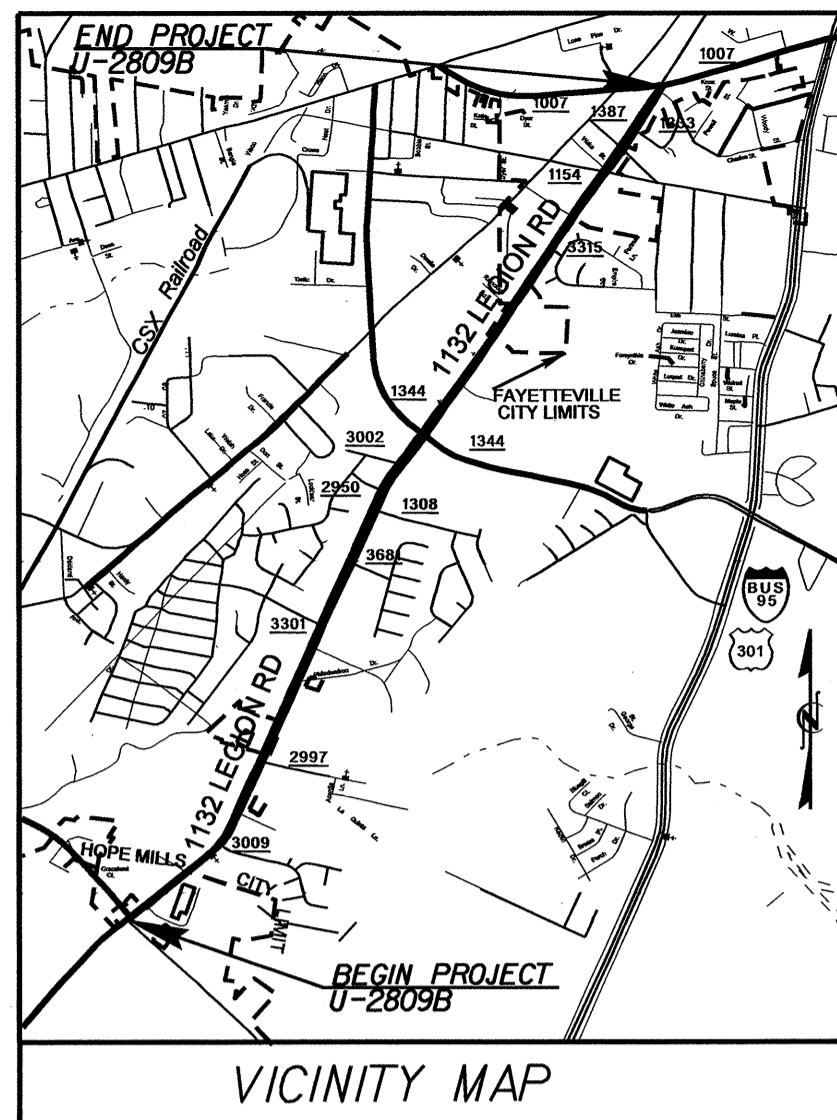
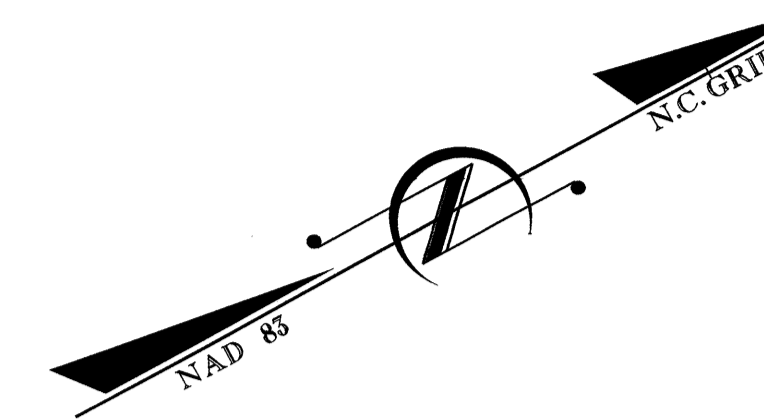


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

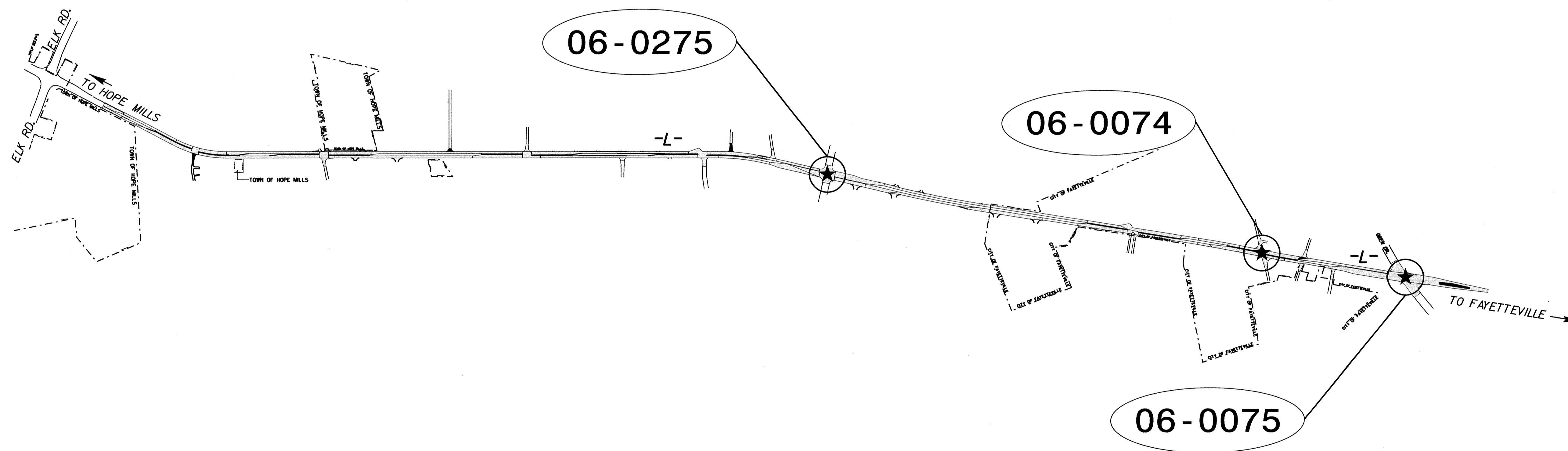
CUMBERLAND COUNTY

**LOCATION: SR 1132 (LEGION RD) FROM SR 1363 (ELK RD)
TO SR 1007 (OWEN DR) IN FAYETTEVILLE**

TYPE OF WORK: TRAFFIC SIGNALS.



TIP: U-2809B



Refer to Roadway Standard Drawings
NCDOT" dated January, 2012 and
"Standard Specifications for Roads
and Structures" dated January, 2012.

Index of Plans

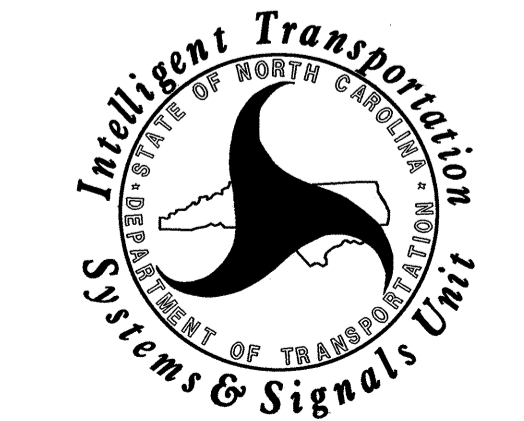
Sheet #	Reference #	Location/Description
06-0275	06-0275	SR 1344 (Black & Decker Road/Mid Pine Road) at SR 1132 (Legion Road)
06-0074	06-0074	SR 1132 (Legion Road/Southern Avenue) at SR 1154 (West Mountain Drive)
06-0075	06-0075	SR 1007 (Owen Drive) at SR 1132 (Legion Road/Southern Avenue)
	N/A	Communication and Conduit Routing Plans
	N/A	Metal Poles Typicals

Intelligent Transportation And Signals Unit

Contacts:

Jason P. Galloway, PE - East Region Signal Project Engineer
George C. Brown, PE - Signal Equipment Design Engineer
Greg Fuller, PE - State ITS and Signals Engineer

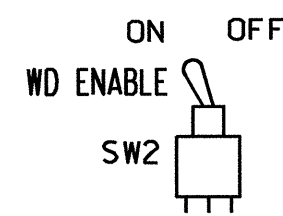
Prepared In the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY
DIVISION



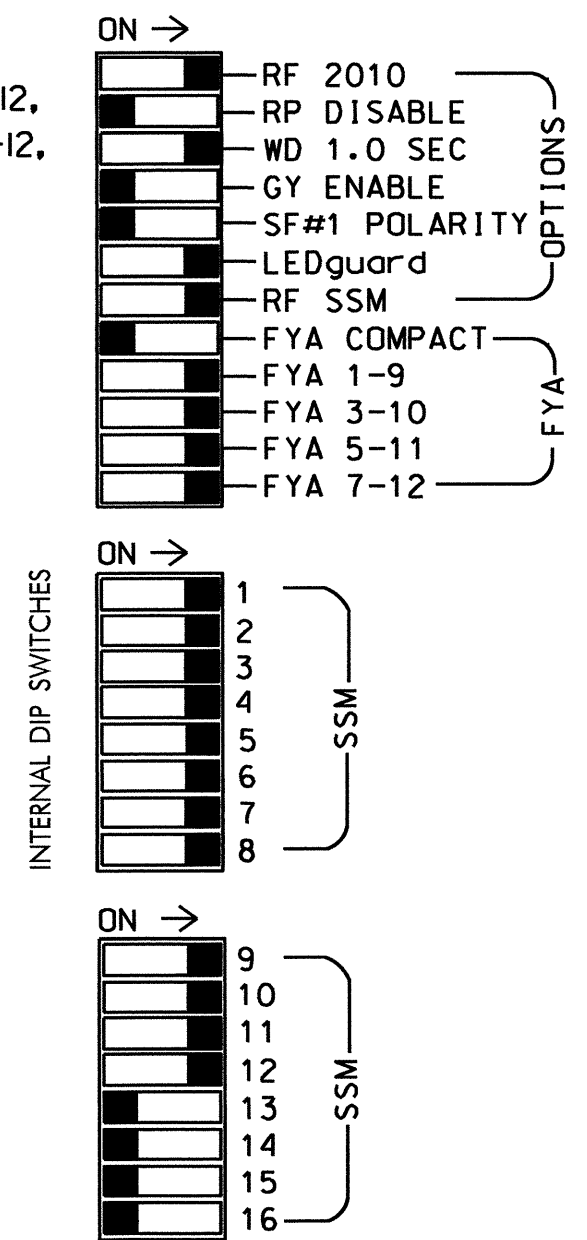
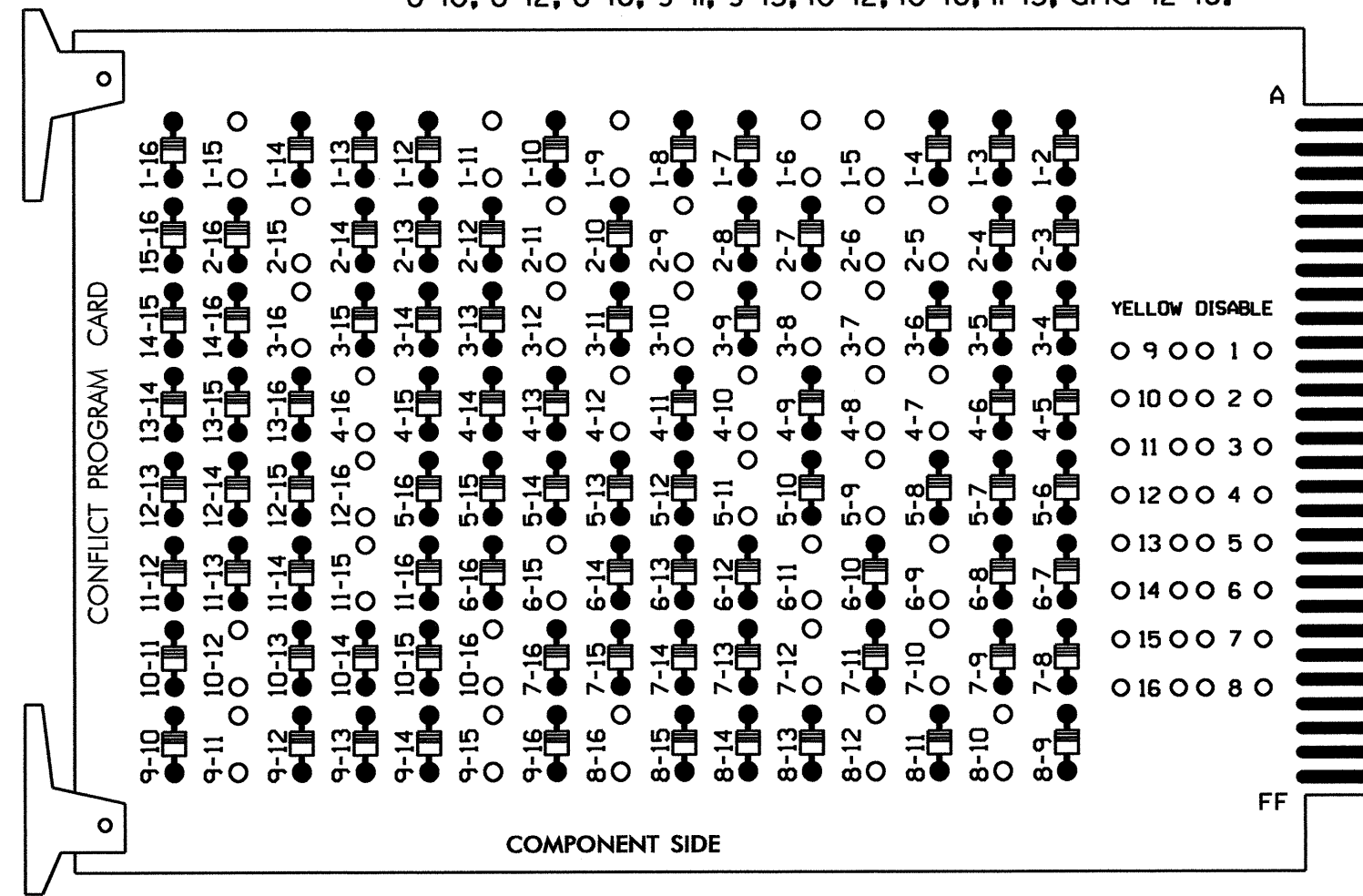
04 JUN 2012 14:42 R:\p\off\c\signals\Design\T\1\sheet\U2809B_r.dwg tsh.dgn

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-16, 5-9, 5-11, 6-9, 6-11, 6-15, 7-10, 7-12, 8-10, 8-12, 8-16, 9-11, 9-15, 10-12, 10-16, 11-5, and 12-16.



■ = DENOTES POSITION OF SWITCH

NOTES:

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

REMOVE JUMPERS AS SHOWN

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 13,14, 15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial.
- Program phases 2, 4, 6, and 8 for Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- The cabinet and controller are part of the SR 1344 (Black & Decker Road) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S6P,S7,S8,S8P,
 S9,S10,S12,S13
 PHASES USED.....1,2,3,4,5,6,6 PED,7,8,8 PED
 OVERLAP "A".....1+2
 OVERLAP "B".....3+4
 OVERLAP "C".....5+6
 OVERLAP "D".....7+8

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	82	21,22	22	31	41,42	42	51	61,62	62	71	81,82	P81, P82	11	31	51	71	NU	
RED	*	128		*	101		*	134		*	107								
YELLOW		129			102			135			108								
GREEN		130			103			136			109								
RED ARROW																A121	A124	A114	A101
YELLOW ARROW		126		117			132			123						A122	A125	A115	A102
FLASHING YELLOW ARROW																A123	A126	A116	A103
GREEN ARROW	127	127		118	118		133	133		124	124								
WALK									119									110	
WALK									121										112

NU = Not Used

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

★ See pictorial of head wiring in detail below.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 2	S	∅ 3	∅ 4	∅ 4	∅ 4	S	S	S	S	S	∅ 6 PED	FS
L	NOT USED	∅ 2	∅ 2	NOT USED	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 8 PED	ST
U	∅ 5	∅ 6	S	∅ 7	∅ 8	∅ 8	∅ 8	S	S	S	S	S	S	S
L	NOT USED	∅ 6	∅ 6	NOT USED	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8

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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

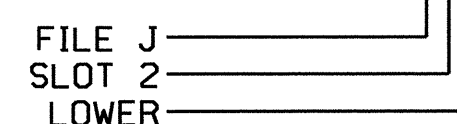
INPUT FILE CONNECTION & PROGRAMMING CHART

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
2A	TB2-5,6	J4U	48	10	26	6	Y	Y	Y		3
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A ²	TB4-5,6	I5U	58	20	3	3	Y	Y			15
4A	TB4-9,10	J8U	50	12	28	8	Y	Y			3
4B	TB4-11,12	I6U	41	3	4	4					
4C	TB6-1,2	I7U	65	27	34	4	Y	Y	Y	2.0	5
4D	TB6-3,4	I7L	78	40	44	4	Y	Y			15
5A ³	TB3-1,2	J1U	55	17	5	5	Y	Y			15
6A	TB3-5,6	I4U	47	9	22	2	Y	Y	Y		3
6B	TB3-7,8	J2U	40	2	6	6	Y	Y			
7A ⁴	TB5-5,6	J5U	57	19	7	7	Y	Y			15
8A	TB5-9,10	I8U	49	11	24	4	Y	Y			3
8B	TB5-11,12	J6U	42	4	8	8					
8C	TB7-1,2	J7U	66	28	38	8	Y	Y	Y	2.0	5
8D	TB7-3,4	J7L	79	41	48	8	Y	Y			15
PED PUSH BUTTONS											
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 ISOLATOR IN INPUT FILE SLOT I13.

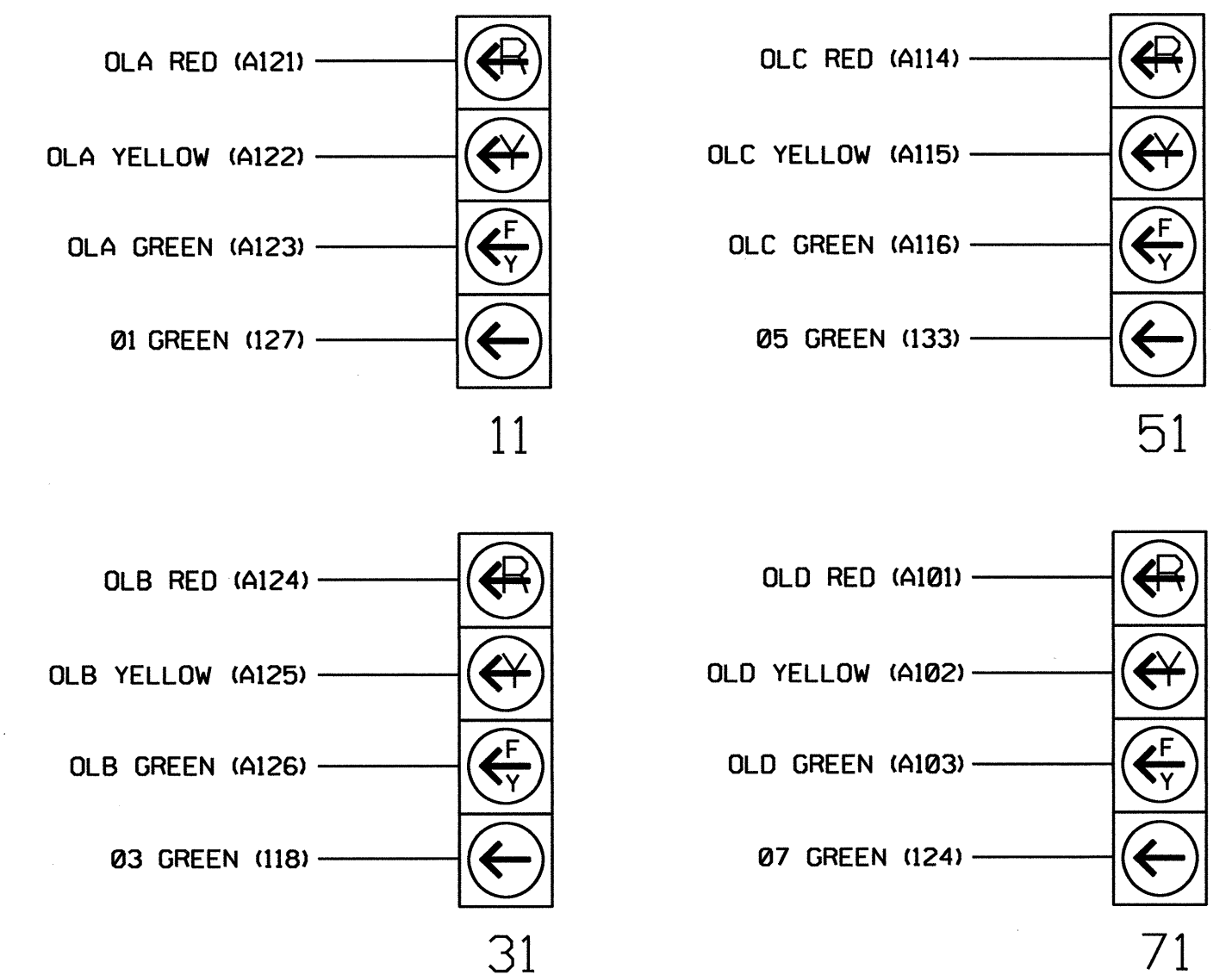
- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11, 31, 51, and 71 requires special logic programming. See sheet 2 of 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0275T1
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

Electrical Detail - Temp 1 - Sheet 1 of 2

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1344 (Black & Decker Road/ Mid Pine Road) at SR 1132 (Legion Road)

Division 6 Cumberland County Fayetteville

PLANNED: May 2012 REVIEWED BY: T. J. ...

PREPARED BY: C. Strickland REVIEWED BY: ...

REVISIONS: _____ INIT. DATE

DATE: 5/16/12

SIGNATURE: _____

SIG. INVENTORY NO. 06-0275T1

SEAL

PROFESSIONAL ENGINEER

022013

GEORGE C. BROWN

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(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 ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, AND 12.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
AND RED CLEAR ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #50 ON
SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #7 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON
AND RED CLEAR ON PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #47 ON
SET OUTPUT ASSIGNMENT #48 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 4 TO PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #8 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #49 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #9 (+/-COMMAND#)
IF YELLOW ON PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #48 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #10 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON
AND RED CLEAR ON PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #39 ON
SET OUTPUT ASSIGNMENT #40 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

LOGICAL I/O COMMAND #11 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71).

LOGICAL I/O COMMAND #12 (+/-COMMAND#)
IF YELLOW ON PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #40 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

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

PRESS '+'

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
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 X 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
RED CLEAR (0=PARENT.0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

PRESS '+'

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
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 X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT.3-25.5 SEC)...0
RED CLEAR (0=PARENT.0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

PRESS '+'

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE: 12345678910111213141516
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 X 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
RED CLEAR (0=PARENT.0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

PRESS '+'

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

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.

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

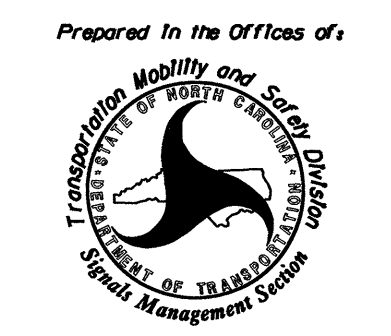
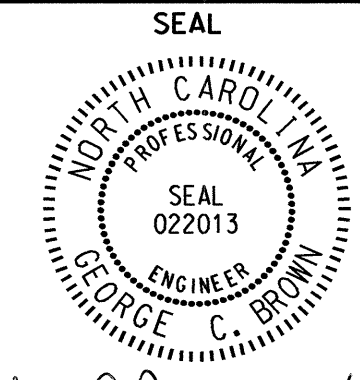
OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

- OUTPUT 39 = Overlap D Red
- OUTPUT 40 = Overlap D Yellow
- OUTPUT 41 = Overlap D Green
- OUTPUT 42 = Overlap C Red
- OUTPUT 43 = Overlap C Yellow
- OUTPUT 44 = Overlap C Green
- OUTPUT 47 = Overlap B Red
- OUTPUT 48 = Overlap B Yellow
- OUTPUT 49 = Overlap B Green
- OUTPUT 50 = Overlap A Red
- OUTPUT 51 = Overlap A Yellow
- OUTPUT 52 = Overlap A Green

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-027511
DESIGNED: March 2012
SEALED: 05/11/12
REVISED: N/A

Electrical Detail - Temp 1 - Sheet 2 of 2

	<p>SR 1344 (Black & Decker Road / Mid Pine Road) at SR 1132 (Legion Road)</p> <p>Division 6 Cumberland County Fayetteville</p> <p>PREPARED BY: C. Strickland REVIEWED BY: T. J. J.</p> <p>REVISIONS: INIT. DATE</p>	<p>SEAL</p>  <p>5/16/12</p> <p>SIGNATURE DATE</p> <p>SIG. INVENTORY NO. 06-027511</p>
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8 Phase Fully Actuated SR 1344 (Black & Decker Road) CLS

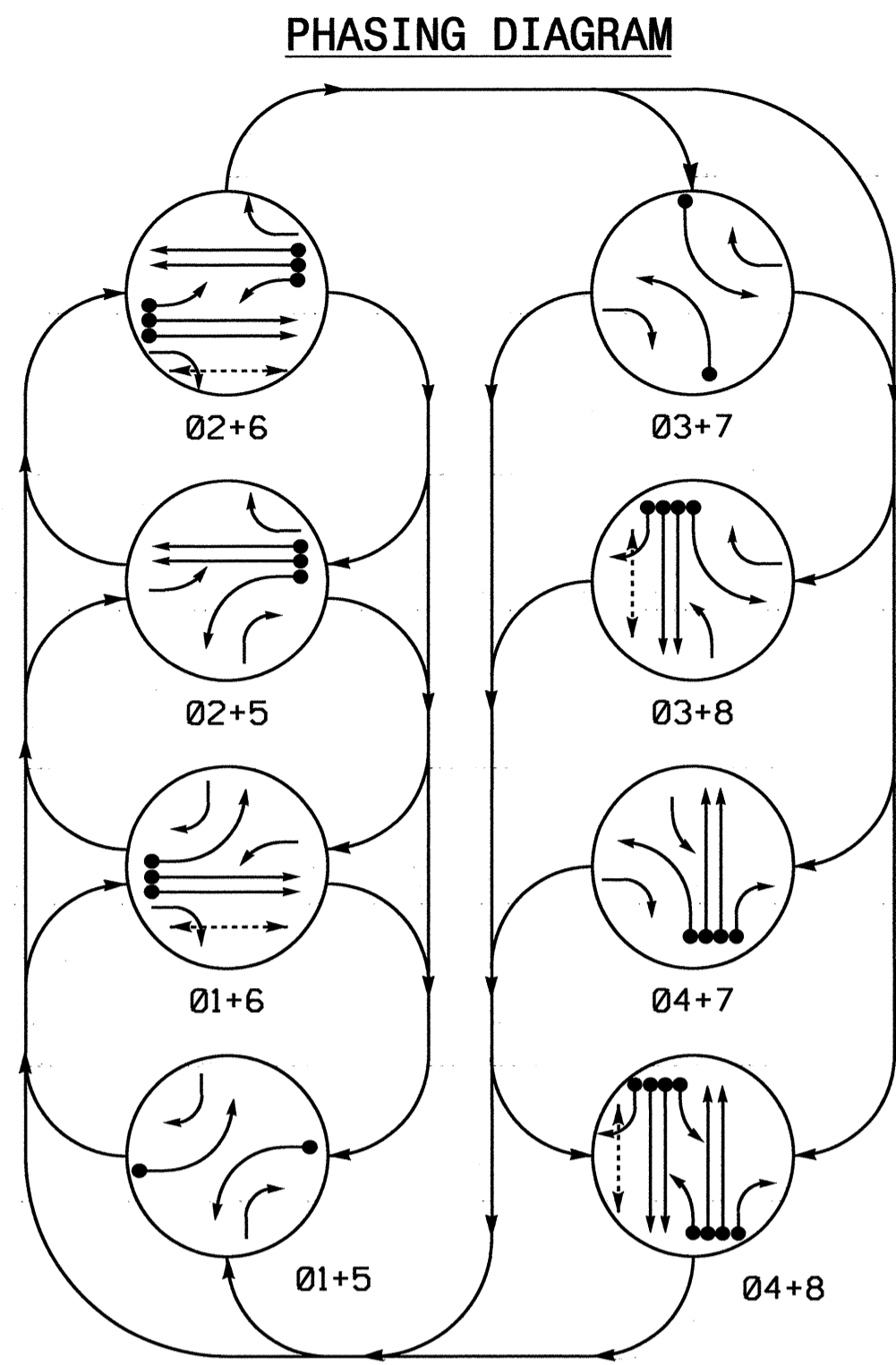
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to count down the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #0275.

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART												
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	-	-
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	15	-	-
4A	6X6	300	5	Y	4	-	-	-	-	-	-	-
4B	6X6	300	5	Y	4	-	-	-	-	-	-	-
4C	6X40	0	2-4-2	Y	4	Y	Y	Y	2.0	5	-	-
4D	6X40	0	2-4-2	Y	4	Y	Y	Y	2.0	5	-	-
4E	6X40	0	2-4-2	Y	4	Y	Y	-	-	15	-	-
5A	6X60	0	2-4-2	Y	5	Y	Y	-	-	15	-	-
6A	6X6	300	4	-	6	Y	Y	-	-	-	-	-
6B	6X6	300	4	-	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	15	-	-
8A	6X6	300	5	Y	8	-	Y	-	-	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5	-	-
8C	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5	-	-
8D	6X40	0	2-4-2	Y	8	Y	Y	-	-	15	-	-

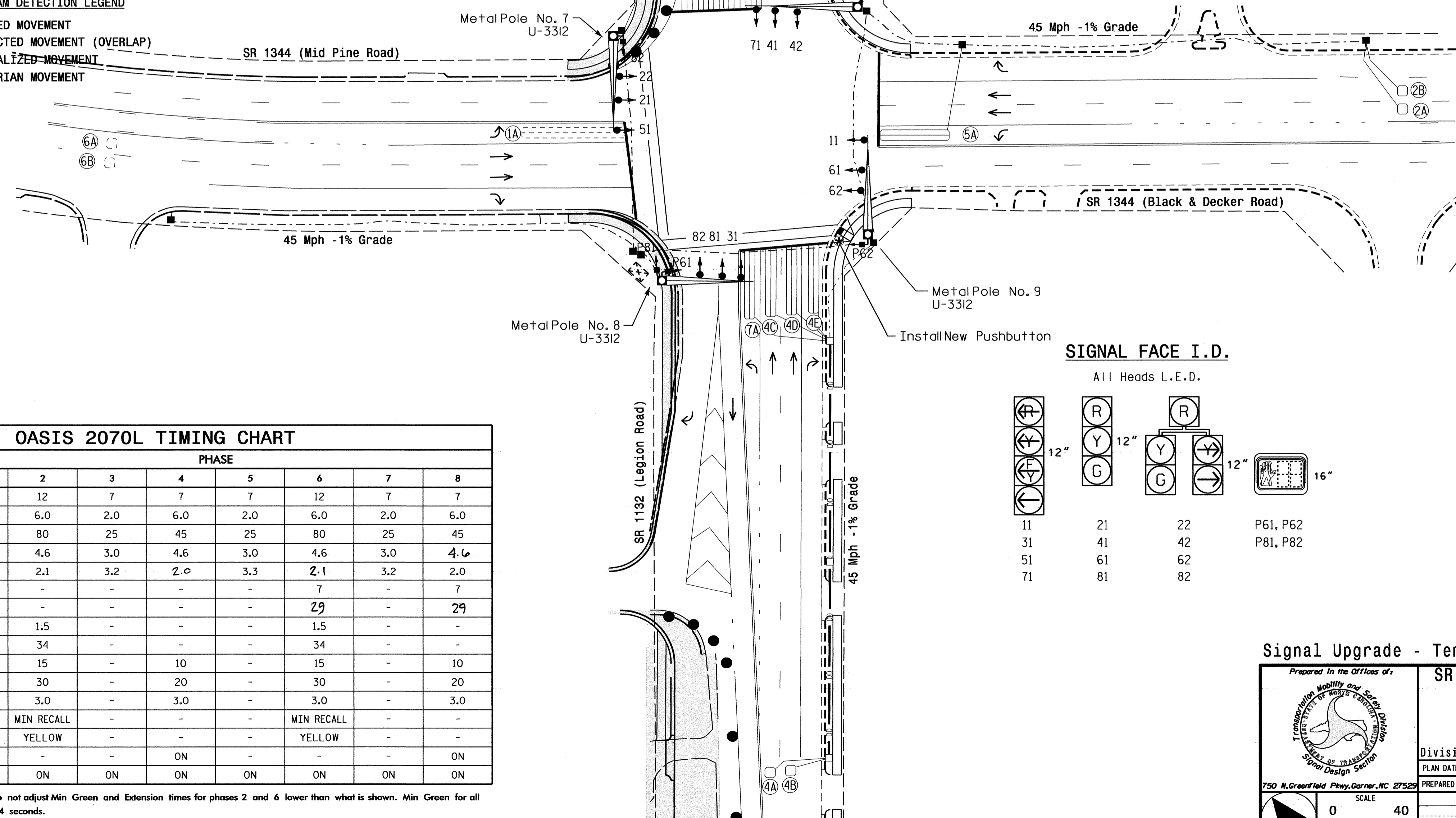
SIGNAL FACE	PHASE								FLASH
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	
11	-	-	F	F	R	R	R	R	Y
21	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R	R	R	R	Y
31	R	R	R	R	-	-	F	F	R
41	R	R	R	R	R	R	G	G	R
42	R	R	R	R	R	R	G	G	R
51	-	-	F	F	R	R	R	R	Y
61	R	G	R	G	R	R	R	R	Y
62	R	G	R	G	R	R	R	R	Y
71	R	R	R	R	-	-	F	F	R
81	R	R	R	R	R	G	R	G	R
82	R	R	R	R	R	G	R	G	R
P61, P62	DW	W	DW	W	DW	DW	DW	DRK	
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK

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

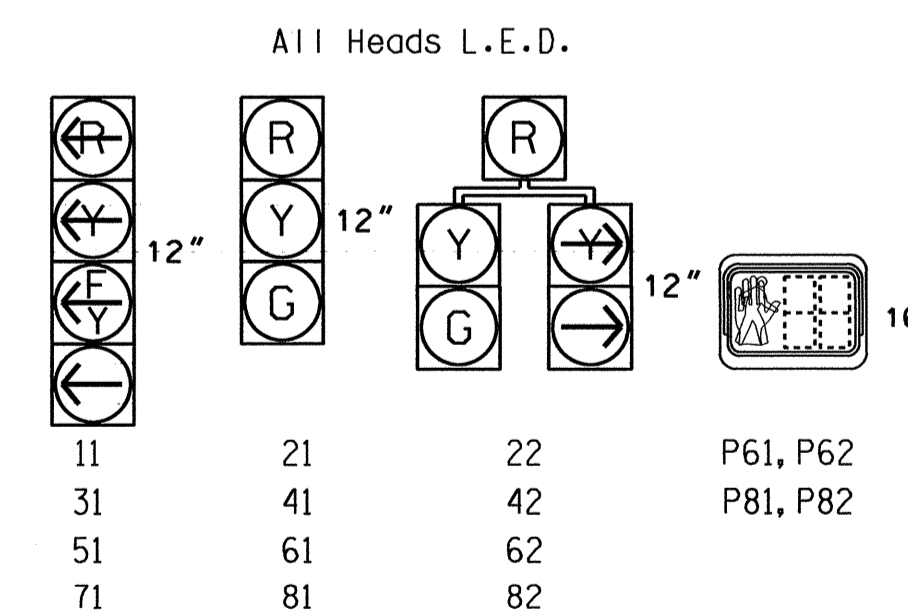


PHASING DIAGRAM DETECTION LEGEND

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



SIGNAL FACE I.D.



PROPOSED		EXISTING	
	Traffic Signal Head		N/A
	Modified Signal Head		N/A
	Sign		N/A
	Pedestrian Signal Head With Push Button & Sign		N/A
	Signal Pole with Guy		N/A
	Signal Pole with Sidewalk Guy		N/A
	Inductive Loop Detector		N/A
	Controller & Cabinet		N/A
	Junction Box		N/A
	2-in Underground Conduit		N/A
	Right of Way		N/A
	Directional Arrow		N/A
	Metal Pole with Mastarm		N/A
	Wheelchair Ramp		N/A
	Construction Zone Drums		N/A
	Type I Pedestal		N/A
	Directional Drill		N/A

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	6.0	2.0	6.0	2.0	6.0	2.0	6.0
Max Green 1*	25	80	25	45	25	80	25	45
Yellow Clearance	3.0	4.6	3.0	4.6	3.0	4.6	3.0	4.6
Red Clearance	3.3	2.1	3.2	2.0	3.3	2.1	3.2	2.0
Walk 1*	-	-	-	-	-	7	-	7
Don't Walk 1	-	-	-	-	-	29	-	29
Seconds Per Actuation*	-	1.5	-	-	-	1.5	-	-
Max Variable Initial*	-	34	-	-	-	34	-	-
Time Before Reduction*	-	15	-	10	-	15	-	10
Time To Reduce*	-	30	-	20	-	30	-	20
Minimum Gap	-	3.0	-	3.0	-	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	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 - Temp 2 Phase II

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1344 (Black & Decker Road / Mid Pine Road) at SR 1132 (Legion Road)

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2012 REVIEWED BY: J. P. Galloway

PREPARED BY: I. O. Umuzurike REVIEWED BY:

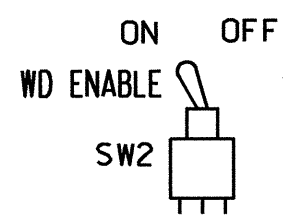
SCALE: 1"=40'

REVISIONS: _____

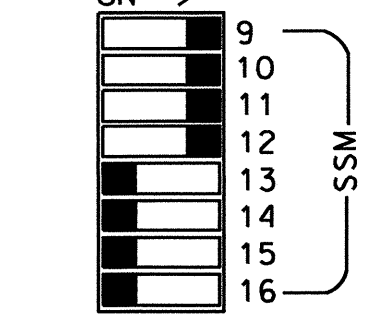
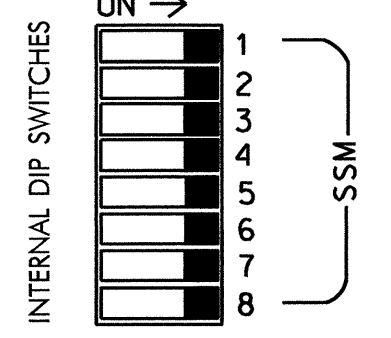
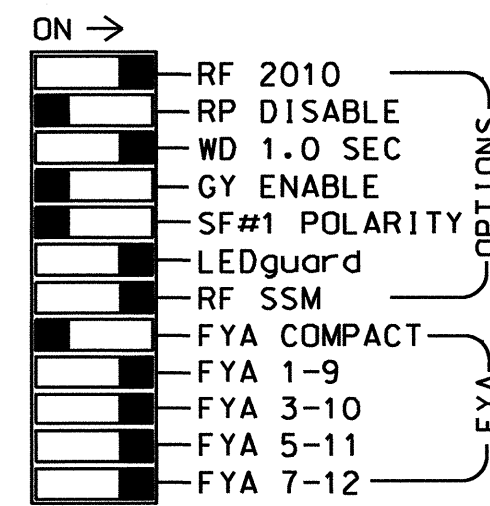
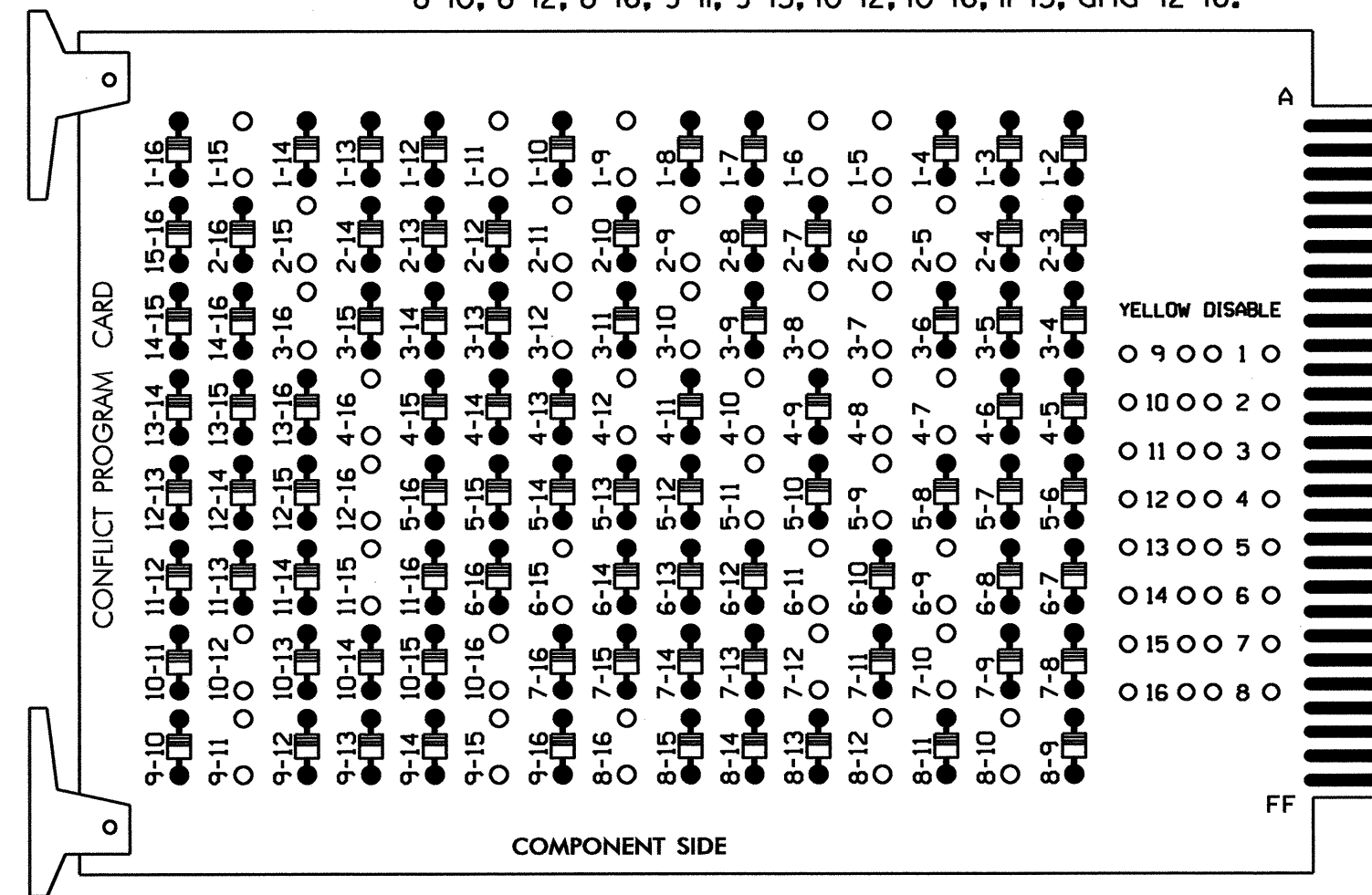
INIT. DATE

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-16, 5-9, 5-11, 6-9, 6-11, 6-15, 7-10, 7-12, 8-10, 8-12, 8-16, 9-11, 9-15, 10-12, 10-16, 11-15, and 12-16.



■ = DENOTES POSITION OF SWITCH

REMOVE JUMPERS AS SHOWN

NOTES:

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

INPUT FILE POSITION LAYOUT

(front view)

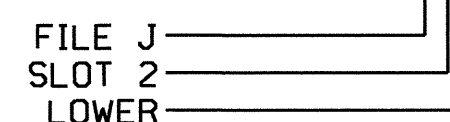
FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1 1A	∅ 2 2A	∅ 3 3A	∅ 4 4A	∅ 4 4C	∅ 4 4E	S S	S S	S S	S S	S S	S S	∅ 6 PED DC ISOLATOR	FS DC ISOLATOR
L	NOT USED	∅ 2 2B	∅ 3 3B	∅ 4 4B	∅ 4 4D	NOT USED	S S	S S	S S	S S	S S	S S	∅ 8 PED DC ISOLATOR	ST DC ISOLATOR
U	∅ 5 5A	∅ 6 6A	∅ 7 7A	∅ 8 8A	∅ 8 8C	∅ 8 8D	S S	S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

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

FS = FLASH SENSE
ST = STOP TIME

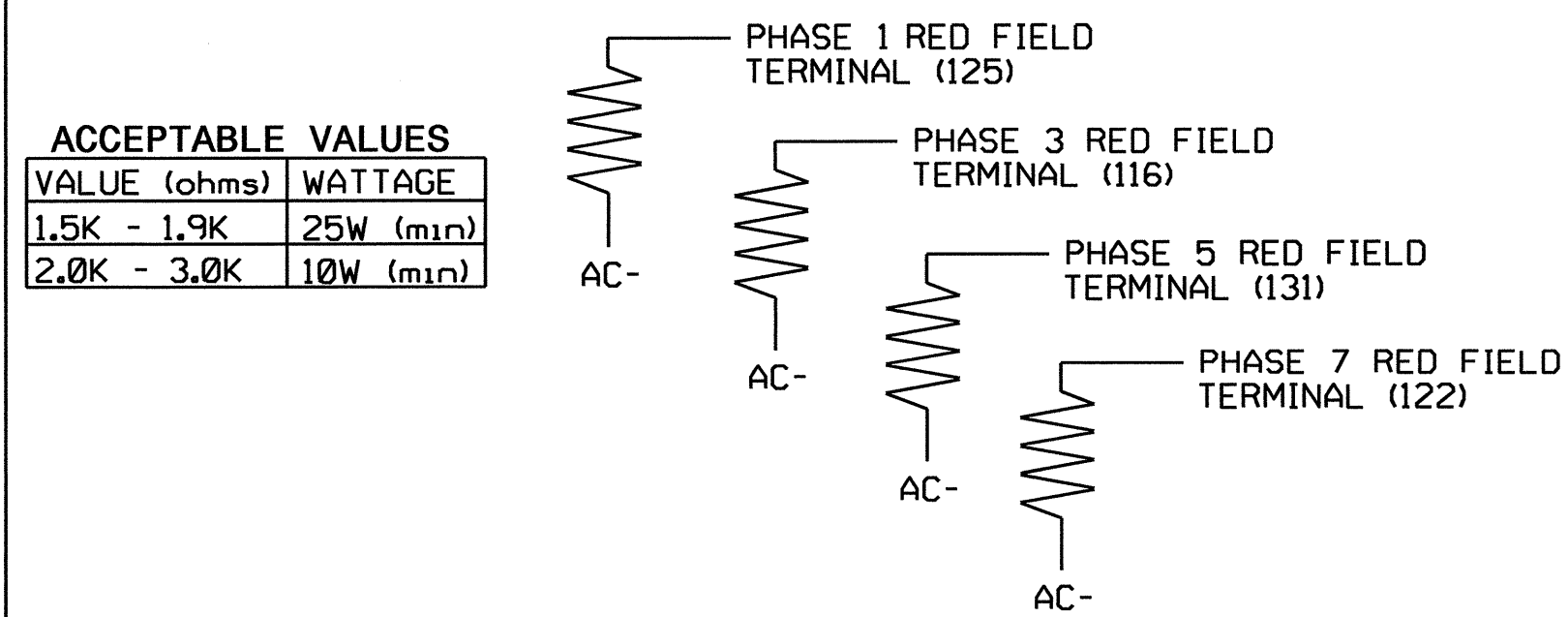
⊗ Wired Input - Do not populate slot with detector card

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 13,14, 15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial.
- Program phases 2, 4, 6, and 8 for Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- The cabinet and controller are part of the SR 1344 (Black & Decker Road) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S6P,S7,S8,S8P,
 S9,S10,S12,S13
 PHASES USED.....1,2,3,4,5,6,6 PED,7,8,8 PED
 OVERLAP "A".....1+2
 OVERLAP "B".....3+4
 OVERLAP "C".....5+6
 OVERLAP "D".....7+8

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
2A	TB2-5,6	J4U	48	10	26	6	Y	Y	Y		3
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A ²	TB4-5,6	I5U	58	20	3	3	Y	Y			15
4A	TB4-9,10	J8U	50	12	28	8	Y	Y			3
4B	TB4-11,12	I6U	41	3	4	4		Y			
4C	TB6-1,2	I7U	65	27	34	4	Y	Y	Y	2.0	5
4D	TB6-3,4	I7L	78	40	44	4	Y	Y	Y	2.0	5
4E	TB6-9,10	I9U	60	22	11	4	Y	Y			15
5A ³	TB3-1,2	J1U	55	17	5	5	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			3
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A ⁴	TB5-5,6	J5U	57	19	7	7	Y	Y			15
8A	TB5-9,10	J6U	42	4	8	8		Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y	Y	2.0	5
8C	TB7-1,2	J7U	66	28	38	8	Y	Y	Y	2.0	5
8D	TB7-3,4	J7L	79	41	48	8	Y	Y			15
PED PUSH BUTTONS											
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

NOTE: INSTALL DC ISOLATOR IN INPUT FILE SLOT I13.

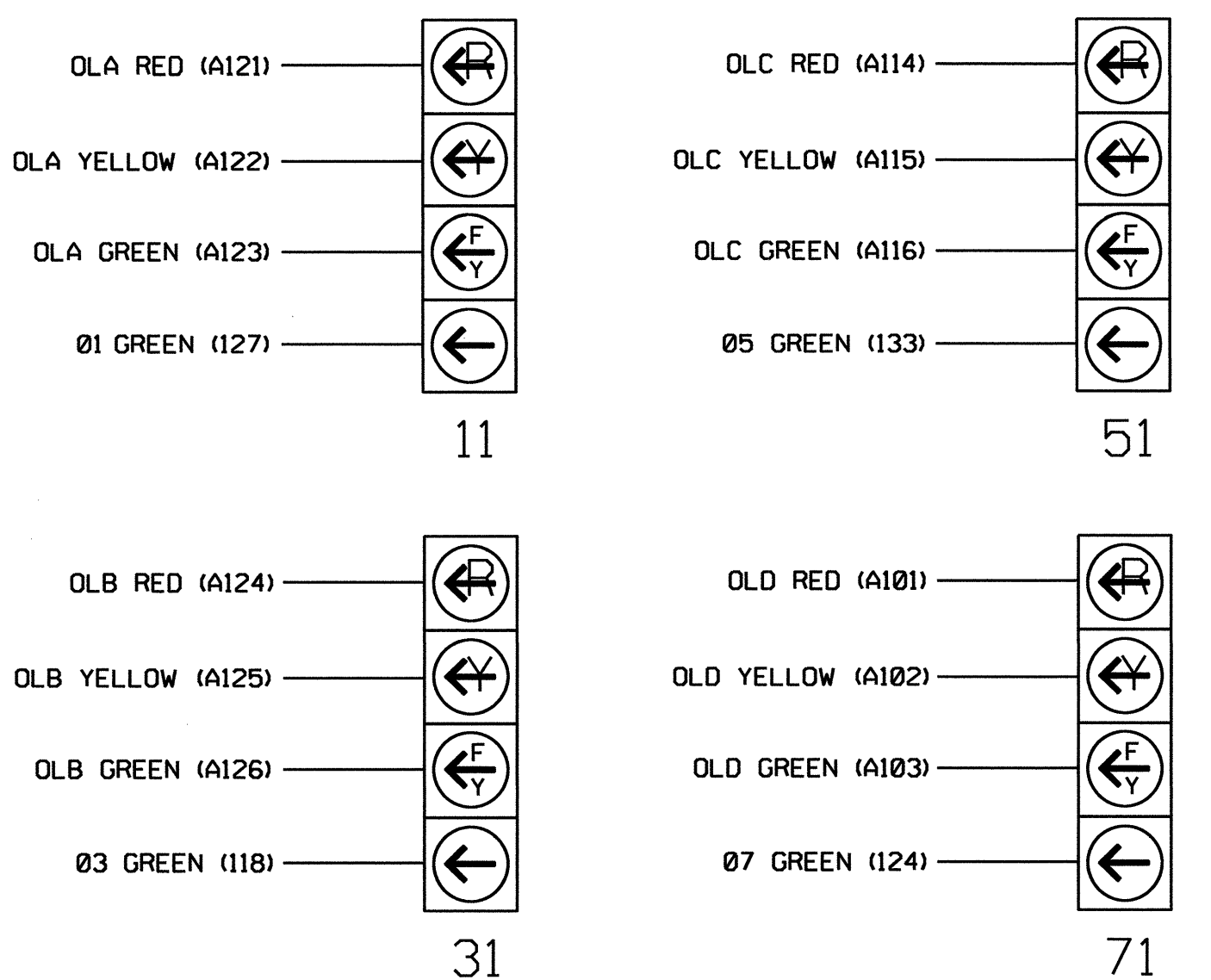
SIGNAL HEAD HOOK-UP CHART

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	82	21,22	22	31	41,42	42	51	61,62	62	71	81,82	P81, P82	11	31	51	71	NU
RED	*	128		*	101		*	134		*	107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW														A121	A124	A114	A101	
YELLOW ARROW		126		117			132			123				A122	A125	A115	A102	
FLASHING YELLOW ARROW														A123	A126	A116	A103	
GREEN ARROW	127	127		118	118		133	133		124	124							
Hand										119								
Person																		112

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail below.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11, 31, 51, and 71 requires special logic programming. See sheet 2 of 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0275T2
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

Electrical Detail - Temp 2 - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 1344 (Black & Decker Road/ Mid Pine Road) at SR 1132 (Legion Road)	SEAL
Prepared In the Offices of:	Division 6 Cumberland County Fayetteville	SEAL
PLANNING	PLANNING DATE: May 2012	SEAL
DESIGN	DESIGNER: C. Strickland	SEAL
REVISIONS	REVIEWED BY: T. J. [Signature]	SEAL
DATE	INITIALS	DATE

750 N. Greenfield Pkwy, Garner, NC 27529

14-MAY-2012 13:57
 S:\1344\1344_15_S1\signal\wkg\kyp\cupss\sig Mon#5\Fr\tdt and#60275_sm.e lb. xxx.dgn

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. AND 12.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
 IF ACTIVE PHASE #1 IS ON
 AND RED CLEAR ON PHASE #1 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #50 ON
 SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
 IF ACTIVE PHASE #1 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
 IF YELLOW ON PHASE #1 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
 IF ACTIVE PHASE #5 IS ON
 AND RED CLEAR ON PHASE #5 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #42 ON
 SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
 IF ACTIVE PHASE #5 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
 IF YELLOW ON PHASE #5 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #7 (+/-COMMAND#)
 IF ACTIVE PHASE #3 IS ON
 AND RED CLEAR ON PHASE #3 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #47 ON
 SET OUTPUT ASSIGNMENT #48 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 4 TO PHASE 4 (HEAD 31).

LOGICAL I/O COMMAND #8 (+/-COMMAND#)
 IF ACTIVE PHASE #3 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #49 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #9 (+/-COMMAND#)
 IF YELLOW ON PHASE #3 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #48 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #10 (+/-COMMAND#)
 IF ACTIVE PHASE #7 IS ON
 AND RED CLEAR ON PHASE #7 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #39 ON
 SET OUTPUT ASSIGNMENT #40 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

LOGICAL I/O COMMAND #11 (+/-COMMAND#)
 IF ACTIVE PHASE #7 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71).

LOGICAL I/O COMMAND #12 (+/-COMMAND#)
 IF YELLOW ON PHASE #7 IS ON

↓
 SCROLL DOWN

THEN:
 SET OUTPUT ASSIGNMENT #40 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE: 12345678910111213141516
 VEH OVL PARENTS: XX
 VEH OVL NOT VEH: XX
 VEH OVL NOT PED: XX
 VEH OVL GRN EXT: XX
 STARTUP COLOR: - RED - YELLOW - GREEN
 FLASH COLORS: - RED - YELLOW X GREEN
 SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
 FLASH YELLOW IN CONTROLLER FLASH?...Y
 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

NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
 PHASE: 12345678910111213141516
 VEH OVL PARENTS: XX
 VEH OVL NOT VEH: XX
 VEH OVL NOT PED: XX
 VEH OVL GRN EXT: XX
 STARTUP COLOR: - RED - YELLOW - GREEN
 FLASH COLORS: - RED - YELLOW X GREEN
 SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
 FLASH YELLOW IN CONTROLLER FLASH?...Y
 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

NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE: 12345678910111213141516
 VEH OVL PARENTS: XX
 VEH OVL NOT VEH: XX
 VEH OVL NOT PED: XX
 VEH OVL GRN EXT: XX
 STARTUP COLOR: - RED - YELLOW - GREEN
 FLASH COLORS: - RED - YELLOW X GREEN
 SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
 FLASH YELLOW IN CONTROLLER FLASH?...Y
 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

NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
 PHASE: 12345678910111213141516
 VEH OVL PARENTS: XX
 VEH OVL NOT VEH: XX
 VEH OVL NOT PED: XX
 VEH OVL GRN EXT: XX
 STARTUP COLOR: - RED - YELLOW - GREEN
 FLASH COLORS: - RED - YELLOW X GREEN
 SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
 FLASH YELLOW IN CONTROLLER FLASH?...Y
 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

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

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.

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

- OUTPUT 39 = Overlap D Red
- OUTPUT 40 = Overlap D Yellow
- OUTPUT 41 = Overlap D Green
- OUTPUT 42 = Overlap C Red
- OUTPUT 43 = Overlap C Yellow
- OUTPUT 44 = Overlap C Green
- OUTPUT 47 = Overlap B Red
- OUTPUT 48 = Overlap B Yellow
- OUTPUT 49 = Overlap B Green
- OUTPUT 50 = Overlap A Red
- OUTPUT 51 = Overlap A Yellow
- OUTPUT 52 = Overlap A Green

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0275T2
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

Electrical Detail - Temp 2 - Sheet 2 of 2

	Electrical AND PROGRAMMING DETAILS FOR:		SR 1344 (Black & Decker Road/ Mid Pine Road) at SR 1132 (Legion Road)	
	Prepared In the Offices of: 		Division 6 Cumberland County Fayetteville	
	PLAN DATE: May 2012	REVIEWED BY: T. J. J.	PREPARED BY: C. Strickland	REVIEWED BY:
	REVISIONS	INIT.	DATE	SIGNATURE: <i>George C. Brown</i> DATE:

PHASING DIAGRAM

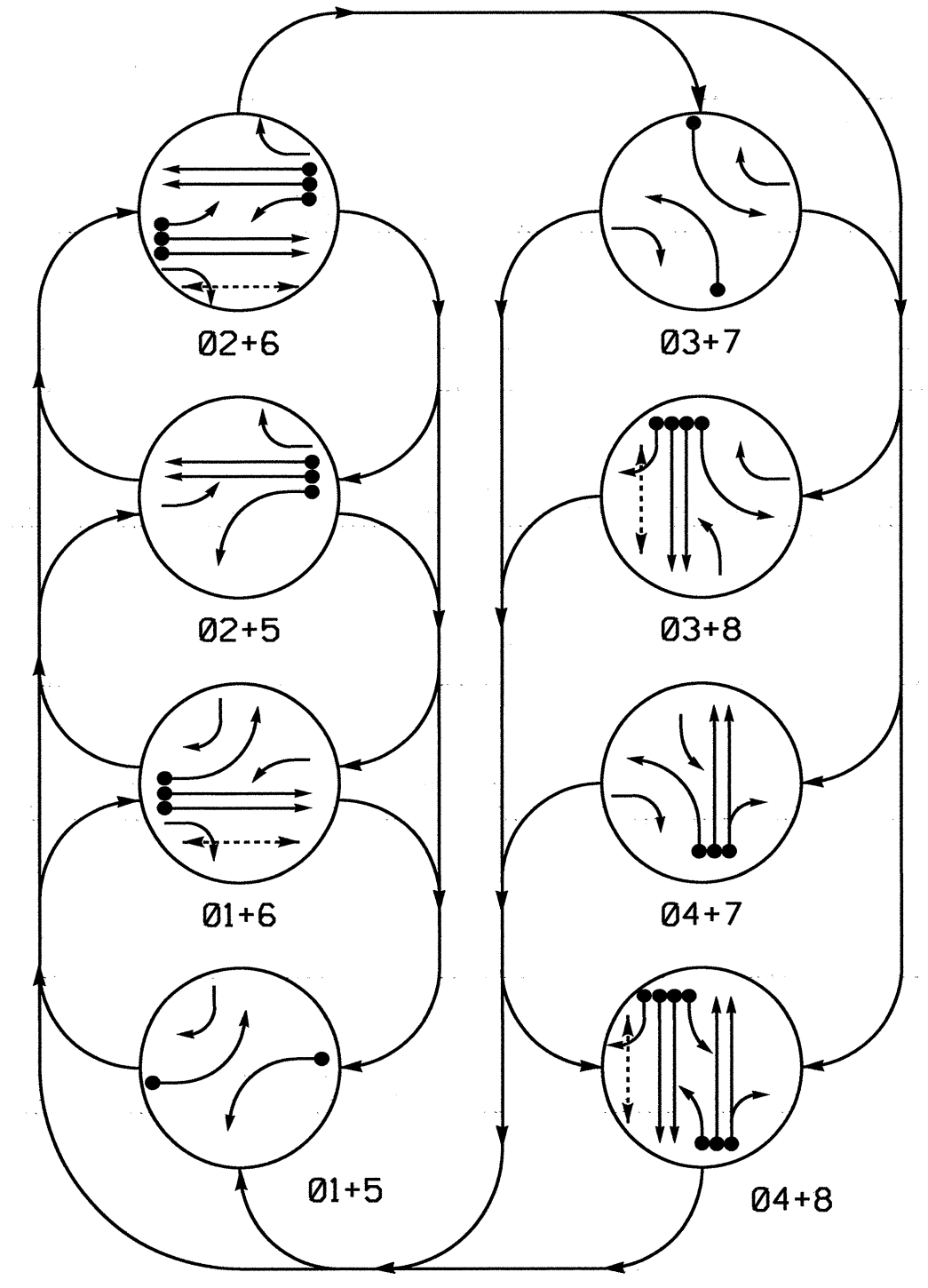


TABLE OF OPERATION

SIGNAL FACE	PHASE								FLASH
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	
11	-	-	F	F	R	R	R	R	Y
21	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R	R	R	R	Y
32	R	R	R	R	-	-	F	F	R
41,42	R	R	R	R	R	R	G	G	R
51	-	F	-	F	R	R	R	R	Y
61	R	G	R	G	R	R	R	R	Y
62	R	G	R	G	R	R	R	R	Y
71	R	R	R	R	-	-	F	F	R
81	R	R	R	R	R	G	G	R	
82	R	R	R	R	R	G	G	R	
P61, P62	DW	W	DW	W	DW	DW	DW	DRK	
P81, P82	DW	DW	DW	DW	DW	W	DW	DRK	

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

PHASING DIAGRAM DETECTION LEGEND

- ← ● DETECTED MOVEMENT
- ← ○ UNDETECTED MOVEMENT (OVERLAP)
- - - UNSIGNALIZED MOVEMENT
- - - PEDESTRIAN MOVEMENT

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	-
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	-
2A	6X6	300	5	-	2	Y	Y	-	-	-	-	-
2B	6X6	300	5	-	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	15	-	-
4A	6X6	300	5	-	4	-	Y	-	-	-	-	-
4B	6X6	300	5	Y	4	-	Y	-	-	-	-	-
4C	6X40	0	2-4-2	-	4	Y	Y	Y	2.0	5	-	-
4D	6X40	0	2-4-2	-	4	Y	Y	Y	2.0	15	-	-
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A	6X6	300	4	-	6	Y	Y	-	-	-	-	-
6B	6X6	300	4	-	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	-	7	Y	Y	-	-	15	-	-
8A	6X6	300	5	Y	8	-	Y	-	-	-	-	-
8B	6X6	300	5	Y	8	-	Y	-	-	-	-	-
8C	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5	-	-
8D	6X40	0	2-4-2	Y	8	Y	Y	Y	2.0	5	-	-

8 Phase Fully Actuated SR 1344 (Black & Decker Road) CLS

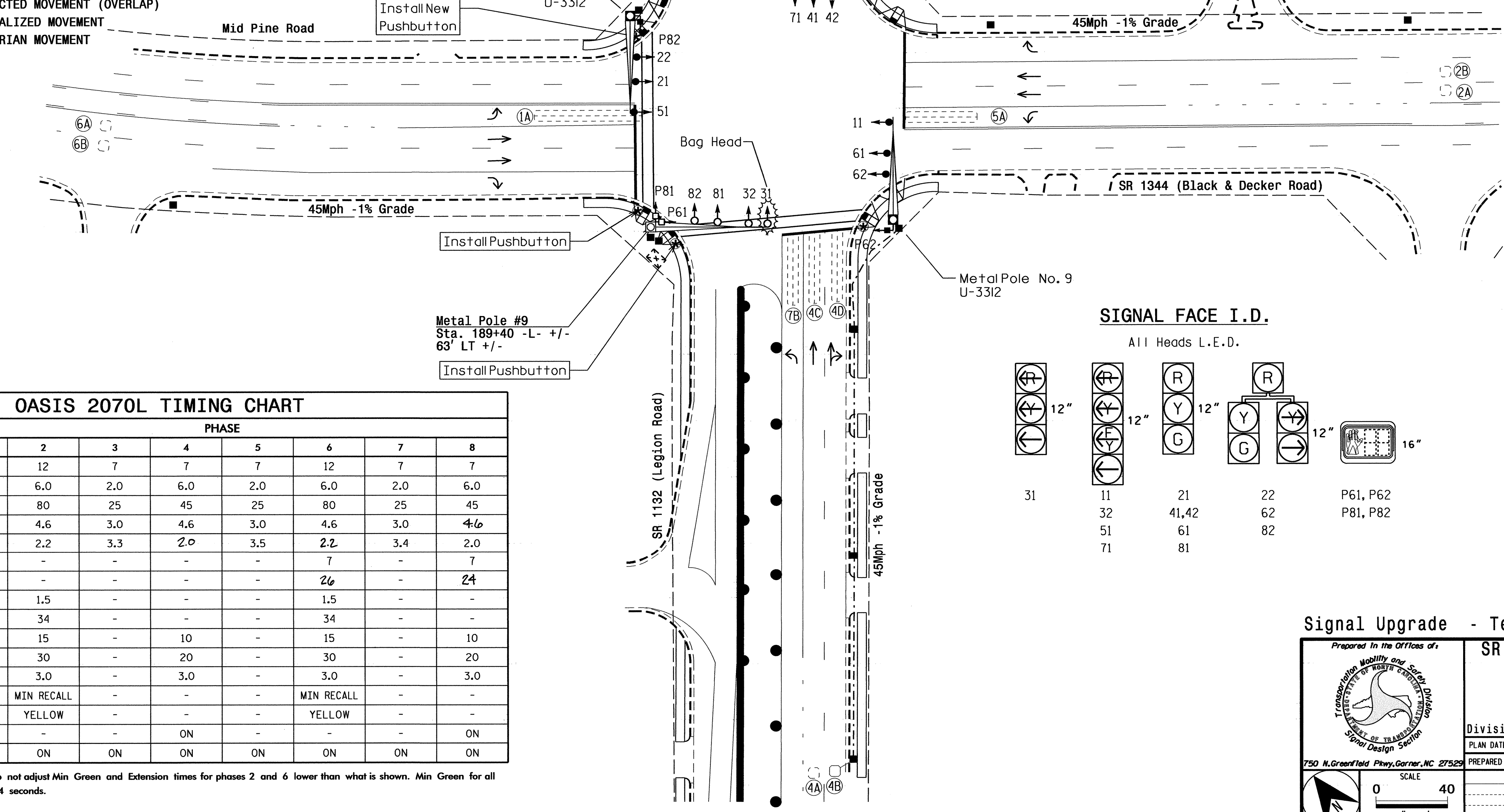
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition signal heads 41 and 71.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #0275.

OASIS 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	6.0	2.0	6.0	2.0	6.0	2.0	6.0
Max Green 1*	25	80	25	45	25	80	25	45
Yellow Clearance	3.0	4.6	3.0	4.6	3.0	4.6	3.0	4.6
Red Clearance	3.3	2.2	3.3	2.0	3.5	2.2	3.4	2.0
Walk 1*	-	-	-	-	-	7	-	7
Don't Walk 1	-	-	-	-	-	26	-	24
Seconds Per Actuation*	-	1.5	-	-	-	1.5	-	-
Max Variable Initial*	-	34	-	-	-	34	-	-
Time Before Reduction*	-	15	-	10	-	15	-	10
Time To Reduce*	-	30	-	20	-	30	-	20
Minimum Gap	-	3.0	-	3.0	-	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	ON	ON

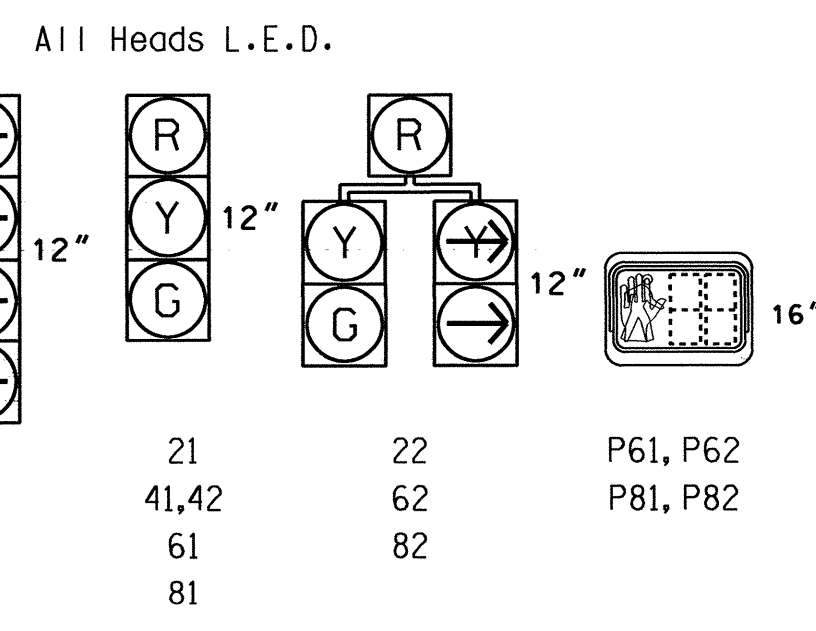
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



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	---
Right of Way	---
Directional Arrow	→
Metal Pole with Mastarm	⊙
Wheelchair Ramp	⊞
Construction Zone Drums	⊞
Type I Pedestal	N/A
Directional Drill	N/A

SIGNAL FACE I.D.



Signal Upgrade - Temp. 3 Phase III

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1344 (Black & Decker Road / Mid Pine Road) at SR 1132 (Legion Road)

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2012 REVIEWED BY: J. P. Galloway

PREPARED BY: I. O. Umozurike REVIEWED BY:

SEAL

5/11/12

SCALE: 0 40 1"=40'

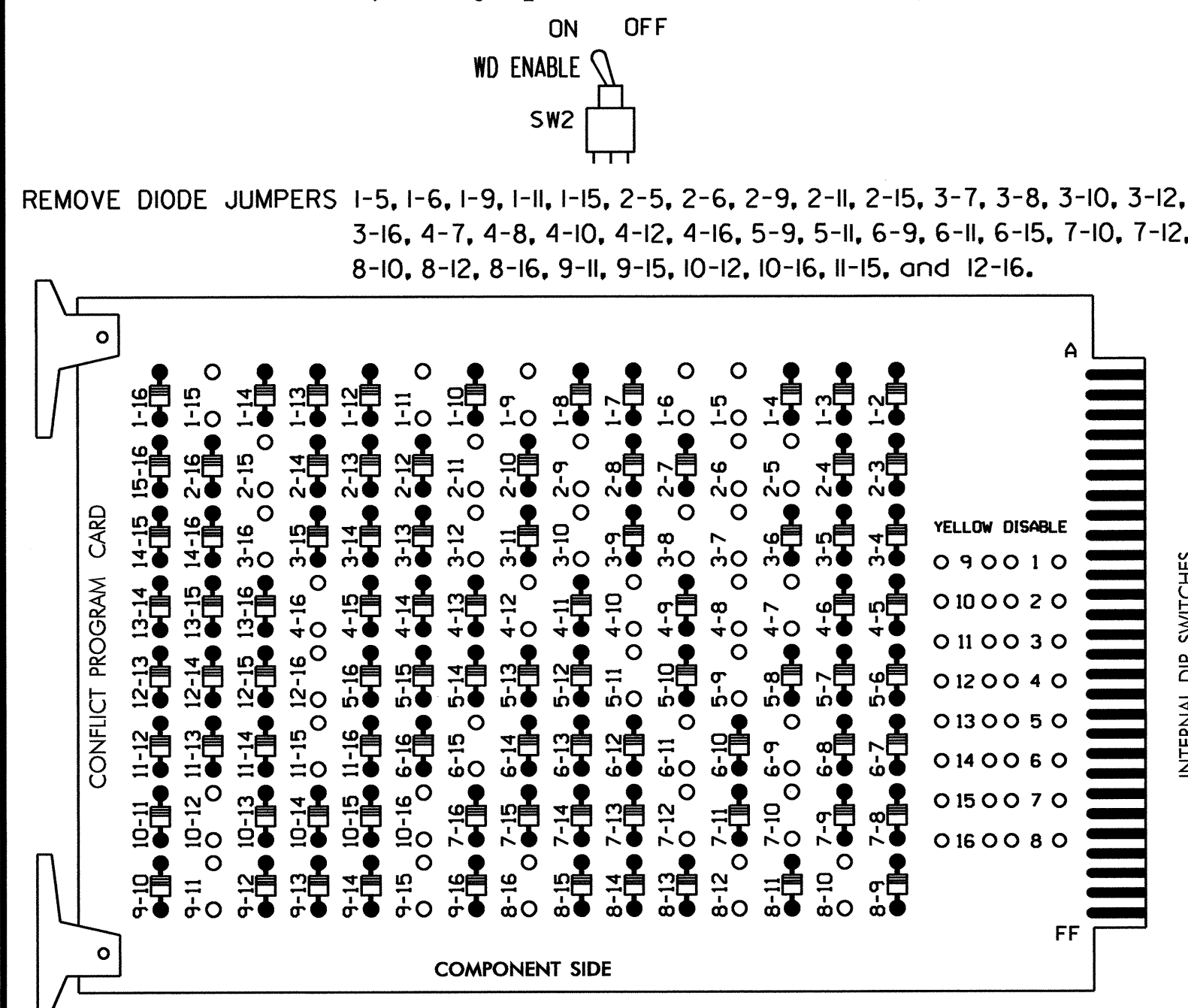
REVISIONS	INIT.	DATE

SIG. INVENTORY NO. 06-027513

11-MAY-2012 14:22 I:\Projects\2012\SR1344\Drawings\SR1344_0275_060275_Temp3PhaseIII.dgn

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

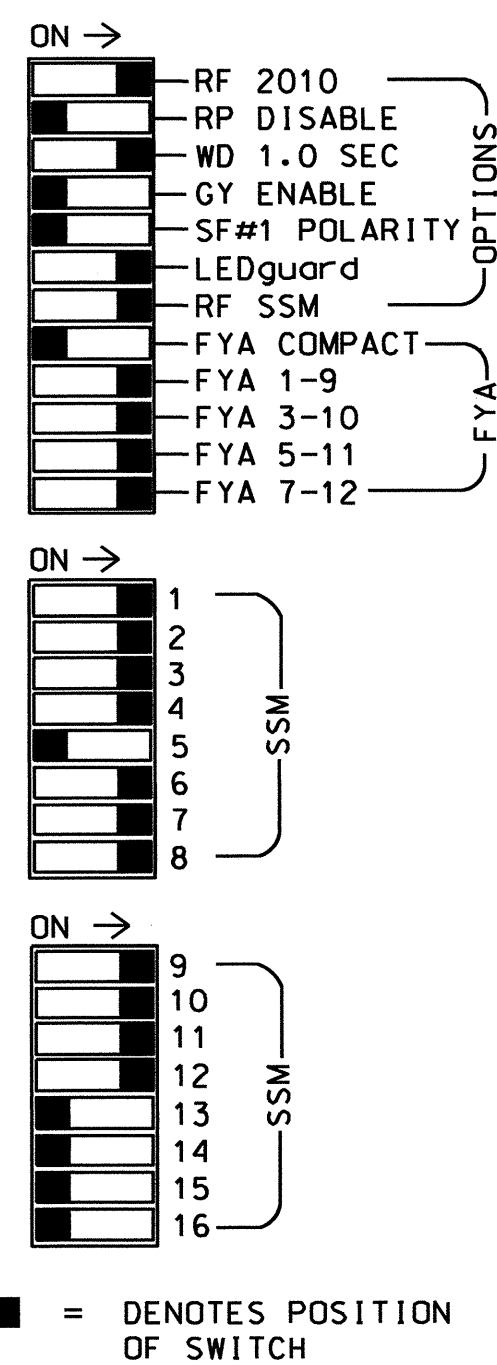
(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 5,13,14, 15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial.
- Program phases 2, 4, 6, and 8 for Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- The cabinet and controller are part of the SR 1344 (Black & Decker Road) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S6P,S7,S8,S8P,
 S9,S10,S12,S13
 PHASES USED.....1,2,3,4,5,6,6 PED,7,8,8 PED
 OVERLAP "A".....1+2
 OVERLAP "B".....3+4
 OVERLAP "C".....5+6
 OVERLAP "D".....7+8

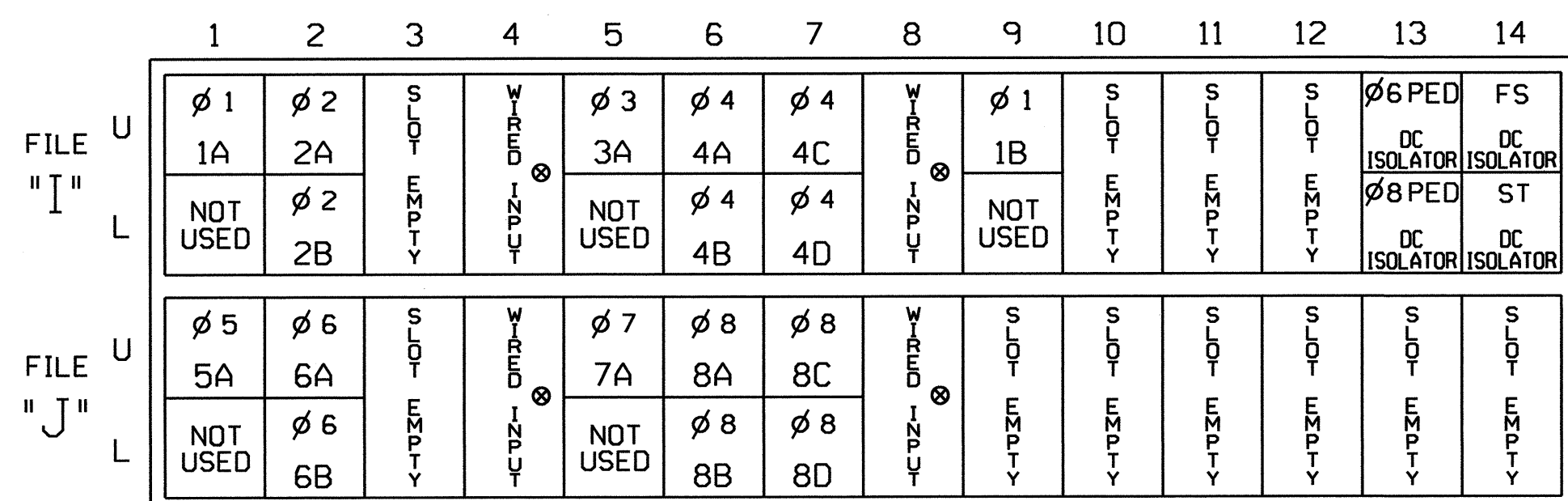
SIGNAL HEAD HOOK-UP CHART

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★	82	21,22	22	32★	41,42	51★	61,62	61, P62	62	71★	81,82	P81, P82	11★	32★	51★	71★	NU	
RED	*	128		*	101			134	*	107									
YELLOW		129			102		*	135		108									
GREEN		130			103			136		109									
RED ARROW																A121	A124	A114	A101
YELLOW ARROW		126			117					123						A122	A125	A115	A102
FLASHING YELLOW ARROW																A123	A126	A116	A103
GREEN ARROW	127	127			118	118		133		124	124								
Hand										119									110
Person																			112

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail below.

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 INPUT FILE POSITION LEGEND: J2L
 FILE J
 SLOT 2
 LOWER

INPUT FILE CONNECTION & PROGRAMMING CHART

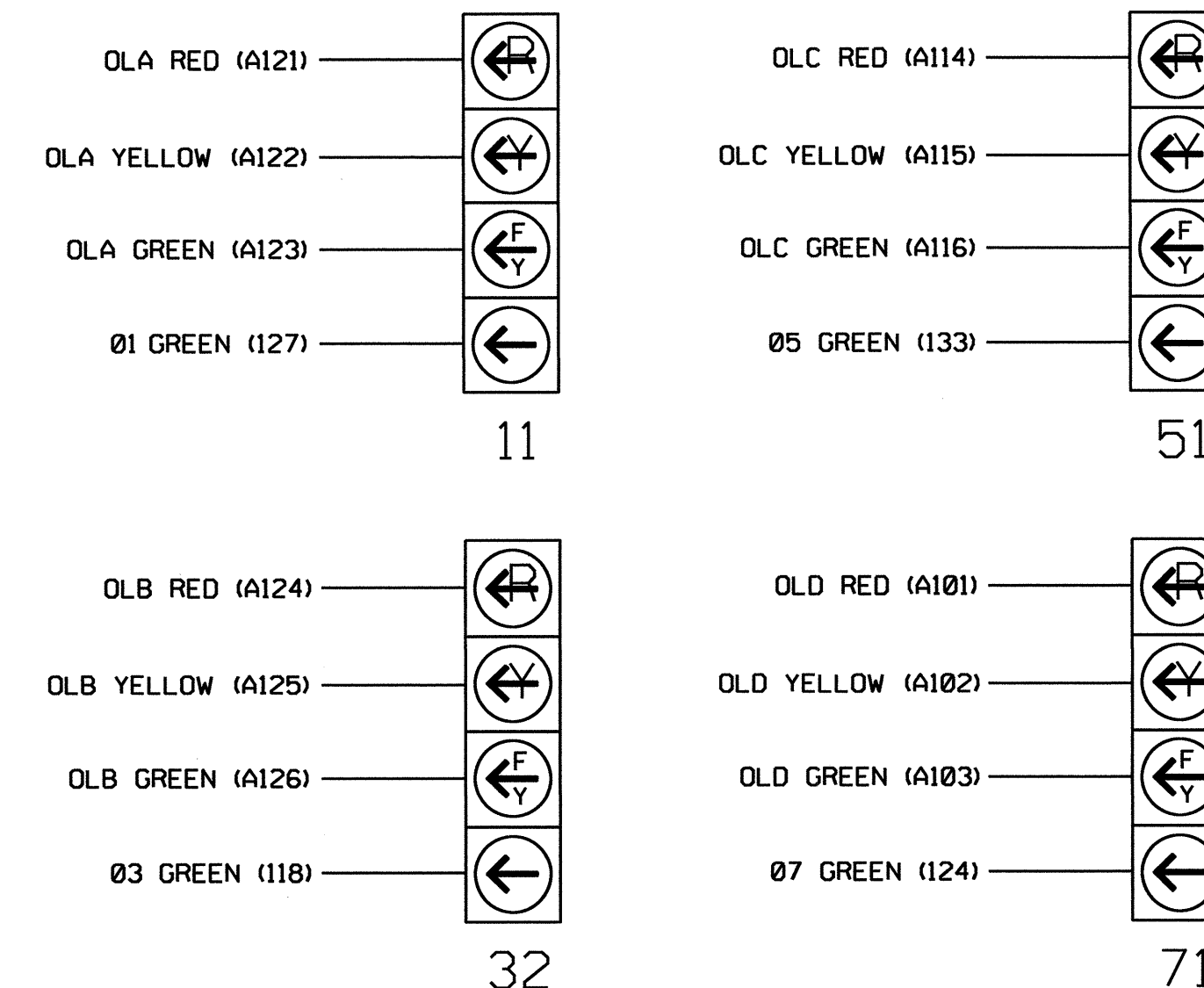
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
1B	TB6-9,10	I9U	60	22	11	1	Y	Y			15
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A ²	TB4-5,6	I5U	58	20	3	3	Y	Y			15
	-	J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4		Y			
4B	TB4-11,12	I6L	45	7	14	4		Y			
4C	TB6-1,2	I7U	65	27	34	4	Y	Y	Y	2.0	5
4D	TB6-3,4	I7L	78	40	44	4	Y	Y	Y	2.0	15
5A ³	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	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 ⁴	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8		Y			
8B	TB5-11,12	J6L	46	8	18	8		Y			
8C	TB7-1,2	J7U	66	28	38	8	Y	Y	Y	2.0	5
8D	TB7-3,4	J7L	79	41	48	8	Y	Y	Y	2.0	5
PED PUSH BUTTONS											
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 ISOLATOR IN INPUT FILE SLOT 113.

- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11, 32, 51, and 71 requires special logic programming. See sheet 2 of 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0275T3
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

Electrical Detail - Temp 3 - Sheet 1 of 2

	Electrical and Programming Details For: SR 1344 (Black & Decker Road/ Mid Pine Road) at SR 1132 (Legion Road)	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN SIGNATURE DATE 5/16/12 SIG. INVENTORY NO. 06-0275T3
	Division 6 Cumberland County Fayetteville PLAN DATE: May 2012 REVIEWED BY: T. J. J.	
	PREPARED BY: C. Strickland REVIEWED BY:	
	REVISIONS INIT. DATE	

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(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 ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, AND 12.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
AND RED CLEAR ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #50 ON
SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #7 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON
AND RED CLEAR ON PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #47 ON
SET OUTPUT ASSIGNMENT #48 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 4 TO PHASE 4 (HEAD 32).

LOGICAL I/O COMMAND #8 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #49 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 32).

LOGICAL I/O COMMAND #9 (+/-COMMAND#)
IF YELLOW ON PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #48 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 32).

LOGICAL I/O COMMAND #10 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON
AND RED CLEAR ON PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #39 ON
SET OUTPUT ASSIGNMENT #40 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

LOGICAL I/O COMMAND #11 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71).

LOGICAL I/O COMMAND #12 (+/-COMMAND#)
IF YELLOW ON PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #40 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
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

PRESS '+'

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
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 X 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

PRESS '+'

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
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 X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
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

PRESS '+'

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE: 12345678910111213141516
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 X 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

PRESS '+'

NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

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.

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

OUTPUT REFERENCE SCHEDULE	
USE TO INTERPRET LOGIC PROCESSOR	
OUTPUT 39 =	Overlap D Red
OUTPUT 40 =	Overlap D Yellow
OUTPUT 41 =	Overlap D Green
OUTPUT 42 =	Overlap C Red
OUTPUT 43 =	Overlap C Yellow
OUTPUT 44 =	Overlap C Green
OUTPUT 47 =	Overlap B Red
OUTPUT 48 =	Overlap B Yellow
OUTPUT 49 =	Overlap B Green
OUTPUT 50 =	Overlap A Red
OUTPUT 51 =	Overlap A Yellow
OUTPUT 52 =	Overlap A Green

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0275T3
DESIGNED: March 2012
SEALED: 05/11/12
REVISED: N/A

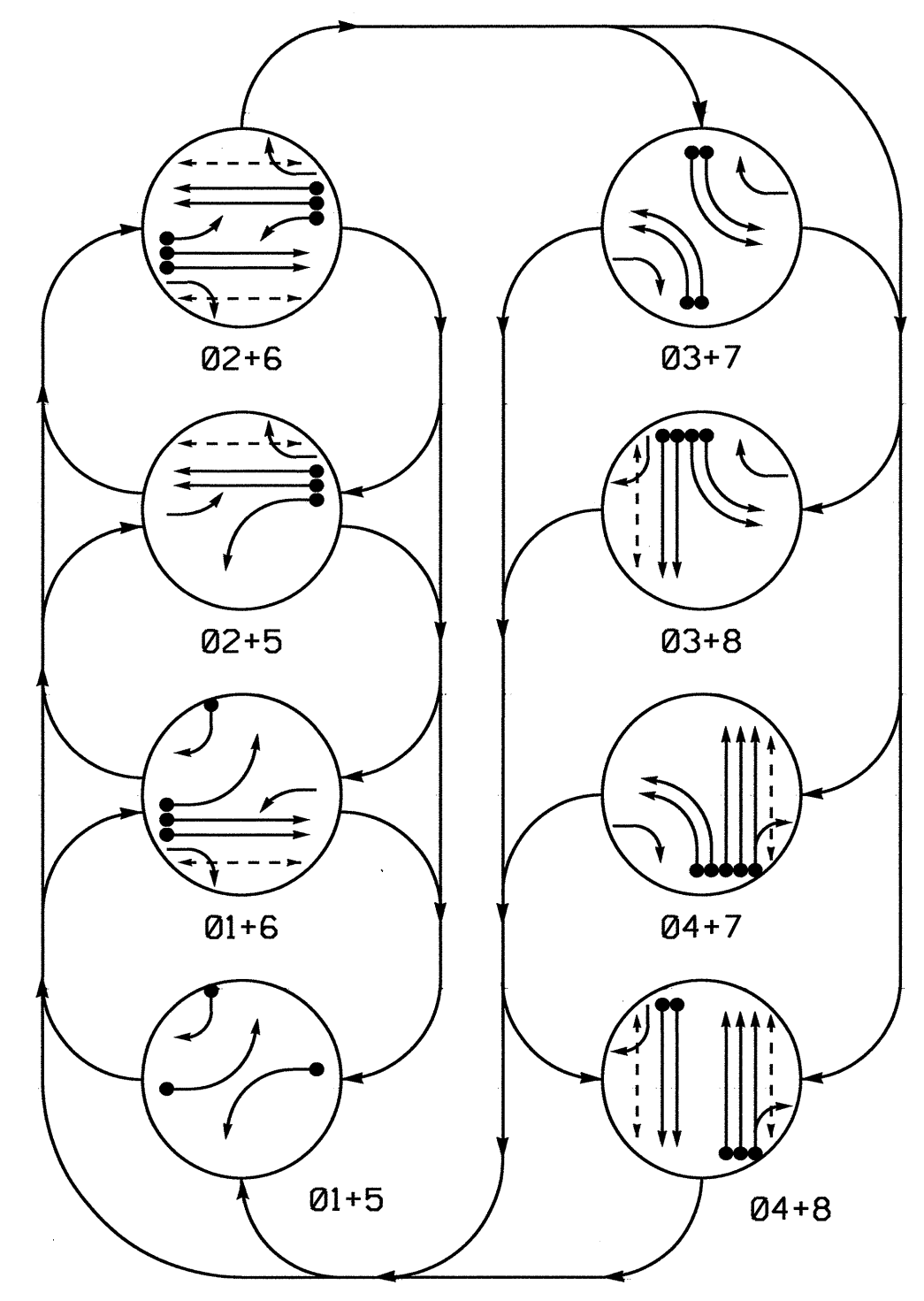
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Electrical Detail - Temp 3 - Sheet 2 of 2

	SR 1344 (Black & Decker Road/ Mid Pine Road) at SR 1132 (Legion Road)	
	Division 6 Cumberland County Fayetteville PLAN DATE: May 2012 REVIEWED BY: T. V. J.	PREPARED BY: C. Strickland REVIEWED BY:
REVISIONS	INIT.	DATE
SIGNATURE: <i>C. Strickland</i> 5/16/12		DATE:

SIG. INVENTORY NO. 06-0275T3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ← ● → DETECTED MOVEMENT
- ← ○ → UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	02+5	03+7	03+8	04+7	04+8	LOCAL	P
11	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
31, 32	←	←	←	←	←	←	←	←
41, 42, 43	R	R	R	R	R	R	G	G
51	←	←	←	←	←	←	←	←
61	R	G	R	G	R	R	R	Y
62	R	G	R	G	R	R	R	Y
71, 72	←	←	←	←	←	←	←	←
81	R	R	R	R	R	R	G	G
82	R	R	R	R	R	R	G	G
P21, P22	DW	DW	W	DW	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	DRK
P61, P62	DW	W	DW	DW	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	W	DW	W	DRK

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

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	STRETCH TIME		
1A	6X40	0	2-4-2	Y	1	Y	Y	-	15	-
1B	6X40	0	2-4-2	-	1	Y	Y	-	15	-
2A	6X6	300	5	Y	2	Y	Y	-	-	-
2B	6X6	300	5	Y	2	Y	Y	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-
3B	6X40	0	2-4-2	-	3	Y	Y	-	-	-
4A	6X6	300	5	Y	4	Y	Y	-	-	Y
4B	6X6	300	5	-	4	Y	Y	-	-	-
4C	6X6	300	5	-	4	Y	Y	-	-	-
4D	6X40	0	2-4-2	-	4	Y	Y	2.0	5	-
4E	6X40	0	2-4-2	-	4	Y	Y	2.0	5	-
4F	6X40	0	2-4-2	-	4	Y	Y	2.0	5	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	15	-
6A	6X6	300	5	Y	6	Y	Y	-	-	-
6B	6X6	300	5	Y	6	Y	Y	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	3	-
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	-
8A	6X6	300	5	-	8	-	Y	-	-	-
8B	6X6	300	5	-	8	-	Y	-	-	-
8C	6X40	0	2-4-2	-	8	Y	Y	2.0	5	-
8D	6X40	0	2-4-2	-	8	Y	Y	2.0	5	-
S3	6X6	+200	4	Y	-	-	-	-	-	Y
S4	6X6	+200	4	Y	-	-	-	-	-	Y
S5	6X6	+180	4	Y	-	-	-	-	-	Y
S6	6X6	+180	4	Y	-	-	-	-	-	Y

8 Phase Fully Actuated SR 1344 (Black & Decker Road) CLS

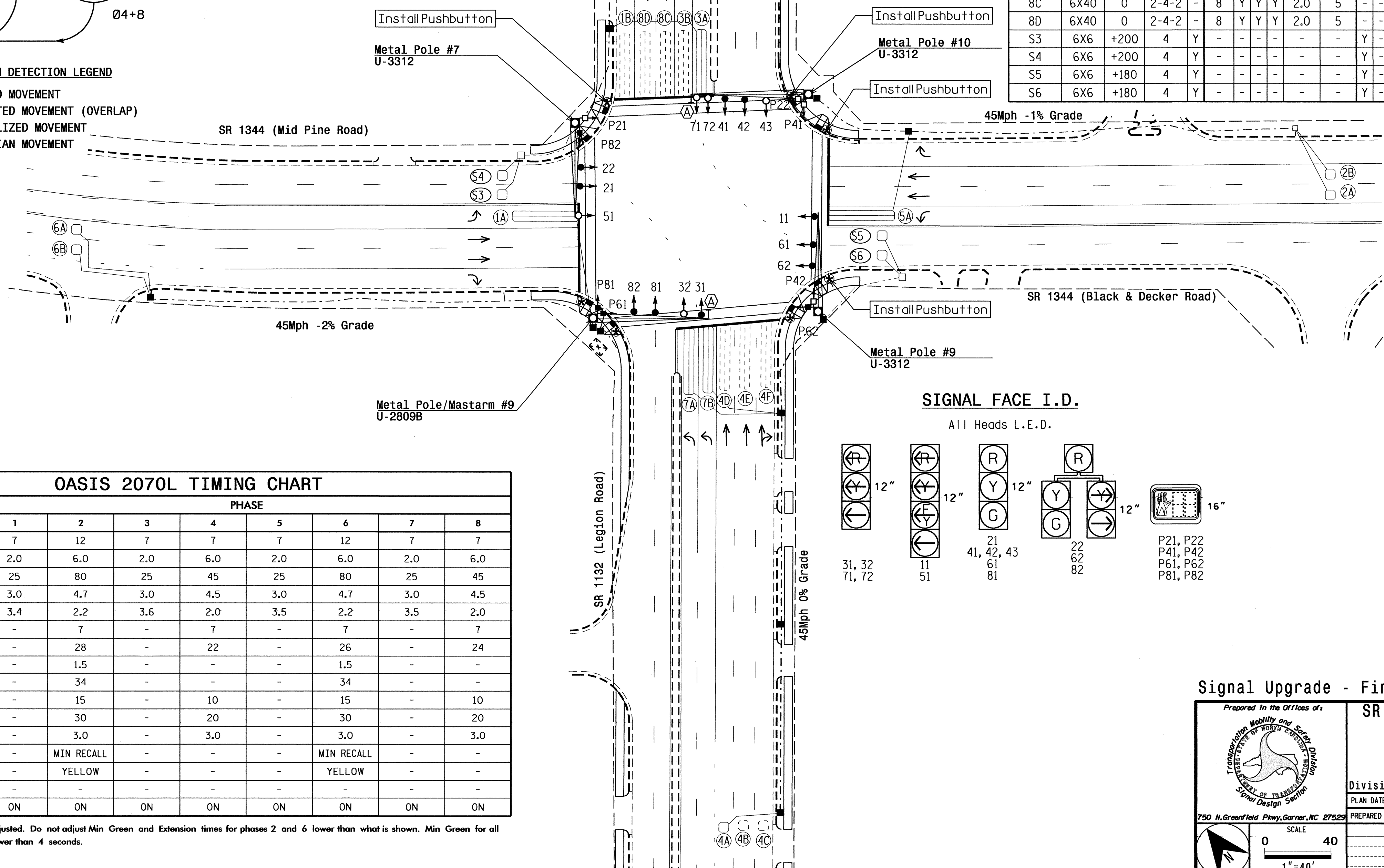
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition heads 41 & 42.
4. Phase 1 and/or phase 5 may be lagged.
5. Phase 3 and/or phase 7 may be lagged.
6. Set all detector units to presence mode.
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. Closed loop system data: Controller Asset #0275.

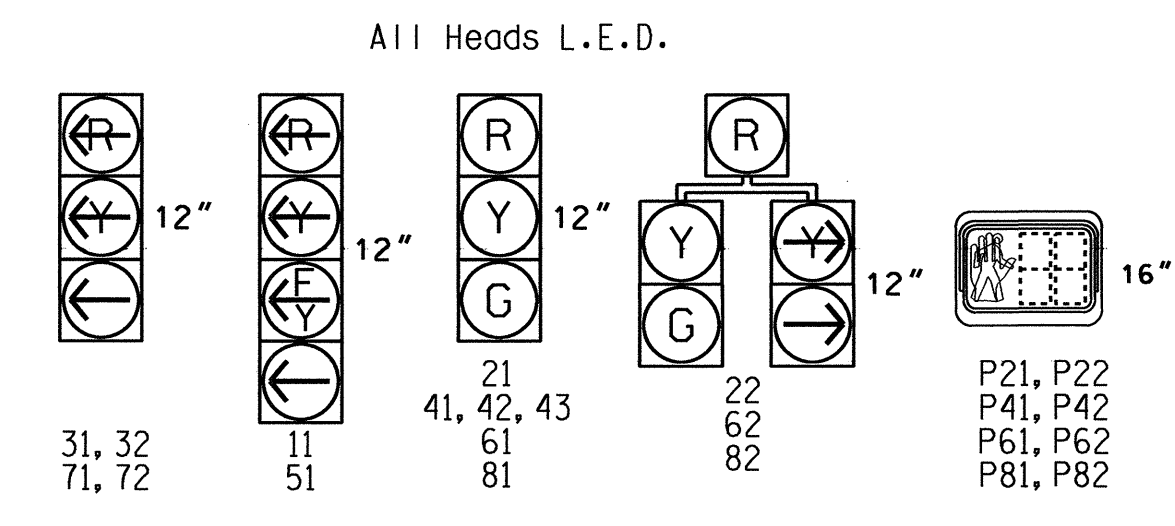
OASIS 2070L TIMING CHART

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	6.0	2.0	6.0	2.0	6.0	2.0	6.0
Max Green 1*	25	80	25	45	25	80	25	45
Yellow Clearance	3.0	4.7	3.0	4.5	3.0	4.7	3.0	4.5
Red Clearance	3.4	2.2	3.6	2.0	3.5	2.2	3.5	2.0
Walk 1*	-	7	-	7	-	7	-	7
Don't Walk 1	-	28	-	22	-	26	-	24
Seconds Per Actuation*	-	1.5	-	-	-	1.5	-	-
Max Variable Initial*	-	34	-	-	-	34	-	-
Time Before Reduction*	-	15	-	10	-	15	-	10
Time To Reduce*	-	30	-	20	-	30	-	20
Minimum Gap	-	3.0	-	3.0	-	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 FACE I.D.



LEGEND

PROPOSED	EXISTING

Signal Upgrade - Final

Prepared In the Offices of:

 TRANSPORTATION MOBILITY AND SAFETY DIVISION
 DIVISION OF TRANSPORTATION
 Signal Design Section
 750 N. Grant Field Pkwy, Garner, NC 27529

SR 1344 (Black & Decker Road / Mid Pine Road) at SR 1192 (Legion Road)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2012 REVIEWED BY: J. P. Galloway
 PREPARED BY: I. O. Umozurike REVIEWED BY:

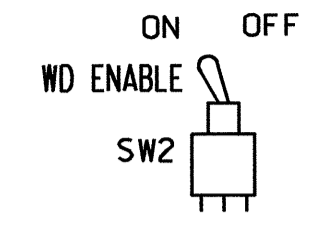
SCALE: 1"=40'
 REVISIONS: _____
 INIT. DATE: _____

SEAL

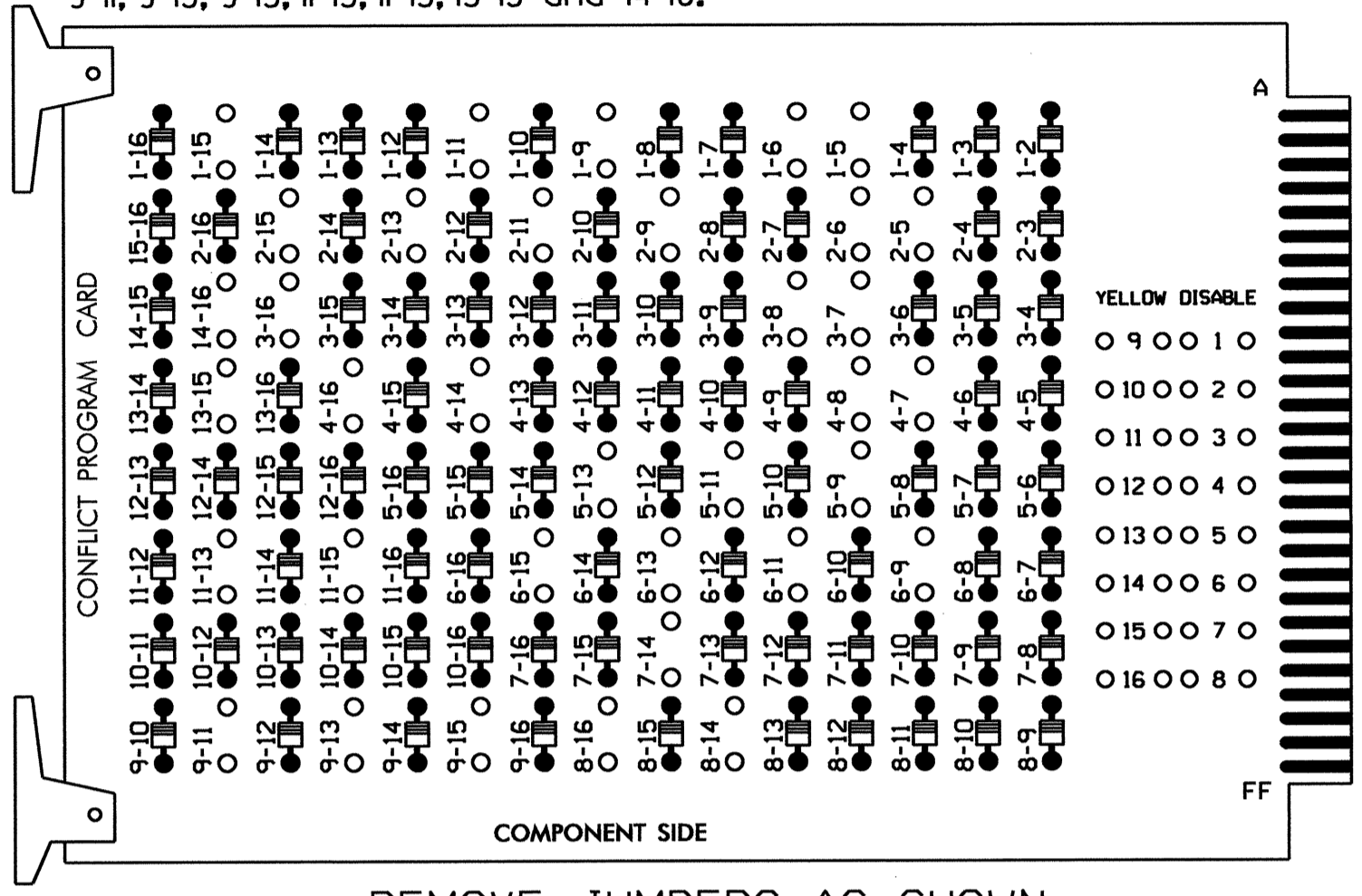
 J. P. GALLOWAY
 ENGINEER
 5/11/12
 DATE
 SIG. INVENTORY NO. 06-0275

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



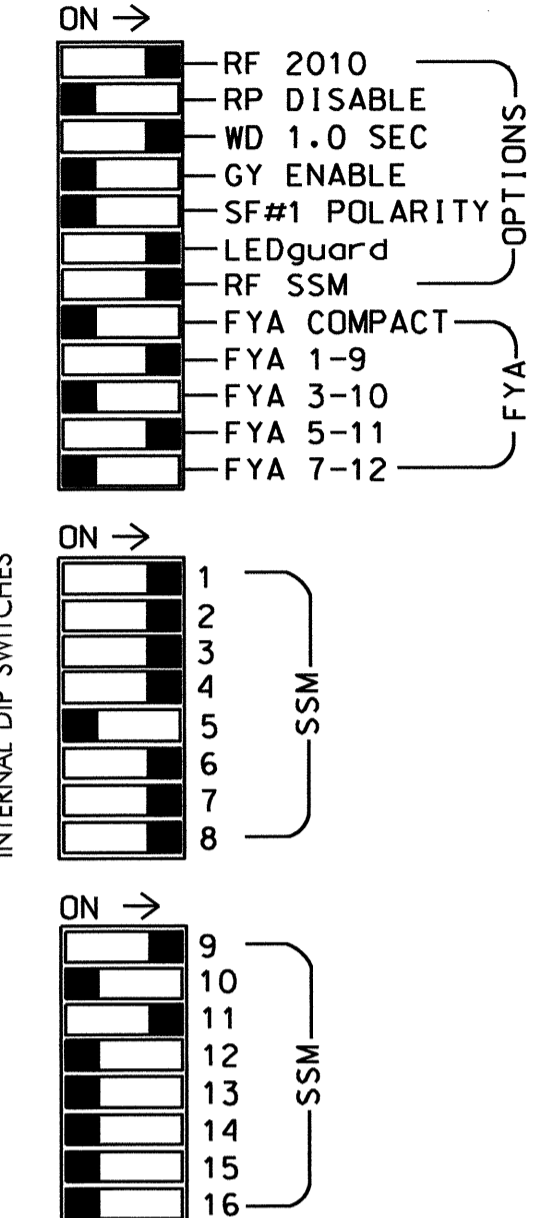
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-16, 4-7, 4-8, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-14, 8-14, 8-16, 9-11, 9-13, 9-15, 11-13, 11-15, 13-15 and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

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



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 5,10, 12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial.
- Program phases 2, 4, 6, and 8 for Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
- The cabinet and controller are part of the SR 1344 (Black & Decker Road) Closed Loop System.

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	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*	82	21,22	P21, P22	22	31,32	41, 42,43	P41, P42	51*	61,62	P61, P62	62	71,72	81,82	P81, P82	11*	NU	NU	51*	NU	NU
RED	*	128			101				134		107										
YELLOW		129			102		*	135			108										
GREEN		130			103			136			109										
RED ARROW					116						122				A121			A114			
YELLOW ARROW	126			117	117					123	123				A122			A115			
FLASHING YELLOW ARROW															A123			A116			
GREEN ARROW	127	127		118	118			133		124	124										
Hand								104			119							110			
Ped								106			121							112			

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail sheet 2 of 2.
 * See pictorial of head wiring in detail below.

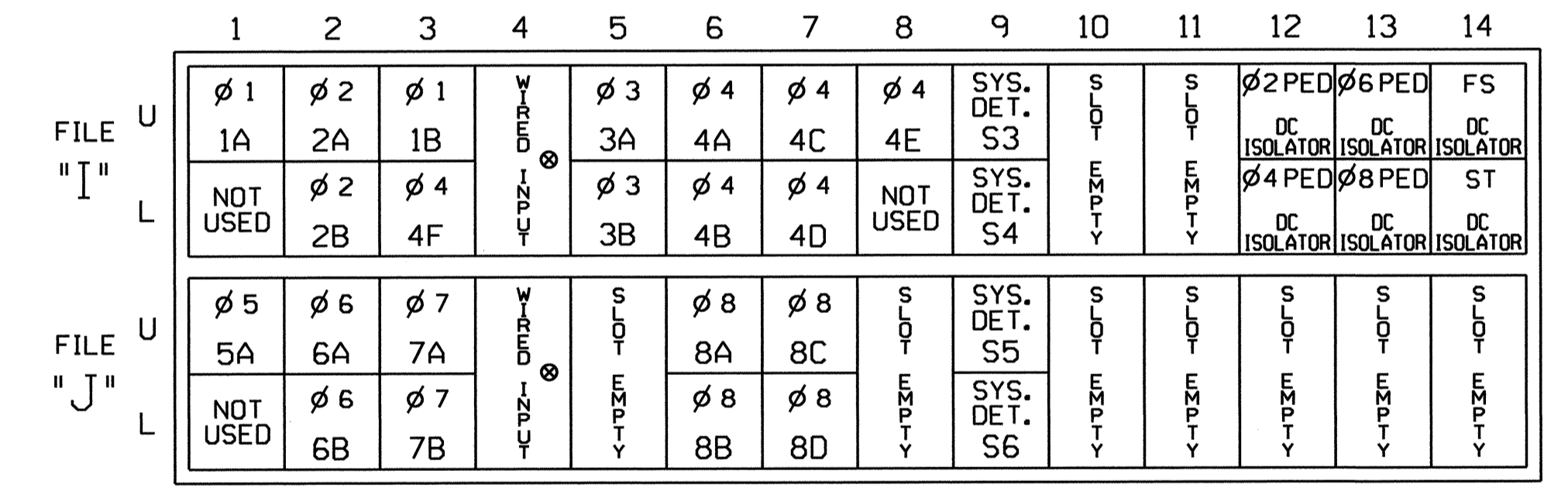
INPUT FILE CONNECTION & PROGRAMMING CHART

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	TB2-9,10	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	TB4-5,5	I5U	58	20	3	3	Y	Y			
3B	TB4-7,8	I5L	58	20	3	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4					
4B	TB4-11,12	I6L	45	7	14	4			Y		
4C	TB6-1,2	I7U	65	27	34	4					
4D	TB6-3,4	I7L	78	40	44	4	Y	Y	Y	2.0	5
4E	TB6-5,6	I8U	49	11	24	4	Y	Y	Y	2.0	5
4F	TB2-11,12	I3L	76	38	42	4	Y	Y	Y	2.0	5
5A ²		J1U	55	17	5	5	Y	Y			15
		I4U	47	9	22	2	Y	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	TB3-9,10	J3U	64	26	36	7	Y	Y			3
7B	TB3-11,12	J3L	77	39	46	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8			Y		
8B	TB5-11,12	J6L	46	8	18	8			Y		
8C	TB7-1,2	J7U	66	28	38	8	Y	Y	Y	2.0	5
8D	TB7-3,4	J7L	79	41	48	8	Y	Y	Y	2.0	5
* S3	TB6-9,10	I9U	60	22	11	SYS					
* S4	TB6-11,12	I9L	62	24	13	SYS					
* S5	TB7-9,10	J9U	59	21	15	SYS					
* S6	TB7-11,12	J9L	61	23	17	SYS					
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				

- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
 - If present, remove jumper from I5-W to J8-W, on rear of input file.
 - If present, remove jumper from J5-W to I8-W, on rear of input file.
- * System detector only. Remove the vehicle phase assigned to this detector in the default programming.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0275
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

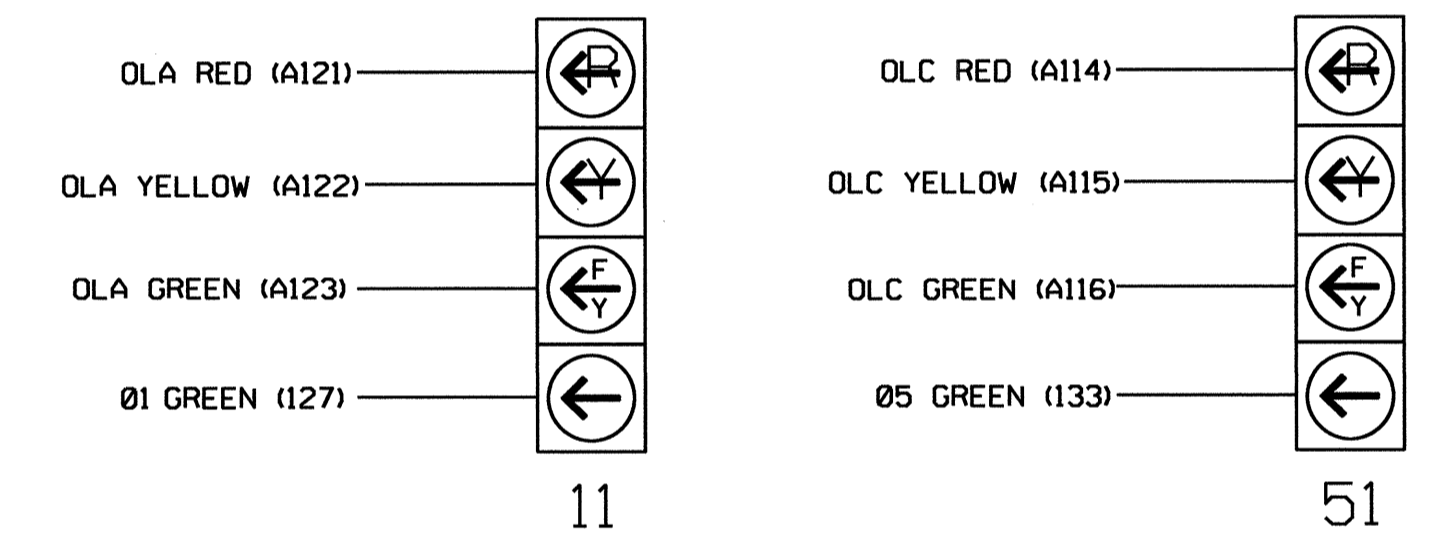
INPUT FILE POSITION LAYOUT (front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 INPUT FILE POSITION LEGEND: J2L, FILE J, SLOT 2, LOWER

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

- The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P,S7,S8,S8P,S9,S12
 PHASES USED.....1,2,2 PED,3,4,4 PED,5,6,6 PED,7,8,8 PED
 OVERLAP "A".....1+2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....NOT USED

Electrical Detail - Final - Sheet 1 of 2

Prepared in the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

SR 1344 (Black & Decker Road / Mid Pine Road) at SR 1132 (Legion Road)

Division 6 Cumberland County Fayetteville
 PLAN DATE: May 2012 REVIEWED BY: T. V. J.
 PREPARED BY: C. Strickland REVIEWED BY:
 REVISIONS INIT. DATE

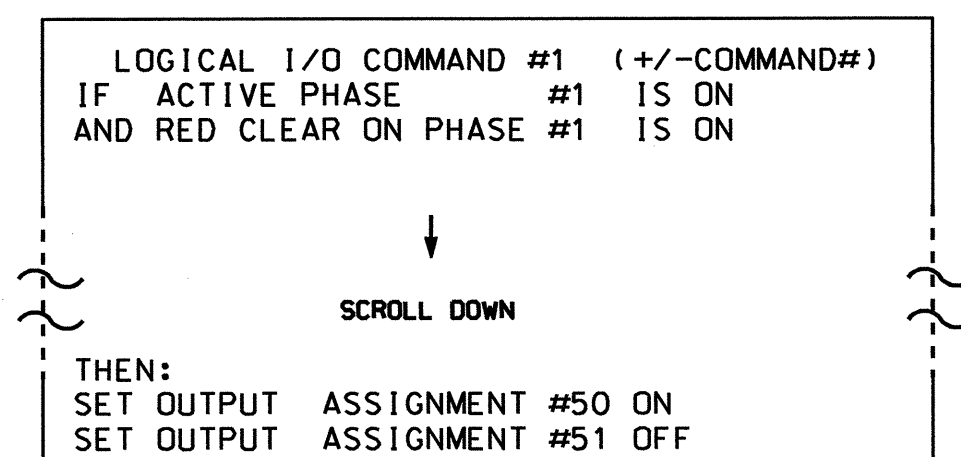
SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 022013
 GEORGE C. BROWN

SIG. INVENTORY NO. 06-0275

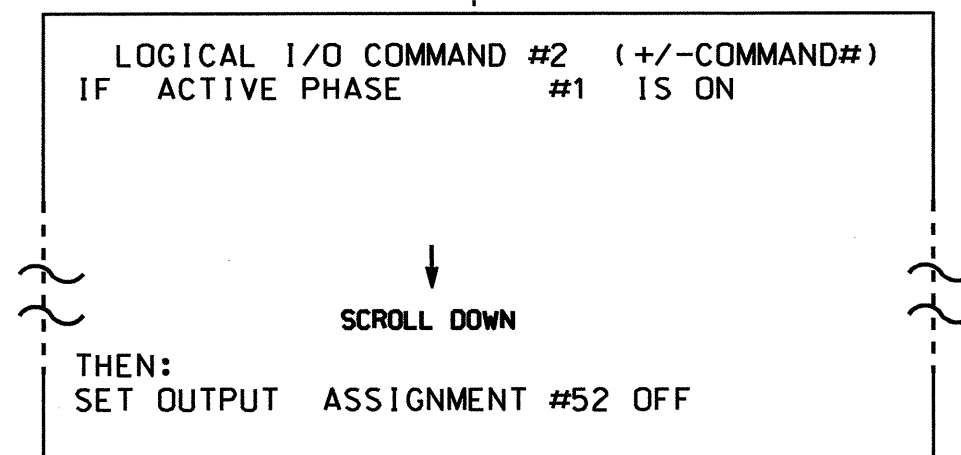
LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

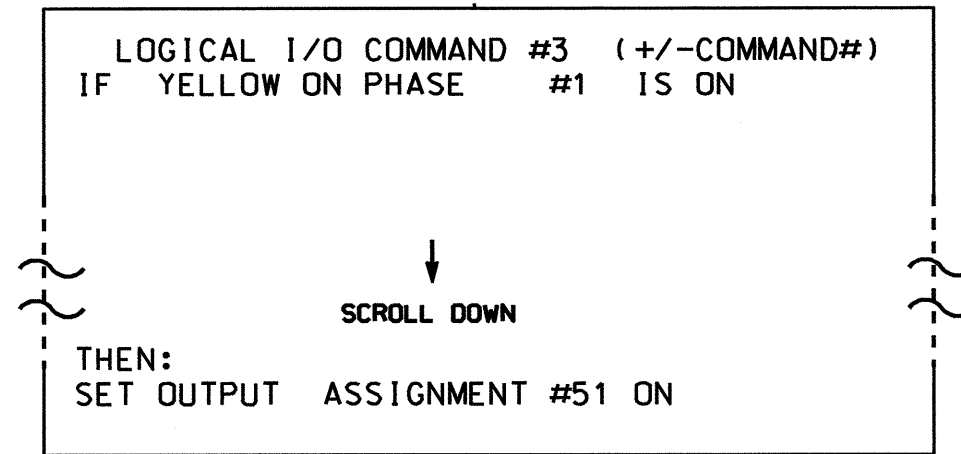
- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



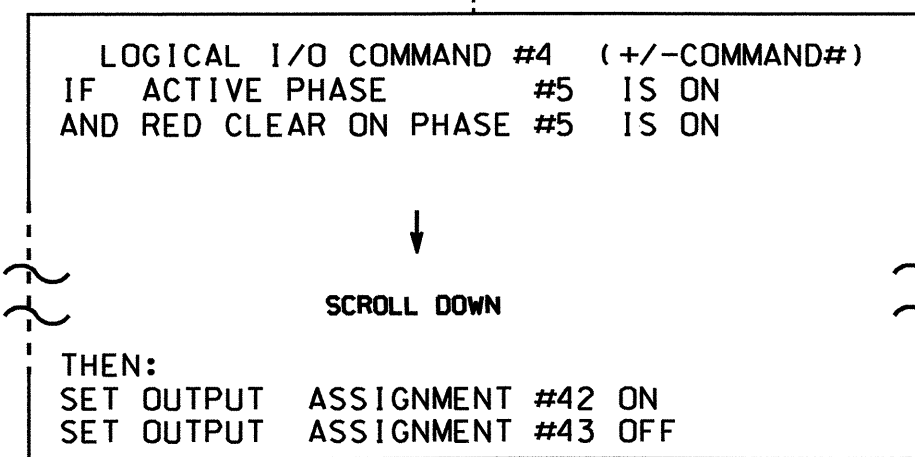
NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).



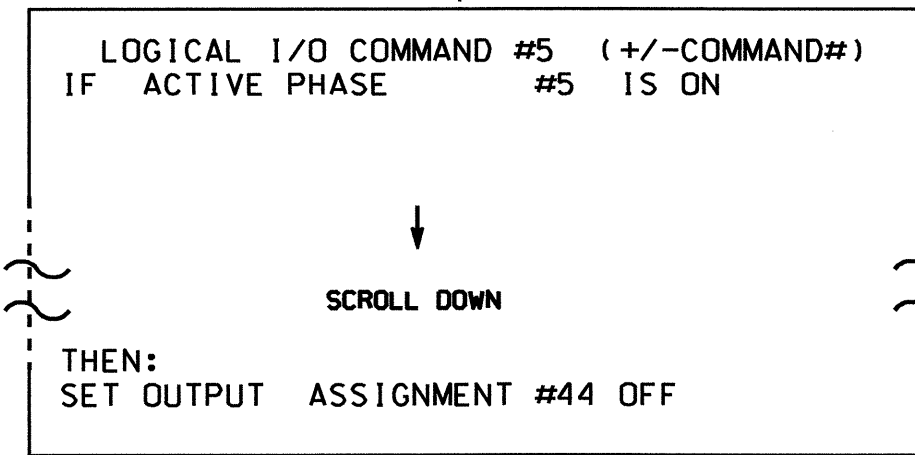
NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).



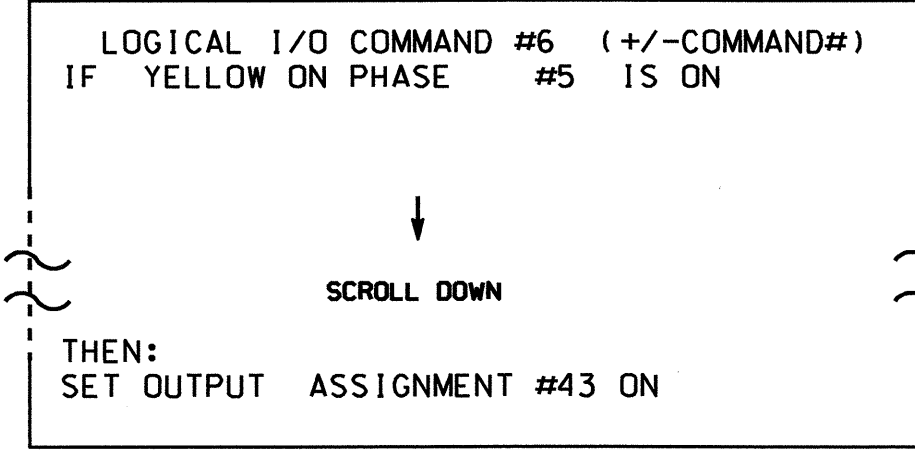
NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).



NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).



NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).



NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

- OUTPUT 42 = Overlap C Red
- OUTPUT 43 = Overlap C Yellow
- OUTPUT 44 = Overlap C Green
- OUTPUT 50 = Overlap A Red
- OUTPUT 51 = Overlap A Yellow
- OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: RED YELLOW GREEN
FLASH COLORS: RED YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
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

← NOTICE GREEN FLASH

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
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 X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
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

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

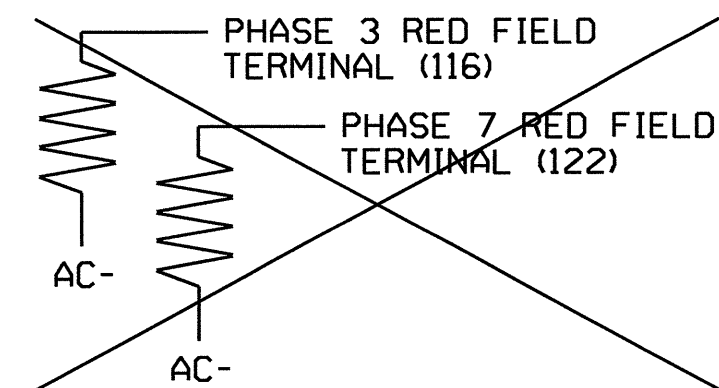
THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

! IMPORTANT: Restore Flasher Circuit wiring to Factory defaults.

LOAD RESISTOR REMOVAL DETAIL

(remove resistors as shown below)

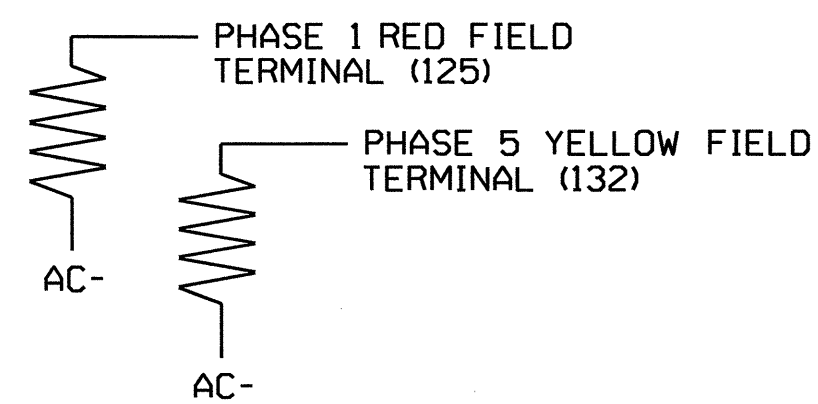
If present, remove load resistors connected to RED FIELD TERMINALS: (116) and (122).



LOAD RESISTOR INSTALLATION DETAIL

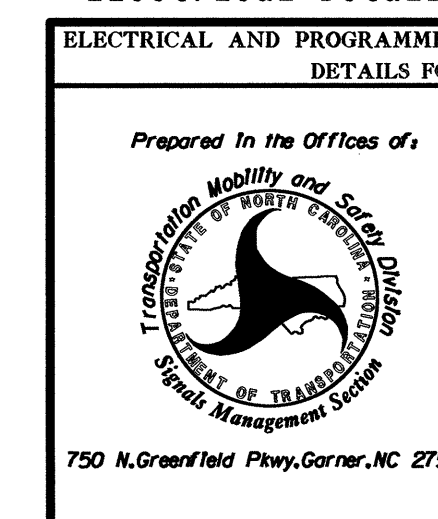
(install resistors as shown below)

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0275
DESIGNED: March 2012
SEALED: 05/11/12
REVISED: N/A

Electrical Detail - Final - Sheet 2 of 2



SR 1344 (Black & Decker Road/ Mid Pine Road) at SR 1132 (Legion Road)	
Division 6	Cumberland County Fayetteville
PLAN DATE: May 2012	REVIEWED BY: T. J. J.
PREPARED BY: C. Strickland	REVIEWED BY:
REVISIONS	INIT. DATE
SIGNATURE: <i>C. Strickland</i> DATE: 5/17/12	

SEAL	SEAL
STATE OF NORTH CAROLINA	STATE OF NORTH CAROLINA
PROFESSIONAL ENGINEER	PROFESSIONAL ENGINEER
GEORGE C. BROWN	GEORGE C. BROWN
022013	022013
SIG. INVENTORY NO. 06-0275	

SPECIAL NOTE
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

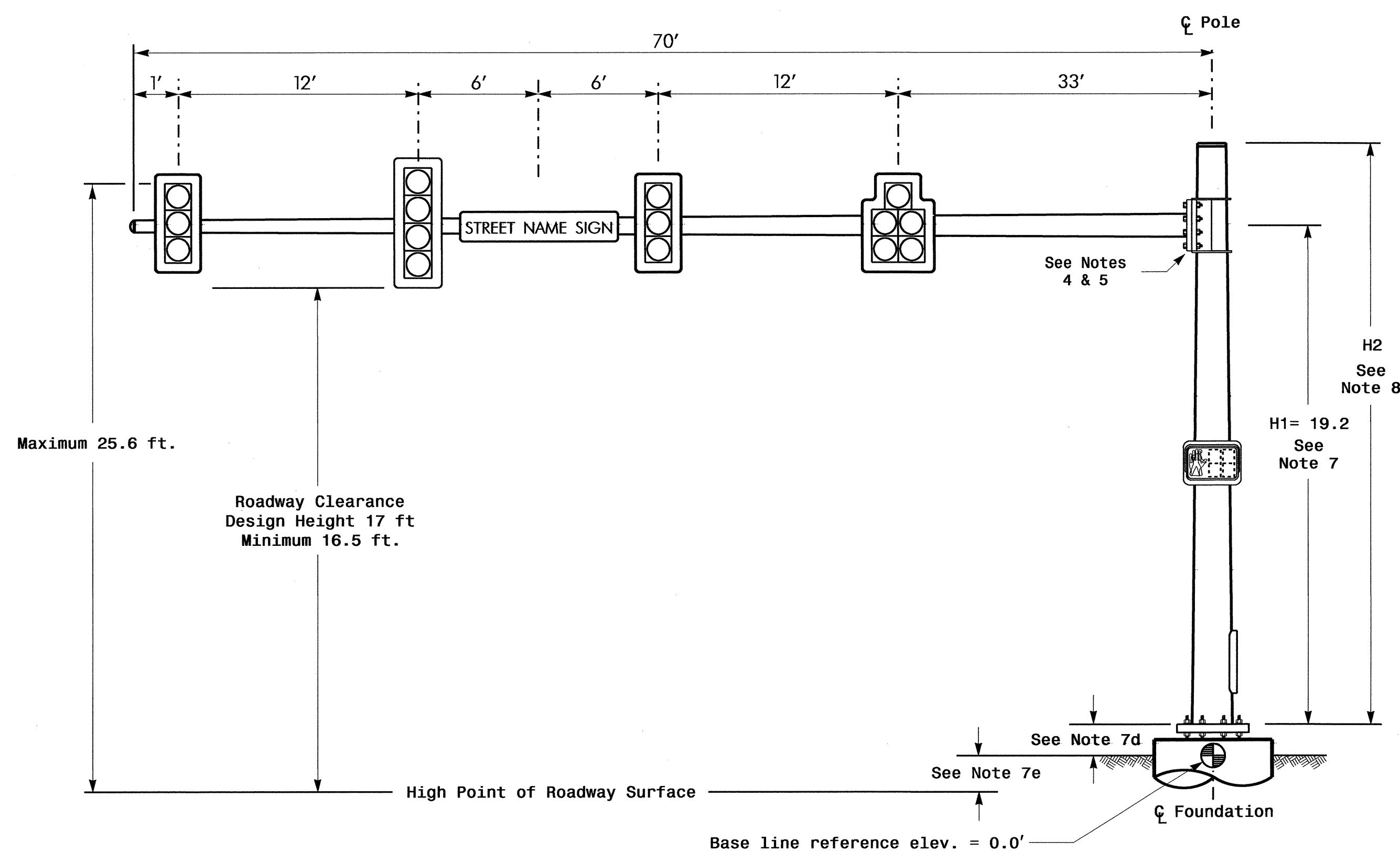
Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 9
Baseline reference point at ϕ Foundation @ ground level	0.0 ft.
Elevation difference at High point of roadway surface	+0.2 ft.
Elevation difference at Edge of travelway or face of curb	N/A

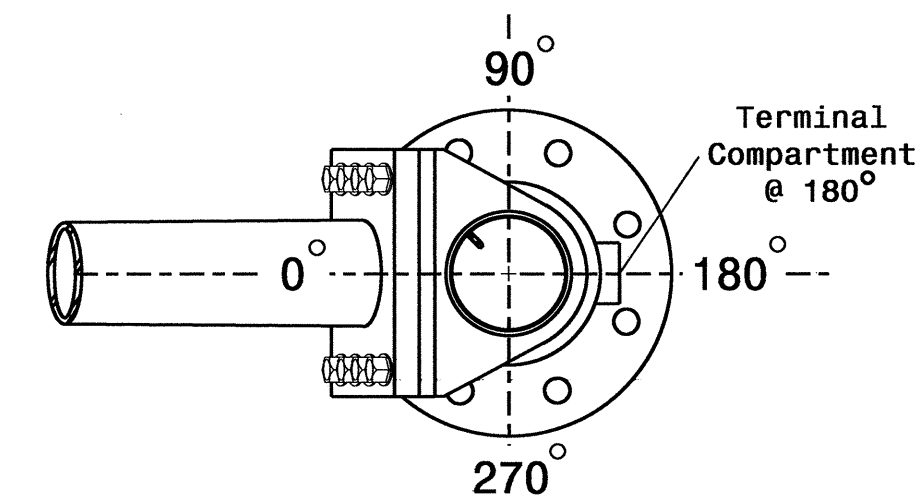
MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE AND ASTRO-BRAC	16.3 S.F.	42.0" W X 56.0" L	103 LBS
	SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE AND ASTRO-BRAC	11.5 S.F.	25.5" W X 66.0" L	74 LBS
	SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE AND ASTRO-BRAC	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	PEDESTRIAN SIGNAL HEAD WITH MOUNTING HARDWARE	2.2 S.F.	18.5" W X 17.0" L	21 LBS
	SIGN RIGID MOUNTED WITH ASTRO-SIGN-BRAC	5.0 S.F.	24.0" W X 30.0" L	11 LBS
	STREET NAME SIGN RIGID MOUNTED WITH ASTRO-SIGN-BRAC	12.0 S.F.	18.0" W X 96.0" L	27 LBS

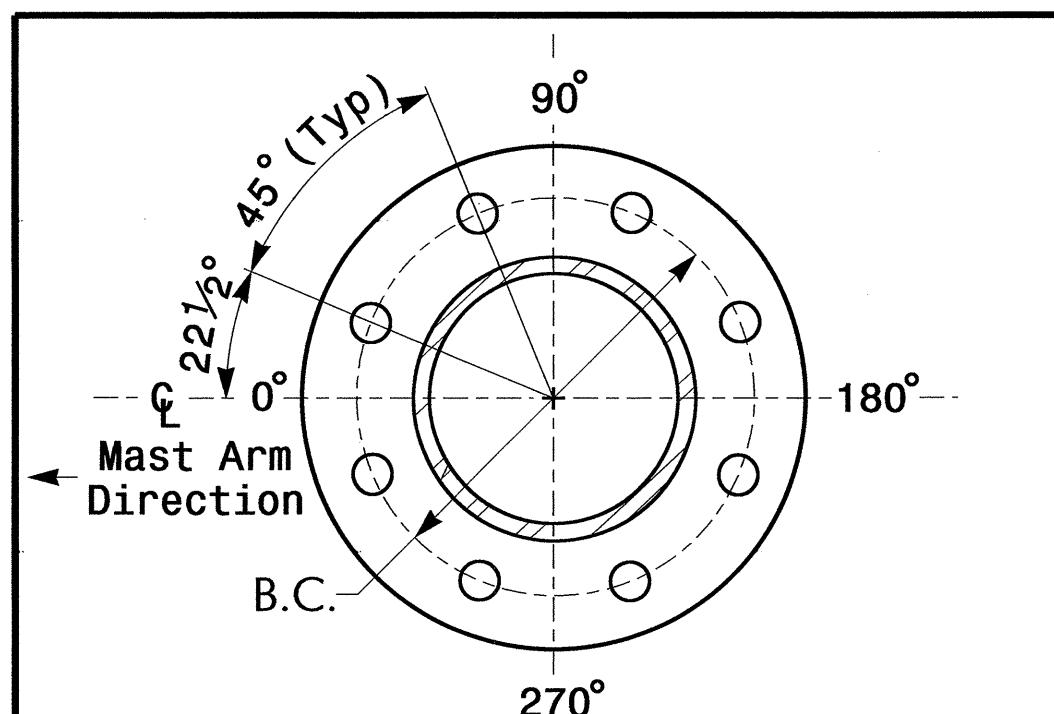
Design Loading for METAL POLE NO. 9



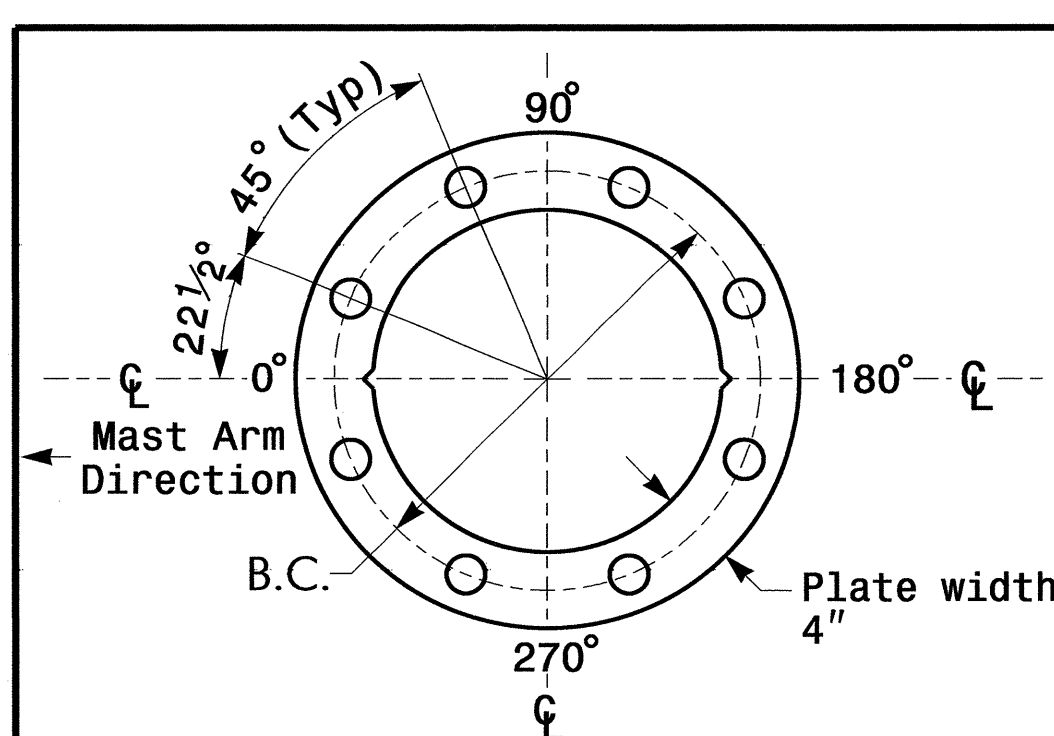
Elevation View



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL
See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

NOTES

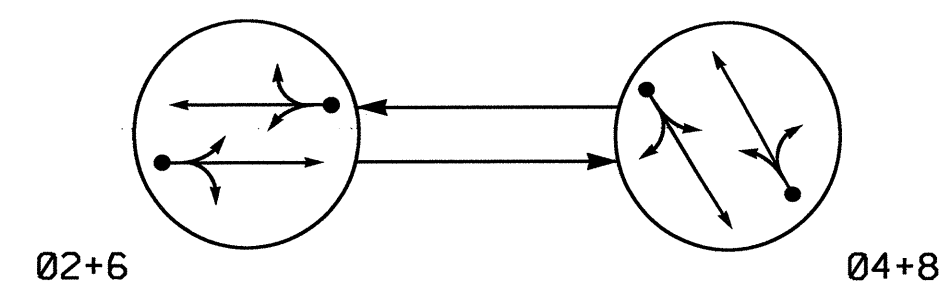
- Design Reference Material**
- Design the traffic signal structure and foundation in accordance with:
 - The 4th Edition 2001 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2012 NCDOT "Standard Specifications for Roads and Structures". The latest addenda to these specifications can be found in the traffic signal project special provisions.
 - The 2012 NCDOT Roadway Standard Drawings.
- Design Requirements**
- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "Design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
 - Design all signal supports using stress ratios that do not exceed 0.9.
 - The camber design for mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
 - A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
 - Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
 - The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Signal heads attached to the mast arm are rigid mounted and vertically centered on the arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is .75 feet above the ground elevation.
 - Refer to the Elevation Data chart for elevation differences between the proposed foundation ground level and the high point on the roadway.
 - The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
 - If pole location adjustments are required, the contractor must gain approval from the engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signals & Geometrics Structural Engineer for assistance at (919) 773-2800.
 - The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
 - The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

NCDOT Wind Zone 3 (110 mph)

<p>Prepared in the Offices of: Transportation Mobility and Safety Division SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Corner, NC 27529</p>	<p>SR 1344 (Black & Decker Road/ Mid Pine Road) at SR 1132 (Legion Road)</p>	<p>SEAL</p> <p>J. P. GALLOWAY ENGINEER 29904</p>							
	<p>Division 6 Cumberland County Fayetteville</p> <p>PLAN DATE: March 2012 REVIEWED BY: J. P. Galloway</p>		<p>PREPARED BY: I. O. Umozurike REVIEWED BY:</p>						
	<p>SCALE: 0 N/A</p>		<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	INIT.	DATE		
NO.	DATE	INIT.	DATE						

SIG. INVENTORY NO. 06-0275

PHASING DIAGRAM



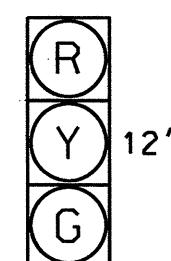
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE		
	02+6	04+8	FLC/SH
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.



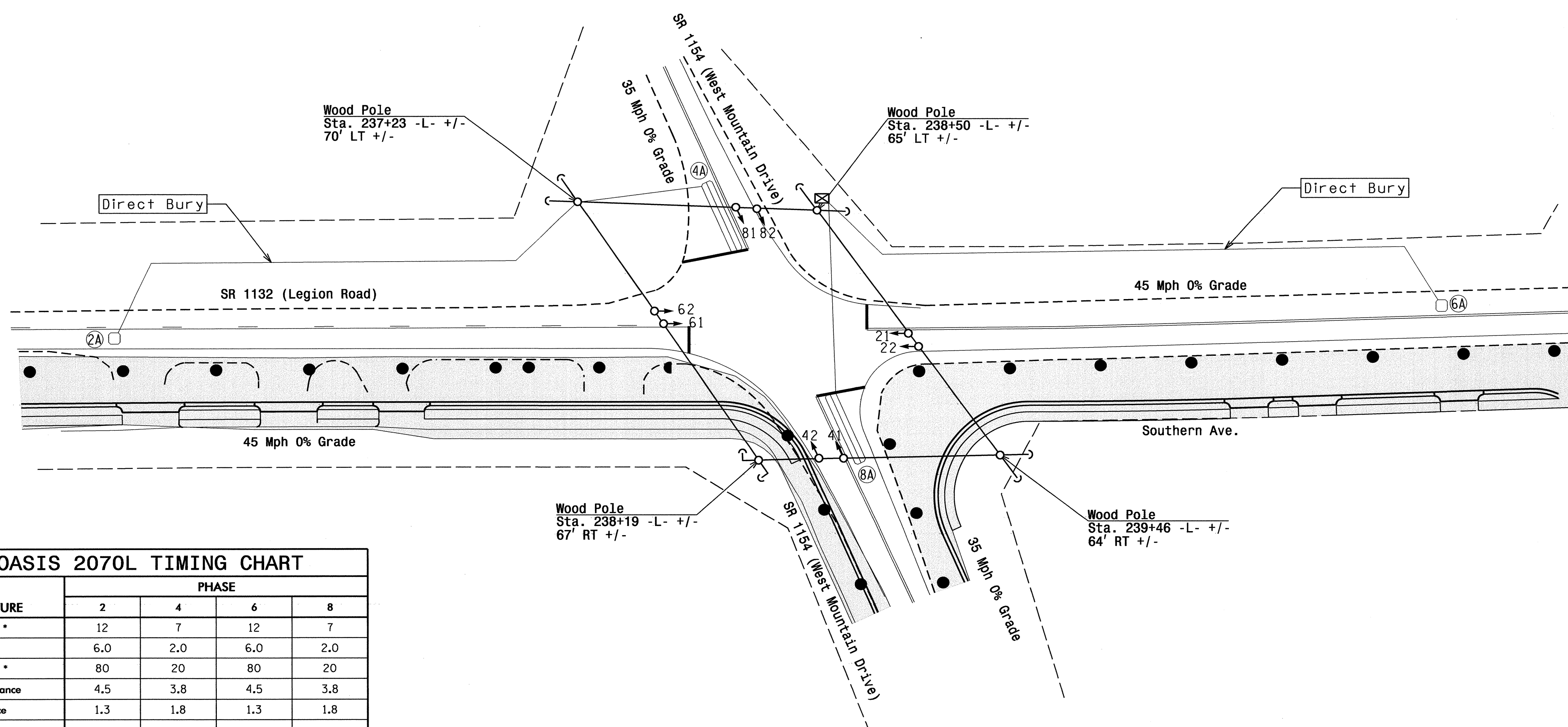
21, 22
41, 42
61, 62
81, 82

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART											
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					LOOP SYSTEM NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME		DELAY TIME
2A	6X6	300	5	Y	2	Y	Y	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	Y
6A	6X6	300	5	Y	6	Y	Y	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	Y

2 Phase Fully Actuated Fayetteville City System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



FEATURE	OASIS 2070L TIMING CHART			
	PHASE			
	2	4	6	8
Min Green 1 *	12	7	12	7
Extension 1 *	6.0	2.0	6.0	2.0
Max Green 1 *	80	20	80	20
Yellow Clearance	4.5	3.8	4.5	3.8
Red Clearance	1.3	1.8	1.3	1.8
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	3.0	-	3.0	-
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	● → N/A
● → Modified Signal Head	- → N/A
⊥ → Sign	⊥ → N/A
⊥ → Pedestrian Signal Head	⊥ → N/A
⊥ → Signal Pole with Push Button & Sign	⊥ → N/A
⊥ → Signal Pole with Guy	⊥ → N/A
⊥ → Signal Pole with Sidewalk Guy	⊥ → N/A
⊥ → Inductive Loop Detector	⊥ → N/A
⊥ → Controller & Cabinet	⊥ → N/A
⊥ → Junction Box	⊥ → N/A
⊥ → 2-in Underground Conduit	⊥ → N/A
N/A → Right of Way	--- → N/A
→ → Directional Arrow	→ → N/A
● → Construction Zone Drums	● → N/A

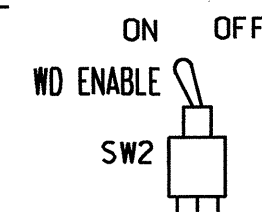
Signal Upgrade - Temp 1 Phase I

	<p>SR 1132 (Legion Road/ Southern Avenue) at SR 1154 (West Mountain Drive)</p>		
	<p>Division 6 Cumberland County Fayetteville</p>		
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>		<p>PREPARED BY: I. O. Umzurike REVIEWED BY: J. P. Galloway</p>	
<p>SCALE 0 40 1"=40'</p>		<p>REVISIONS INIT. DATE</p>	
<p>DATE 5/11/12</p>		<p>SIG. INVENTORY NO. 09-007411</p>	

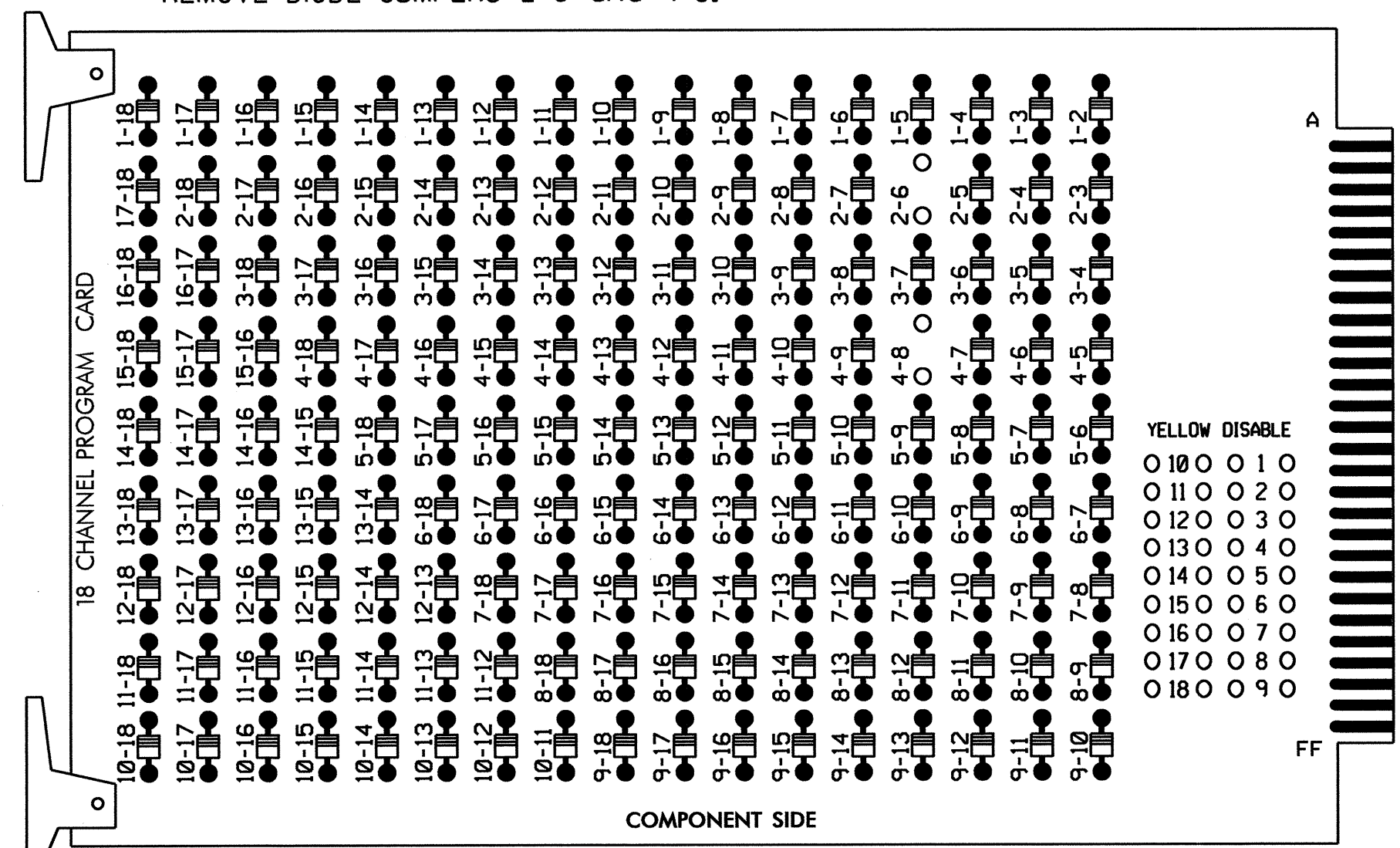
11-MAY-2012 12:40
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**EDI MODEL 2018ECL-NC CONFLICT MONITOR
PROGRAMMING DETAIL**

(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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- 3. Ensure that Red Enable is active at all times during normal operation.
- 4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

■ = 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. Program phases 4 and 8 for Dual Entry.
- 3. Enable Simultaneous Gap-Out for all phases.
- 4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
- 5. Program phases 2 and 6 for Start Up In Green.
- 6. Program phases 2 and 6 for Yellow Flash.
- 7. The cabinet and controller are part of the Fayetteville City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

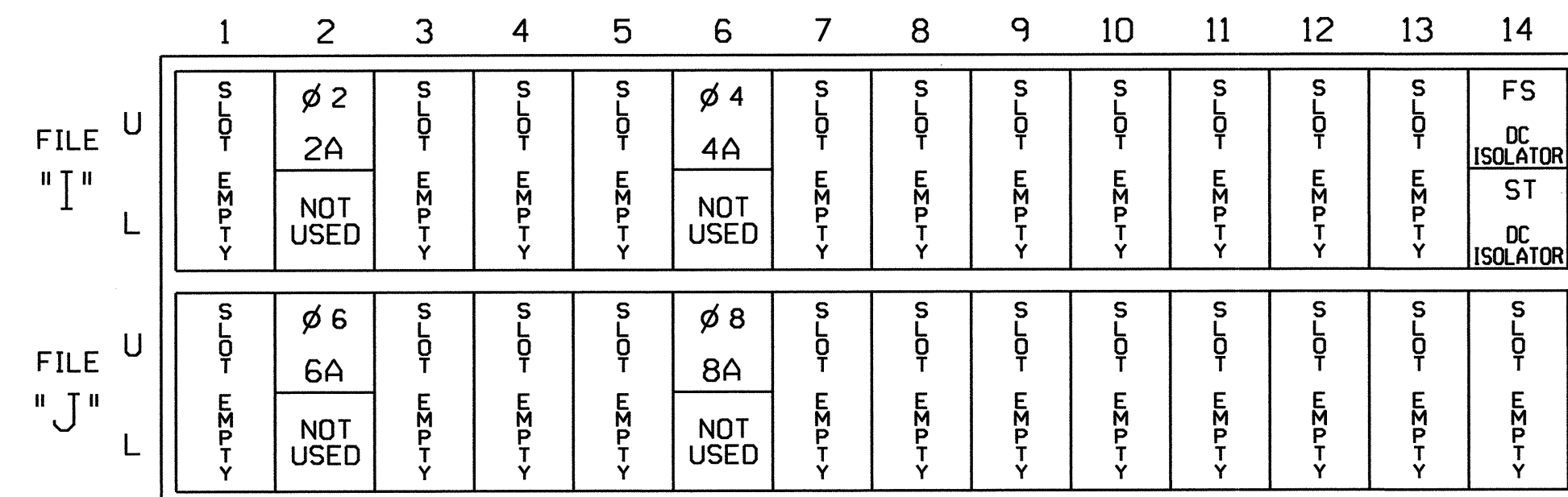
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
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)



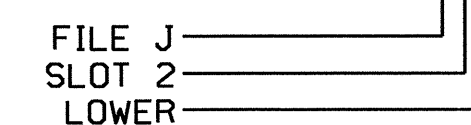
EX. : 1A, 2A, ETC. = LOOP NO.'S

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	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	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			3

INPUT FILE POSITION LEGEND: J2L

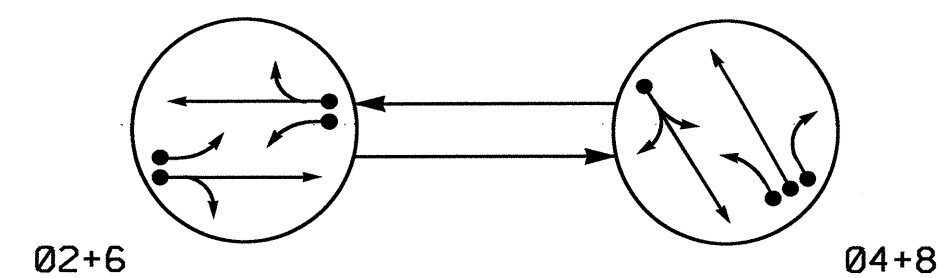


THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0074T1
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

Electrical Detail - Temp 1

<p>Prepared In the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>SR 1132 (Legion Road/ Southern Avenue) at SR 1154 (West Mountain Drive)</p> <p>Division 6 Cumberland County Fayetteville</p> <p>PLAN DATE: May 2012 REVIEWED BY: T. J. Strickland</p> <p>PREPARED BY: C. Strickland REVIEWED BY:</p>	<p>SEAL</p> <p>GEORGE C. BROWN</p> <p>ENGINEER</p> <p>05/11/12</p> <p>SIG. INVENTORY NO. 06-0074T1</p>								
	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		NO.	DATE	INIT.	DATE				
	NO.		DATE	INIT.	DATE					
<p>Electrical AND PROGRAMMING DETAILS FOR:</p>										
<p>Signature and Date</p>										

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

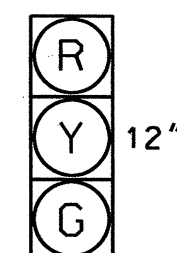
- → DETECTED MOVEMENT
- → UNDETECTED MOVEMENT (OVERLAP)
- → UNSIGNALIZED MOVEMENT
- → PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+6	04+8	FLSH
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

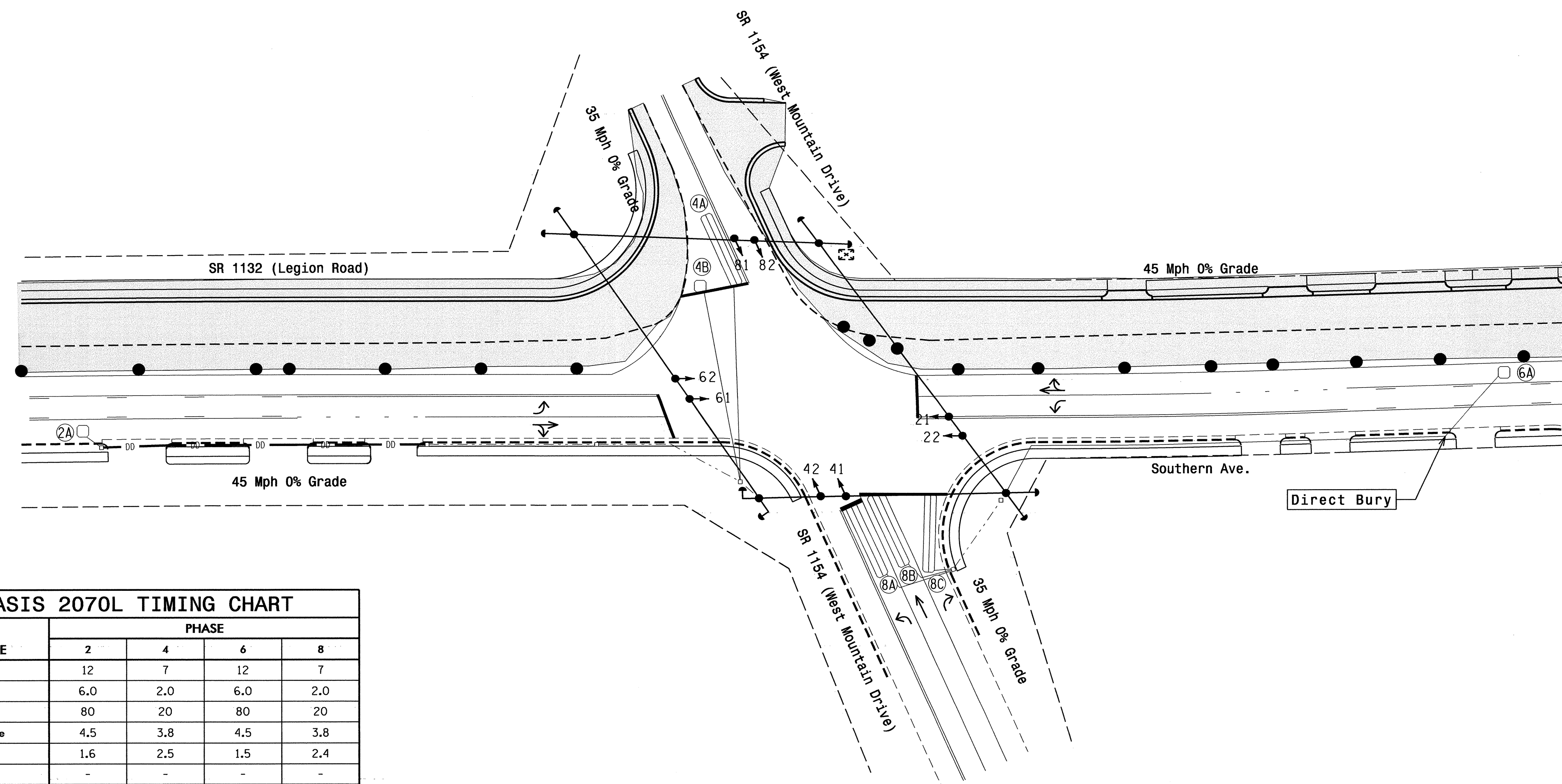
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	-
4B	6X6	0	4	Y	4	Y	Y	-	-	15	-	-
6A	6X6	300	4	Y	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	-
8C	6X40	0	2-4-2	Y	8	Y	Y	-	-	15	-	-

2 Phase Fully Actuated Fayetteville City System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



OASIS 2070L TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	12	7	12	7
Extension 1 *	6.0	2.0	6.0	2.0
Max Green 1 *	80	20	80	20
Yellow Clearance	4.5	3.8	4.5	3.8
Red Clearance	1.6	2.5	1.5	2.4
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

* 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	● → Traffic Signal Head
● → Modified Signal Head	N/A
⊥ Sign	⊥ Sign
⊥ Pedestrian Signal Head With Push Button & Sign	⊥ Pedestrian Signal Head With Push Button & Sign
○ Signal Pole with Guy	● Signal Pole with Guy
⊥ Signal Pole with Sidewalk Guy	⊥ Signal Pole with Sidewalk Guy
□ Inductive Loop Detector	□ Inductive Loop Detector
⊠ Controller & Cabinet	⊠ Controller & Cabinet
□ Junction Box	□ Junction Box
--- 2-in Underground Conduit	--- 2-in Underground Conduit
N/A Right of Way	N/A Right of Way
→ Directional Arrow	→ Directional Arrow
● Construction Zone Drums	● Construction Zone Drums
--- Directional Drill	N/A

Signal Upgrade - Temp 2 Phase II

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

**SR 1132 (Legion Road/
Southern Avenue)
at
SR 1154 (West Mountain Drive)**

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2012 REVIEWED BY: J. P. Galloway

PREPARED BY: I. O. Umzurike REVIEWED BY:

SEAL

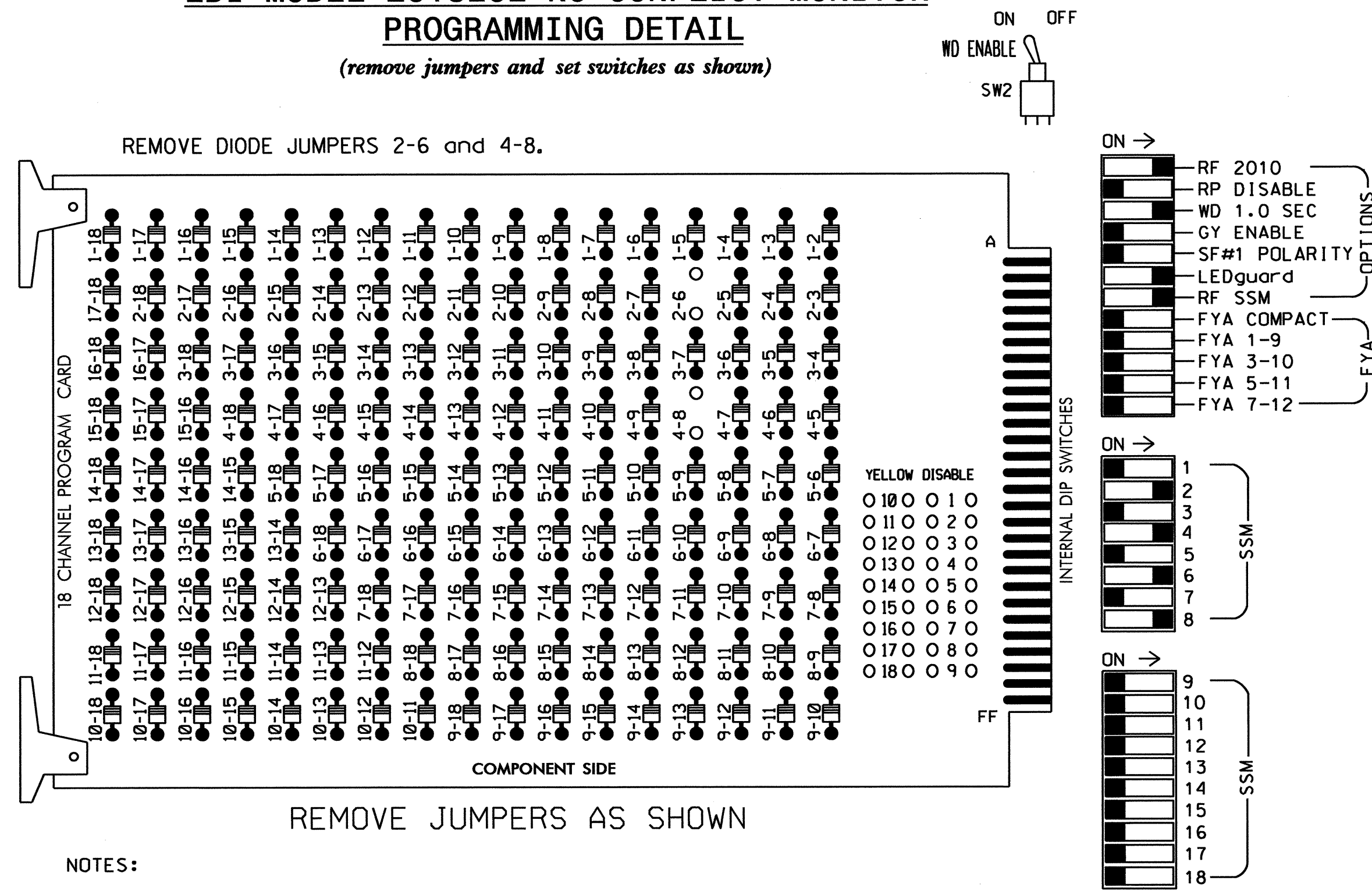
DATE: 5/14/12

SIG. INVENTORY NO. 06-007472

14-MAY-2012 06:13:41 \\s1p01\is\pdes\gms\1s\06-0074\06007472-s1p-dgn_2012mmdu.dgn

**EDI MODEL 2018ECL-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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the Fayetteville City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

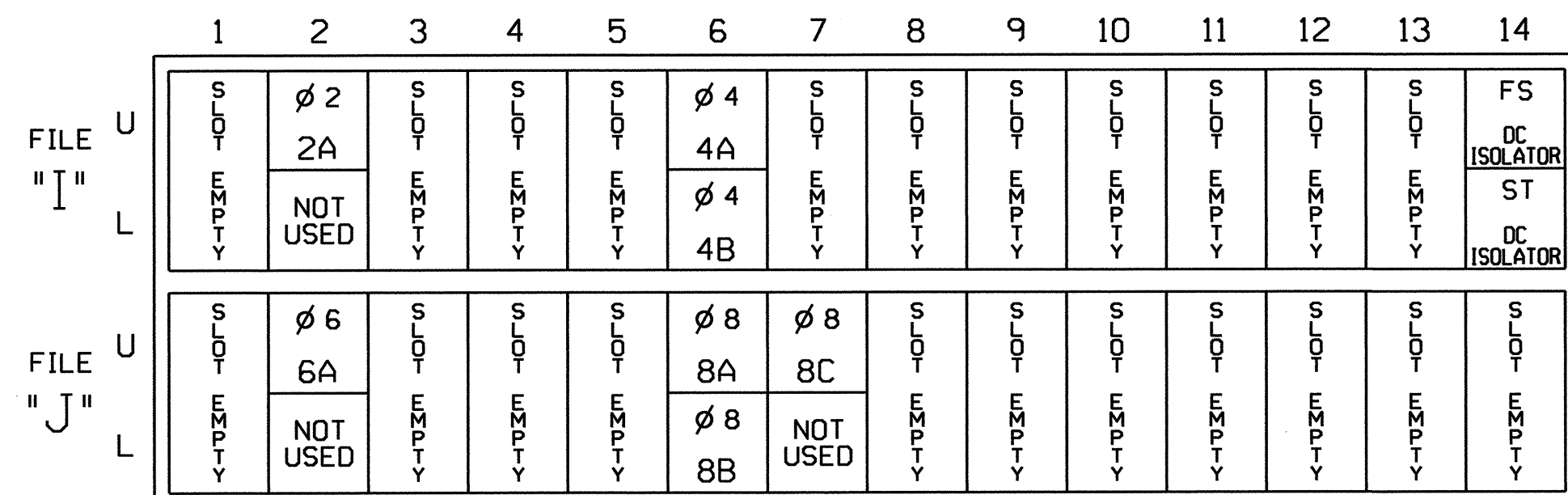
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
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

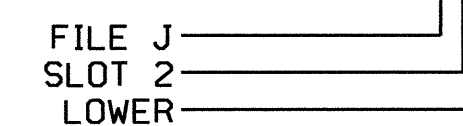
(front view)



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			15
6A	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			
8C	TB7-1,2	J7U	66	28	38	8	Y	Y			15

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0074T2
 DESIGNED: March 2012
 SEALED: 05/14/12
 REVISED: N/A

Electrical Detail - Temp 2

Electrical and Programming Details for:

SR 1132 (Legion Road/Southern Avenue)
 at
 SR 1154 (West Mountain Drive)

Division 6 Cumberland County Fayetteville

PLAN DATE: May 2012 REVIEWED BY: T. J. J...

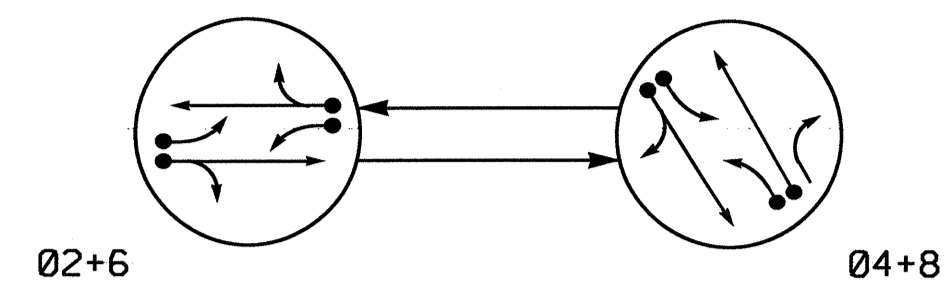
PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS: INIT. DATE

Signature: George C. Brown, 5/15/12

SIG. INVENTORY NO. 06-0074T2

PHASING DIAGRAM

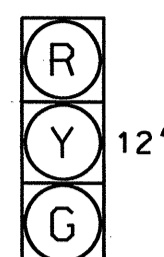


PHASING DIAGRAM DETECTION LEGEND
 ● DETECTED MOVEMENT
 ◄ UNDETECTED MOVEMENT (OVERLAP)
 - - - UNSIGNALIZED MOVEMENT
 <- - - PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE		
	02+6	04+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.



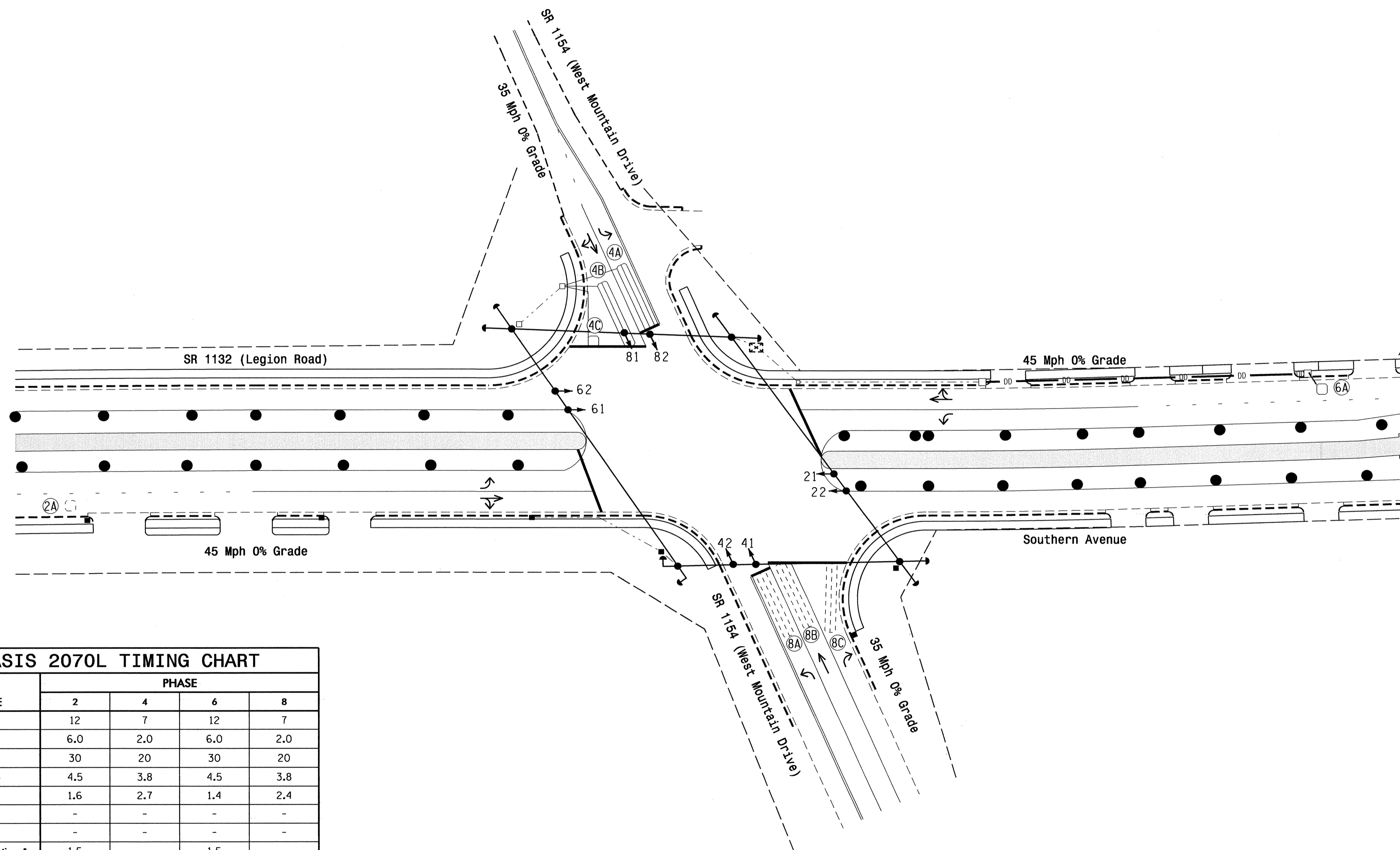
21, 22
41, 42
61, 62
81, 82

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING									
				NEW LOOP	PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD		
2A	6X6	300	4	-	2	Y	Y	-	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-	Y
4C	6X6	0	4	Y	4	Y	Y	-	-	15	-	-	Y
6A	6X6	300	4	Y	6	Y	Y	-	-	-	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	-	-	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	-	-	-	-
8C	6X40	0	2-4-2	-	8	Y	Y	-	-	15	-	-	-

2 Phase Fully Actuated Fayetteville City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	12	7	12	7
Extension 1 *	6.0	2.0	6.0	2.0
Max Green 1 *	30	20	30	20
Yellow Clearance	4.5	3.8	4.5	3.8
Red Clearance	1.6	2.7	1.4	2.4
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	1.5	-	1.5	-
Max Variable Initial *	34	-	34	-
Time Before Reduction *	30	-	30	-
Time To Reduce *	45	-	45	-
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

* 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	● → N/A
● → Modified Signal Head	- Sign
⊥ Pedestrian Signal Head	⊥ Signal Pole with Guy
⊥ With Push Button & Sign	⊥ Signal Pole with Sidewalk Guy
⊥ Signal Pole with Guy	⊥ Inductive Loop Detector
⊥ Signal Pole with Sidewalk Guy	⊥ Controller & Cabinet
⊥ Inductive Loop Detector	⊥ Junction Box
⊥ Controller & Cabinet	⊥ 2-in Underground Conduit
⊥ Junction Box	- - - Right of Way
⊥ 2-in Underground Conduit	→ Directional Arrow
- - - Right of Way	→ Construction Zone Drums
→ Directional Arrow	→ Directional Drill
→ Construction Zone Drums	N/A
→ Directional Drill	

Signal Upgrade - Temp 3 Phase III

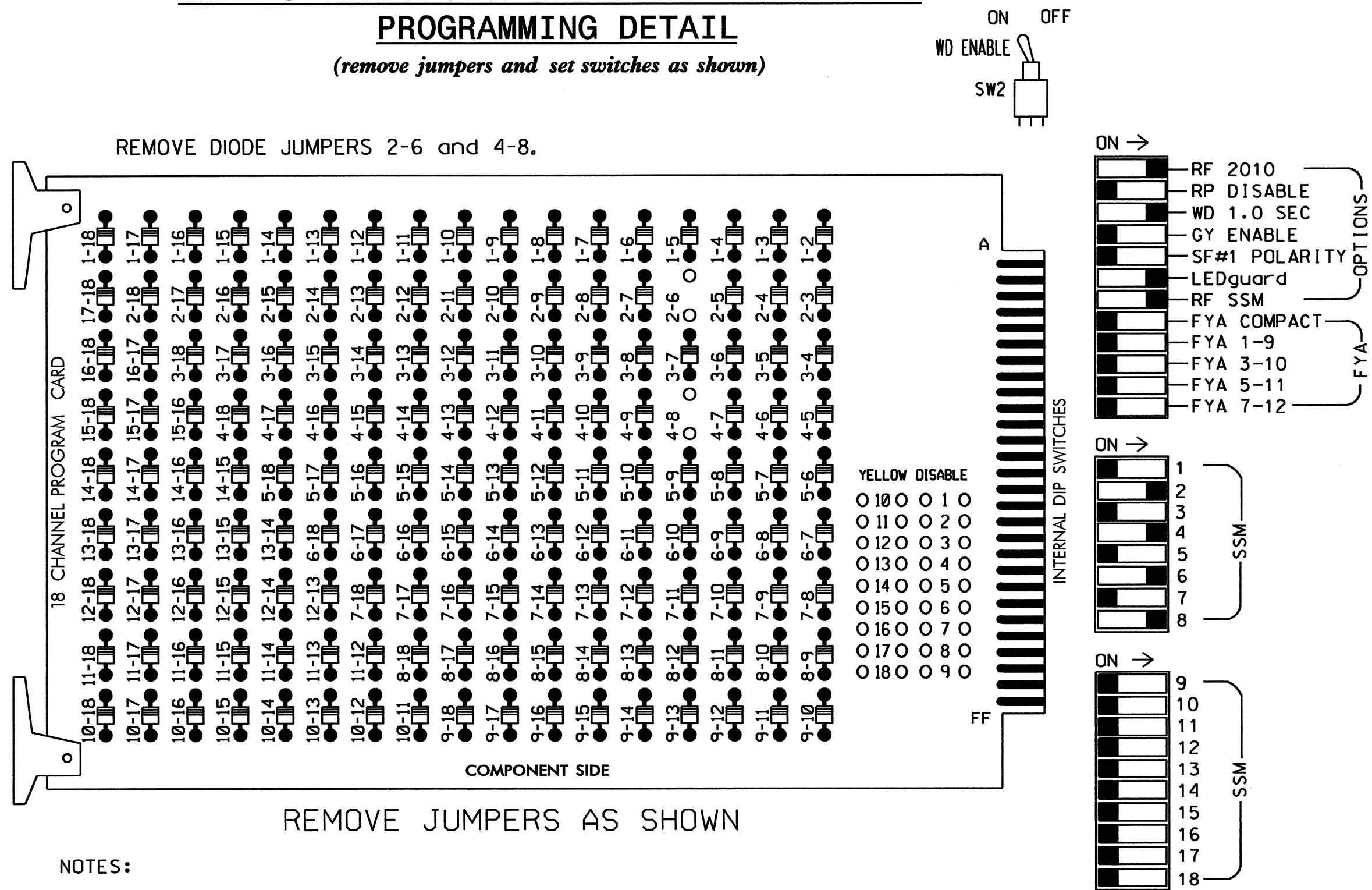
	SR 1132 (Legion Road/ Southern Avenue) at SR 1154 (West Mountain Drive)	
	Division 6 Cumberland County Fayetteville	
	PLAN DATE: March 2012	REVIEWED BY: J. P. Galloway
PREPARED BY: I. O. Umzurike	REVIEWED BY:	DATE: 5/11/12
SCALE: 1" = 40'	REVISIONS:	INIT. DATE:
750 N. Greenfield Pkwy, Garner, NC 27529		SIG. INVENTORY NO. 06-007413

11-MAY-2012 13:10:21 I:\GIS\Projects\GIS\GIS\1132_1154\1132_1154.dgn 2012mm.dwg dgm

EDI MODEL 2018ECL-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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the Fayetteville City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
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	∅ 2	∅ 2	∅ 2	∅ 2	∅ 2	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4
L	2A	NOT USED	NOT USED	NOT USED	NOT USED	4A	4C	4B	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
U	∅ 6	∅ 6	∅ 6	∅ 6	∅ 6	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8
L	6A	NOT USED	NOT USED	NOT USED	NOT USED	8A	8C	8B	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

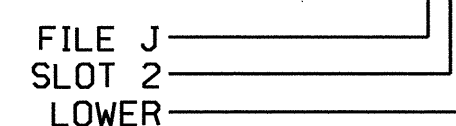
EX.: 1A, 2A, ETC. = LOOP NO.'S

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
2A	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			
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			15
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			
8C	TB7-1,2	J7U	66	28	38	8	Y	Y			15

INPUT FILE POSITION LEGEND: J2L



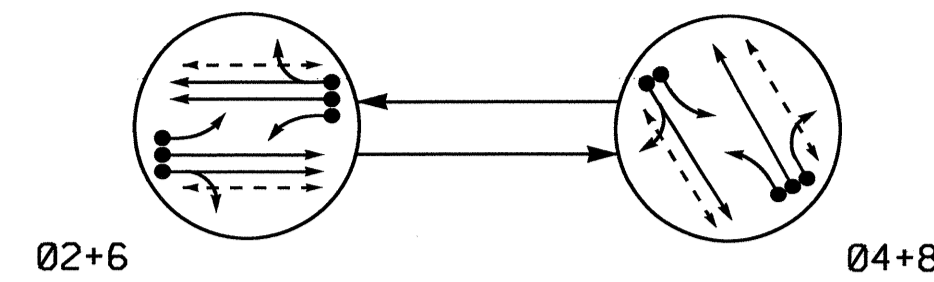
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0074T3
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

Electrical Detail - Temp 3

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: TRANSPORTATION MOBILITY AND SAFETY SOLUTIONS, INC. Signal Management Systems 750 N. Greenfield Pkwy, Garner, NC 27529	SR 1132 (Legion Road/ Southern Avenue) at SR 1154 (West Mountain Drive)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN SIGNATURE DATE
	Division 6 Cumberland County Fayetteville PLAN DATE: May 2012 PREPARED BY: C. Strickland	REVIEWED BY: T. J. h REVIEWED BY: REVISIONS INIT. DATE	

14-MAY-2012 13:08
 S:\1154\1154_SigHead\1154_SigHead.dgn
 S:\1154\1154_SigHead\1154_SigHead.dgn

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

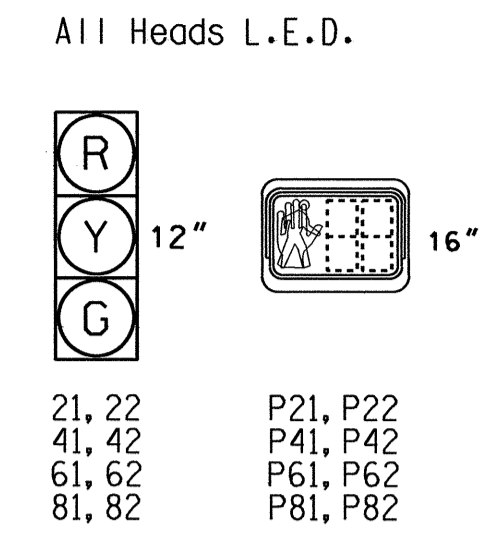
- → DETECTED MOVEMENT
- → UNDETECTED MOVEMENT (OVERLAP)
- → UNSIGNALIZED MOVEMENT
- ↔ → PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+6	04+8	FLTS
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

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

SIGNAL FACE I.D.



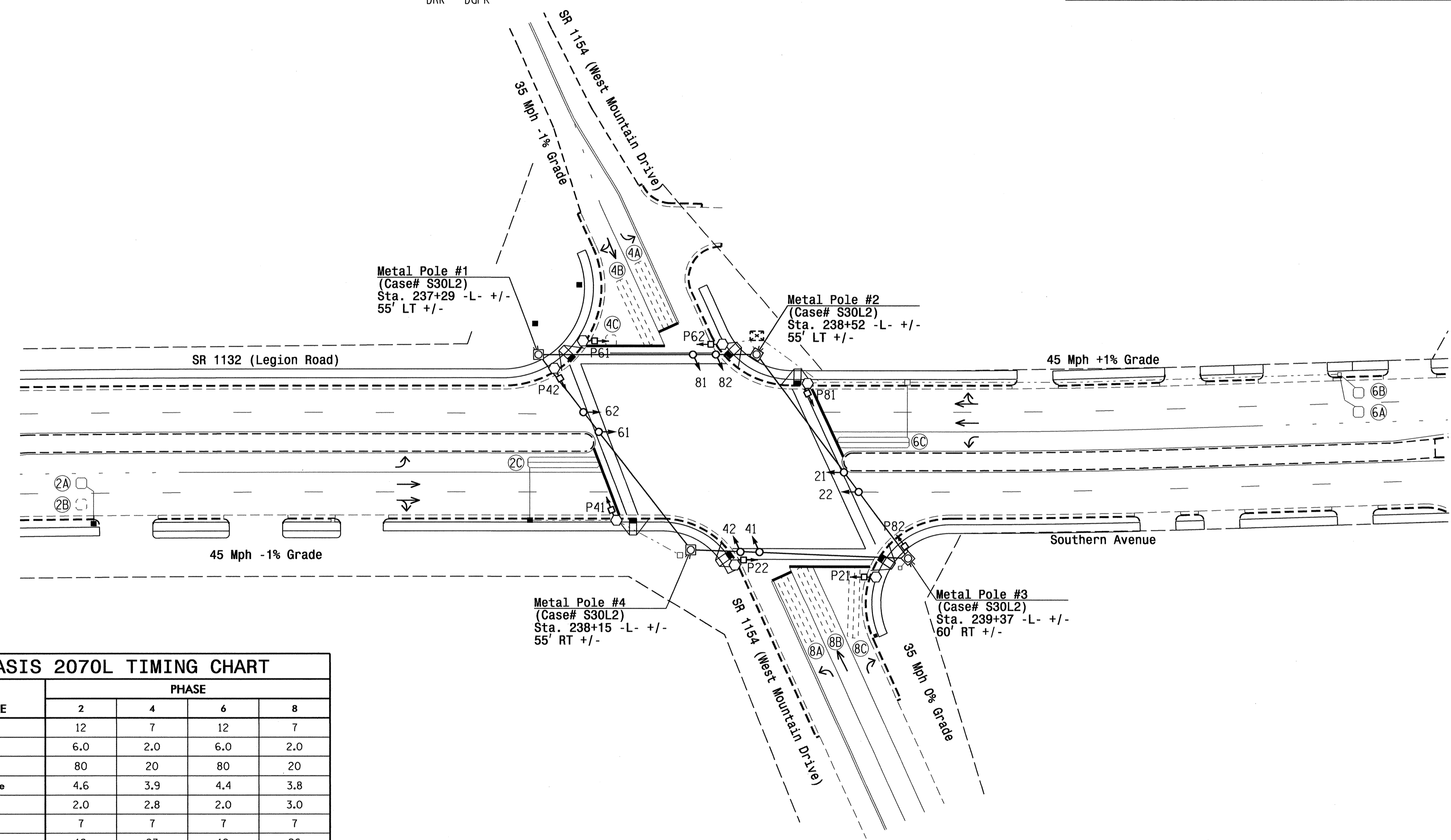
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME		
2A	6X6	300	4	-	2	Y	Y	-	-	-	-
2B	6X6	300	4	-	2	Y	Y	-	-	-	-
2C	6X40	0	2-4-2	Y	2	Y	Y	Y	-	3	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-
4C	6X6	0	4	-	4	Y	Y	-	-	15	-
6A	6X6	300	4	Y	6	Y	Y	-	-	-	-
6B	6X6	300	4	Y	6	Y	Y	-	-	-	-
6C	6X40	0	2-4-2	Y	6	Y	Y	Y	-	3	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	-	-
8C	6X40	0	2-4-2	-	8	Y	Y	-	-	15	-

2 Phase Fully Actuated Fayetteville City System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



OASIS 2070L TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1*	12	7	12	7
Extension 1*	6.0	2.0	6.0	2.0
Max Green 1*	80	20	80	20
Yellow Clearance	4.6	3.9	4.4	3.8
Red Clearance	2.0	2.8	2.0	3.0
Walk 1*	7	7	7	7
Don't Walk 1	18	23	19	26
Seconds Per Actuation*	1.5	-	1.5	-
Max Variable Initial*	34	-	34	-
Time Before Reduction*	30	-	30	-
Time To Reduce*	45	-	45	-
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

* 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	● → N/A
● → Modified Signal Head	- → N/A
⊥ → Sign	⊥ → N/A
⊥ → Pedestrian Signal Head With Push Button & Sign	⊥ → N/A
○ → Signal Pole with Guy	● → N/A
○ → Signal Pole with Sidewalk Guy	● → N/A
□ → Inductive Loop Detector	□ → N/A
□ → Controller & Cabinet	□ → N/A
□ → Junction Box	□ → N/A
□ → 2-in Underground Conduit	□ → N/A
N/A → Right of Way	--- → N/A
→ → Directional Arrow	→ → N/A
○ → Metal Strain Pole	○ → N/A
○ → Type II Pedestal	○ → N/A

Signal Upgrade - Final

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1132 (Legion Road) / Southern Avenue at SR 1154 (West Mountain Drive)

Division 6 Cumberland County Fayetteville

PLANNED BY: March 2012 REVIEWED BY: J. P. Galloway

PREPARED BY: I. O. Umzurike REVIEWED BY:

SEAL

SEAL 29904

ENGINEER

J. P. Galloway

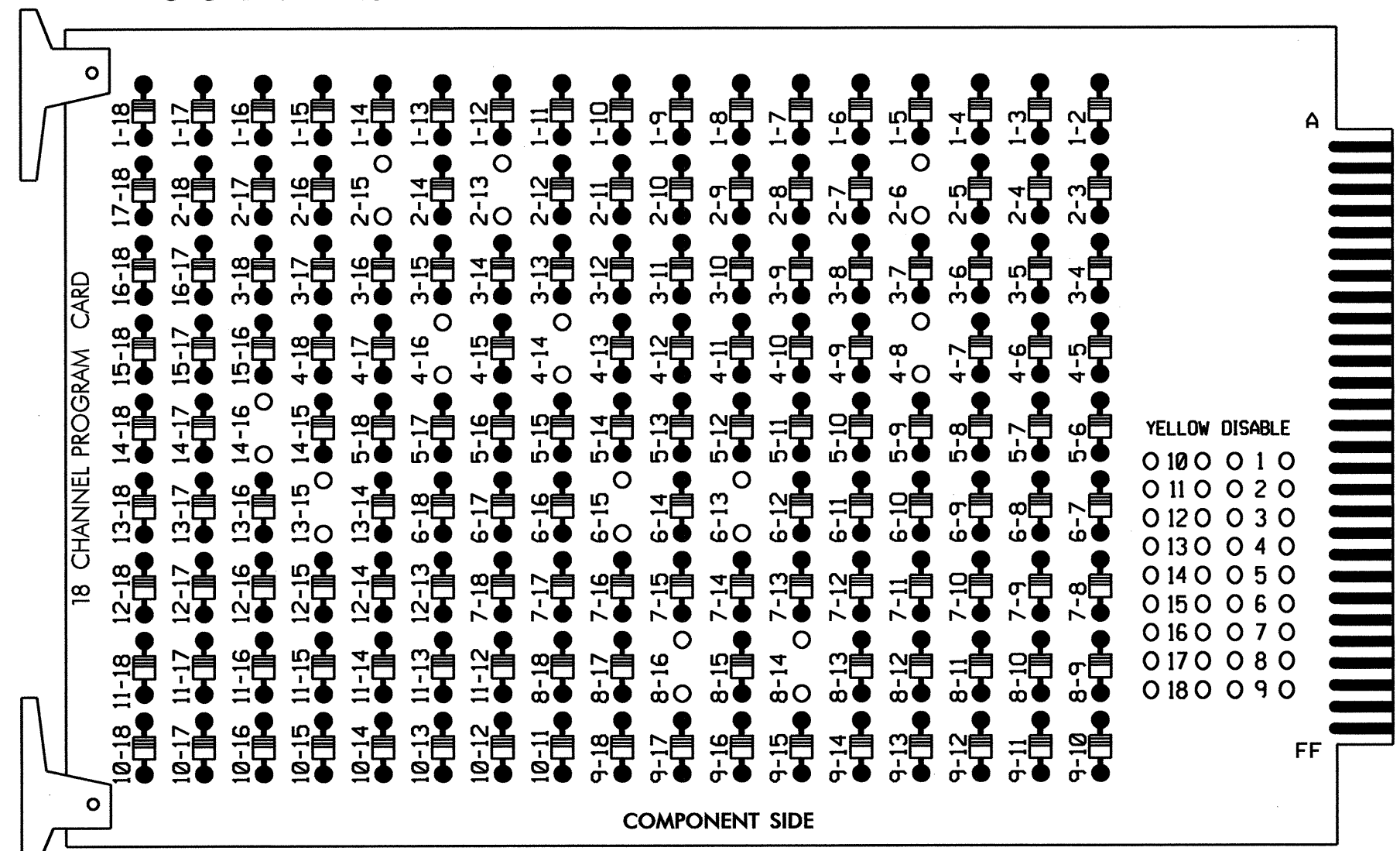
SIG. INVENTORY NO. 06-0074

19-MAY-2012 06:19 I:\projects\2012\06-119\05\plans\sig\sig\06-0074\06-0074.dgn 2012mdd.dgn

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

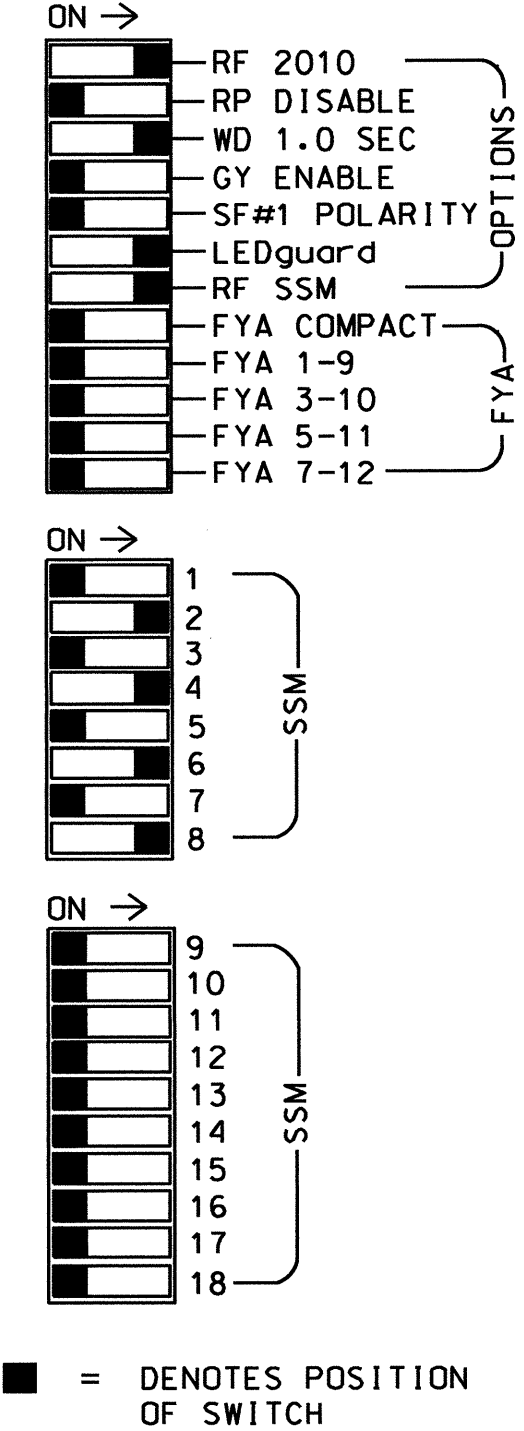
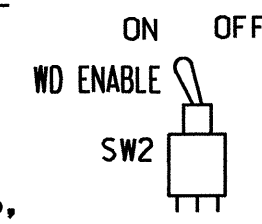
REMOVE DIODE JUMPERS 2-6, 2-13, 2-15, 4-8, 4-14, 4-16, 6-13, 6-15, 8-14, 8-16, 13-15 and 14-16.



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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.



NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Start Up In Green.
6. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
7. Program phases 2 and 6 for Yellow Flash.
8. The cabinet and controller are part of the Fayetteville City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S3,S5,S6,S8,S9,S11,S12
 PHASES USED.....2,2 PED,4,4 PED,6,6 PED,8,8 PED
 OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
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												
Hand icon			113			104			119			110
Walker icon			115			106			121			112

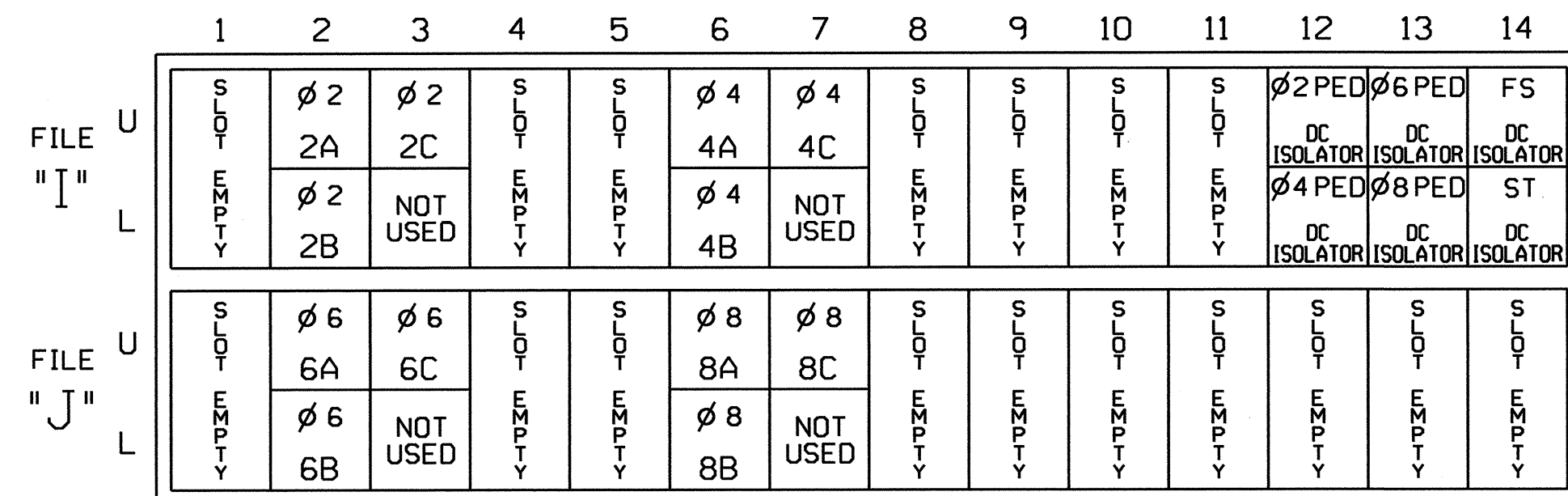
NU = Not Used

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.

INPUT FILE POSITION LAYOUT

(front view)



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

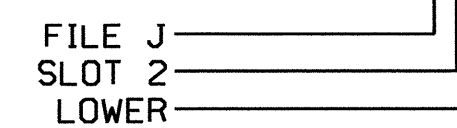
FS = FLASH SENSE
 ST = STOP TIME

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	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	Y		3
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			15
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	Y		3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			
8C	TB7-1,2	J7U	66	28	38	8	Y	Y			15
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 112 AND 113.

INPUT FILE POSITION LEGEND: J2L

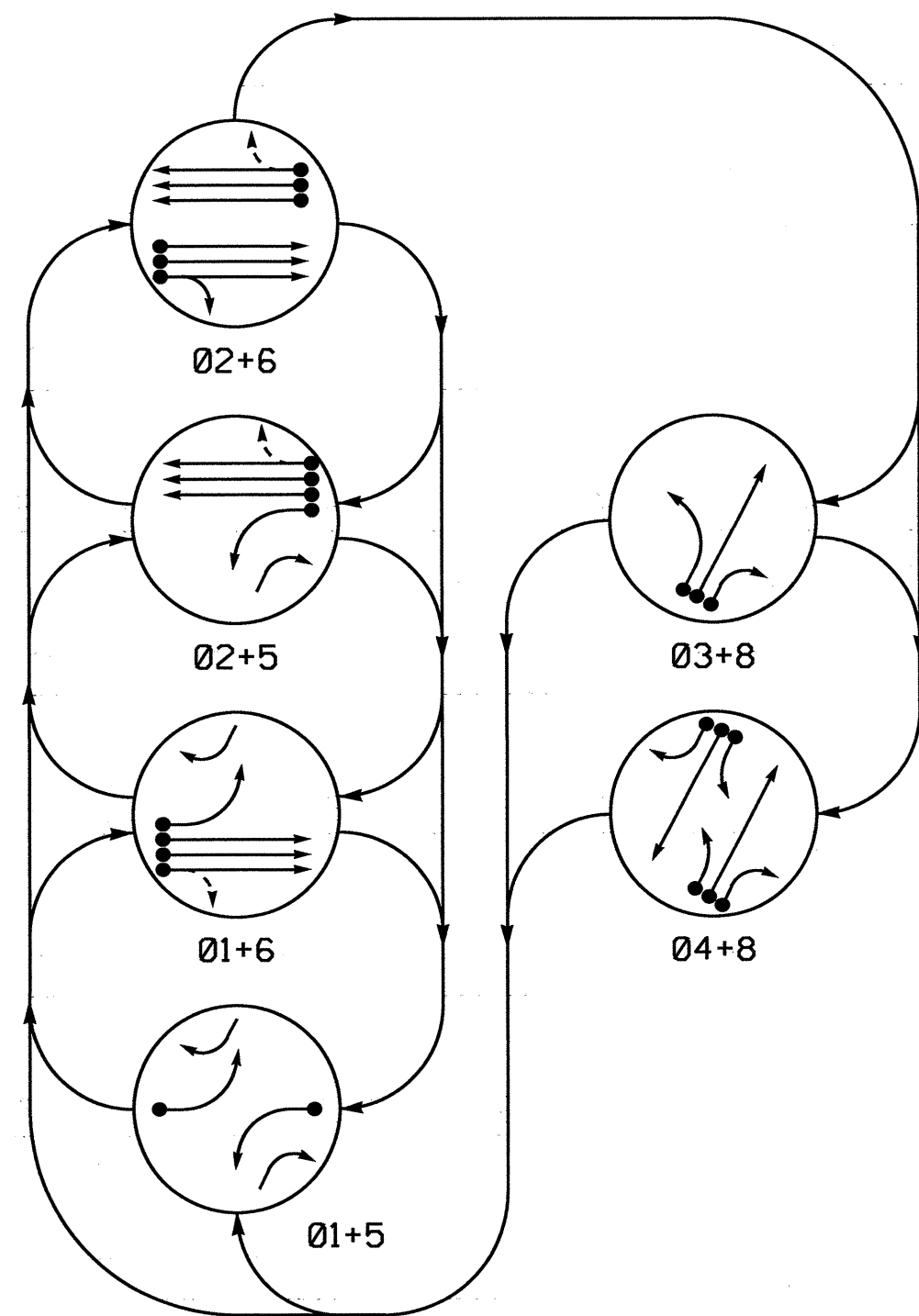


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0074
 DESIGNED: March 2012
 SEALED: 05/14/12
 REVISED: N/A

Electrical Detail - Final

Electrical and Programming Details for:
SR 1132 (Legion Road/Southern Avenue) at SR 1154 (West Mountain Drive)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: May 2012 REVIEWED BY: T. J. G...
 PREPARED BY: C. Strickland REVIEWED BY: ...
 REVISIONS: ... INIT. DATE: ...
 SEAL: GEORGE C. BROWN, PROFESSIONAL ENGINEER, No. 022013
 SIGNATURE: George C. Brown 5/16/12
 SIG. INVENTORY NO. 06-0074

PHASING DIAGRAM

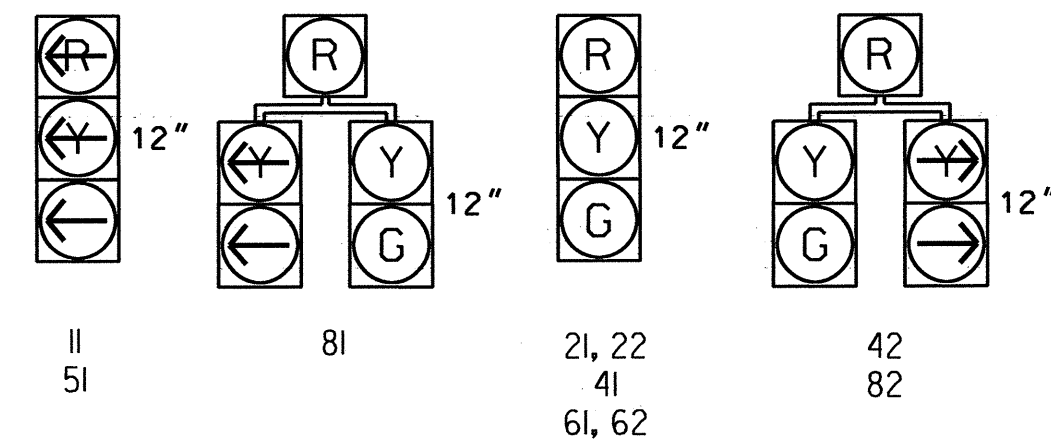


SIGNAL FACE	PHASE							
	01+5	02+6	03+8	04+8	01+6	02+5	03+8	04+8
11	R	R	R	R	R	R	R	R
21, 22	R	R	G	G	R	R	Y	Y
41	R	R	R	R	R	G	R	Y
42	R	R	R	R	R	G	R	Y
51	R	R	R	R	R	R	R	R
61, 62	R	G	R	G	R	R	Y	Y
81	R	R	R	R	G	G	R	Y
82	R	R	R	R	G	G	R	Y

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	STRETCH TIME		
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	-
2A, 2B, 2C	6X6	300	5	-	2	Y	Y	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	15	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-
4B	6X60	0	2-4-2	-	4	Y	Y	-	-	-
4C	6X60	0	2-4-2	-	4	Y	Y	-	15	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	-
6A, 6B, 6C	6X6	300	5	-	6	Y	Y	-	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	-

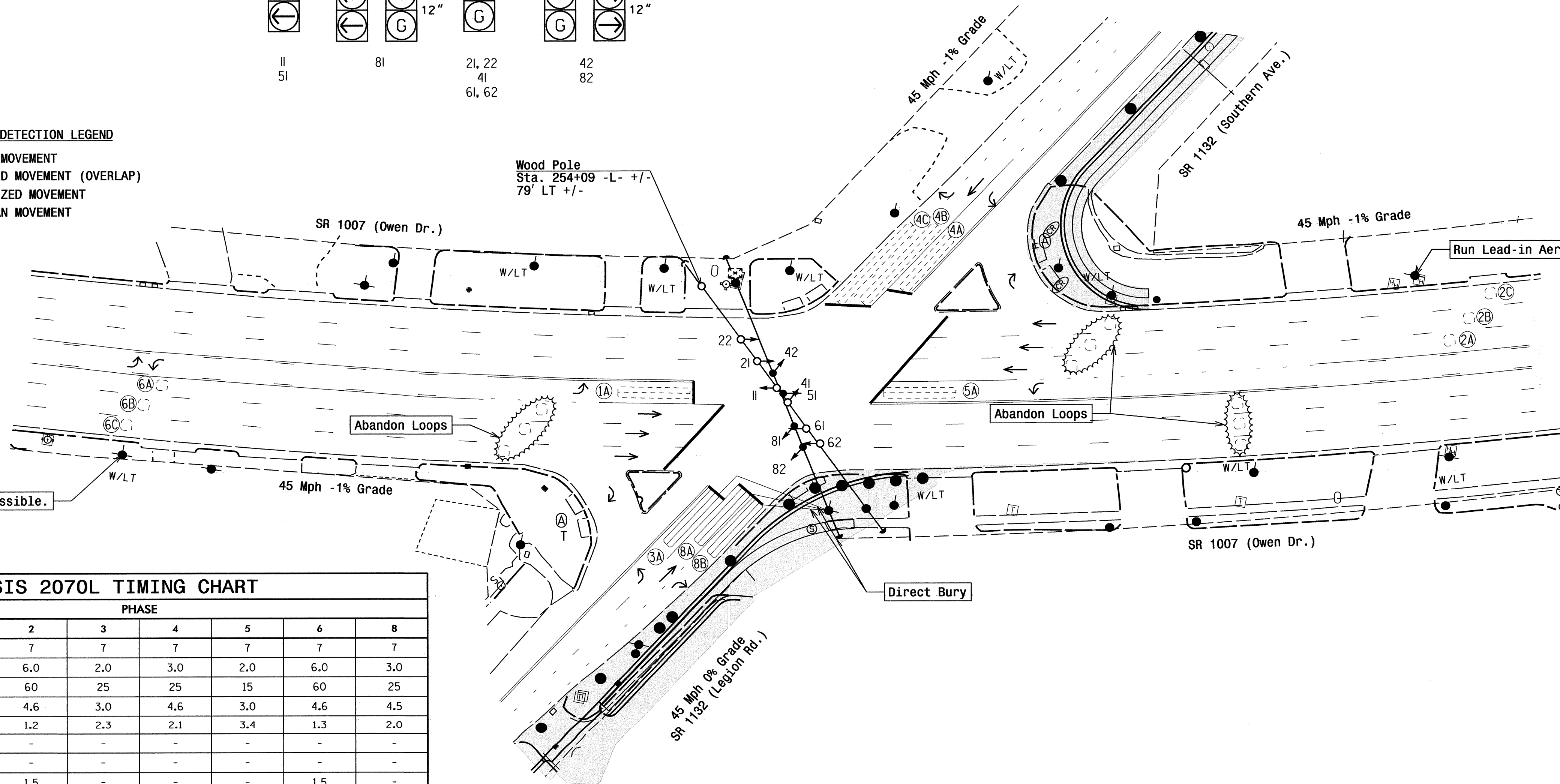
SIGNAL FACE I.D.

All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

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



6 Phase Fully Actuated Fayetteville Signal System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
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. Phase 1 and/or phase 5 may be lagged.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Signal system data: Controller Asset #0075.

OASIS 2070L TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	8	
Min Green 1 *	7	7	7	7	7	7	7	
Extension 1 *	2.0	6.0	2.0	3.0	2.0	6.0	3.0	
Max Green 1 *	24	60	25	25	15	60	25	
Yellow Clearance	3.0	4.6	3.0	4.6	3.0	4.6	4.5	
Red Clearance	3.7	1.2	2.3	2.1	3.4	1.3	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	-	MIN RECALL	-	-	-	MIN 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.

LEGEND

- | | | | |
|-------|---|-------|---|
| ○ | PROPOSED Traffic Signal Head | ● | EXISTING Traffic Signal Head |
| ○ | PROPOSED Modified Signal Head | N/A | EXISTING Modified Signal Head |
| + | PROPOSED Signal | - | EXISTING Signal |
| + | PROPOSED Pedestrian Signal Head With Push Button & Sign | + | EXISTING Pedestrian Signal Head With Push Button & Sign |
| ⊕ | PROPOSED Signal Pole with Guy | ⊕ | EXISTING Signal Pole with Guy |
| ⊕ | PROPOSED Signal Pole with Sidewalk Guy | ⊕ | EXISTING Signal Pole with Sidewalk Guy |
| ⊗ | PROPOSED Inductive Loop Detector | ⊗ | EXISTING Inductive Loop Detector |
| ⊠ | PROPOSED Controller & Cabinet | ⊠ | EXISTING Controller & Cabinet |
| ■ | PROPOSED Junction Box | ■ | EXISTING Junction Box |
| - - - | PROPOSED 2-in Underground Conduit | - - - | EXISTING 2-in Underground Conduit |
| N/A | PROPOSED Right of Way | - - - | EXISTING Right of Way |
| → | PROPOSED Directional Arrow | → | EXISTING Directional Arrow |
| A | PROPOSED "YIELD" Sign (R1-2) | A | EXISTING "YIELD" Sign (R1-2) |
| • | PROPOSED Construction Zone Drums | • | EXISTING Construction Zone Drums |

Signal Upgrade - Temp 1 Phase I

Prepared In the Office of:

SR 1007 (Owen Drive) at SR 1132 (Legion Road/Southern Avenue)

Division 6 Cumberland County Fayetteville

PLANNING & DESIGN SECTION

PREPARED BY: I. O. Umozurike REVIEWED BY:

DATE: 5/4/12

SCALE: 1"=40'

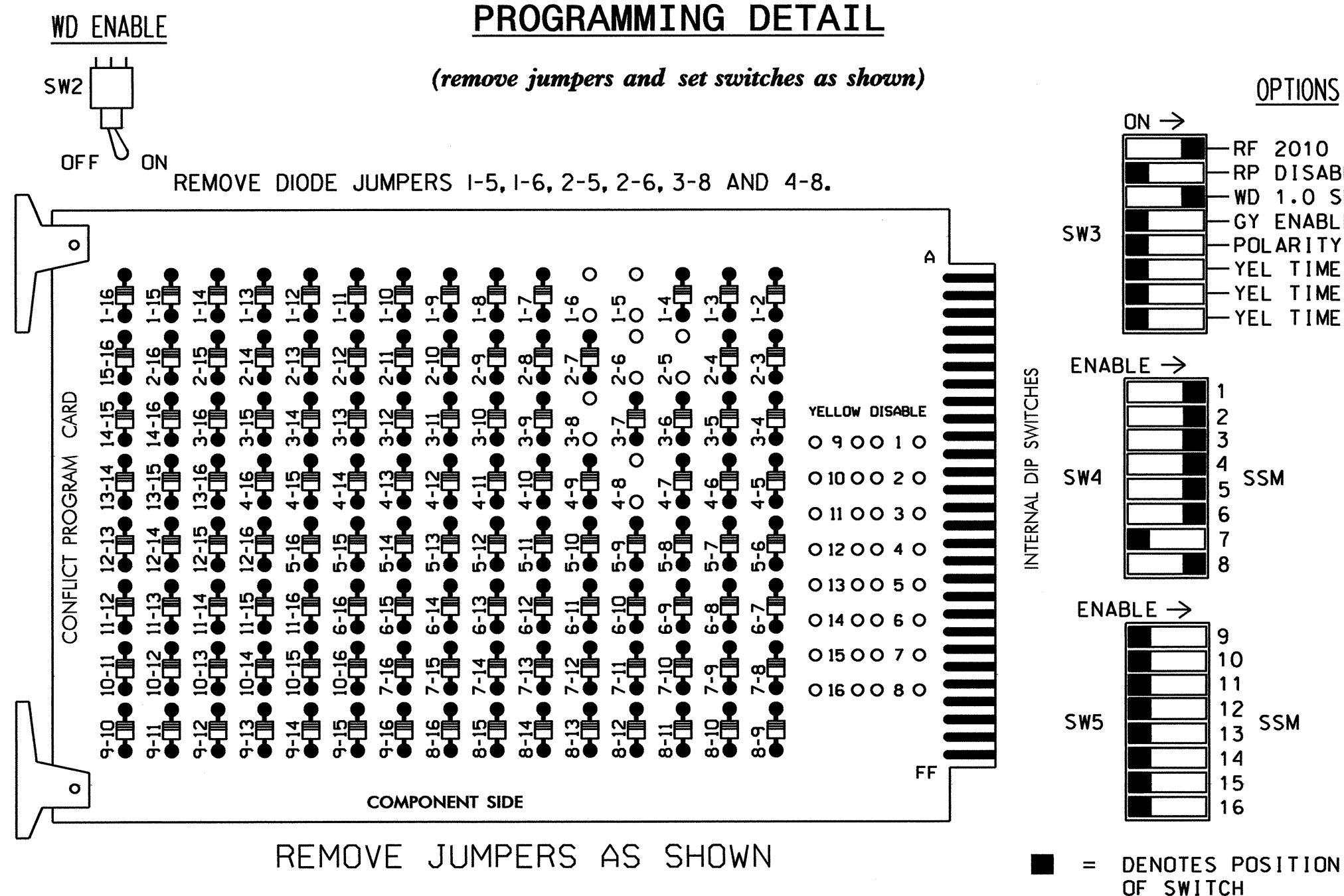
SIGNATURE: [Signature]

SEAL: [Professional Engineer Seal - I. O. Umozurike]

SIG. INVENTORY NO. 06-007511

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 7,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Fayetteville 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.	11	42	21,22	NU	81	41,42	NU	82	51	61,62	NU	81,82
RED		128		*	101			134				107
YELLOW		129			102			135				108
GREEN		130			103			136				109
RED ARROW	125							131				
YELLOW ARROW	126	126			117		132	132				
GREEN ARROW	127	127			118		133	133				

NU = Not Used

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

EQUIPMENT INFORMATION

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

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

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

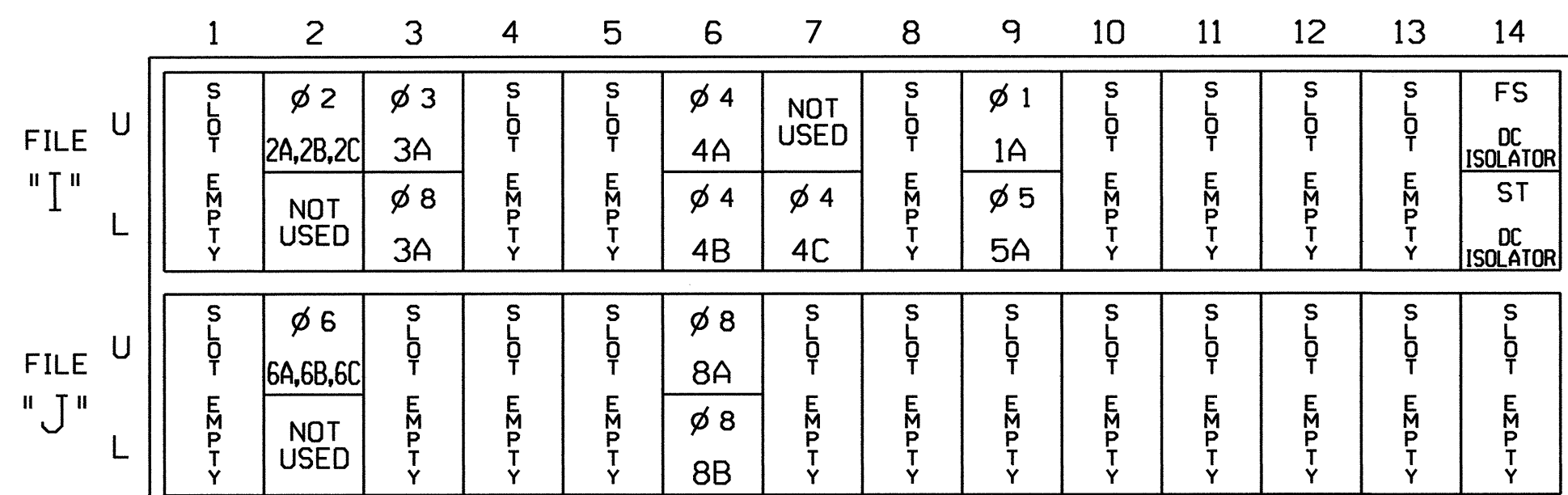
DYNAMIC/BACKUP CONTROL FUNCTION #01
 OVERLAPS:;ABCDEFGHIJKLMNPO
 IF OVERLAPS ARE ACTIVE ;
 OR PHASES:;12345678910111213141516
 IF PHASES ARE ON: ; X
 OMIT PHASES ; ; X
 CALL PHASES ; ;

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0075T1
 DESIGNED: March 2012
 SEALED: 05/14/12
 REVISED: N/A

INPUT FILE POSITION LAYOUT

(front view)



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

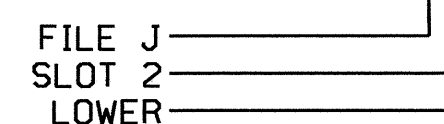
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

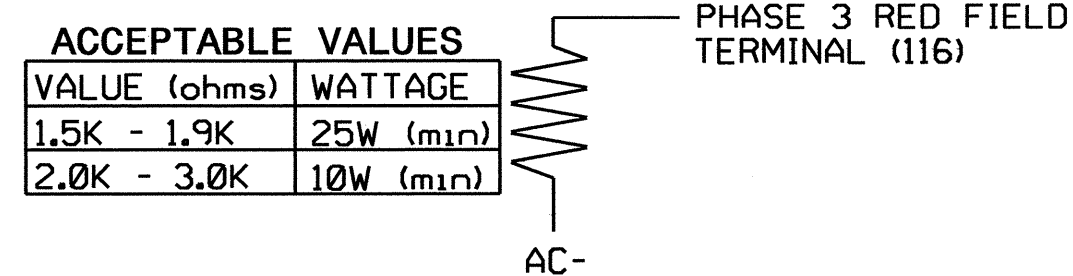
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB6-9,10	I9U	60	22	11	1	Y	Y			
2A,2B,2C	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB2-9,10	I3U	63	25	32	3	Y	Y			15
4A	TB2-11,12	I3L	76	38	42	8	Y	Y			
4B	TB4-9,10	I6U	41	3	4	4	Y	Y			
4C	TB4-11,12	I6L	45	7	14	4	Y	Y			
5A	TB6-3,4	I7L	78	40	44	4	Y	Y			15
6A,6B,6C	TB6-11,12	I9L	62	24	13	5	Y	Y			
8A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8B	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			

1 Add jumpers from TB2-9 to TB2-11, and from TB2-10 to TB2-12.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL



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.

Electrical Detail - Temp 1

Electrical and Programming Details For: SR 1007 (Owen Drive) at SR 1132 (Legion Road/Southern Avenue)

Division 6 Cumberland County Fayetteville

Prepared In the Offices of: Transportation Mobility and Signal Operations

Prepared By: C. Strickland

Reviewed By: T. J. J. J.

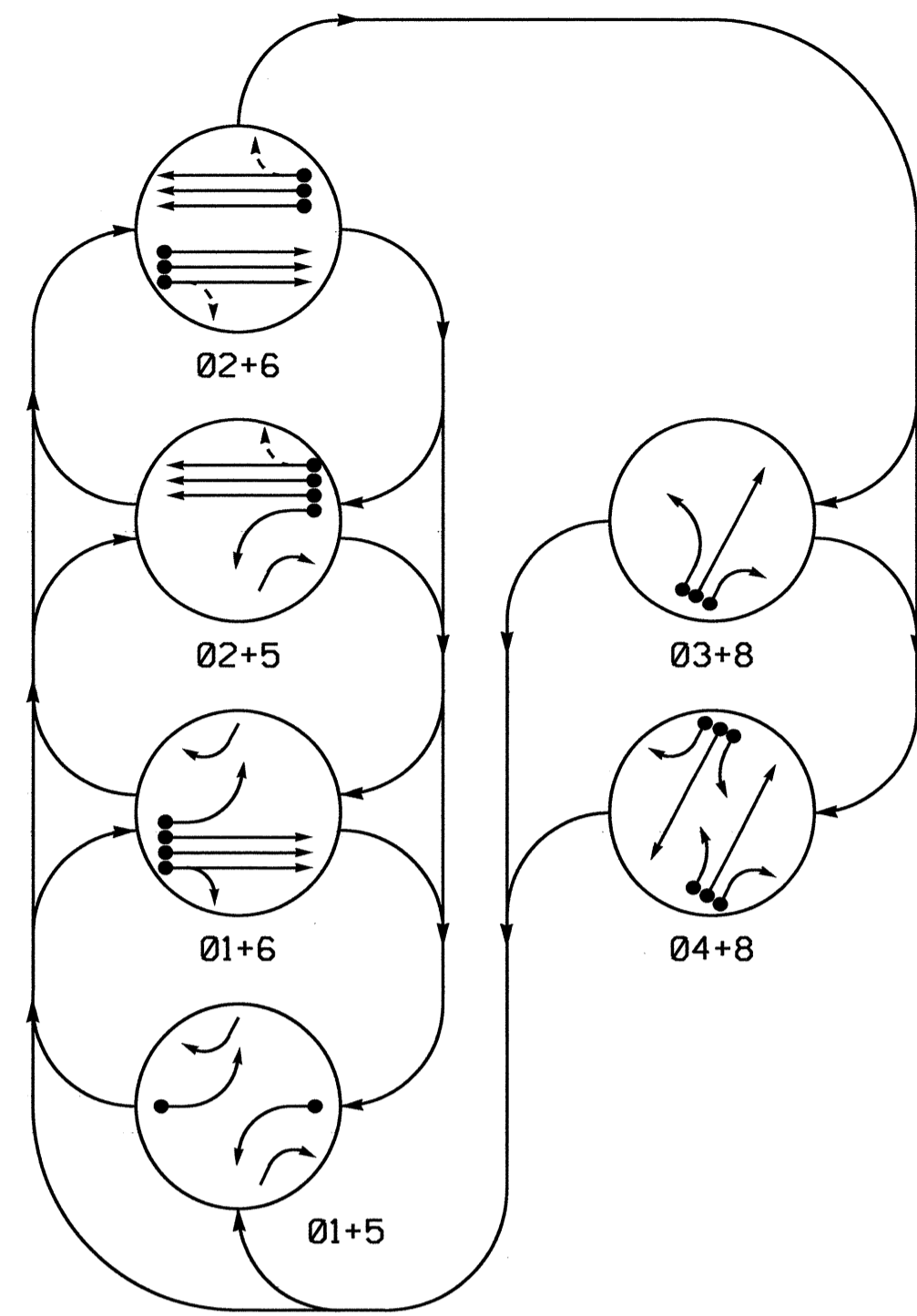
Signature: [Signature]

Date: 5/16/12

Seal: [Professional Engineer Seal]

Sig. Inventory No. 06-0075T1

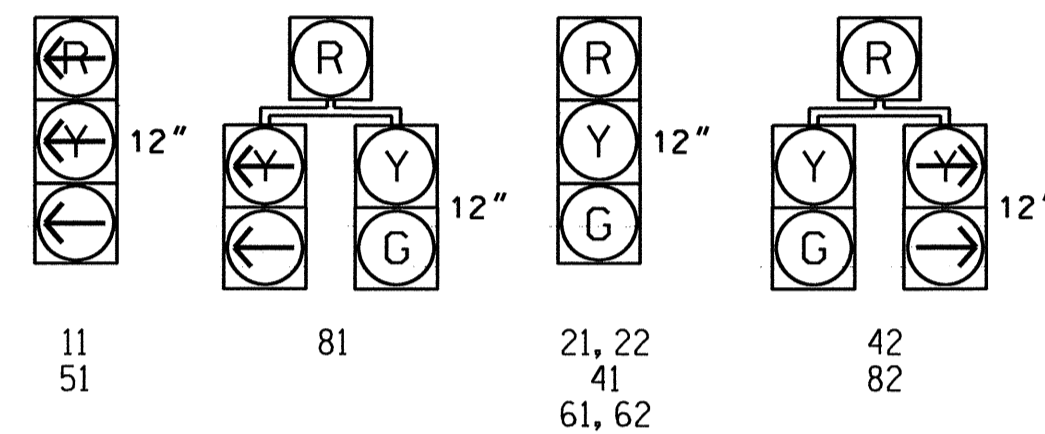
PHASING DIAGRAM



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

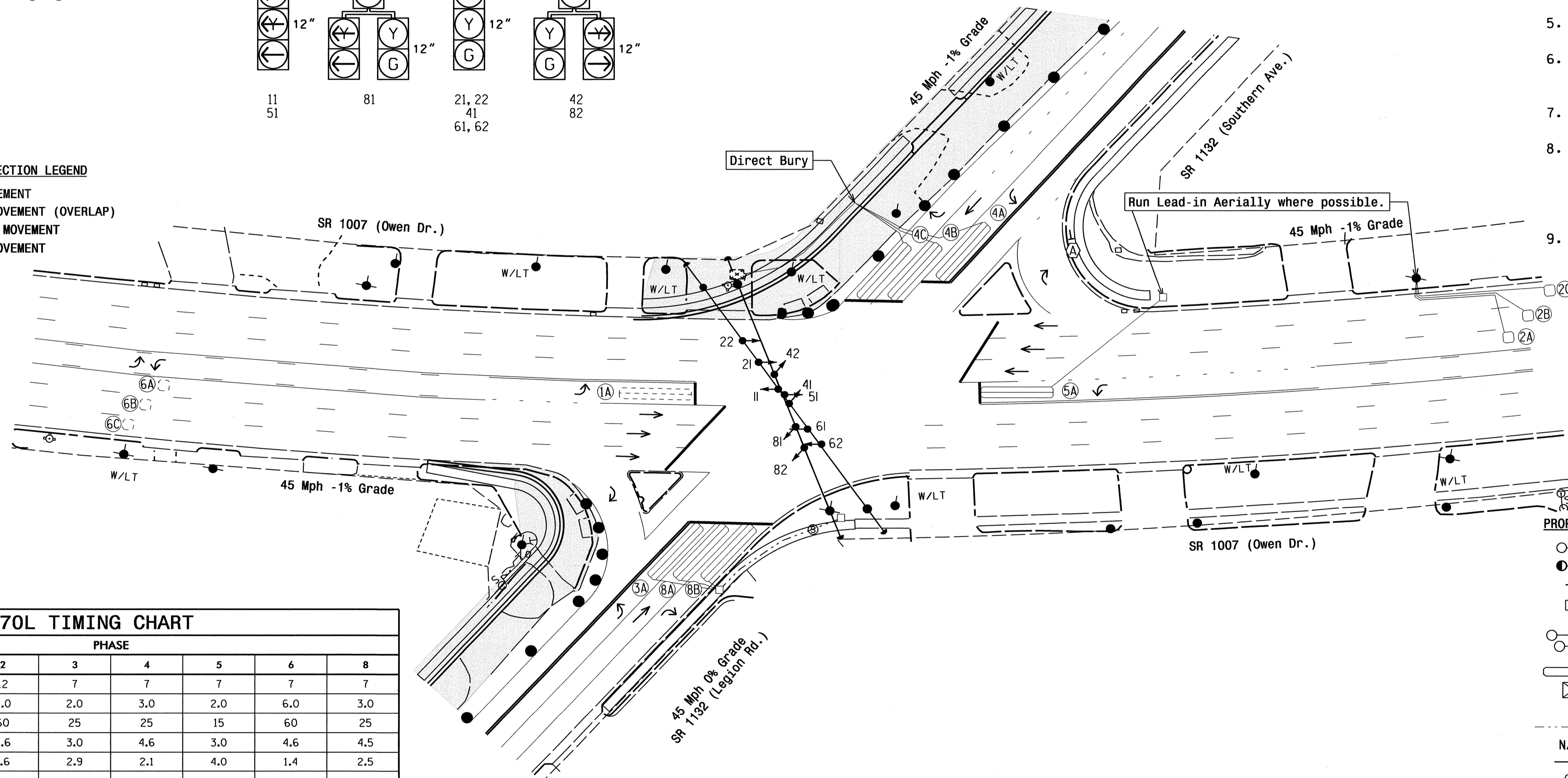
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART												
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	-	-	-
2A	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
2C	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	15	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
4C	6X40	0	2-4-2	Y	4	Y	Y	-	-	15	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
6A,6B,6C	6X6	300	5	-	6	Y	Y	-	-	-	-	-
8A	6X6	0	2-4-2	Y	8	Y	Y	-	-	-	-	-
8B	6X6	0	2-4-2	Y	8	Y	Y	-	-	-	-	-

SIGNAL FACE I.D.
All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

- ← ● DETECTED MOVEMENT
- ← ○ UNDETECTED MOVEMENT (OVERLAP)
- - - UNSIGNALIZED MOVEMENT
- ← - - - PEDESTRIAN MOVEMENT



6 Phase Fully Actuated Fayetteville Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Omit phase 3 during phase 4 on.
- Phase 1 and/or phase 5 may be lagged.
- Reposition existing signal heads numbered 41, 42, 81 & 82.
- Run all lead-in cable overhead on existing utility poles where possible.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #0075.

OASIS 2070L TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	8	
Min Green 1*	7	12	7	7	7	7	7	
Extension 1*	2.0	6.0	2.0	3.0	2.0	6.0	3.0	
Max Green 1*	24	60	25	25	15	60	25	
Yellow Clearance	3.0	4.6	3.0	4.6	3.0	4.6	4.5	
Red Clearance	3.9	1.6	2.9	2.1	4.0	1.4	2.5	
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	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

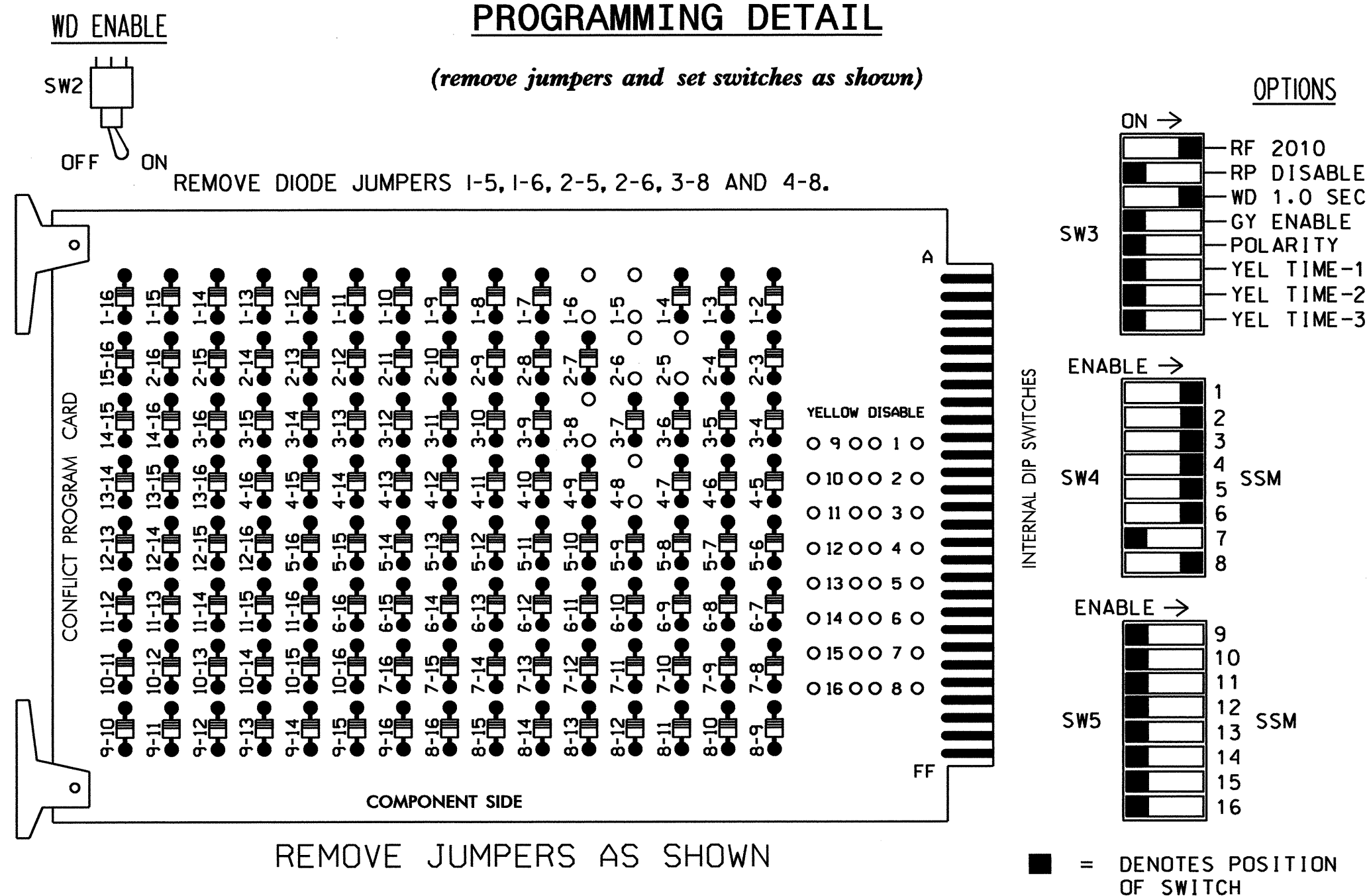
- | PROPOSED | EXISTING |
|----------|----------|
| ○ | ● |
| ○ | N/A |
| + | + |
| ⊥ | ⊥ |
| ○ | ⊥ |
| ○ | ○ |
| ○ | ○ |
| ⊠ | ⊠ |
| ⊠ | ⊠ |
| - - - | - - - |
| N/A | - - - |
| → | → |
| ⊠ | ⊠ |
| ○ | ○ |

Signal Upgrade - Temp 2 Phase II

	SR 1007 (Owen Drive) at SR 1132 (Legion Road/ Southern Avenue)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29904 J. J. SHAWLOW 5/11/12
	Division 6 Cumberland County Fayetteville		
	PLAN DATE: March 2012 PREPARED BY: I. O. Umozurike	REVIEWED BY:	
SCALE: 1"=40' 0 40		REVISIONS:	INIT. DATE:
750 N. Greenfield Pkwy, Garner, NC 27529		SIG. INVENTORY NO. 06-0075T2	

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....SAFETRAN 2070L
 CABINET.....SAFETRAN 332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S8
 PHASES USED.....1,2,3,4,5,6,8
 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	42	21,22	NU	81	41,42	NU	82	51	61,62	NU	81,82
RED		128		*	101					134		107
YELLOW		129			102					135		108
GREEN		130			103					136		109
RED ARROW	125									131		
YELLOW ARROW	126	126			117			132	132			
GREEN ARROW	127	127			118			133	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)

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

```

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

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0075T2
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

INPUT FILE POSITION LAYOUT

(front view)

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

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

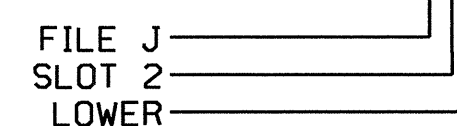
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

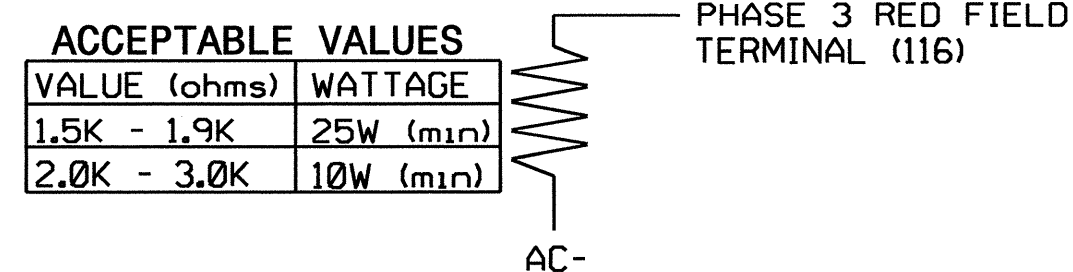
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB6-9,10	I9U	60	22	11	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-1,2	I1U	56	18	1	2	Y	Y			
3A ¹	TB2-9,10	I3U	63	25	32	3	Y	Y			15
	TB2-11,12	I3L	76	38	42	8	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	TB6-3,4	I7L	78	40	44	4	Y	Y			15
5A	TB6-11,12	I9L	62	24	13	5	Y	Y			
6A,6B,6C	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			

¹Add jumpers from TB2-9 to TB2-11, and from TB2-10 to TB2-12.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL



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.

Electrical Detail - Temp 2

Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	SR 1007 (Owen Drive) at SR 1132 (Legion Road/ Southern Avenue)		SEAL GEORGE C. BROWN
	Division 6 Cumberland County Fayetteville	PREPARED BY: C. Strickland REVIEWED BY: T. J. G.	
REVISIONS DATE	INIT.	DATE	SIGNATURE DATE SIG. INVENTORY NO. 06-0075T2

PHASING DIAGRAM

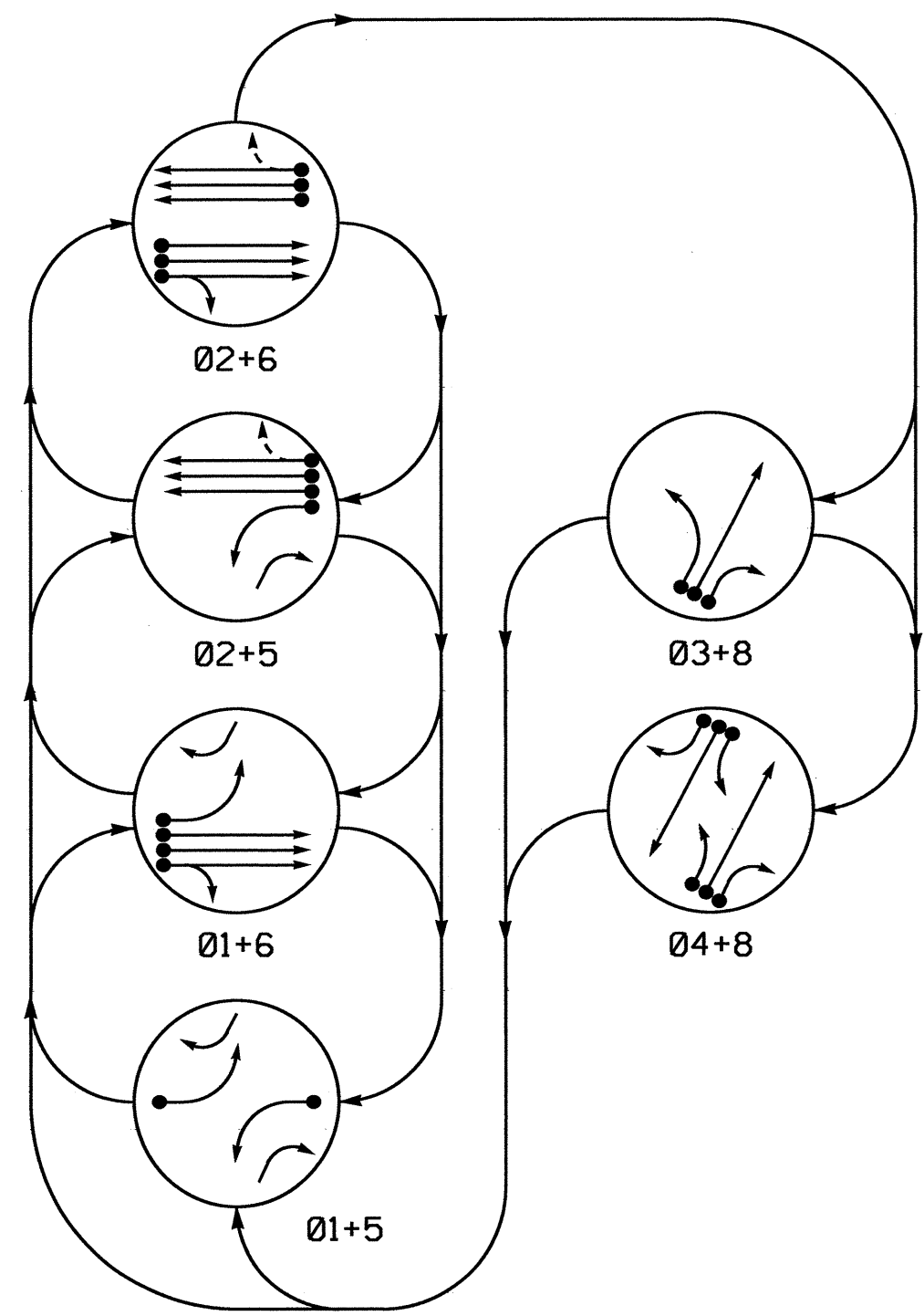
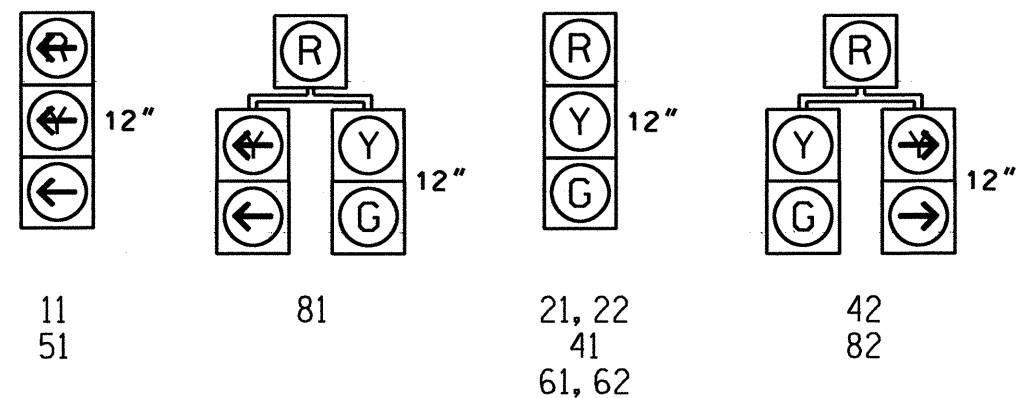


TABLE OF OPERATION

SIGNAL FACE	PHASE						
	01 +5	01 +6	02 +5	02 +6	03 +8	04 +8	F HEADS
11	←	←	←	←	←	←	←
21, 22	R	R	G	G	R	R	Y
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
51	←	←	←	←	←	←	←
61, 62	R	G	R	G	R	R	Y
81	R	R	R	R	R	G	R
82	R	R	R	R	G	G	R

SIGNAL FACE I.D.
All Heads L.E.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

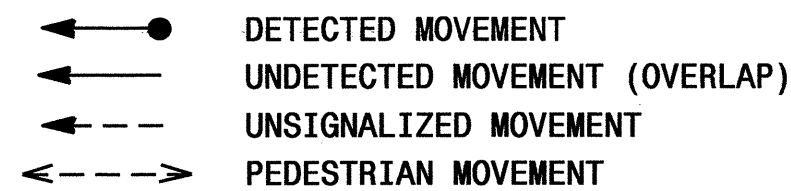
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY		
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	-
2A	6X6	300	4	-	2	Y	Y	-	-	-
2B	6X6	300	4	-	2	Y	Y	-	-	-
2C	6X6	300	4	-	2	Y	Y	-	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	15	-
					8	Y	Y	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	-
4C	6X40	0	2-4-2	Y	4	Y	Y	-	15	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	-
6A	6X6	300	5	Y	6	Y	Y	-	-	-
6B	6X6	300	5	Y	6	Y	Y	-	-	-
6C	6X6	300	5	Y	6	Y	Y	-	-	-
8A	6X6	0	2-4-2	-	8	Y	Y	-	-	-
8B	6X6	0	2-4-2	-	8	Y	Y	-	-	-

6 Phase Fully Actuated Fayetteville Signal System

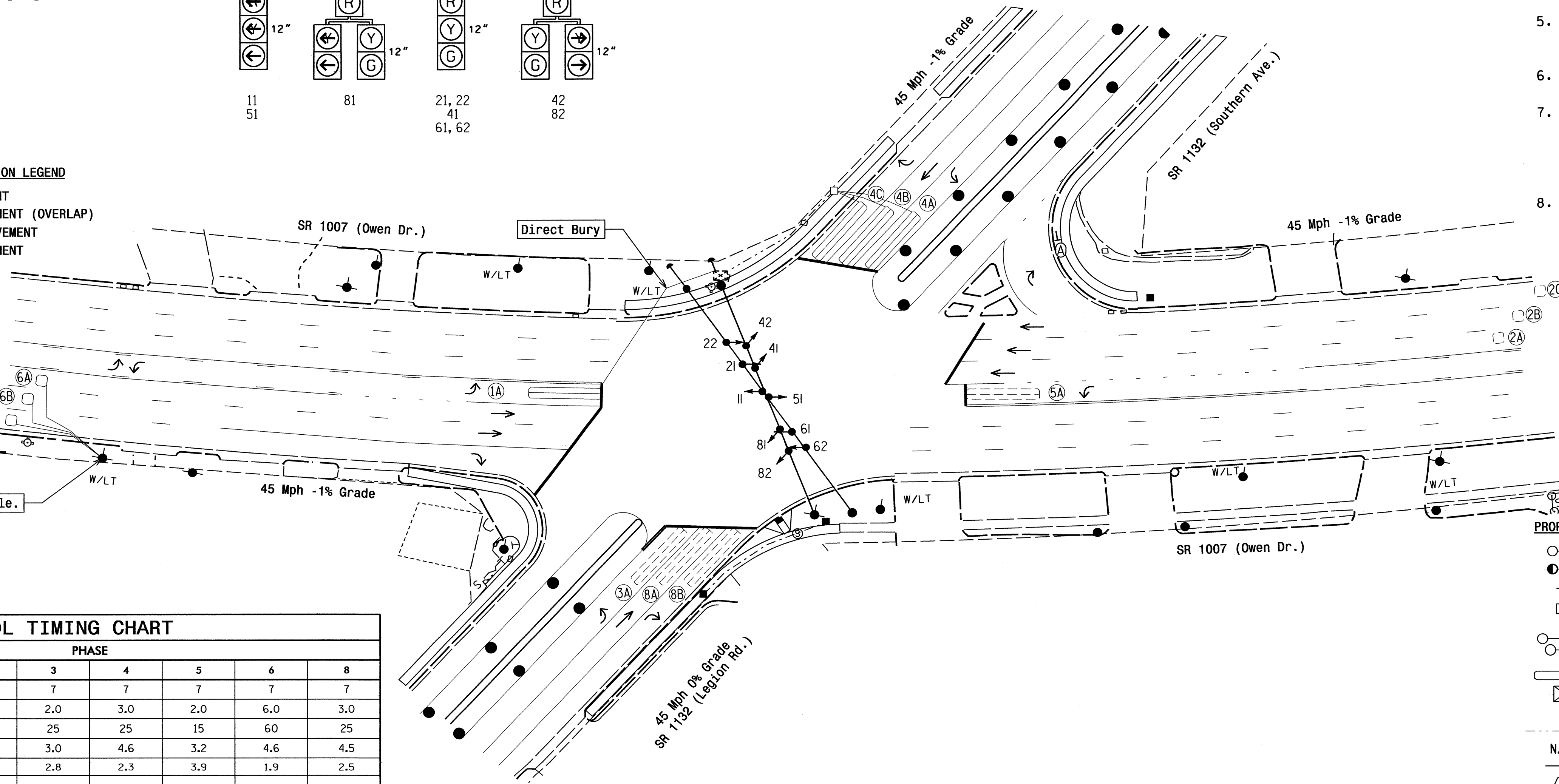
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Omit phase 3 during phase 4 on.
- Reposition existing signal heads numbered 41 & 42.
- Run all lead-in cable overhead on existing utility poles where possible.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal system data: Controller Asset #0075.

PHASING DIAGRAM DETECTION LEGEND



Run Lead-in Aerially where possible.

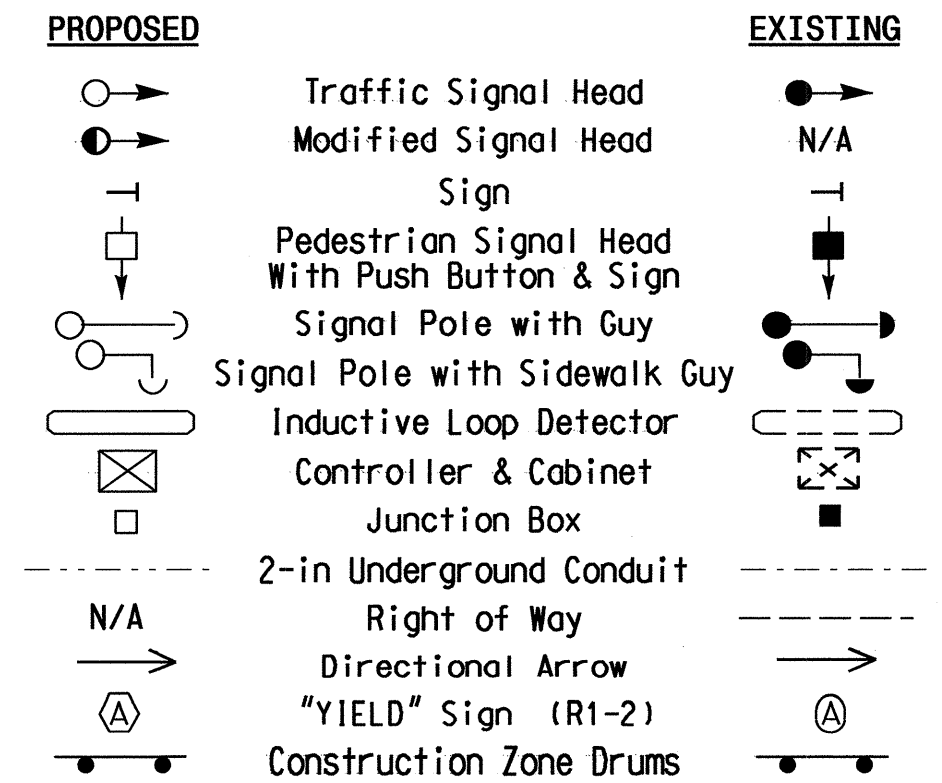


OASIS 2070L TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1*	7	12	7	7	7	7	7	7
Extension 1*	2.0	6.0	2.0	3.0	2.0	6.0	3.0	3.0
Max Green 1*	24	60	25	25	15	60	25	25
Yellow Clearance	3.2	4.6	3.0	4.6	3.2	4.6	4.5	4.5
Red Clearance	3.9	2.1	2.8	2.3	3.9	1.9	2.5	2.5
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	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



Signal Upgrade - Temp 3 Phase III

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1007 (Owen Drive) at
SR 1132 (Legion Road/
Southern Avenue)

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2012 REVIEWED BY:

PREPARED BY: I. O. Umzurike REVIEWED BY:

REVISIONS

NO.	DATE	INIT.	DATE

DATE: 5/11/12

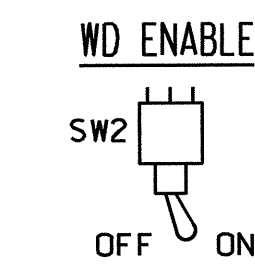
SEAL

SEAL 29904

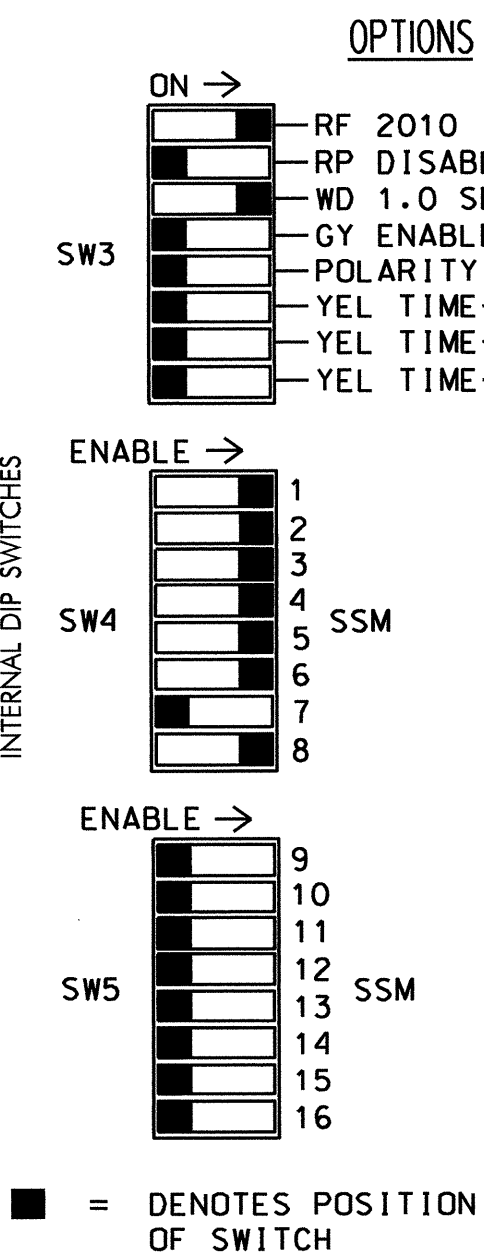
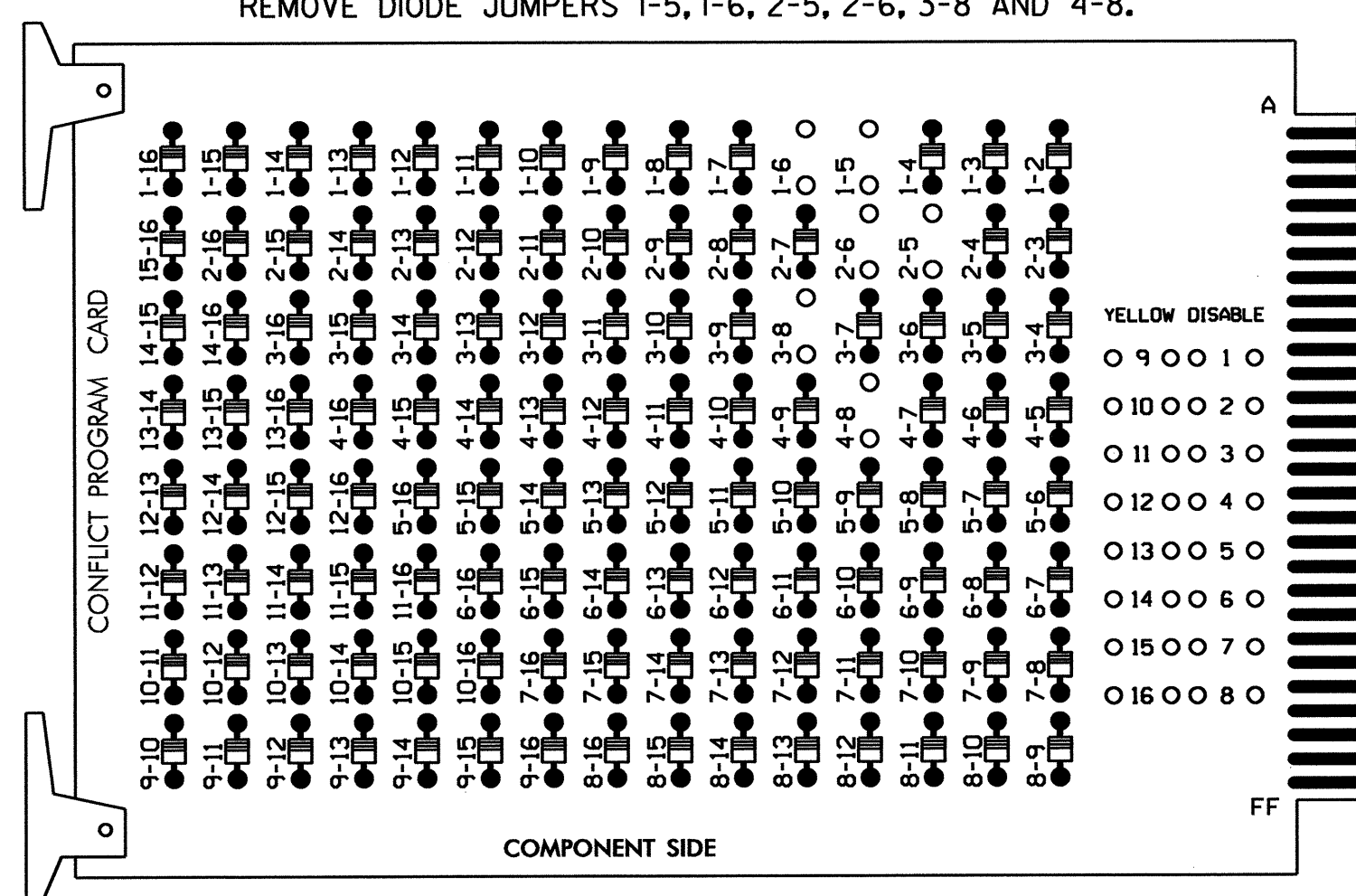
SIG. INVENTORY NO. 06-007513

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....SAFETRAN 2070L
 CABINET.....SAFETRAN 332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S8
 PHASES USED.....1,2,3,4,5,6,8
 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	42	21,22	NU	81	41,42	NU	82	51	61,62	NU	81,82
RED		128		*	101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW	125							131				
YELLOW ARROW	126	126			117		132	132				
GREEN ARROW	127	127			118		133	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)

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

```

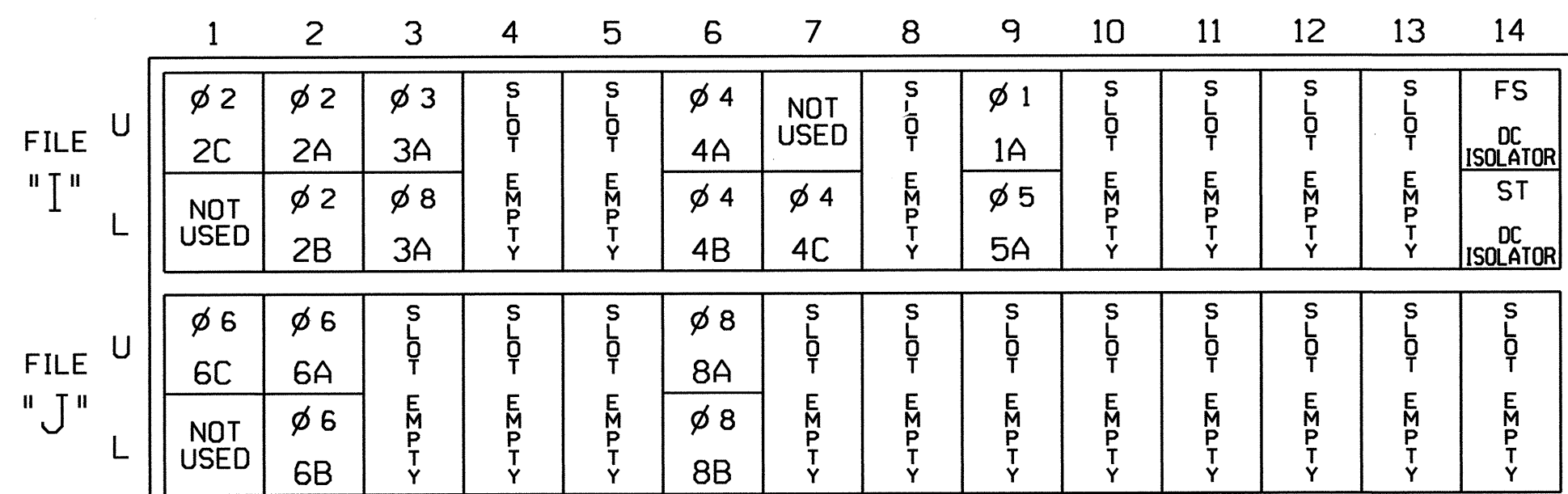
DYNAMIC/BACKUP CONTROL FUNCTION #01
OVERLAPS: ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE:
OR PHASES: 12345678910111213141516
IF PHASES ARE ON: X
OMIT PHASES: X
CALL PHASES:
    
```

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0075T3
 DESIGNED: March 2012
 SEALED: 05/11/12
 REVISED: N/A

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	TB6-9,10	I9U	60	22	11	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-1,2	I1U	56	18	1	2	Y	Y			
3A ¹	TB2-9,10	I3U	63	25	32	3	Y	Y			15
	TB2-11,12	I3L	76	38	42	8	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	TB6-3,4	I7L	78	40	44	4	Y	Y			15
5A	TB6-11,12	I9L	62	24	13	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	TB3-1,2	J1U	55	17	5	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			

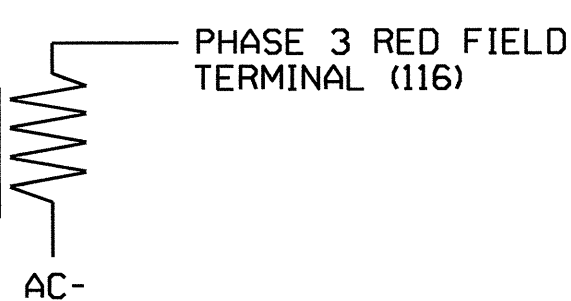
¹Add jumpers from TB2-9 to TB2-11, and from TB2-10 to TB2-12.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

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

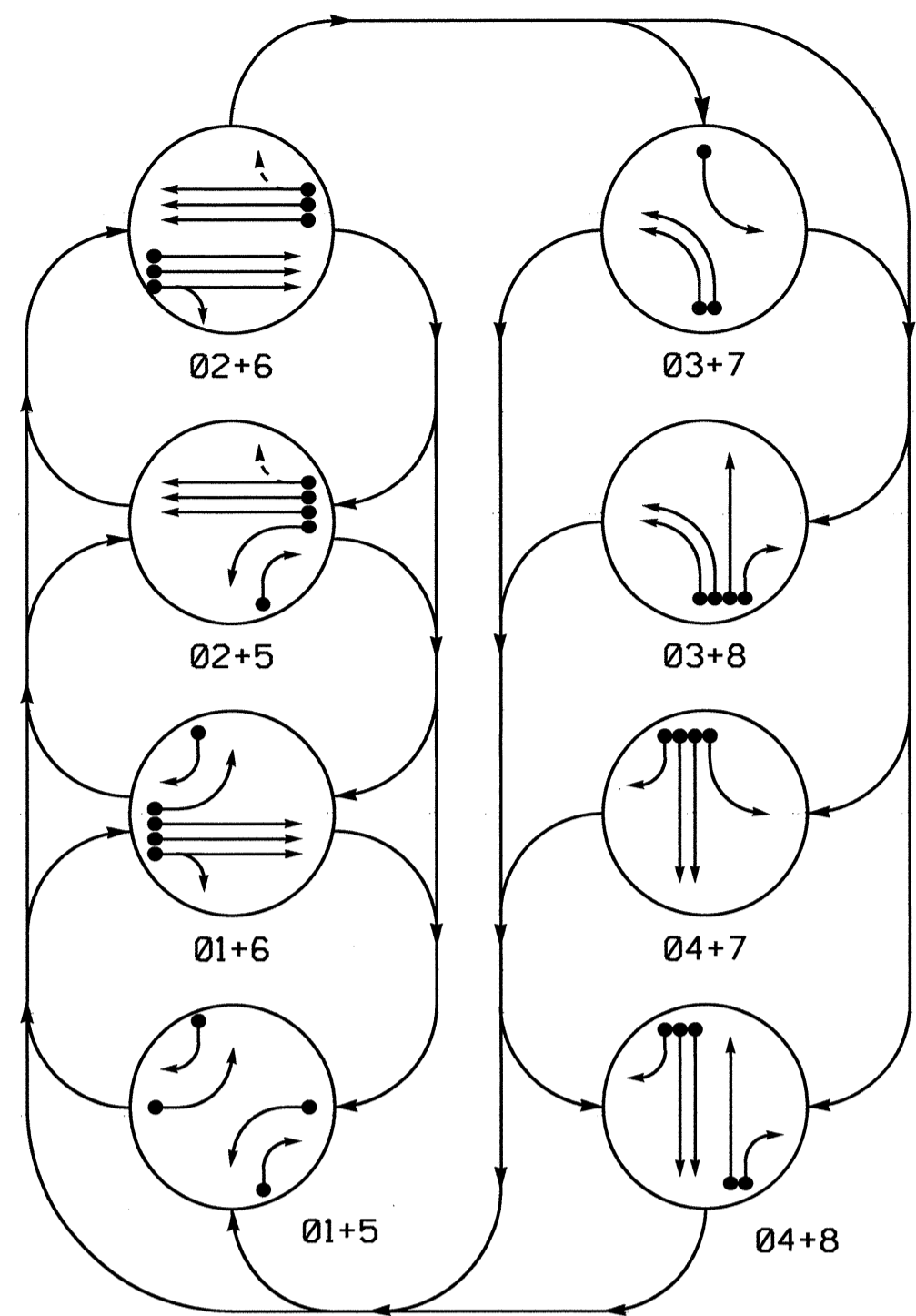


NOTE: The purpose of these resistors is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

Electrical Detail - Temp 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 1007 (Owen Drive) at SR 1132 (Legion Road/Southern Avenue)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN
	Prepared In the Offices of: 	Division 6 Cumberland County Fayetteville PLAN DATE: May 2012 PREPARED BY: C. Strickland	
REVISIONS		INIT. DATE	SIGNATURE DATE
750 N. Greenfield Pkwy, Garner, NC 27529			SIG. INVENTORY NO. 06-0075T3

PHASING DIAGRAM



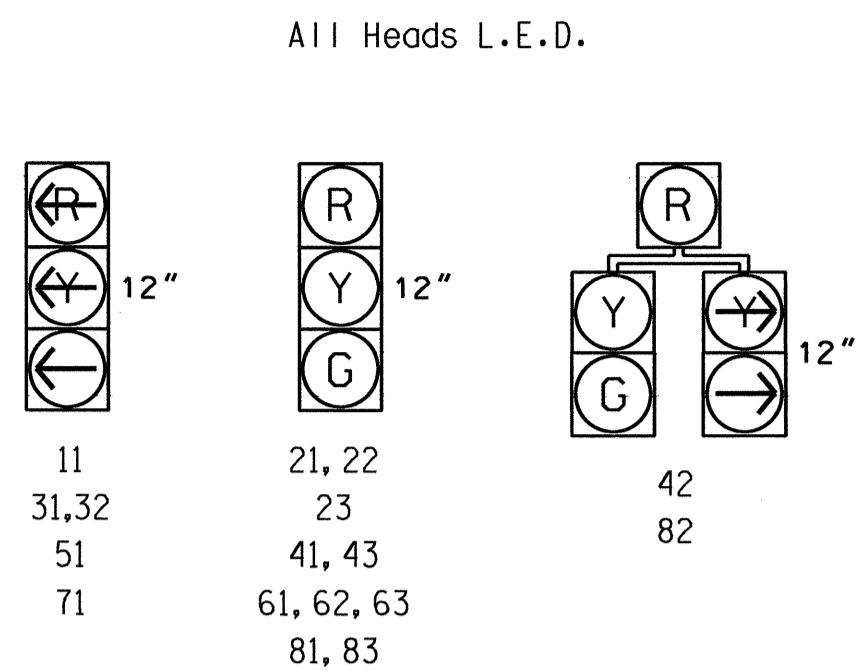
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	02+5	03+8	04+7	01+6	02+6	03+7	04+8
11	-	-	R	R	R	R	R	R
21, 22, 23	R	R	G	G	R	R	R	Y
31, 32	-	-	R	R	-	-	-	-
41, 43	R	R	R	R	R	G	G	R
42	R	R	R	R	R	R	G	R
51	-	-	R	R	-	-	-	-
61, 62, 63	R	G	R	G	R	R	R	Y
71	-	-	R	R	-	-	-	-
81, 83	R	R	R	R	R	G	R	G
82	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.



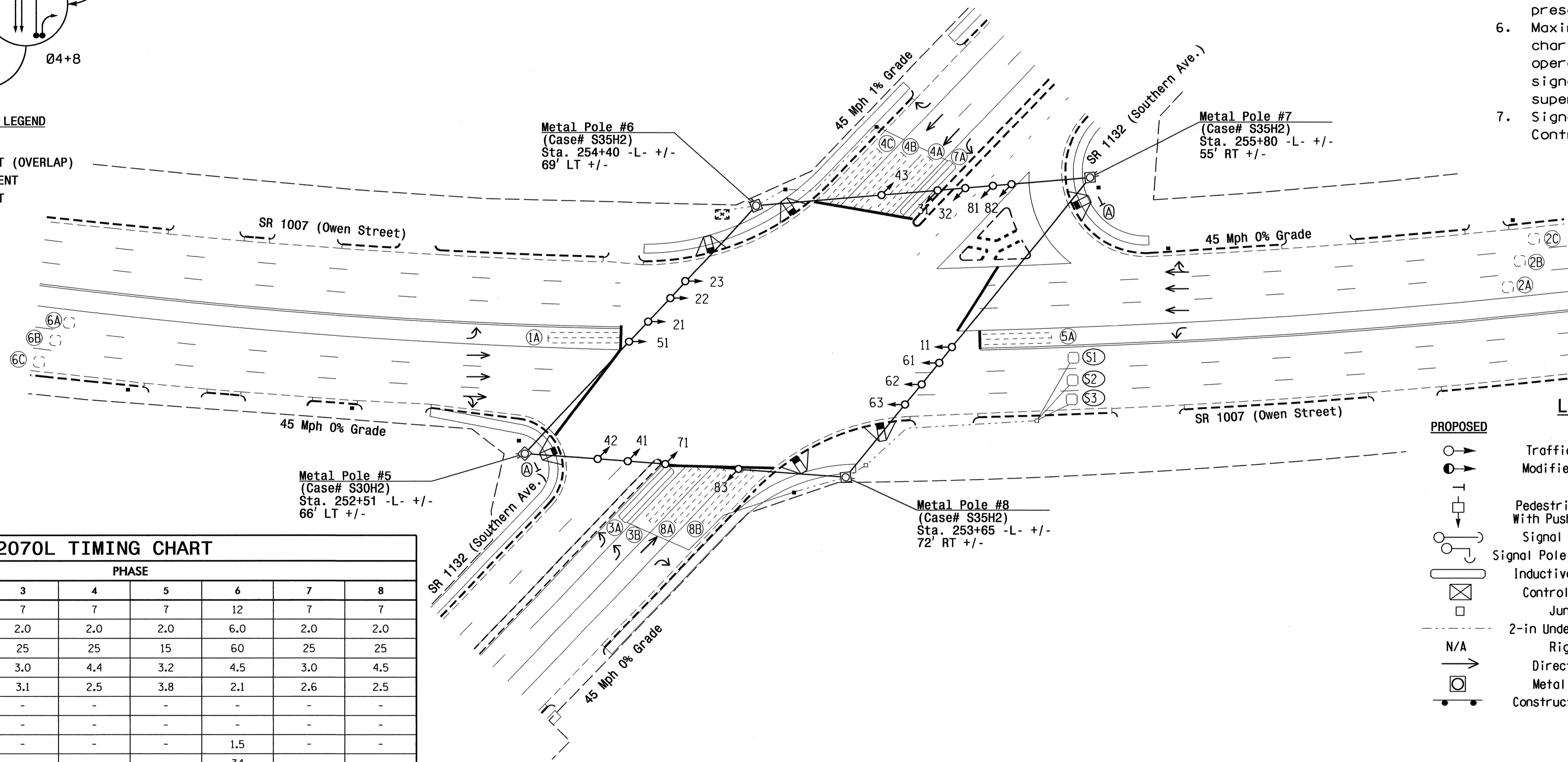
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME		
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	-	-
2A	6X6	300	4	-	2	Y	Y	-	-	-	-
2B	6X6	300	4	-	2	Y	Y	-	-	-	-
2C	6X6	300	4	-	2	Y	Y	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-
3B	6X40	0	2-4-2	-	3	Y	Y	-	-	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-
4C	6X40	0	2-4-2	-	4	Y	Y	-	-	15	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	-	-
6A	6X6	300	4	-	6	Y	Y	-	-	-	-
6B	6X6	300	4	-	6	Y	Y	-	-	-	-
6C	6X6	300	4	-	6	Y	Y	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	15	-
S1	6X6	+250	4	Y	-	-	-	-	-	Y	Y
S2	6X6	+250	4	Y	-	-	-	-	-	Y	Y
S3	6X6	+250	4	Y	-	-	-	-	-	Y	Y

8 Phase Fully Actuated Fayetteville Signal System

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal system data: Controller Asset #0075.



OASIS 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	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	24	60	25	25	15	60	25	25
Yellow Clearance	3.2	4.5	3.0	4.4	3.2	4.5	3.0	4.5
Red Clearance	3.8	2.1	3.1	2.5	3.8	2.1	2.6	2.5
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	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**
 - Traffic Signal Head
 - ◊ Modified Signal Head 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
 - - - Right of Way
 - Directional Arrow
 - Metal Strain Pole
 - Construction Zone Drums
- EXISTING**
 - N/A
 - ⊖
 - ⊞
 - ⊞
 - ⊞
 - ⊞
 - ⊞
 - - -
 -
 -
 -

Signal Upgrade

Prepared in the Office of:
 Transportation Mobility and Safety
 FEDERAL ROAD BOARD
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 J. P. GALLOWAY
 SEAL 29904

SR 1007 (Owen Drive) at SR 1132 (Legion Road/ Southern Avenue)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2012 REVIEWED BY: J. P. Galloway
 PREPARED BY: I. O. Umzurike REVIEWED BY:

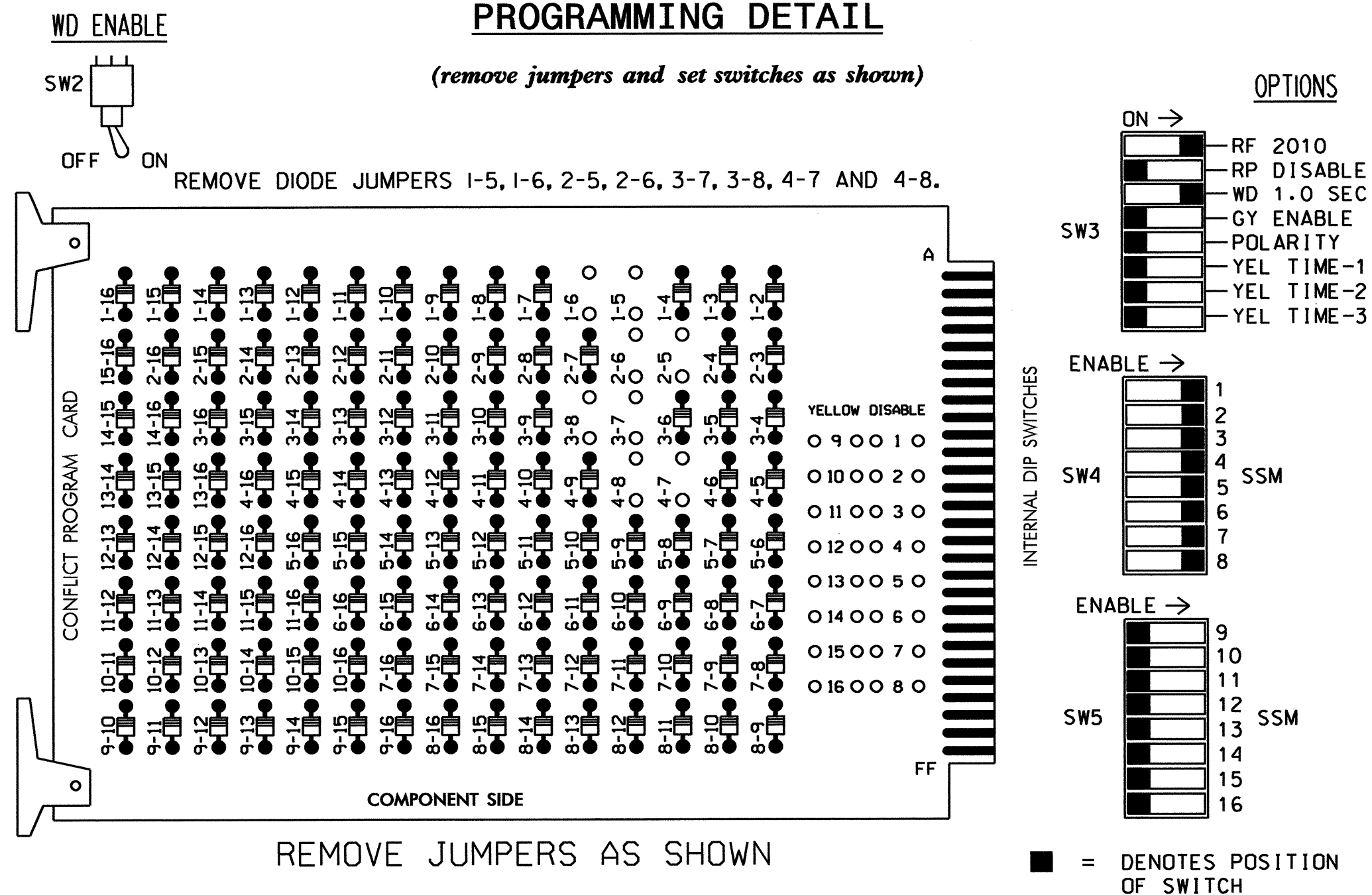
750 N. Greenfield Pkwy, Corner, NC 27529
 SCALE: 0 40
 1"=40'

REVISIONS	INIT.	DATE

SEAL
 PROFESSIONAL ENGINEER
 I. O. Umzurike
 DATE: 5/14/12
 SIG. INVENTORY NO. 08-0075

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....SAFETRAN 2070L
 CABINET.....SAFETRAN 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	42	21, 22,23	NU	31,32	41, 42,43	NU	82	51	61, 62,63	NU	71	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			132	132		123				
GREEN ARROW	127	127		118			133	133		124				

NU = Not Used

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

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

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

BACKUP PROTECTION PROGRAMMING COMPLETE

- ! If present, remove all functions from 'Dynamic/Backup'.
- ! If present, remove all phases from all 'Dynamic/Backup Control Functions'.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 2	∅ 2	∅ 3	S	S	∅ 4	SYS. DET. S1	S	∅ 1	S	S	S	S	FS
L	NOT USED	∅ 2	∅ 3	∅ 4	∅ 4	∅ 4	∅ 4	∅ 5	∅ 5	∅ 5	∅ 5	∅ 5	∅ 5	DC ISOLATOR
U	∅ 6	∅ 6	S	S	∅ 7	∅ 8	S	S	SYS. DET. S2	S	S	S	S	DC ISOLATOR
L	NOT USED	∅ 6	∅ 6	∅ 7	∅ 8	∅ 8	∅ 8	∅ 8	SYS. DET. S3	∅ 8	∅ 8	∅ 8	∅ 8	DC ISOLATOR

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

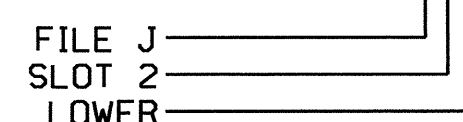
FS = FLASH SENSE
 ST = STOP TIME

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	TB6-9,10	I9U	60	22	11	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-1,2	I1U	56	18	1	2	Y	Y			
3A	TB2-9,10	I3U	63	25	32	3	Y	Y			
3B	TB2-11,12	I3L	76	38	42	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			
4C	TB6-3,4	I7L	78	40	44	4	Y	Y			15
5A	TB6-11,12	I9L	62	24	13	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	TB3-1,2	J1U	55	17	5	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			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			15
* S1	TB6-1,2	I7U	65	27	34	SYS					
* S2	TB7-9,10	J9U	59	21	15	SYS					
* S3	TB7-11,12	J9L	61	23	17	SYS					

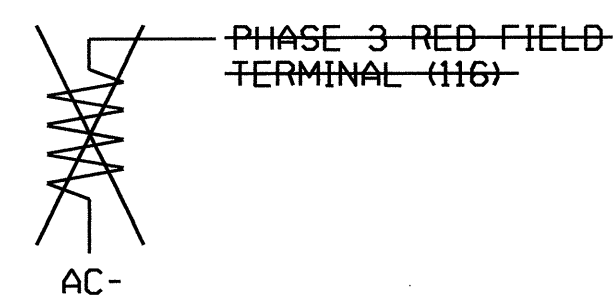
- * System detector only. Remove the vehicle phase assigned to this detector in the default programming.
- ! If present, remove jumpers from TB2-9 to TB2-11, and from TB2-10 to TB2-10.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR REMOVAL DETAIL

(remove resistor as shown below)



- ! IMPORTANT: If present, remove load resistor PHASE 3 RED FIELD TERMINAL (116)

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0075
 DESIGNED: March 2012
 SEALED: 05/14/12
 REVISED: N/A

Electrical Detail

Electrical and Programming Details for:

SR 1007 (Owen Drive) at SR 1132 (Legion Road/Southern Avenue)

Division 6 Cumberland County Fayetteville

Plan Date: May 2012

Prepared by: C. Strickland

Reviewed by: T. V. J.

Signature: C. Strickland

Date: 5/15/12

Seal: GEORGE C. BROWN

Sig. Inventory No. 06-0075

- 1 INSTALL REA, PE - 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 2 INSTALL REA, PE - 38, (FIGURE 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 3 INSTALL REA, PE - 39, (UNDERGROUND) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 4 INSTALL SMFO CABLE
- 5 INSTALL MMFO CABLE
- 6 INSTALL FIBER OPTIC DROP CABLE
- 7 INSTALL TRACER WIRE
- 8 TRENCH
- 9 INSTALL PVC CONDUIT
- 10 INSTALL RIGID, GALVANIZED STEEL CONDUIT
- 11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
- 12 INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
- 13 INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
- 14 INSTALL POLYETHYLENE CONDUIT
- 15 DIRECTIONAL DRILL CONDUIT
- 16 BORE AND JACK CONDUIT
- 17 INSTALL CABLE(S) IN EXISTING CONDUIT
- 18 INSTALL CABLE(S) IN NEW CONDUIT
- 19 INSTALL CABLE(S) IN EXISTING RISER
- 20 INSTALL CABLE(S) IN NEW RISER
- 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUB-OUTS
- 22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 24 INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
- 25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
- 26 TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 27 INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS AND FUSION SPlice CABLE IN CABINET
- 29 INSTALL UNDERGROUND SPlice ENCLOSURE
- 30 INSTALL AERIAL SPlice ENCLOSURE
- 31 INSTALL POLE MOUNTED SPlice CABINET
- 32 INSTALL BASE MOUNTED SPlice CABINET
- 33 REMOVE EXISTING SPlice CABINET

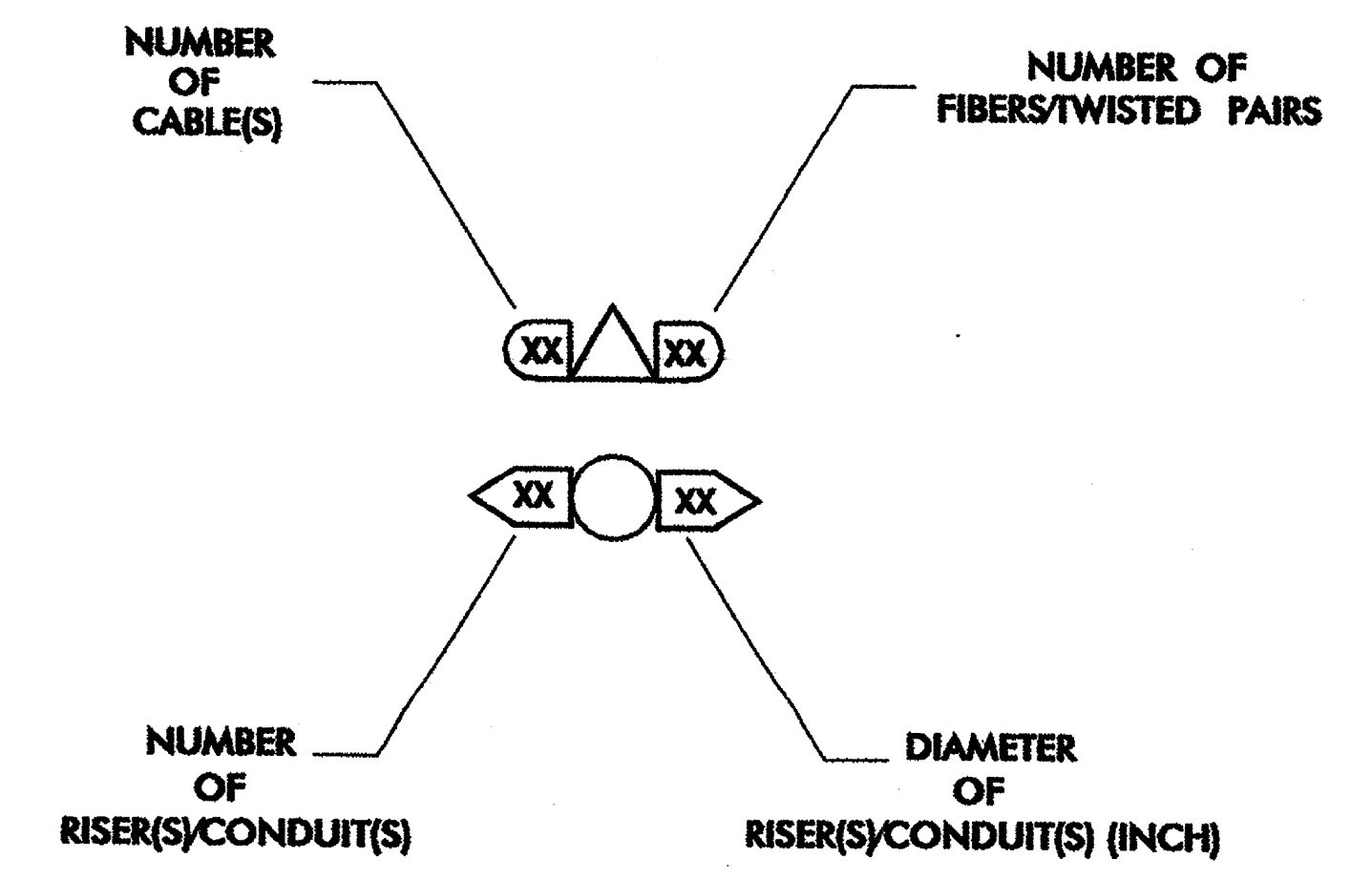
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 REMOVE EXISTING WOOD POLE
- 44 INSTALL AERIAL GUY ASSEMBLY
- 45 INSTALL STANDARD GUY ASSEMBLY
- 46 INSTALL SIDEWALK GUY ASSEMBLY
- 47 INSTALL MESSENGER CABLE
- 48 REMOVE EXISTING COMMUNICATIONS AND MESSENGER CABLE
- 49 REMOVE EXISTING MESSENGER CABLE
- 50 INSTALL TELEPHONE SERVICE
- 51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
- 52 INSTALL DELINEATOR MARKER
- 53 STORE 20 FEET OF COMMUNICATIONS CABLE
- 54 LASH CABLE(S) TO EXISTING SIGNAL/COMMUNICATIONS CABLE
- 55 LASH CABLE(S) TO EXISTING MESSENGER CABLE
- 56 LASH CABLE(S) TO NEW MESSENGER CABLE
- 57 MODIFY EXISTING ELECTRICAL SERVICE
- 58 INSTALL NEW ELECTRICAL SERVICE

LEGEND

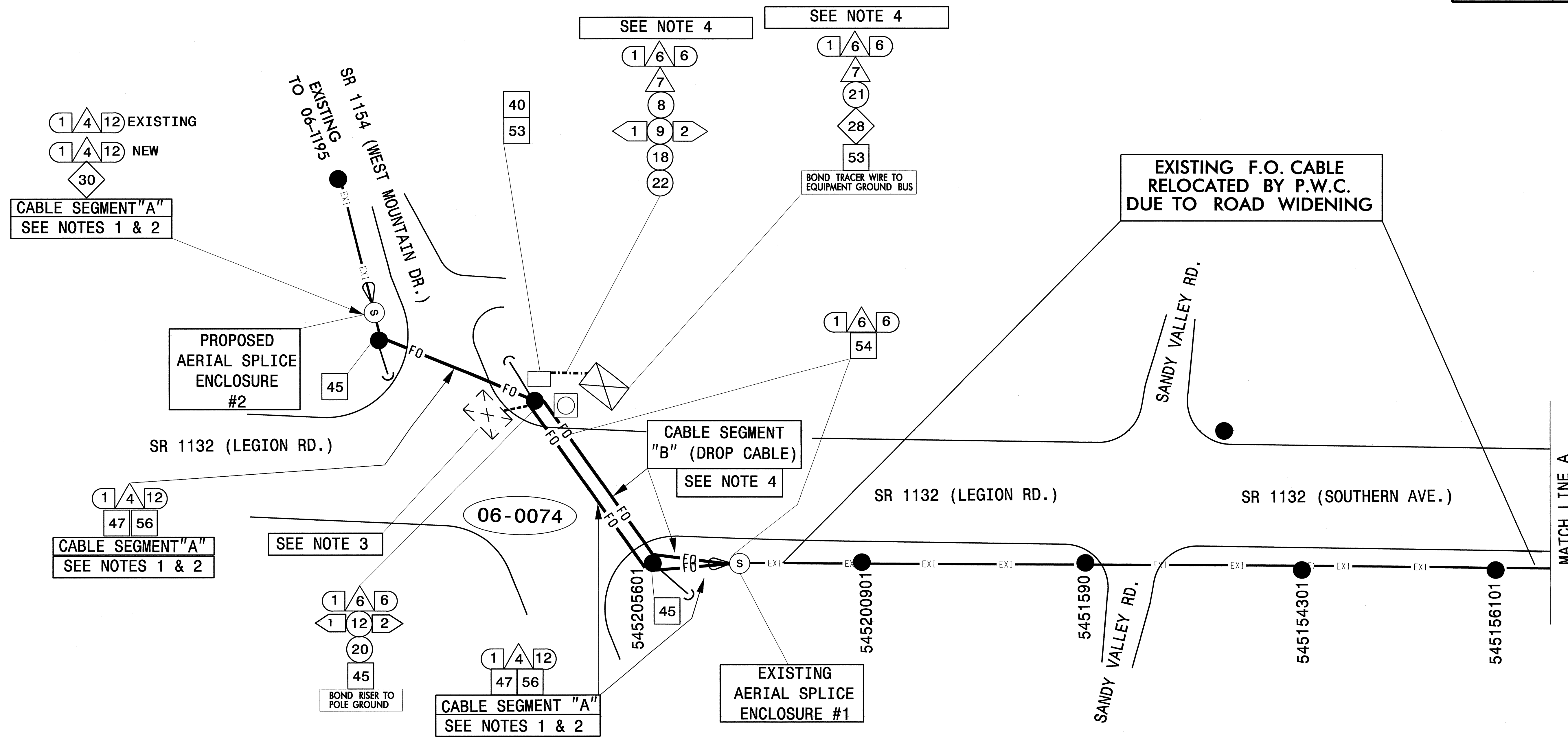
- FO NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST PR NEW TWISTED PAIR COMMUNICATIONS CABLE
- EXI EXISTING COMMUNICATIONS CABLE
- REM EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- DD NEW DIRECTIONAL DRILLED CONDUIT
- B&J NEW BORED AND JACKED CONDUIT
- NEW JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW WOOD POLE
- EXISTING WOOD POLE
- AERIAL SPlice ENCLOSURE
- NEW METAL POLE
- EXISTING METAL POLE
- NEW CCTV ASSEMBLY
- NEW STANDARD GUY ASSEMBLY
- NEW SIDEWALK GUY ASSEMBLY
- NEW CABLE STORAGE RACKS (SNOW SHOES)
- EXISTING CONTROLLER AND CABINET
- EXISTING SPlice CABINET
- NEW SPlice CABINET
- SP SIGNAL POLE
- XX-XXXX SIGNAL INVENTORY NUMBER

CONSTRUCTION NOTE SYMBOLOGY KEY

- XX INDICATES NUMBER OF CABLES, LOOPS, ETC.
- XX INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
- XX INDICATES NUMBER OF RISER(S)/CONDUIT(S)
- XX INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)



	CONSTRUCTION NOTES		SEAL
	PLAN DATE: _____ PREPARED BY: _____	REVIEWED BY: _____ REVIEWED BY: G. A. FULLER	
222 N. McDowell St., Raleigh, NC 27603 	SCALE 	INIT. _____ DATE _____	SIGNATURE



CABLE SEGMENT "A"

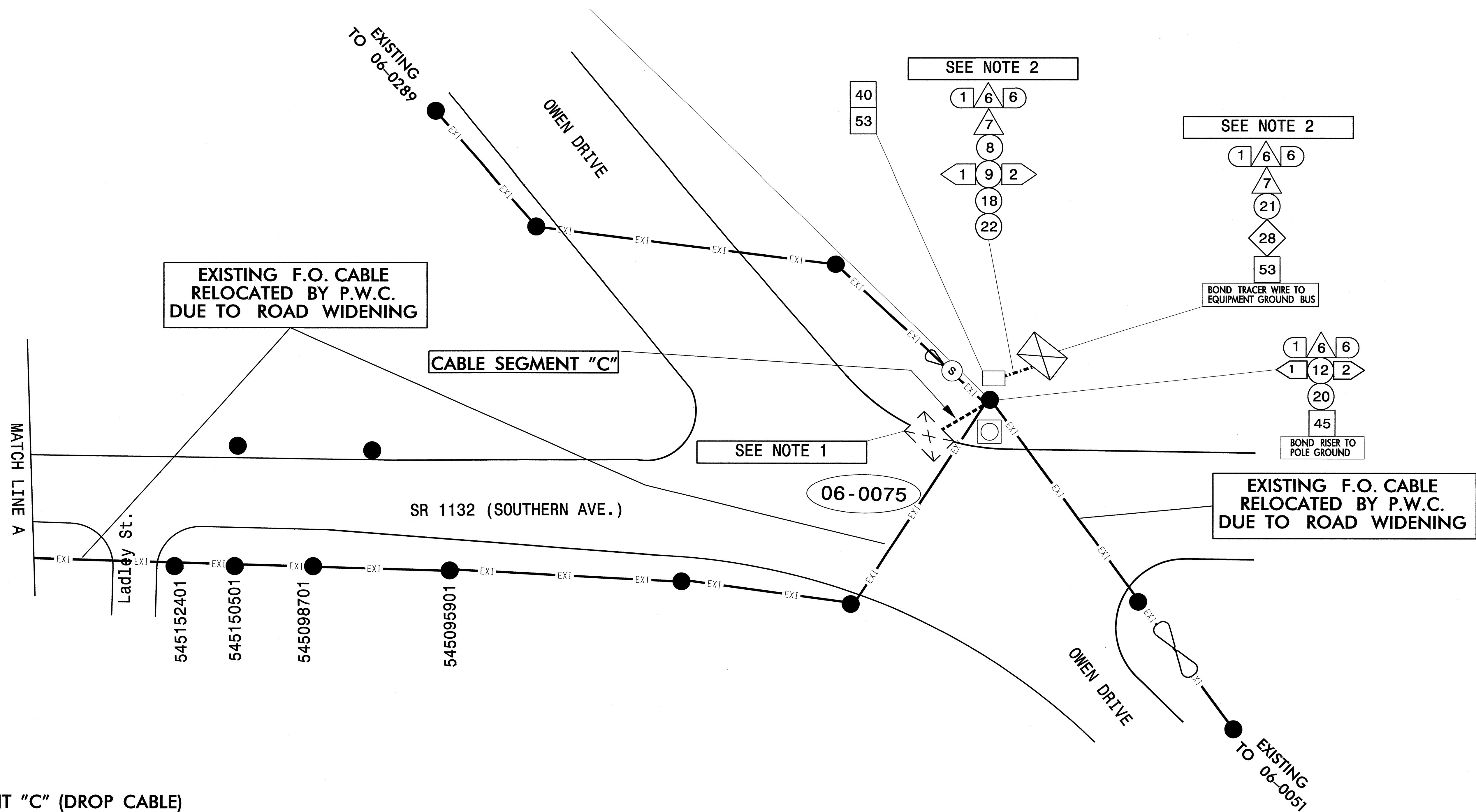
1. ONCE THE NEW POLE LINE IS INSTALLED AND THE EXISTING FIBER OPTIC CABLE HAS BEEN RELOCATED TO THE NEW POLE LINE, PERFORM THE FOLLOWING WORK IF CABLE SEGMENT "A" IS NOT LONG ENOUGH TO COMPLETE THE CIRCUIT BETWEEN "EXISTING AERIAL SPLICE ENCLOSURE # 1" AND SIG. INV. NO. 06-1195.
2. REMOVE CABLE SEGMENT "A" (12 FIBER CABLE) FROM "EXISTING AERIAL SPLICE ENCLOSURE # 1" AND BACKPULL TO "PROPOSED AERIAL SPLICE ENCLOSURE #2" LOCATION. INSTALL NEW SECTION OF MESSENGER CABLE AND LASH NEW 12 FIBER CABLE BETWEEN "EXISTING AERIAL SPLICE ENCLOSURE #1" AND "PROPOSED AERIAL SPLICE ENCLOSURE #2". TERMINATE FIBER AS SHOWN IN THE SPLICE PLAN.

CABLE SEGMENT "B" (DROP CABLE)

3. EXISTING CONTROLLER AND CABINET TO BE RE-LOCATED/REMOVED.
4. REMOVE CABLE SEGMENT "B" (DROP CABLE) FROM EXISTING CONTROLLER CABINET AND RE-ROUTE TO NEW CONTROLLER CABINET. IF THE EXISTING DROP CABLE IS NOT LONG ENOUGH TO MAKE THE CONNECTION INTO THE NEW CONTROLLER CABINET, THEN REPLACE THE DROP CABLE WITH A NEW LENGTH OF DROP CABLE. TERMINATE FIBERS AS SHOWN IN THE SPLICE PLANS.

TMP PHASE I

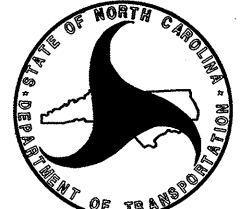
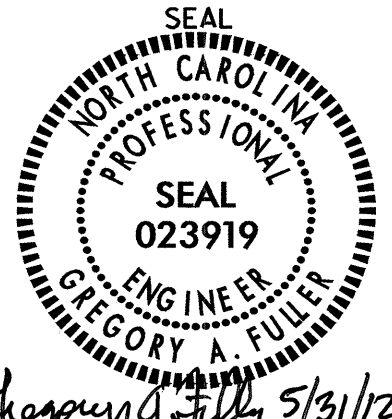
	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS	
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE	
PLAN DATE: MAY 2012 PREPARED BY: P. C. LOUDER	REVIEWED BY: I. N. AVERY REVIEWED BY: G. A. FULLER, PE	SCALE: 0 REVISIONS: _____ INIT.: _____ DATE: _____
Prepared in the Offices of: 		SIGNATURE: _____ DATE: _____ CADD File Name: _____



CABLE SEGMENT "C" (DROP CABLE)

1. EXISTING CONTROLLER AND CABINET TO BE REMOVED/RELOCATED.
2. REMOVE CABLE SEGMENT "C" (DROP CABLE) FROM EXISTING CONTROLLER CABINET AND RE-ROUTE TO NEW CONTROLLER CABINET. IF THE EXISTING DROP CABLE IS NOT LONG ENOUGH TO MAKE THE CONNECTION INTO THE NEW CONTROLLER CABINET, THEN REPLACE THE DROP CABLE WITH A NEW LENGTH OF DROP CABLE. TERMINATE FIBERS AS SHOWN IN THE SPLICE PLANS.

TMP PHASE I

 Prepared in the Offices of: 250 N. Greenfield Place, Gaston, NC 27529	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS		
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE		
PLAN DATE: MAY 2012	REVIEWED BY: I. N. AVERY	PREPARED BY: P. C. LOUDER	
REVISIONS	INIT.	DATE	SIGNATURE: <i>Gregory A. Fuller</i> 5/31/12

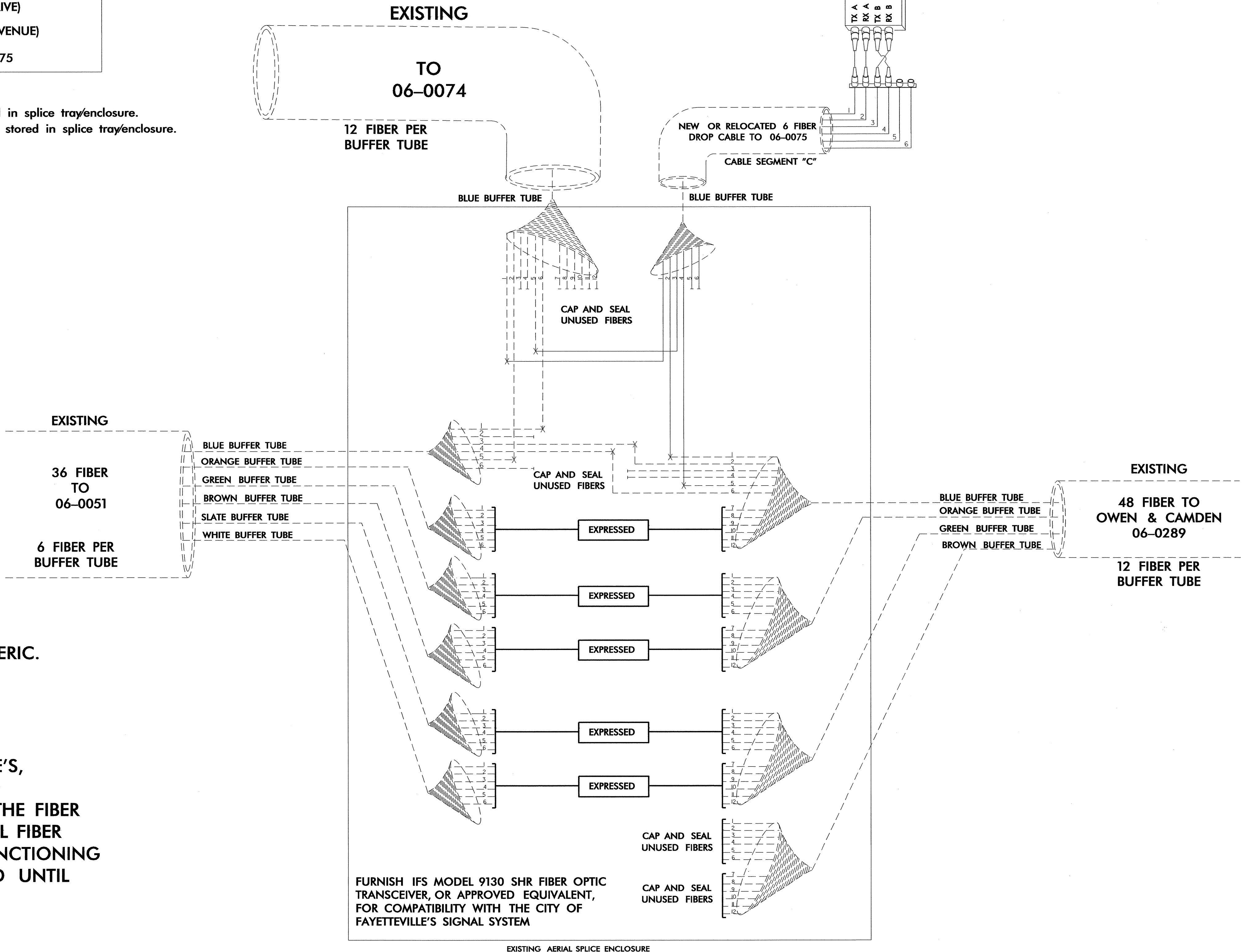
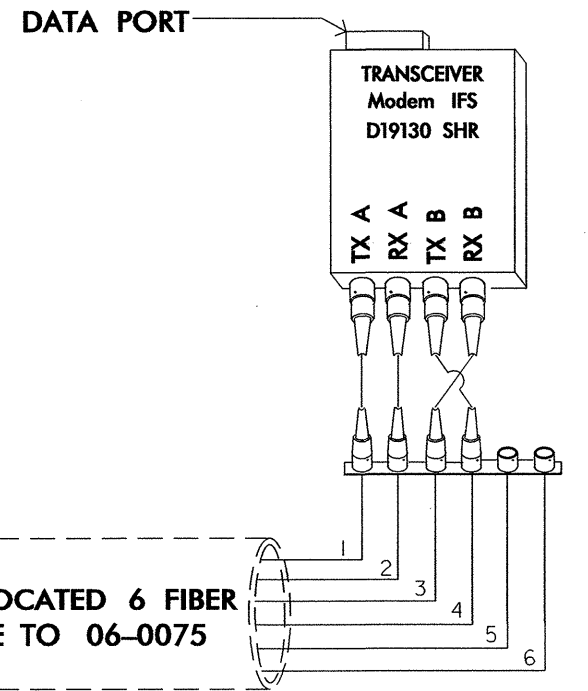
SR 1007 (OWEN DRIVE)
AT
SR 1132 (SOUTHERN AVENUE)
SIG INV NO: 06-0075

Notes:
Unused fibers left coiled and stored in splice tray/enclosure.
Unused Buffer Tubes left coiled and stored in splice tray/enclosure.

LEGEND
X = FUSION SPLICE
- = CAP & SEAL

COLOR CODE
TIA/EIA 598-A
(1) BLUE
(2) ORANGE
(3) GREEN
(4) BROWN
(5) SLATE
(6) WHITE

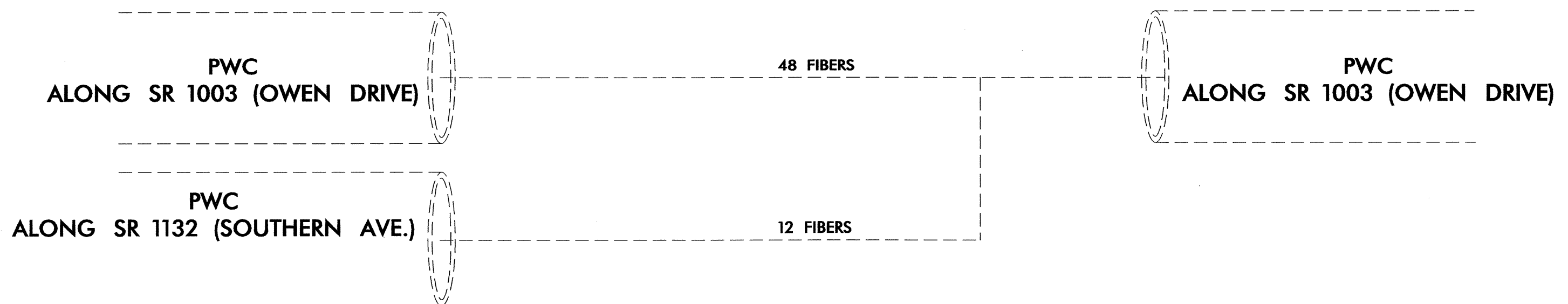
FURNISH NEW TRANSCEIVER



GENERAL NOTES:

1) TRANSCEIVER TERMINATION CONFIGURATIONS SHOWN ARE GENERIC. CONTRACTOR RESPONSIBLE FOR DETERMINING/ENSURING PROPER TERMINATIONS.

2) NOTIFY THE CITY OF FAYETTEVILLE'S, TRANSPORTATION ENGINEER (MR. LEE JERNIGAN @ 910 433-1153) ONCE THE FIBER IS TERMINATED TO ENSURE THAT ALL FIBER CIRCUITS ARE CONNECTED AND FUNCTIONING PROPERLY. WORK IS NOT COMPLETED UNTIL THE CITY OF FAYETTEVILLE'S SIGNAL SYSTEM IS OPERATIONAL.



TMP PHASE I

	SPLICE PLANS		
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE		
	PLAN DATE: MAY 2012 PREPARED BY: P. C. LOUDER REVISIONS: _____ SCALE: 0	REVIEWED BY: I. N. AVERY REVIEWED BY: G. A. FULLER, PE INIT. DATE _____	

GENERAL NOTES:

1) TRANSCEIVER TERMINATION CONFIGURATIONS SHOWN ARE GENERIC. CONTRACTOR RESPONSIBLE FOR DETERMINING/ENSURING PROPER TERMINATIONS.

2) NOTIFY THE CITY OF FAYETTEVILLE'S, TRANSPORTATION ENGINEER (MR. LEE JERNIGAN @ 910 433-1153) ONCE THE FIBER IS TERMINATED TO ENSURE THAT ALL FIBER CIRCUITS ARE CONNECTED AND FUNCTIONING PROPERLY. WORK IS NOT COMPLETED UNTIL THE CITY OF FAYETTEVILLE'S SIGNAL SYSTEM IS OPERATIONAL.

IF CABLE SEGMENT "A" IS LONG ENOUGH TO COMPLETE THE CIRCUIT BETWEEN "EXISTING AERIAL SPLICE ENCLOSURE #1" AND SIG INV. NO. 06-1195. THEN NO EXTRA WORK REQUIRED.

IF CABLE SEGMENT "A" IS NOT LONG ENOUGH TO COMPLETE THE CIRCUIT BETWEEN "EXISTING AERIAL SPLICE ENCLOSURE #1" AND SIG. INV. NO. 06-1195. THEN PERFORM WORK REQUIRED BY ADDING "PROPOSED AERIAL SPLICE ENCLOSURE #2".

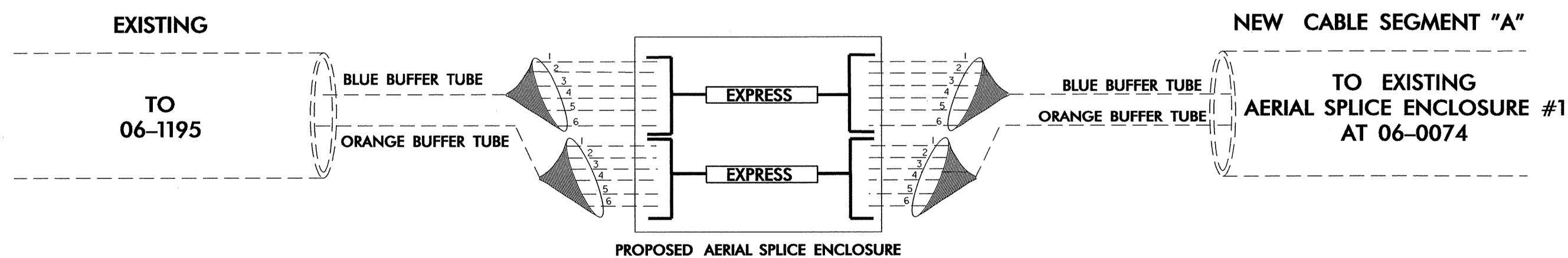
PROPOSED AERIAL SPLICE ENCLOSURE #2
SR 1132 (LEGION RD.)
AT
SR 1154 (W. MOUNTAIN DR.)
SIG INV NO: 06-0074

Notes:
Unused fibers left coiled and stored in splice tray/enclosure.
Unused Buffer Tubes left coiled and stored in splice tray/enclosure.

LEGEND
X = FUSION SPLICE
- = CAP & SEAL

COLOR CODE
TIA/EIA 598-A

- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
- (6) WHITE



EXISTING AERIAL SPLICE ENCLOSURE
SR 1132 (LEGION RD.)
AT
SR 1154 (W. MOUNTAIN DR.)
SIG INV NO: 06-0074

Notes:
Unused fibers left coiled and stored in splice tray/enclosure.
Unused Buffer Tubes left coiled and stored in splice tray/enclosure.

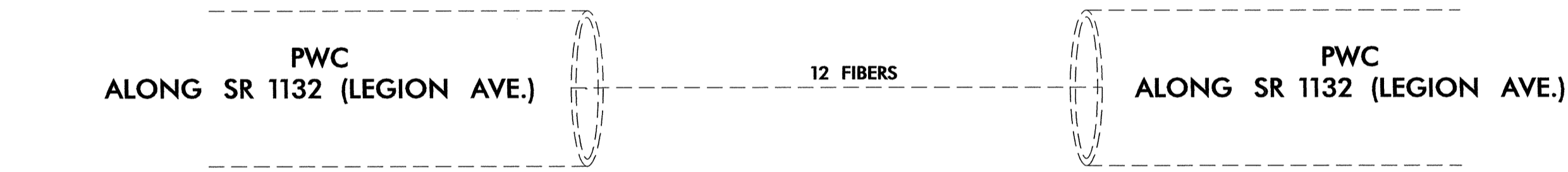
LEGEND
X = FUSION SPLICE
- = CAP & SEAL

COLOR CODE
TIA/EIA 598-A

- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
- (6) WHITE

CABLE SEGMENT "A"
EXISTING OR NEW

EXISTING TO CAMDEN RD.
06-1195
OR
NEW TO PROPOSED
AERIAL SPLICE
ENCLOSURE #2



FURNISH IFS MODEL 9130 SHR FIBER OPTIC TRANSCEIVER, OR APPROVED EQUIVALENT, FOR COMPATIBILITY WITH THE CITY OF FAYETTEVILLE'S SIGNAL SYSTEM

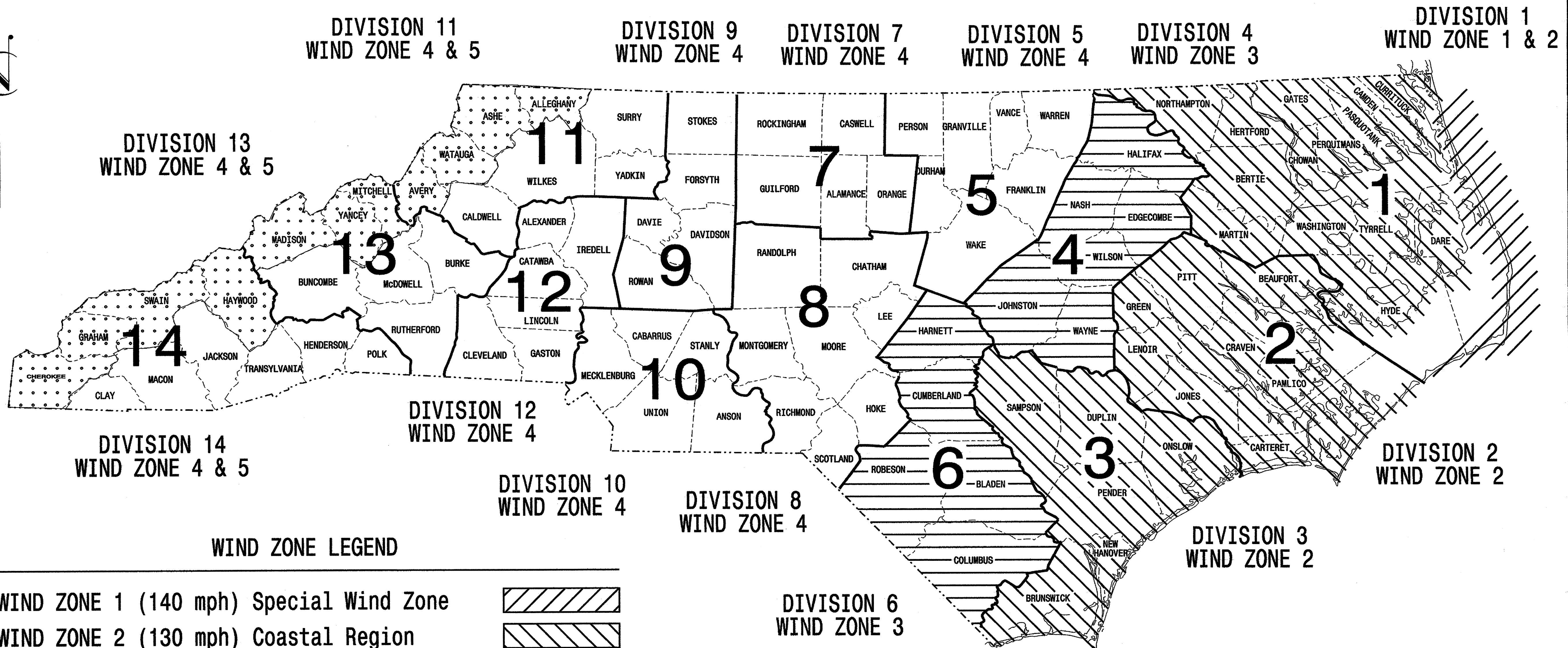
TMP PHASE I

	SPLICE PLANS	
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE	
PLAN DATE: MAY 2012 PREPARED BY: P. C. LOUDER	REVIEWED BY: I. N. AVERY REVIEWED BY: G. A. FULLER, PE	SCALE: 0
REVISIONS: _____ INIT.: _____ DATE: _____		SIGNATURE: <i>Gregory A. Fuller</i> 5/31/12 DATE: _____ CADD Filename: _____

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE	PROJECT NO.	SHEET NO.
N.C.	U-2809B	Sig.36
F.A. PROJ. NO.		M 1
PROJECT ID. NO.		

STANDARD DRAWINGS FOR METAL POLES

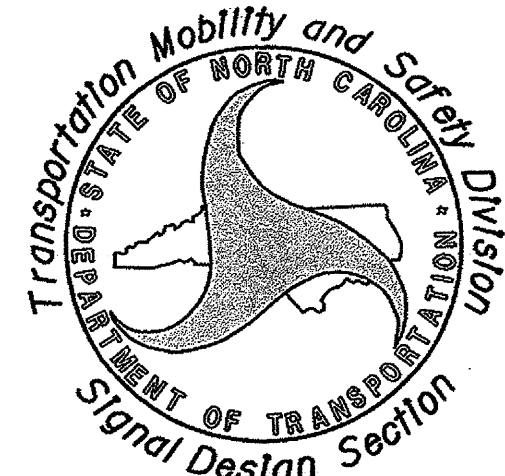


WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone	
WIND ZONE 2 (130 mph) Coastal Region	
WIND ZONE 3 (110 mph) Eastern Region	
WIND ZONE 4 (90 mph) Central & Mtn. Region	
WIND ZONE 5 (120 mph) Special Wind Zone	

<http://www.ncdot.org/doh/preconstruct/traffic/ITSS/ws/mpoles/poles.html>

Prepared In the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

Designed in conformance
with the
2002 Interim to the
4th Edition 2001

AASHTO

Standard Specifications for
Structural Supports for
Highway Signs, Luminaires,
and Traffic Signals

INDEX OF PLANS

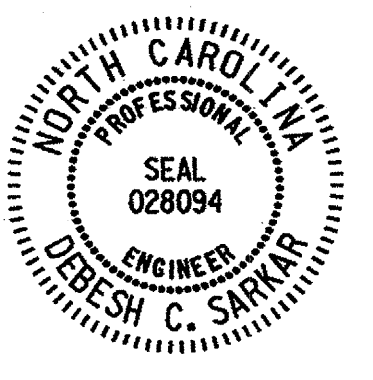
DRAWING NUMBER	DESCRIPTION
M 1	Title Sheet
M 2	Fabrication Details - All Poles
M 3	Fabrication Details - Strain Poles
M 4,5	Fabrication Details - Mast Arm Poles
M 6	Construction Details - Strain Poles
M 7	Construction Details - Foundations
M 8	Standard Strain Poles

NCDOT CONTACTS:

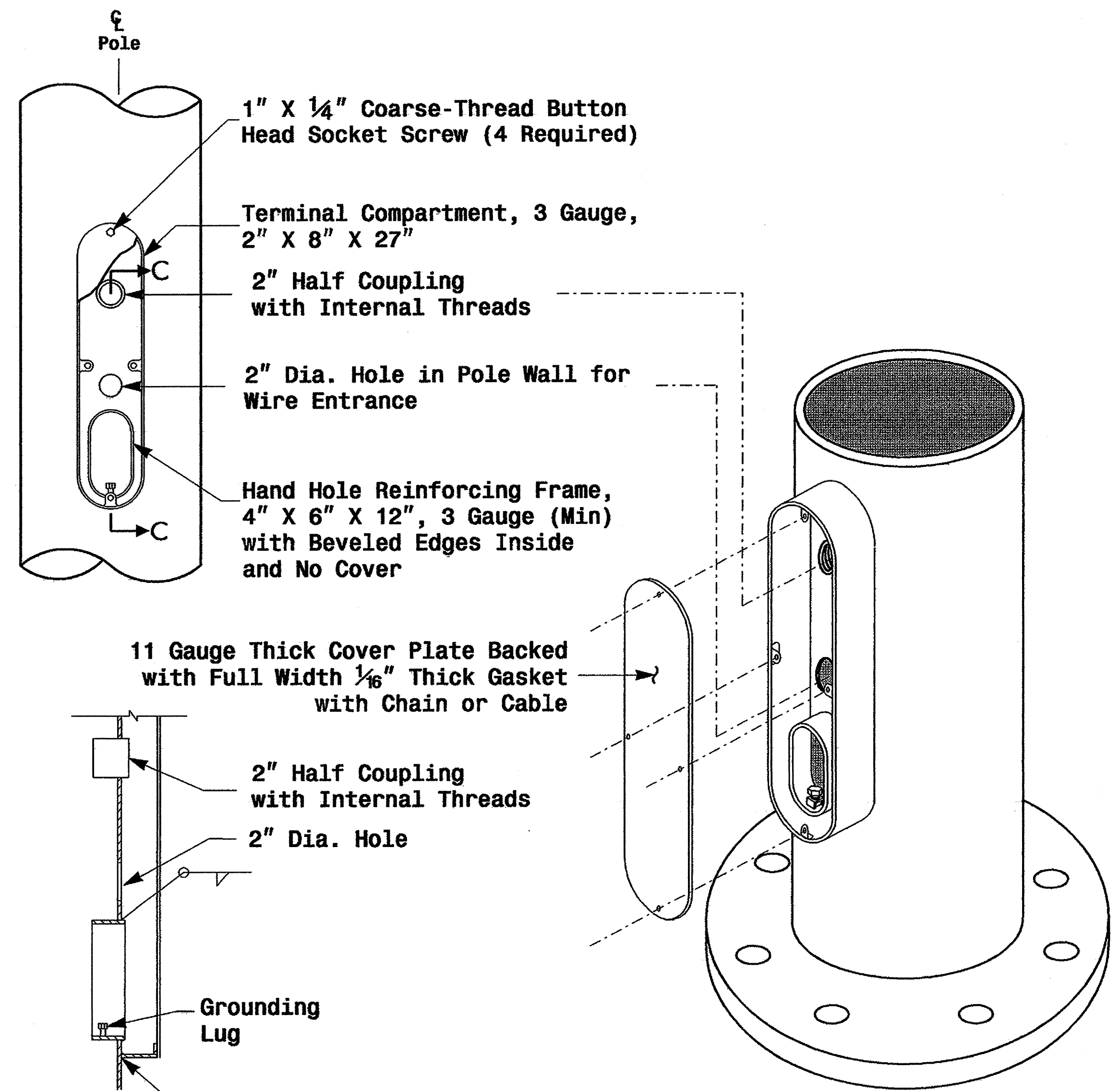
MOBILITY AND SAFETY DIVISION - ITS and SIGNALS UNIT

- G. A. Fuller, P.E. - State ITS and Signals Engineer
- G. G. Murr, Jr., P.E. - State Signals Engineer
- D. C. Sarkar, P.E. - ITS and Signals Senior Structural Engineer
- C. F. Andrews, Jr. - ITS and Signals Structural Project Engineer
- M. Aslam - ITS and Signals Structural Project Engineer
- N. Bitting, P.E. - ITS and Signals Structural Project Engineer

SEAL

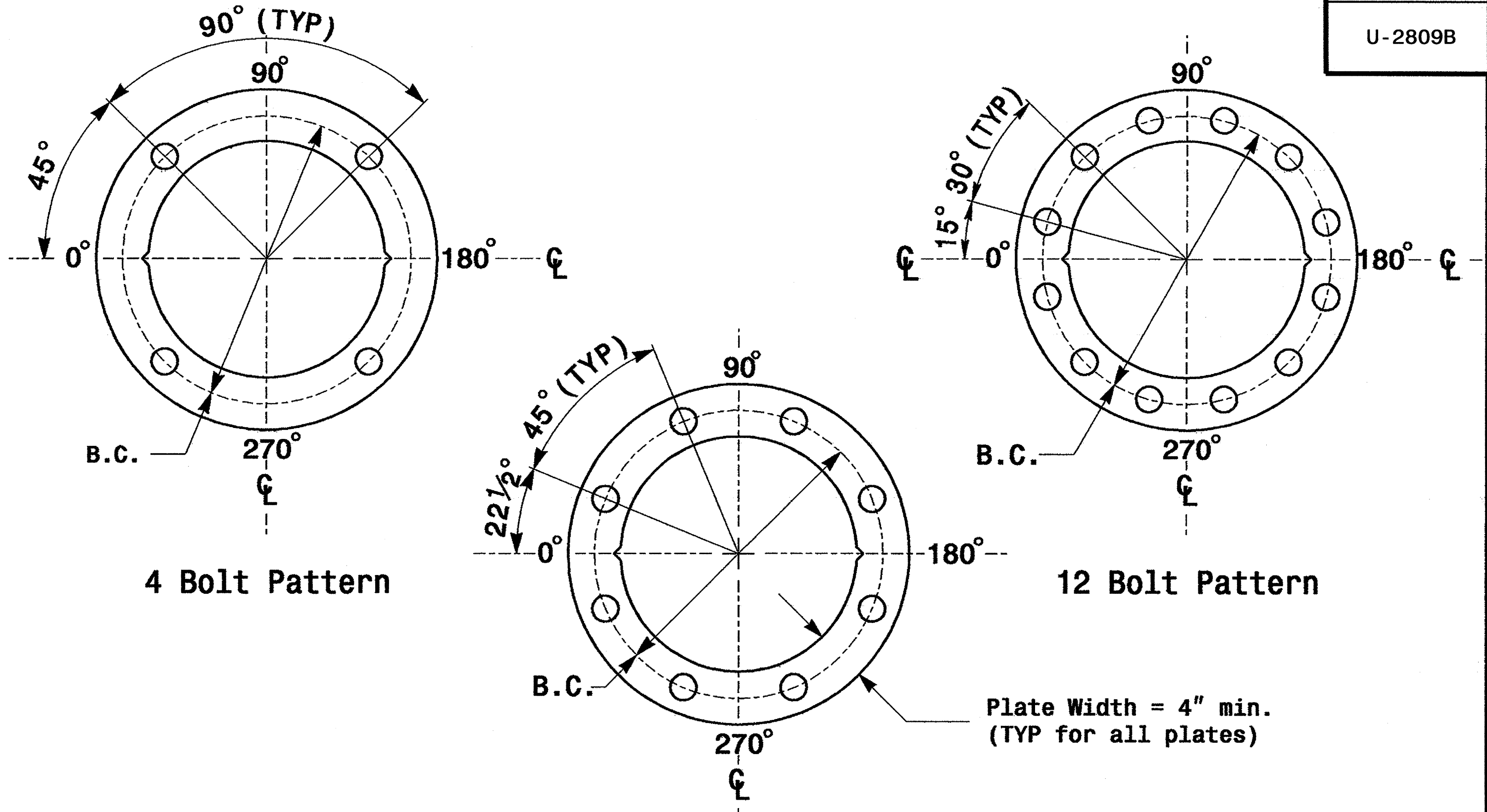


D. Sarkar 7.26.2009
SIGNATURE DATE



Note: Unless otherwise specified, locate Terminal Compartment 1 foot above the pole base plate at 180 degrees on the pole's radial index.

Terminal Compartment Detail



Construct Templates and Plates from 1/4" min. thick Steel. Galvanizing is not required.

Base Plate Template and Anchor Bolt Lock Plate Details

MFG _____ MFG. DATE: MM/YY

SHAFT D/T/L/Y _____

ARM-A D/T/L/Y _____

ARM-B D/T/L/Y _____

A.B. DIA./B.C./L/Y _____

NCDOT STANDARD _____

MFG _____ MFG. DATE: MM/YY

SECTION D/T/L/Y _____

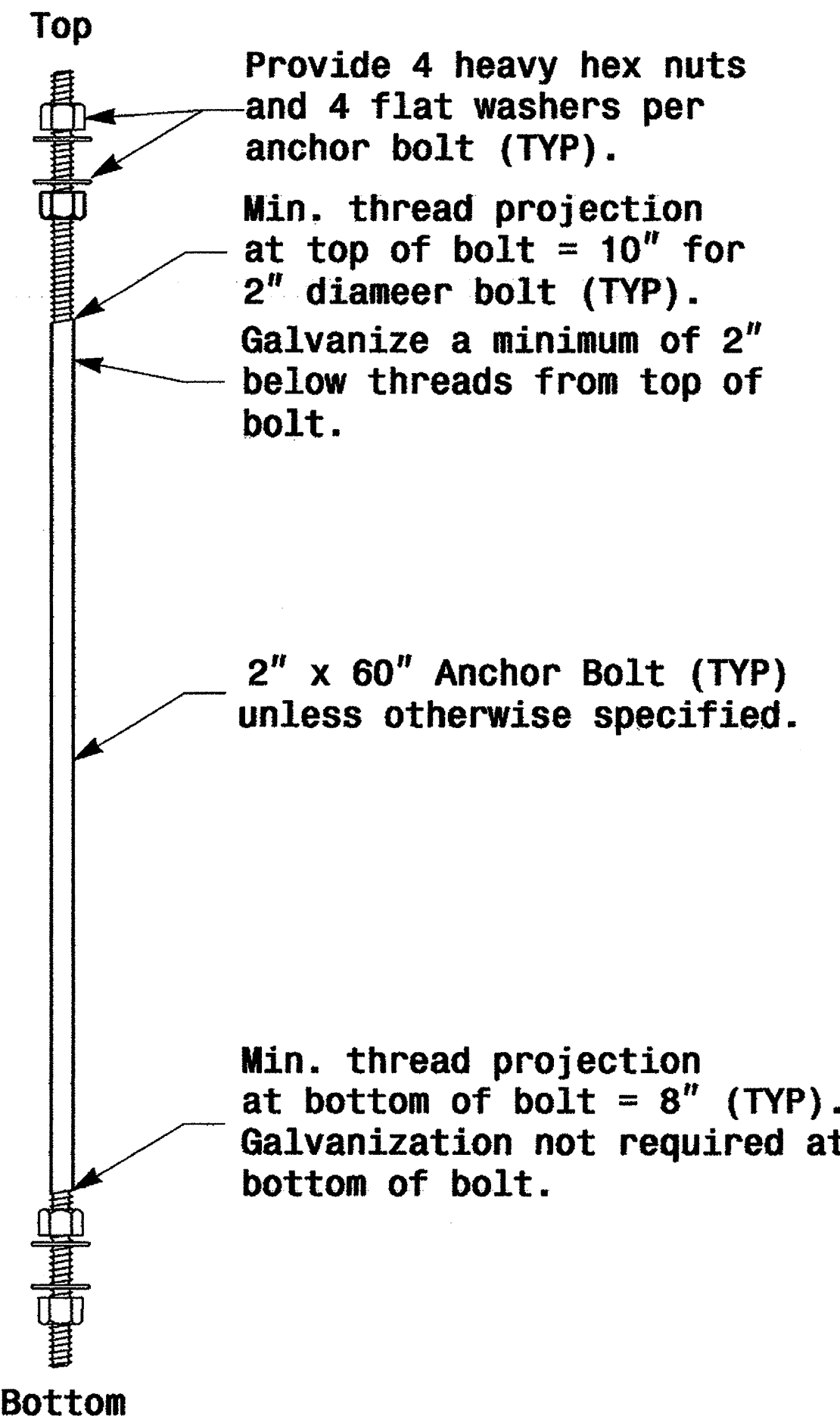
NCDOT STANDARD _____

Arm I.D. Tag
(Provide on each section of a multi-section mast arm)

Shaft I.D. Tag
(Provide on Strain Poles and Mast Arm Poles)

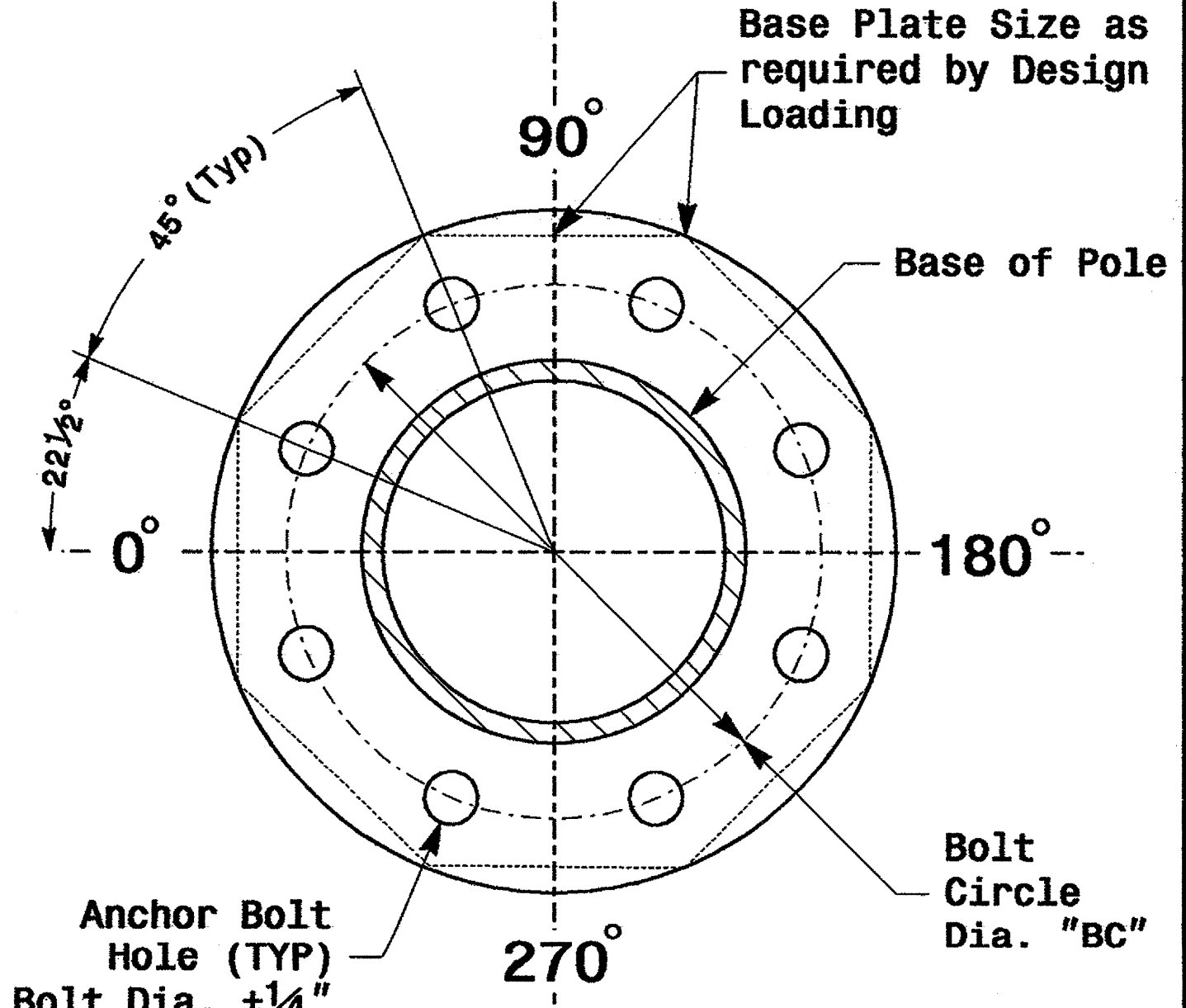
- Notes:
- 1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
 - 2) A.B. = Anchor Bolt
 - 3) B.C. = Bolt Circle of Anchor Bolts
 - 4) If Custom Design, use "NCDOT STANDARD" line for plan pole I.D.
 - 5) See drawing M4 for mounting positions of I.D. tags.

Identification Tag Details



Anchor Bolt Detail

Note: See Strain Pole drawing M3 and Mast arm drawing M4 for base plate weld details.



8 Bolt Base Plate Detail

Prepared in the Office of: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

222 N. McDowell St., Raleigh, NC 27603

SCALE: 0 NA NONE

Typical Fabrication Details Common To All Metal Poles

PLAN DATE: May 2005 REVIEWED BY: C.F. Andrews

PREPARED BY: P.L. Alexander REVIEWED BY: A.M. Esposito

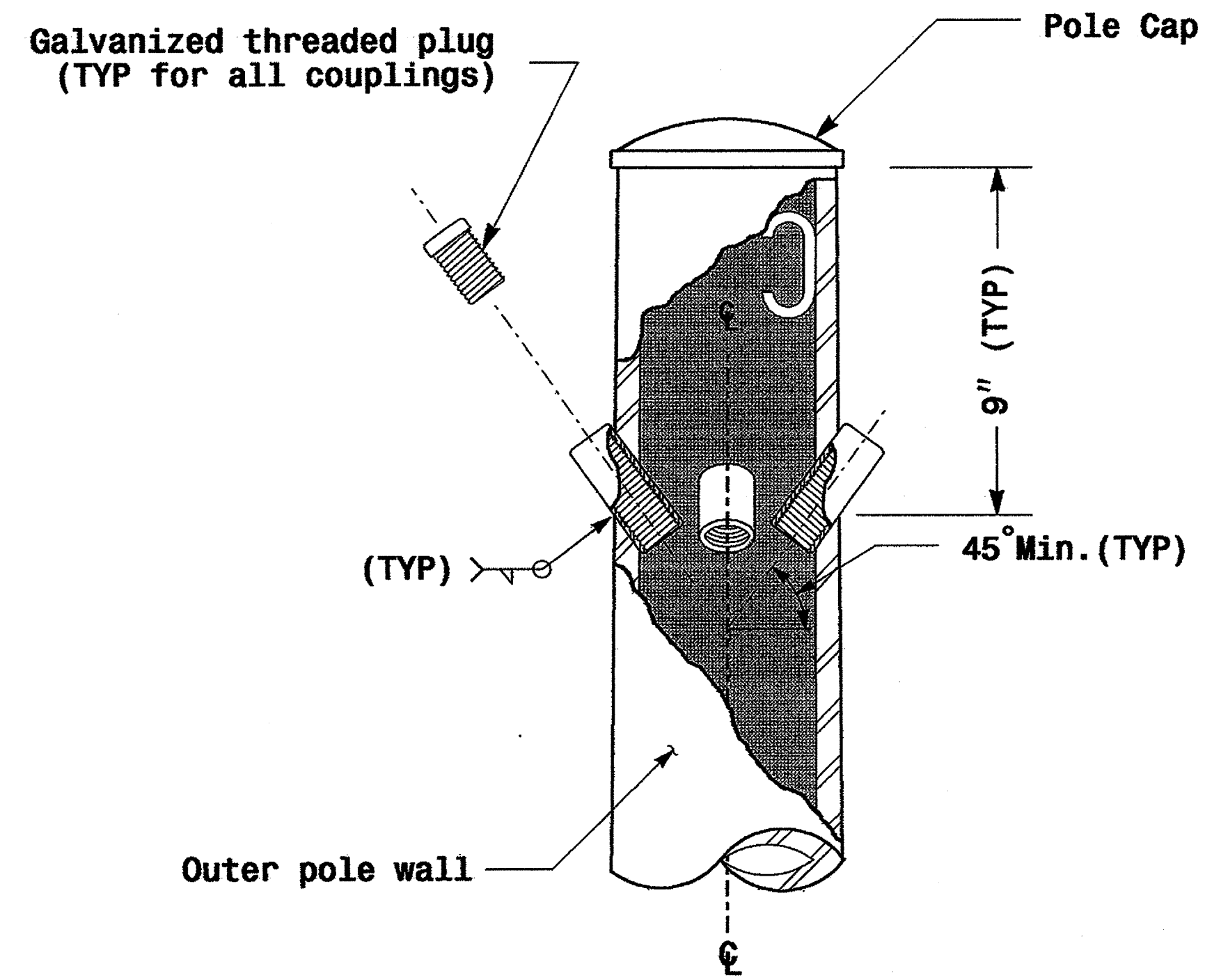
REVISIONS	INIT.	DATE

Signature: D. Sankar 9.2.2005

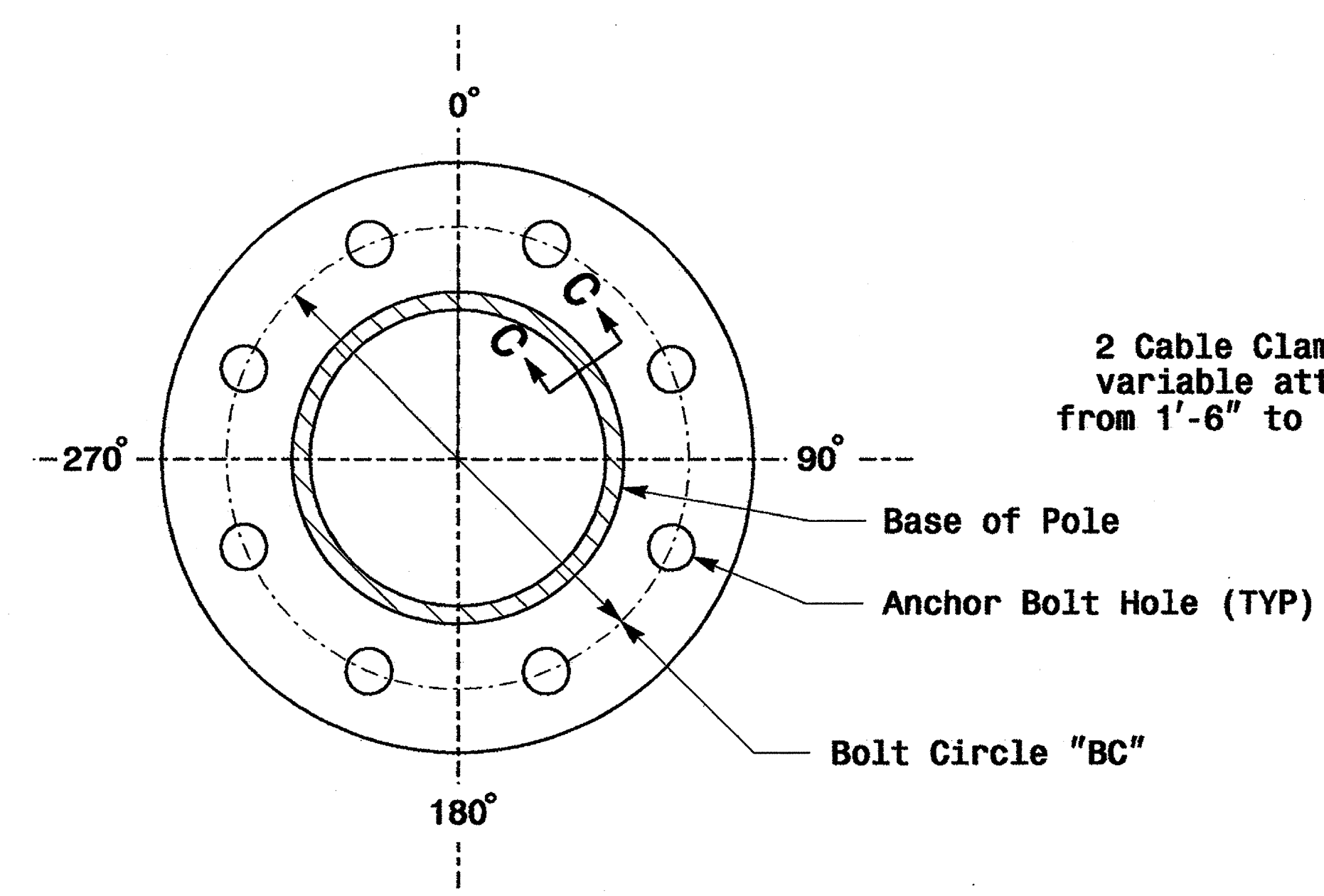
SIG. INVENTORY NO.

Fabrication Details - All Poles

01-SEP-2005 18:22 D:\2004 Metro Pole Standards\2004.m2 thru m6.dgn c.andrews

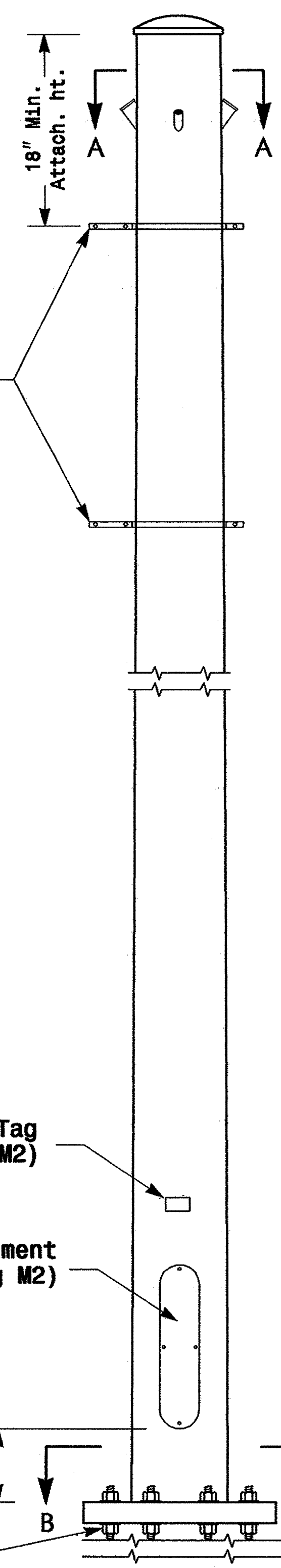


Cable Entrances at Top of Pole

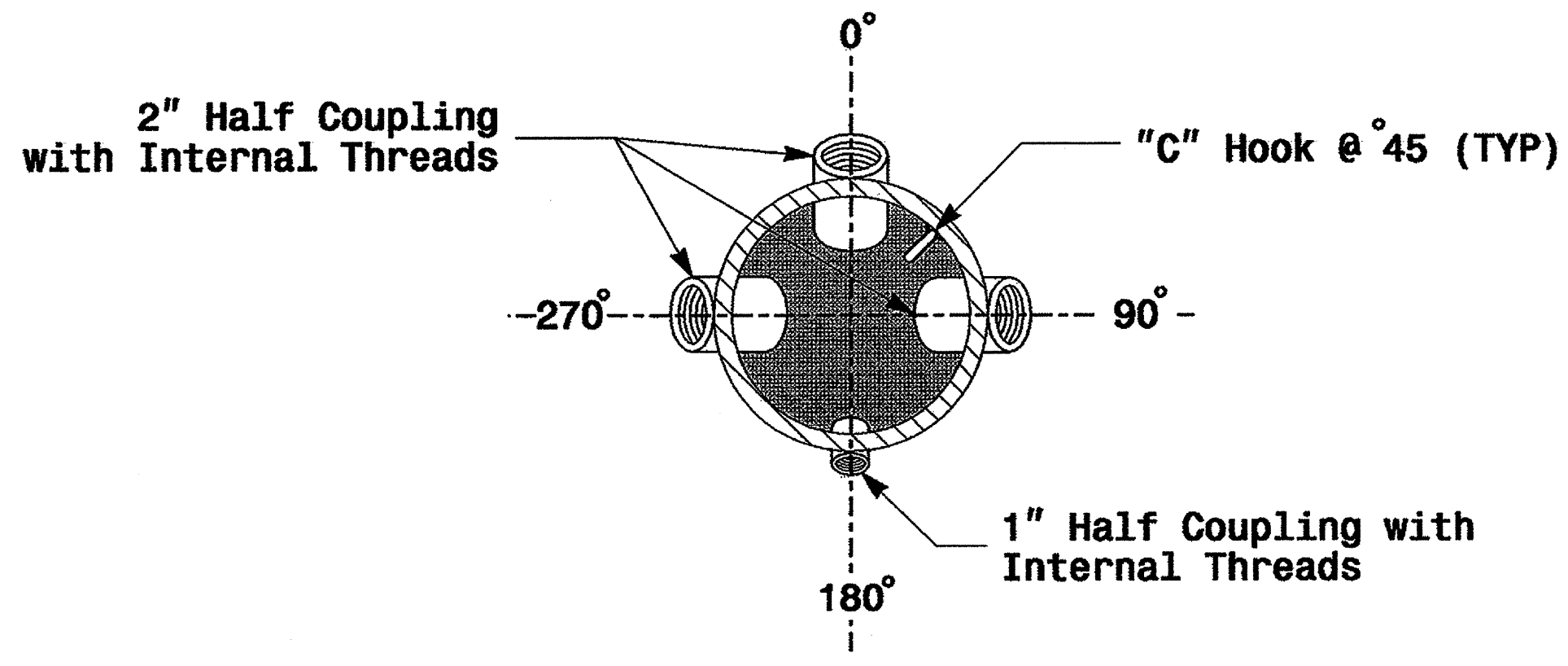


Section B-B
(See drawing M2)
Pole Base Plate

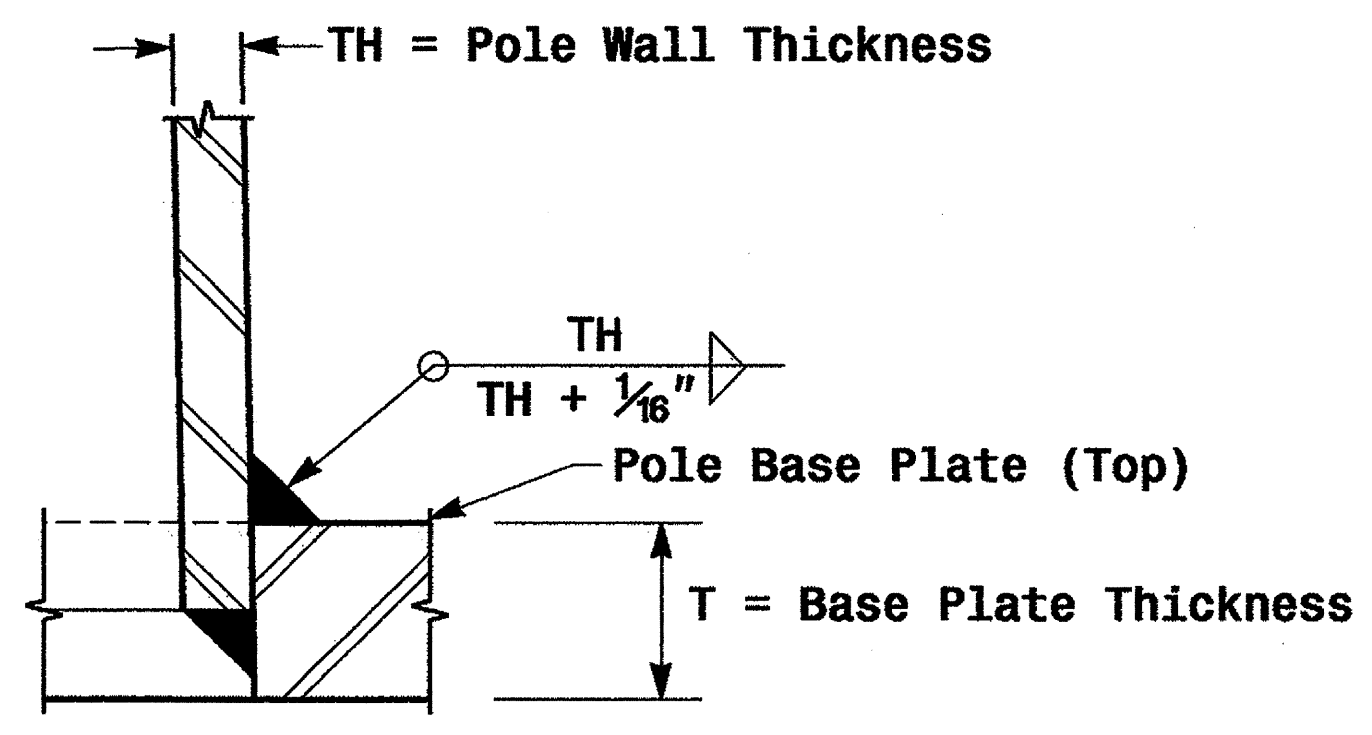
2 Cable Clamps designed for variable attachment heights from 1'-6" to 10' below the top of the pole.



Monotube Strain Pole
(.14"/Foot Taper)



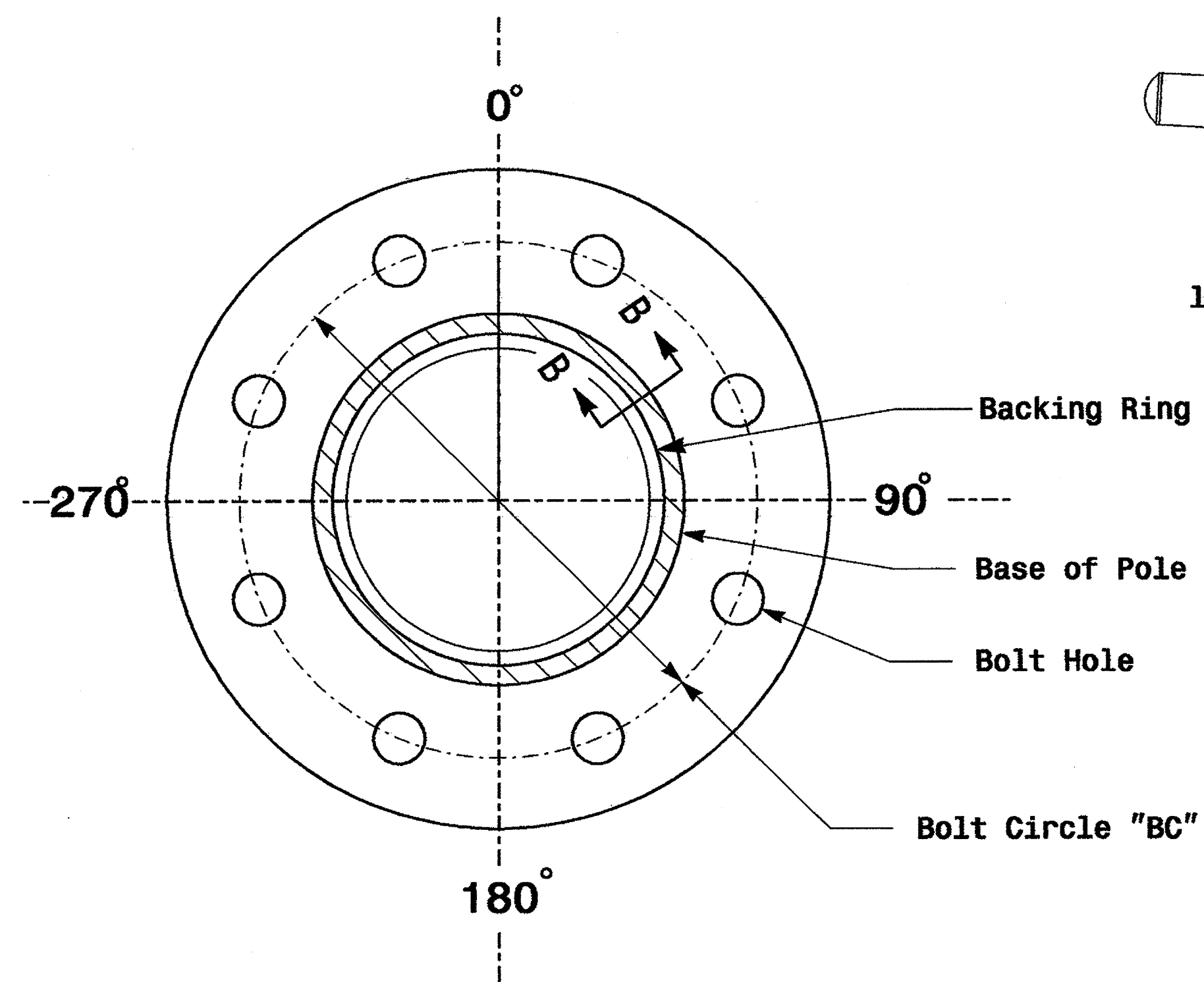
Radial Orientation for Factory Installed Accessories at Top of Pole



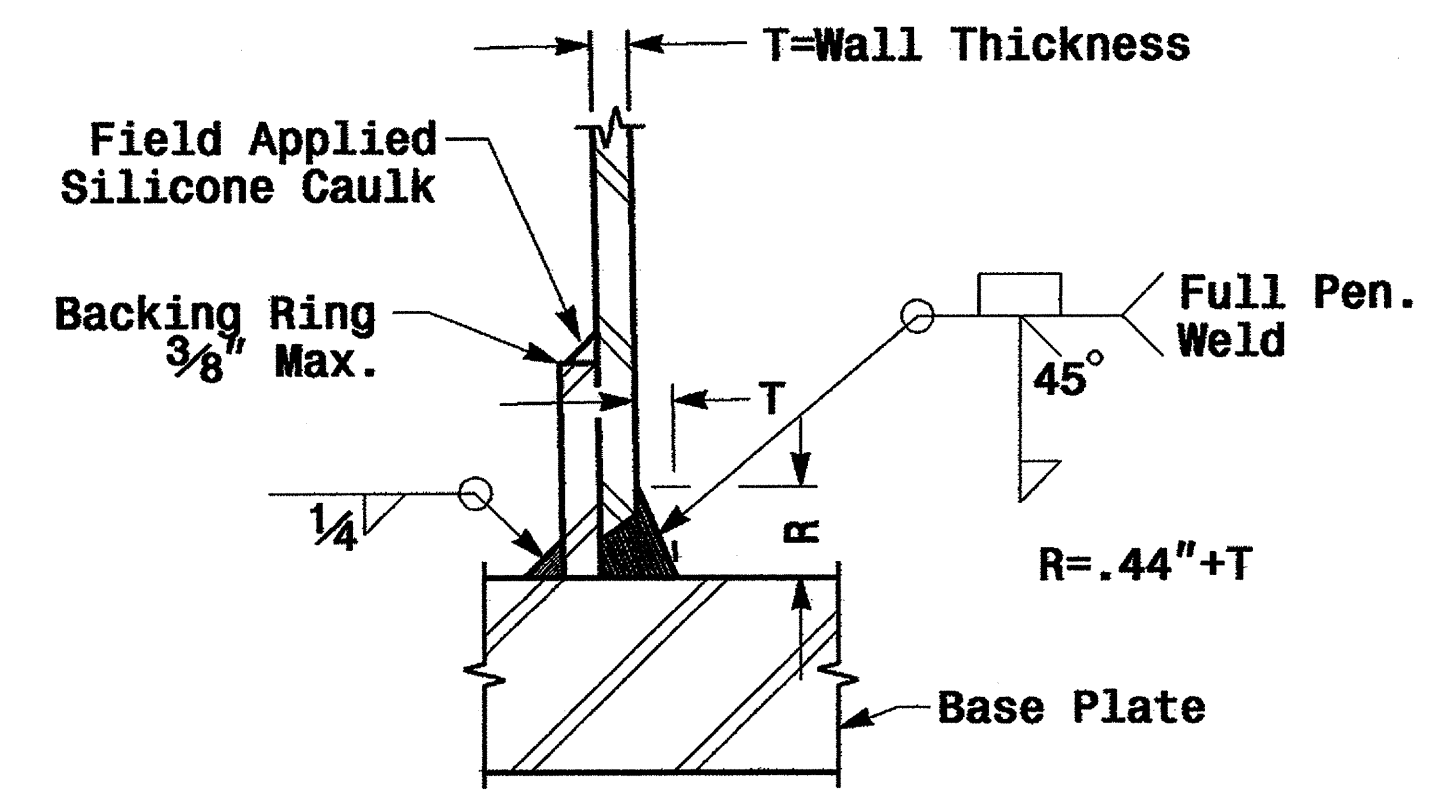
Socket Connection Weld Detail

	<p>Typical Fabrication Details For Strain Poles</p>		
	<p>PLAN DATE: May 2005</p>	<p>REVIEWED BY: C.F. Andrews</p>	
<p>PREPARED BY: P.L. Alexander</p>	<p>REVIEWED BY: A.M. Esposito</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>
<p>222 N. McDowell St., Raleigh, NC 27603</p>	<p>SIGNATURE: J. Sarker</p>	<p>DATE: 2.2.2005</p>	<p>SIG. INVENTORY NO.</p>

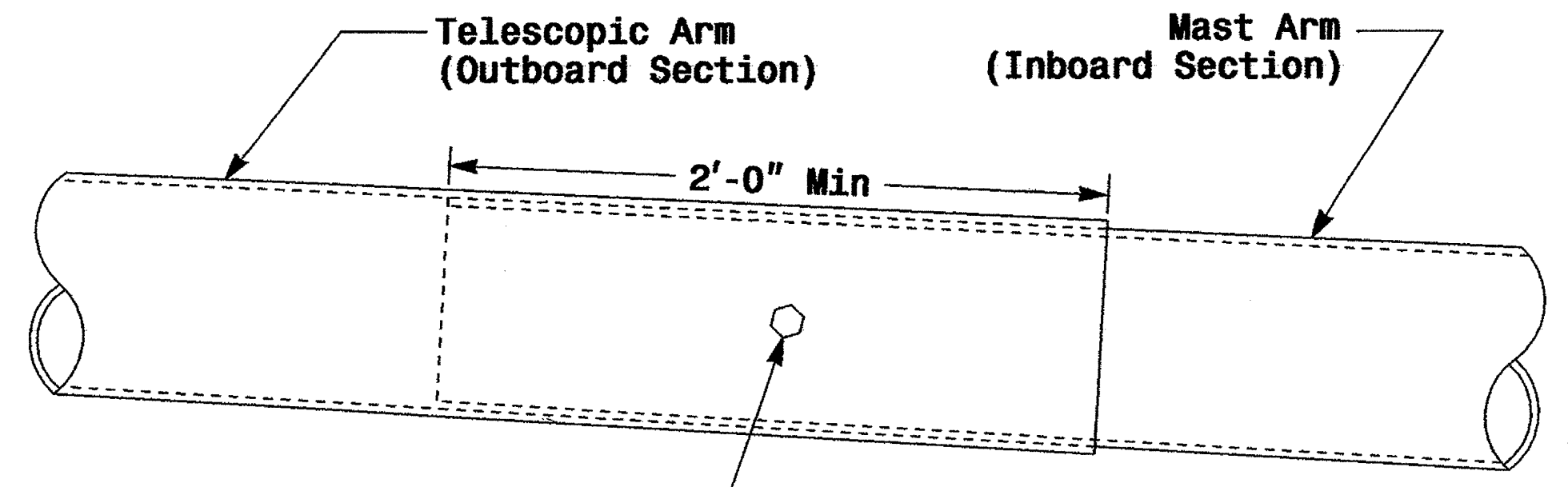
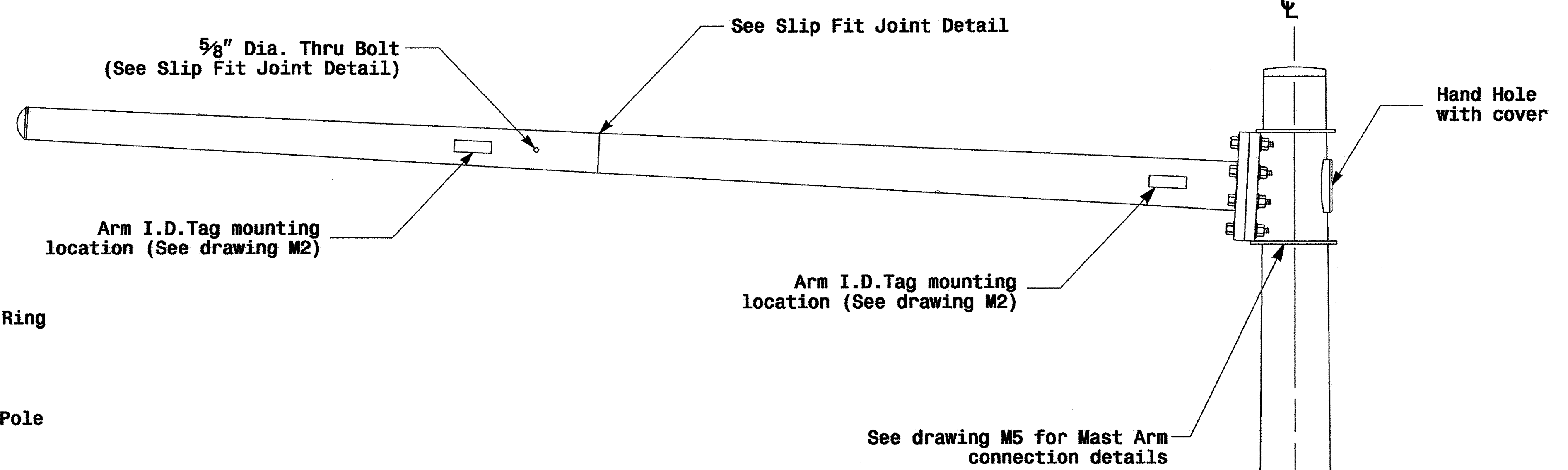
01-SEP-2005 14:07 w:\peopl\es-unit\work\groups\2004 metal pole standard\sig38.m2.dgn P.L. Alexander



Section A-A
(See drawing M 2)
Pole Base Plate

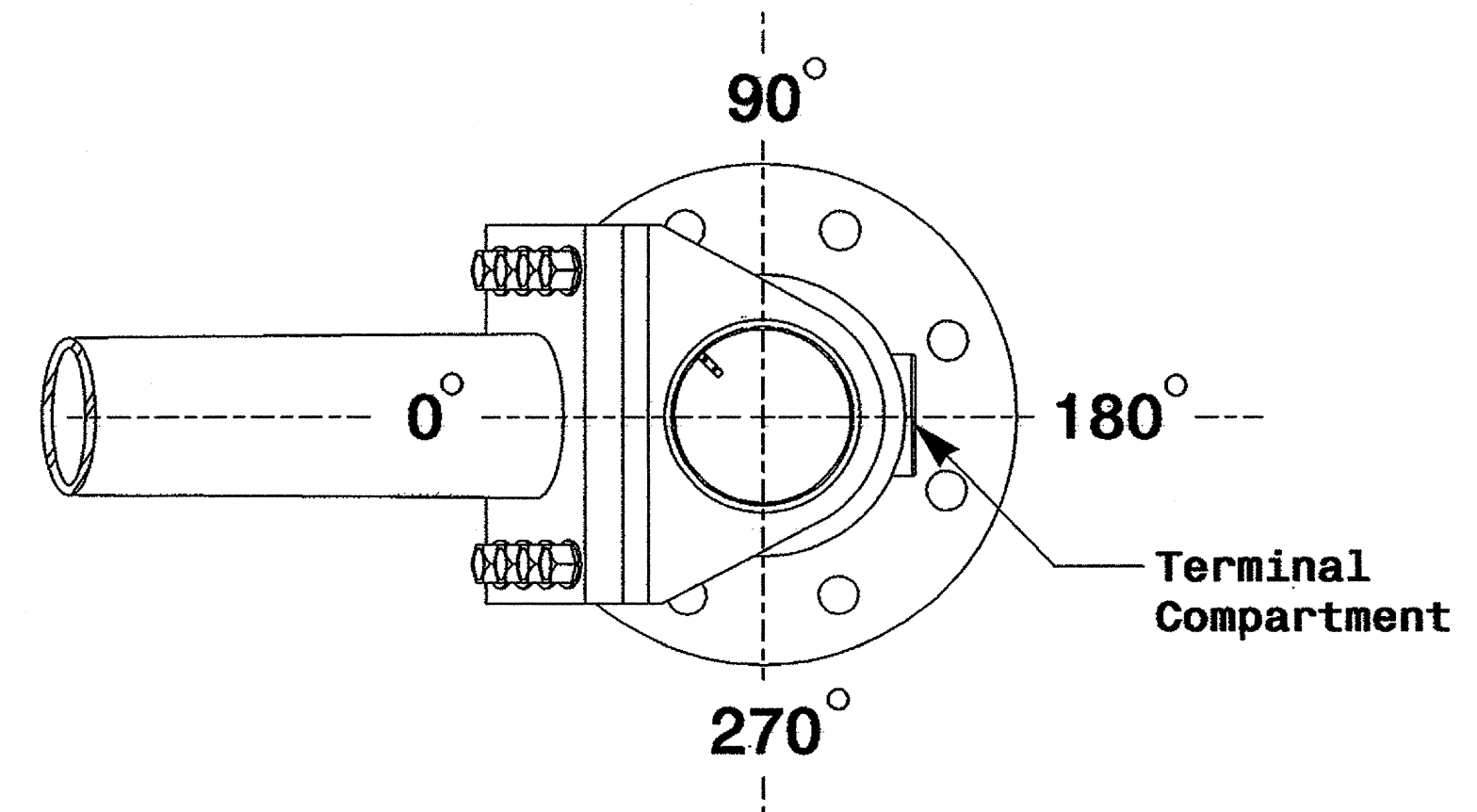


Section B-B
(Pole Attachment to Base Plate)
Full-Penetration Groove Weld Detail

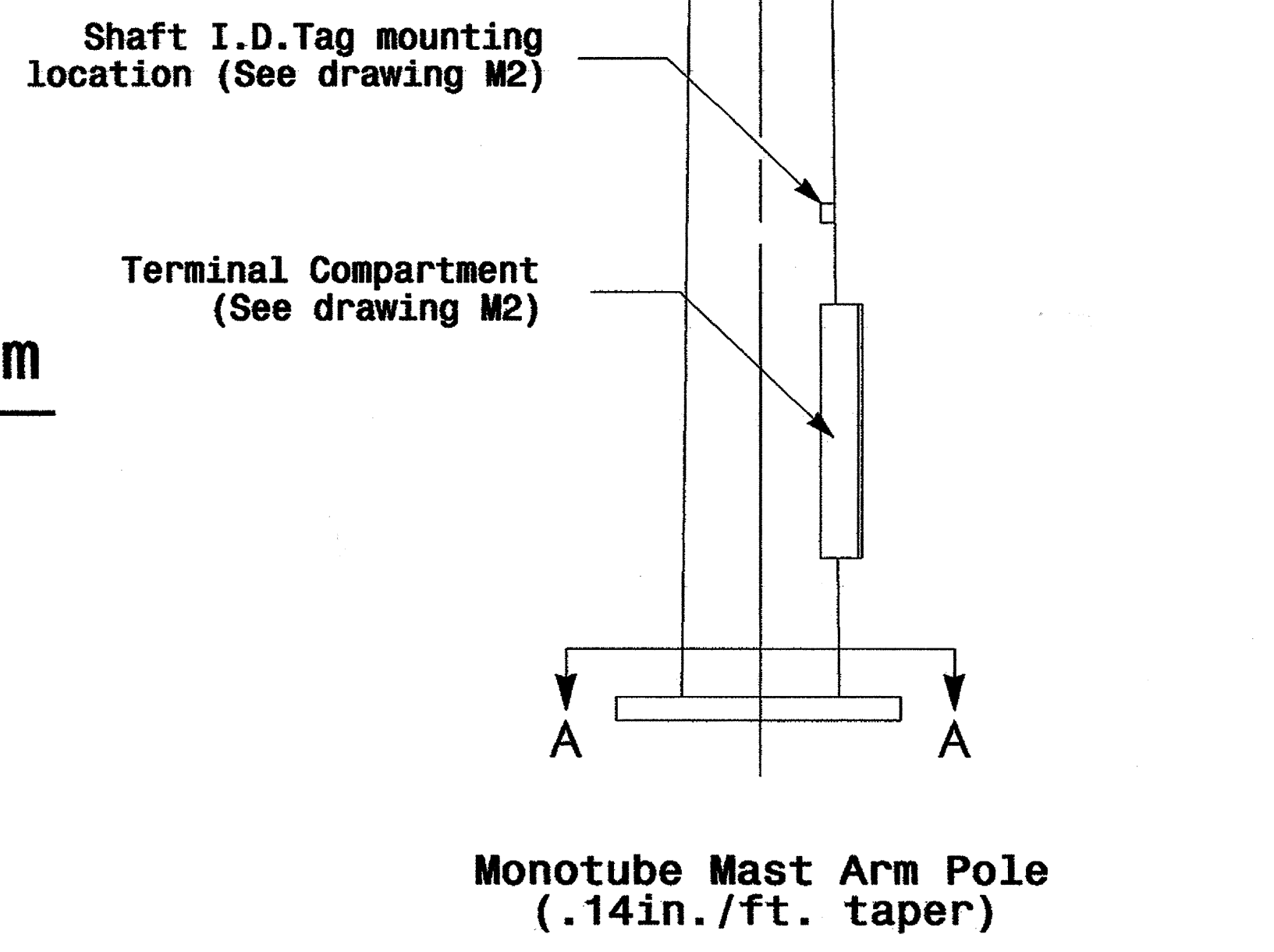


3/4" Factory Drilled Hole in Outboard Tube.
Field Drill Inboard Tube.
5/8" Galvanized Thru Stud with (2) Hex. Locknuts Ea.

Slip Fit Joint Detail for Mast Arm



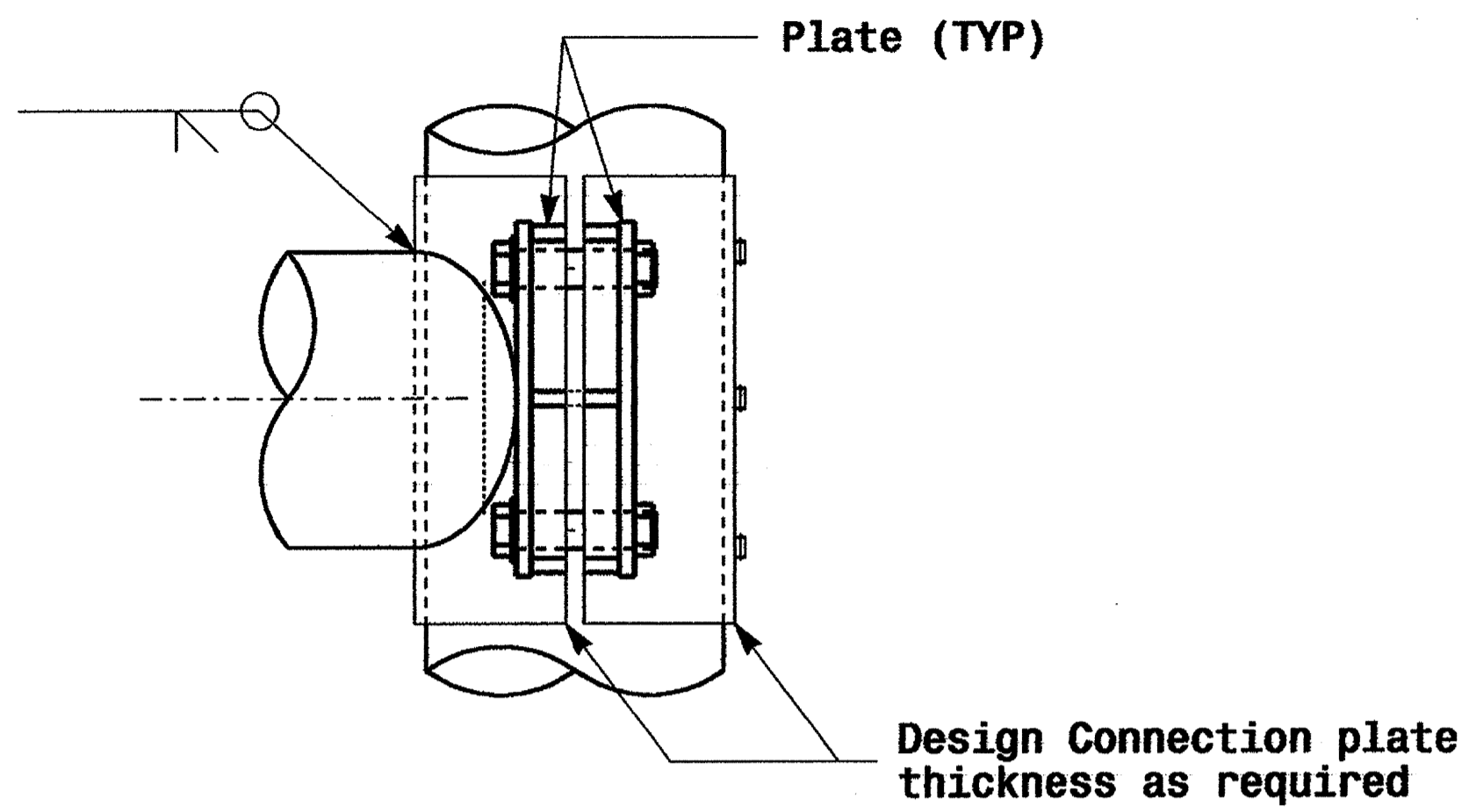
Mast Arm Radial Orientation



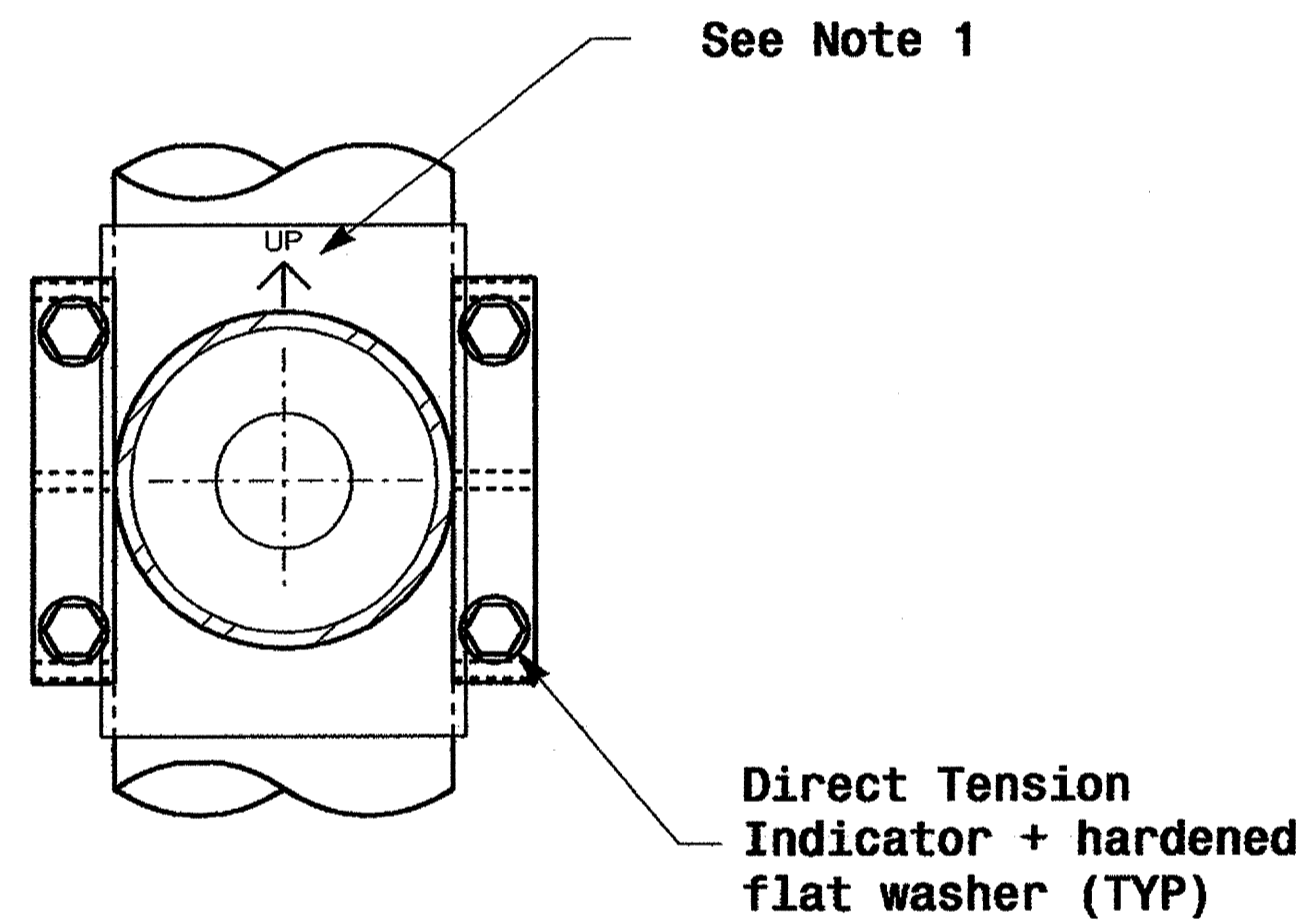
	Typical Fabrication Details for Mast Arm Poles		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028094 DEBESH C. SAHA
	PLAN DATE: May 2005 PREPARED BY: P.L. Alexander	REVIEWED BY: C.F. Andrews REVIEWED BY: A.M. Esposito	REVISIONS INIT. DATE
Prepared in the Office of: 122 N. McDowell St., Raleigh, NC 27603	SCALE: 0 NA NONE		

01-SEP-2005 14:08 v:\p\p\l\es-un\l\hew\k\groups\2004\metal pole standard\2004 mtl.dgn pol alexander

Adjustable Clamp Type Bolted Mast Arm Connection

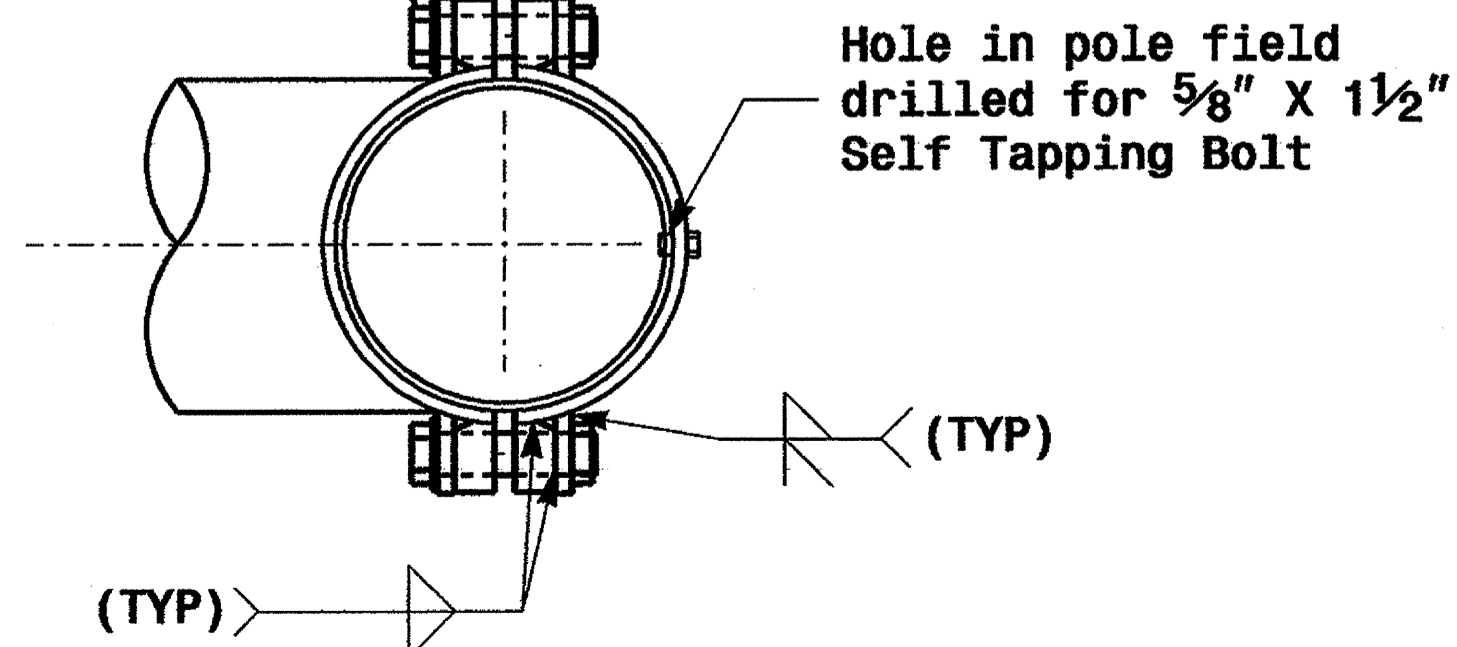


Side Elevation View



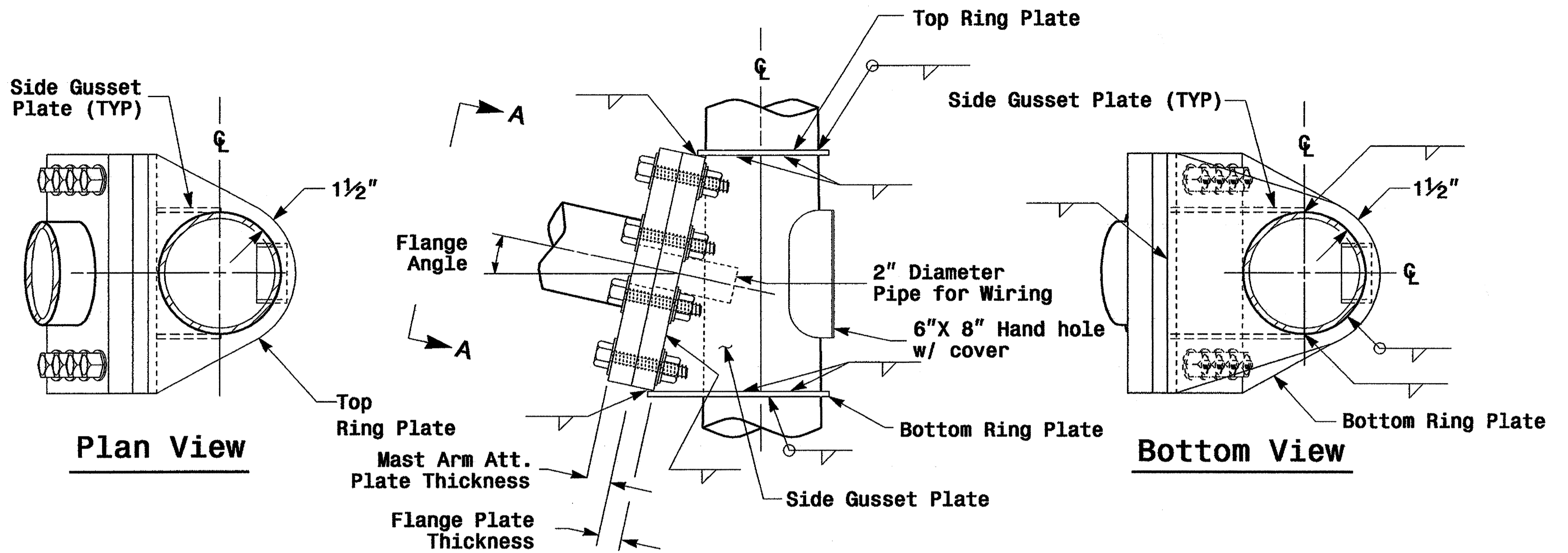
Front Elevation View

(4) - Size "E" Hex Head Bolts with (1) Hex Nuts & Washers

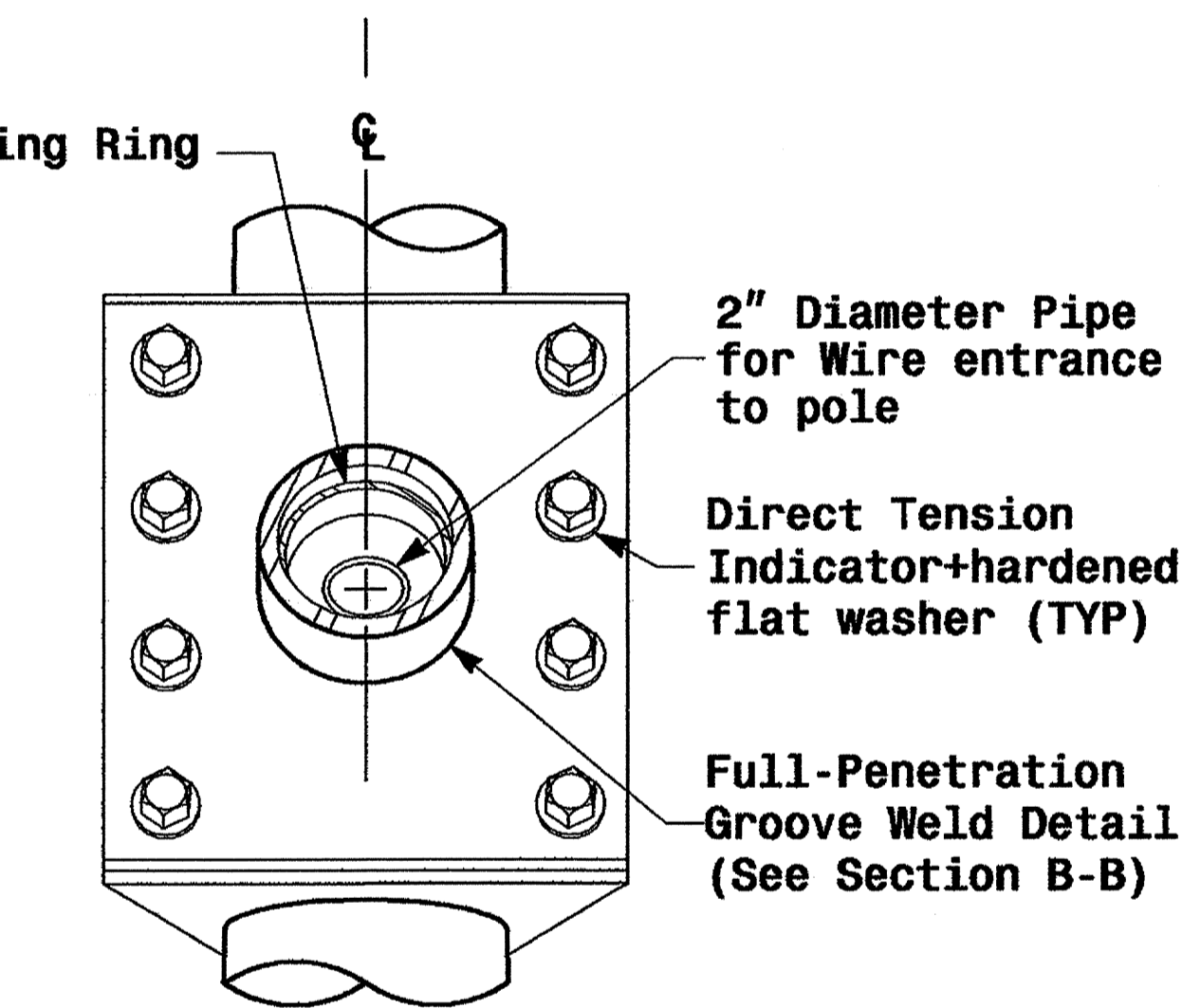


Plan View

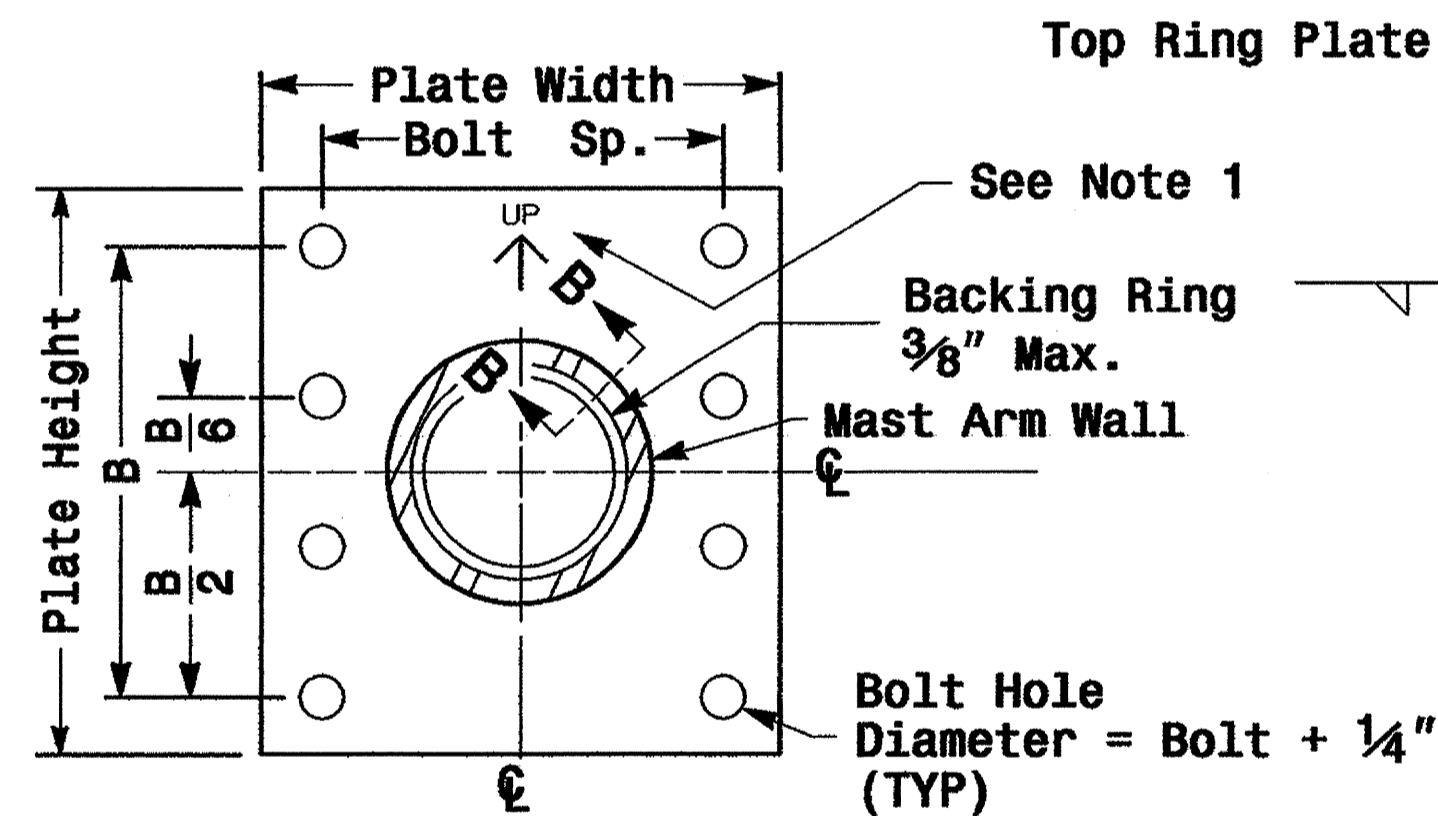
Welded Ring Stiffened Mast Arm Connection



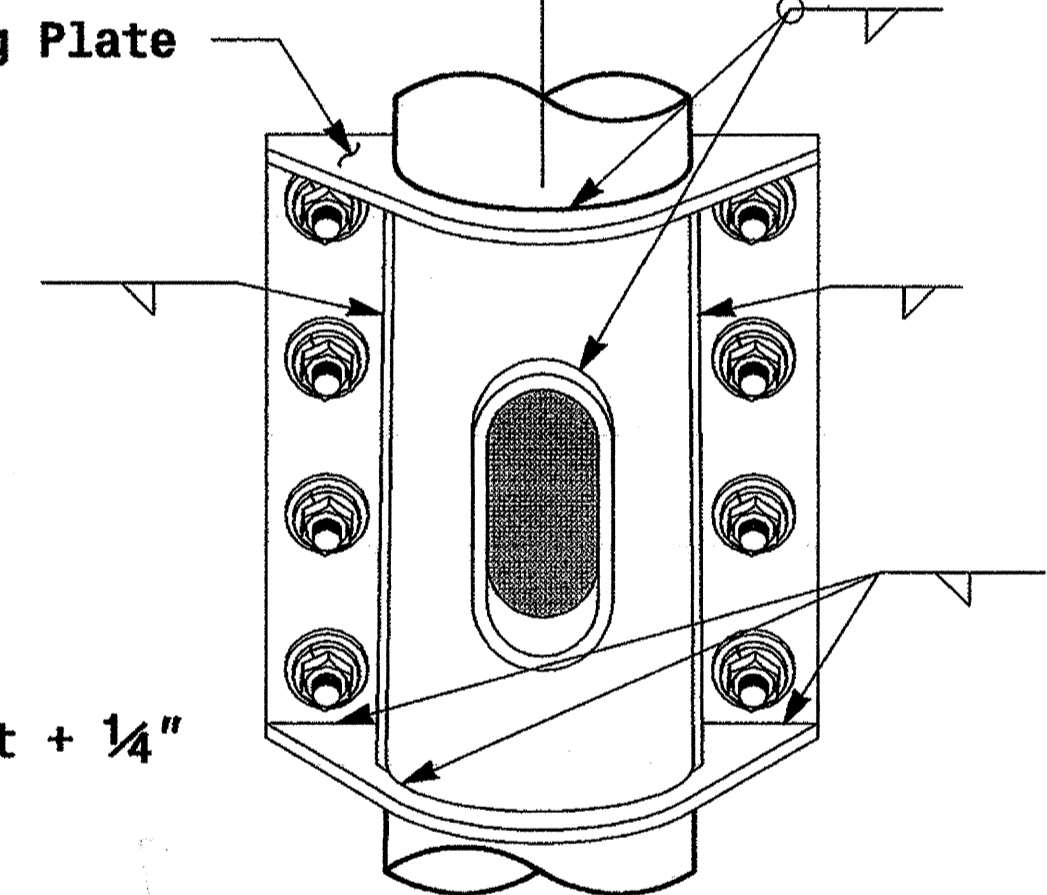
Side Elevation View



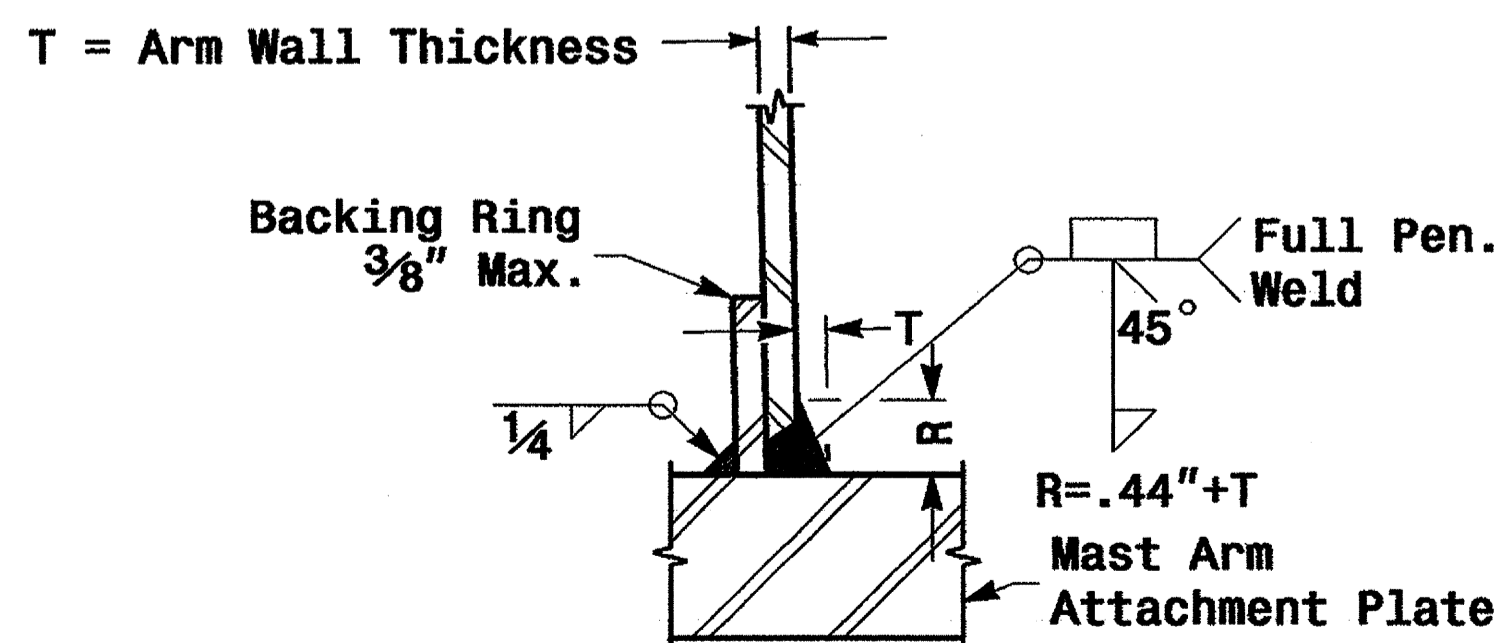
Front Elevation View



Section View A-A
Mast Arm Attachment Plate



Back Elevation View



Section B-B
Full-Penetration Groove Weld Detail

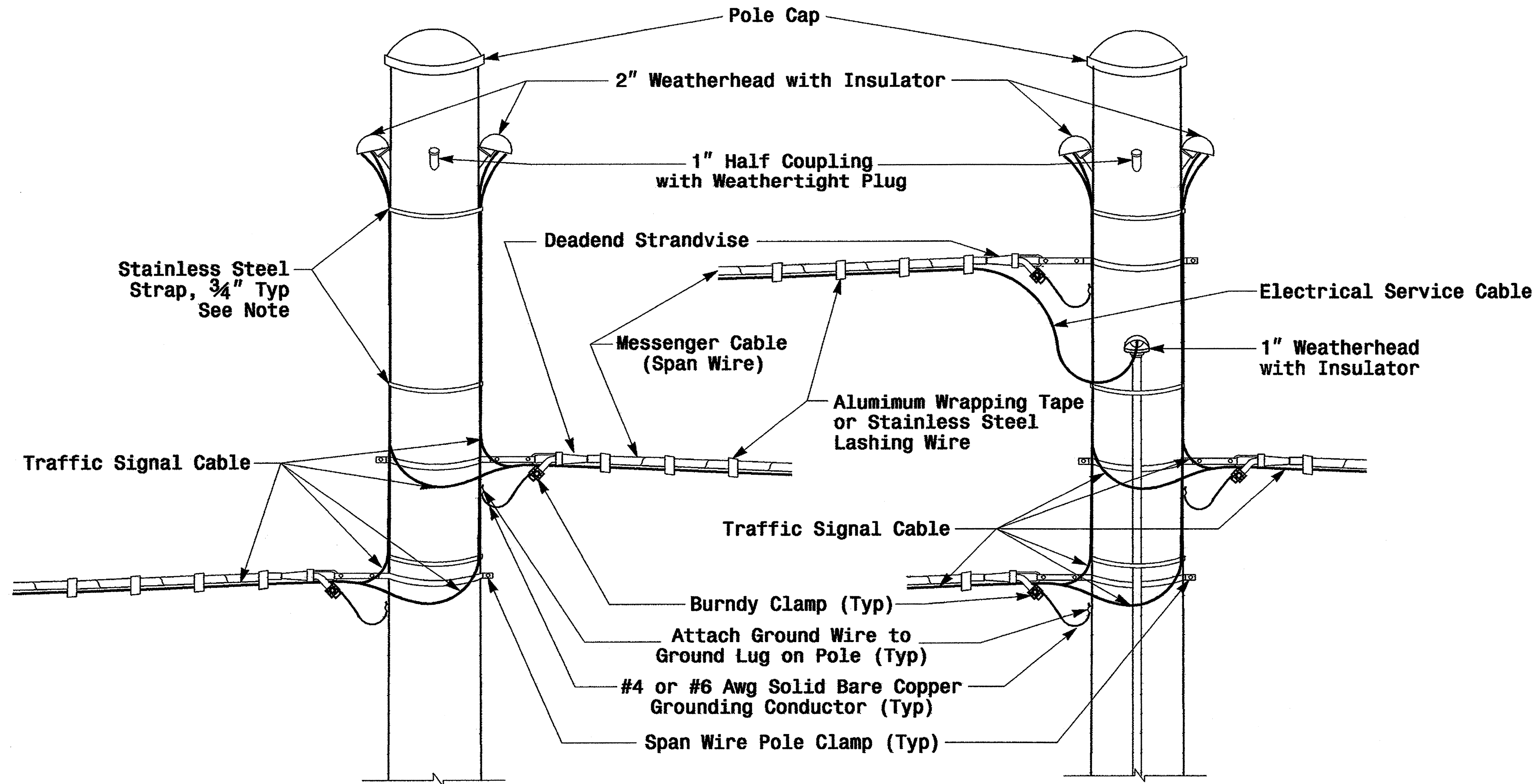
Notes:

1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Designer is responsible for providing appropriate drainage points.

Fabrication Details - Mast Arm Poles

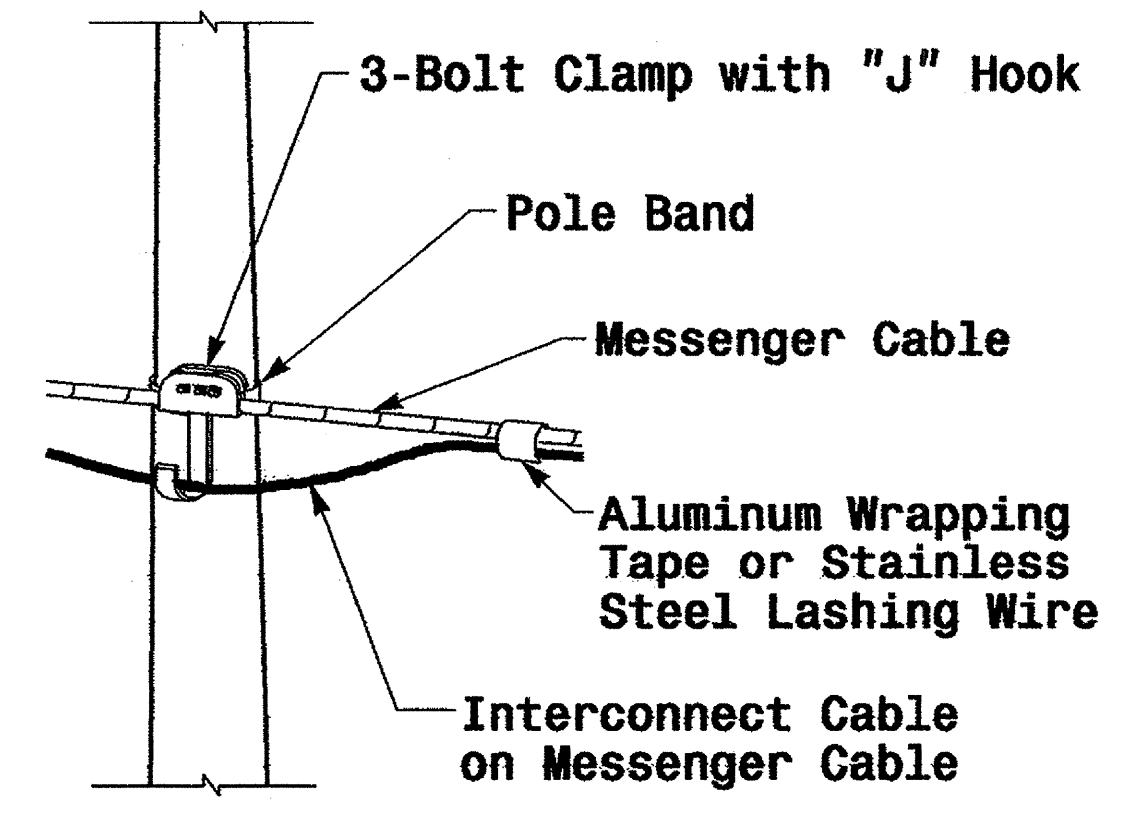
01-SEP-2005 14:11 w:\peop\ee-un\11\work\groups\2004_metal_pole_standards\2004_m5.dgn pol_alexander

	<p>Fabrication Details For Mast Arm Connection To Pole</p>		
	<p>PLAN DATE: May 2005</p>	<p>REVIEWED BY: C.F. Andrews</p>	
<p>PREPARED BY: P.L. Alexander</p>	<p>REVIEWED BY: A.M. Esposito</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>
<p>SIGNATURE: P.L. Alexander</p>			<p>DATE: 9.2.2005</p>
<p>SIG. INVENTORY NO.</p>			

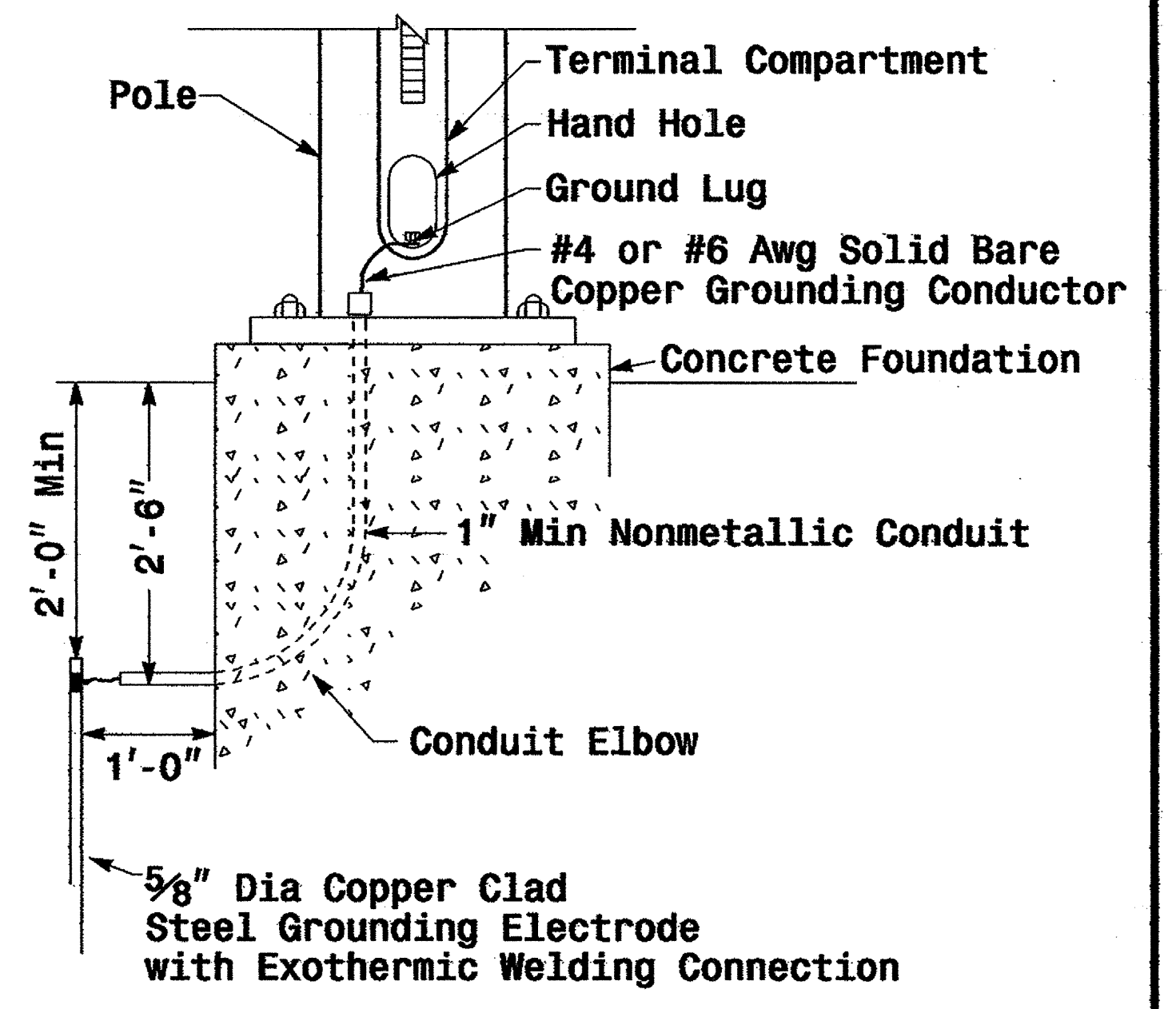


Note: Strap all signal cables to the side of the pole with 3/4" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36"

Strain Pole Attachments



Attachment of Cable to Intermediate Metal Pole



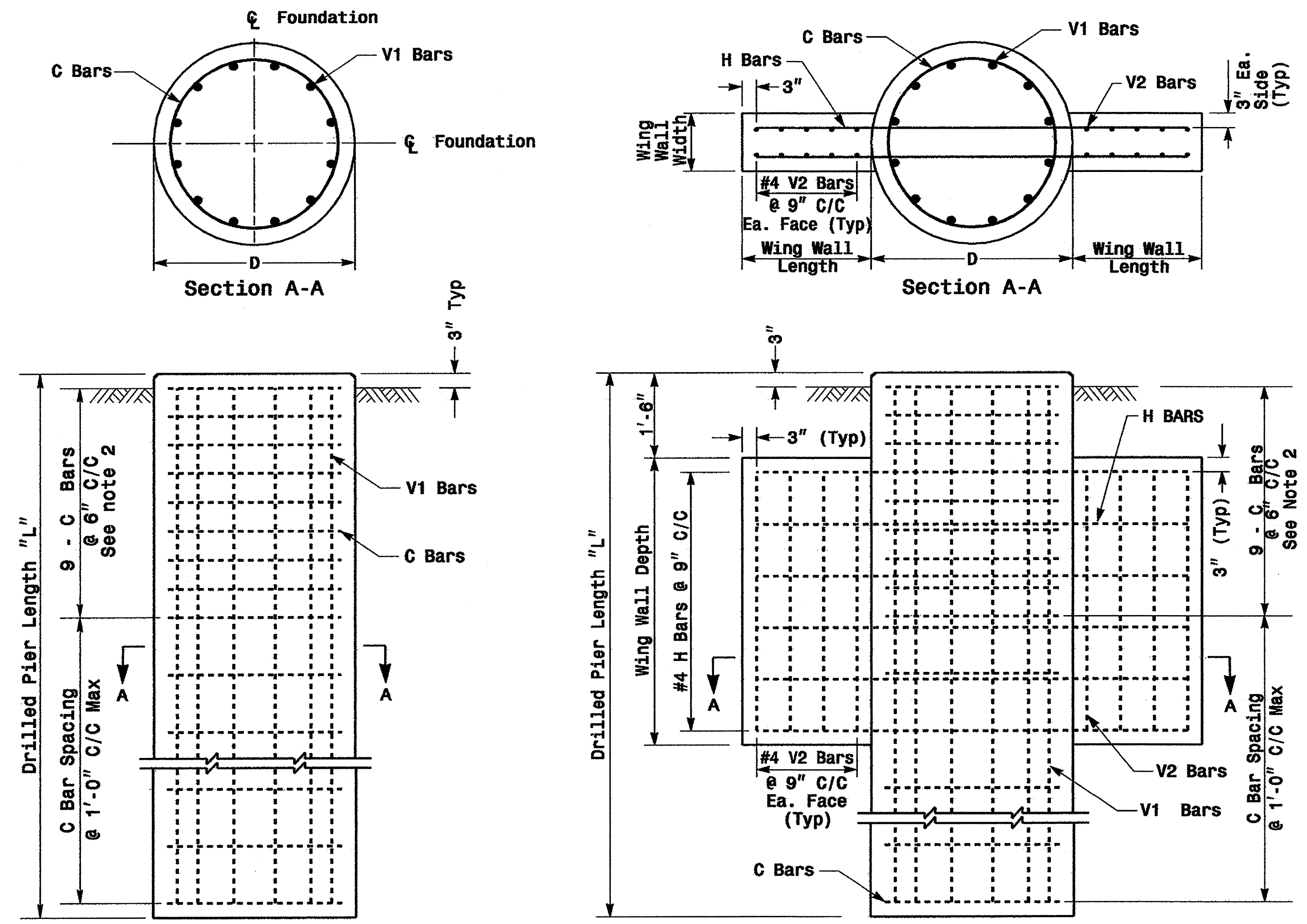
Metal Pole Grounding Detail

Construction Details - Strain Poles

01-SEP-2005 16:33 C:\pwork\cups\2004 metal pole stender\dsg004.mgd pdl alexander

	Construction Details Strain Poles		
	PLAN DATE: May 2005 PREPARED BY: C.F. ANDREWS	REVIEWED BY: P.L. ALEXANDER REVIEWED BY: D.C. SARKAR	
REVISIONS: _____ INT. DATE _____		SIGNATURE: <i>P.L. Alexander</i> DATE: 9-1-05	SEAL: _____ INVENTORY NO. _____

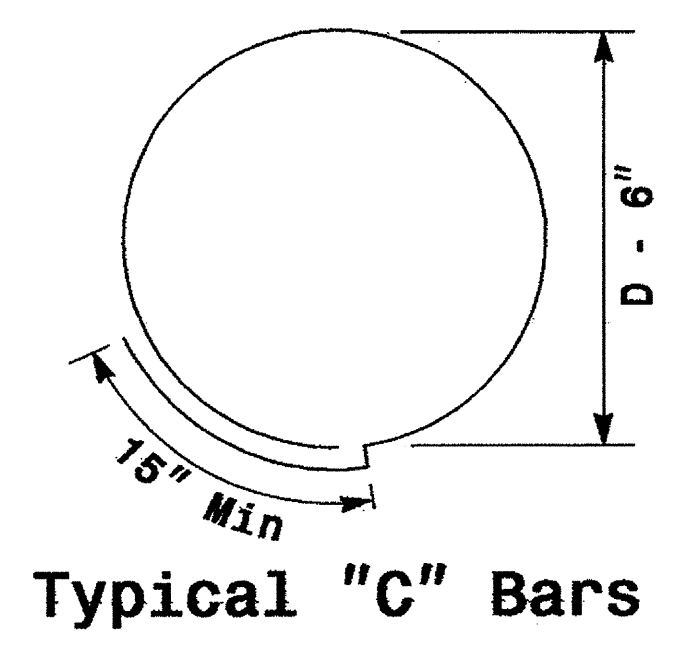
Reinforcing Steel Bars



REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (42" & 48" DIAMETER)

Shaft Dia (in.)	Conc. Volume (cu. yds.)	Bar Name	No.	Size	Type	Length
42"	.356 x L	V1	9	#8	STR.	**
		C	*	#4	CIR.	10'-9"
48"	.465 x L	V1	12	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* See Note No. 1
** See Note No. 3



REINFORCING STEEL TABLE FOR STANDARD 42" and 48" DRILL PIER SHAFT WITH TYPE 1 AND TYPE 2 WING WALLS

Wing Wall Type	Drill Pier Shaft Dia. (in.)	Reinforcing Steel				
		Bar Name	No.	Size	Type	Length
TYPE 1	42"	V1	9	#8	STR.	**
		V2	12	#4	STR.	2'-6"
		H	8	#4	STR.	6'-0"
		C	*	#4	CIR.	10'-9"
TYPE 2	42"	V1	9	#8	STR.	**
		V2	16	#4	STR.	4'-6"
		H	12	#4	STR.	9'-0"
		C	*	#4	CIR.	10'-9"
TYPE 2	48"	V1	12	#8	STR.	**
		V2	16	#4	STR.	4'-6"
		H	12	#4	STR.	9'-6"
		C	*	#4	CIR.	12'-6"

* See Note No. 1
** See Note No. 3

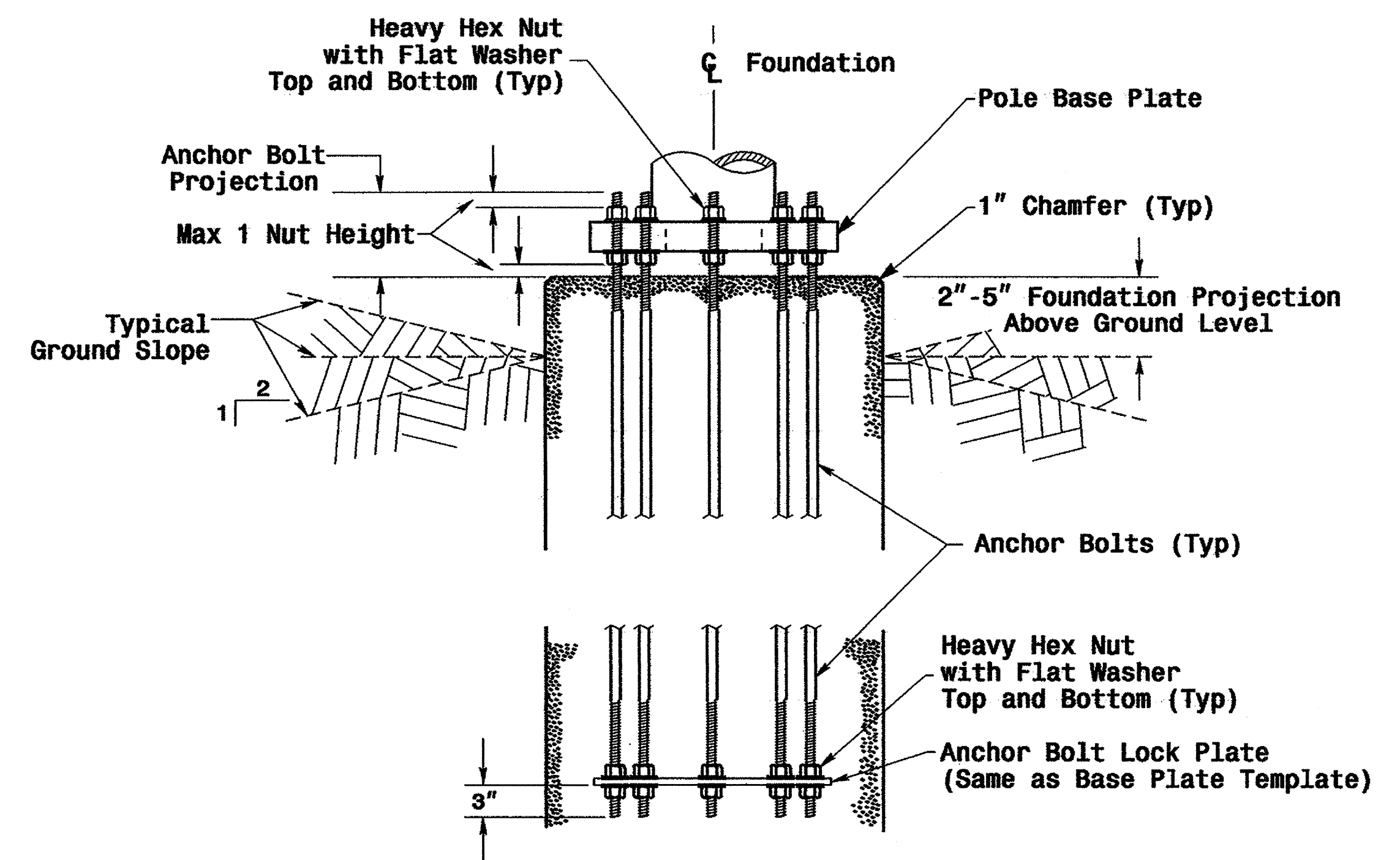
WING WALL DETAILS

Wing Wall Type	Wing Wall Length (Ft.)	Wing Wall Width (Ft.)	Wing Wall Depth (Ft.)	Concrete Volume (Cu. Yds.)
TYPE 1	1'-6"	1'-0"	3'-0"	.4
TYPE 2	3'-0"	1'-0"	5'-0"	1.2

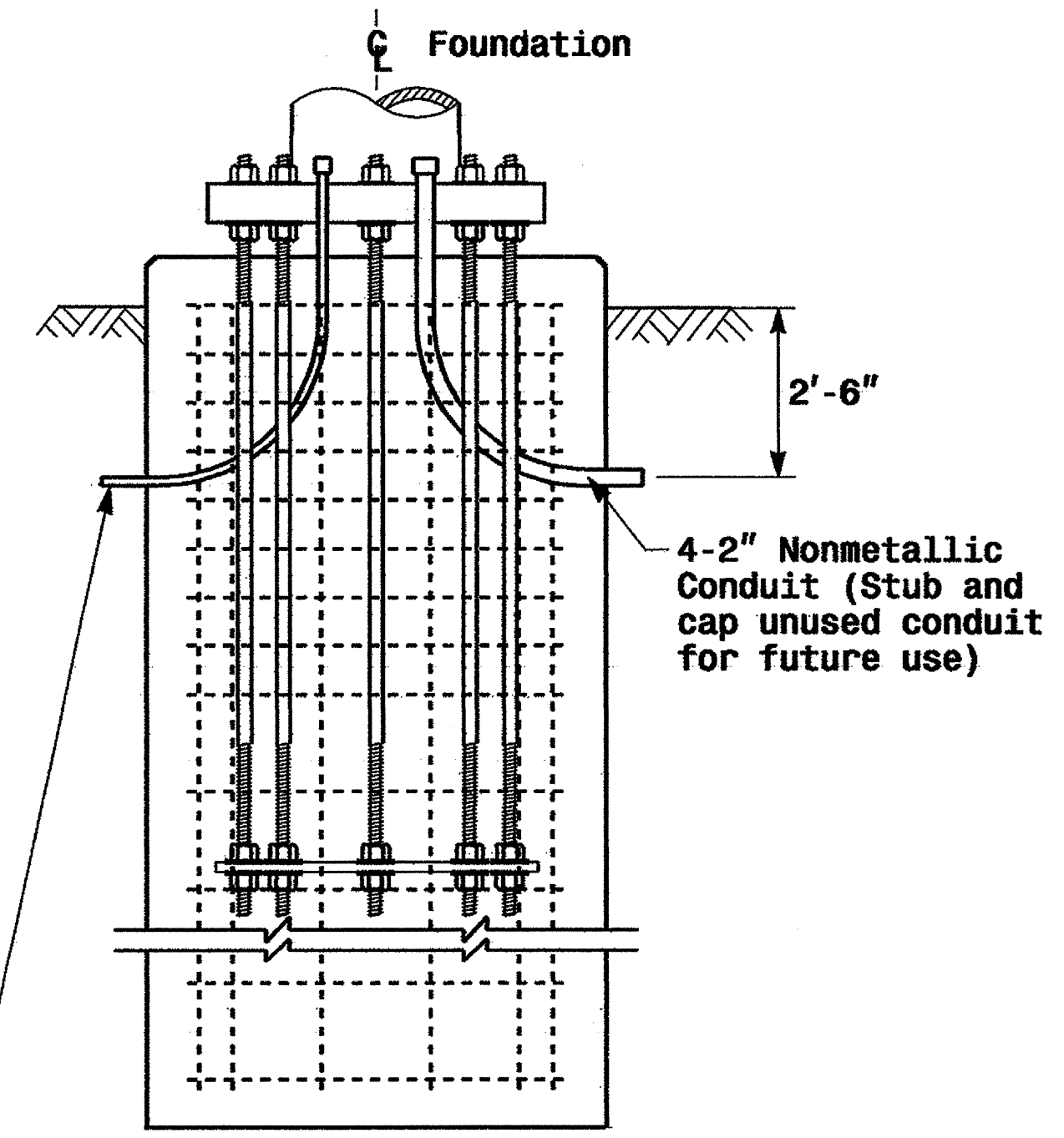
See Note No. 4

Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)



Typical Foundation Conduit Details



Notes

- The number of C-bars is based on foundation depth. For standard foundations, see sheet M 8.
- Circular tie reinforcing rings may be vertically adjusted by +/- 3" at a depth between 2'-0" and 3'-0" to facilitate the installation of electrical conduit entering in the cage.
- The length of V1-bars is based on foundation depth. For standard foundations, see sheet M 8.
- The quantities for steel and concrete shown in the Wing Wall Details Chart reflect the amount of material for 1 pair of wing walls (2 wing walls per drilled pier shaft.)

Construction Details - Foundations

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Prepared in the Office of:

Construction Details Foundations

PLAN DATE: May 2005 REVIEWED BY: P. L. ALEXANDER
 PREPARED BY: C. F. ANDREWS REVIEWED BY: A. W. ESPOSITO

SCALE: 0 NA NONE

REVISIONS: _____ INIT. DATE _____

Signature: *D. Sarker* 9.2.2005
 DATE: 9.2.2005
 SIG. INVENTORY NO. _____

		STANDARD STRAIN POLES				STANDARD FOUNDATIONS 42" Diameter Drilled Pier Length (L) - Feet						
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Moment at the Pole Base (ft-kp)	Clay				Sand		
						Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30
WIND ZONE 1	LIGHT	S26L3	26	25	280	20.5	14.0	11.5	9.5	18.0	16.0	14.0
		S30L3	30	25	310	21.0	14.5	11.5	9.5	18.5	16.5	14.5
		S35L3	35	25	350	22.5	15.0	12.0	10.0	19.5	17.5	15.5
	HEAVY	S30H3	30	29	450	25.5	16.5	13.0	11.0	21.0	18.5	16.5
		S35H3	35	29	540	26.0	17.0	13.5	11.5	22.0	19.5	17.0
	WIND ZONE 2	LIGHT	S26L2	26	23	250	19.5	13.5	11.0	9.0	18.0	15.5
S30L2			30	23	290	20.0	14.0	11.5	9.5	18.5	16.0	14.0
S35L2			35	23	315	21.0	14.5	11.5	9.5	19.0	16.5	14.5
HEAVY		S30H2	30	29	415	24.5	16.0	13.0	10.5	21.0	18.5	16.0
		S35H2	35	29	485	25.5	16.5	13.5	11.0	21.5	19.0	16.5
WIND ZONE 3		LIGHT	S26L2	26	23	250	18.5	13.0	10.5	9.0	17.5	15.0
	S30L2		30	23	290	19.5	13.5	11.0	9.0	18.0	15.5	14.0
	S35L2		35	23	315	20.0	14.0	11.5	9.5	18.5	16.0	14.5
	HEAVY	S30H2	30	29	415	23.0	15.5	12.5	10.0	20.5	17.5	16.0
		S35H2	35	29	485	24.0	16.0	13.0	10.5	21.0	18.0	16.5
	WIND ZONE 4	LIGHT	S26L1	26	22	195	18.0	13.0	10.5	9.0	16.5	14.5
S30L1			30	22	225	18.5	13.0	10.5	9.0	17.0	15.0	13.5
S35L1			35	22	255	19.0	13.5	11.0	9.0	17.5	15.5	14.0
HEAVY		S30H1	30	25	330	22.0	15.0	12.0	9.5	19.5	17.0	15.0
		S35H1	35	25	385	23.0	15.5	12.5	10.0	20.0	17.5	15.5
WIND ZONE 5		LIGHT	S26L2	26	23	250	19.0	13.5	10.5	9.0	17.5	15.5
	S30L2		30	23	290	20.0	14.0	11.0	9.5	18.0	16.0	14.0
	S35L2		35	23	315	21.0	14.5	11.5	10.0	19.0	16.5	14.5
	HEAVY	S30H2	30	29	415	23.5	15.5	12.5	10.5	21.0	18.0	16.0
		S35H2	35	29	485	25.0	16.5	13.0	11.0	21.5	18.5	16.5

Concrete Volume (cubic yards) = .356 X L

Fabrication Design Notes:

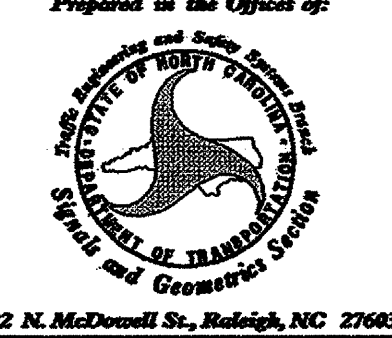
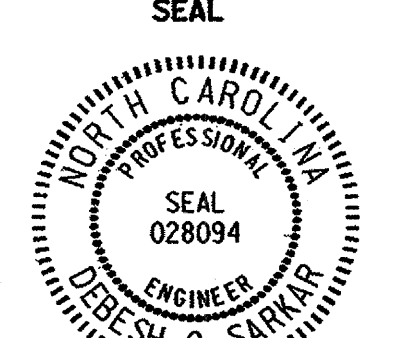
- Values shown in "Moment at the Pole Base" column represents the minimum acceptable capacity allowable for design using a design CSR of 1.
- Base plate thickness (T) is 2.0 inches.

Foundation Selection:

- Perform a standard penetration test at each proposed foundation site to determine "N" value.
- Select the appropriate wind zone from sheet M 1.
- Select the soil type (Clay or Sand) that best describes the soil characteristics.
- Get the appropriate pole case load number from the plans or from the Engineer.
- Select the appropriate column in the chart based on soil type and "N" value. Select the appropriate row based on the pole load case. The foundation depth is the value where the column and the row intersect.

Standard Strain Poles

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	Standard Strain Poles and Standard Foundations		
	PLAN DATE: May 2005	REVIEWED BY: C.F. Andrews	
SCALE: None	REVISIONS	INIT.	DATE
SIGNATURE: <i>D. Sarkar</i>	DATE: 9.2.2005		