ø4	FLASH
21, 22	R	G	R	R	Y
31, 32	~~R~~	~~R~~	~~-~~	~~R~~	~~R~~
33, 34	R	R	G	R	R
41	R	R	R	G	R
42	R	R	R	G	R
61	G	G	R	R	Y
62	G	G	R	R	Y

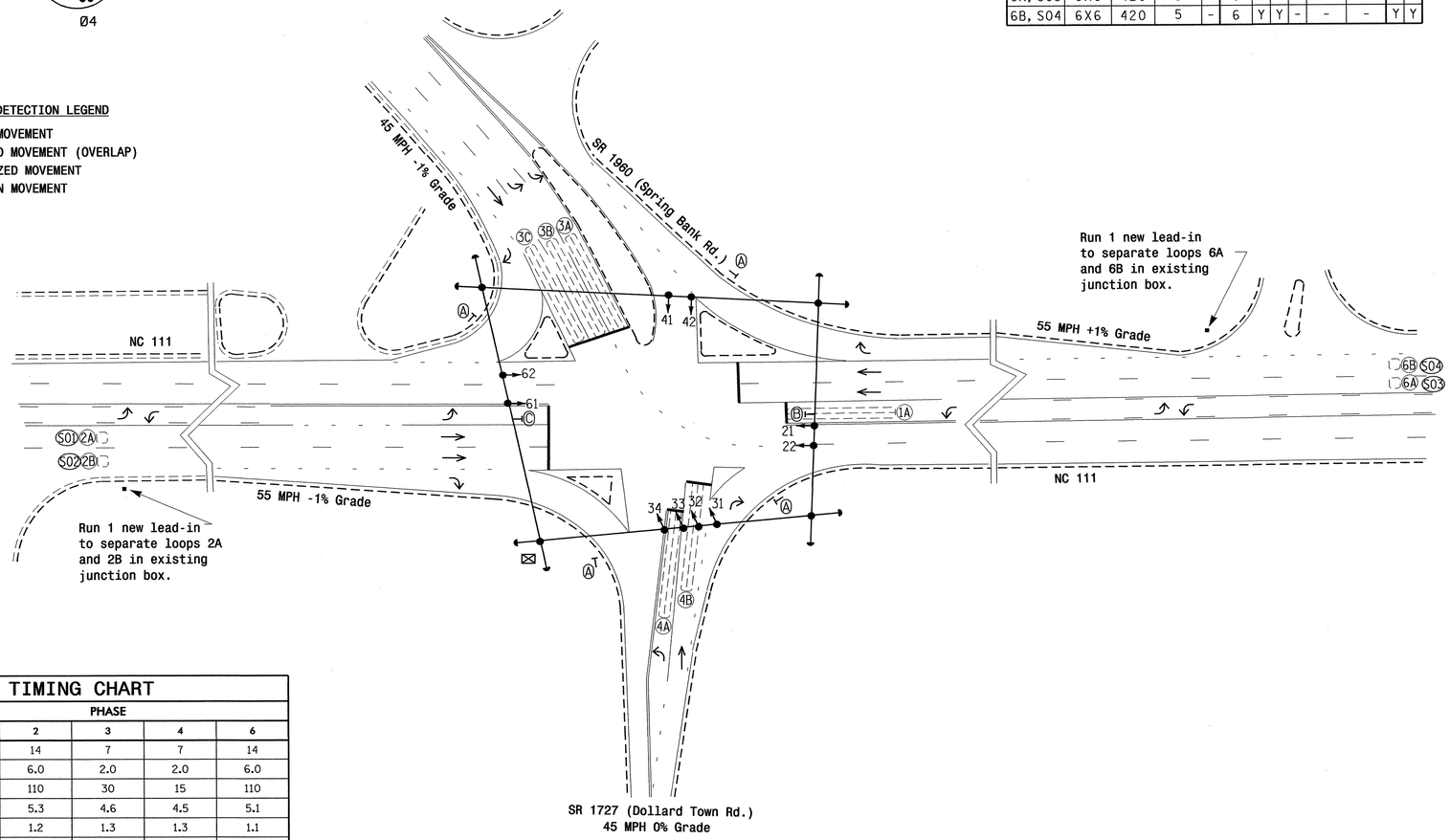
SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
					6	Y	Y	Y	-	3	-	Y
2A, S01	6X6	420	5	-	2	Y	Y	-	-	-	Y	Y
2B, S02	6X6	420	5	-	2	Y	Y	-	-	-	Y	Y
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	-	-	Y
3B	6X60	0	2-4-2	-	3	Y	Y	-	-	-	-	Y
3C	6X60	0	2-4-2	-	3	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	5	-	Y
6A, S03	6X6	420	5	-	6	Y	Y	-	-	-	Y	Y
6B, S04	6X6	420	5	-	6	Y	Y	-	-	-	Y	Y



2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	6
Min Green 1 *	7	14	7	7	14
Extension 1 *	1.0	6.0	2.0	2.0	6.0
Max Green 1 *	15	110	30	15	110
Yellow Clearance	3.0	5.3	4.6	4.5	5.1
Red Clearance	2.5	1.2	1.3	1.3	1.1
Red Revert	2.0	2.0	2.0	2.0	5.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	-	2.0	-	-	2.0
Max Variable Initial *	-	46	-	-	46
Time Before Reduction *	-	20	-	-	20
Time To Reduce *	-	40	-	-	40
Minimum Gap	-	3.4	-	-	3.4
Recall Mode	-	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-	-
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.

4 Phase Fully Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. ~~Closed loop system data:~~ Controller Asset #0603.
11. Existing sign R10-12 may be removed at the discretion of the Regional Traffic Engineer.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"YIELD" Sign (R1-2)	Ⓐ
Ⓑ	Left Arrow "ONLY" Sign (R3-5L)	Ⓑ
Ⓒ	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	Ⓒ

Signal Upgrade

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signals and Geometrics Section, Division of Highways, State of North Carolina, Department of Transportation
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40 1"=40'

NC 111 at SR 1960 (Spring Bank Road) / SR 1727 (Dollard Town Road)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: EM Minshew

PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER ALEXANDER B. HAMBRIGHT

SIGNATURE DATE 11/21/08

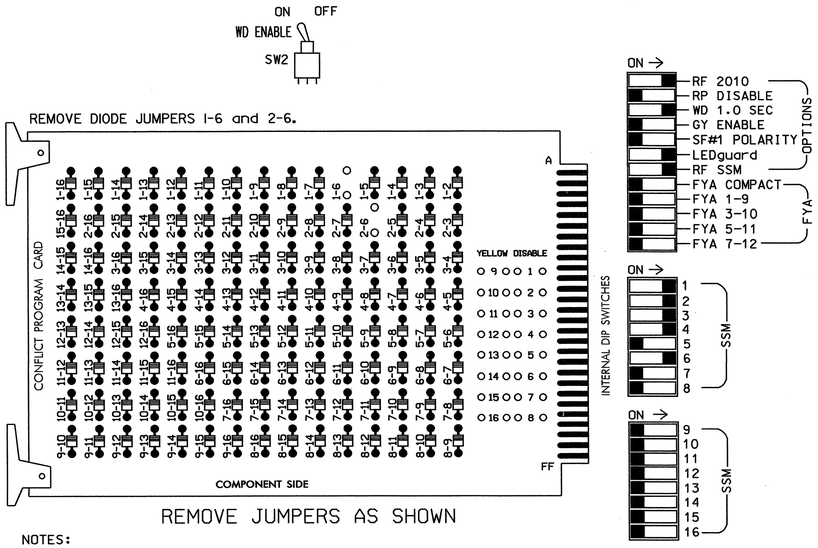
SIG. INVENTORY NO. 04-0603

20-NOV-2008 12:35
S:\TIS Signals\Signal Design Section\Eastern Region\Div-04\Goldsboro City System\Signal Designs\04-0603\04-0603_sig_dsn_2008mmdd.dgn
abhambright

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 72

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 5,7,8, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S6
PHASES USED.....1,2,3,4,6
OVERLAPS.....NONE

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	31,32	33,34	41	42	NU	NU	61,62	NU	NU	NU	NU
RED	*	128			116	101	101			134				
YELLOW		129			117	102	102			135				
GREEN		130			118	103	103			136				
RED ARROW				116										
YELLOW ARROW	126			117										
GREEN ARROW	127			118		103								

NU = Not Used

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

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.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1	Ø2/SYS	Ø 3	SLOT EMPTY	Ø 3	Ø 4	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
		1A	2A/SØ1	3A		3C	4A								
	L	NOT USED	Ø2/SYS	Ø 3		NOT USED	Ø 4								ST DC ISOLATOR
			2B/SØ2	3B			4B								
FILE "J"	U	SLOT EMPTY	Ø6/SYS	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
			6A/SØ3												
	L		Ø6/SYS												
			6B/SØ4												

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
2A/SØ1	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/SØ2	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
3A	TB2-9,10	I3U	63	25	32	3	Y	Y			
3B	TB2-11,12	I3L	76	38	42	3	Y	Y			
3C	TB4-5,6	I5U	58	20	3	3	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			5
6A/SØ3	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/SØ4	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			

[1] Add jumper from I1-W to J4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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

PHASE 1 RED FIELD TERMINAL (125)

AC-

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0603
DESIGNED: September 2008
SEALED: 11/21/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
Signal Management Section
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

750 N. Greenfield Pwky, Garner, NC 27529

NC 111
at
SR 1960 (Spring Bank Road)/
SR 1727 (Dollard Town Road)

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 12/16/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0603

25-NOV-2008 09:45
s:\its signals\workgroups\sig management\strickland\040603_smlele_xxx.dgn
cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.73

PHASING DIAGRAM

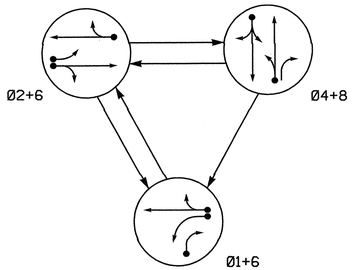


TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø4+8	PHASE FLASH
11	~~←~~	~~R~~	~~R~~	~~R~~
21, 22	R	G	R	Y
41	R	R	G	R
42	R/→	R	G	R
61, 62	G	G	R	Y
81, 82	R	R	G	R

2070L LOOP & DETECTOR INSTALLATION

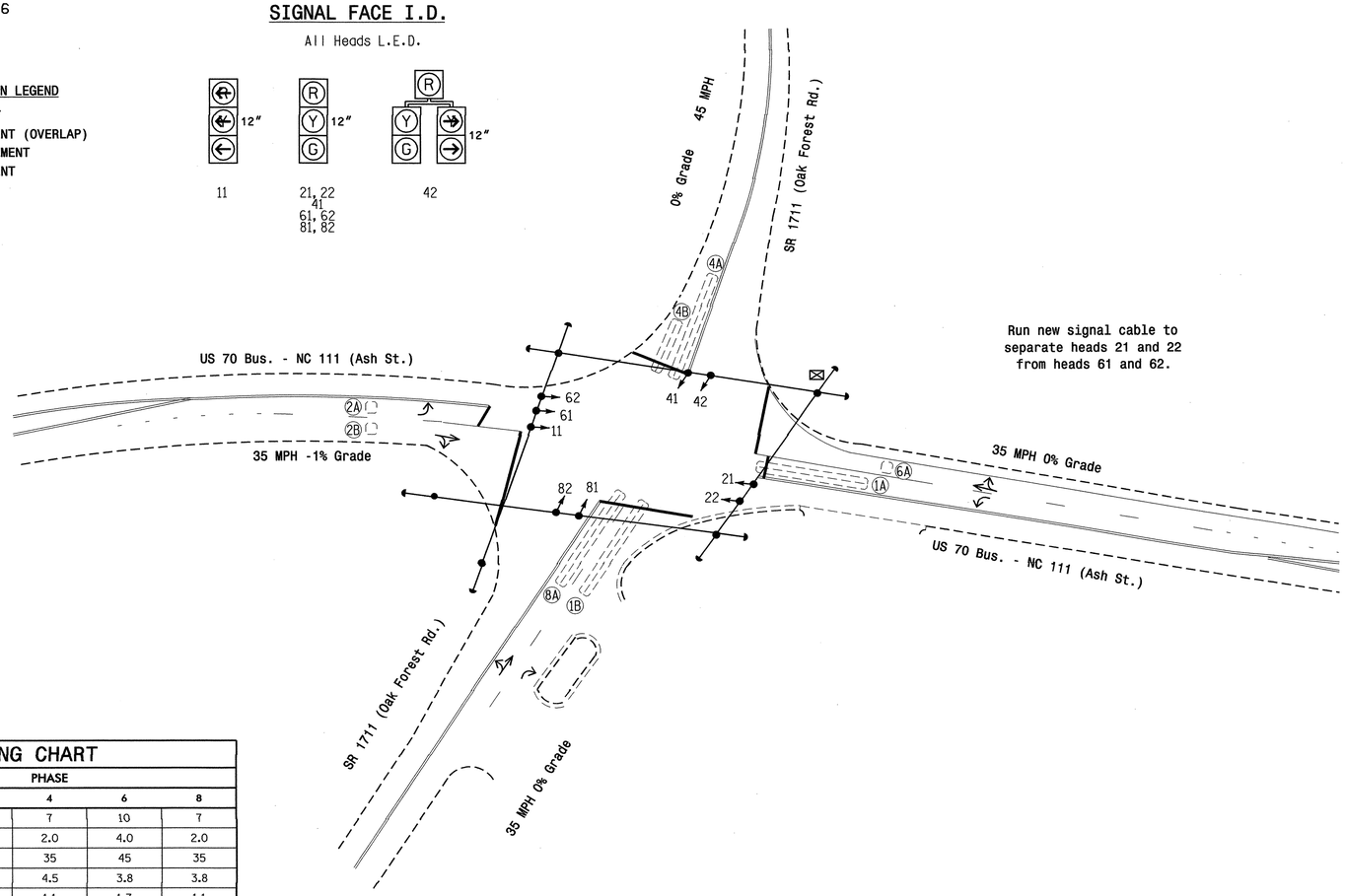
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	-	1	Y	Y	-	-	3	-	Y
1B	6X60	+5	2-4-2	-	1	Y	Y	-	-	15	-	Y
2A, 2B	6X6	70	EXIST	-	2	Y	Y	-	-	-	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X30	+5	2-4-2	-	4	Y	Y	-	-	-	-	Y
6A	6x6	70	EXIST	-	6	Y	Y	-	-	-	-	Y
8A	6X60	+5	2-4-2	-	8	Y	Y	-	-	3	-	-

SIGNAL FACE I.D.

All Heads L.E.D.

PHASING DIAGRAM DETECTION LEGEND

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



Run new signal cable to separate heads 21 and 22 from heads 61 and 62.

3 Phase Fully Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0605.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	7	10	7	10	7
Extension 1 *	1.0	4.0	2.0	4.0	2.0
Max Green 1 *	20	45	35	45	35
Yellow Clearance	3.0	3.9	4.5	3.8	3.8
Red Clearance	2.9	2.4	1.1	1.7	1.1
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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1" = 40'

US 70 Bus.-NC111 (Ash St.) at SR 1711 (Oak Forest Rd.)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY:

PREPARED BY: L. Blount REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL E. ALEXANDER

SIGNATURE 1/13/09 DATE

SIG. INVENTORY NO. 04-0605

13-JAN-2009 14:46
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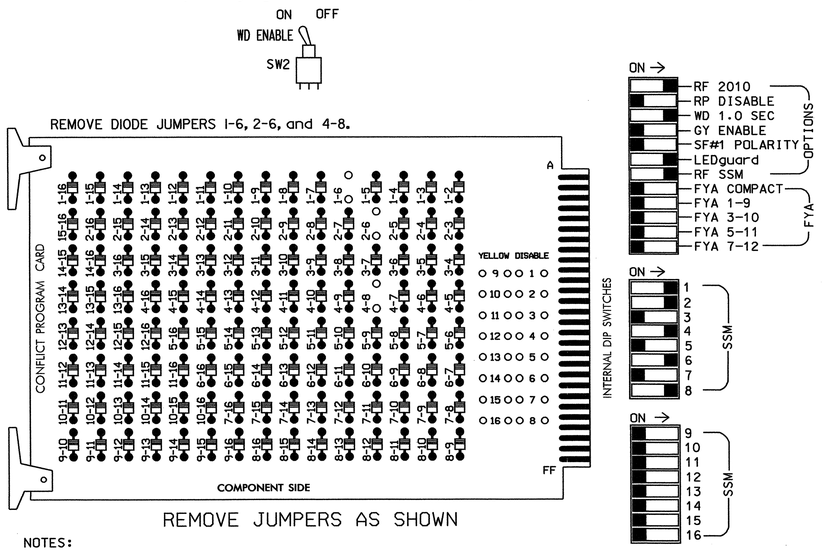
Lorin Blount

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 74

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 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

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.	11	42	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	125												
YELLOW ARROW	126	126											
GREEN ARROW	127	127											
✋													
🚶													

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A,2B	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			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0605
DESIGNED: September 2008
SEALED: 01-13-09
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 70 Bus.-NC 111 (Ash St.)
at
SR 1711 (Oak Forest Rd.)

Division 04 Wayne County Goldsboro

PLAN DATE: January 2009 REVIEWED BY: T. Jgm
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

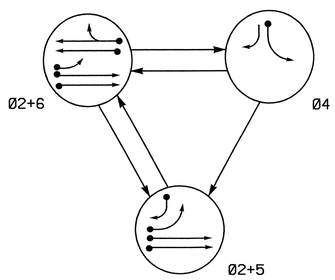
George C. Brown 1/15/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0605

14-JAN-2009 08:41
s:\its signals\workgroups\sig management\040605_sample_xxx.dgn
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.75

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

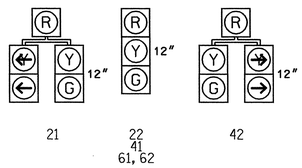
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø4	FLASH
21	G	G	R	Y
22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
61, 62	R	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



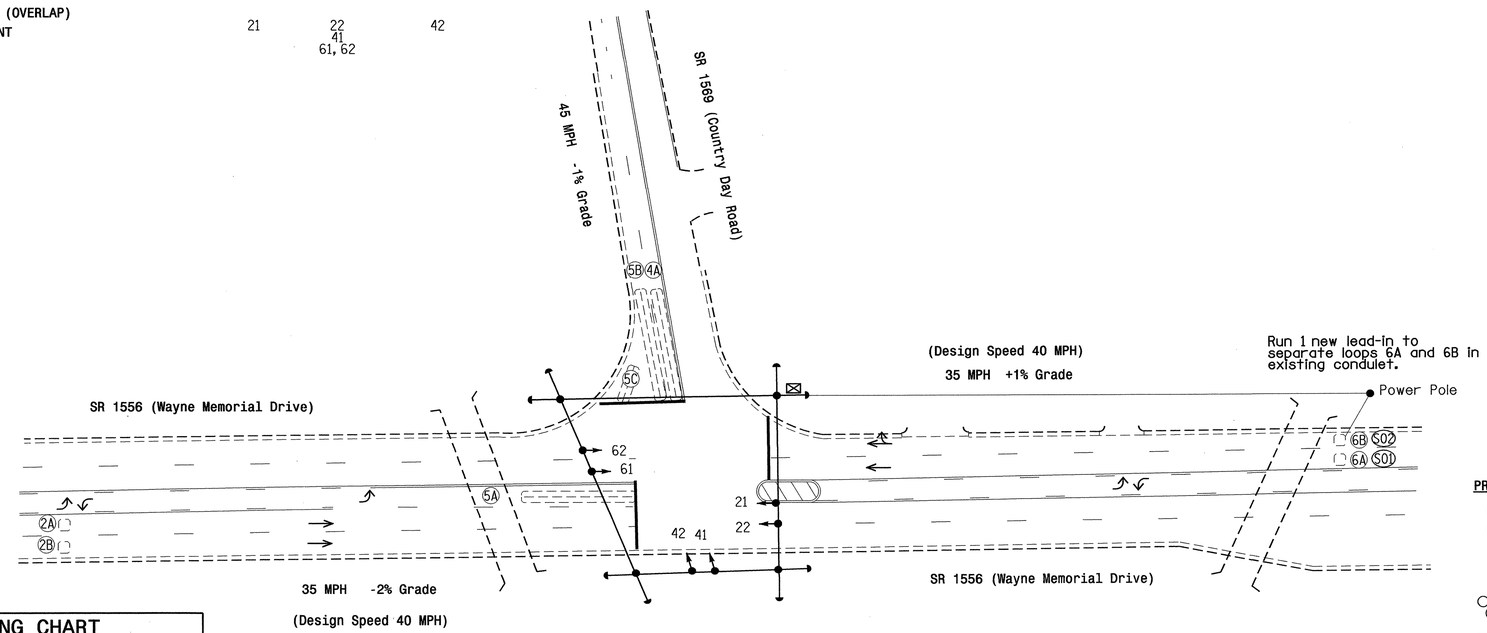
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A, 2B	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	5	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	Y
					2	Y	Y	Y	-	3	-	Y
5B	6X60	0	2-4-2	-	5	Y	Y	-	-	10	-	Y
5C	6X20	0	2-4-2	-	5	Y	Y	-	-	10	-	Y
6A/S01	6X6	300	4	-	6	Y	Y	-	-	-	Y	Y
6B/S02	6X6	300	4	-	6	Y	Y	-	-	-	Y	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Run all lead-in cable overhead on existing utility poles where possible.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. ~~Closed loop system data:~~ Controller Asset #0606.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Min Green 1 *	12	7	7	12
Extension 1 *	6.0	2.0	2.0	6.0
Max Green 1 *	100	25	15	100
Yellow Clearance	4.2	3.0	3.0	4.2
Red Clearance	1.2	2.6	2.3	1.6
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.0	-	-	1.5
Max Variable Initial *	34	-	-	34
Time Before Reduction *	20	-	-	20
Time To Reduce *	50	-	-	50
Minimum Gap	3.0	-	-	3.0
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

SR 1556 (Wayne Memorial Drive) at SR 1569 (Country Day Road)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY:
PREPARED BY: L. Blount REVIEWED BY:

REVISIONS	INIT.	DATE

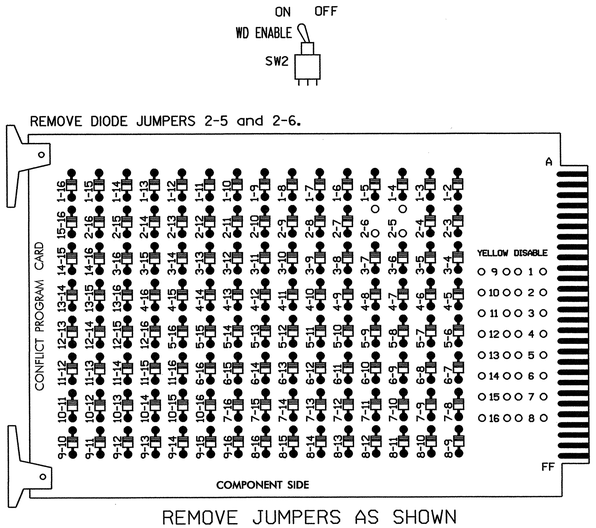
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 23489 L. BLOUNT
SIGNATURE 12/5/08 DATE
SIG. INVENTORY NO. 04-0606

05-DEC-2008 10:52
s:\its\signals\signal design sections\eastern region\div-04\goldsboro city systems\signal designs\04-0606\04-0606_2008.dgn
larry.blount

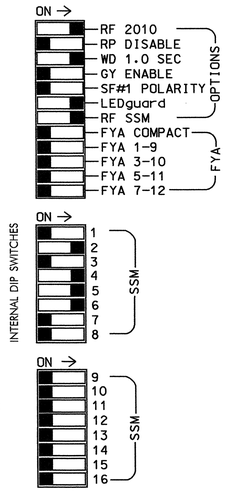
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 76

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES (DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S5,S6
PHASES USED.....2,4,5,6
OVERLAPS.....NONE

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.	NU	21,22	NU	NU	41,42	NU	21,42	61,62	NU	NU	NU	NU
RED		128			101		*	134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW							132					
GREEN ARROW							133					

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	Ø 4	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		2A,2B NOT USED				4A NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5	Ø 5	Ø6/SYS	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	5A NOT USED	5B	6A/SØ1											
			Ø 5 5C	Ø6/SYS 6B/SØ2											

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

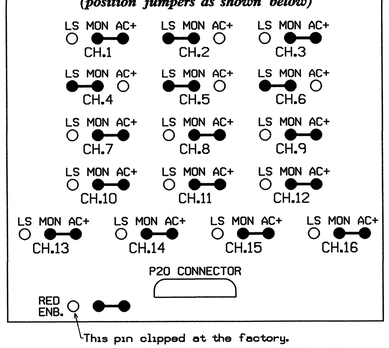
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			5
5A[1]	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y	Y		3
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			10
5C	TB3-7,8	J2L	44	6	16	5	Y	Y			10
6A/SØ1	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B/SØ2	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			

[1] Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

RED MONITOR BOARD PROGRAMMING

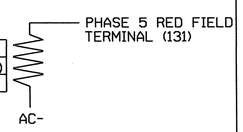
(position jumpers as shown below)



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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0606
DESIGNED: September 2008
SEALED: 12-05-08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1556 (Wayne Memorial Drive) at SR 1569 (Country Day Road)

Division 4 Wayne Country Goldsboro

PLAN DATE: November 2008 REVIEWED BY: MLH

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS	INIT.	DATE

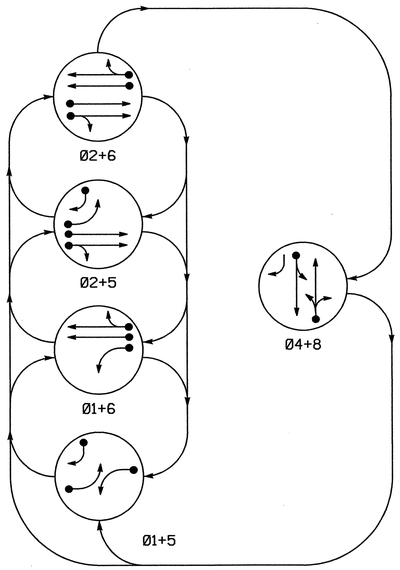
Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
John T. Rowe 12-12-08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0606

12-DEC-2008 07:14
s:\its\signals\workgroups\sig man\petersonw\040606_sample_xxx.dgn
JTPETERSON

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.77

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

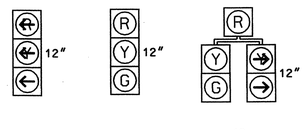
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	Y
41	R	R	R	R	G	R
42	R/←	R	R/←	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



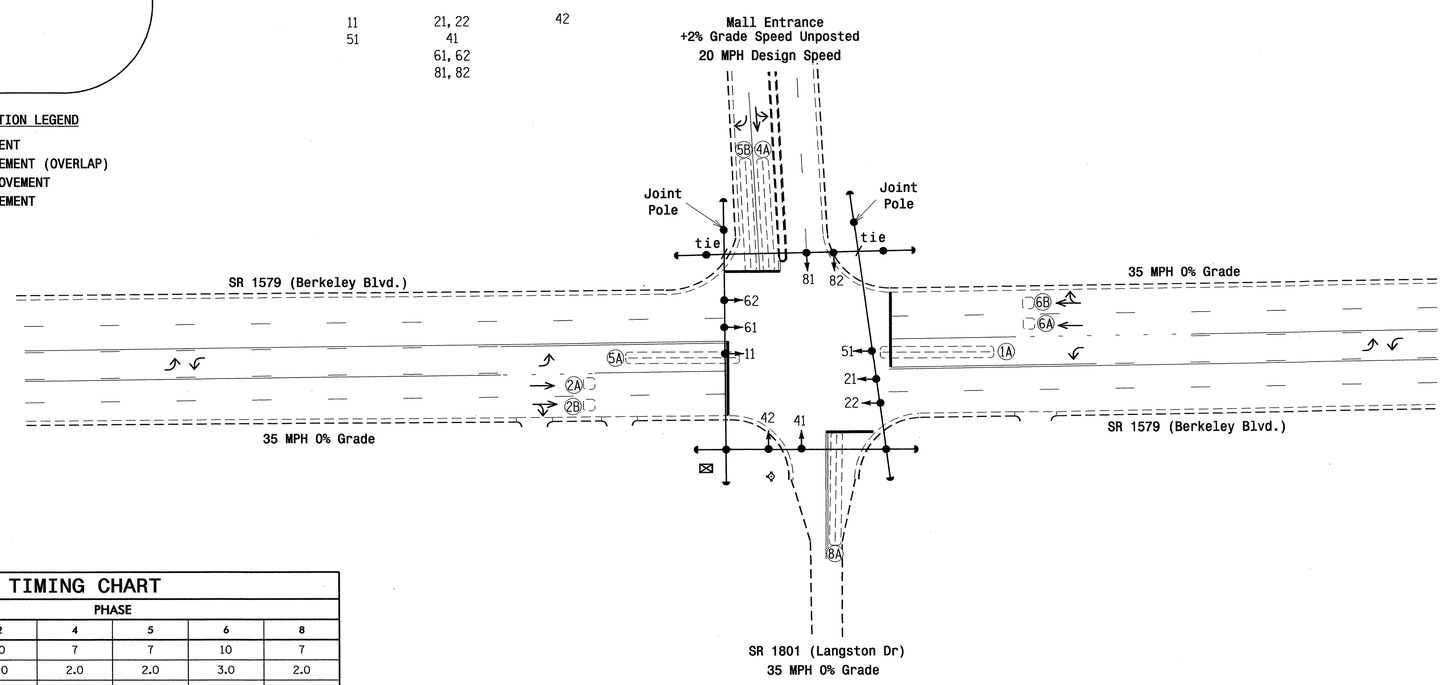
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A,2B	6X6	70	EXISTING	-	2	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	3	-	Y
5B	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	Y
6A,6B	6X6	70	EXISTING	-	6	Y	Y	-	-	-	-	Y
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	10	-	Y

5 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. ~~Closed loop system data:~~ Controller Asset #0647.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
N/A	Fire Hydrant	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	10	7	7	10	7
Extension 1 *	2.0	3.0	2.0	2.0	3.0	2.0
Max Green 1 *	15	50	20	25	50	20
Yellow Clearance	3.0	3.8	3.0	3.0	3.8	3.8
Red Clearance	1.9	1.3	2.8	1.8	1.6	1.8
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	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40 1"=40

SR 1579 (Berkeley Blvd.)
at
SR 1801 (Langston Drive)/
Mall Entrance

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: EM Minshew
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

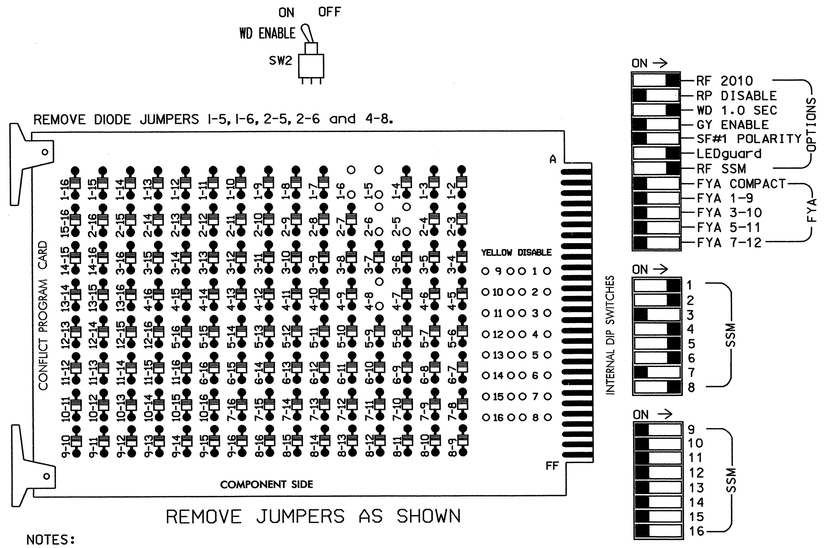
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
11/21/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0647

20-NOV-2008 12:39
S:\TIS Signals\Signal Design Section\Eastern Region\Div-04\Goldsboro City System\Signal Designs\04-0647\04-0647_sig_dsn_2008mmdd.dgn
abhambright

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.78

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 3,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

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.	11	21,22	NU	NU	41,42	NU	42	51	61,62	NU	NU	81,82	NU
RED		128			101				134			107	
YELLOW		129			102				135			108	
GREEN		130			103				136			109	
RED ARROW	125							131					
YELLOW ARROW	126						132	132					
GREEN ARROW	127						133	133					

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB2-7,8	I2L	43	5	12	4	Y	Y			
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			3
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			15
6A,6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB3-11,12	J3L	77	39	46	8	Y	Y			10

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0647
DESIGNED: September 2008
SEALED: 11/21/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1579 (Berkeley Blvd.)
at
SR 1801 (Langston Drive)/
Mall Entrance

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pwky, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 12/16/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0647

25-NOV-2008 09:54
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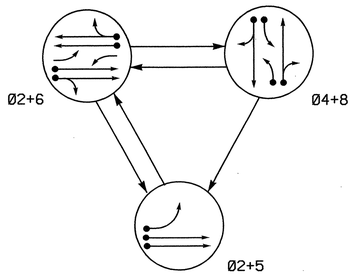
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 79

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

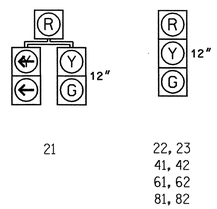
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 02+5	PHASE 02+6	PHASE 04+8	FLASH
21	G	G	R	Y
22,23	G	G	R	Y
41,42	R	R	G	R
61,62	R	G	R	Y
81,82	R	R	G	R

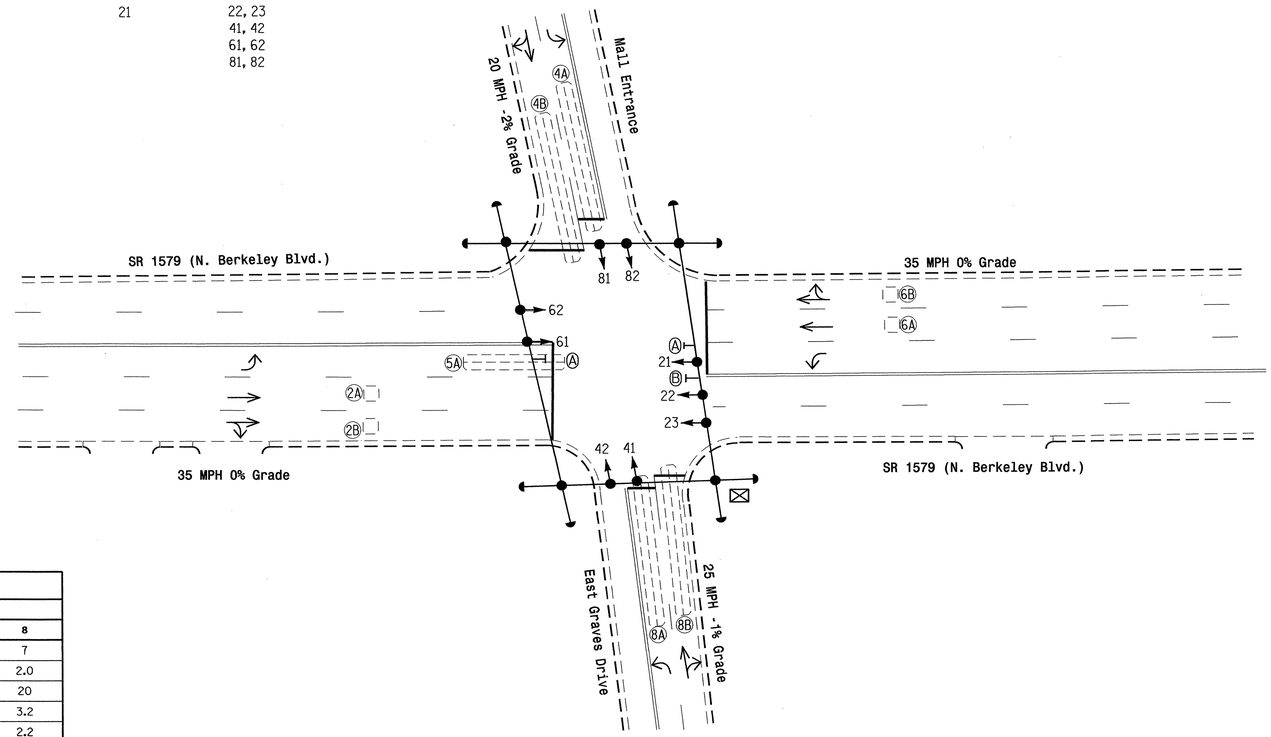
SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A,2B	6X6	70	4	-	2	Y	Y	-	-	-	-	Y
4A,4B	6X60	+5	2-4-2	-	4	Y	Y	-	-	-	-	Y
5A	6X40	+5	2-4-2	-	5	Y	Y	-	-	15	-	Y
6A,6B	6X6	70	4	-	6	Y	Y	-	-	-	-	Y
8A,8B	6X60	+5	2-4-2	-	8	Y	Y	-	-	-	-	Y



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6	PHASE 8
Min Green 1 *	10	7	7	10	7
Extension 1 *	3.0	2.0	2.0	3.0	2.0
Max Green 1 *	40	20	15	40	20
Yellow Clearance	3.8	3.0	3.0	3.8	3.2
Red Clearance	1.0	2.8	1.8	1.1	2.2
Red Revert	5.0	2.0	2.0	2.0	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.

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. ~~Closed loop system data:~~ Controller Asset #0658.
10. Existing Sign R10-12 may be removed at the discretion of the Regional Traffic Engineer.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	Left Arrow "ONLY" Sign (R3-5L)	A
B	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	B

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 30 1"=30'

SR 1579 (N. Berkeley Blvd.) at E. Graves Dr./ Mall Entrance

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY: EM Minshew

PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
SIGNATURE 11/21/08 DATE
SIG. INVENTORY NO. 04-0658

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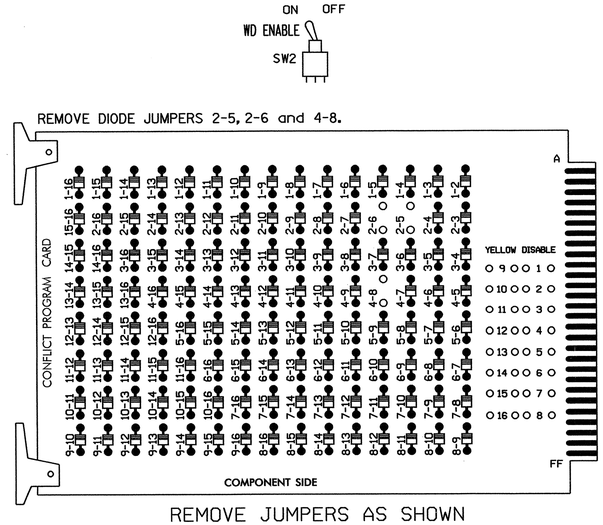
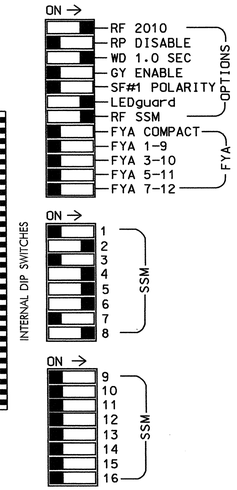
patexander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.80

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S5,S6,S8
PHASES USED.....2,4,5,6,8
OVERLAPS.....NONE

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.	NU	21, 22,23	NU	NU	41,42	NU	21	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							132					
GREEN ARROW							133					

NU = Not Used

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

BACKUP PROTECTION NOTE

(program controller as shown below)

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	Ø2 2A,2B	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	EMPTY	Ø4 4A,4B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A,6B	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	NOT USED	Ø8 8A,8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

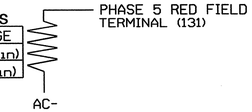
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A,4B	TB2-7,8	I2L	43	5	12	4	Y	Y			
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			15
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A,8B	TB3-7,8	J2L	44	6	16	8	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0658
DESIGNED: October 2008
SEALED: 11/21/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1579 (N. Berkeley Blvd.) at E. Graves Dr./ Mall Entrance

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS | INIT. | DATE

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Traffic Engineering Division, Division of Highways, State of North Carolina, Department of Transportation, Signals Management Section

750 N. Greenfield Pwky, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

Henry C. Brown 12/16/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0658

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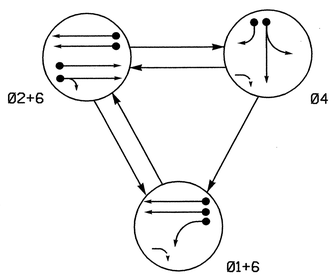
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.8

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

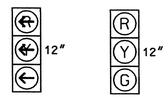
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø4	PHASE FLASH
11	←	~~R~~	~~R~~	~~R~~
21,22	R	G	R	Y
41,42	R	R	G	R
61,62	G	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



11

21, 22
41, 42
61, 62

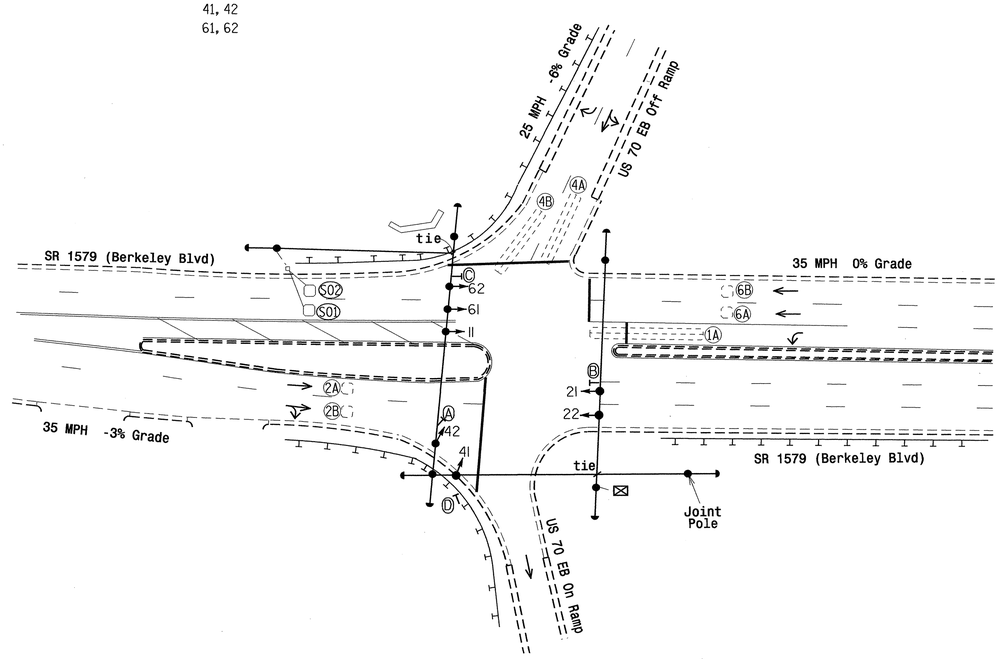
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+10	2-4-2	-	1	Y	Y	-	-	-	-	Y
2A,2B	6X6	70	EXISTING	-	2	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4B	6X60	+5	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A,6B	6X6	70	EXISTING	-	6	Y	Y	-	-	-	-	Y
S01	6X6	+150±	5	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+150±	5	Y	-	-	-	-	-	-	Y	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. ~~Closed loop system data:~~ Controller Asset #0659.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Guardrail	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Right Arrow "ONLY" Sign (R3-5R)	Ⓐ
Ⓑ	No Left Turn Sign (R3-2)	Ⓑ
Ⓒ	No RightTurn Sign (R3-1)	Ⓒ
Ⓓ	"YIELD" Sign (R1-2)	Ⓓ

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	7	10	7	10
Extension 1 *	2.0	3.0	3.0	3.0
Max Green 1 *	20	50	25	50
Yellow Clearance	3.0	4.1	3.5	3.8
Red Clearance	3.3	1.0	2.8	1.1
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	-	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signal and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40
1"=40'

SR 1579 (Berkeley Blvd.) at US 70 Eastbound Ramps

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: EM Minshew

PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
SIGNATURE DATE 11/21/08
SIG. INVENTORY NO. 04-0659

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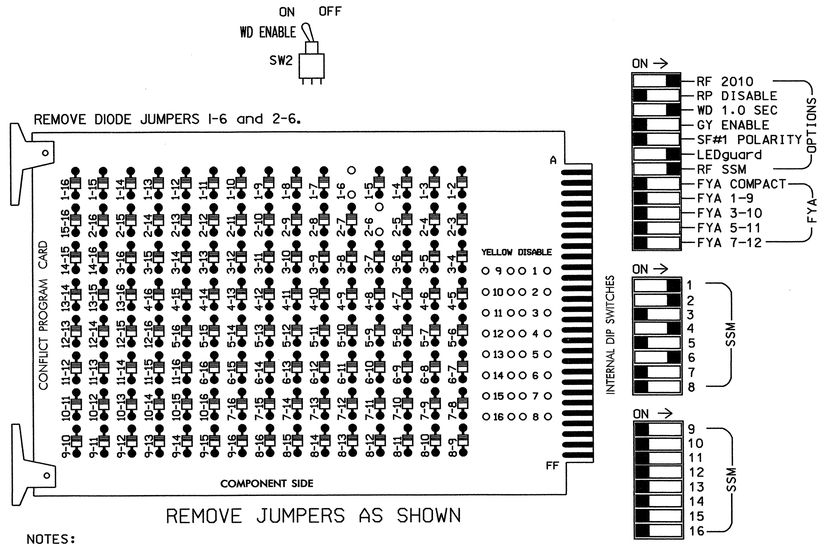
Kathryn Ogburn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 82

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

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

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.	11	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW	125											
YELLOW ARROW	126											
GREEN ARROW	127											

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A,2B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED				Ø4 4B			SYS. DET. SØ2					ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6 6A,6B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		NOT USED												

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	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
* SØ1	TB6-9,10	I9U	60	22	11	SYS					
* SØ2	TB6-11,12	I9L	62	24	13	SYS					

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-0659
DESIGNED: September 2008
SEALED: 11/21/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pwky, Garner, NC 27529

SR 1579 (Berkeley Blvd.) at US 70 Eastbound Ramps

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Vigil
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 12/15/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0659

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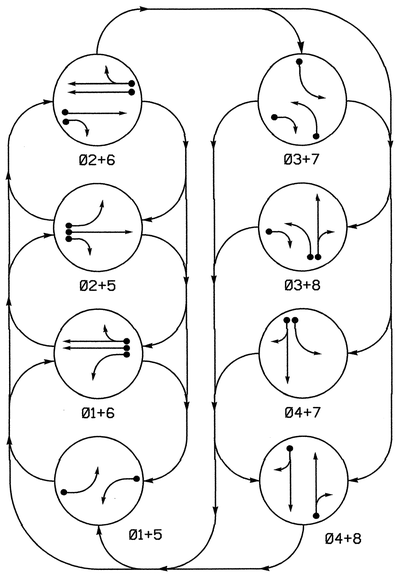
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 83

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

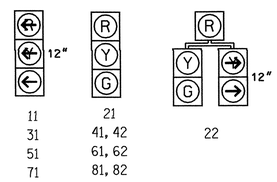
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+05	01+06	02+05	02+06	03+07	03+08	04+07	04+08	FLASH
11	↚	↚	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R↗	R↗	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	↚	↚	~~R~~	~~R~~	~~R~~
41, 42	R	R	R	R	R	R	G	G	R
51	↚	~~R~~	↚	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	R	R	R	Y
71	~~R~~	~~R~~	~~R~~	~~R~~	↚	~~R~~	↚	~~R~~	~~R~~
81, 82	R	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



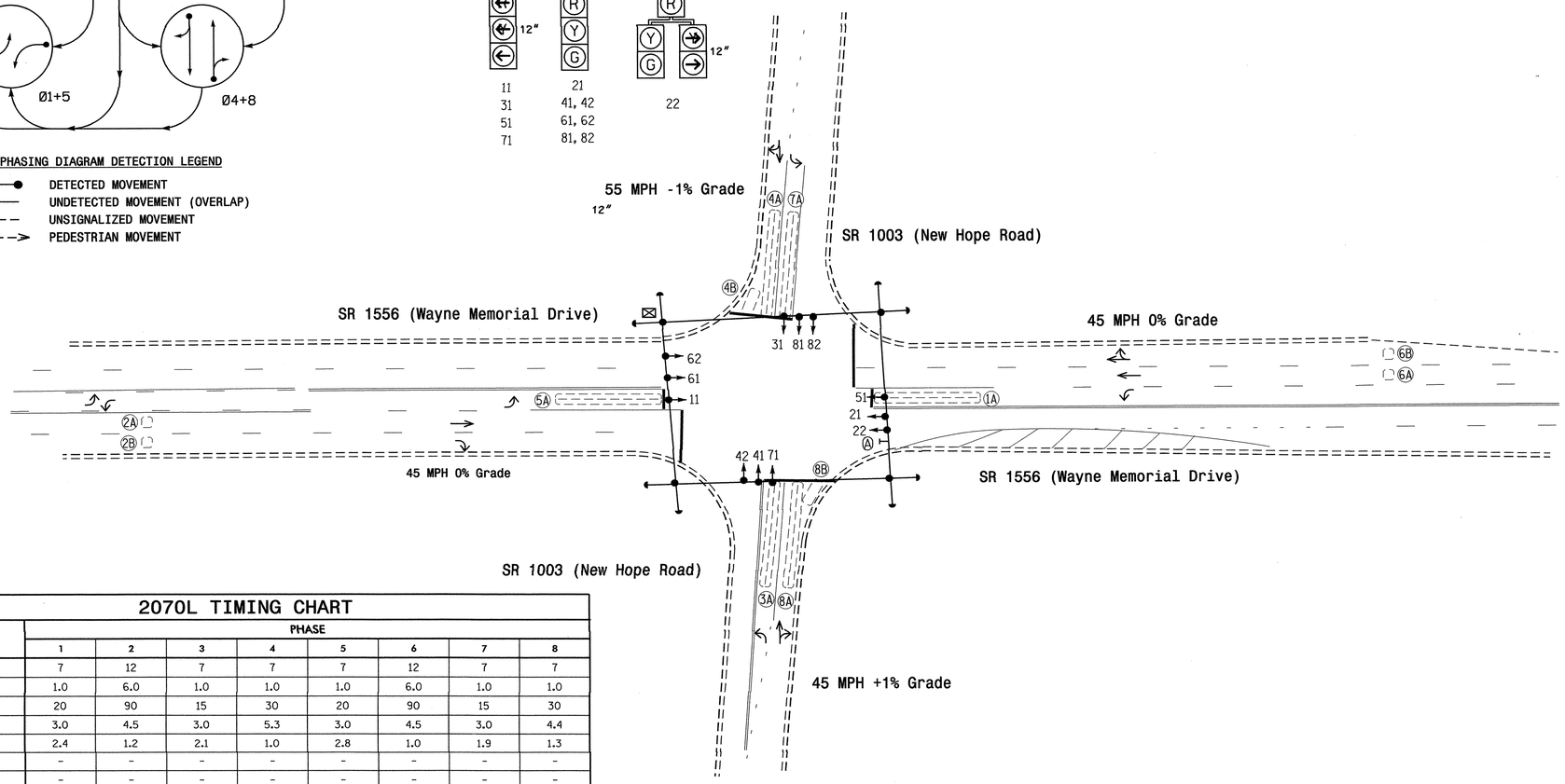
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A, 2B	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	3	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	10	-	Y
4B	6X15	0	2-4-2	-	4	Y	Y	-	-	20	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	3	-	Y
6A, 6B	6X6	300	4	-	6	Y	Y	-	-	-	-	Y
7A	6X60	0	2-4-2	-	7	Y	Y	-	-	3	-	Y
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	10	-	Y
8B	6X15	0	3	-	8	Y	Y	-	-	20	-	Y

8 Phase Fully Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset # 0663.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Right Arrow "ONLY" Sign (R3-5R)	Ⓐ

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	1.0	6.0	1.0	1.0	1.0	6.0	1.0	1.0
Max Green 1 *	20	90	15	30	20	90	15	30
Yellow Clearance	3.0	4.5	3.0	5.3	3.0	4.5	3.0	4.4
Red Clearance	2.4	1.2	2.1	1.0	2.8	1.0	1.9	1.3
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	2.0	-	-	-	2.0	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40 1"=40'

SR 1556 (Wayne Memorial Drive) at SR 1003 (New Hope Road)

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY: Larry Blount

PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER

12/22/08

SIGNATURE DATE

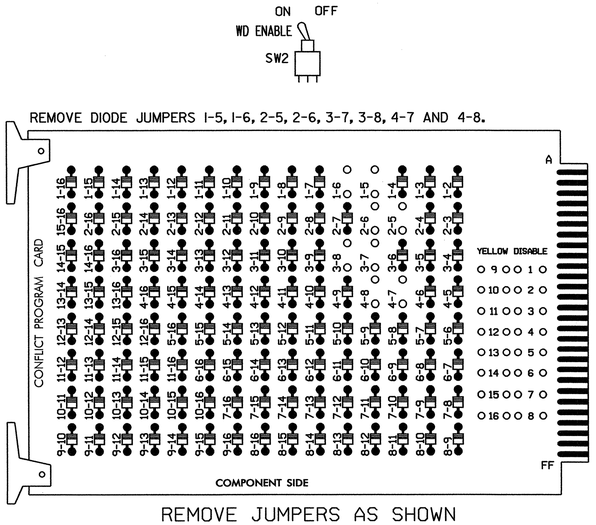
SIG. INVENTORY NO. 04-0663

19-DEC-2008 13:15
smith signals\signal design sections\eastern regions\div-04\goldsboro city systems\signal designs\04-0663\04-0663_2008.dgn
lorrainjoant

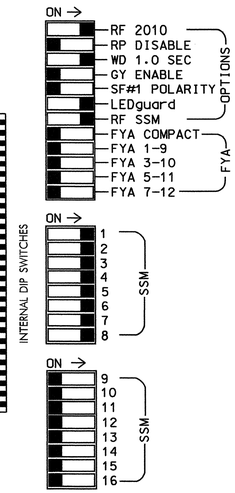
PROJECT REFERENCE NO.	SHEET NO.
U5016	Sig.84

EDI MODEL 2010ECL-NC CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City 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.	11	21,22	NU	22	31	41,42	NU	51	61,62	NU	71	81,82	NU
RED		128				101			134			107	
YELLOW		129				102			135			108	
GREEN		130				103			136			109	
RED ARROW	125				116			131			122		
YELLOW ARROW	126			117	117			132			123		
GREEN ARROW	127			118	118			133			124		

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
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	Ø1 1A	Ø2 2A,2B	SLOT EMPTY	SLOT EMPTY	Ø3 3A	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED			NOT USED	Ø4 4B								ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A,6B	SLOT EMPTY	SLOT EMPTY	Ø7 7A	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED			NOT USED	Ø8 8B								

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			20
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			20

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0663
DESIGNED: October 2008
SEALED: 12/22/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1556 (Wayne Memorial Drive)
at
SR 1003 (New Hope Road)

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY:
PREPARED BY: K. McDaniel | REVIEWED BY:

REVISIONS	INIT.	DATE

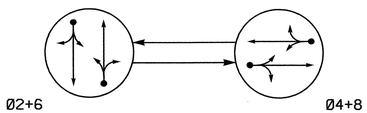
Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 1-21-09
SIG. INVENTORY NO. 04-0663

12-JAN-2009 15:02
S:#ITS Signals#Workgroups#Sig Mgmt#McDaniels#Files2#04_04-0663179-86)#04-0663_smlele.xxx.dgn
kmmcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 85

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

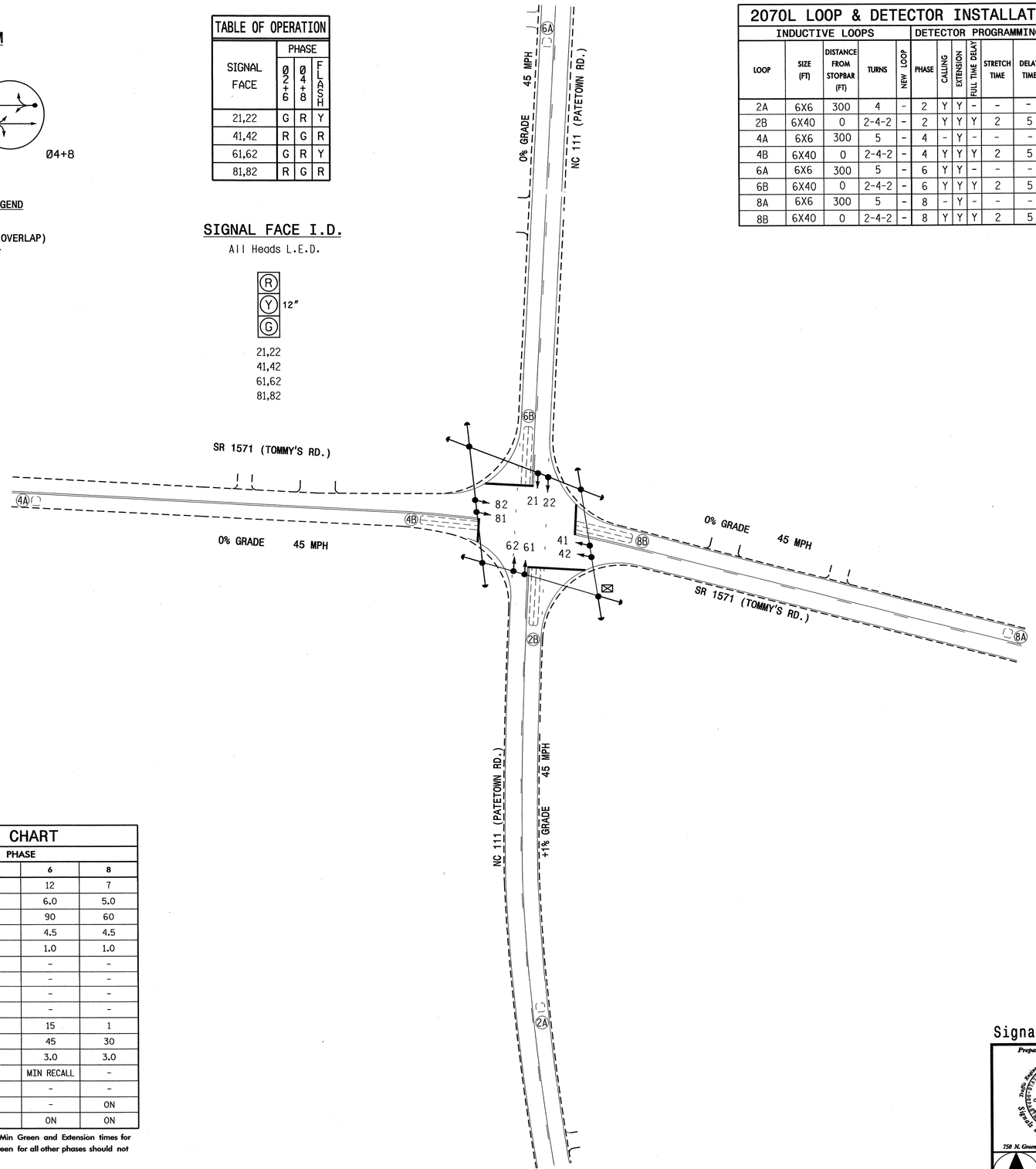
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+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



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
2B	6X40	0	2-4-2	-	2	Y	Y	Y	2	5	-	Y
4A	6X6	300	5	-	4	-	Y	-	-	-	-	Y
4B	6X40	0	2-4-2	-	4	Y	Y	Y	2	5	-	Y
6A	6X6	300	5	-	6	Y	Y	-	-	-	-	Y
6B	6X40	0	2-4-2	-	6	Y	Y	Y	2	5	-	Y
8A	6X6	300	5	-	8	-	Y	-	-	-	-	Y
8B	6X40	0	2-4-2	-	8	Y	Y	Y	2	5	-	Y

2 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset # 0760.

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	12	7	12	7
Extension 1 *	6.0	5.0	6.0	5.0
Max Green 1 *	90	60	90	60
Yellow Clearance	4.4	4.5	4.5	4.5
Red Clearance	1.0	1.0	1.0	1.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	15	1	15	1
Time To Reduce *	45	30	45	30
Minimum Gap	3.0	3.0	3.0	3.0
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	-	-	-	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	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.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

N

SCALE 0 40
1" = 40'

NC 111 (Patetown Road)
at
SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY:
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
PAUL E. ALEXANDER

SIGNATURE 12/22/08 DATE

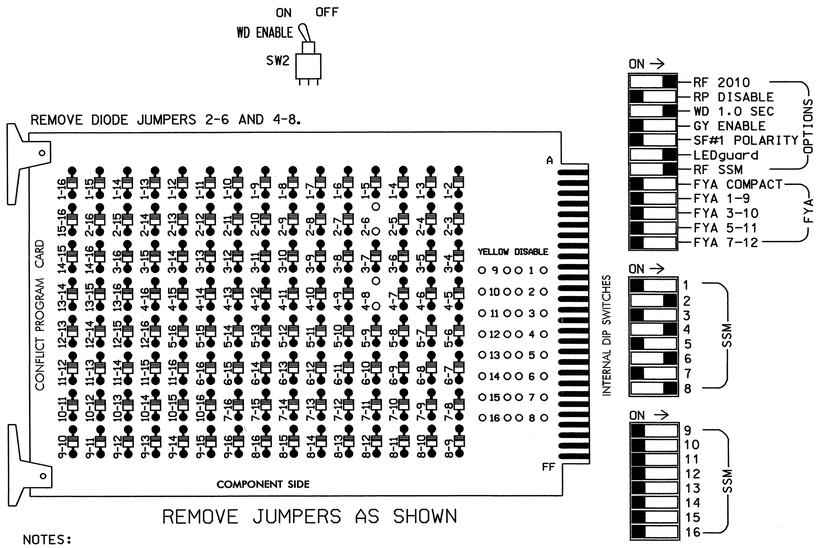
SIG. INVENTORY NO. 04-0760

22-DEC-2008 10:02
s:\its signals\signal design section\eastern region\div-04\goldsboro city systems\signal designs\04-0760\04-0760_sig.dgn_20081222.dgn
pdlexander

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 86

EDI MODEL 2010ECL-NC CONFLICT MONITOR
PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 1,3,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phases 2, 4, 6 and 8, on the controller unit, for Gap Reduction.
7. The cabinet and controller are part of the Goldsboro City 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.	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

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....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	SLOT	ø2 2A	SLOT	SLOT	SLOT	ø4 4A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	EMPTY	ø2 2B	EMPTY	EMPTY	EMPTY	ø4 4B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	SLOT	ø6 6A	SLOT	SLOT	SLOT	ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	ø6 6B	EMPTY	EMPTY	EMPTY	ø8 8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y	Y	2	5
4A	TB4-9,10	I6U	41	3	4	4		Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y	Y	2	5
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y	Y	2	5
8A	TB5-9,10	J6U	42	4	8	8		Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y	Y	2	5

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0760
DESIGNED: September 2008
SEALED: 12/22/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 111 (Patetown Road)
at
SR 1571 (Tommy's Road)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY:
PREPARED BY: K. McDaniel REVIEWED BY:

REVISIONS	INIT.	DATE

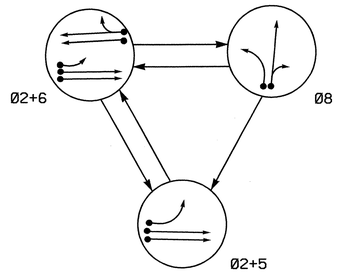
Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE DATE 1-21-09
SIG. INVENTORY NO. 04-0760

12-JAN-2009 15:01
S:\ITS\Signals\Workgroups\Sig Mgmt\McDaniel\Files2\05_04-0760(79-86)\04076O_sht_ele_xxx.dgn
kmcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 87

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

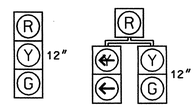
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø8	FLASH
21	G	G	R	Y
22, 23	R	G	R	Y
61, 62	R	G	R	Y
81, 82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



22, 23
61, 62
81, 82

21

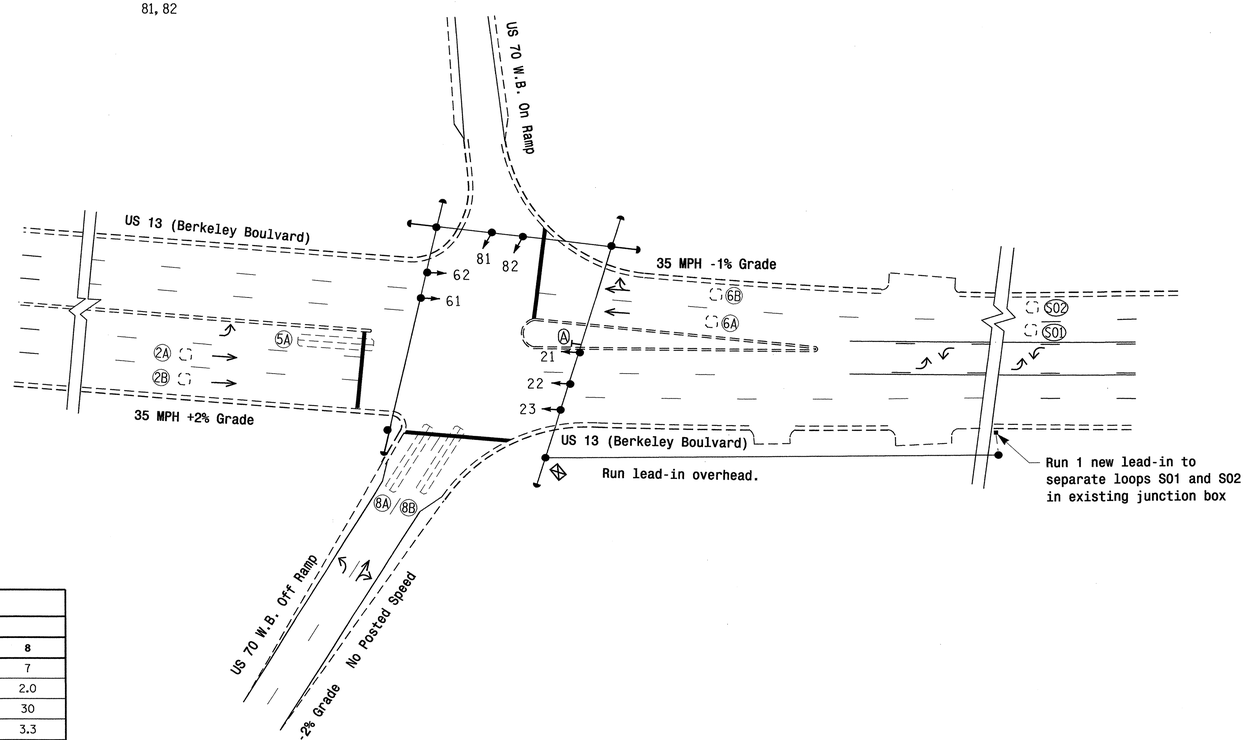
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A, 2B	6X6	90	4	-	2	Y	Y	-	-	-	-	Y
5A	6X40	+5	2-4-2	-	5	Y	Y	-	-	-	-	Y
6A, 6B	6X6	90	4	-	6	Y	Y	-	-	-	-	Y
8A	6X40	+5	2-4-2	-	8	Y	Y	-	-	-	-	Y
8B	6X40	+5	2-4-2	-	8	Y	Y	-	-	15	-	Y
S01	6X6	330	5	-	-	-	-	-	-	-	Y	Y
S02	6X6	330	5	-	-	-	-	-	-	-	Y	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Abandon existing loops 2A,2B and renumber existing loops 2C,2D to 2A & 2B. Renumber existing loops 6C,6D to 6A,6B and renumber existing loops 6A,6B to S01,S02.
6. Existing "Left Turn Yield on Green" ball sign(s)-(R10-12) may be removed at the discretion of the Regional Traffic Engineer.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0761



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 5	PHASE 6	PHASE 8
Min Green 1 *	12	7	12	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	55	15	55	30
Yellow Clearance	3.9	3.0	3.7	3.3
Red Clearance	1.0	3.1	2.4	2.6
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	-	-	-	-
Simultaneous Gap	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.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

US 13 (Berkeley Boulevard) at US 70 West Bound Ramps

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008	REVIEWED BY: L. Blount
PREPARED BY: AB Hambright	REVIEWED BY:

REVISIONS	INIT.	DATE

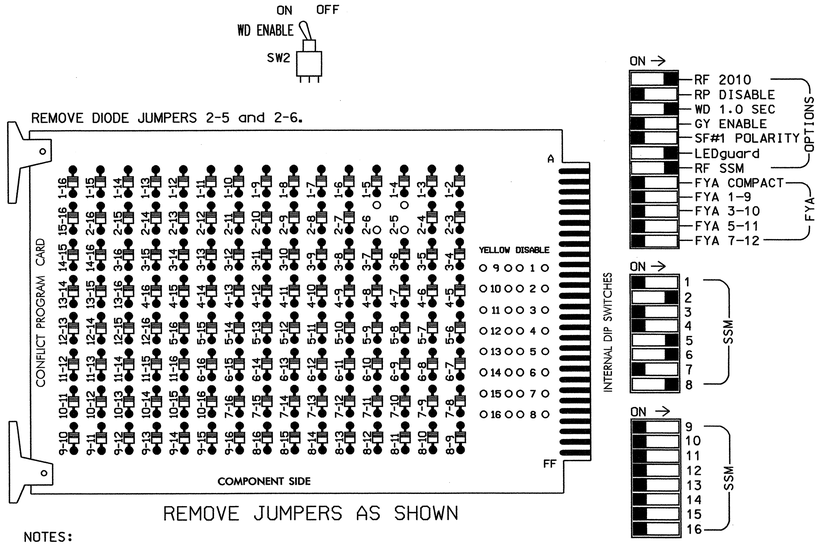
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PHILLIP M. KLAMOS
SIGNATURE 11/21/08 DATE
SIG. INVENTORY NO. 04-0761

12-JAN-2009 14:45
s:#its signals#signal design section#eastern region#div-04#goldsboro city system#signal designs#04-0761#04076l.sig_dsn_20081121.dgn
pdbrandon

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 88

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3, 4,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S5,S6,S8
PHASES USED.....2,5,6,8
OVERLAPS.....NONE

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.	NU	21,22, 23	NU	NU	NU	NU	21	61,62	NU	NU	81,82	NU
RED		128					*	134			107	
YELLOW		129						135			108	
GREEN		130						136			109	
RED ARROW												
YELLOW ARROW							132					
GREEN ARROW							133					
✋												
🚶												

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	Ø2 2A,2B	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	SYS. DET. SØ2	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A,6B	SLOT	SLOT	SLOT	Ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	NOT USED	NOT USED	EMPTY	EMPTY	EMPTY	Ø8 8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A,6B	TB3-5,6	J2U	40	2	6	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			15
*SØ1	TB6-9,10	I9U	60	22	11	SYS					
*SØ2	TB6-11,12	I9L	62	24	13	SYS					

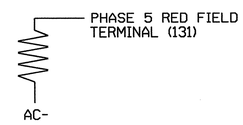
* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0761
DESIGNED: September 2008
SEALED: 11-21-08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 13 (Berkeley Boulevard) at US 70 West Bound Ramps

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: T. Ugle
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

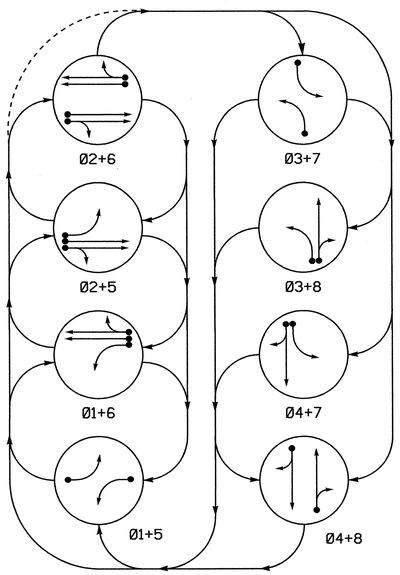
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C Brown 12/4/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-0761

24-NOV-2008 07:52
s:\its signals\workgroups\sig management\04076l_sm_e1a_xxx.dgn
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 89

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41,42	R	R	R	R	R	R	G	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	R	Y
71	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81,82	R	R	R	R	R	G	R	G	R

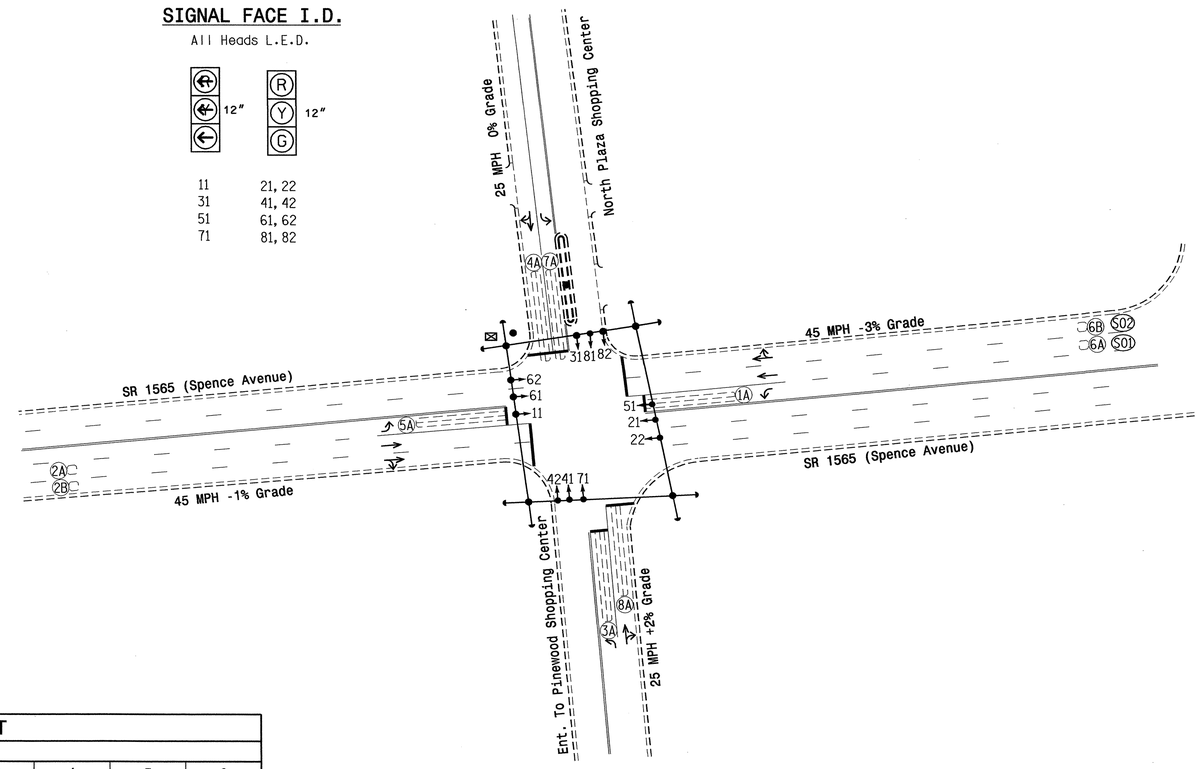
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
2B	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	3	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	10	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	3	-	Y
6A/S01	6X6	300	4	-	6	Y	Y	-	-	-	Y	Y
6B/S02	6X6	300	4	-	6	Y	Y	-	-	-	Y	Y
7A	6X60	+5	2-4-2	-	7	Y	Y	-	-	3	-	Y
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	10	-	Y

SIGNAL FACE I.D.

All Heads L.E.D.

11	21, 22
31	41, 42
51	61, 62
71	81, 82



8 Phase
Fully Actuated
(Goldsboro Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0771.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	12	4	7	4	12	4	7
Extension 1 *	3.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	25	90	15	20	15	90	15	20
Yellow Clearance	3.0	4.6	3.0	3.2	3.0	4.8	3.0	3.1
Red Clearance	1.9	1.0	3.3	2.0	2.3	1.0	2.1	2.8
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.2	-	-	-	3.2	-	-
Recall Mode	-	SOFT RECALL	-	-	-	SOFT RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

SR 1565 (Spence Avenue) at Entrances to Pinewood and North Plaza Shopping Centers

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008	REVIEWED BY: P. Alexander, PE
PREPARED BY: AB Hambright	REVIEWED BY:

REVISIONS	INIT.	DATE

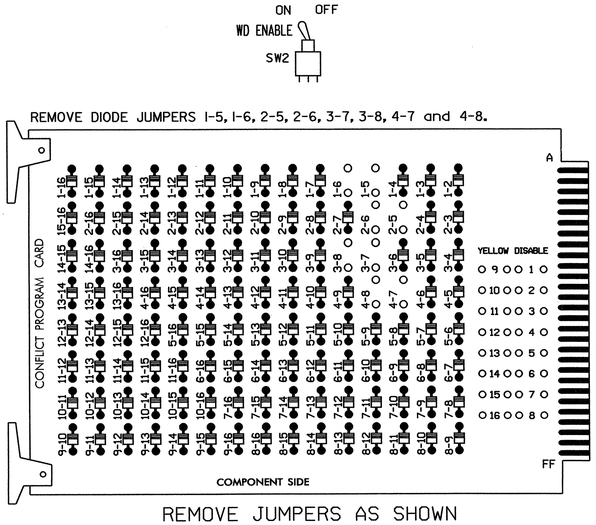
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER P. ALEXANDER
SIGNATURE DATE 12/9/08
SIG. INVENTORY NO. 04-0771

08-DEC-2008 15:11
s:\ts\signals\signal design section\eastern region\div-04\goldsboro city systems\signal designs\04-0771\04-0771_sig_dsn_2008smdd.dgn
emmishaw

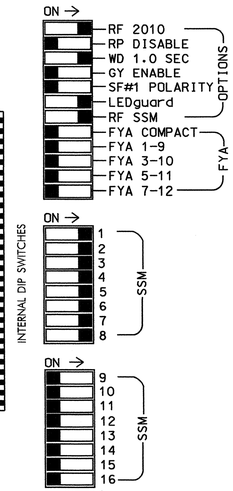
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 10

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAPS.....NONE

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.	11	21,22	NU	31	41,42	NU	51	61,62	NU	71	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125			116			131			122		
YELLOW ARROW	126			117			132			123		
GREEN ARROW	127			118			133			124		

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	SLOT EMPTY	SLOT EMPTY	Ø3 3A	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø2 2B			NOT USED	NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6/SYS 6A/SØ1	SLOT EMPTY	SLOT EMPTY	Ø7 7A	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø6/SYS 6B/SØ2			NOT USED	NOT USED								

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

FS = FLASH SENSE
ST = STOP TIME

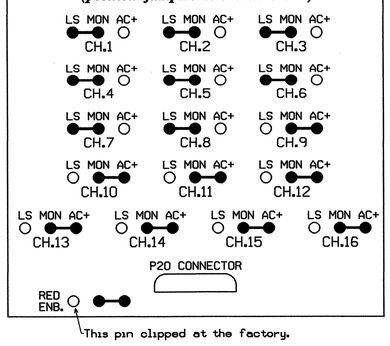
INPUT FILE CONNECTION & PROGRAMMING CHART

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A/SØ1	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/SØ2	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0771
DESIGNED: October 2008
SEALED: 12-09-08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1565 (Spence Avenue)
at
Entrances to Pinewood and North Plaza Shopping Centers

Division 4 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY: MWA
PREPARED BY: James Peterson REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE DATE 12-11-08
SIG. INVENTORY NO. 04-0771

09-DEC-2008 13:59
s:\its_signals\workgroups\sig mon\petersonMO4071_smlele_xxx.dgn
jpeterson

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.91

PHASING DIAGRAM

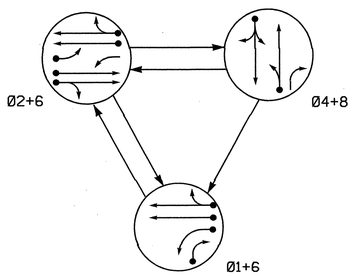
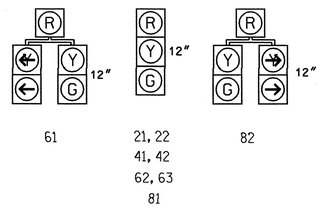


TABLE OF OPERATION

SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 04+8	FLASH
21,22	R	G	R	Y
61	G	G	R	Y
62,63	G	G	R	Y
41,42	R	R	G	R
81	R	R	G	R
82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

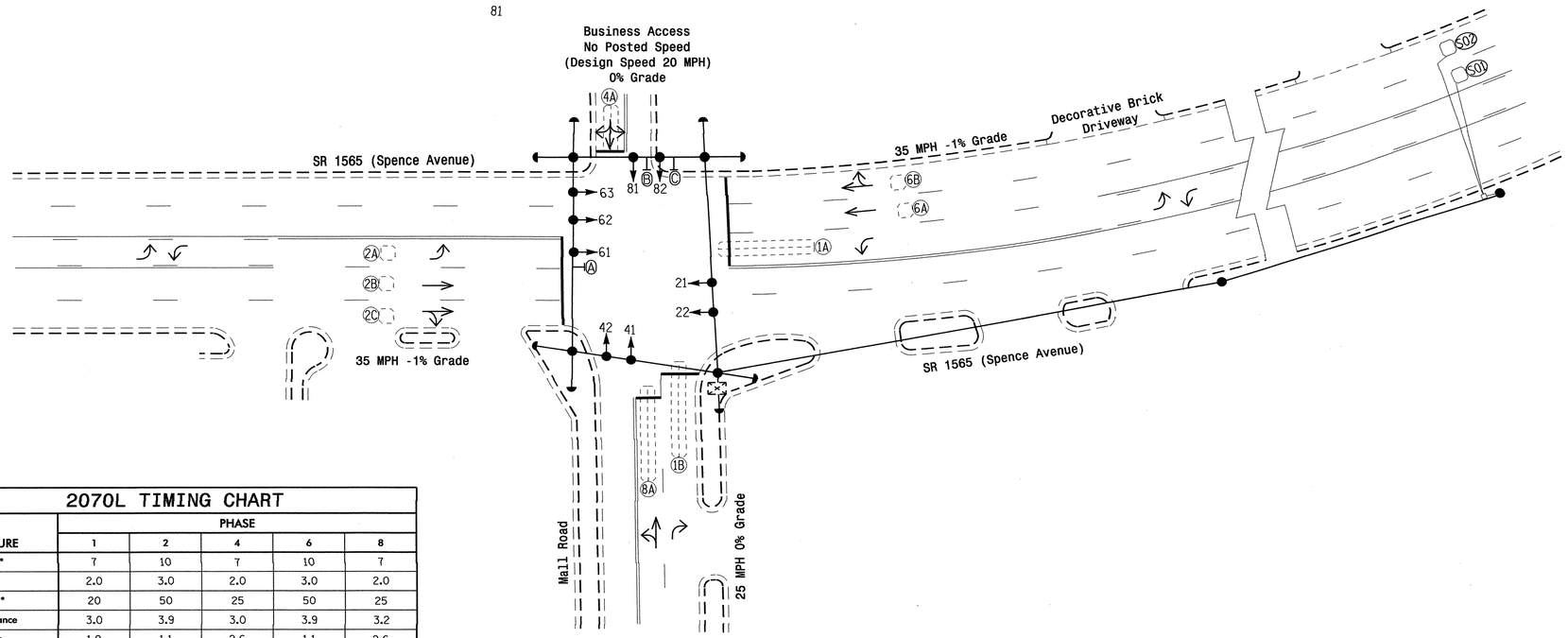


PHASING DIAGRAM DETECTION LEGEND

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

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	+5	2-4-2	-	1	Y	Y	-	-	15	-	-
					6	Y	Y	-	-	-	-	-
1B	6X40	+5	2-4-2	-	1	Y	Y	-	-	15	-	-
2A,2B,2C	6X6	70	EXISTING	-	2	Y	Y	-	-	-	-	-
4A	6X20	+5	2-4-2	-	4	Y	Y	-	-	5	-	-
6A,6B	6X6	70	EXISTING	-	6	Y	Y	-	-	-	-	-
8A	6X40	+5	2-4-2	-	8	Y	Y	-	-	3	-	-
S01	6X6	400±	5	Y	-	-	-	-	-	-	Y	Y
S02	6X6	400±	5	Y	-	-	-	-	-	-	Y	Y



2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	7	10	7	10	7
Extension 1 *	2.0	3.0	2.0	3.0	2.0
Max Green 1 *	20	50	25	50	25
Yellow Clearance	3.0	3.9	3.0	3.9	3.2
Red Clearance	1.9	1.1	2.6	1.1	2.6
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.

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. Run all lead-in cable overhead on existing utility poles where possible.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Existing "Left Turn Yield on Green" ball sign (R10-12) may be removed at the discretion of the Regional Traffic Engineer.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #0777.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	A
B	Combined Through and Left Arrow Sign (R3-6L)	B
C	Right Arrow "ONLY" Sign (R3-5R)	C

Signal Revision

Revision Seal

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL ALEXANDER

SIGNATURE 1/22/09 DATE

Prepared in the Offices of:

Pacific Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 30 1"=30'

SR 1565 (Spence Ave.) at Mall Road/Business Access

Division 4 Wayne County Goldsboro

PLAN DATE: 2-88 REVIEWED BY:

PREPARED BY: S. SAIDI REVIEWED BY:

REVISIONS	INIT.	DATE
Revise loop functions and delay times	RZ	7/26/06
Install system loops, update clearance timings, switch phases 4 and 8, revise to backup protect with red revert.		1/22/09

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by William J.Watson,PE no.3982 on March 3, 1988 This document is only certified as to the revisions.

SIG. INVENTORY NO. 04-0777

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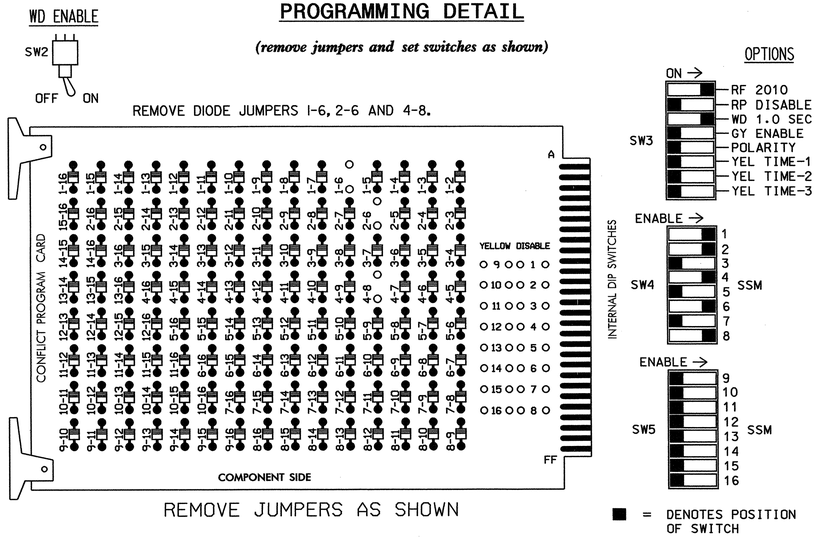
smithpdew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 12

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....McCAIN/CONTROL TECHNOLOGIES
(DWG.NO.9500-332-NCDOT)
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

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.	61,82	21,22	NU	NU	41,42	NU	NU	61,62, 63	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.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø 1	Ø 1	SLOT	SLOT	SLOT	Ø 4	SLOT	SLOT	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
		1A	1B	EMPTY	EMPTY	EMPTY	4A	EMPTY	EMPTY		EMPTY	EMPTY	EMPTY	EMPTY	
	L	NOT USED	Ø 2 2A, 2B,2C				NOT USED			SYS. DET. SØ2					ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A,6B	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		NOT USED				NOT USED								

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y			
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A,2B,2C	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			5
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
* SØ1	TB6-9,10	I9U	60	22	11	SYS					
* SØ2	TB6-11,12	I9L	62	24	13	SYS					

[1] Add jumper from I1-W to J4-W, on rear of input file. If present, remove jumper that connects TB2-5 to TB2-7, and remove jumper that connects TB2-6 to TB2-8.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

1. 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.
2. 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

REMOVE DYMANIC/BACKUP CONTROL FUNCTION 1 FROM PHASE CONTROL PAGE.

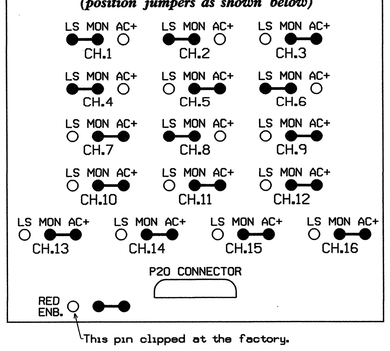
BACKUP PROTECTION NOTE

(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.

RED MONITOR BOARD PROGRAMMING

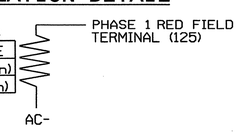
(position jumpers as shown below)



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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0777
DESIGNED: 2-88
SEALED: March 3, 1988
REVISED1: 07/26/06
REVISED2: 01/22/09

REVISION SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE 1/27/09 DATE

Signal Revision

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
DIVISION OF HIGHWAYS
DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1565 (Spence Ave.) at Mall Road/Business Access

Division 4 | Wayne County | Goldsboro

PLAN DATE: July 2006	REVIEWED BY: T. Joyce		
PREPARED BY:	REVIEWED BY:		
REVISIONS		INIT.	DATE
Revise loop functions and delay time.		JTR	8-9-06
Install system loops. Switch phases 4 & 8. Revise to backup protect with red revert. CES 01/09/09		JTR	1/27/09

SEAL

This document shall not be considered a certified document.

SIGNATURE | DATE

SIG. INVENTORY NO. 04-0777

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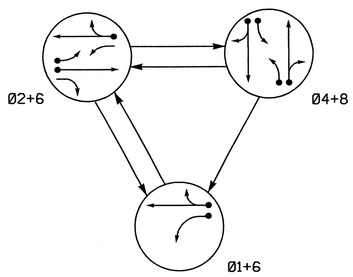
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 93

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

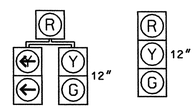
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 04+8	FLASH
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

SIGNAL FACE I.D.

All Heads L.E.D.



61 — 21, 22, 41, 42, 62, 81, 82

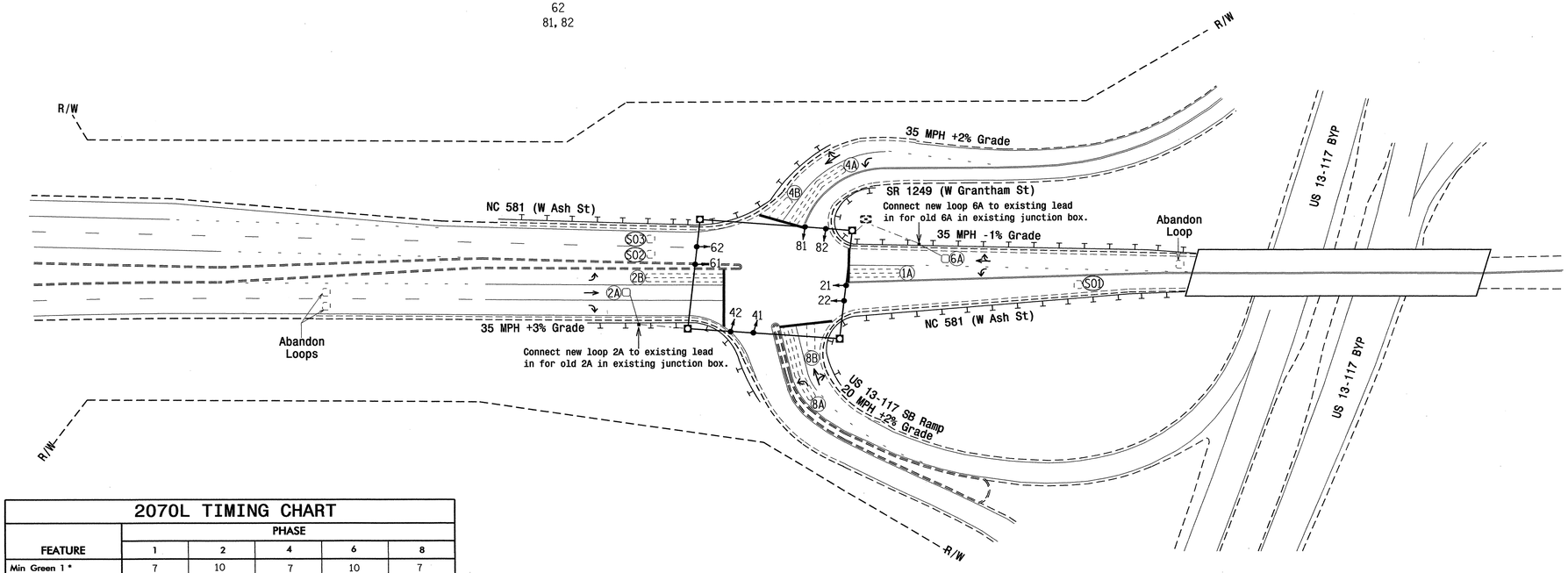
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	—	1	Y	Y	—	—	10	—	—
2A	6X6	70	4	Y	2	Y	Y	—	—	—	—	—
2B	6X60	0	2-4-2	—	2	Y	Y	Y	—	10	—	—
4A	6X60	0	2-4-2	—	4	Y	Y	—	—	5	—	—
4B	6X20	0	4	—	4	Y	Y	—	—	15	—	—
6A	6X6	70	3	Y	6	Y	Y	—	—	—	—	—
8A	6X60	0	2-4-2	—	8	Y	Y	—	—	5	—	—
8B	6X20	0	3	—	8	Y	Y	—	—	15	—	—
S01	6X6	+260	4	—	—	Y	Y	—	—	—	Y	—
S02	6X6	+150	4	—	—	Y	Y	—	—	—	Y	—
S03	6X6	+150	4	—	—	Y	Y	—	—	—	Y	—

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0850.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Guard Rail	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	7	10	7	10	7
Extension 1 *	2.0	3.0	2.0	3.0	2.0
Max Green 1 *	15	90	20	90	30
Yellow Clearance	3.0	3.7	3.7	3.9	3.0
Red Clearance	2.6	1.7	1.5	1.7	2.3
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 Revision

Revision ▽ Seal

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL ALEXANDER

SIGNATURE — DATE 1/6/09

Prepared in the Offices of: Traffic Engineering and Safety Systems Branch, Signals and Geometrics Section, Division of Highways, State of North Carolina, Department of Transportation

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

NC 581 (W Ash St) at US 13-117 SB Ramp/ SR 1249 (W Grantham St)

Division 4 Wayne County Goldsboro

PLAN DATE: 6-15-02 REVIEWED BY: D. Morton

PREPARED BY: J. Cole REVIEWED BY:

REVISIONS	INIT.	DATE
▽ Update clearance timing, revise to backup protect with red revert, install newloops 2A & 6A.	da	1/6/09

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Donald W.Morton,PE no.19798 on 9/3/02 This document is only certified as to the revisions.

SIG. INVENTORY NO. 04-0850

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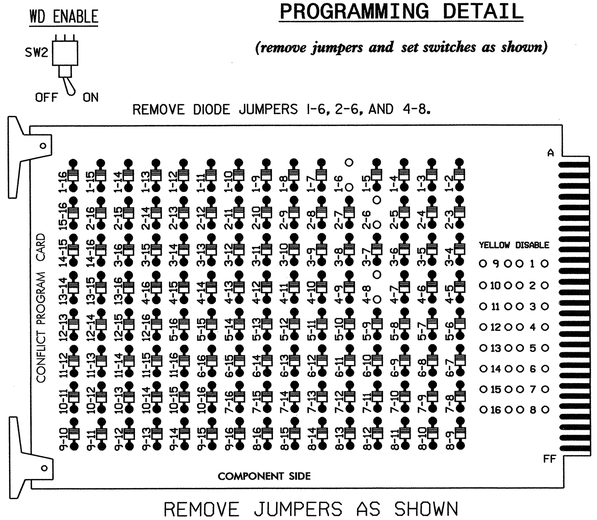
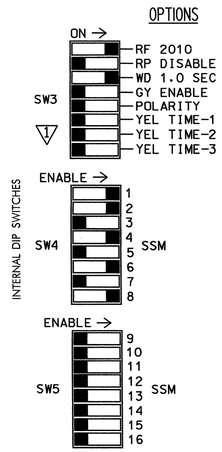
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 94

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.
3. ⚠1 Make sure YEL TIME-1, YEL TIME-2, and YEL TIME-3 switches are set to "OFF".

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. 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.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE 2070L
CABINET.....EAGLE 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

SIGNAL HEAD HOOK-UP CHART

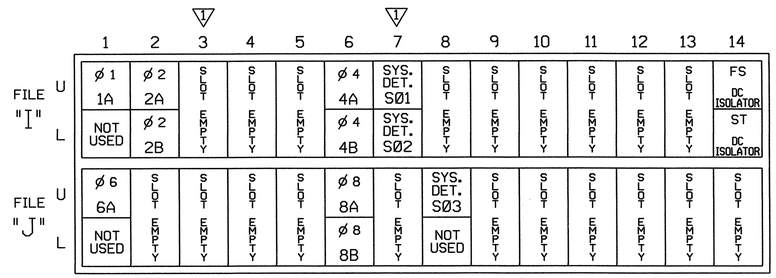
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED	*	128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW	126											
GREEN ARROW	127											
✋												
🚶												

NU = Not Used

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

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			10
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y	Y		10
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			5
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
6A	TB3-1,2	J1U	55	17	5	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			5
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			15
*SØ1	TB6-1,2	I7U	65	27	34	SYS					
*SØ2	TB6-3,4	I7L	78	40	44	SYS					
*SØ3	TB7-5,6	J8U	50	12	28	SYS					

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

⚠1 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.

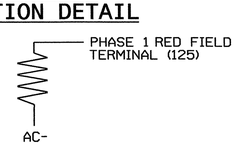
⚠1

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0850
DESIGNED: 06-15-02
ORIGINALLY SEALED: 09-03-02
REVISED: 01-06-09

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.

Signal Revision

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 581 (W Ash St)
at
US 13-117 SB Ramp/
SR 1249 (W Grantham St)

Division 04 | Wayne County | Goldsboro

PLAN DATE: August 2002 | REVIEWED BY: R. Hinshaw
PREPARED BY: James Peterson | REVIEWED BY:

REVISIONS	INIT.	DATE
⚠1 revised monitor switch settings; revise backup protect to Red Revert; abandoned loop 2C; eliminated volume density. (WSA) 01/06/09	DCB	1/13/09

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/13/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0850

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sarmstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.96

PHASING DIAGRAM

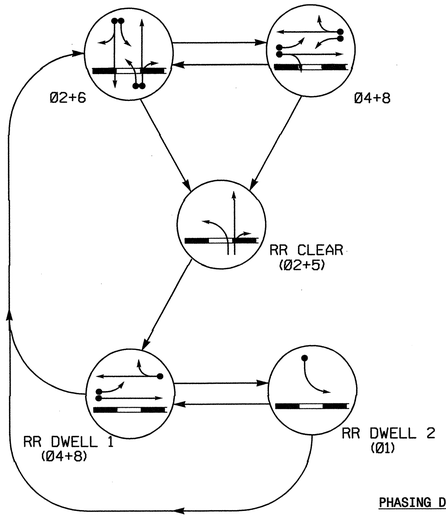


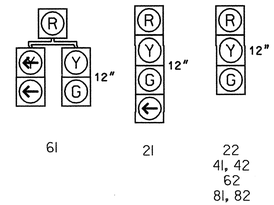
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	Ø4+8	CLEARANCE	DWELL 1	DWELL 2	FLASH
21	G	R	G	R	R	Y
22	G	R	G	R	R	Y
41, 42	R	G	R	G	R	R
61	G	R	R	R	R	Y
62	G	R	R	R	R	Y
81, 82	R	G	R	G	R	R
SIGN D	OFF	OFF	ON	ON	ON	*
SIGN E	OFF	OFF	ON	ON	ON	*

* See note 7

SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	-	1	Y	Y	-	-	3	-	Y
2A	6X6	70	EXISTING	-	2	Y	Y	-	2.0	-	-	Y
2B	6X6	+44	EXISTING	-	2	Y	Y	-	-	-	-	Y
2C	6X6	+44	EXISTING	-	2	Y	Y	-	-	-	-	Y
2D	6X6	+50	EXISTING	-	2	Y	Y	-	-	-	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X60	+5	2-4-2	-	4	Y	Y	-	-	10	-	Y
6A	6X6	70	EXISTING	-	6	Y	Y	-	-	-	-	Y
6B	6X6	70	EXISTING	-	6	Y	Y	-	-	-	-	Y
8A	6X60	+5	2-4-2	-	8	Y	Y	-	-	3	-	Y
8B	6X60	+5	2-4-2	-	8	Y	Y	-	-	10	-	Y
S01	6X6	+180±	4	Y	-	-	-	-	-	-	Y	Y
S02	6X6	+180±	4	Y	-	-	-	-	-	-	Y	Y

2 Phase W/RR Preemption
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Ensure flashing operation does not alter operation of blankout signs.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0871.
10. Program Parent phases for overlap "P" for all phases used in normal operation.

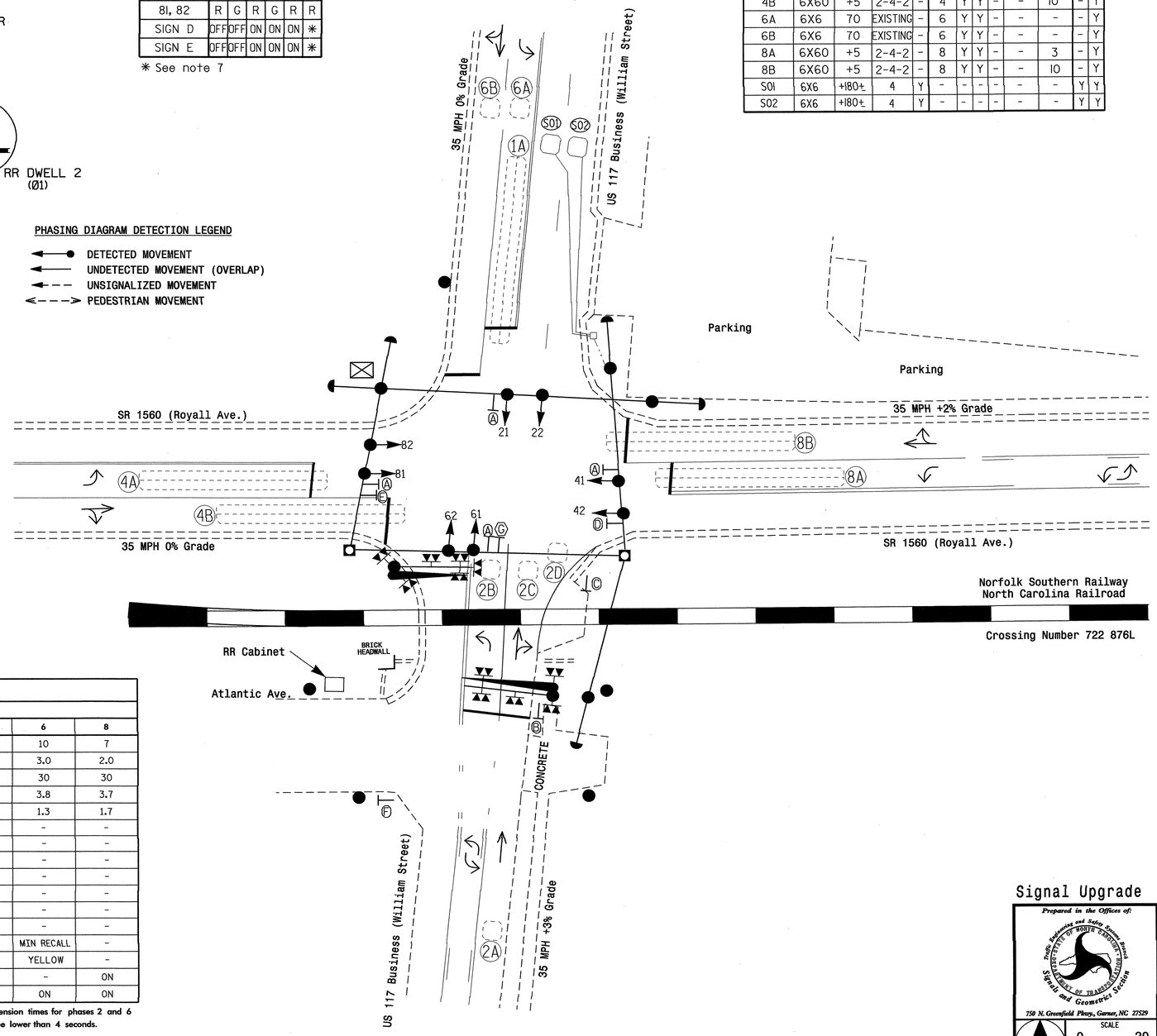
2070 RAIL PREEMPTION

Interval 1 – Track Clearance Green	10
Interval 1 – Track Clearance Yellow	3.7
Interval 1 – Track Clearance Red	2.2
Interval 2 – Dwell Green	255
Interval 2 – Dwell Yellow	0.0*
Interval 2 – Dwell Red	0.0*
Interval 5 – Exit Green	1
Interval 5 – Yellow	0.0
Interval 5 – Red	0.0
Delay Time	0
Min Green Before Pre	1
Ped Clear Before Pre	0
Yellow Clear Before Pre	0.0*
Red Clear Before Pre	0.0*
Dwell Min Time	7
Ped Clear Through Yellow	N
Omit Overlaps	P

* Time defaults to time used for phase during normal operation.

PHASING DIAGRAM DETECTION LEGEND

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



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Metal Strain Pole	
N/A	Railroad Tracks	
N/A	Railroad Cantilever	
N/A	Railroad Gate and Flasher	
A	Left Arrow "ONLY" Sign (R3-5L)	A
B	"STOP HERE ON RED" Sign (R10-6)	B
C	"DO NOT STOP ON TRACKS" Sign (R8-8)	C
D	"NO RIGHT TURN - TRAIN" Fiber Optic Blankout Sign	D
E	"NO LEFT TURN - TRAIN" Fiber Optic Blankout Sign	E
F	"STOP" Sign (R1-1)	F
G	"ONCOMING TRAFFIC MAY HAVE EXTENDED GREEN" Sign (W25-2)	G

2070L TIMING CHART

FEATURE	PHASE 1	2	4	6	8
Min Green 1 *	7	10	7	10	7
Extension 1 *	1.0	2.0	2.0	3.0	2.0
Max Green 1 *	20	30	30	30	30
Yellow Clearance	3.0	3.7	3.8	3.8	3.7
Red Clearance	1.9	2.2	1.6	1.3	1.7
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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 20 1"=20'

US 117 Business (William St.) at SR 1560 (Royall Ave.)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: PL Alexander, PE

PREPARED BY: AB Hambright/Emm REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA L. ALEXANDER

SIGNATURE 1/22/09 DATE

SIG. INVENTORY NO. 04-0871

22-JAN-2009 11:43
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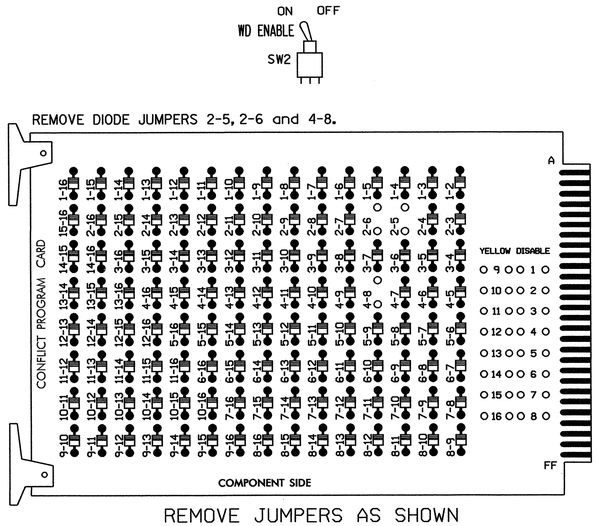
jenryan

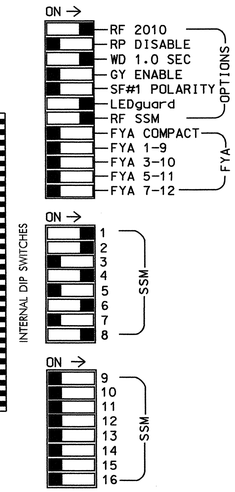
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 96

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Program phases 2 and 6, on the controller unit, for Yellow Flash.
5. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
6. Program phases 4 and 8, on the controller unit, for Dual Entry.
7. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS 3.02.20
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
PHASES USED.....*1,2,4,*5,6,8
OVERLAP P.....2+4+6+8

*USED ONLY DURING RR PREEMPTION

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	21	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						133					

NU = Not Used

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

PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control). Then '1' (Phase Control Functions). Program Phases 1 and 5 for 'Omit Phase' and Phases 2, 4, 6 and 8 for 'Startup Calls'. This is to prevent Phases 1 and 5 from being served when not in Preempt.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	Ø2 2C	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø2 2B	Ø2 2D			Ø4 4B			SYS. DET. SØ2					ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	PRE1 AC ISOLATOR
	L		Ø6 6B				Ø8 8B								NOT USED

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y		2.0	
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
2D	TB2-11,12	I3L	76	38	42	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	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	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
*SØ1	TB6-9,10	I9U	60	22	11	SYS					
*SØ2	TB6-11,12	I9L	62	24	13	SYS					

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

OVERLAP 'P' PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press '8' (Overlaps), then '1' (Vehicle Overlap Settings).

PRESS '-' ONCE

```
PAGE 1: VEHICLE OVERLAP 'P' SETTINGS
PHASE:            ¦123456789101112131415 16
VEH OVL PARENTS:¦ X X X X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

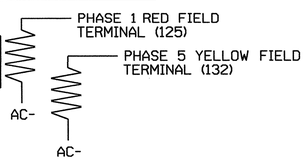
OVERLAP PROGRAMMING COMPLETE

The utilization of overlap P ensures consistent clearance timing during transition to preemption

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0871
DESIGNED: September 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 117 Business (William St.)
at
SR 1560 (Royall Ave.)

Division 4 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY: T. Jayes
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
SIGNATURE | DATE 1/27/09
SIG. INVENTORY NO. 04-0871

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cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.97

RAILROAD PREEMPTION PROGRAMMING DETAIL

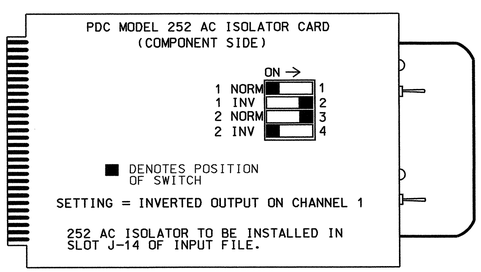
(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions).

```
   PREEMPTION  #1  SETTINGS (NEXT:1-10)
INTERVAL/TIMING ¦  CLEAR/DWELL PHASES
  GRN YEL  RED  ¦123456789101112131415 16
1  10  3.7  2.2 ¦ X  X
2 255  0.0  0.0 ¦X  X   X
3   0  0.0  0.0 ¦
4   0  0.0  0.0 ¦
5   1  0.0  0.0 ¦ X   X
EXIT CALLS      ¦
            OPTIONS
PRIORITY (Y/N TO SELECT) ............HIGH
DELAY TIMER (0-255 SEC) .............0
MIN GREEN BEFORE PRE (0= DEFAULT)....1
PED CLEAR BEFORE PRE (0= DEFAULT)....0
YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0
RED CLEAR BEFORE PRE (0= DEFAULT)....0.0
DWELL MIN TIMER (0-255 SEC) .........7
DWELL MAX TIMER (0=OFF,1-255MIN) ....0
DWELL HOLD-OVER TIMER (0-255) .......0
LATCH CALL? .........................N
LINK TO NEXT PREEMPT? ...............N
ENABLE BACKUP PROTECTION? ...........N
HOLD CLEAR 1 PHASES DURING DELAY? ...N
FAST GREEN FLASH DWELL PHASES? ......N
PED CLEARANCE THROUGH YELLOW? .......N
INHIBIT OVERLAP GREEN EXTENSION? ....N
SERVICE DURING SOFTWARE FLASH? ......N
REST IN RED DURING DWELL INTERVAL? ..N
FLASH DWELL INTERVAL? ...............N
ALLOW PEDS IN DWELL INTERVAL? .......N
RE-TIME DWELL INTERVAL? .............N
OVERLAPS:                ¦ ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW   ¦
OMIT OVERLAPS:           ¦                X
```

PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)

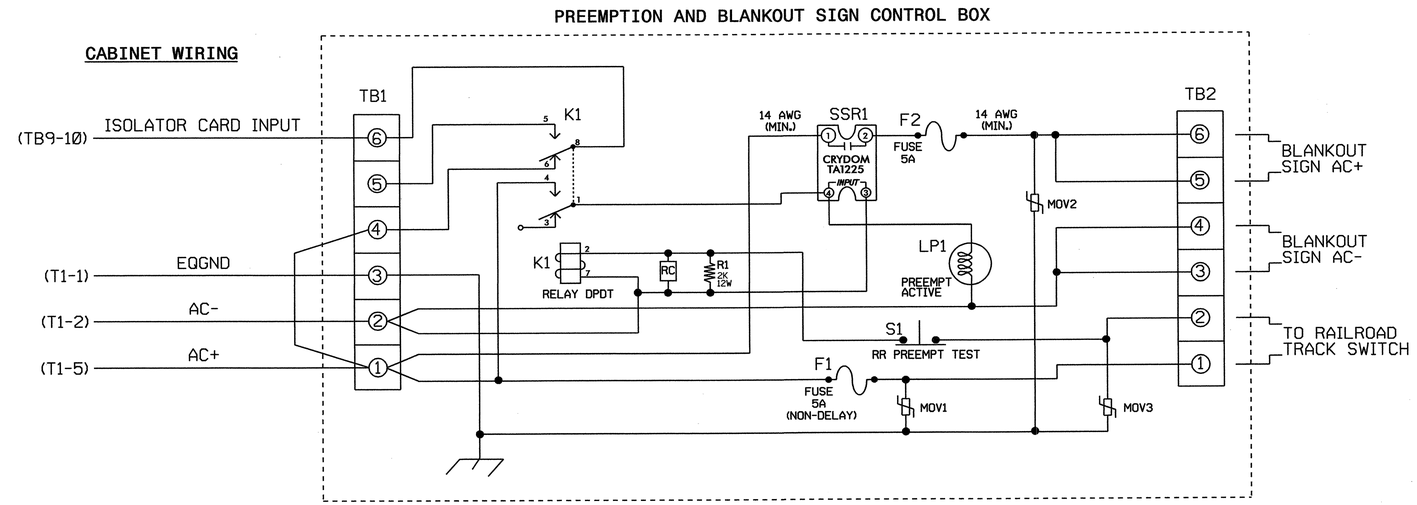


NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

RAILROAD PREEMPTION WIRING DETAIL

(wire as shown below)

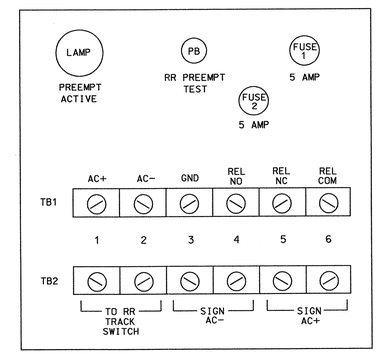
CABINET WIRING



NOTES

1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay K1 is a DPDT with 120VAC coil. Potter & Brumfield KRP11AG with octal base or approved equivalent.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output. Crydom TA1225 or approved equivalent.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
5. Resistor is valued at 2K ohm, 12 watt. Clarostat part no. VPR10F-2K or approved equivalent.
6. RC network is valued at .1 microfarad, 100 ohm.
7. If replacement movs are needed, GE part no. V150LA20A may be used.
8. Preemption and Blankout Sign Control Box is a Control Technologies part no. 2299-101 or approved equivalent.
9. IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0871
DESIGNED: September 2008
SEALED: 01/22/09
REVISED: N/A

Signal Upgrade - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 117 Business (William St.) at SR 1560 (Royall Ave.)

Division 4 Wayne County Goldsboro

PLAN DATE: January 2009 REVIEWED BY: T. Jyle
PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 1/27/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0871

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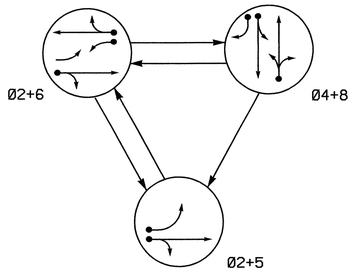
cbstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.98

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

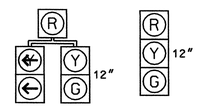
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	Ø2+6	Ø4+8	FLASH
21	G	G	R	Y
22	G	G	R	Y
41,42	R	R	G	R
61,62	R	G	R	Y
81,82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

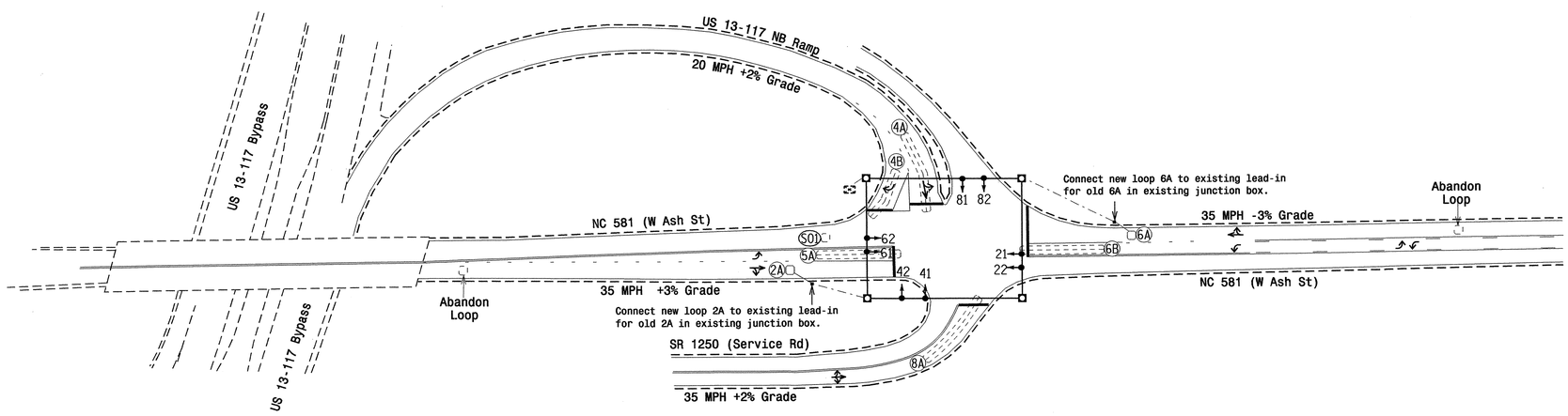


21

22
41,42
61,62
81,82

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	3	Y	2	Y	Y	—	—	—	—	—
4A	6X60	+5	2-4-2	—	4	Y	Y	—	—	3	—	—
4B	6X60	+5	2-4-2	—	4	Y	Y	—	—	10	—	—
5A	6X60	+5	2-4-2	—	5	Y	Y	—	—	10	—	—
6A	6X6	70	4	Y	6	Y	Y	—	—	—	—	—
6B	6X60	+5	2-4-2	—	6	Y	Y	—	—	3	—	—
8A	6X60	+5	2-4-2	—	8	Y	Y	—	—	5	—	—
S01	6X6	+150	3	—	—	Y	Y	—	—	—	Y	—



3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0889.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	4	5	6	8
Min Green 1 *	12	7	7	12	7
Extension 1 *	3.0	2.0	3.0	3.0	2.0
Max Green 1 *	90	20	15	90	20
Yellow Clearance	3.7	3.0	3.0	4.1	3.7
Red Clearance	1.5	2.6	2.0	2.3	2.5
Red Revert	5.0	2.0	2.0	2.0	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 Revision

Revision ▽ Seal

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA D. ALEXANDER

SIGNATURE — DATE 12/15/08

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

NC 581 (W Ash St)
at
US 13-117 NB Ramp/
SR 1250 (Service Rd)

Division 4 Wayne County Goldsboro

PLAN DATE: 6/15/02 REVIEWED BY: D. Morton, PE
PREPARED BY: J. Cole REVIEWED BY:

REVISIONS	INIT.	DATE
▽ Update clearance timing, revise to backup protect with red revert, renumber system loop, install new loops 2A and 6A.	ak	12/15/08

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by Donald W. Morton, PE no. 19798 on 9/3/02 This document is only certified as to the revisions.

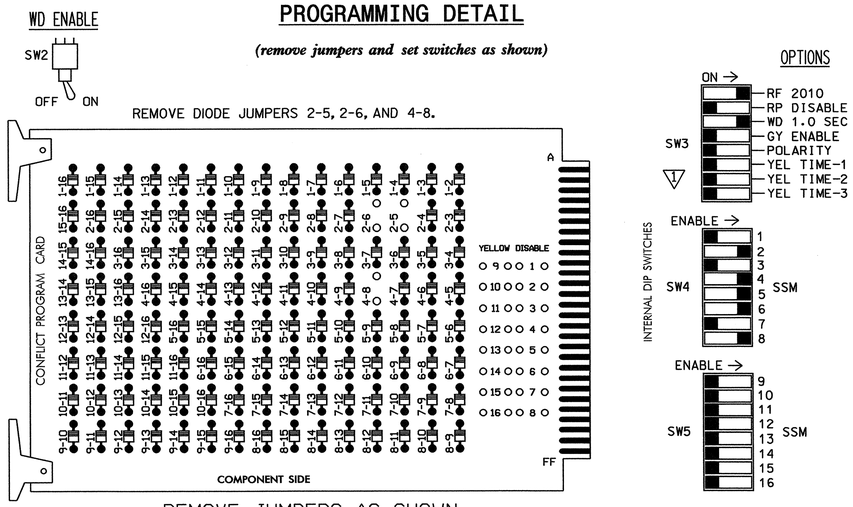
SIG. INVENTORY NO. 04-0889

06-JAN-2009 14:48
s:\ts\signals\signal design section\eastern region\div-04\goldsboro city systems\signal designs\04-0889\04-0889_sig_dsn_20081215.dgn
emmcbee

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 99

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.
3. Make sure switches YEL TIME-1, YEL TIME-2, and YEL TIME-3 are in the 'OFF' position.

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. 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 1,3, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City 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.	NU	21,22	NU	NU	41,42	NU	21	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							132					
GREEN ARROW							133					
✋												
🚶												

NU = Not Used

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

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE 2070L
CABINET.....EAGLE 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S5,S6,S8
PHASES USED.....2,4,5,6,8
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	SLOT	Ø2 / 2A	SLOT	SLOT	SLOT	Ø4 / 4A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS / DC ISOLATOR
	L	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	Ø4 / 4B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST / DC ISOLATOR
FILE "J"	U	Ø5 / 5A	Ø6 / 6A	SLOT	SLOT	SLOT	Ø8 / 8A	SLOT	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	NOT USED	Ø6 / 6B	EMPTY	EMPTY	EMPTY	NOT USED	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A	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
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			5
* SØ1	TB7-5,6	J8U	50	12	28	SYS					

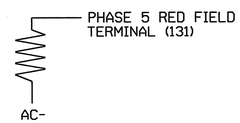
* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

BACKUP PROTECTION NOTE

(program controller as shown below)

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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0889
DESIGNED: 06-15-02
ORIGINALLY SEALED: 09-03-02
REVISED: 12-15-08

Signal Revision

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 581 (W Ash St)
at
US 13-117 NB Ramp/
SR 1250 (Service Rd)

Division 04 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY:
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE
Removed loop 4C; renumbered system loop; revised backup protect; revised monitor switch settings. (NSA) DTJ 4/22/08	KCB	1/5/09

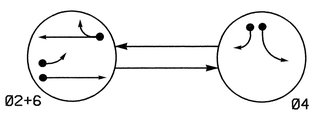
Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN
George C. Brown 1/5/09
SIGNATURE DATE
SIG. INVENTORY NO. 04-0889

29-DEC-2008 12:30
s:\#ts_signals\workgroups\#sig man\armstrong\040889_smle\e_xxx.dgn
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.100

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4	FLASH
21,22	G	R	Y
41,42	R	G	R
61,62	G	R	Y

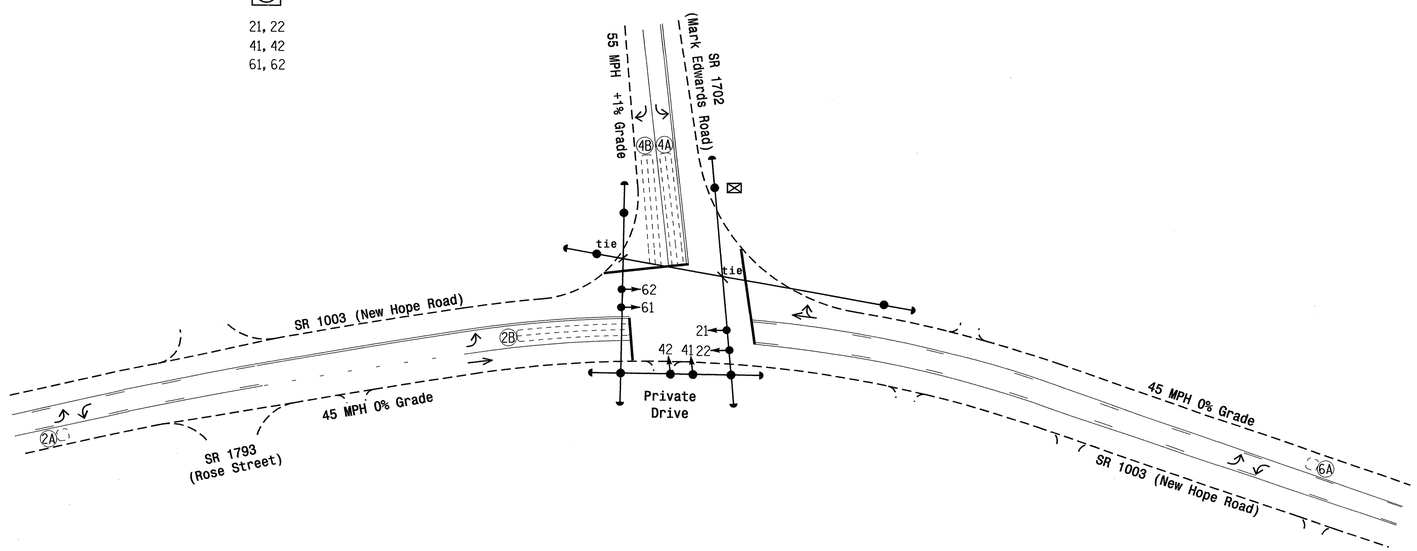
SIGNAL FACE I.D.

All Heads L.E.D.

21, 22
41, 42
61, 62

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
2B	6X60	0	2-4-2	-	2	Y	Y	Y	-	3	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A	6X6	300	4	-	6	Y	Y	-	-	-	-	Y



2 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0907.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	12	7	12
Extension 1 *	6.0	1.0	6.0
Max Green 1 *	90	25	90
Yellow Clearance	4.5	3.0	4.5
Red Clearance	1.0	1.6	1.0
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	2.5	-	2.5
Max Variable Initial *	34	-	34
Time Before Reduction *	15	-	15
Time To Reduce *	45	-	45
Minimum Gap	3.0	-	3.0
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

SR 1003 (New Hope Road)
at
SR 1702 (Mark Edwards Road)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: P. Alexander, PE
PREPARED BY: A Hambright/Emm REVIEWED BY:

REVISIONS	INIT.	DATE

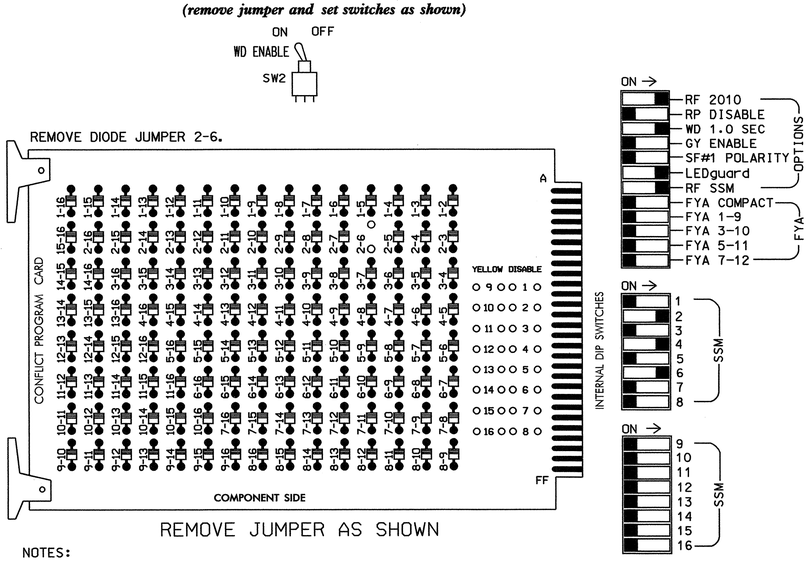
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA G. ALEXANDER
SIGNATURE 12/15/08 DATE
SIG. INVENTORY NO. 04-0907

15-DEC-2008 14:22
s:\traffic\signals\signal design section\eastern regions\div-04\goldsboro city systems\signal designs\04-0907\04-0907_sig.dgn_2008mmdd.dgn
emhighsmith

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 101

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3,5, 7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City 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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6
PHASES USED.....2,4,6
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	SLOT	ø2 2A	SLOT	SLOT	SLOT	ø4 4A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	EMPTY	ø2 2B	EMPTY	EMPTY	EMPTY	ø4 4B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	SLOT	ø6 6A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y	Y		3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0907
DESIGNED: September 2008
SEALED: 12/15/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1003 (New Hope Road)
at
SR 1702 (Mark Edwards Road)

Division 4 | Wayne County | Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: QIP
PREPARED BY: K. McDaniel | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Management Section
750 N. Greenfield Pwky, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 12-31-08
SIG. INVENTORY NO. 04-0907

23-DEC-2008 08:07
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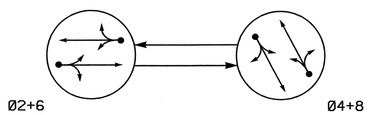
kmmcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 102

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

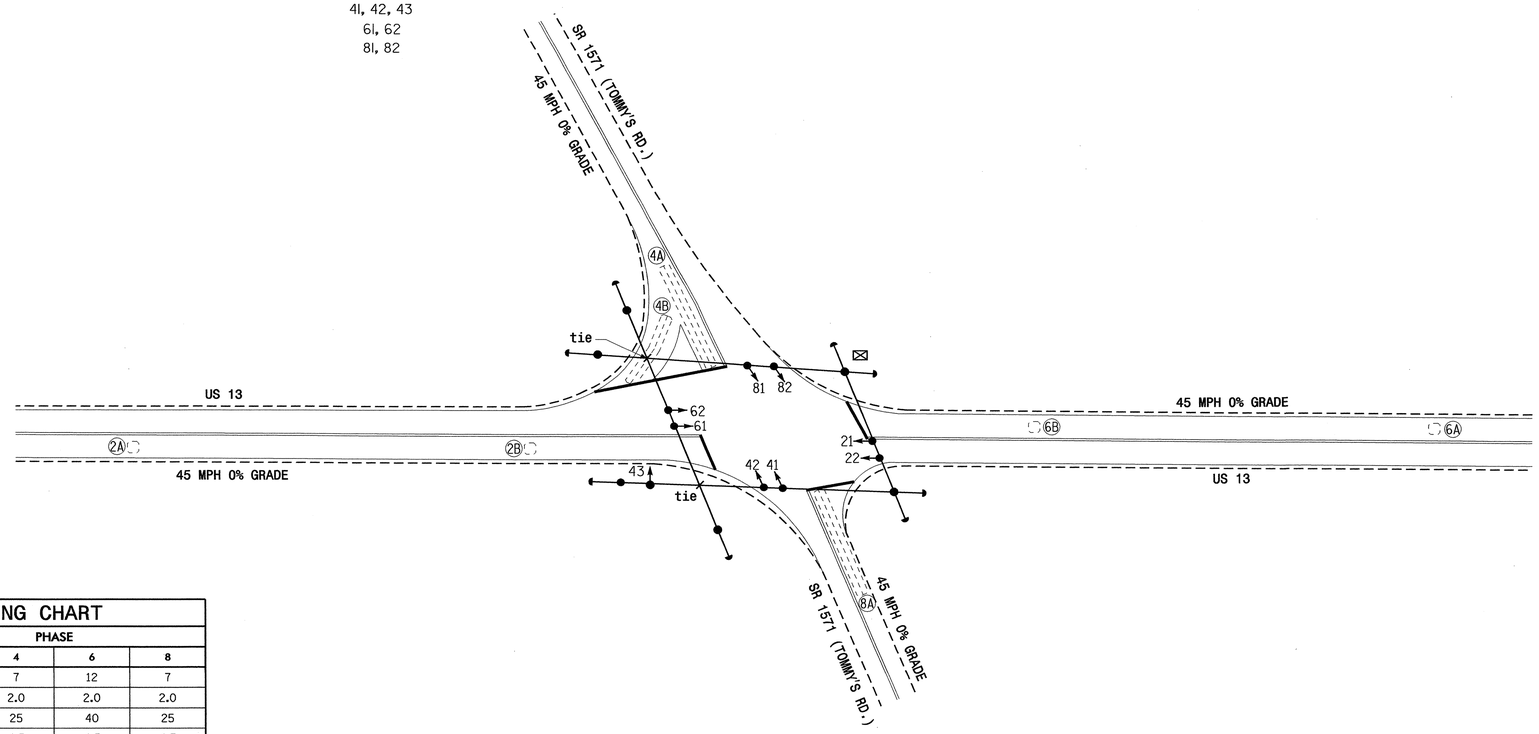
TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21,22	G	R	Y
41,42,43	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, 43
61, 62
81, 82



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	4	-	2	Y	Y	-	1.6	-	-	Y
2B	6X6	90	4	-	2	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A	6X6	300	4	-	6	Y	Y	-	1.6	-	-	Y
6B	6X6	90	4	-	6	Y	Y	-	-	-	-	Y
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	10	-	Y

2 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Controller Asset #0911.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	12	7	12	7
Extension 1 *	2.0	2.0	2.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	4.5	4.5	4.5	4.5
Red Clearance	1.0	1.0	1.9	1.0
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

* 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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 40 1"=40'

US 13
AT
SR 1571 (TOMMY'S ROAD)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: P. Alexander, PE
PREPARED BY: AB Hambright/Emm REVIEWED BY:

REVISIONS	INIT.	DATE

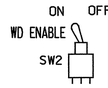
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA G. ALEXANDER
SIGNATURE 12/15/08 DATE
SIG. INVENTORY NO. 04-0911

15-DEC-2008 13:50
s:\traffic\signals\signal design section\eastern region\mdlv-04\goldsboro city systems\signal designs\04-0911\04-0911_sig_dsn_2008mmdd.dgn
emmhardew

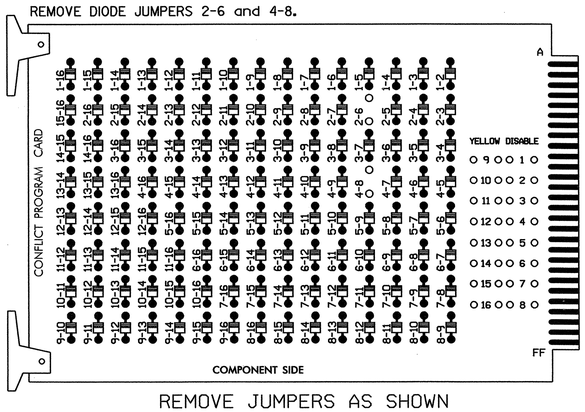
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.103

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

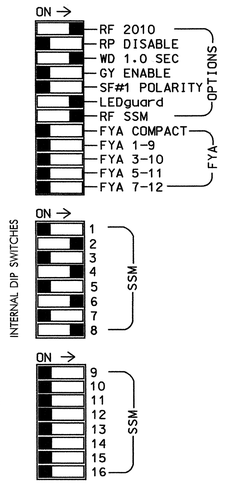
(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City 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.	NU	21,22	NU	NU	41,42,43	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

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....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	SLOT EMPTY	ø 2 / 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 4 / 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS / DC ISOLATOR
	L		ø 2 / 2B				ø 4 / 4B								ST / DC ISOLATOR
FILE "J"	U	SLOT EMPTY	ø 6 / 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	ø 8 / 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		ø 6 / 6B				NOT USED								

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y		1.6	
2B	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			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y		1.6	
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0911
DESIGNED: September 2008
SEALED: 12/15/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Public Information and Safety Services Unit
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pwky, Garner, NC 27529

US 13
at
SR 1571 (Tommy's Road)

Division 4 | Wayne County | Goldsboro

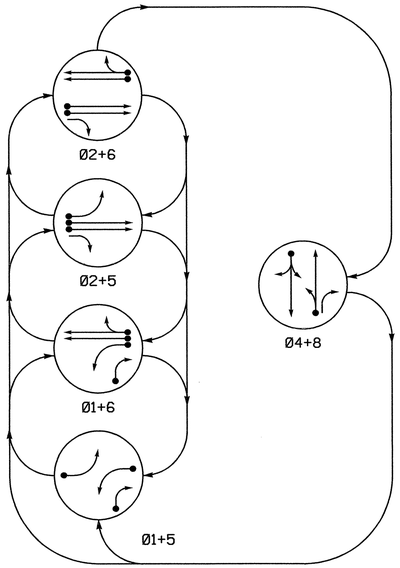
PLAN DATE: November 2008	REVIEWED BY:		
PREPARED BY: K. McDaniel	REVIEWED BY:		
REVISIONS		INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE | DATE 12-31-08
SIG. INVENTORY NO. 04-0911

23-DEC-2008 08:08
s:##ts_signals#workgroups#sig mcmmcdaniels##files2#75.04-0911_oa171-771#04091l_sm_ele_xxx.dgn
kmcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 104

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	04+8	FLASH
11	~~←~~	~~←~~	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
51	~~←~~	~~R~~	~~←~~	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	Y
81	R	R	R	R	G	R
82	R/←	R/←	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

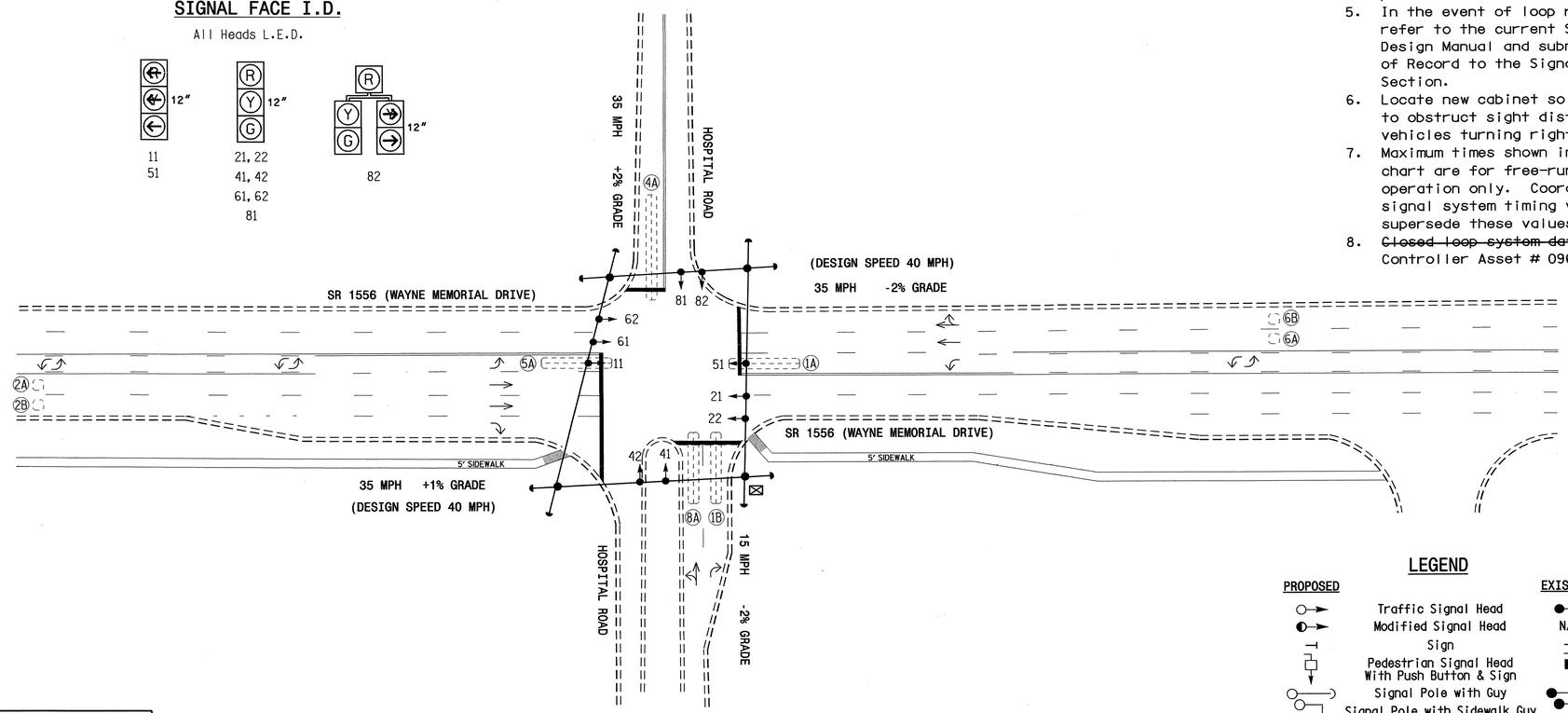
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	+5	2-4-2	-	1	Y	Y	-	-	3	-	Y
1B	6X40	+5	2-4-2	-	1	Y	Y	-	-	15	-	Y
2A, 2B	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	5	-	Y
5A	6X40	+5	2-4-2	-	5	Y	Y	-	-	3	-	Y
6A, 6B	6X6	300	4	-	6	Y	Y	-	-	-	-	Y
8A	6X40	+5	2-4-2	-	8	Y	Y	-	-	-	-	Y

5 Phase Fully Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signal Design Manual and submit a Plan of Record to the Signal Design Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. ~~Closed loop system data~~ Controller Asset # 0967.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	3.0	6.0	2.0	3.0	6.0	2.0
Max Green 1 *	25	90	25	15	90	25
Yellow Clearance	3.0	4.1	3.7	3.0	4.3	3.0
Red Clearance	2.6	1.3	1.9	1.9	1.1	3.4
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	1.5	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1556 (Wayne Memorial Drive) at Hospital Road

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY:

PREPARED BY: L. Blount REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER

SIGNATURE DATE 11/21/08

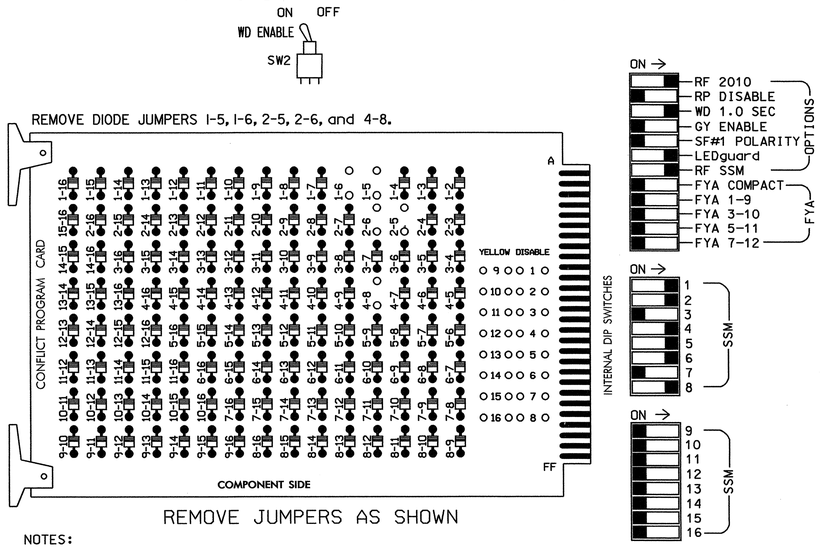
SIG. INVENTORY NO. 04-0967

20-NOV-2008 14:36
s:*its signals\signal design sections\eastern regions\div-04\goldsboro city systems\signal designs\04-0967\04096?.dgn
larryblunt

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.105

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 3,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
7. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

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.	11	82	21,22	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU
RED			128			101			134			107	
YELLOW			129			102			135			108	
GREEN			130			103			136			109	
RED ARROW	125							131					
YELLOW ARROW	126	126						132					
GREEN ARROW	127	127						133					
✋													
🚶													

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A,2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			5
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A,6B	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0967
DESIGNED: September 2008
SEALED: 11-21-08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1556 (Wayne Memorial Drive) at Hospital Road

Division 4 | Wayne County | Goldsboro

PLAN DATE: September 2008 | REVIEWED BY: T. Jyer
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

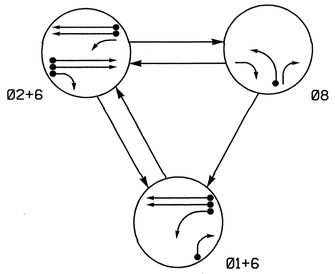
George C. Brown 12/4/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-0967

24-NOV-2008 07:59
s:\traffic\signals\workgroups\sig mon\armstrong\W4U967_sml_ele.xxx.dgn
smarmstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.10a

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

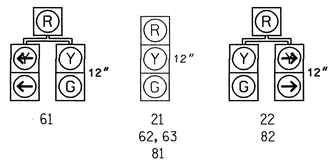
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø8	FLASH
21	R	G	R	Y
22	R	G	R	Y
61	G	G	R	Y
62, 63	G	G	R	Y
81	R	R	G	R
82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



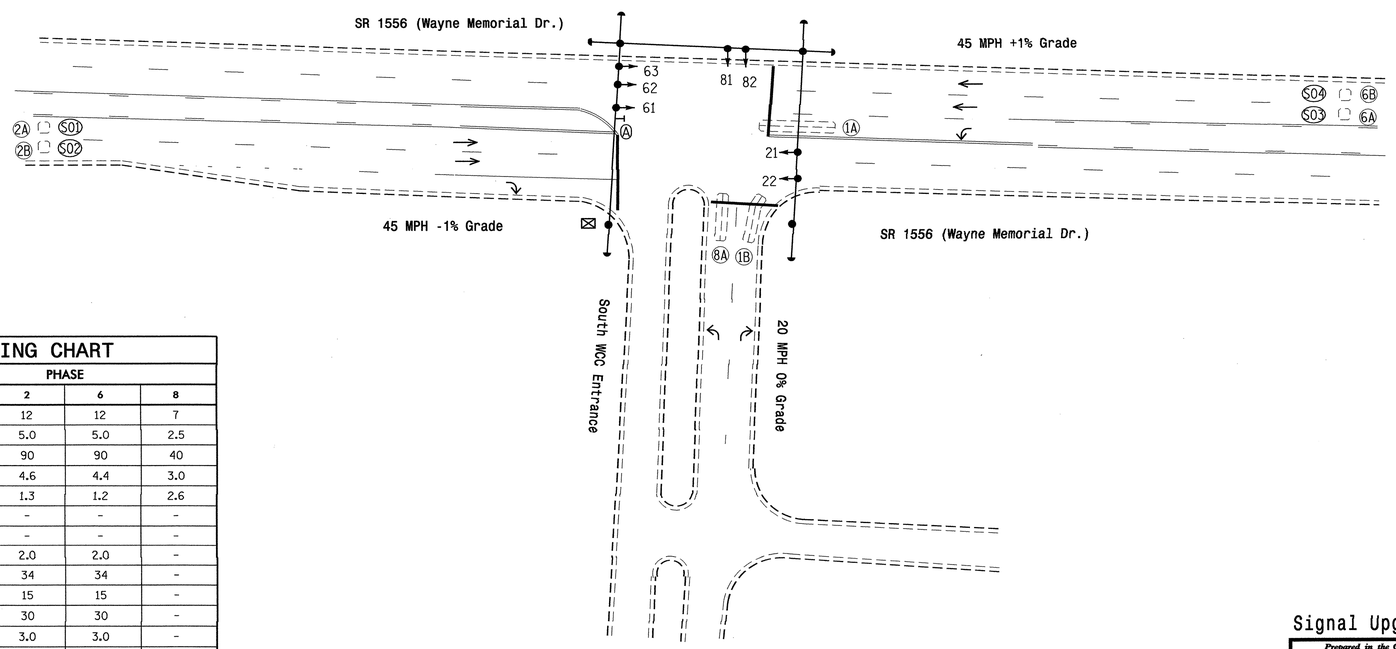
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6x40	+5	2-4-2	-	1	Y	Y	-	-	15	-	Y
1B	6X25	+5	2-4-2	-	1	Y	Y	-	-	15	-	Y
2A/S01	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
2B/S02	6X6	300	4	-	2	Y	Y	-	-	-	-	Y
6A/S03	6X6	300	4	-	6	Y	Y	-	-	-	-	Y
6B/S04	6X6	300	4	-	6	Y	Y	-	-	-	-	Y
8A	6X25	+5	2-4-2	-	8	Y	Y	-	-	-	-	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Existing "Left Turn Yield on Green" ball sign(R10-12) may be removed at the discretion of the Regional Traffic Engineer.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #0968



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	A

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	12	12	7
Extension 1 *	2.0	5.0	5.0	2.5
Max Green 1 *	15	90	90	40
Yellow Clearance	3.0	4.6	4.4	3.0
Red Clearance	2.3	1.3	1.2	2.6
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	2.0	2.0	-
Max Variable Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	3.0	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signal and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

SR 1556 (Wayne Memorial Dr.)
at
South Entrance to Wayne Community College

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: L. Blount
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

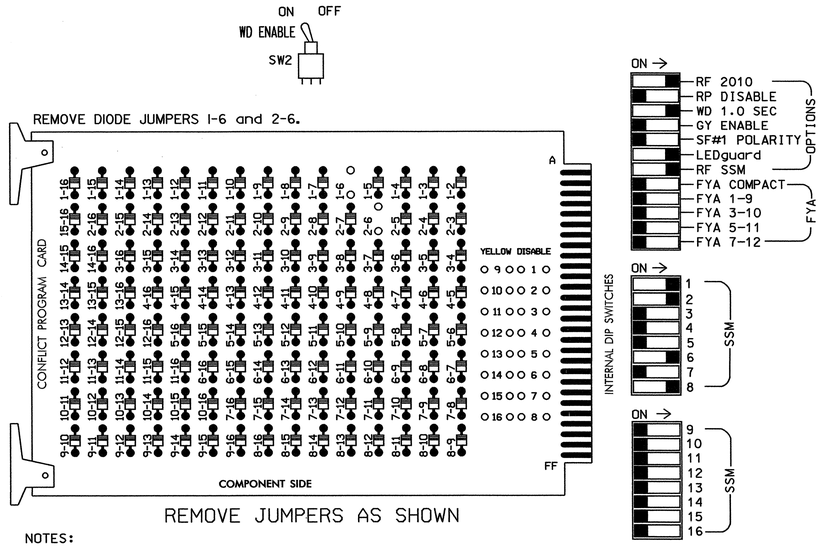
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL ALEXANDER
SIGNATURE DATE 1/22/09
SIG. INVENTORY NO. 04-0968

22-JAN-2009 10:31
s:\its signals\signal design section\eastern region\div-04\goldsboro city system\signal designs\04-0968\04-0968.dgn
lorraloart

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.107

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 3,4,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

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

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.	61,82	21,22	NU	NU	NU	NU	NU	61, 62,63	NU	NU	22	81,82	NU
RED	✳	128						134				107	
YELLOW		129						135				108	
GREEN		130						136				109	
RED ARROW													
YELLOW ARROW	126										108		
GREEN ARROW	127										109		

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	ø 1	ø2/SYS	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS
			1A	2A/SØ1											DC ISOLATOR
	L	EMPTY	ø 1	ø2/SYS	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST
			1B	2B/SØ2											DC ISOLATOR
FILE "J"	U	SLOT	ø6/SYS	SLOT	SLOT	SLOT	ø 8	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
			6A/SØ3				8A								
	L	EMPTY	ø6/SYS	EMPTY	EMPTY	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY
			6B/SØ4												

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	TB2-5,6	I2U	39	1	2	1	Y	Y			15
1B	TB2-7,8	I2L	43	5	12	1	Y	Y			15
2A/SØ1	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
2B/SØ2	TB2-11,12	I3L	76	38	42	2/SYS	Y	Y			
6A/SØ3	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/SØ4	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			

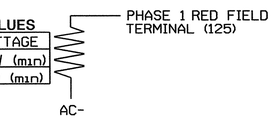
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-0968
DESIGNED: September 2008
SEALED: 01/22/09
REVISED: N/A

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.

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1556 (Wayne Memorial Dr.)
at
South Entrance to Wayne Community College

Division 4 Wayne County Goldsboro

PLAN DATE: January 2009 REVIEWED BY: T. Jaja
PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/26/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-0968

23-JAN-2009 11:31
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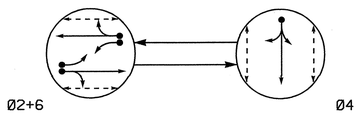
cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.1c8

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE 02+6	PHASE 04	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P43, P44	DW	W	DRK
P61, P62	W	DW	DRK

W - Walk
DW - Don't Walk
DRK - Dark

SIGNAL FACE I.D.

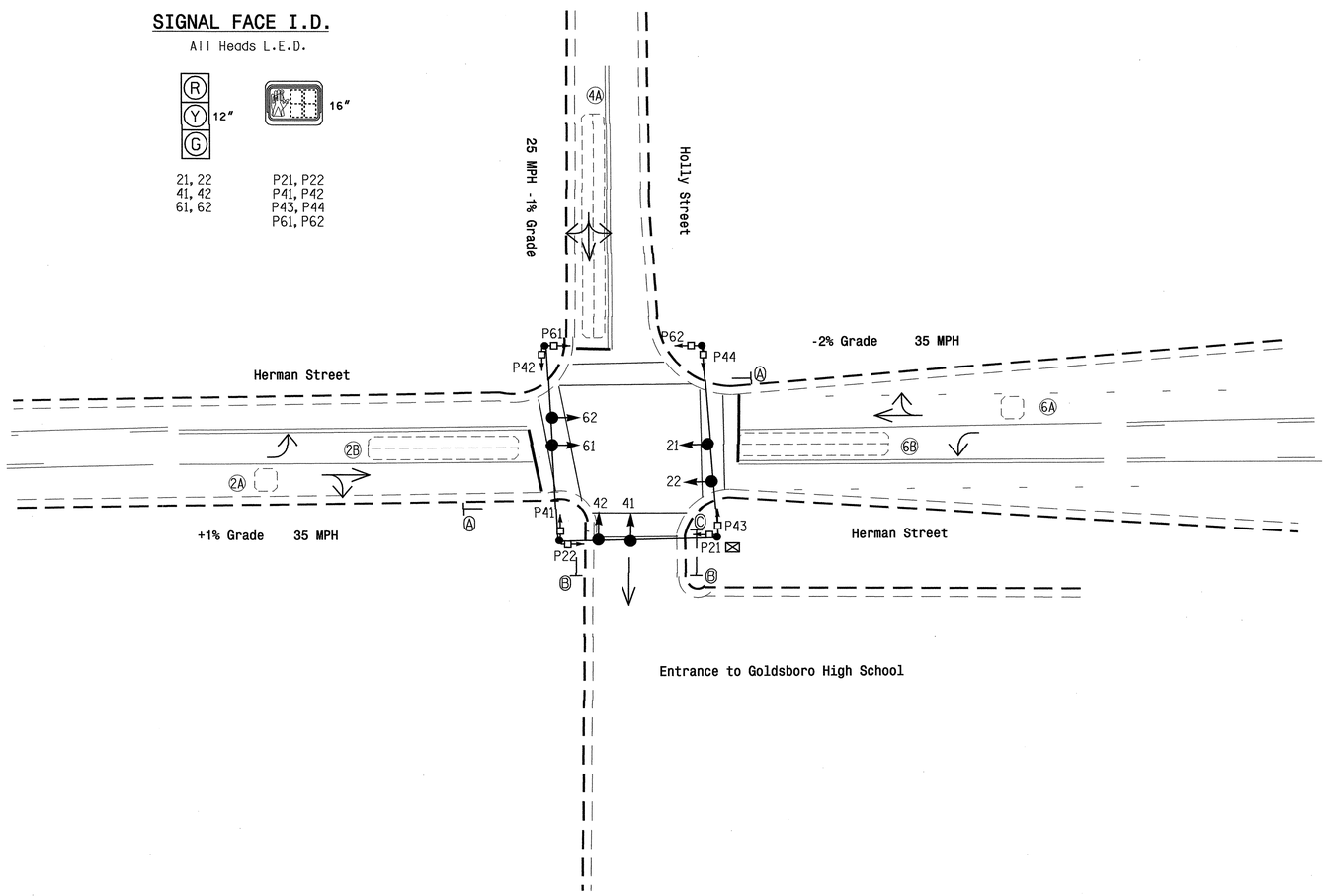
All Heads L.E.D.

21, 22
41, 42
61, 62

P21, P22
P41, P42
P43, P44
P61, P62

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	3	-	2	Y	Y	-	-	-	-	Y
2B	6X40	3	2-4-2	-	2	Y	Y	-	-	-	-	Y
4A	6X60	3	2-4-2	-	4	Y	Y	-	-	5	-	Y
6A	6X6	70	3	-	6	Y	Y	-	-	-	-	Y
6B	6X40	0	2-4-2	-	6	Y	Y	-	-	-	-	Y



2 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #1013.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
A	School Crossing Sign (S2-1)	A
B	"DO NOT ENTER" Sign (R5-1)	B
	"ENTER ONLY" Sign (NON-MUTCD)	C

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	10	7	10
Extension 1 *	3.0	1.0	3.0
Max Green 1 *	30	20	30
Yellow Clearance	3.8	3.2	4.0
Red Clearance	1.0	1.3	1.0
Walk 1 *	4	4	4
Don't Walk 1	6	8	6
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	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pwky., Garner, NC 27529

SCALE 0 20 1" = 20'

Herman Street
at
Holly Street and Entrance
to Goldsboro High School

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: L. Blount
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER
SIGNATURE 1/13/09 DATE
SIG. INVENTORY NO. 04-1013

13-JAN-2009 13:48
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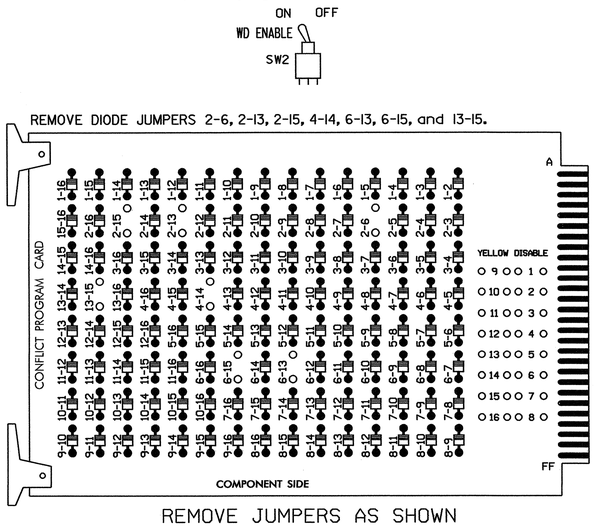
larry\blount

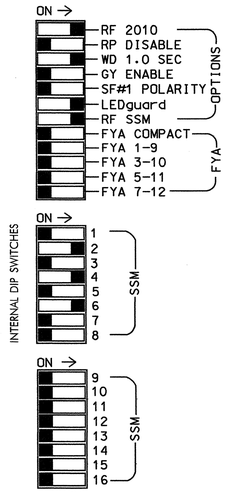
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 109

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3, 5,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2, 4, and 6 for 'STARTUP PED CALL'.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P
PHASES USED.....2,2 PED,4,4 PED,6,6 PED
OVERLAPS.....NONE

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.	NU	21,22	P21, P22	NU	41,42	P41,P42 P43,P44	NU	61,62	P61, P62	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113			104			119			
🚶			115			106			121			

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
	L		Ø2 2B				NOT USED						Ø4 PED DC ISOLATOR	NOT USED	ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø6 6B												

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			5
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42 P43,P44	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

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

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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: 04-1013
DESIGNED: September 2008
SEALED: 01-13-09
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

Herman Street
at
Holly Street and
entrance to Goldsboro High School

Division 04 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY: T. Jogh
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/16/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-1013

15-JAN-2009 13:40
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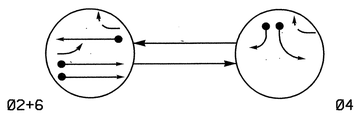
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.110

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4	FLASH
21,22	G	R	Y
41,42	R	G	R
61,62	G	R	Y

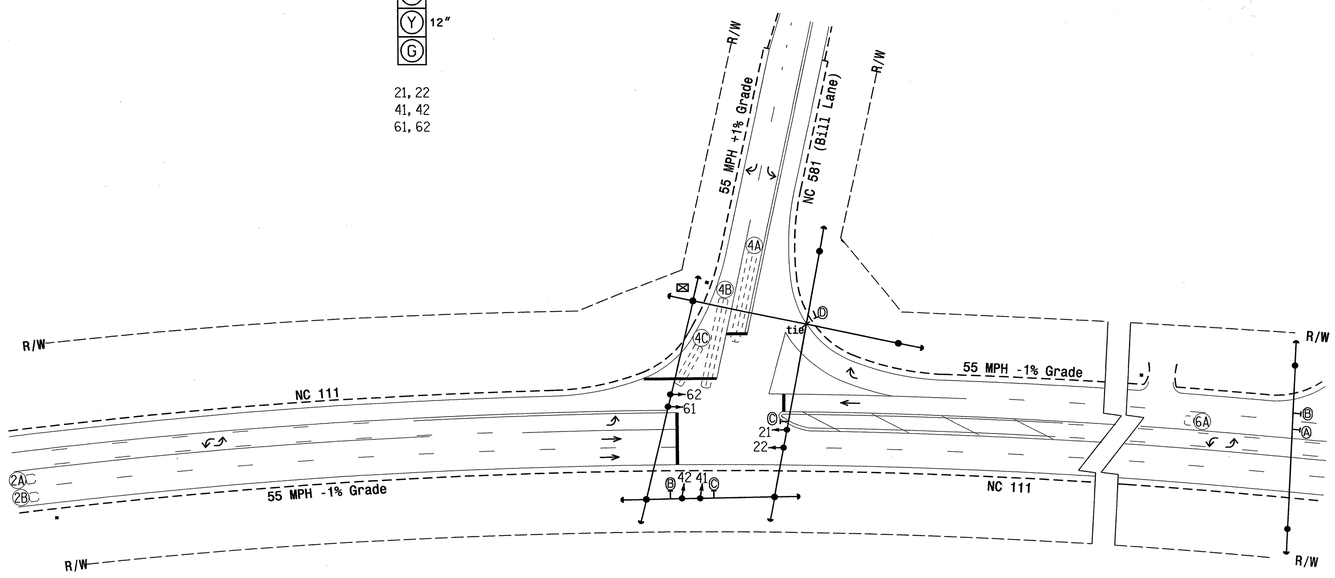
SIGNAL FACE I.D.

All Heads L.E.D.

21, 22
41, 42
61, 62

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A,2B	6X6	420	5	-	2	Y	Y	-	-	-	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6X60	+5	2-4-2	-	4	Y	Y	-	-	15	-	Y
4C	6X30	+5	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A	6X6	420	5	-	6	Y	Y	-	-	-	-	Y



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	14	7	14
Extension 1 *	6.0	2.0	6.0
Max Green 1 *	90	20	90
Yellow Clearance	5.3	3.0	5.3
Red Clearance	1.0	2.4	1.1
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	1.5	-	2.5
Max Variable Initial *	46	-	46
Time Before Reduction *	15	-	15
Time To Reduce *	30	-	30
Minimum Gap	3.5	-	3.5
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	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.

2 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Controller Asset #1054.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	
A	Through Arrow "ONLY" Sign (R3-5A)	A
B	Right Arrow "ONLY" Sign (R3-5R)	B
C	Left Arrow "ONLY" Sign (R3-5L)	C
D	"YIELD" Sign (R1-2)	D

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Pkwy, Garner, NC 27529

NC 111 at NC 581 (Bill Lane)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: P. Alexander, PE

PREPARED BY: EM Minshew REVIEWED BY:

SCALE 1"=50' (0 – 50)

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23499 ENGINEER PAUL ALEXANDER
12/15/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-1054

15-DEC-2008 11:39
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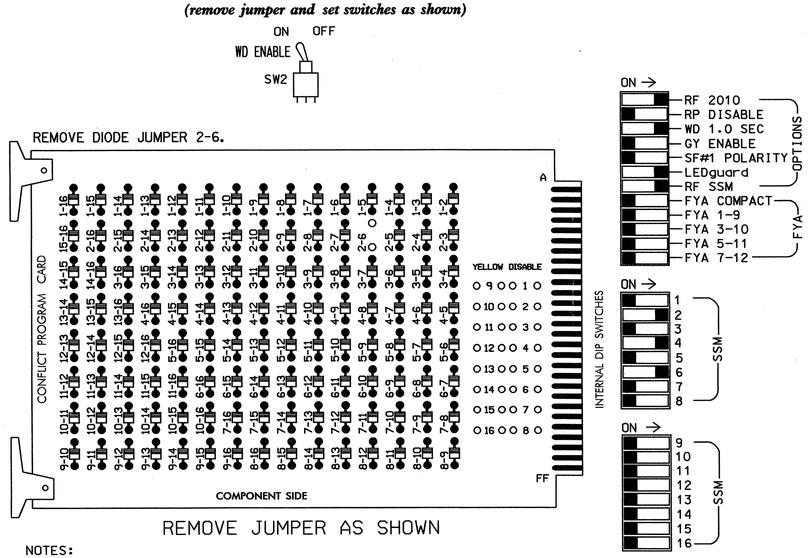
emminshew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.III

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3,5, 7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City 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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6
PHASES USED.....2,4,6
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	SLOT	ø 2 / 2A,2B	SLOT	SLOT	SLOT	ø 4 / 4A	ø 4 / 4C	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS / DC ISOLATOR
	L	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	ø 4 / 4B	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST / DC ISOLATOR
FILE "J"	U	SLOT	ø 6 / 6A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A,2B	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			15
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1054
DESIGNED: September 2008
SEALED: 12/15/2008
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signal Management Section
750 N. Greenfield Pwky, Garner, NC 27529

NC 111
at
NC 581 (Bill Lane)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY:
PREPARED BY: K. McDaniel REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 12-31-08 DATE
SIG. INVENTORY NO. 04-1054

31-DEC-2008 14:04
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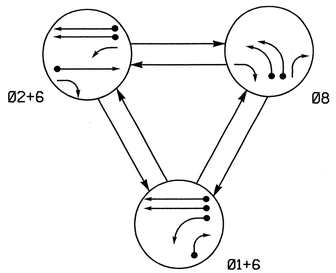
kmmcdaniel

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.12

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

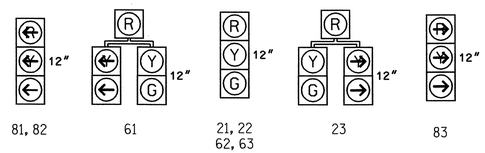
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	PHASE Ø2+6	PHASE Ø8	FLASH
21,22	R	G	R	Y
23	R	G	R	Y
61	G	G	R	Y
62,63	G	G	R	Y
81,82	~~R~~	~~R~~	←	~~R~~
83	→	~~R~~	→	~~R~~

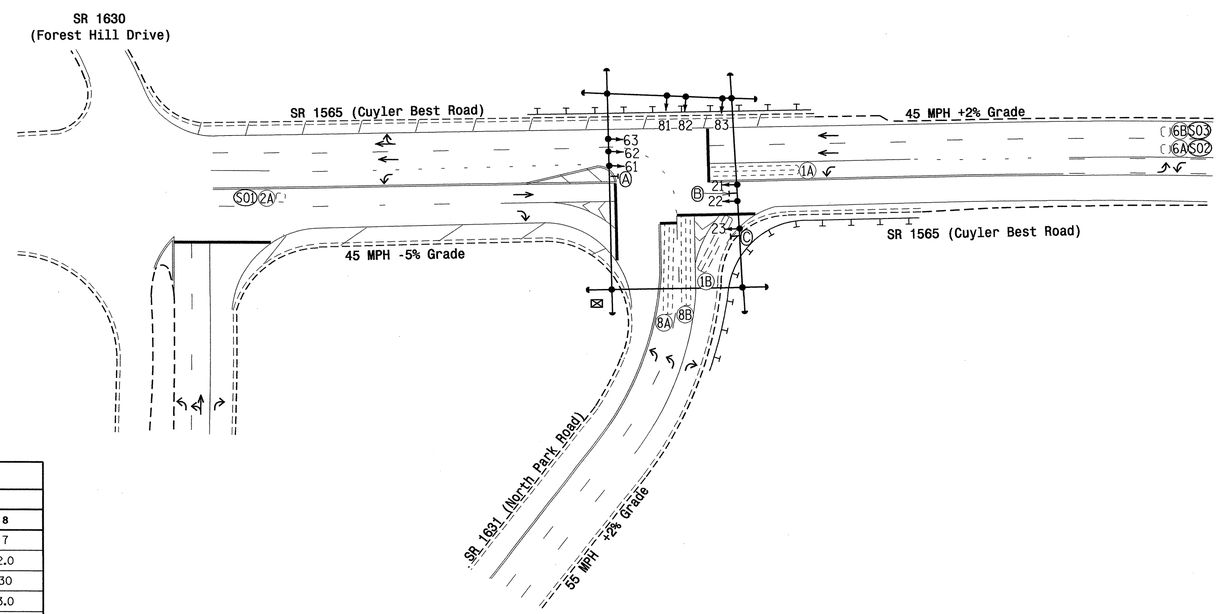
SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
1B	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
2A,S01	6X6	220	4	-	2	Y	Y	-	-	-	Y	Y
6A,S02	6X6	300	4	-	6	Y	Y	-	-	-	Y	Y
6B,S03	6X6	300	4	-	6	Y	Y	-	-	-	Y	Y
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	-	-	Y
8B	6X60	0	2-4-2	-	8	Y	Y	-	-	-	-	Y



2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	12	12	7
Extension 1 *	1.0	6.0	6.0	2.0
Max Green 1 *	15	100	100	30
Yellow Clearance	3.0	5.0	4.3	3.0
Red Clearance	1.8	1.4	1.0	1.8
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	2	1.5	-
Max Variable Initial *	-	26	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	2.0	3.2	-
Recall Mode	-	SOFT RECALL	SOFT RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	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.

3 Phase
Fully Actuated
(Goldsboro Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. ~~Closed loop system data:~~ Controller Asset #1058.
9. Existing "Left Turn Yield on Green" ball sign (R10-12) may be removed at the discretion of the Regional Traffic Engineer.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Guard Rail	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	"LEFT TURN YIELD ON GREEN" Sign (R10-12)	Ⓐ
Ⓑ	Through Arrow "ONLY" Sign (R3-5A)	Ⓑ
Ⓒ	Right Arrow "ONLY" Sign (R3-5R)	Ⓒ

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 50 1"=50'

SR 1565 (Cuyler Best Road)
at
SR 1631 (North Park Road)

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY: EM Winshew
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

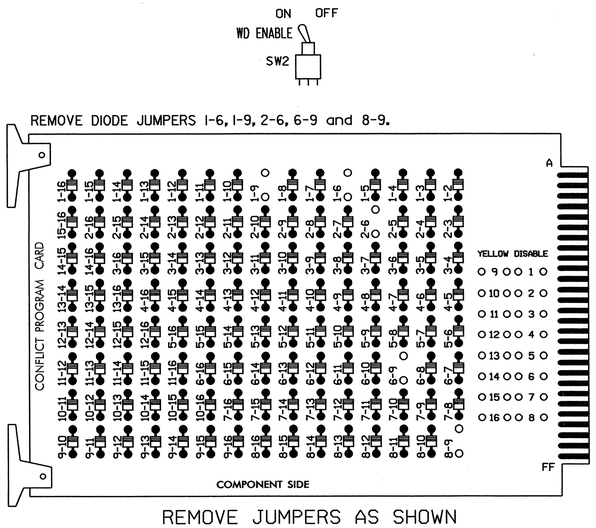
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA A. ALEXANDER
12/4/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-1058

04-DEC-2008 09:32
s:\traffic\signals\design section\eastern region\div-04\goldsboro city system\signal designs\04-1058\041058_sig_dsn_2008mdd.dgn
eminshew

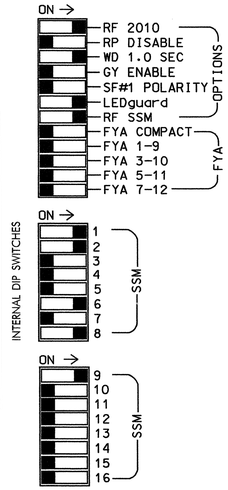
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.113

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 3,4, 5,7,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8		S8P	S9	S10	S11	S12	S13	S14
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.	61	21, 22,23	NU	NU	NU	NU	NU	61, 62,63	NU	NU	23	81,82	NU	83	NU	NU	NU	NU	NU
RED	✱	128						134											
YELLOW		129						135											
GREEN		130						136											
RED ARROW												107		A121					
YELLOW ARROW	126										108	108		A122					
GREEN ARROW	127										109	109		A123					

NU = Not Used

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

✱✱ Flash Note: Wire Overlap "A" to flash on Flasher unit #2, Circuit #1.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET .....CONTRACTOR SUPPLIED 332
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S6,S8,S9
PHASES USED.....1,2,6,8
OVERLAP A.....1+8

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:          ¦123456789101112131415 16
VEH OVL PARENTS:¦X       X
VEH OVL NOT VEH:¦
VEH OVL NOT PED:¦
VEH OVL GRN EXT:¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø1 1B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	Ø2/SYS 2A/SØ1												ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø6/SYS 6A/SØ2	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø6/SYS 6B/SØ3				Ø8 8B								

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

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

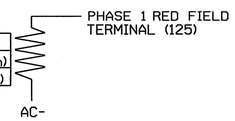
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			15
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A/SØ1	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
6A/SØ2	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/SØ3	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1058
DESIGNED: October 2008
SEALED: 12/04/08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1565 (Cuyler Best Road) at SR 1631 (North Park Road)

Division 4 | Wayne County | Goldsboro

PLAN DATE: December 2008 | REVIEWED BY:
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

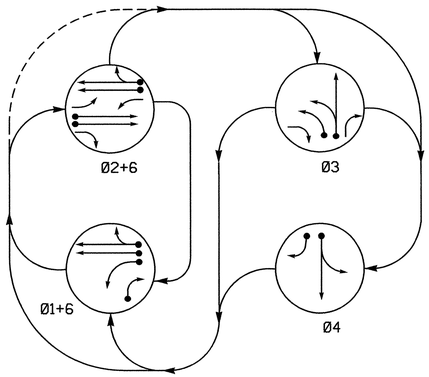
SIGNATURE | DATE 12/18/08

SIG. INVENTORY NO. 04-1058

10-DEC-2008 11:14
s:\its\signals\workgroups\sig management\strickland\041058_smallelle_xxx.dgn
cstrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.114

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

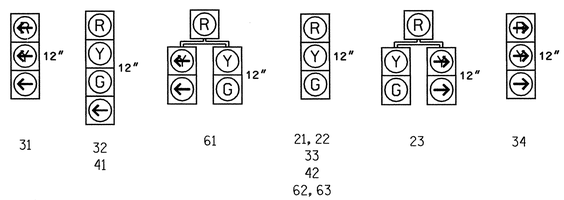
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+6	Ø2+6	Ø3	Ø4	FLASH
21,22	R	G	R	R	Y
23	R	G	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
32	R	R	G	R	R
33	R	R	G	R	R
34	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
41	R	R	R	G	R
42	R	R	R	G	R
61	G	G	R	R	Y
62,63	G	G	R	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

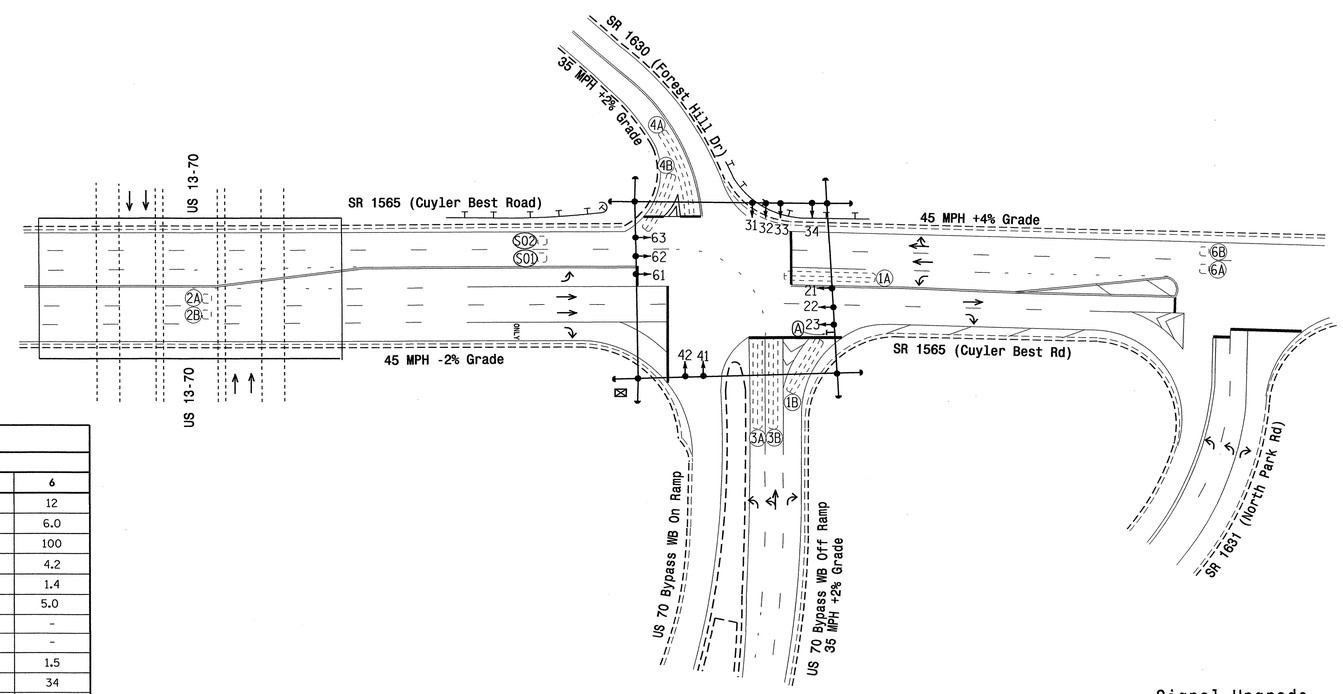
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	+5	2-4-2	-	1	Y	Y	-	-	15	-	Y
1B	6X40	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
✳ 2A	6X6	300±	5	-	2	Y	Y	-	-	-	-	Y
✳ 2B	6X6	300±	5	-	2	Y	Y	-	-	-	-	Y
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	-	-	Y
3B	6X60	0	2-4-2	-	3	Y	Y	-	-	-	-	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4B	6X40	+5	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A	6X6	270	4	-	6	Y	Y	-	-	-	-	Y
6B	6X6	270	4	-	6	Y	Y	-	-	-	-	Y
S01	6X6	+160±	EXISTING	-	-	-	-	-	-	-	Y	Y
S02	6X6	+160±	EXISTING	-	-	-	-	-	-	-	Y	Y

✳PREFORMED LOOPS IN BRIDGE DECK

4 Phase Fully Actuated (Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 6 to allow the controller to clear from phase 2+6 to phase 1+6 by progressing through an all red display.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset # 1068.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Guard Rail	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Right Arrow "ONLY" Sign (R3-5R)	Ⓐ

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	6
Min Green 1 *	7	12	7	7	12
Extension 1 *	1.0	6.0	1.0	1.0	6.0
Max Green 1 *	15	100	25	20	100
Yellow Clearance	3.0	4.7	3.7	3.7	4.2
Red Clearance	2.4	1.6	2.6	1.8	1.4
Red Revert	2.0	2.0	2.0	2.0	5.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	1.5
Max Variable Initial *	-	34	-	-	34
Time Before Reduction *	-	15	-	-	15
Time To Reduce *	-	30	-	-	30
Minimum Gap	-	3.2	-	-	3.2
Recall Mode	-	SOFT RECALL	-	-	SOFT RECALL
Vehicle Call Memory	-	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-	-
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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

SR 1565 (Cuyler Best Road) at SR 1630 (Forest Hill Drive)/ US 70 Byp. WB Ramps

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY: EM Minshew

PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL A. ALEXANDER

SIGNATURE 12/15/08 DATE

SIG. INVENTORY NO. 04-1068

15-DEC-2008 12:19
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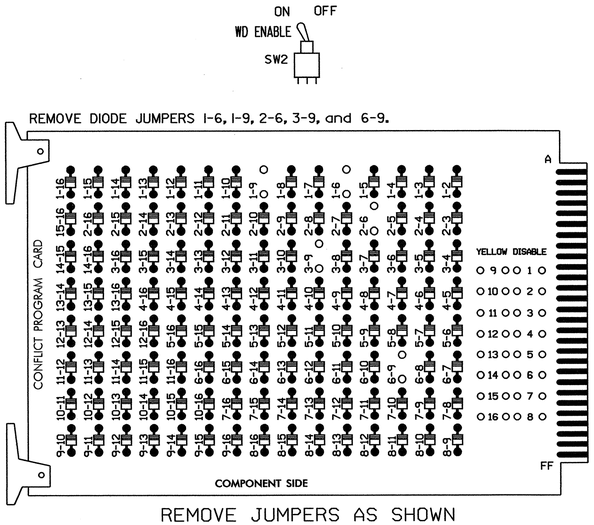
palexander

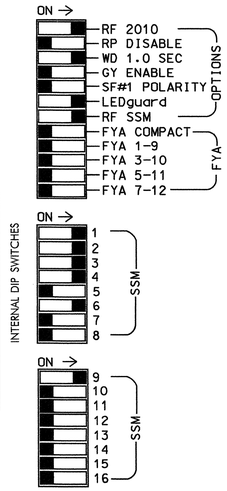
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.115

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 5,7, 8,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET .....CONTRACTOR SUPPLIED 332
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S1,S2,S3,S4,S6,S9
PHASES USED.....1,2,3,4,6
OVERLAP A.....1+3

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3				S4		S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
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.	61	21,22, 23	NU	23	31	32	33	41	42	NU	NU	61,62, 63	NU	NU	NU	NU	34	NU	NU	NU	NU	NU
RED	*	128				116	116	101	101			134										
YELLOW		129				117	117	102	102			135										
GREEN		130				118	118	103	103			136										
RED ARROW					116												A121					
YELLOW ARROW	126			117	117												A122					
GREEN ARROW	127			118	118	118		103									A123					
✋																						
🚶																						

NU = Not Used

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

** Flash note: wire OLA to flash on Flasher Unit #2, Circuit #1.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	Ø1 1A	Ø2 2A	SLOT	SLOT	Ø3 3A	Ø4 4A	SLOT	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	EMPTY	Ø1 1B	Ø2 2B	EMPTY	EMPTY	Ø3 3B	Ø4 4B	EMPTY	SYS. DET. SØ2	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	SLOT	Ø6 6A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	Ø6 6B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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	TB2-5,6	I2U	39	1	2	1	Y	Y			15
1B	TB2-7,8	I2L	43	5	12	1	Y	Y			15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
2B	TB2-11,12	I3L	76	38	42	2	Y	Y			
3A	TB4-9,10	I6U	41	3	4	3	Y	Y			
3B	TB4-11,12	I6L	45	7	14	3	Y	Y			
4A	TB6-1,2	I7U	65	27	34	4	Y	Y			
4B	TB6-3,4	I7L	78	40	44	4	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
* SØ1	TB6-9,10	I9U	60	22	11	SYS					
* SØ2	TB6-11,12	I9L	62	24	13	SYS					

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

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.

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

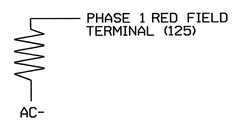
```
PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:          |123456789101112131415 16
VEH OVL PARENTS:|X X
VEH OVL NOT VEH:|
VEH OVL NOT PED:|
VEH OVL GRN EXT:|
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

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.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1068
DESIGNED: October 2008
SEALED: 12-15-08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1565 (Cuyler Best Road) at SR 1630 (Forest Hill Drive)/ US 70 Byp. WB Ramps

Division 04 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY: T. Jyle
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Institute of North Carolina
Department of Transportation
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

SIGNATURE DATE 11/5/09
SIG. INVENTORY NO. 04-1068

05-JAN-2009 11:40
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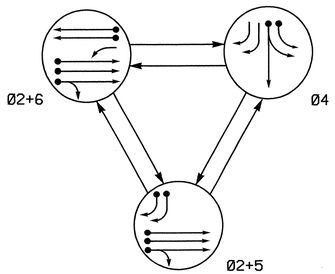
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.16

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

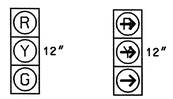
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø4	FLASH
21, 22	G	G	R	Y
41, 42	R	R	G	R
51, 52	→	~~R~~	→	~~R~~
61, 62	R	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



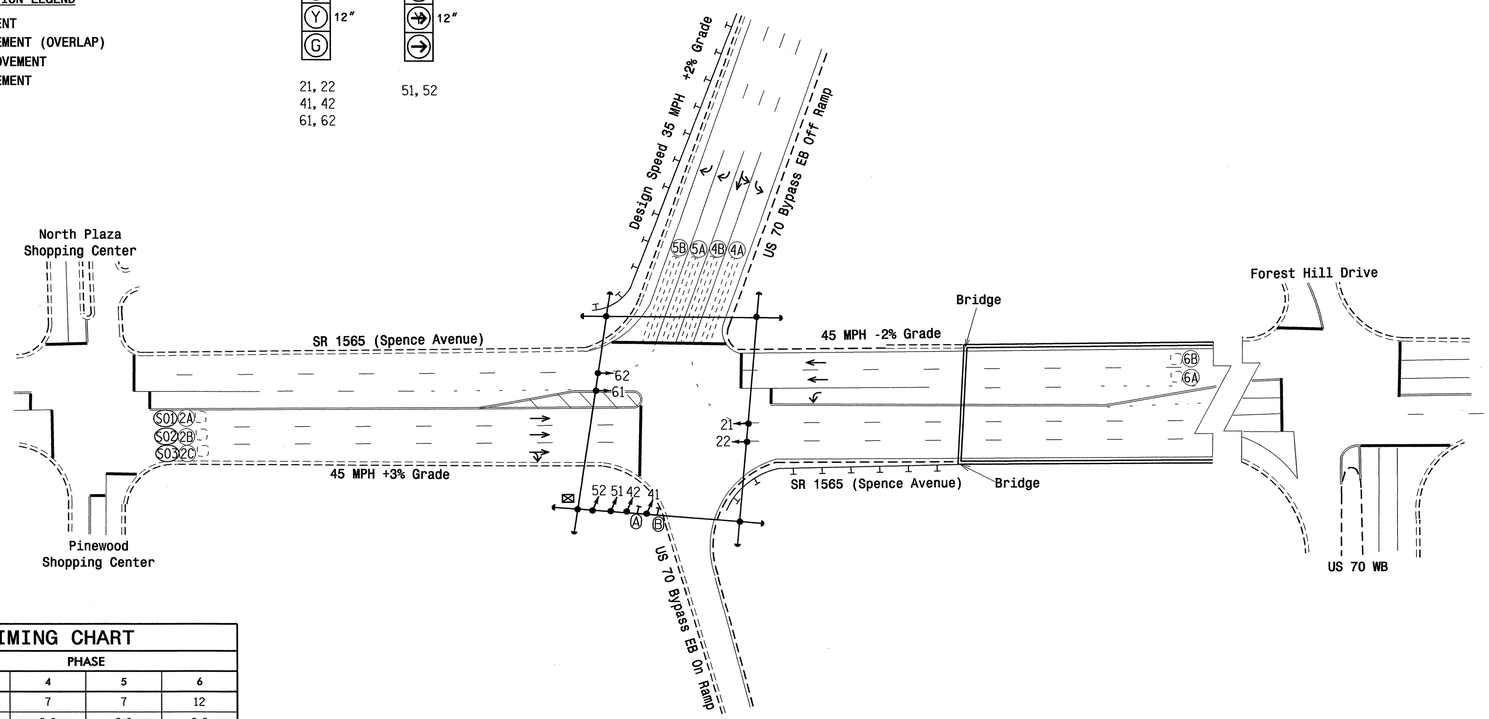
21, 22
41, 42
61, 62

51, 52

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S01	6X6	300	4	-	2	Y	Y	-	-	-	Y	Y
2B/S02	6X6	300	4	-	2	Y	Y	-	-	-	Y	Y
2C/S03	6X6	300	4	-	2	Y	Y	-	-	-	Y	Y
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	-	-	Y
5B	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	Y
6A	6X6	*307	5	-	6	Y	Y	-	-	-	-	Y
6B	6X6	*307	5	-	6	Y	Y	-	-	-	-	Y

* Preformed Loops in Bridge Deck



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Min Green 1 *	12	7	7	12
Extension 1 *	6.0	2.0	2.0	6.0
Max Green 1 *	120	25	40	120
Yellow Clearance	4.3	3.7	3.0	4.7
Red Clearance	1.0	1.6	1.6	1.2
Red Revert	5.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	1.5	-	-	1.5
Max Variable Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Recall Mode	SOFT RECALL	-	-	SOFT RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	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.

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
4. Renumber existing signal heads numbered 43 & 44.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #1069.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Guard Rail	
N/A	Right of Way	
	Directional Arrow	
Ⓐ	Combined Through and Left Arrow Sign (R3-6L)	Ⓐ
Ⓑ	Left Arrow "ONLY" Sign (R3-5L)	Ⓑ

Signal Upgrade

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 50 1"=50'

SR 1565 (Spence Avenue) at US 70 Bypass EB Off/On Ramps

Division 4 Wayne County Goldsboro

PLAN DATE: October 2008 REVIEWED BY: P. Alexander, PE

PREPARED BY: AB Hambright/Emm REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL ALEXANDER
SIGNATURE 1/13/09 DATE
SIG. INVENTORY NO. 04-1069

13-JAN-2009 13:53
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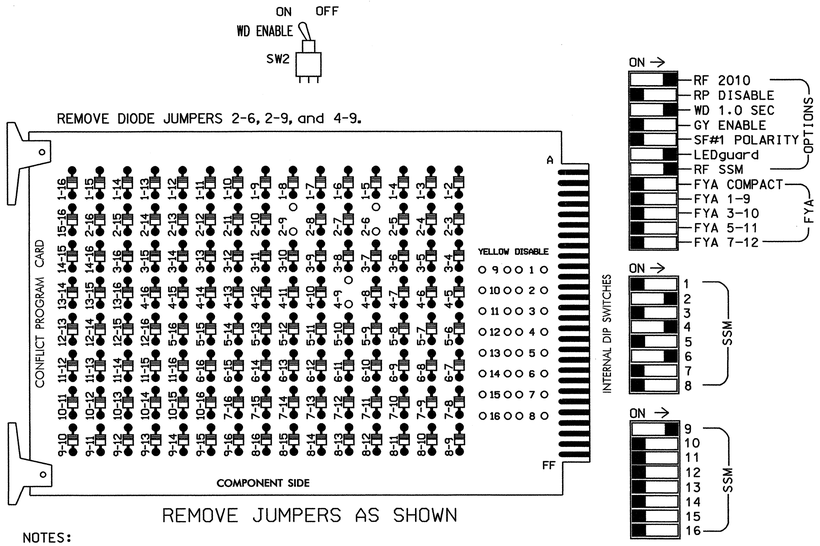
eminshew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 117

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3, 5,7,8,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

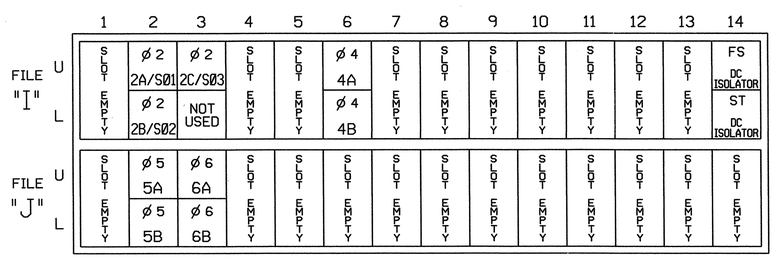
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
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	NC	61,62	NU	NU	NU	NU	51,52	NU	NU	NU	NU	NU
RED		128			101			134										
YELLOW		129			102			135										
GREEN		130			103			136										
RED ARROW													A121					
YELLOW ARROW													A122					
GREEN ARROW													A123					
✋																		
🚶																		

NU = Not Used
NC = Not Connected
** Flash note: rewire Overlap A to flash on Flasher Unit #2, Circuit #2.

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/SØ1	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/SØ2	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
2C/SØ3	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			15
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET .....CONTRACTOR SUPPLIED 332
SOFTWARE .....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 (12-STD, 6-AUX)
LOAD SWITCHES USED.....S2,S4,S6,S9
PHASES USED.....2,4,5*,6
OVERLAP A.....4+5

* USED FOR TIMING PURPOSES ONLY

BACKUP PROTECTION NOTE

(program controller as shown below)

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

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:          ¦123456789101112131415 16
VEH OVL PARENTS: ¦   XX
VEH OVL NOT VEH: ¦
VEH OVL NOT PED: ¦
VEH OVL GRN EXT: ¦
STARTUP COLOR: _ RED  _ YELLOW  _ GREEN
FLASH COLORS:  _ RED  _ YELLOW  _ GREEN
SELECT VEHICLE OVERLAP OPTIONS:   (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC).........0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)....0
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1069
DESIGNED: October 2008
SEALED: 01-13-09
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SR 1565 (Spence Avenue) at US 70 Bypass EB Off/On Ramps

Division 04 | Wayne County | Goldsboro

PLAN DATE: January 2009 | REVIEWED BY: T. Jgh
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

George C. Brown 1/15/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-1069

15-JAN-2009 08:02
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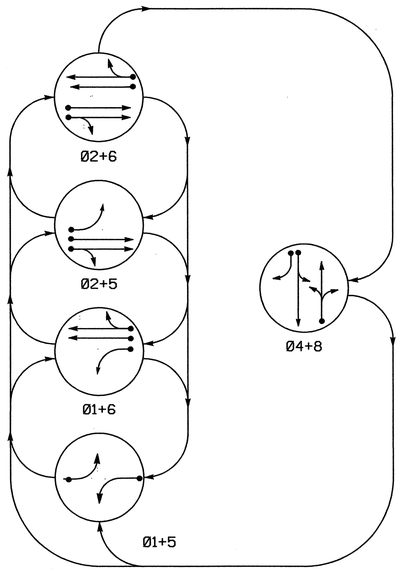
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 1/6

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~
21, 22	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~
61, 62	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

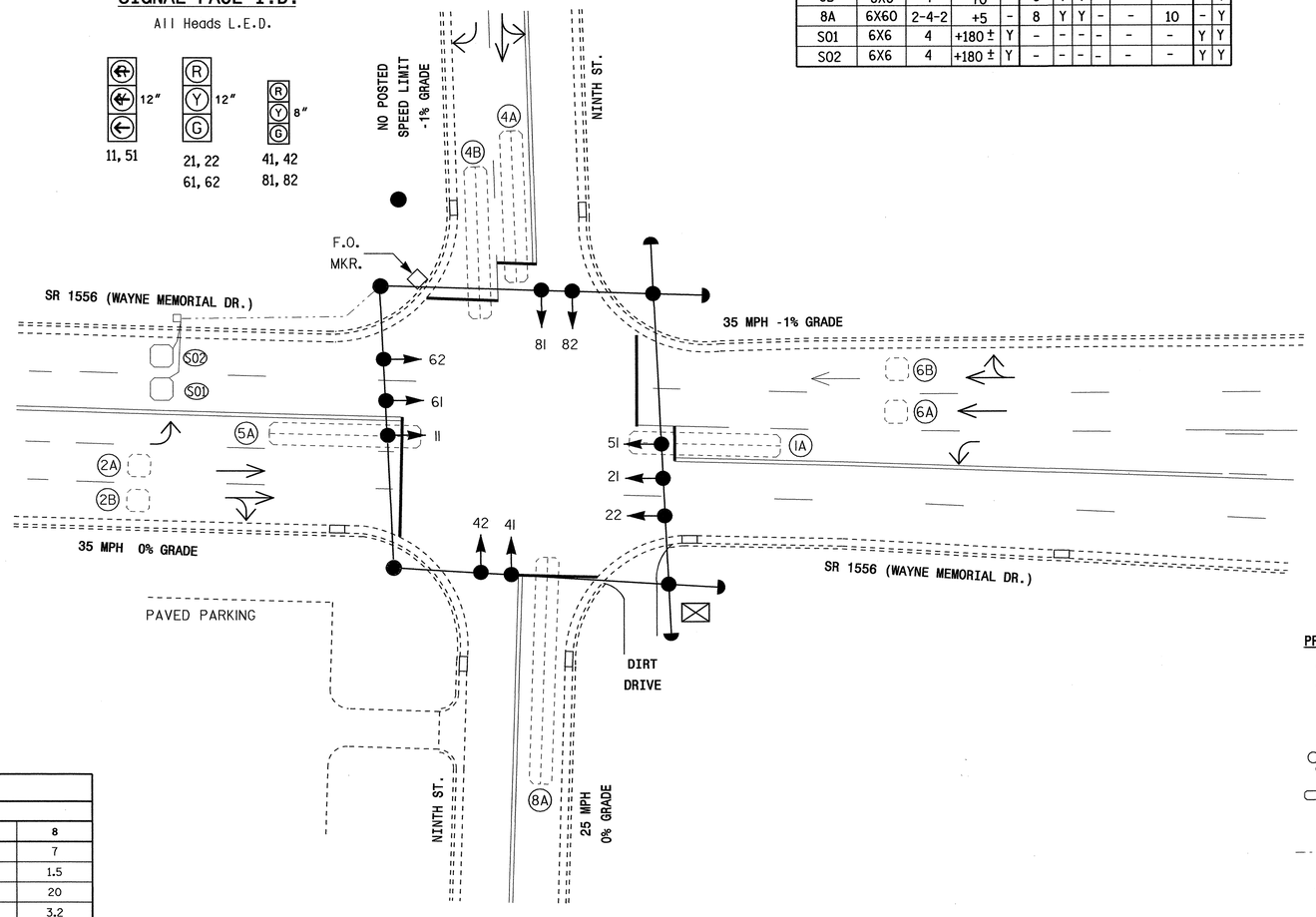
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	2-4-2	+5	-	1	Y	Y	-	-	3	-	Y
2A, 2B	6X6	4	70	-	2	Y	Y	-	-	-	-	Y
4A	6X40	2-4-2	+5	-	4	Y	Y	-	-	3	-	Y
4B	6X40	2-4-2	+5	-	4	Y	Y	-	-	15	-	Y
5A	6X40	2-4-2	+5	-	5	Y	Y	-	-	3	-	Y
6A	6X6	4	70	-	6	Y	Y	-	-	-	-	Y
6B	6X6	4	70	-	6	Y	Y	-	-	-	-	Y
8A	6X60	2-4-2	+5	-	8	Y	Y	-	-	10	-	Y
S01	6X6	4	+180 ±	Y	-	-	-	-	-	-	Y	Y
S02	6X6	4	+180 ±	Y	-	-	-	-	-	-	Y	Y

5 Phase
Fully Actuated
Goldsboro City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #1081.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	1.5	4.0	1.5	1.5	4.0	1.5
Max Green 1 *	15	45	20	15	45	20
Yellow Clearance	3.0	3.8	3.9	3.0	3.9	3.2
Red Clearance	1.8	1.0	1.2	1.6	1.0	1.7
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	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 20 1"=20'

SR 1556 (Wayne Memorial Drive) at Ninth Street

Division 4 Wayne County Goldsboro

PLAN DATE: December 2008 REVIEWED BY: PL Alexander, PE
PREPARED BY: Monif Bazzarie REVIEWED BY:

REVISIONS	INIT.	DATE

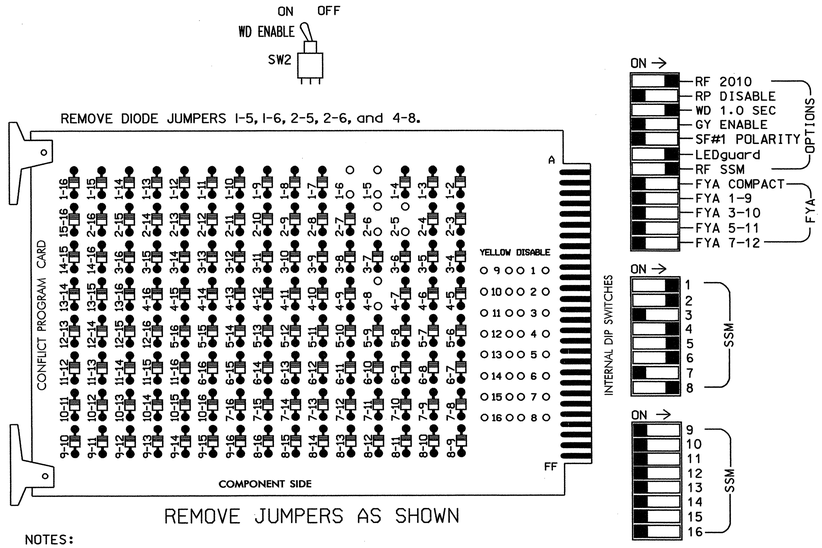
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL L. ALEXANDER
SIGNATURE 1/13/09 DATE
SIG. INVENTORY NO. 04-1081

13-JAN-2009 16:21
s:\its\signals\signal design section\eastern region\div-04\goldsboro city systems\signal designs\04-1081\041081_sig_dsn_2008xxxx.dgn
smminshew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.119

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 3,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

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.	11	21,22	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125						131					
YELLOW ARROW	126						132					
GREEN ARROW	127						133					
✋												
🚶												

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A,2B	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	NOT USED				Ø4 4B			SYS. DET. SØ2					ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	Ø6 6B				NOT USED								

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	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A,2B	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			15
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
* SØ1	TB6-9,10	I9U	60	22	11	SYS					
* SØ2	TB6-11,12	I9L	62	24	13	SYS					

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: Ø4-1Ø81
DESIGNED: December 2008
SEALED: Ø1-13-Ø9
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1556 (Wayne Memorial Drive) at Ninth Street

Division 04 Wayne County Goldsboro

PLAN DATE: January 2009 REVIEWED BY: T. Jyles
PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

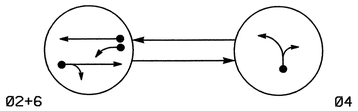
George C. Brown 1/21/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-1081

14-JAN-2009 09:08
s:\traffic\signals\workgroups\sig mon\armstrong\04\1081_sht_ele_xxx.dgn
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.12

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.

21, 22
41, 42
61, 62

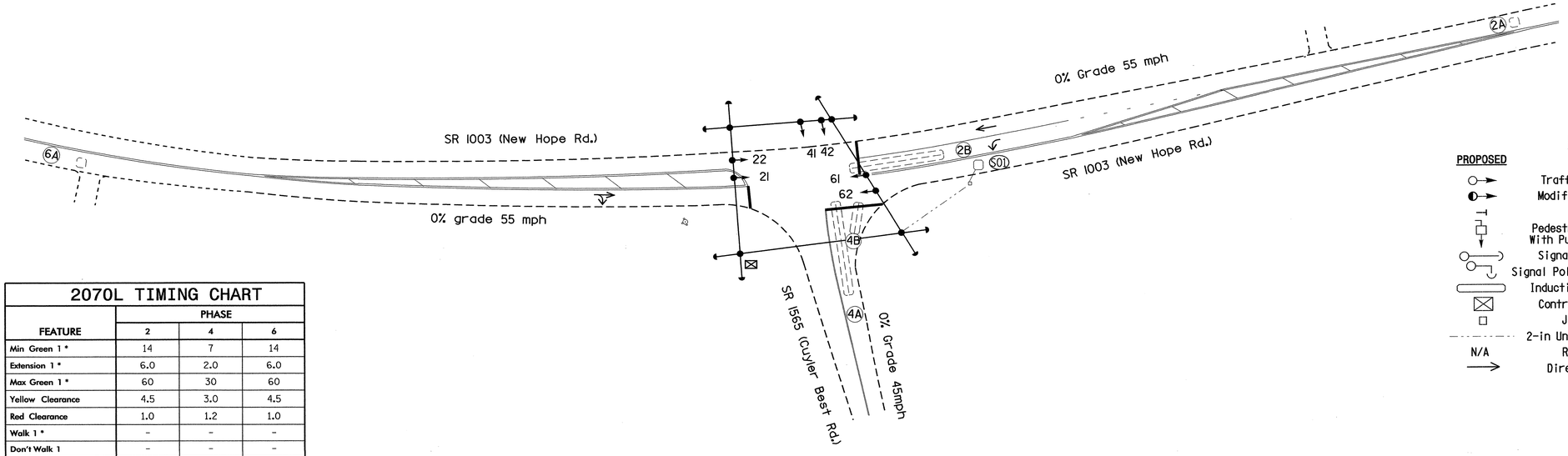
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	420	6	-	2	Y	Y	-	-	-	-	Y
2B	6X60	+5	2-4-2	-	2	Y	Y	Y	-	3	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	10	-	Y
4B	6X20	+5	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A	6X6	420	6	-	6	Y	Y	-	-	-	-	Y
S01	6X6	+140±	3	Y	-	-	-	-	-	-	Y	Y

2 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. ~~Closed loop system data:~~ Controller Asset #1170.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6
Min Green 1 *	14	7	14
Extension 1 *	6.0	2.0	6.0
Max Green 1 *	60	30	60
Yellow Clearance	4.5	3.0	4.5
Red Clearance	1.0	1.2	1.0
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	2.5	-	2.5
Max Variable Initial *	46	-	46
Time Before Reduction *	15	-	15
Time To Reduce *	30	-	30
Minimum Gap	3.4	-	3.4
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

SR 1003 (New Hope Rd.)
at
SR 1565 (Cuyler Best Rd.)

Division 04 Wayne County Near Goldsboro

PLAN DATE: October 2008 REVIEWED BY: EMM
PREPARED BY: AB Hambright REVIEWED BY:

REVISIONS	INIT.	DATE

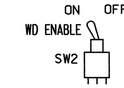
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL E. ALEXANDER
11/21/08
SIGNATURE DATE
SIG. INVENTORY NO. 04-1170

21-NOV-2008 13:44
s:\its signals\signal design section\eastern region\div-04\goldsboro city system\signal designs\04-1170\04i1170.dgn
paalexander

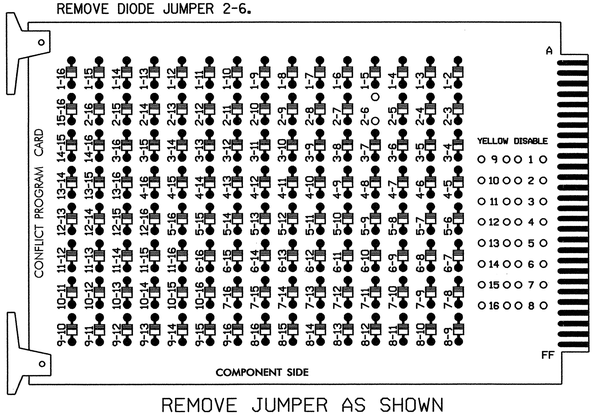
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.121

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

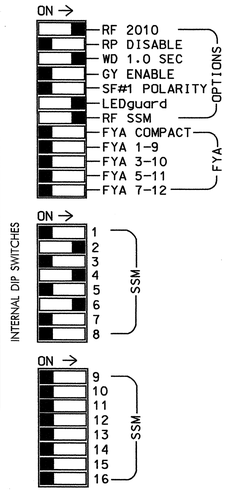
(remove jumper and set switches as shown)



REMOVE DIODE JUMPER 2-6.



REMOVE JUMPER AS SHOWN



■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 1,3, 5,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6
PHASES USED.....2,4,6
OVERLAPS.....NONE

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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋												
🚶												

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT	Ø2 / 2A	SLOT	SLOT	SLOT	Ø4 / 4A	SLOT	SLOT	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	FS / DC ISOLATOR
	L	EMPTY	Ø2 / 2B	EMPTY	EMPTY	EMPTY	Ø4 / 4B	EMPTY	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	ST / DC ISOLATOR
FILE "J"	U	SLOT	Ø6 / 6A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

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
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y	Y		3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
*SØ1	TB6-9,10	I9U	60	22	11	SYS					

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 04-1170
DESIGNED: October 2008
SEALED: 11-21-08
REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1003 (New Hope Rd.)
at
SR 1565 (Cuyler Best Rd.)

Division 4 | Wayne County | Near Goldsboro

PLAN DATE: November 2008 | REVIEWED BY: T. Joyce
PREPARED BY: S. Armstrong | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

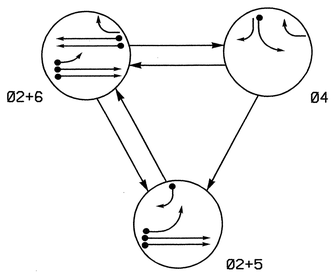
George C. Brown 12/4/08
SIGNATURE DATE

SIG. INVENTORY NO. 04-1170

24-NOV-2008 08:06
s:\ws_signs\checkgroups\sig mcmarmstrong041170_sm.ele_xxx.dgn
armstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.12.2

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

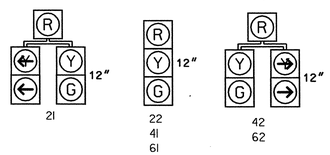
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+5	PHASE Ø2+6	PHASE Ø4	FLASH
21	G	G	R	Y
22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
61	R	G	R	Y
62	R	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



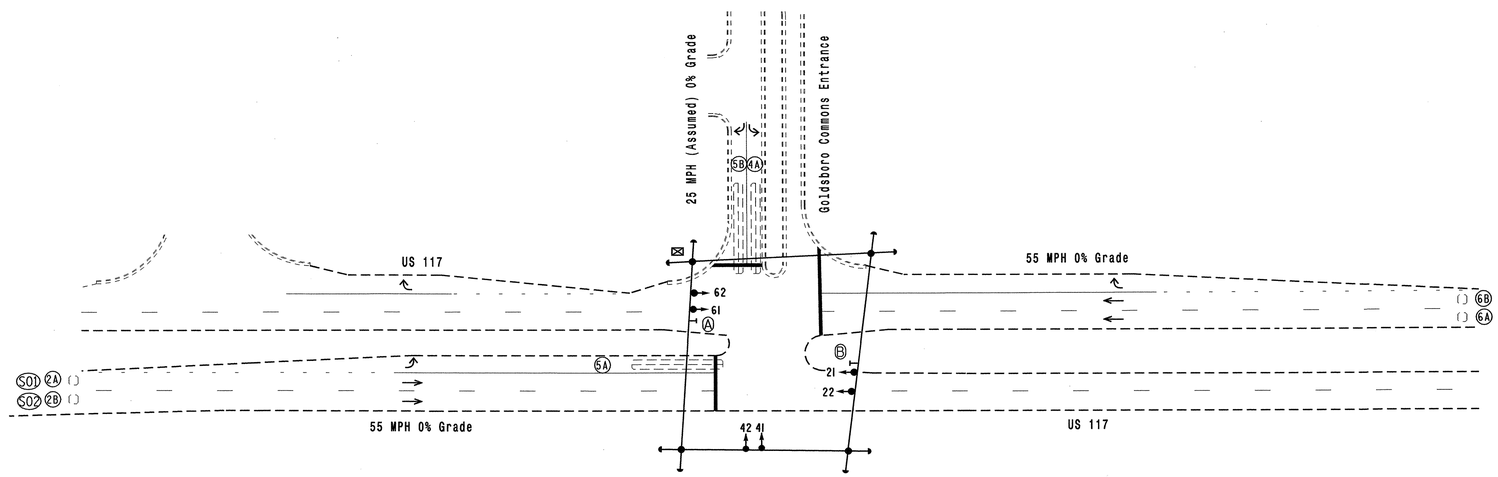
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A, S01	6X6	420	6	-	2	Y	Y	-	-	-	Y	Y
2B, S02	6X6	420	6	-	2	Y	Y	-	-	-	Y	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	-	-	Y
5A	6X60	+5	2-4-2	-	5	Y	Y	-	-	15	-	Y
					2	Y	Y	Y	-	3	-	Y
5B	6X60	+5	2-4-2	-	5	Y	Y	-	-	15	-	Y
6A	6X6	420	6	-	6	Y	Y	-	-	-	-	Y
6B	6X6	420	6	-	6	Y	Y	-	-	-	-	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may lag.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics
6. Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset # 1255.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	No U-Turn Sign (R3-4)	
	U-Turn "MUST YIELD" Sign (R3-27)	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 5	PHASE 6
Min Green 1 *	14	7	7	14
Extension 1 *	6.0	1.0	1.0	6.0
Max Green 1 *	90	30	20	90
Yellow Clearance	5.2	3.0	3.0	5.2
Red Clearance	1.0	2.8	2.8	1.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	1.8	-	-	1.8
Max Variable Initial *	46	-	-	46
Time Before Reduction *	15	-	-	15
Time To Reduce *	45	-	-	45
Minimum Gap	3.4	-	-	3.4
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 50' 1"=50'

US 117 AT Goldsboro Commons Entrance

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: JPG

PREPARED BY: A Hambright/pla REVIEWED BY:

REVISIONS	INIT.	DATE

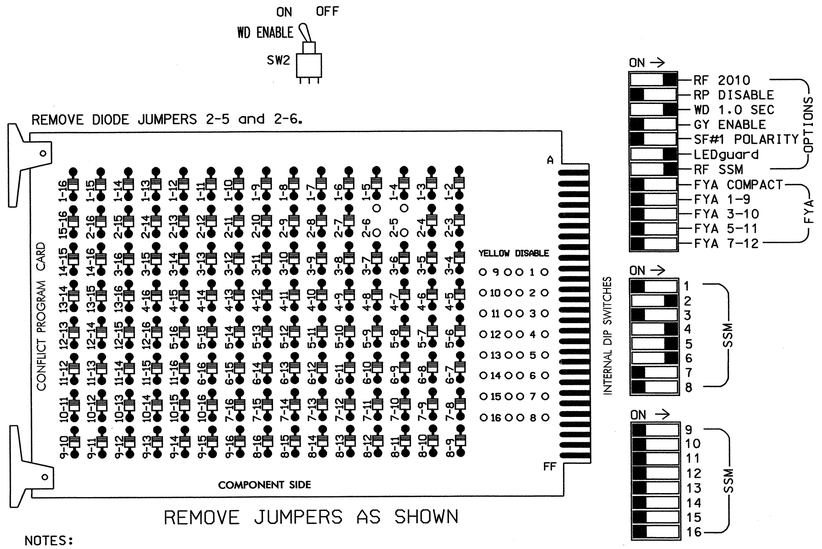
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23188 ENGINEER PAUL L. ALEXANDER
SIGNATURE DATE 1/6/09
SIG. INVENTORY NO. 04-1255

06-JAN-2009 11:08
s:\its\signals\signal design sections\eastern regions\eliv-04\goldsboro city systems\signal designs\04-1255\04-1255_sig_dsn_2008xxxx.dgn
dminchew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.123

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3,7, 8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S5,S6
PHASES USED.....2,4,5,6
OVERLAPS.....NONE

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.	NU	21,22	NU	NU	41,42	62	NU	21,42	61,62	NU	NU	NU	NU
RED		128			101			*	134				
YELLOW		129			102				135				
GREEN		130			103				136				
RED ARROW													
YELLOW ARROW						102		132					
GREEN ARROW						103		133					

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø2/SYS 2A/SØ1	SLOT EMPTY	WIRED INPUT ⊗	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L		Ø2/SYS 2B/SØ2				NOT USED								ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	Ø 5 5B	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	NOT USED	Ø 6 6B											

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/SØ1	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/SØ2	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
5A[1]	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y	Y		3
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			

[1] Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: Ø4-1255
DESIGNED: November 2008
SEALED: Ø1/06/09
REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

ACCEPTABLE VALUES

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

PHASE 5 RED FIELD TERMINAL (131)

AC-

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.

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
Signals Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 117 at Goldsboro Commons Entrance

Division 4 | Wayne County | Goldsboro

PLAN DATE: December 2008 | REVIEWED BY: T. Jyn
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022013 ENGINEER GEORGE C. BROWN

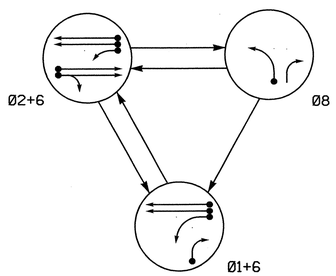
George C. Brown 1/9/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-1255

07-JAN-2009 11:11
s:*ts\signals\workgroups\sig management\strickland\M041255_smele_xxx.dgn
cestrickland

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.124

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

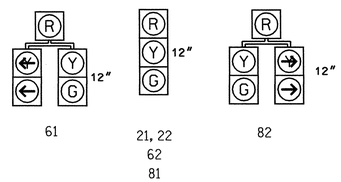
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+6	PHASE 02+6	PHASE 08	FLASH
21, 22	R	G	R	Y
61	G	G	R	Y
62	G	G	R	Y
81	R	R	G	R
82	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



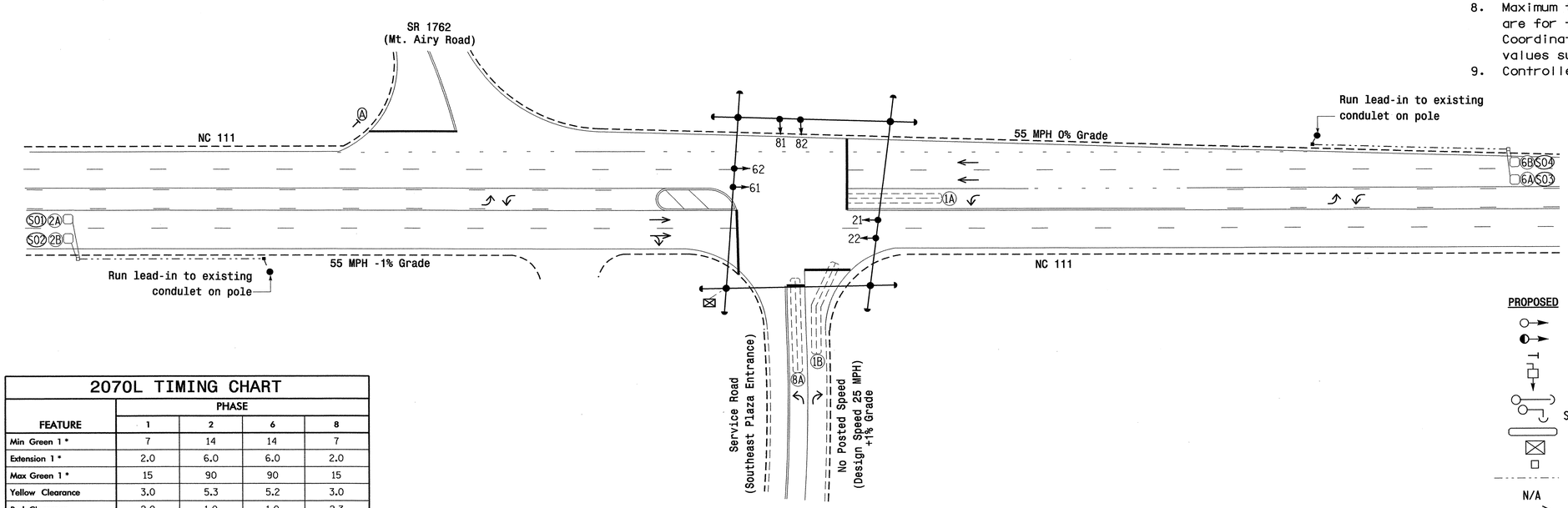
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	Y
					6	Y	Y	Y	-	3	-	Y
1B	6X60	+5	2-4-2	-	1	Y	Y	-	-	15	-	Y
2A/S01	6X6	420	5	Y	2	Y	Y	-	-	-	Y	Y
2B/S02	6X6	420	5	Y	2	Y	Y	-	-	-	Y	Y
6A/S03	6X6	420	5	Y	6	Y	Y	-	-	-	Y	Y
6B/S04	6X6	420	5	Y	6	Y	Y	-	-	-	Y	Y
8A	6X60	+5	2-4-2	-	8	Y	Y	-	-	3	-	Y

3 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Run all lead-in cable overhead on existing utility poles where possible.
4. Set all detector units to presence mode.
5. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Controller Asset #1264.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	"STOP" Sign (R1-1)	

2070L TIMING CHART

FEATURE	PHASE 1	PHASE 2	PHASE 6	PHASE 8
Min Green 1 *	7	14	14	7
Extension 1 *	2.0	6.0	6.0	2.0
Max Green 1 *	15	90	90	15
Yellow Clearance	3.0	5.3	5.2	3.0
Red Clearance	2.0	1.0	1.0	2.3
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	1.5	1.5	-
Max Variable Initial *	-	46	46	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.4	3.4	-
Recall Mode	-	MIN RECALL	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	YELLOW	-
Dual Entry	-	-	-	-
Simultaneous Gap	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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
750 N. Greenfield Pkwy., Garner, NC 27529

NC 111
at
Service Road to
(Southeast Plaza Entrance)

Division 4 Wayne County Goldsboro

PLAN DATE: September 2008 REVIEWED BY: P. Alexander, PE
PREPARED BY: AB Hambright/EMM REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

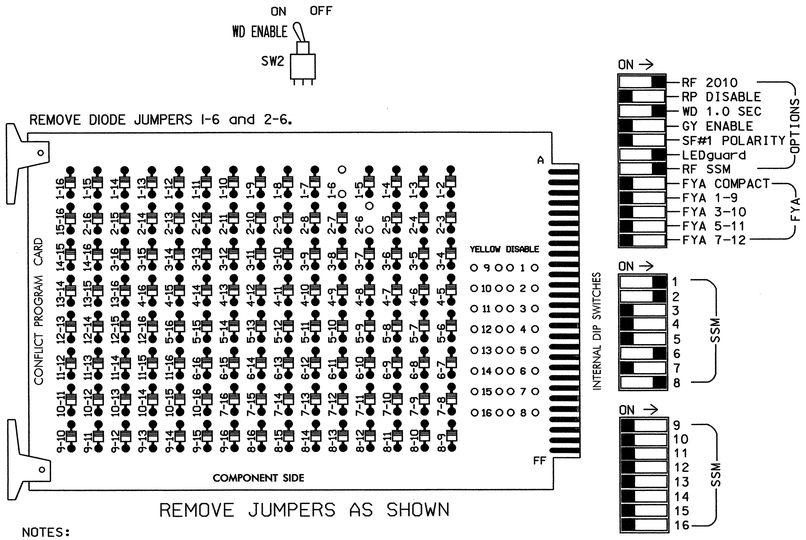
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAUL L. ALEXANDER
SIGNATURE DATE 12/5/08
SIG. INVENTORY NO. 04-1264

30-JAN-2009 09:13
S:\TIS Signals\Signal design section\eastern region\div-04\goldsboro city system\signal designs\04-1264\041264_sig_dsn_20081215.dgn
pjonesdot

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 125

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 3,4,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City 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.	61,82	21,22	NU	NU	NU	NU	NU	61,62	NU	NU	81,82	NU
RED	*	128						134			107	
YELLOW		129						135			108	
GREEN		130						136			109	
RED ARROW												
YELLOW ARROW	126											
GREEN ARROW	127											

NU = Not Used

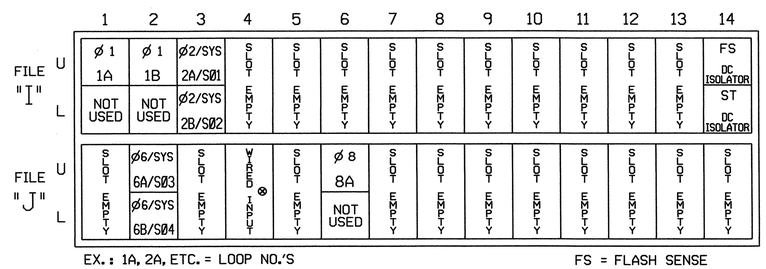
* Denotes install load resistor. See load resistor installation detail this sheet.

EQUIPMENT INFORMATION

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

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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A[1]	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A/SØ1	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
2B/SØ2	TB2-11,12	I3L	76	38	42	2/SYS	Y	Y			
6A/SØ3	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/SØ4	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3

[1] Add jumper from I1-W to J4-W, on rear of input file.

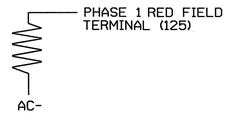
INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: Ø4-1264
DESIGNED: September 2008
SEALED: 12/15/2008
REVISED: N/A

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.

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N. Greenfield Pwky, Garner, NC 27529

NC 111
at
Service Road to
(Southeast Plaza Entrance)

Division 4 Wayne County Goldsboro

PLAN DATE: November 2008 REVIEWED BY: JJP
PREPARED BY: K. McDaniel REVIEWED BY:

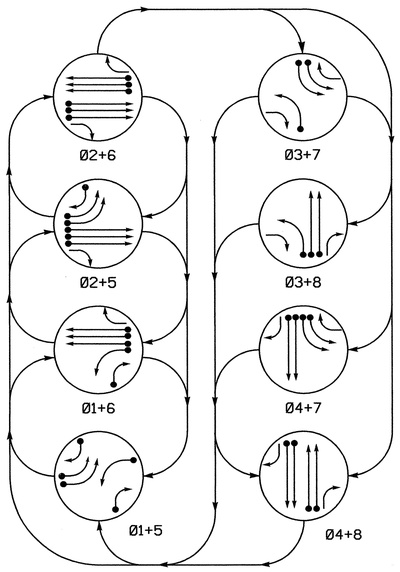
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 008453 ENGINEER JOHN T. ROWE, JR.
SIGNATURE 12-31-08 DATE
SIG. INVENTORY NO. 04-1264

23-DEC-2008 08:08
s:\its signals\workgroups\sig management\danielsk\files2\47_04-1264_oa171-771\M041264_sm_ele_xxx.dgn
kmcdan181

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.126

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

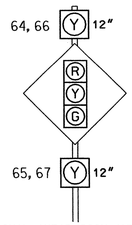
TABLE OF OPERATION

SIGNAL FACE	PHASE 01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21,22	R	R	G	G	R	R	R	R	Y
23	R	R	G	G	R/→	R/→	R	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	←	~~R~~	~~R~~	~~R~~
41,43	R	R	R	R	R	R	G	G	R
42	R/→	R	R/→	R	R	R	G	G	R
51,52	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
61,62	R	G	R	G	R	R	R	R	Y
63	R	G	R	G	R/→	R	R/→	R	Y
71,72	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	←	~~R~~	~~R~~
81,83	R	R	R	R	R	G	R	G	R
82	R/→	R/→	R	R	R	G	R	G	R

WARNING BEACON TABLE OF OPERATION

SIGNAL FACE	INTERVAL 1	INTERVAL 2
64, 66	ON	OFF
65, 67	OFF	ON

FIGURE 1
Sign Ⓐ



SIGNAL AHEAD SIGN (W3-3)
WITH WARNING BEACONS

SIGNAL FACE I.D.

All Heads L.E.D.

11	21, 22	23
31	41, 43	42
51, 52	61, 62	63
71, 72	81, 83	82

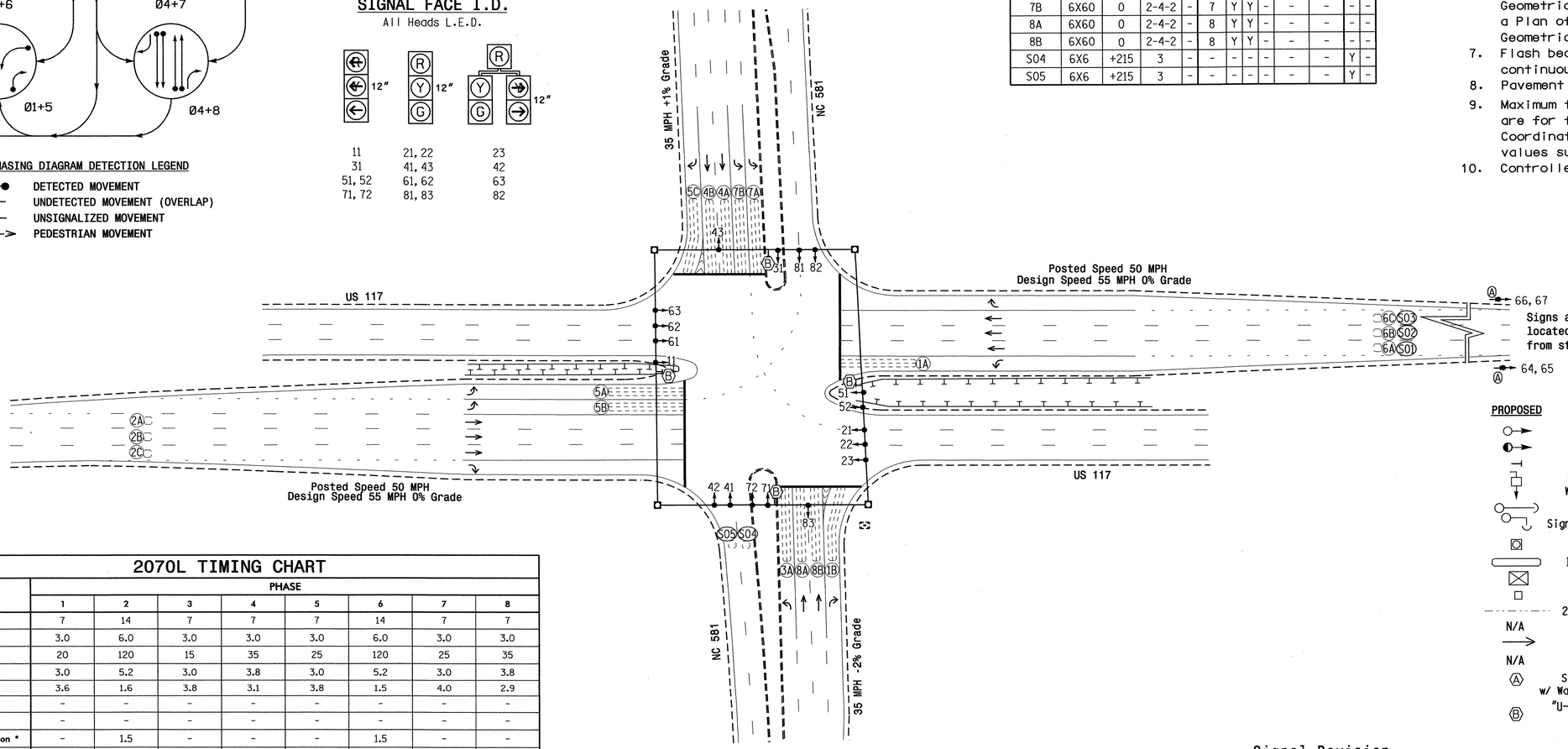
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	-	-	-
1B	6X60	0	2-4-2	-	1	Y	Y	-	-	10	-	-
2A	6X6	420	5	-	2	Y	Y	-	-	-	-	-
2B	6X6	420	5	-	2	Y	Y	-	-	-	-	-
2C	6X6	420	5	-	2	Y	Y	-	-	-	-	-
3A	6X60	0	2-4-2	-	3	Y	Y	-	-	-	-	-
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	-
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	-	-	-
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	-	-	-
5B	6X60	0	2-4-2	-	5	Y	Y	-	-	-	-	-
5C	6X60	0	2-4-2	-	5	Y	Y	-	-	10	-	-
6A/S01	6X6	420	6	-	6	Y	Y	-	-	-	Y	-
6B/S02	6X6	420	6	-	6	Y	Y	-	-	-	Y	-
6C/S03	6X6	420	6	-	6	Y	Y	-	-	-	Y	-
7A	6X60	0	2-4-2	-	7	Y	Y	-	-	-	-	-
7B	6X60	0	2-4-2	-	7	Y	Y	-	-	-	-	-
8A	6X60	0	2-4-2	-	8	Y	Y	-	-	-	-	-
8B	6X60	0	2-4-2	-	8	Y	Y	-	-	-	-	-
S04	6X6	+215	3	-	-	-	-	-	-	-	Y	-
S05	6X6	+215	3	-	-	-	-	-	-	-	Y	-

8 Phase
Fully Actuated
(Goldsboro City System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 or phase 5 may be lagged.
4. Phase 3 or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current Signals and Geometrics Design Manual and submit a Plan of Record to the Signals and Geometrics Section.
7. Flash beacons 64, 65, 66, and 67 continuously.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Controller Asset #1279.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
N/A	Guard Rail	
Ⓐ	Signal Ahead Sign (W3-3) w/ Warning Beacons (See Figure 1)	Ⓐ
Ⓑ	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓑ

2070L TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green 1 *	7	14	7	7	7	14	7	7
Extension 1 *	3.0	6.0	3.0	3.0	3.0	6.0	3.0	3.0
Max Green 1 *	20	120	15	35	25	120	25	35
Yellow Clearance	3.0	5.2	3.0	3.8	3.0	5.2	3.0	3.8
Red Clearance	3.6	1.6	3.8	3.1	3.8	1.5	4.0	2.9
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	46	-	-	-	46	-	-
Time Before Reduction *	-	20	-	-	-	20	-	-
Time To Reduce *	-	60	-	-	-	60	-	-
Minimum Gap	-	3.5	-	-	-	3.5	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	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 Revision

Revision Seal

NORTH CAROLINA PROFESSIONAL SEAL 23789 ENGINEER PAMELA A. MATTHEWS

SIGNATURE 1/13/09 DATE

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals and Geometrics Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 50 1"=50'

US 117 at NC 581

Division 4 Wayne County Goldsboro

PLAN DATE:	5/13/03	REVIEWED BY:	
PREPARED BY:	J Cole	REVIEWED BY:	

REVISIONS	INIT.	DATE
1) Construction Revision-additional NB right turn lane to match roadway plans.	DWM	10-21-03
2) Revise speed limits & clearance times.	TJW	2-7-06
3) Add sign "8" (R10-16)	BZ	9-12-06
4) Renumber existing system loops.	PAM	1/13/09

Not a certified document as to the Original Document but Only as to the Revisions - This document originally Issued and sealed by D.W.Morton,PE no.19798 on 10/21/03 This document is only certified as to the revisions.

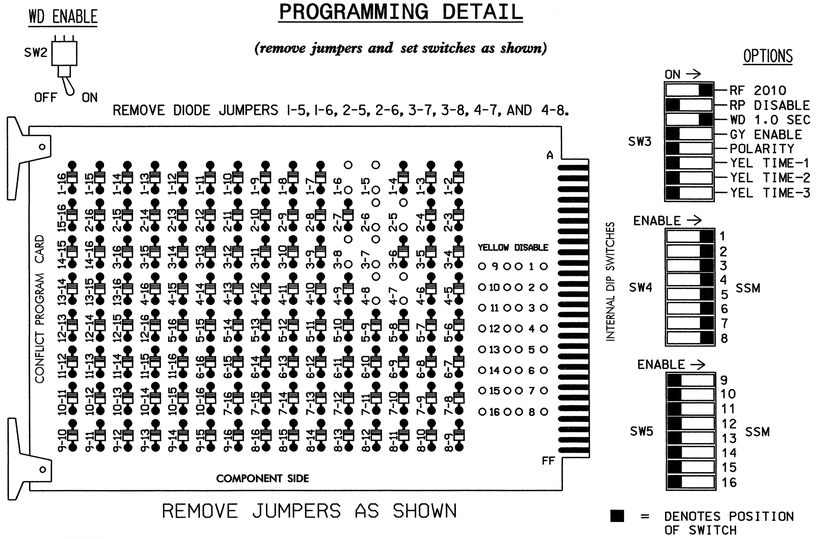
SIG. INVENTORY NO. 04-1279

13-JAN-2009 14:15
s:\its signals\signal design section\eastern region\div-04\goldsboro city system\signal designs\04-1279\04127Srev_sig.dgn_2008mmdd.dgn
sminshew

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 127

EDI MODEL 2010ECL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

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. 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 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
6. The cabinet and controller are part of the Goldsboro City 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.	11	82	21,22, 23	NU	23	31	41,42, 43	NU	42	51,52	61,62, 63	NU	63	71,72	81,82, 83	NU
RED			128				101				134				107	
YELLOW			129				102				135				108	
GREEN			130				103				136				109	
RED ARROW	125					116				131				122		
YELLOW ARROW	126	126			117	117			132	132			123	123		
GREEN ARROW	127	127			118	118			133	133			124	124		
✋																
🚶																

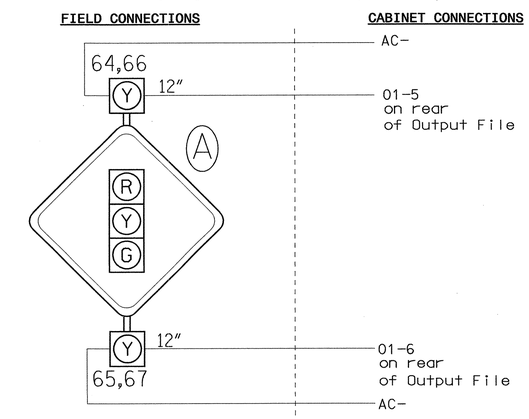
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
CABINET.....EAGLE 332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAPS.....NONE

FLASHER WIRING DETAIL

(wire flashers as shown below)



INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	Ø1 1A	Ø2 2A	Ø2 2C	Ø1 1B	Ø3 3A	Ø4 4A	SYS. DET. SØ4	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
	L	NOT USED	Ø2 2B	NOT USED	NOT USED	NOT USED	Ø4 4B	SYS. DET. SØ5	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	ST DC ISOLATOR
FILE "J"	U	Ø5 5A	Ø6/SYS 6A/SØ1	Ø5 5B	Ø6/SYS 6C/SØ3	Ø7 7A	Ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT	SLOT
	L	NOT USED	Ø6/SYS 6B/SØ2	Ø5 5C	NOT USED	Ø7 7B	Ø8 8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY

FS = FLASH SENSE
ST = STOP TIME

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

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	TB2-1,2	I1U	56	18	1	1	Y	Y			
1B	TB4-1,2	I4U	47	9	22	1	Y	Y			10
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			
✱ SØ4	TB6-1,2	I7U	65	27	34	SYS					
✱ SØ5	TB6-3,4	I7L	78	40	44	SYS					
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
5B	TB3-9,10	J3U	64	26	36	5	Y	Y			
5C	TB3-11,12	J3L	77	39	46	5	Y	Y			10
6A/SØ1	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/SØ2	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
6C/SØ3	TB5-1,2	J4U	48	10	26	6/SYS	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			

✱ SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: Ø4-1279
DESIGNED: Ø5-13-Ø3
ORIGINALLY SEALED: 1Ø-21-Ø3
REVISED1: 1Ø-21-Ø3
REVISED2: Ø2-Ø7-Ø6
REVISED3: Ø9-12-Ø6
REVISED4: Ø1-13-Ø9

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 117
at
NC 581

DIvision 04	Wayne County		Goldsboro
PLAN DATE: August 2002	REVIEWED BY:	R. Hinshaw	
PREPARED BY: James Peterson	REVIEWED BY:		

REVISIONS	INIT.	DATE
1 Added WB right turn lane. (JP)	GCB	11/10/03
2 Revised YEL TIME-1 and YEL TIME-2. (JP)	GCB	02/15/06
3 Re-numbered existing system loops. (WSA)	GCB	1/21/09

SEAL

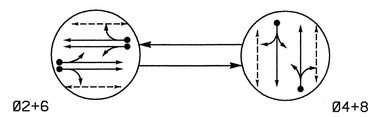
George C. Brown 1/21/09
SIGNATURE DATE

SIG. INVENTORY NO. 04-1279

14-JAN-2009 09:31
state.signals\workgroups\sig management\04279_sheets_xxx.dgn
smarstrong

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 128

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42, 43	R	G	R
61, 62	G	R	Y
81, 82, 83	R	G	R
P21, P22	W	DW	DRK
P41, P42, P43, P44	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82, P83, P84	DW	W	DRK

SIGNAL FACE I.D.

Denotes L.E.D.

21, 22
41, 42, 43
61, 62
81, 82, 83

P21, P22
P41, P42, P43, P44
P61, P62
P81, P82, P83, P84

2070L LOOP & DETECTOR INSTALLATION

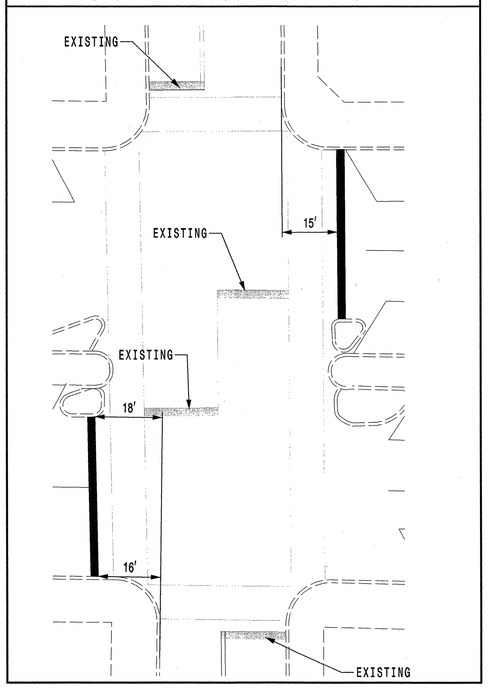
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X30	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X30	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

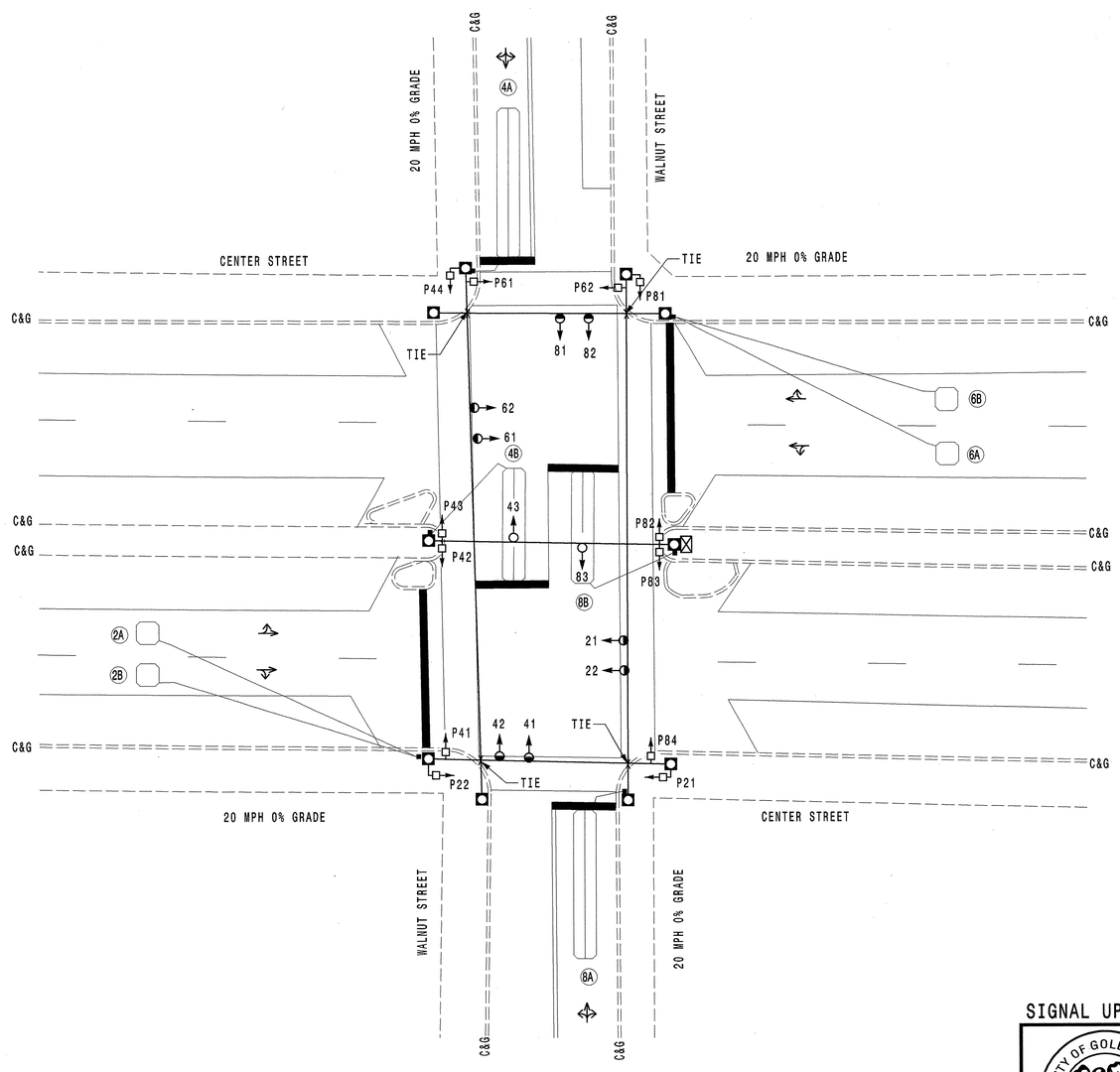
2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Modify all signal heads to include LED faces.

STOP LINE LOCATION DIAGRAM





2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	60	30	60	30
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	3.2	3.9	3.1	3.9
Walk 1 *	7	7	7	7
Don't Walk 1	7	12	7	12
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

* 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	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1954

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

CENTER STREET AT WALNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE 2/2/09 DATE
SIG. INVENTORY NO. C1

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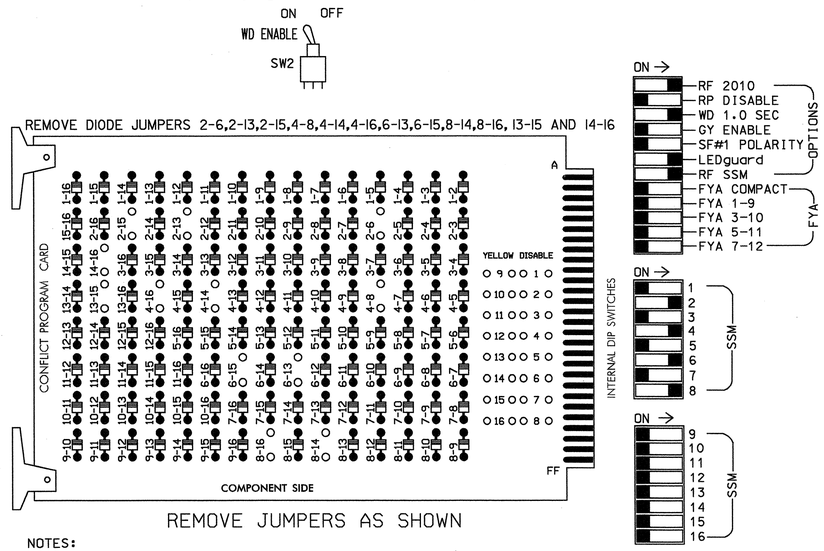
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 129

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT	Ø2 2A	SLOT	Ø4 4A	SLOT	Ø6 6A	SLOT	Ø8 8A	SLOT	SLOT	SLOT	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
L	EMPTY	Ø2 2B	EMPTY	Ø4 4B	EMPTY	Ø6 6B	EMPTY	Ø8 8B	EMPTY	EMPTY	EMPTY	Ø4 PED DC ISOLATOR	Ø8 PED 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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			3
PED PUSH BUTTONS											
P21,P22	TB22-9,10	I12U	67	29	PED 2	2 PED					
P41,P42 P43,P44	TB24-9,10	I12L	69	31	PED 4	4 PED					
P61,P62	TB22-11,12	I13U	68	30	PED 6	6 PED					
P81,P82 P83,P84	TB24-11,12	I13L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P,S8,S8P
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
OVERLAPS.....NONE

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.

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.	NU	21,22	P21, P22	NU	41,42 43	P41,P42 P43,P44	NU	61,62	P61, P62	NU	81,82 83	P81,P82 P83,P84
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113			104			119			110
🚶			115			106			121			112

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C1
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1934

ELECTRICAL AND PROGRAMMING DETAILS FOR:
CITY OF GOLDSBORO NORTH CAROLINA

CENTER STREET AT WALNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE DATE 2/20/09
SIG. INVENTORY NO. C1

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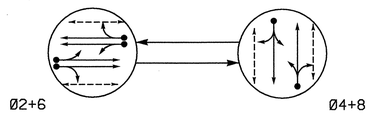
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 130

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42, 43	R	G	R
61, 62	G	R	Y
81, 82, 83	R	G	R
P21, P22	W	DW	DRK
P41, P42, P43, P44	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82, P83, P84	DW	W	DRK

SIGNAL FACE I.D.

Denotes L.E.D.

21, 22
41, 42, 43
61, 62
81, 82, 83

P21, P22
P41, P42, P43, P44
P61, P62
P81, P82, P83, P84

2070L LOOP & DETECTOR INSTALLATION

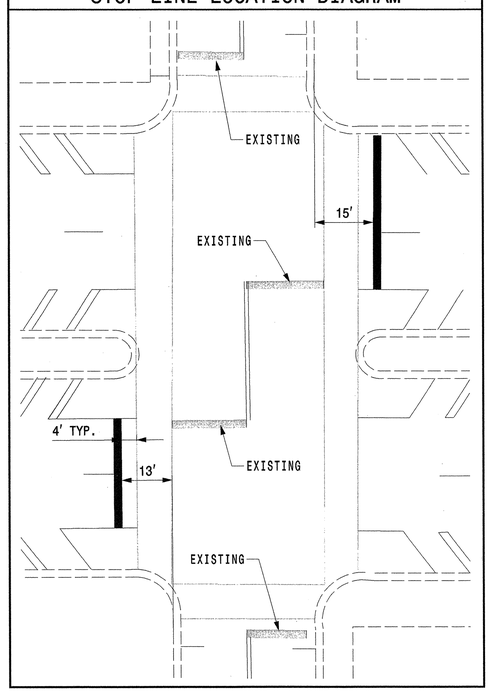
INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X30	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X30	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

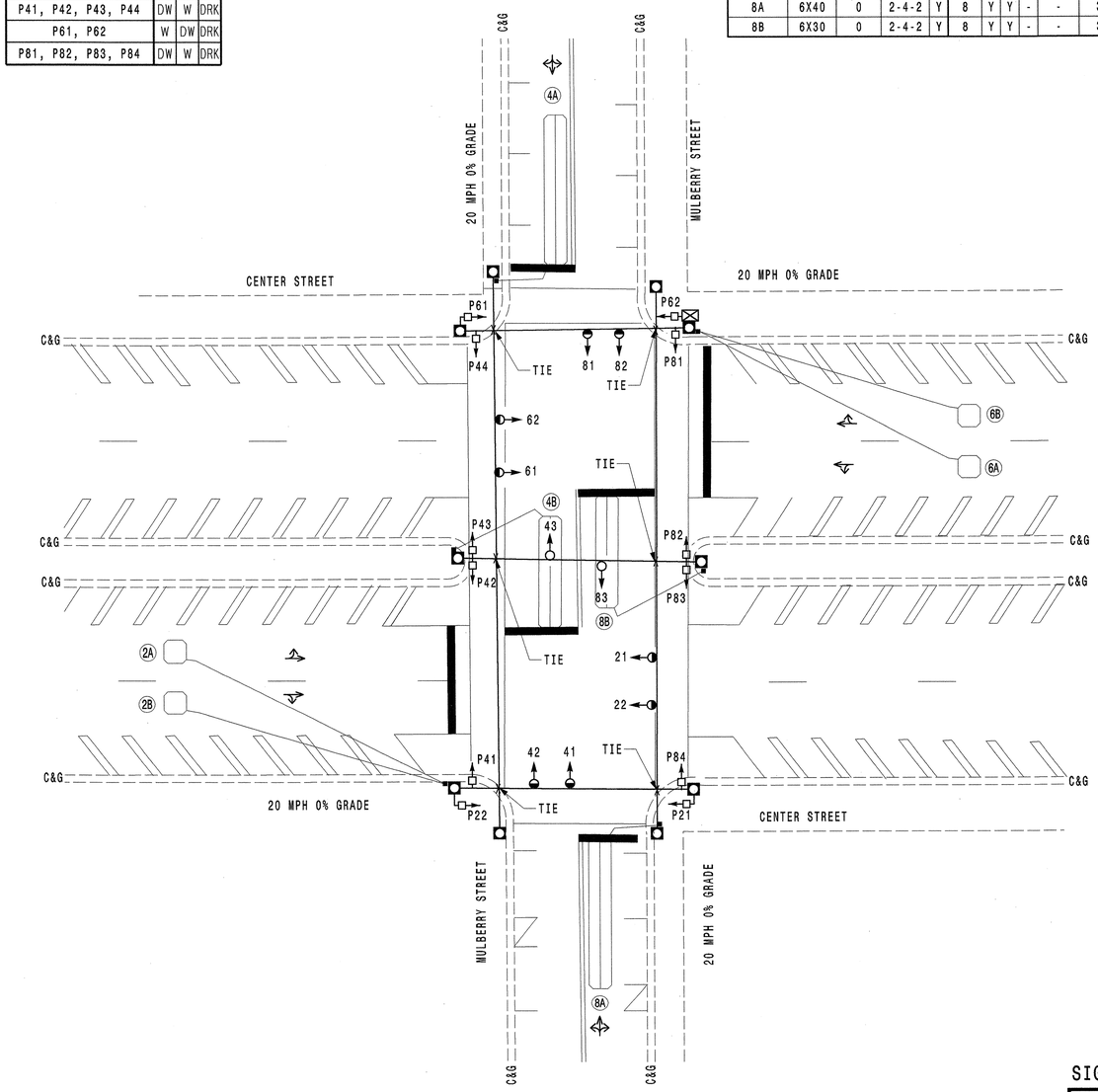
2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Modify all signal heads to include LED faces.

STOP LINE LOCATION DIAGRAM





2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	60	30	60	30
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	3.1	3.9	3.1	3.9
Walk 1 *	7	7	7	7
Don't Walk 1	7	12	7	12
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

* 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	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

CENTER STREET AT MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

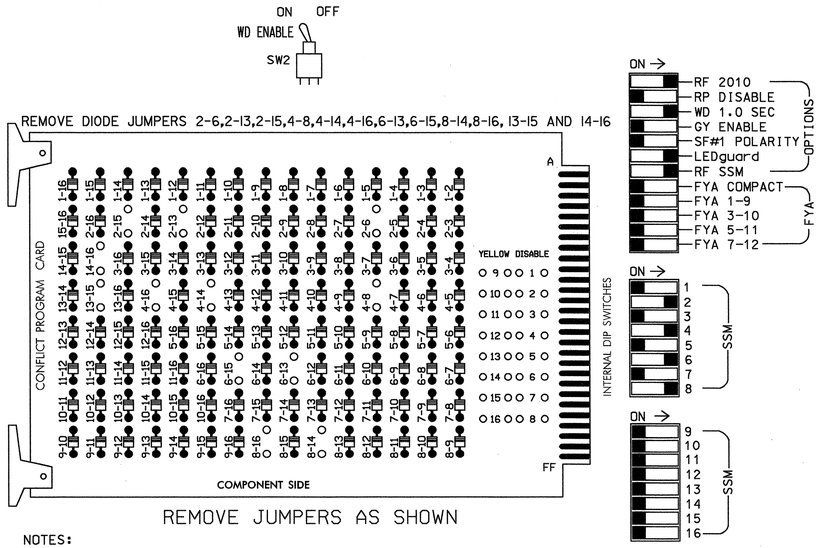
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE DATE 2/27/09
SIG. INVENTORY NO. C2

k:\ral_tpto_its\01174601\6 goldsboro signal system\signal design\S11 - Center-Mulberry\Plans\Center-Mulberry_2008.sig
2/17/2009 9:17:34 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 131

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT	Ø2 2A	SLOT	Ø4 4A	SLOT	Ø6 6A	SLOT	Ø8 8A	SLOT	SLOT	SLOT	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
L	EMPTY	Ø2 2B	EMPTY	Ø4 4B	EMPTY	Ø6 6B	EMPTY	Ø8 8B	EMPTY	EMPTY	EMPTY	Ø4 PED DC ISOLATOR	Ø8 PED 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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			3
PED PUSH BUTTONS											
P21,P22	TB22-9,10	I12U	67	29	PED 2	2 PED					
P41,P42 P43,P44	TB24-9,10	I12L	69	31	PED 4	4 PED					
P61,P62	TB22-11,12	I13U	68	30	PED 6	6 PED					
P81,P82 P83,P84	TB24-11,12	I13L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P,S8,S8P
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
OVERLAPS.....NONE

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.

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.	NU	21,22	P21, P22	NU	41,42 43	P41,P42 P43,P44	NU	61,62	P61, P62	NU	81,82 83	P81,P82 P83,P84
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113			104			119			110
🚶			115			106			121			112

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C2
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

CENTER STREET AT MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACY L. PHILLIPS

SIGNATURE DATE 2/20/09

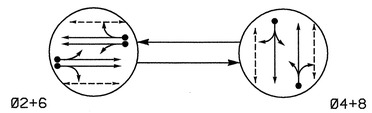
SIG. INVENTORY NO. C2

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

2/17/2009 9:17:38 AM sscale.pennington k:\rdi_tpto_ts\011\00016 goldsboro signal system\signal design\51 - center-mulberry\plans\center-mulberry_2008.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 132

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

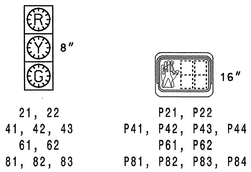
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42, 43	R	G	R
61, 62	G	R	Y
81, 82, 83	R	G	R
P21, P22	W	DW	DRK
P41, P42, P43, P44	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82, P83, P84	DW	W	DRK

SIGNAL FACE I.D.

Denotes L.E.D.



2070L LOOP & DETECTOR INSTALLATION

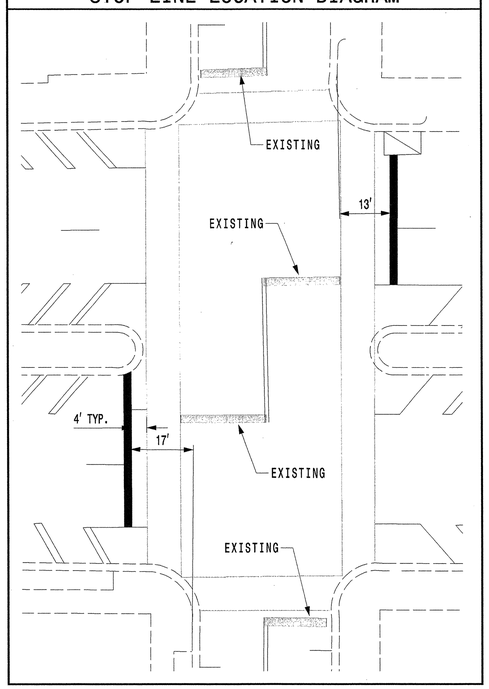
INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X30	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X30	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

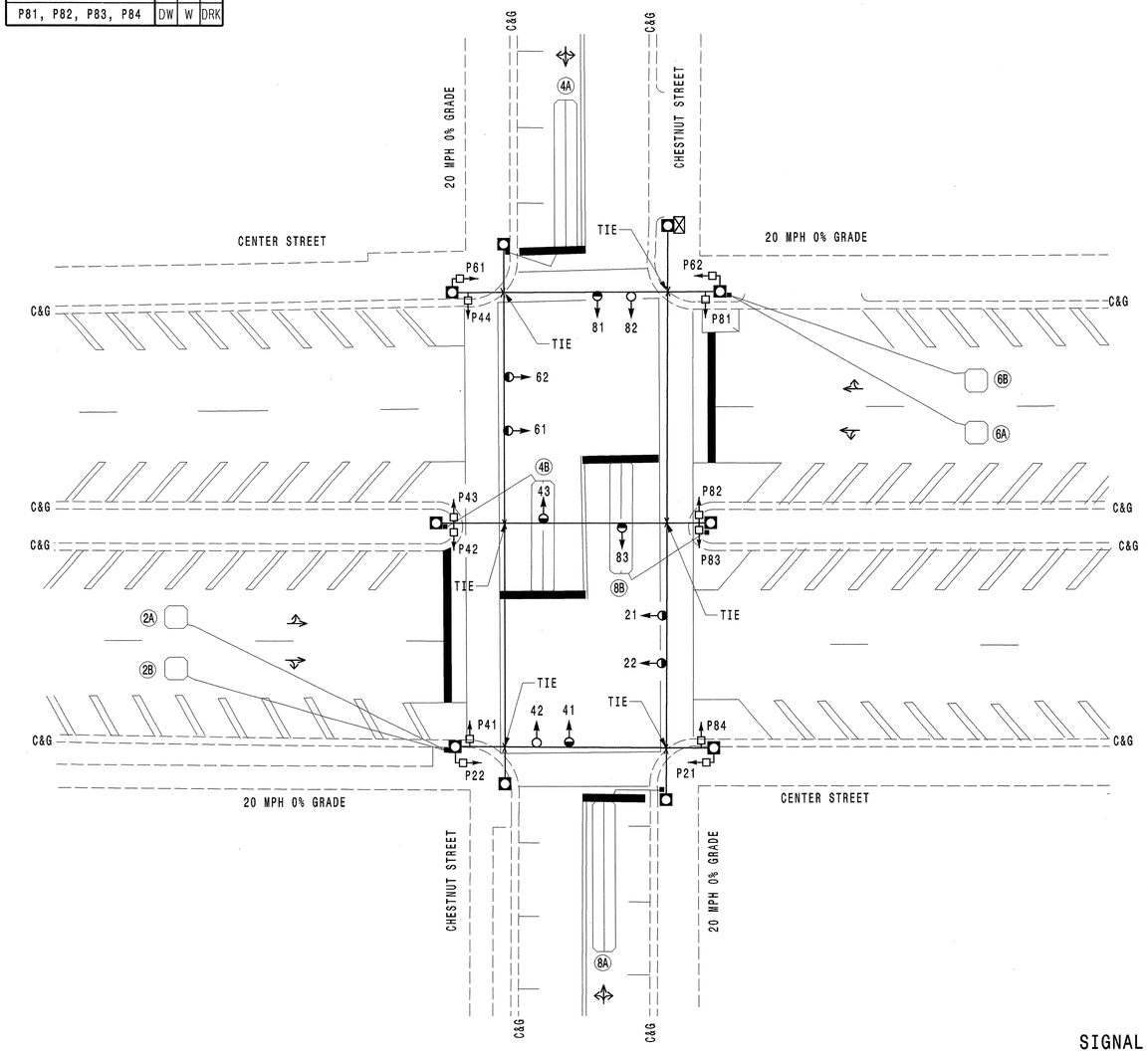
2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Modify all signal heads to include LED faces.

STOP LINE LOCATION DIAGRAM





2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	60	30	60	30
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	3.2	3.9	3.1	3.9
Walk 1 *	7	7	7	7
Don't Walk 1	9	12	9	12
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

* 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	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

CENTER STREET AT CHESTNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

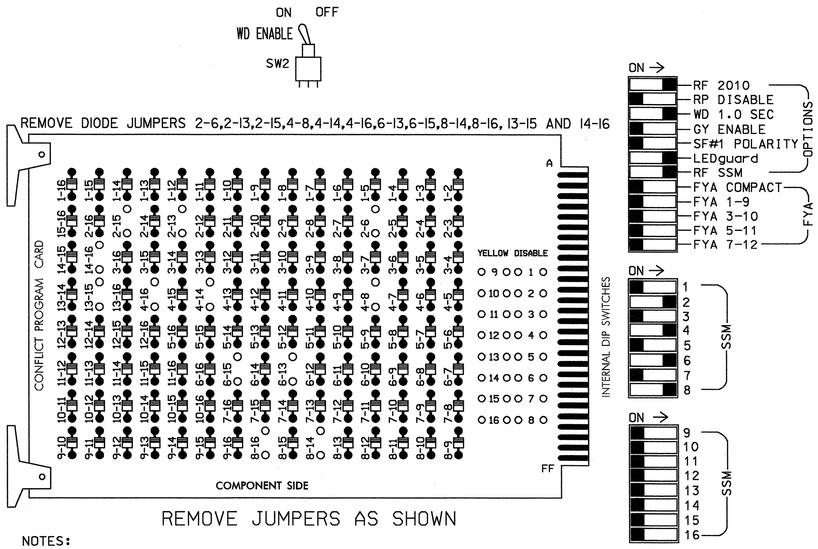
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE DATE 2/20/09
SIG. INVENTORY NO. C3

2/17/2009 9:17:38 AM susan.pennington k:\ral_tpto_its\01174016 goldsboro signal system\signal design\S10 - Center-Chestnut\Plans\Center-Chestnut_2009.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 133

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	Ø4 4A	SLOT EMPTY	Ø6 6A	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2PED DC ISOLATOR	Ø6PED DC ISOLATOR	FS DC ISOLATOR
L		Ø2 2B		Ø4 4B		Ø6 6B		Ø8 8B				Ø4PED DC ISOLATOR	Ø8PED 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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			3
PED PUSH BUTTONS											
P21,P22	TB22-9,10	I12U	67	29	PED 2	2 PED					
P41,P42 P43,P44	TB24-9,10	I12L	69	31	PED 4	4 PED					
P61,P62	TB22-11,12	I13U	68	30	PED 6	6 PED					
P81,P82 P83,P84	TB24-11,12	I13L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P,S8,S8P
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
OVERLAPS.....NONE

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.

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.	NU	21,22	P21, P22	NU	41,42 43	P41,P42 P43,P44	NU	61,62	P61, P62	NU	81,82 83	P81,P82 P83,P84
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113			104			119			110
🚶			115			106			121			112

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C3
DESIGNED: AUGUST 2008
SEALED: 2-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

CENTER STREET
AT
CHESNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACE L. PHILLIPS

SIGNATURE DATE 2/20/09
SIG. INVENTORY NO. C3

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

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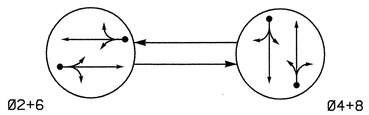
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 131

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+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.

Denotes L.E.D.

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

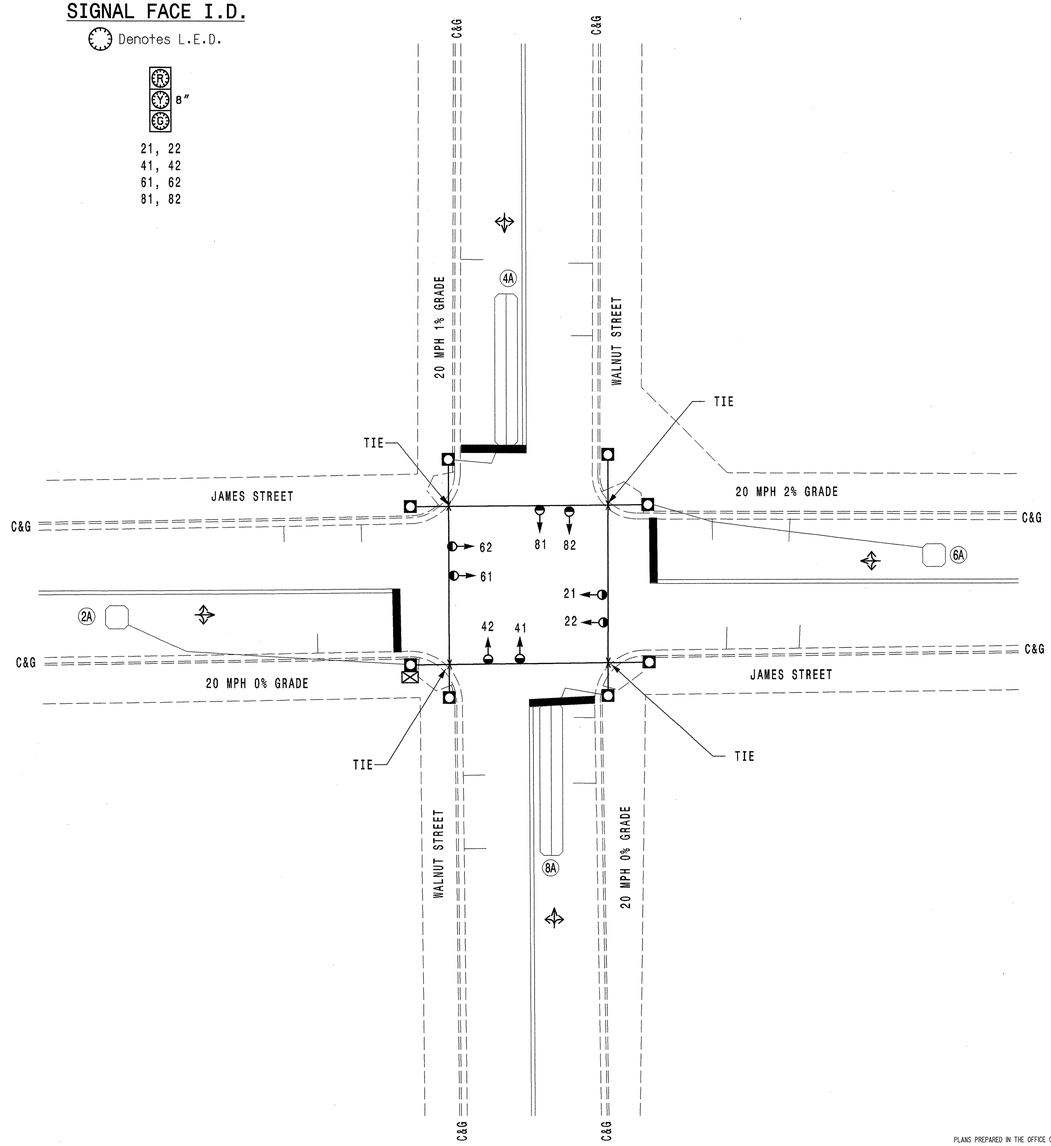
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	Y	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	Y	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	Y	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Run all lead-in cable overhead on existing utility poles where possible.
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. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Modify all signal heads to include LED faces.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	1.9	1.9	1.9	1.8
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

* 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.

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1954

SIGNAL UPGRADE

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

JAMES STREET AT WALNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/20/09

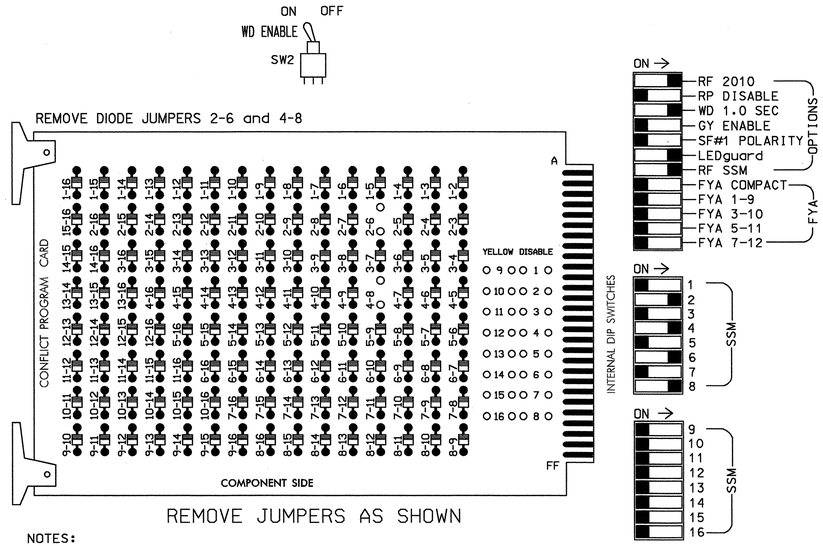
SIG. INVENTORY NO. C4

2/17/2009 9:17:43 AM susan.pennington k:\ral_tpto_its\01174016 goldsboro signal system\signal design\SD4 - Walnut-James\Plans\Walnut-James_20008.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 135

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	Ø4 4A	SLOT EMPTY	Ø6 6A	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L		NOT USED		NOT USED		NOT USED		NOT USED						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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C4
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

JAMES STREET
AT
WALNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/20/09

SIG. INVENTORY NO. C4

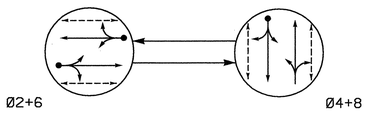
PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1954

2/17/2009 9:17:46 AM susan.pennington k:\ral_gtpo_jts\017140\6 guideware signal system\signal design\S4 - Walnut-James\Plans\James-Walnut_2008.sla

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig 136

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

SIGNAL FACE I.D.

Denotes L.E.D.

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

P21, P22
P41, P42
P61, P62
P81, P82

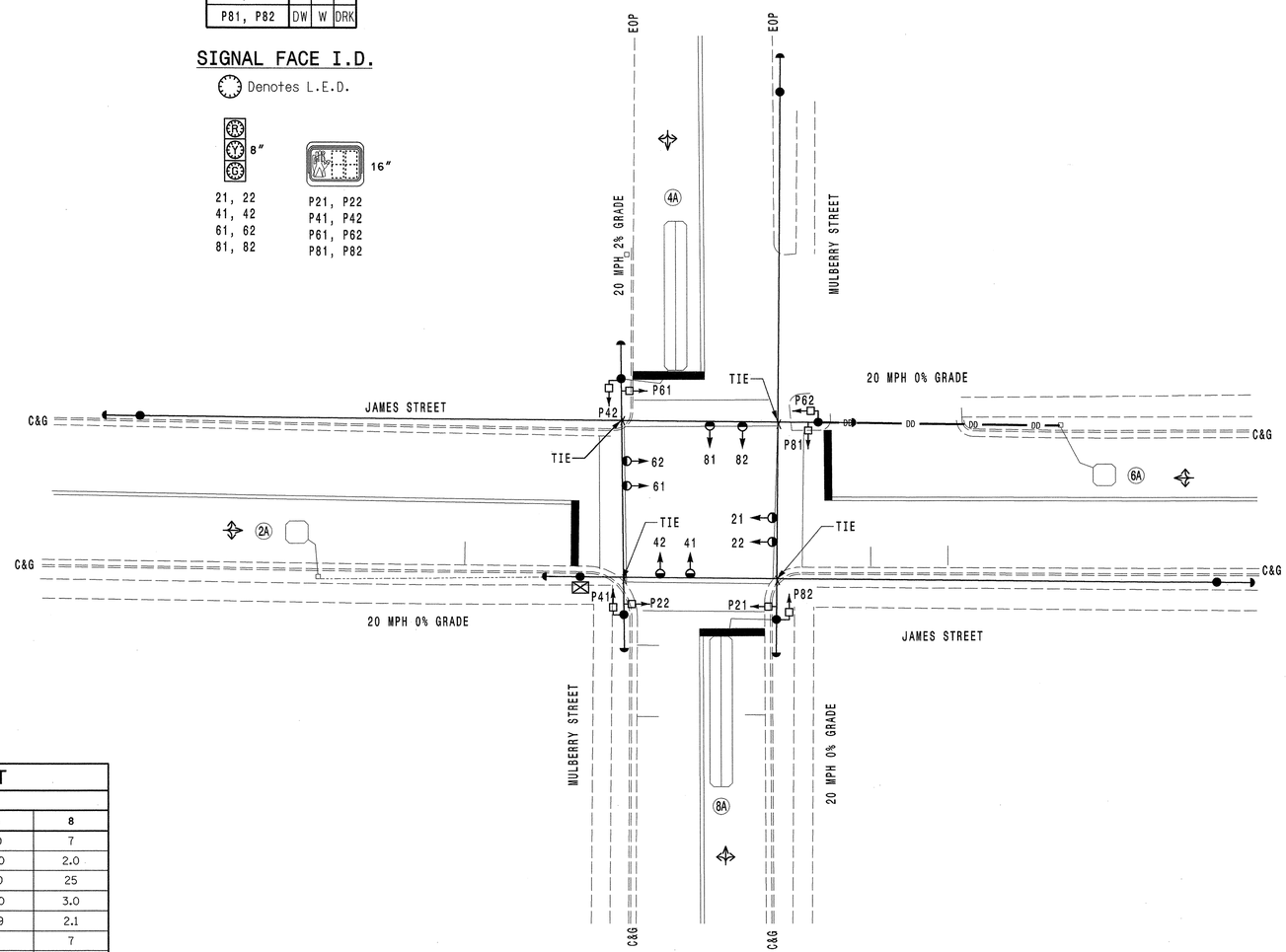
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
10. Modify all signal heads to include LED faces.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
DD	Directional Drill	N/A
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	1.9	2.1	1.9	2.1
Walk 1 *	7	7	7	7
Don't Walk 1	7	7	9	7
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

* 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.

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1494

SIGNAL UPGRADE

CITY OF GOLDSBORO · NORTH CAROLINA

SCALE 0 20' 1"=20'

JAMES STREET
AT
MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE 2/12/09 DATE

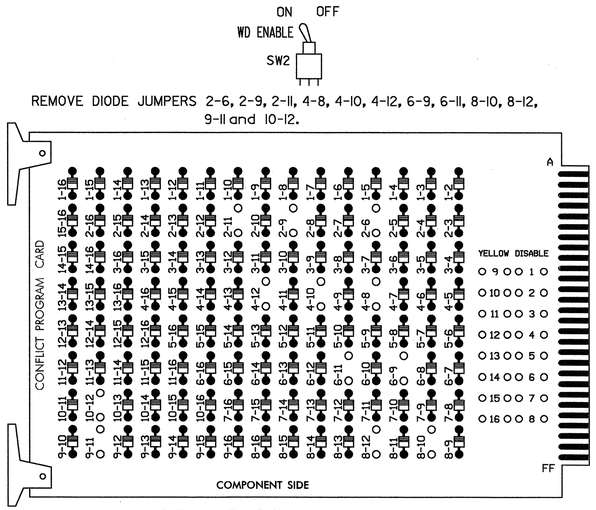
SIG. INVENTORY NO. C5

2/17/2009 9:17:48 AM susan.pennington k:\ral_tpto_its\01174601\6 goldsboro signal system\signal design\S19 - Mulberry-James\Plans\Mulberry-James_2008.sig

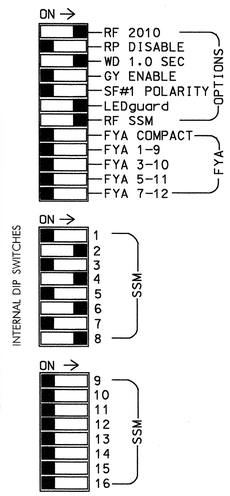
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.137

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3,5,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
7. The cabinet and controller are part of the City of Goldsboro Signal 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.	NU	21,22	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	P81, P82
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113			104			119			110
🚶			115			106			121			112

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	Ø4 4A	SLOT EMPTY	Ø6 6A	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
FILE "I" L		NOT USED		NOT USED		NOT USED		NOT USED				Ø4 PED DC ISOLATOR	Ø8 PED 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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
PED PUSH BUTTONS											
P21,P22	TB22-9,10	I12U	67	29	PED 2	2 PED					
P41,P42	TB24-9,10	I12L	69	31	PED 4	4 PED					
P61,P62	TB22-11,12	I13U	68	30	PED 6	6 PED					
P81,P82	TB24-11,12	I13L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,SP2,S4,SP4,S6,SP6,S8,SP8
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
OVERLAPS.....NONE

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: C5
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

JAMES STREET
AT
MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 | REVIEWED BY:
PREPARED BY: SP PENNINGTON | REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

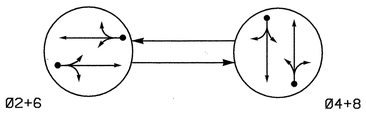
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE 2/20/09 DATE
SIG. INVENTORY NO. C5

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1934

2/17/2009 8:17:50 AM susan.pennington k:\tal_tpo_sig\017160\6 goldsboro signal system\signal design\S10 - Mulberry-James\Plans\Mulberry-James_S008.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 138

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	Y	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	Y	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	Y	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

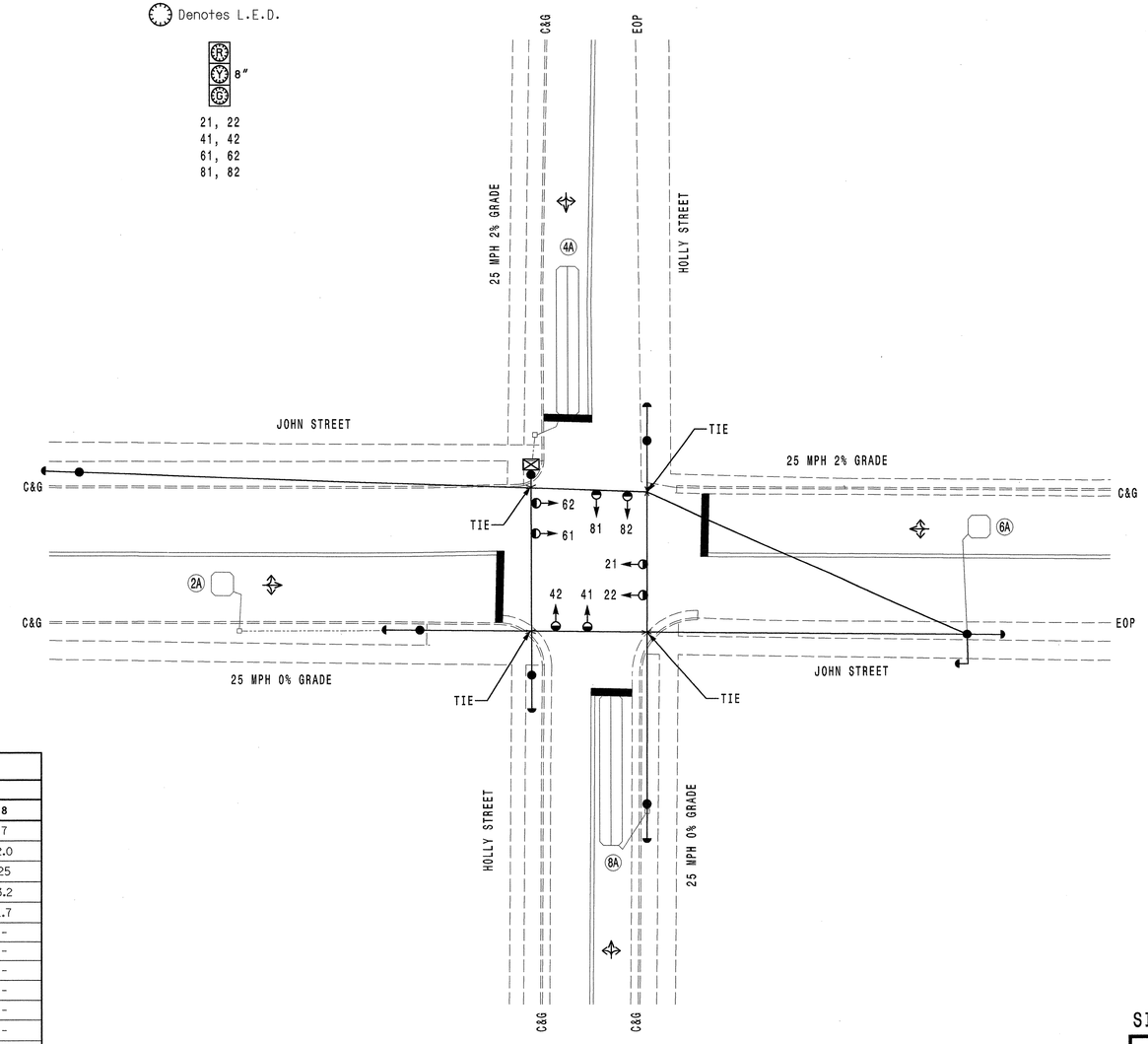
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Modify all signal heads to include LED faces.

SIGNAL FACE I.D.

Denotes L.E.D.

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



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	3.2	3.1	3.1	3.2
Red Clearance	1.2	1.5	1.5	1.7
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

* 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	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1934

CITY OF GOLDSBORO NORTH CAROLINA

JOHN STREET
AT
HOLLY STREET

WAYNE COUNTY — GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SCALE 0 20' 1"=20'

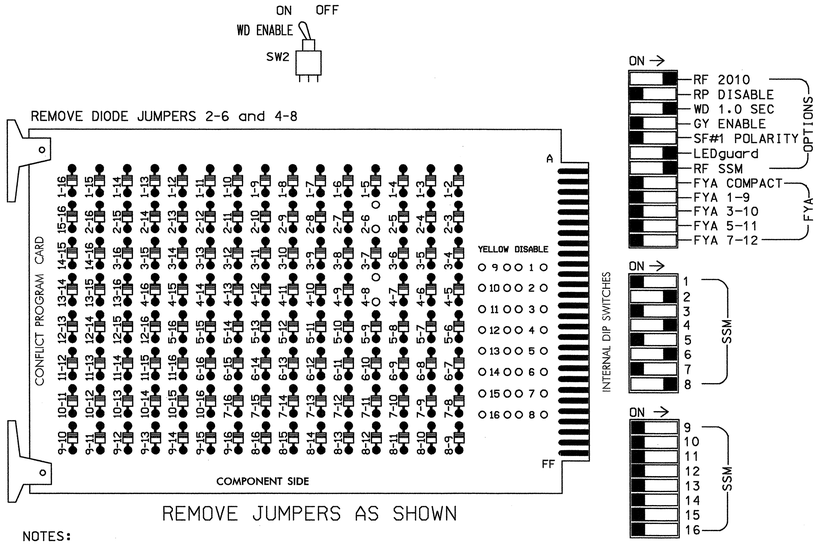
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE — DATE 2/20/09
SIG. INVENTORY NO. C6

2/17/2009 9:17:52 AM susan.pennington k:\ral_tpto_its\01174\5016 goldsboro signal system\signal design\S17 - John-Holly\Plans\John-Holly_2008.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 139

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT	Ø2 2A	SLOT	Ø4 4A	SLOT	Ø6 6A	SLOT	Ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
L	EMPTY	NOT USED	EMPTY	NOT USED	EMPTY	NOT USED	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7,9, 10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C6
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

JOHN STREET AT HOLLY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008		REVIEWED BY:	
PREPARED BY: SP PENNINGTON		REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/20/09

SIG. INVENTORY NO. C6

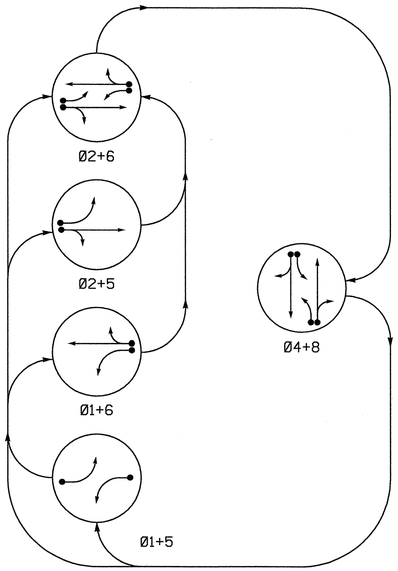
PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

2/17/2009 8:17:54 AM sspn pennington k:\ral_proj_ids\011160\dg goldsboro signal system\signal design\017 - john\holly\plans\john-holly_2008.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 140

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	FLASH
21	R	R	G	G	R	Y
22	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
61	R	G	R	G	R	Y
62	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R

SIGNAL FACE I.D.

Denotes L.E.D.

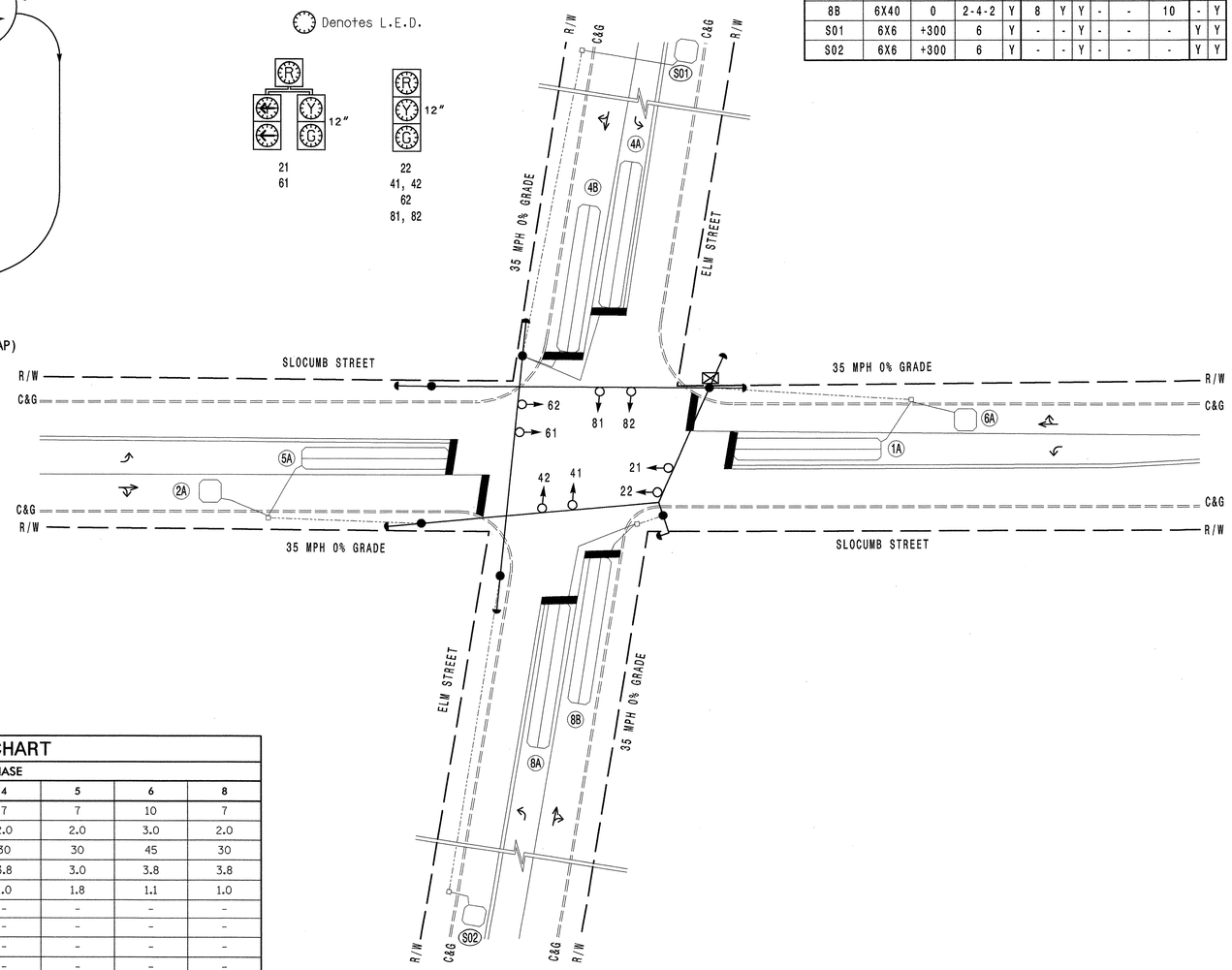
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
					6	Y	Y	-	-	-	-	Y
2A	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
					2	Y	Y	-	-	-	-	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y
S01	6X6	+300	6	Y	-	-	Y	-	-	-	Y	Y
S02	6X6	+300	6	Y	-	-	Y	-	-	-	Y	Y

5 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Omit phase 1 during phase 2 on.
4. Omit phase 5 during phase 6 on.
5. Program controller to clear from phase 2+6 to phase 1 and/or 5 by progressing through phase 4+8 (see Electrical Details).
6. Program phase 4 and phase 8 for dual entry.
7. Set all detector units to presence mode.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.



2070L TIMING CHART

FEATURE	PHASE 1	2	4	5	6	8
Min Green 1 *	7	10	7	7	10	7
Extension 1 *	2.0	3.0	2.0	2.0	3.0	2.0
Max Green 1 *	30	45	30	30	45	30
Yellow Clearance	3.0	3.8	3.8	3.0	3.8	3.8
Red Clearance	1.9	1.0	1.0	1.8	1.1	1.0
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	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.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

CITY OF GOLDSBORO NORTH CAROLINA

SLOCUMB STREET AT ELM STREET

WAYNE COUNTY — GOLDSBORO

PLAN DATE: AUGUST 2008 — REVIEWED BY:

PREPARED BY: SP PENNINGTON — REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SCALE 0 20′ 1″=20′

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE — DATE 2/2/09

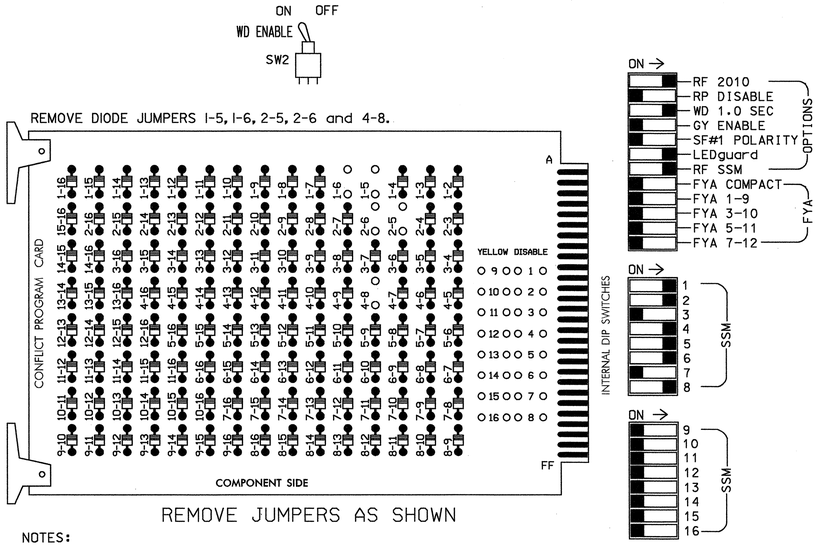
SIG. INVENTORY NO. C7

2/17/2009 8:17:57 AM susan.pennington k:\ral_tpto_its\01740016 goldsboro signal system\signal design\S16 - Elm-Slocumb\Plans\Elm-Slocumb_2006.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.141

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	Ø1 1A	Ø2 2A	SLOT EMPTY	Ø4 4A	Ø5 5A	Ø6 6A	SLOT EMPTY	Ø8 8A	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L	Ø6 1A	NOT USED		Ø4 4B	Ø2 5A	NOT USED		Ø8 8B	SYS. DET. SØ2					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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB21-1,2	I1U	56	18	1	1	Y	Y			15
	TB23-1,2	I1L	47	9	22	6	Y	Y			
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			10
5A	TB21-9,10	I5U	55	17	5	5	Y	Y			15
	TB23-9,10	I5L	48	10	26	2	Y	Y			
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			10
* SØ1	TB6-9,10	I9U	60	22	11	SYS		Y			
* SØ2	TB6-11,12	I9L	62	24	13	SYS		Y			

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 3,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System.

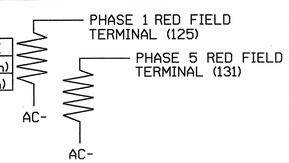
EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
PHASES USED.....1,2,4,5,6,8
OVERLAPS.....NONE

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 these resistors is to load the channel red monitor inputs 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.

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	21	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						132					
GREEN ARROW	127						133					
✋												
🚶												

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

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

1. From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Functions 1 and 2.
2. From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

```
DYNAMIC/BACKUP CONTROL FUNCTION #01
              OVERLAPS:|ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE |
OR         PHASES:|123456789101112131415 16
IF PHASES ARE ON| X
OMIT PHASES     |X
CALL PHASES     |   X
```

PRESS 'NEXT'

```
DYNAMIC/BACKUP CONTROL FUNCTION #02
              OVERLAPS:|ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE |
OR         PHASES:|123456789101112131415 16
IF PHASES ARE ON|     X
OMIT PHASES     |    X
CALL PHASES     |   X
```

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C7
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

SLOCUMB STREET
AT
ELM STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008	REVIEWED BY:		
PREPARED BY: SP PENNINGTON	REVIEWED BY: SL PHILLIPS		
REVISIONS		INIT.	DATE

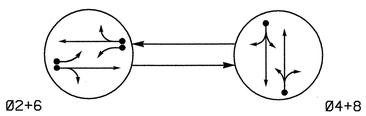
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE 2/20/09 DATE
SIG. INVENTORY NO. C7

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

2/17/2009 8:17:59 AM susan.pennington k:\rnl_proj_sta\011740016 goldsboro signal system\signal design\S16 - Elm-Slocumb\Plans\Elm-Slocumb_2008.sla

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 142

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+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.

Denotes L.E.D.

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

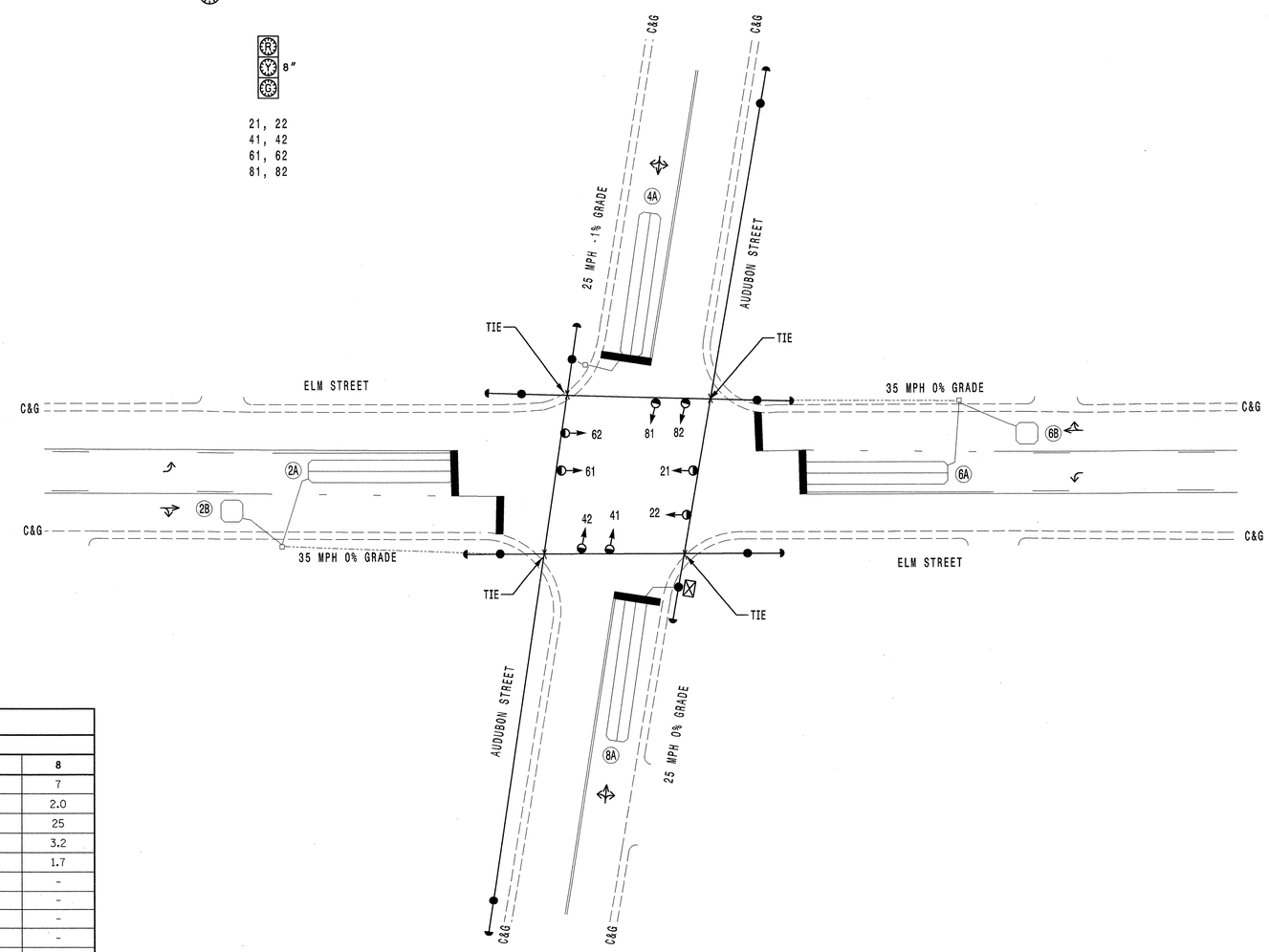
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Modify all signal heads to include LED faces.



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	25	45	25
Yellow Clearance	3.8	3.2	3.8	3.2
Red Clearance	1.3	1.5	1.3	1.7
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

* 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	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1934

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

ELM STREET AT AUDUBON STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

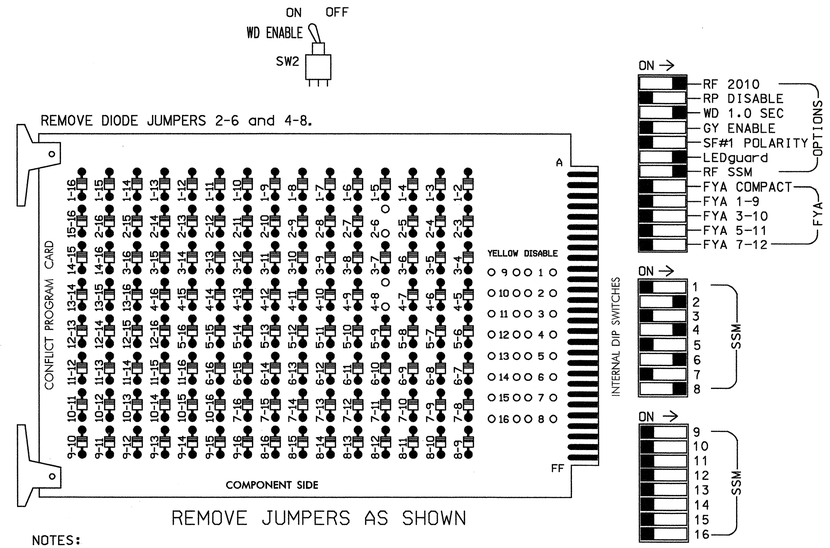
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACE L. PHILLIPS
SIGNATURE DATE
SIG. INVENTORY NO. C8

2/17/2009 9:18:01 AM susan.pennington k:\traj_tpto_its\011746016 goldsboro signal system\signal design\S14 - Elm-Audubon\Plans\Elm-Audubon_2008.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 143

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT	Ø2 2A	SLOT	Ø4 4A	SLOT	Ø6 6A	SLOT	Ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
L	EMPTY	Ø2 2B	EMPTY	NOT USED	EMPTY	Ø6 6B	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3

INPUT FILE POSITION LEGEND: I2L

FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C8
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

ELM STREET
AT
AUDUBON STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE 2/20/09 DATE

SIG. INVENTORY NO. C8

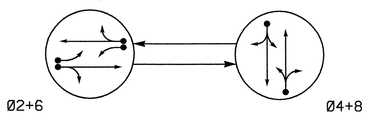
PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

k:\ral_proj_13\017\0016 goldsboro signal system\signal design\514 - Elm-Audubon\Plans\Elm-Audubon_2008.dgn 2/17/2009 8:16:03 AM susan.pennington

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 144

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	PHASE 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.

Denotes L.E.D.

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

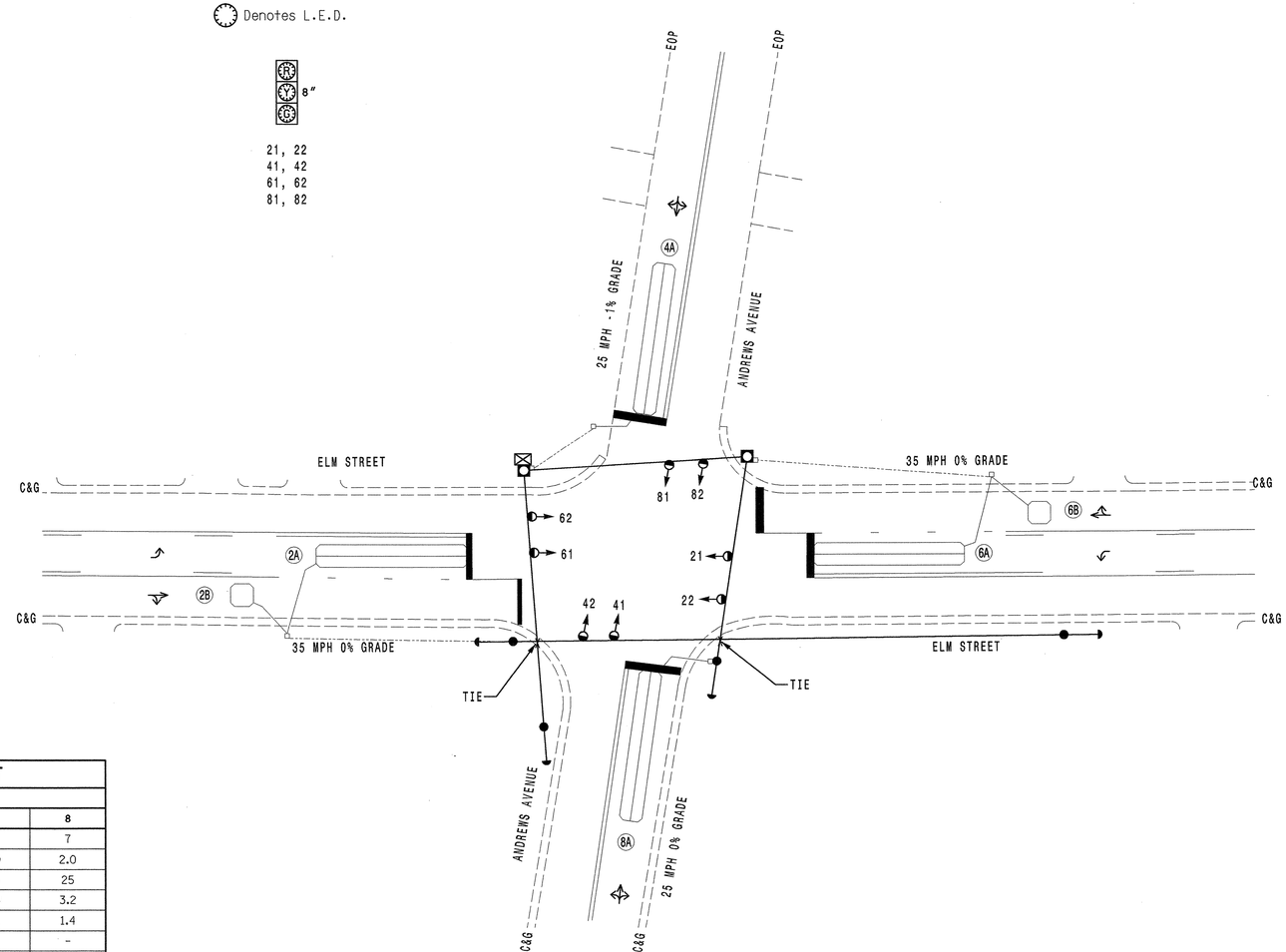
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Modify all signal heads to include LED faces.



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	25	45	25
Yellow Clearance	3.8	3.2	3.8	3.2
Red Clearance	1.3	1.7	1.1	1.4
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

* 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	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1954

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

ELM STREET AT ANDREWS AVENUE

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/23/09

SIG. INVENTORY NO. C9

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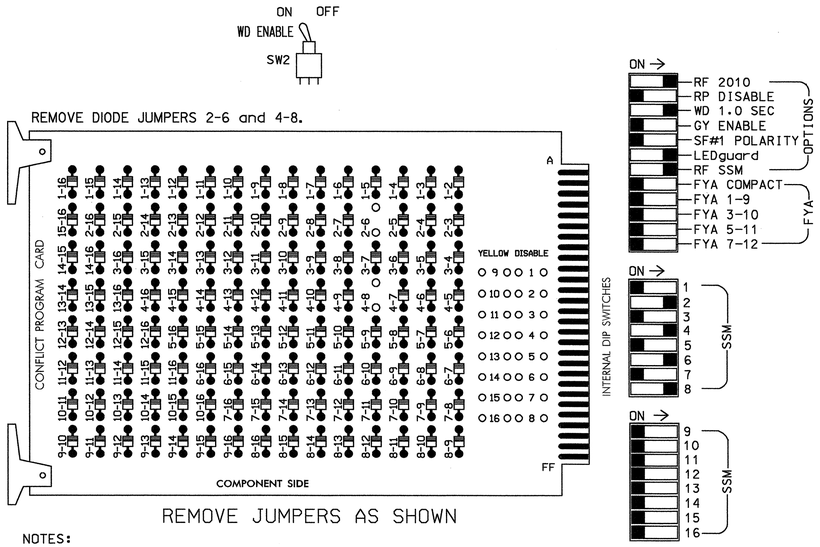
susan_pennington 9:18:06 AM 2/17/2009

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 145

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal 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.	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 "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT	Ø2 2A	SLOT	Ø4 4A	SLOT	Ø6 6A	SLOT	Ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
L	EMPTY	Ø2 2B	EMPTY	NOT USED	EMPTY	Ø6 6B	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3

INPUT FILE POSITION LEGEND: I2L

FILE I
SLOT 2
LOWER

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C9
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

ELM STREET
AT
ANDREWS AVENUE

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE 2/20/09 DATE

SIG. INVENTORY NO. C9

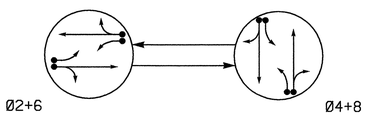
PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1434

2/17/2009 8:18:08 AM susan.pennington k:\rnl_tpto_lds\011726\016 goldsboro signal system\signal design\013 - Elm-Andrews\Plans\Elm-Andrews_2008.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 146

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	PHASE 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.

Denotes L.E.D.

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

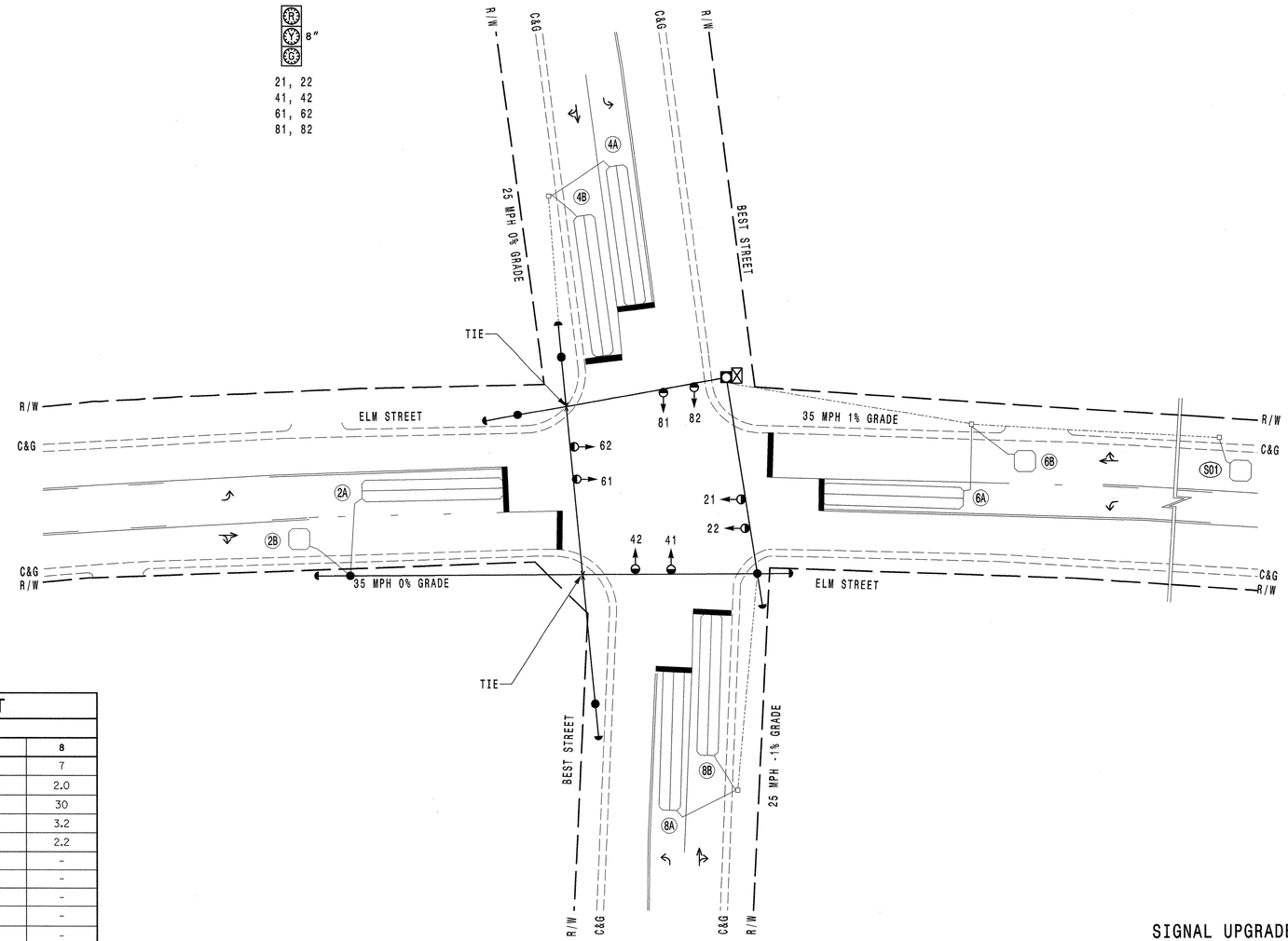
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y
S01	6X6	300	6	Y	-	-	Y	-	-	-	Y	Y

2 PHASE FULLY ACTUATED (CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Modify all signal heads to include LED faces.



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	30	45	30
Yellow Clearance	3.8	3.2	3.8	3.2
Red Clearance	1.1	2.2	1.1	2.2
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

* 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	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

CITY OF GOLDSBORO NORTH CAROLINA

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

SCALE 0 20' 1"=20'

ELM STREET AT BEST STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACE L. PHILLIPS

SIGNATURE DATE 2/20/09

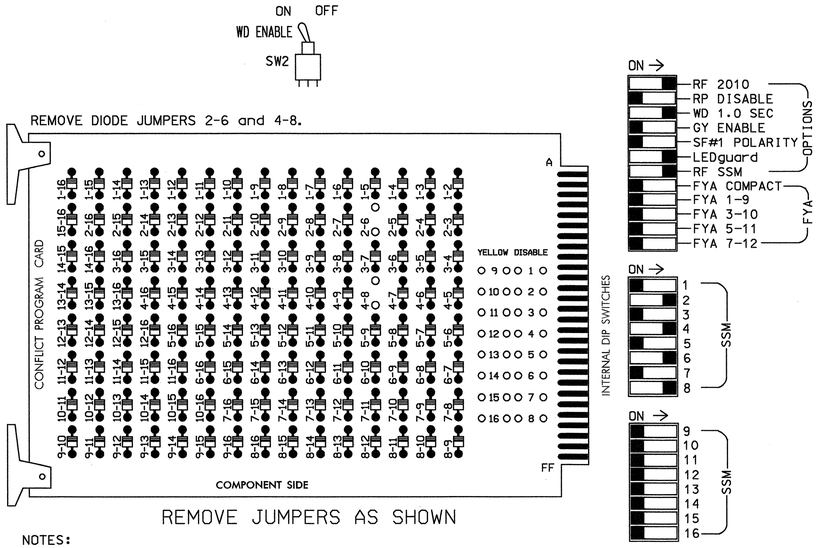
SIG. INVENTORY NO. C10

2/17/2009 9:18:10 AM susan_pennington k:\ral_tpto_lts\0117460\16 goldsboro signal system\signal design\SIG - Elm-Best\Plans\Elm-best_2008.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 147

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT	Ø2 2A	SLOT	Ø4 4A	SLOT	Ø6 6A	SLOT	Ø8 8A	SYS. DET. SØ1	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
L	EMPTY	Ø2 2B	EMPTY	Ø4 4B	EMPTY	Ø6 6B	EMPTY	Ø8 8B	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			1Ø
6A	TB21-11,12	I6U	4Ø	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			1Ø
* SØ1	TB6-9,1Ø	I9U	6Ø	22	11	SYS		Y			

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED		128			1Ø1			134			1Ø7	
YELLOW		129			1Ø2			135			1Ø8	
GREEN		13Ø			1Ø3			136			1Ø9	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋												
🚶												

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C10
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

ELM STREET AT BEST STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE 2/20/09 DATE
SIG. INVENTORY NO. C10

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1494

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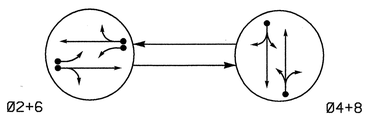
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.14B

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

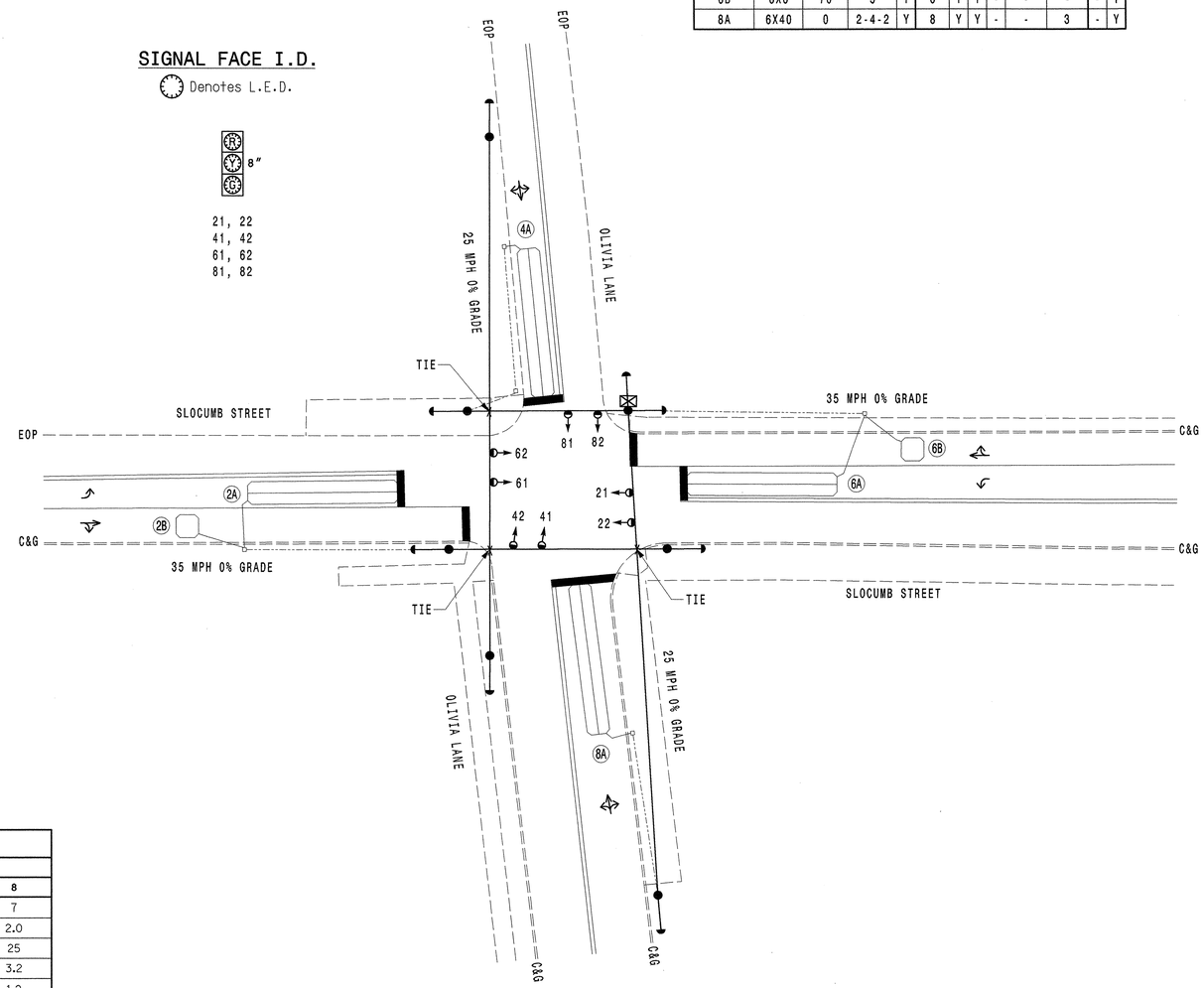
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
7. Modify all signal heads to include LED faces.

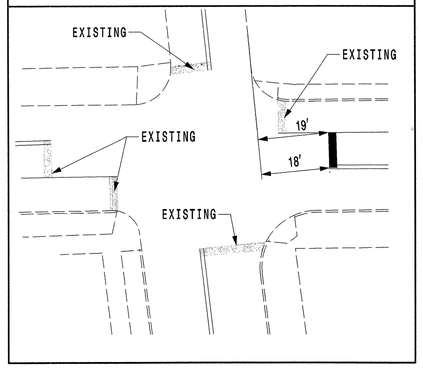
SIGNAL FACE I.D.

Denotes L.E.D.

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



STOP LINE LOCATION DIAGRAM



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	25	45	25
Yellow Clearance	3.8	3.2	3.8	3.2
Red Clearance	1.0	1.2	1.0	1.2
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

* 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	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

CITY OF GOLDSBORO · NORTH CAROLINA

SCALE 0 20' 1"=20'

SLOCUMB STREET AT OLIVIA LANE

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE 2/20/09 DATE

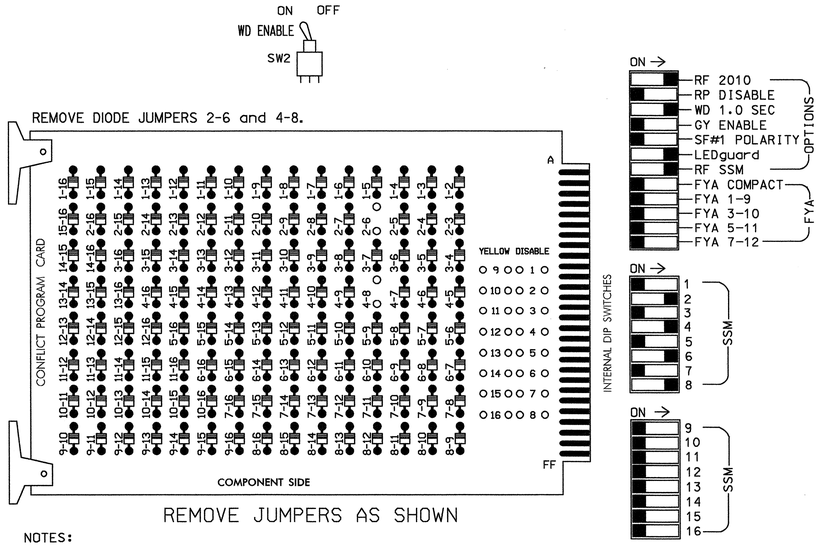
SIG. INVENTORY NO. C11

2/17/2009 9:18:15 AM susan.pennington k:\ral_tpto_its\01746016 goldsboro signal system\signal design\822 - Slocumb-Olivia\Plans\Slocumb-Olivia_2008.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 149

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT	Ø2 2A	SLOT	Ø4 4A	SLOT	Ø6 6A	SLOT	Ø8 8A	SLOT	SLOT	SLOT	SLOT	SLOT	FS DC ISOLATOR
L	EMPTY	Ø2 2B	EMPTY	NOT USED	EMPTY	Ø6 6B	EMPTY	NOT USED	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			3
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			

INPUT FILE POSITION LEGEND: I2L

FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....1,2,4,6,8
OVERLAPS.....NONE

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.	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C11
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO
NORTH CAROLINA

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1934

SLOCUMB STREET AT OLIVIA LANE

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

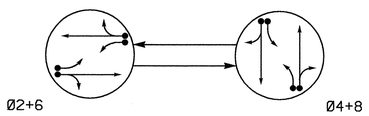
SIGNATURE 2/20/09 DATE

SIG. INVENTORY NO. C11

2/17/2009 8:16:17 AM sspn.pennington k:\real_prop_dev\011740016 goldsboro signal system\signal design\02- Slocumb-Olivia\Plans\Slocumb-Olivia_2008.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 15D

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+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.

Denotes L.E.D.

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

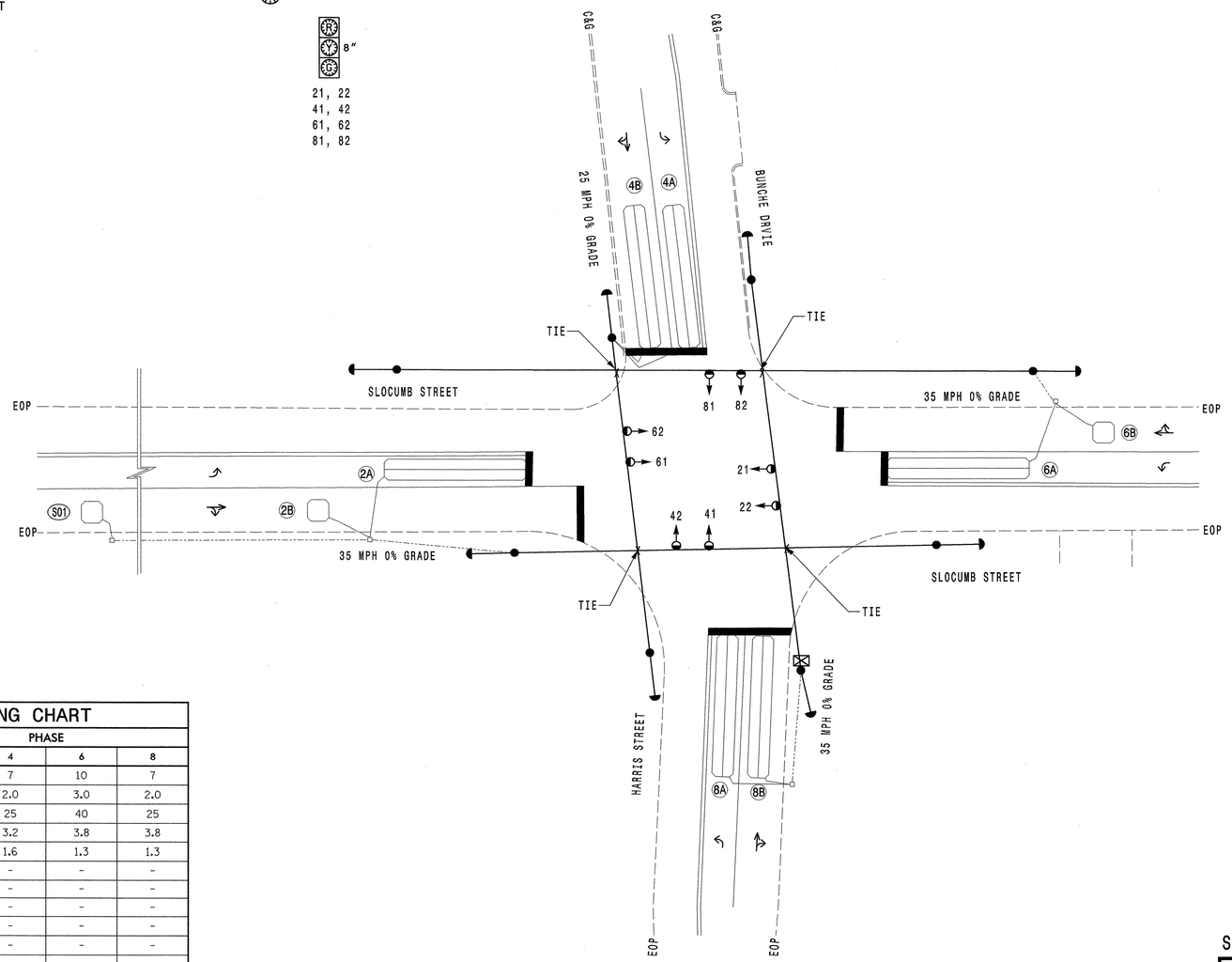
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y
S01	6X6	300	6	Y	-	-	Y	-	-	-	Y	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Backplates remain on signal heads 21, 22, 61 and 62.
5. Program phase 4 and phase 8 for dual entry.
6. Set all detector units to presence mode.
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Modify all signal heads to include LED faces.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	3.8	3.2	3.8	3.8
Red Clearance	1.5	1.6	1.3	1.3
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

* 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.

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1454

SIGNAL UPGRADE

CITY OF GOLDSBORO · NORTH CAROLINA

SLOCUMB STREET
AT
BUNCHE DRIVE AND HARRIS STREET

WAYNE COUNTY — GOLDSBORO

PLAN DATE: AUGUST 2008	REVIEWED BY:	
PREPARED BY: SP PENNINGTON	REVIEWED BY: SL PHILLIPS	

SCALE 0 20' 1"=20'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE — DATE 2/20/09

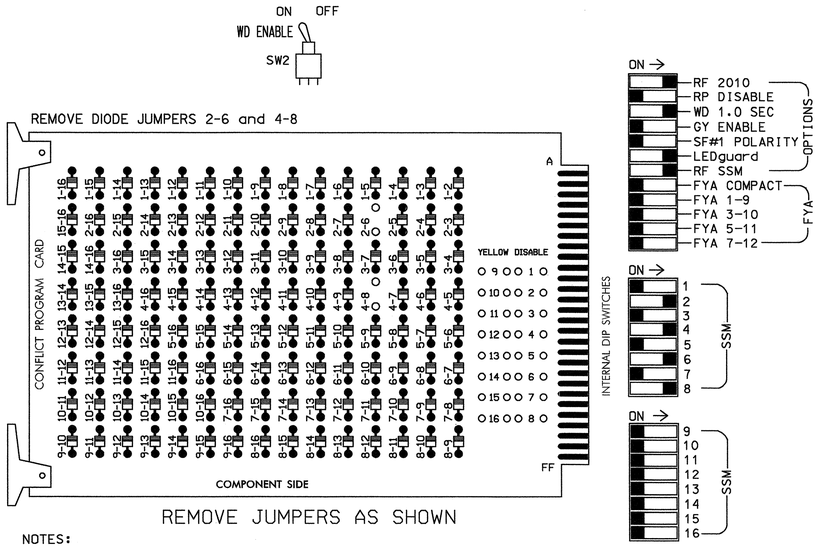
SIG. INVENTORY NO. C12

2/17/2009 9:16:19 AM susan.pennington k:\ral_tpto_its\011746016 goldsboro signal system\signal design\S20 - Slocumb-Harris-Bunche\Plans\Slocumb-Harris_2008.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 151

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	Ø4 4A	SLOT EMPTY	Ø6 6A	SLOT EMPTY	Ø8 8A	SYS. DET. SØ1	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
FILE "I" L	SLOT EMPTY	Ø2 2B	SLOT EMPTY	Ø4 4B	SLOT EMPTY	Ø6 6B	SLOT EMPTY	Ø8 8B	NOT USED	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			1Ø
6A	TB21-11,12	I6U	4Ø	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			1Ø
* SØ1	TB6-9,1Ø	I9U	6Ø	22	11	SYS		Y			

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU
RED		128			1Ø1			134			1Ø7	
YELLOW		129			1Ø2			135			1Ø8	
GREEN		13Ø			1Ø3			136			1Ø9	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋												
🚶												

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C12
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

SLOCUMB STREET AT BUNCHE STREET AND HARRIS STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACE L. PHILLIPS

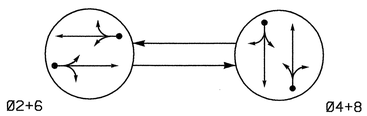
SIGNATURE DATE 2/20/09
SIG. INVENTORY NO. C12

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1934

2/17/2009 9:18:21 AM susan.pennington k:\rd_bpto_ite\011740\8 goldsboro signal system\signal design\320 - Slocumb-Harris-Bunche\Plans\Slocumb-Harris-Bunche_2008.sla

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 15Z

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+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.

Denotes L.E.D.

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

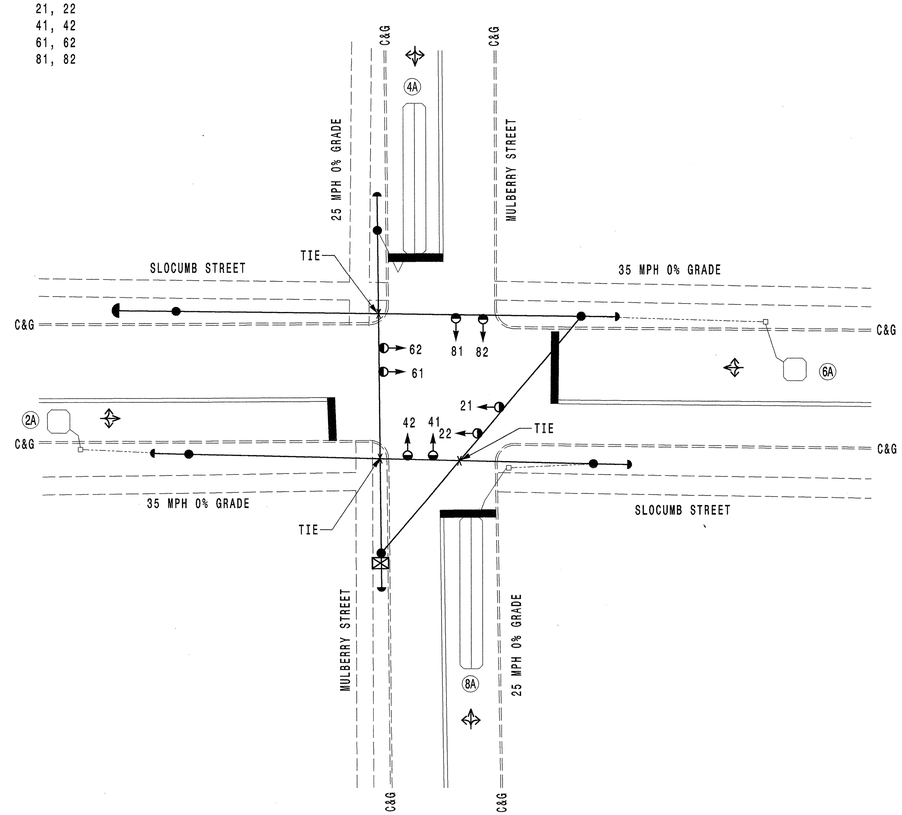
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	Y	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	Y	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	Y	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
8. Modify all signal heads to include LED faces.



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	3.8	3.2	3.8	3.2
Red Clearance	1.0	1.6	1.0	1.4
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

* 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	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

CITY OF GOLDSBORO NORTH CAROLINA

SLOCUMB STREET
AT
MULBERRY STREET

WAYNE COUNTY — GOLDSBORO

PLAN DATE: AUGUST 2008 — REVIEWED BY:
PREPARED BY: SP PENNINGTON — REVIEWED BY: SL PHILLIPS

SCALE 0 20' 1"=20'

REVISIONS	INIT.	DATE

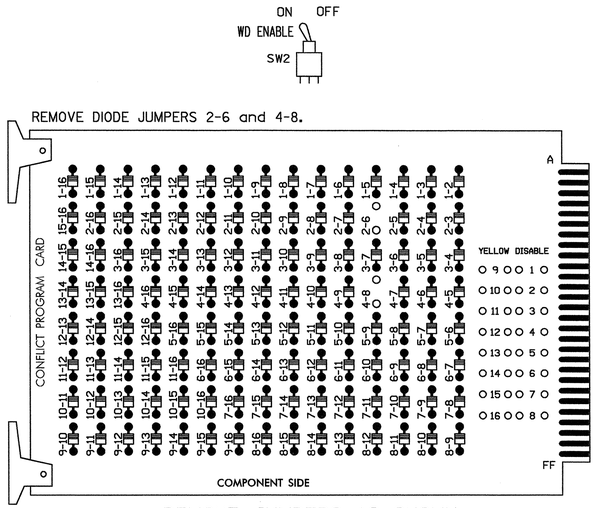
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE — DATE 2/20/09
SIG. INVENTORY NO. C13

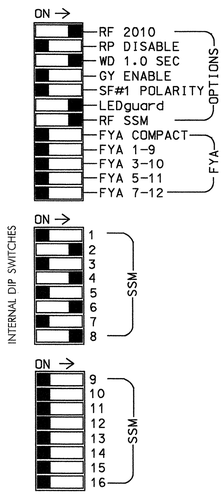
2/17/2009 9:18:29 AM susan.pennington k:\ral_ptco_its\011746\16 goldsboro signal system\signal design\S21 - Slocumb-Mulberry\Plans\Slocumb-Mulberry_2008.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 153

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)





■ = DENOTES POSITION OF SWITCH

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT EMPTY	ø2 2A	SLOT EMPTY	ø4 4A	SLOT EMPTY	ø6 6A	SLOT EMPTY	ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L		NOT USED		NOT USED		NOT USED		NOT USED						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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C13
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

SLOCUMB STREET
AT
MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/20/09

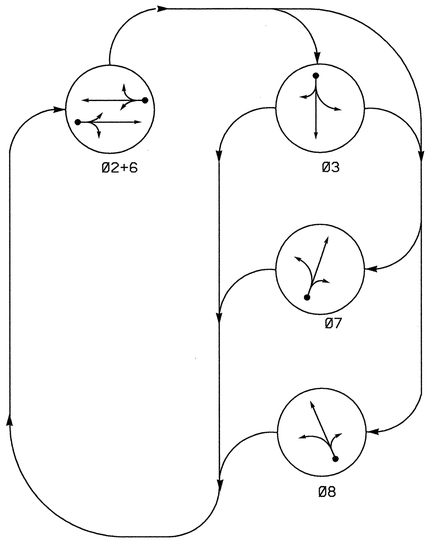
SIG. INVENTORY NO. C13

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-9934

2/17/2009 8:16:28 AM susan.pennington k:\rnl_proj_lib\017\06016 goldsboro signal system\signal design\01- slocumb-mulberry\plans\slocumb-mulberry_2008.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 15.4

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	Ø3	Ø7	Ø8	FLASH
21, 22	G	R	R	R	Y
31	R	G	R	R	R
32	R	G	R	R	R
61, 62	G	R	R	R	Y
71	R	R	G	R	R
72, 73	R	R	G	R	R
81	R	R	R	G	R
82	R	R	R	G	R

SIGNAL FACE I.D.

Denotes L.E.D.

31
71
81

21, 22
32
61, 62
72, 73
82

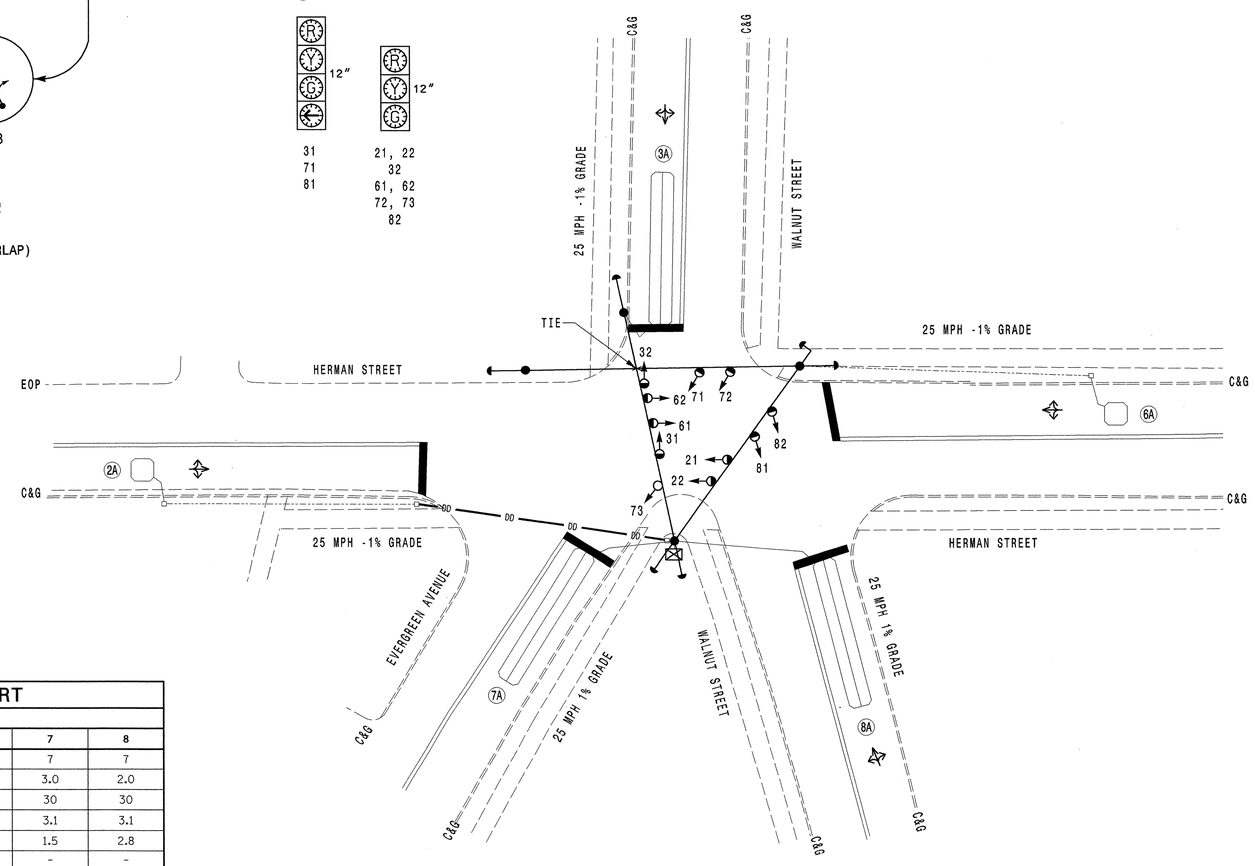
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	3	-	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	3	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y

4 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
7. Modify all signal heads to include LED faces.
8. Install new cabinet on existing foundation.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	
DD	Directional Drill	N/A

2070L TIMING CHART

FEATURE	PHASE 2	3	6	7	8
Min Green 1 *	10	7	10	7	7
Extension 1 *	3.0	2.0	2.0	3.0	2.0
Max Green 1 *	30	30	30	30	30
Yellow Clearance	3.2	3.2	3.2	3.1	3.1
Red Clearance	2.9	1.7	2.2	1.5	2.8
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	-	-	-	-	-
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.

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1934

SIGNAL UPGRADE

CITY OF GOLDSBORO · NORTH CAROLINA

SCALE 0 20' 1"=20'

HERMAN STREET AT WALNUT STREET AND EVERGREEN AVENUE
WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/26/09

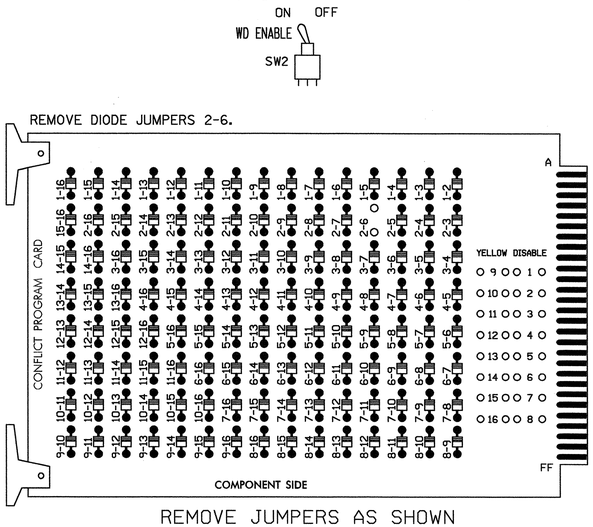
SIG. INVENTORY NO. C14

2/17/2009 9:18:29 AM susan_pennington k:\ral_tpto_its\01174\5016 goldsboro's signal system\signal design\SIG - Walnut-Herman-Evergreen\Plans\Walnut-Herman-Evergreen_2006.SIG

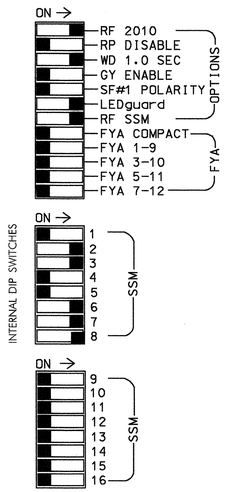
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 155

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT EMPTY	Ø2 2A	Ø3 3A	SLOT EMPTY	SLOT EMPTY	Ø6 6A	Ø7 7A	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
L		NOT USED	NOT USED			NOT USED	NOT USED	NOT USED						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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
3A	TB21-5,6	I3U	58	20	3	3	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
7A	TB21-13,14	I7U	57	19	7	7	Y	Y			3
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,4,5,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. The cabinet and controller are part of the City of Goldsboro Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S3,S6,S7,S8
PHASES USED.....2,3,6,7,8
OVERLAPS.....NONE

PHASE SEQUENCE PROGRAMMING DETAIL

(program controller as shown below)

FROM OASIS LOCAL CONTROLLER MAIN MENU
SELECT: 4 PHASE SEQUENCE

PHASE SEQUENCE: PAGE 1 NEXT: PAGES) ↘

RNG	LEAD	BARRIER 1		X-LAG	LEAD	BARRIER 2		X-LAG
1	0	2	0	0	3	0	7	8
2	0	6	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0

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.	NU	21,22	NU	31	32	NU	NU	NU	61,62	NU	71	72,73	81	82	NU
RED		128		116	116				134		122	122	107	107	
YELLOW		129		117	117				135		123	123	108	108	
GREEN		130		118	118				136		124	124	109	109	
RED ARROW															
YELLOW ARROW															
GREEN ARROW				118							124		109		
✋															
🚶															

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C14
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1494

ELECTRICAL AND PROGRAMMING DETAILS FOR:
CITY OF GOLDSBORO NORTH CAROLINA

WALNUT STREET
AT
HERMAN STREET AND
EVERGREEN AVENUE
WAYNE COUNTY GOLDSBORO

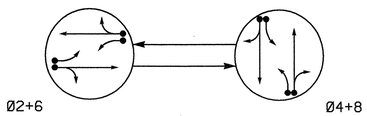
PLAN DATE: AUGUST 2008	REVIEWED BY:		
PREPARED BY: SP PENNINGTON	REVIEWED BY: SL PHILLIPS		
REVISIONS		INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS
SIGNATURE DATE 2/20/09
SIG. INVENTORY NO. C14

k:\rel_proj_tdy\01170010 goldsboro signal system\signal design\S03 - Walnut-Herman-Evergreen\Plans\Walnut-Herman-Evergreen_2009.dgn 8:18:31 AM susan.pennington 2/17/2009

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 15C

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+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.

Denotes L.E.D.

8"

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

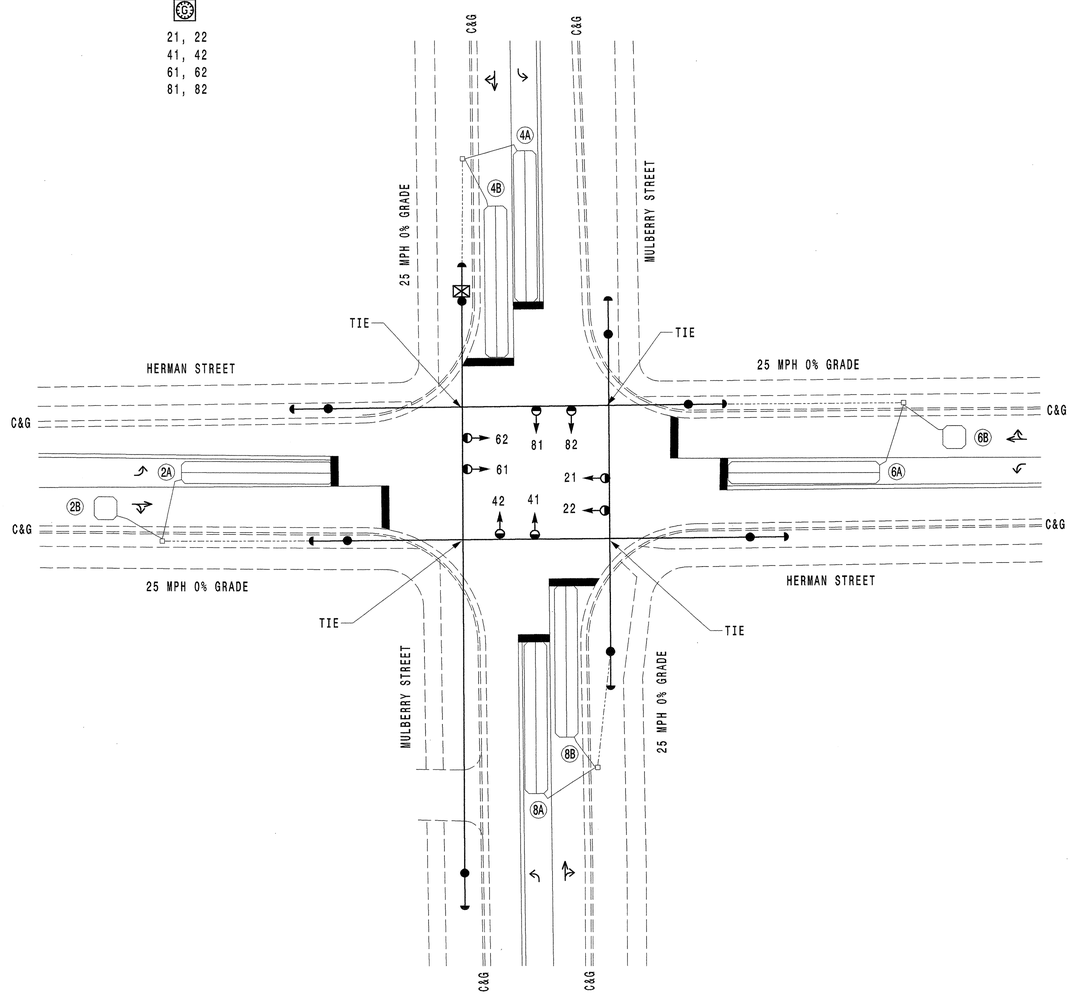
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Pavement markings are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
7. Modify all signal heads to include LED faces.



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	30	45	30
Yellow Clearance	3.2	3.2	3.2	3.2
Red Clearance	1.9	1.7	1.9	1.7
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

* 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	
	Modified Signal Head	N/A
	Sign	
	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	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

HERMAN STREET AT MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:

PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/26/09

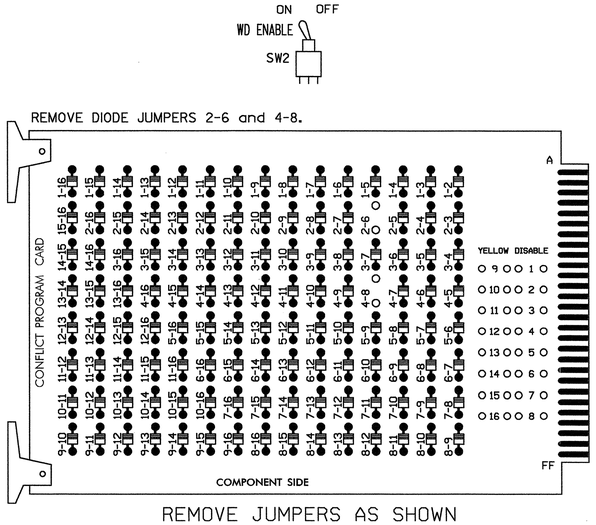
SIG. INVENTORY NO. C15

2/17/2009 9:18:33 AM susan_pennington k:\ral_tpto_its\01746016 goldsboro signal system\signal design\S18 - Mulberry-Herman\Plans\Mulberry-Herman_2008.sig

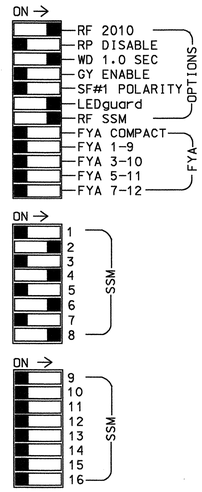
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 15J

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT	Ø2 / 2A	SLOT	Ø4 / 4A	SLOT	Ø6 / 6A	SLOT	Ø8 / 8A	SLOT	SLOT	SLOT	SLOT	SLOT	FS / DC ISOLATOR
L	EMPTY	Ø2 / 2B	EMPTY	Ø4 / 4B	EMPTY	Ø6 / 6B	EMPTY	Ø8 / 8B	EMPTY	EMPTY	EMPTY	EMPTY	EMPTY	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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			10
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			10

INPUT FILE POSITION LEGEND: I2L

FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C15
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1934

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

HERMAN STREET AT MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

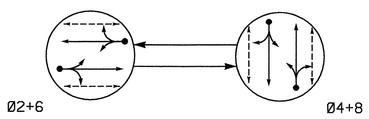
SIGNATURE DATE 2/20/09

SIG. INVENTORY NO. C15

2/17/2009 8:18:38 AM susan.pennington k:\rnl_tpoy_lab\011760\6 goldsboro signal system\signal design\18 mulberry-herman\plans\mulberry-herman_2008.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.15 8

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

SIGNAL FACE I.D.

Denotes L.E.D.

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

P21, P22
P41, P42
P61, P62
P81, P82

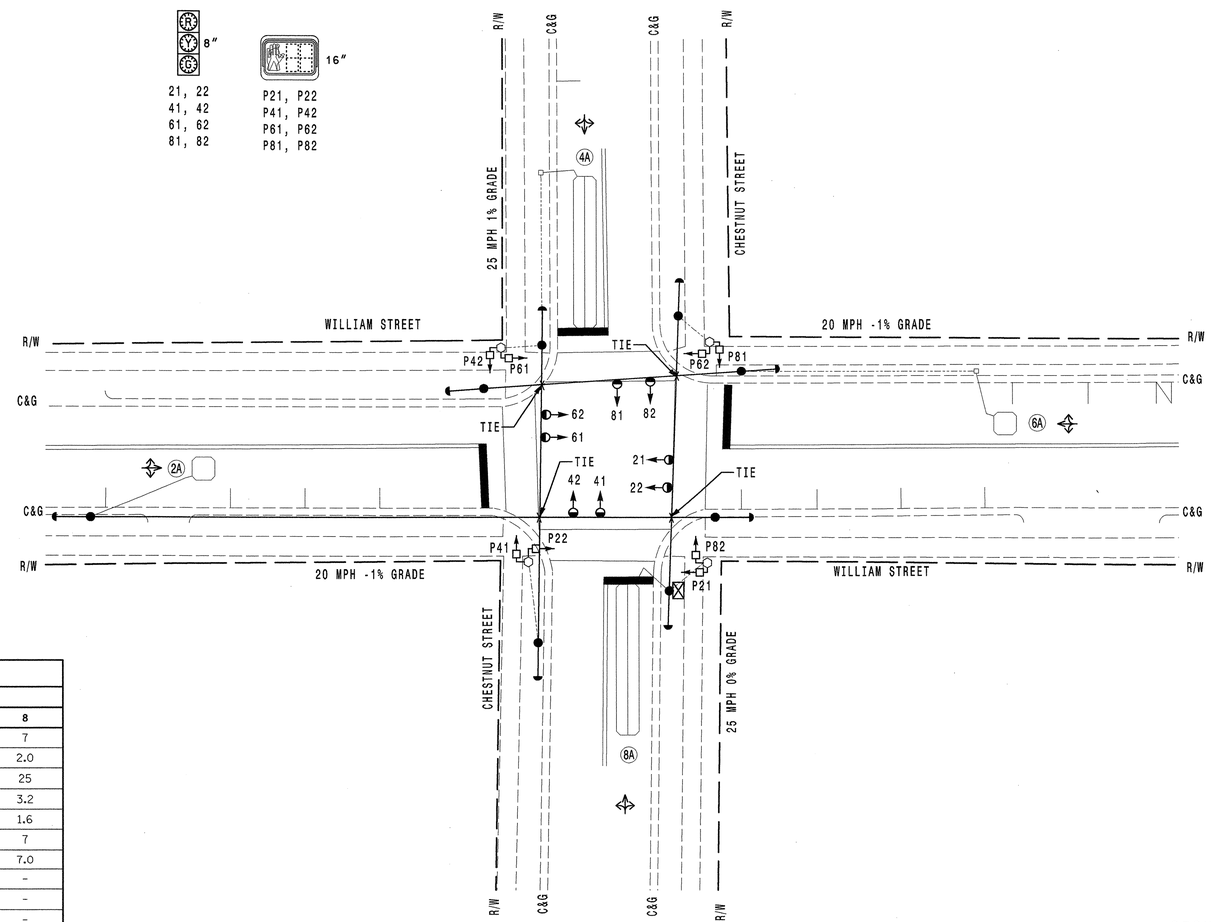
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	Y	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	Y	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	Y	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
10. Modify all signal heads to include LED faces.



2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	3.0	3.1	3.0	3.2
Red Clearance	1.9	1.5	1.9	1.6
Walk 1 *	7	7	7	7
Don't Walk 1	6.0	6.0	6.0	7.0
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

* 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	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Pedestrian Signal Pedestal	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

SIGNAL UPGRADE

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1494

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

WILLIAM STREET
AT
CHESTNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008	REVIEWED BY:
PREPARED BY: SP PENNINGTON	REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

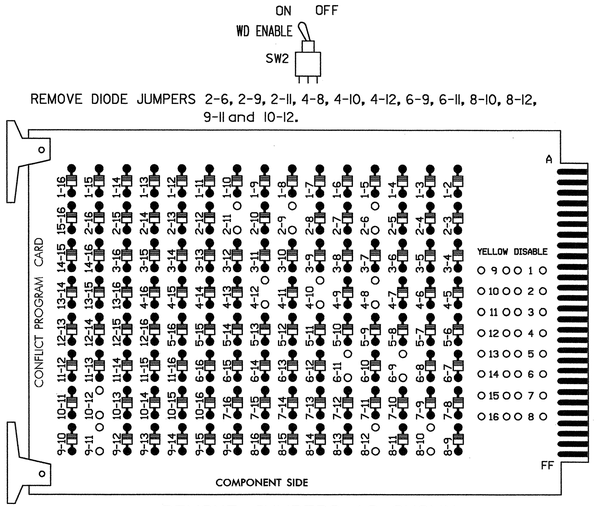
SIGNATURE DATE 2/27/09
SIG. INVENTORY NO. C16

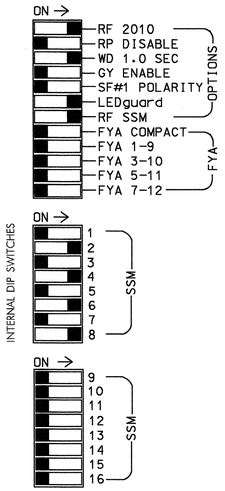
2/17/2009 9:16:43 AM susan.pennington k:\ral_tpto_its\01174\016 goldsboro signal system\signal design\SIS - William-Chestnut\Plans\William-Chestnut_2008.sig

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.159

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	Ø4 4A	SLOT EMPTY	Ø6 6A	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
L		NOT USED		NOT USED		NOT USED		NOT USED				Ø4 PED DC ISOLATOR	Ø8 PED 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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
PED PUSH BUTTONS											
P21,P22	TB22-9,10	I12U	67	29	PED 2	2 PED					
P41,P42	TB24-9,10	I12L	69	31	PED 4	4 PED					
P61,P62	TB22-11,12	I13U	68	30	PED 6	6 PED					
P81,P82	TB24-11,12	I13L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
7. The cabinet and controller are part of the City of Goldsboro Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,SP2,S4,SP4,S6,SP6,S8,SP8
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
OVERLAPS.....NONE

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.

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.	NU	21,22	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	P81, P82
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113			104			119			110
🚶			115			106			121			112

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C16
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

WILLIAM STREET
AT
CHESTNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

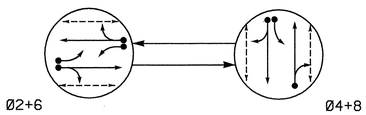
SIGNATURE DATE 2/20/09
SIG. INVENTORY NO. C16

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1934

2/17/2009 9:18:42 AM susan.pennington k:\rdu_lpro_ites\017\6016 goldsboro signal systems\signal design\SS - William-Chestnut\William-Chestnut_2008.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 16O

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X20	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	70	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
6A	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y

2 PHASE FULLY ACTUATED (CITY OF GOLDSBORO SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
9. Modify all signal heads to include LED faces.

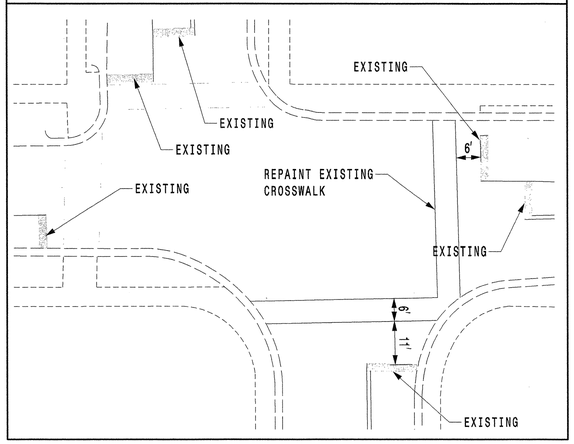
SIGNAL FACE I.D.

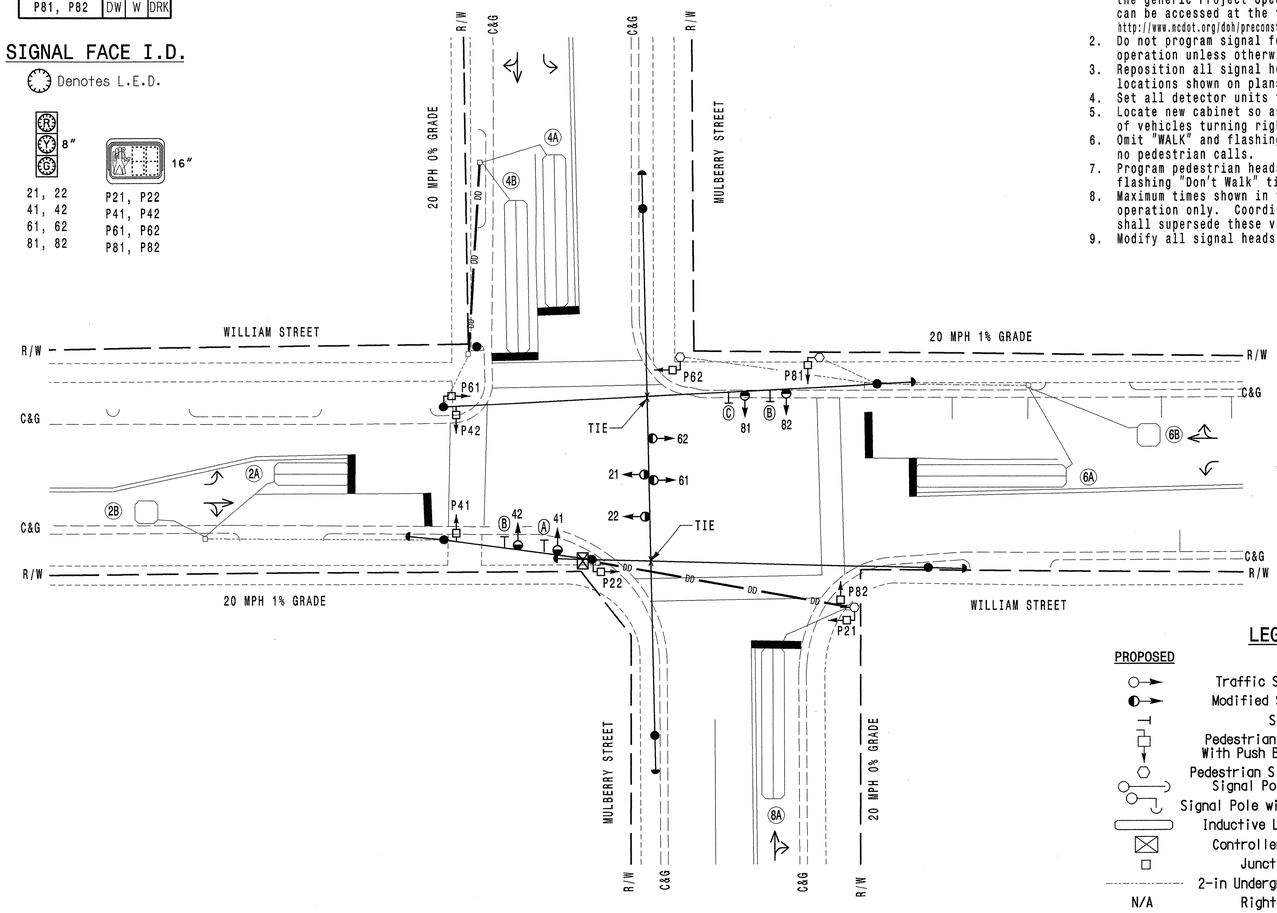
Denotes L.E.D.

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

P21, P22
P41, P42
P61, P62
P81, P82

CROSSWALK LOCATION DIAGRAM





LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Pedestrian Signal Pedestal	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	
Ⓐ	Left Arrow "ONLY" Sign (R3-5L)	Ⓐ
Ⓑ	Combined Through and Right Arrow Sign (R3-6R)	Ⓑ
Ⓒ	No Left Turn Sign (R3-2)	Ⓒ
DD	Directional Drill	N/A

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	3.3	3.1	3.3	2.9
Walk 1 *	7	7	7	7
Don't Walk 1	11	6	10	11
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

* 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 DESIGN

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919)-835-1954

CITY OF GOLDSBORO NORTH CAROLINA

SCALE 0 20' 1"=20'

WILLIAM STREET AT MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008	REVIEWED BY:	
PREPARED BY: SP PENNINGTON	REVIEWED BY: SL PHILLIPS	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/17/09

SIG. INVENTORY NO. C17

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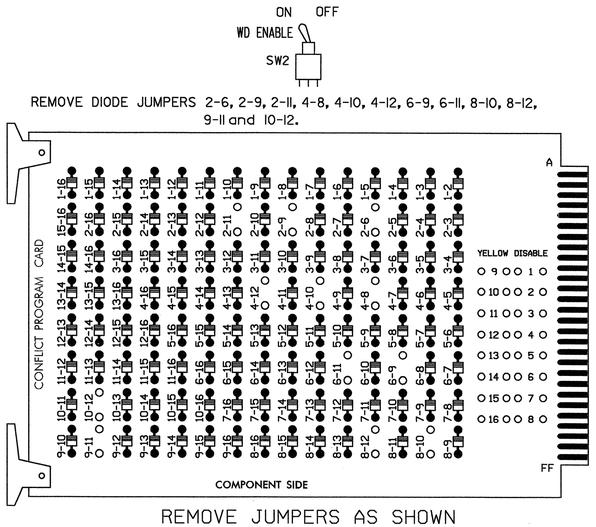
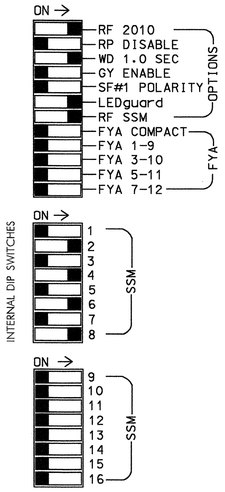
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 16

EDI MODEL 2010ECL-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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	Ø4 4A	SLOT EMPTY	Ø6 6A	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
L		Ø2 2B		Ø4 4B		Ø6 6B		NOT USED				Ø4 PED DC ISOLATOR	Ø8 PED 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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			10
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB22-9,10	I12U	67	29	PED 2	2 PED					
P41,P42	TB24-9,10	I12L	69	31	PED 4	4 PED					
P61,P62	TB22-11,12	I13U	68	30	PED 6	6 PED					
P81,P82	TB24-11,12	I13L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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 1,3,5,7, 9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
7. The cabinet and controller are part of the City of Goldsboro Signal System

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,SP2,S4,SP4,S6,SP6,S8,SP8
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
OVERLAPS.....NONE

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.

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.	NU	21,22	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	P81, P82
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113			104			119			110
🚶			115			106			121			112

NU = Not Used

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C17
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

WILLIAM STREET
AT
MULBERRY STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008 REVIEWED BY:
PREPARED BY: SP PENNINGTON REVIEWED BY: SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/20/09
SIG. INVENTORY NO. C17

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1494

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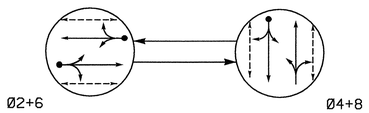
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig. 162

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø2+6	PHASE Ø4+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	5	Y	2	Y	Y	-	-	-	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	Y	Y
6A	6X6	70	5	Y	6	Y	Y	-	-	-	Y	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	Y	Y

2 PHASE
FULLY ACTUATED
(CITY OF GOLDSBORO SIGNAL SYSTEM)

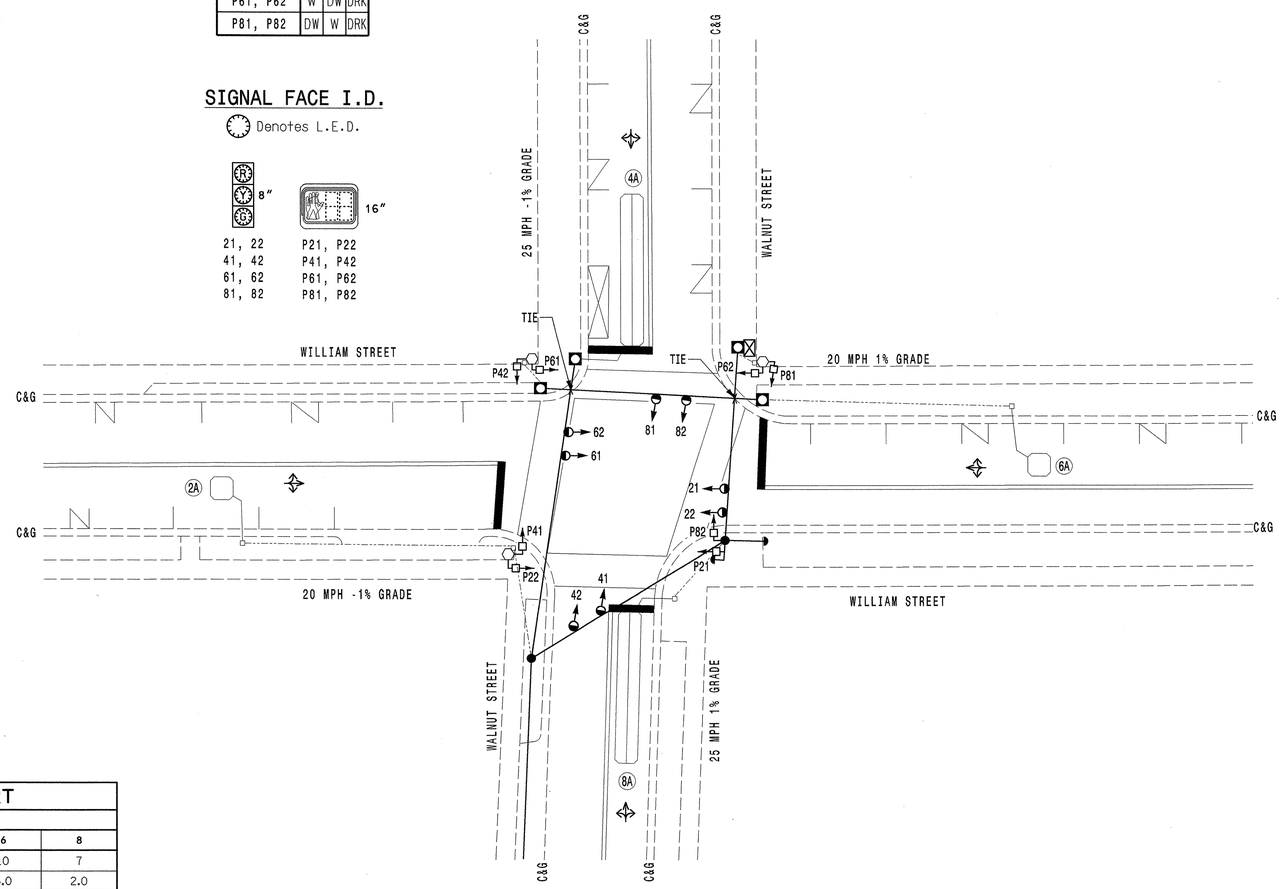
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006, "Standard Specifications for Roads and Structures" dated July 2006, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: http://www.ncdot.org/doh/preconstruct/traffic/itss/
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition all signal heads as necessary to reflect locations shown on plans.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
10. Modify all existing signal heads to include LED faces.

SIGNAL FACE I.D.

Denotes L.E.D.

21, 22	P21, P22
41, 42	P41, P42
61, 62	P61, P62
81, 82	P81, P82



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Pedestrian Signal Pedestal	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Metal Strain Pole	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
	Pavement Marking Arrow	

2070L TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	40	25	40	25
Yellow Clearance	3.0	3.2	3.0	3.1
Red Clearance	1.8	1.7	1.9	1.7
Walk 1 *	7	7	7	7
Don't Walk 1	6	9	9	9
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

* 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 DESIGN

PLANS PREPARED IN THE OFFICE OF:
Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1494

CITY OF GOLDSBORO · NORTH CAROLINA

SCALE 0 20' 1"=20'

WILLIAM STREET AT WALNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE:	AUGUST 2008	REVIEWED BY:	
PREPARED BY:	SP PENNINGTON	REVIEWED BY:	SL PHILLIPS

REVISIONS	INIT.	DATE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE SLP DATE 2/20/09

SIG. INVENTORY NO. C18

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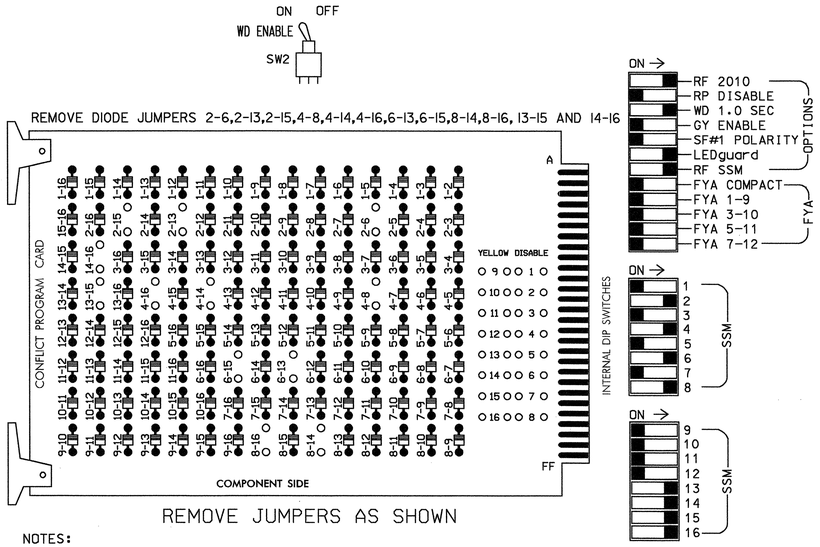
PROJECT REFERENCE NO.	SHEET NO.
U-5016	Sig.163

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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. Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	SLOT EMPTY	Ø2 2A	SLOT EMPTY	Ø4 4A	SLOT EMPTY	Ø6 6A	SLOT EMPTY	Ø8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
L		NOT USED		NOT USED		NOT USED		NOT USED				Ø4 PED DC ISOLATOR	Ø8 PED 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.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			3
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			3
PED PUSH BUTTONS											
P21,P22	TB22-9,10	I12U	67	29	PED 2	2 PED					
P41,P42	TB24-9,10	I12L	69	31	PED 4	4 PED					
P61,P62	TB22-11,12	I13U	68	30	PED 6	6 PED					
P81,P82	TB24-11,12	I13L	70	32	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: I2L
FILE I
SLOT 2
LOWER

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. 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.
3. Program phases 2 and 6, on the controller unit, for Start Up In Green.
4. Enable Simultaneous Gap-Out, on the controller unit, for all phases.
5. Program phases 4 and 8, on the controller unit, for Dual Entry.
6. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
7. The cabinet and controller are part of the City of Goldsboro Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINET.....CONTRACTOR SUPPLIED 336
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P,S8,S8P
PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED
OVERLAPS.....NONE

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.	NU	21,22	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	P81, P82
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
✋			113			104			119			110
🚶			115			106			121			112

NU = Not Used

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: C18
DESIGNED: AUGUST 2008
SEALED: 02-20-2009
REVISED: N/A

SIGNAL UPGRADE

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF GOLDSBORO NORTH CAROLINA

PLANS PREPARED IN THE OFFICE OF:

Kimley-Horn and Associates, Inc.
Suite 600
333 Fayetteville Street
Raleigh, NC 27601
(919) 835-1454

WILLIAM STREET AT WALNUT STREET

WAYNE COUNTY GOLDSBORO

PLAN DATE: AUGUST 2008		REVIEWED BY:	
PREPARED BY: SP PENNINGTON		REVIEWED BY:	SL PHILLIPS
REVISIONS		INIT.	DATE

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032607 ENGINEER STACIE L. PHILLIPS

SIGNATURE DATE 2/20/09

SIG. INVENTORY NO. C18

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