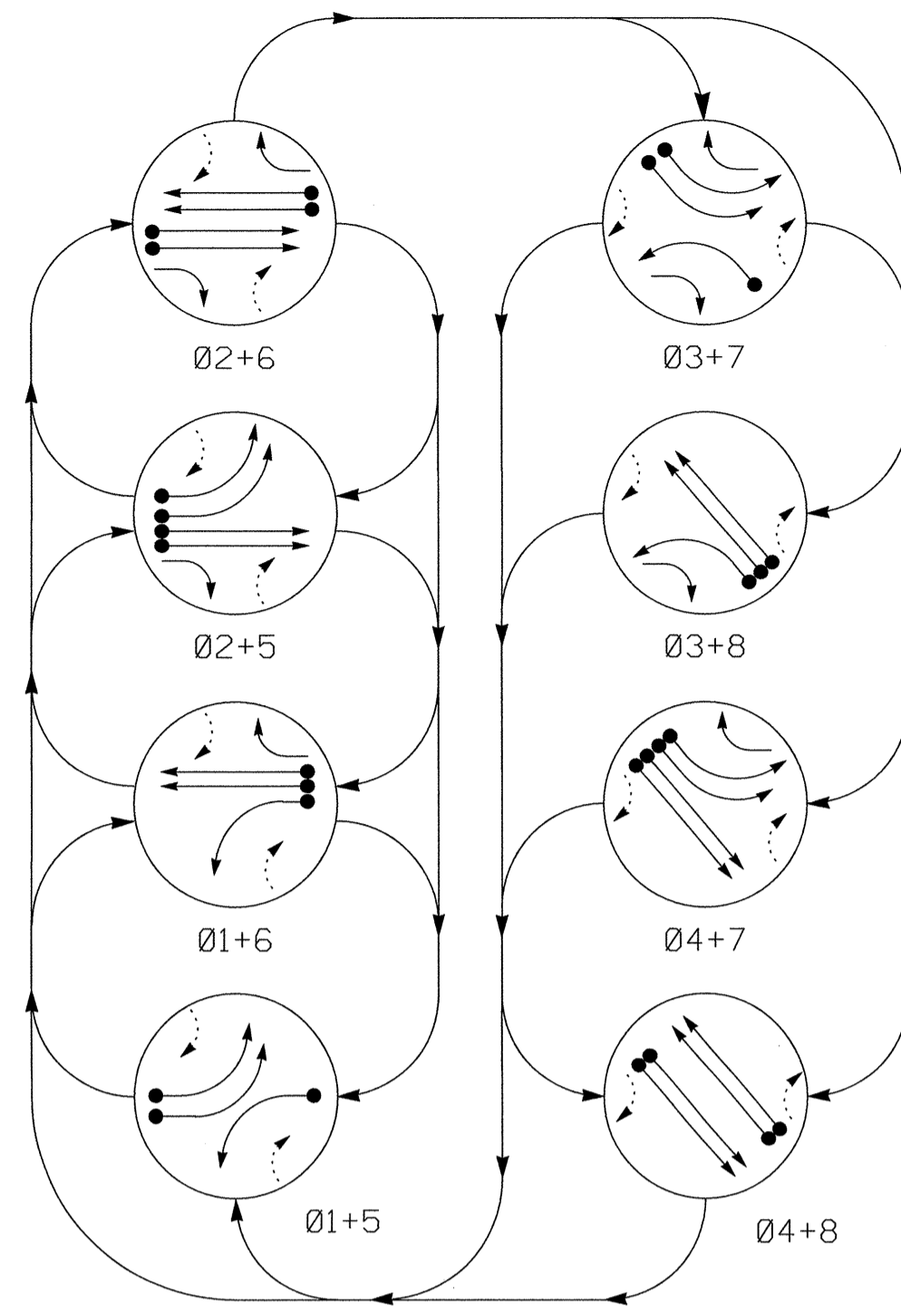


8 Phase Fully Actuated SR 1344 (Black & Decker Rd) CLS

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.
- Maintain detection during construction, installing new loops and temporary direct bury lead-in as directed by the engineer.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Locate new cabinet on existing base pad.
- Closed loop system data: Master Asset #10608, Controller Asset #0335.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

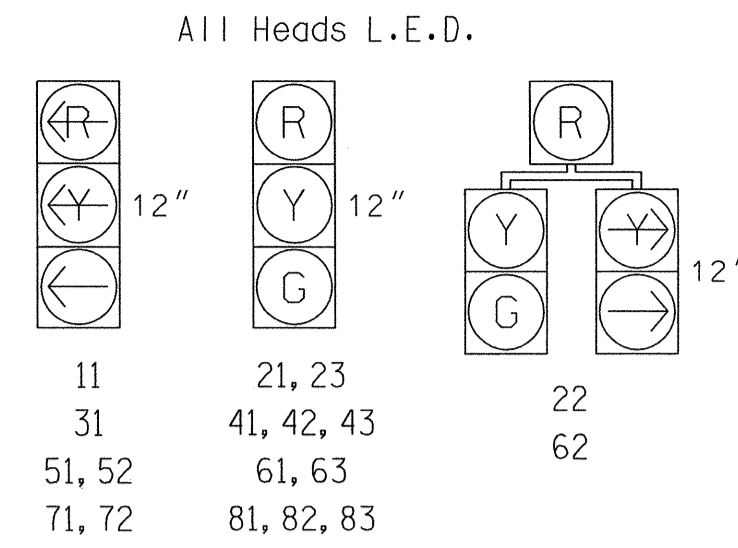
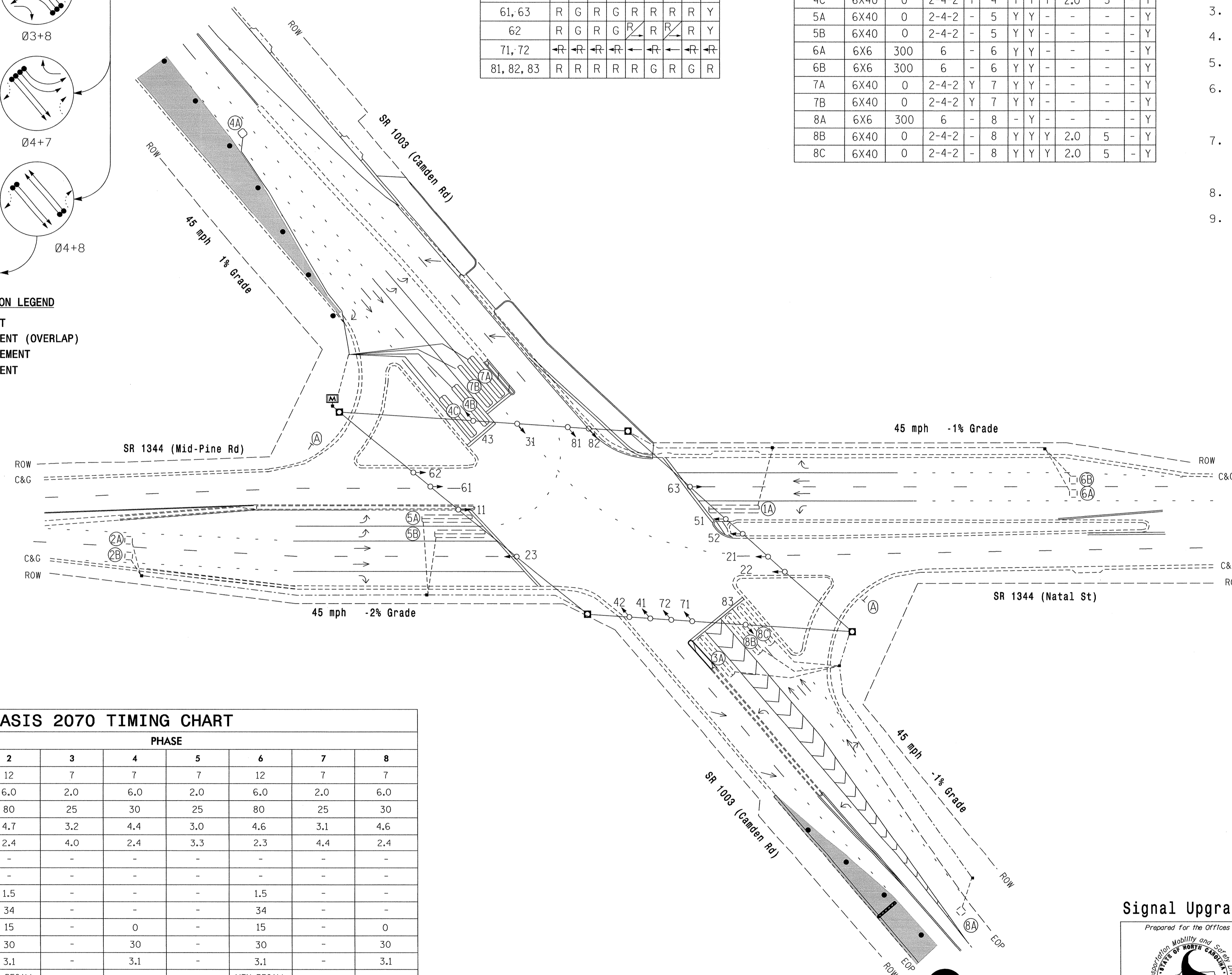


TABLE OF OPERATION

SIGNAL FACE	PHASE								FULL TOTAL
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3 + 7	Ø 3 + 8	Ø 4 + 7	Ø 4 + 8	
11	←	←	←	←	←	←	←	←	←
21, 23	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R	R	R	R	Y
31	←	←	←	←	←	←	←	←	←
41, 42, 43	R	R	R	R	R	R	G	G	R
51, 52	←	←	←	←	←	←	←	←	←
61, 63	R	G	R	G	R	R	R	R	Y
62	R	G	R	G	R	R	R	R	Y
71, 72	←	←	←	←	←	←	←	←	←
81, 82, 83	R	R	R	R	R	G	G	R	

OASIS 2070 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	DELAY TIME		
1A	6X40	0	2-4-2	-	1	Y	Y	-	-	-	Y
2A	6X6	300	6	-	2	Y	Y	-	-	-	Y
2B	6X6	300	6	-	2	Y	Y	-	-	-	Y
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	-	Y
4A	6X6	300	4	Y	4	-	Y	-	-	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	2.0	5	-	Y
4C	6X40	0	2-4-2	Y	4	Y	Y	2.0	5	-	Y
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	-	Y
5B	6X40	0	2-4-2	-	5	Y	Y	-	-	-	Y
6A	6X6	300	6	-	6	Y	Y	-	-	-	Y
6B	6X6	300	6	-	6	Y	Y	-	-	-	Y
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	Y
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	Y
8A	6X6	300	6	-	8	-	Y	-	-	-	Y
8B	6X40	0	2-4-2	-	8	Y	Y	2.0	5	-	Y
8C	6X40	0	2-4-2	-	8	Y	Y	2.0	5	-	Y



OASIS 2070 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	30	25	80	25	30
Yellow Clearance	3.0	4.7	3.2	4.4	3.0	4.6	3.1	4.6
Red Clearance	2.9	2.4	4.0	2.4	3.3	2.3	4.4	2.4
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	0	-	15	-	0
Time To Reduce *	-	30	-	30	-	30	-	30
Minimum Gap	-	3.1	-	3.1	-	3.1	-	3.1
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 | EXISTING |
|-------------------------------|-------------------------------|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| — Sign | — Sign |
| ⊙ Metal Strain Pole | ⊙ Metal Strain Pole |
| ▭ Inductive Loop Detector | ▭ Inductive Loop Detector |
| ⊞ Master Controller & Cabinet | ⊞ Master Controller & Cabinet |
| □ Junction Box | □ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| --- Direct Bury Lead-In Cable | N/A |
| N/A Right of Way | --- Right of Way |
| → Directional Arrow | → Directional Arrow |
| ⊙ "YIELD" Sign (R1-2) | ⊙ "YIELD" Sign (R1-2) |
| ▭ Construction Zone | ▭ Construction Zone |
| ● Construction Zone Drums | ● Construction Zone Drums |
| ▬ Traffic Control Barricade | N/A |
| ▬ Stop Bar | ▬ Stop Bar |

Signal Upgrade - Temporary 1 - TCP Phase I Step 2

SR 1344 (Natal St/Mid-Pine Rd) at SR 1003 (Camden Rd)

Division 6 Cumberland County Fayetteville

PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity

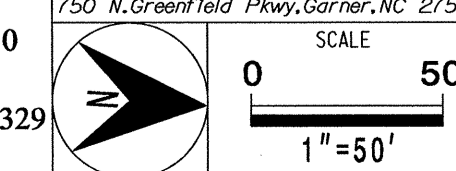
PREPARED BY: D.J. Darity VHB PROJECT NO: 38276.00

REVISIONS	INIT.	DATE

SIGNATURE: _____ DATE: _____

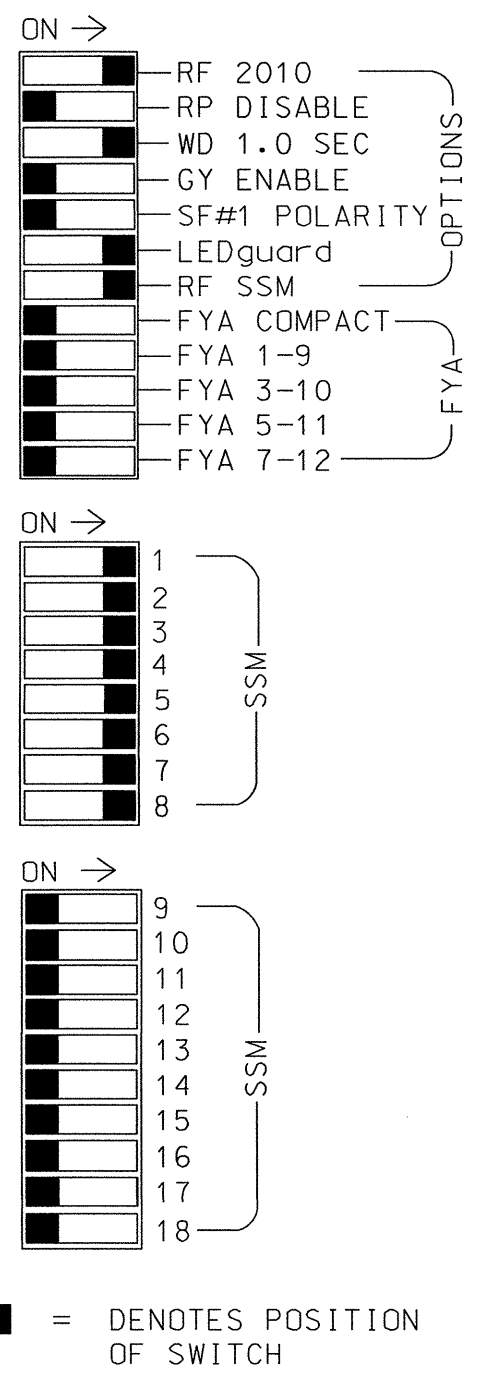
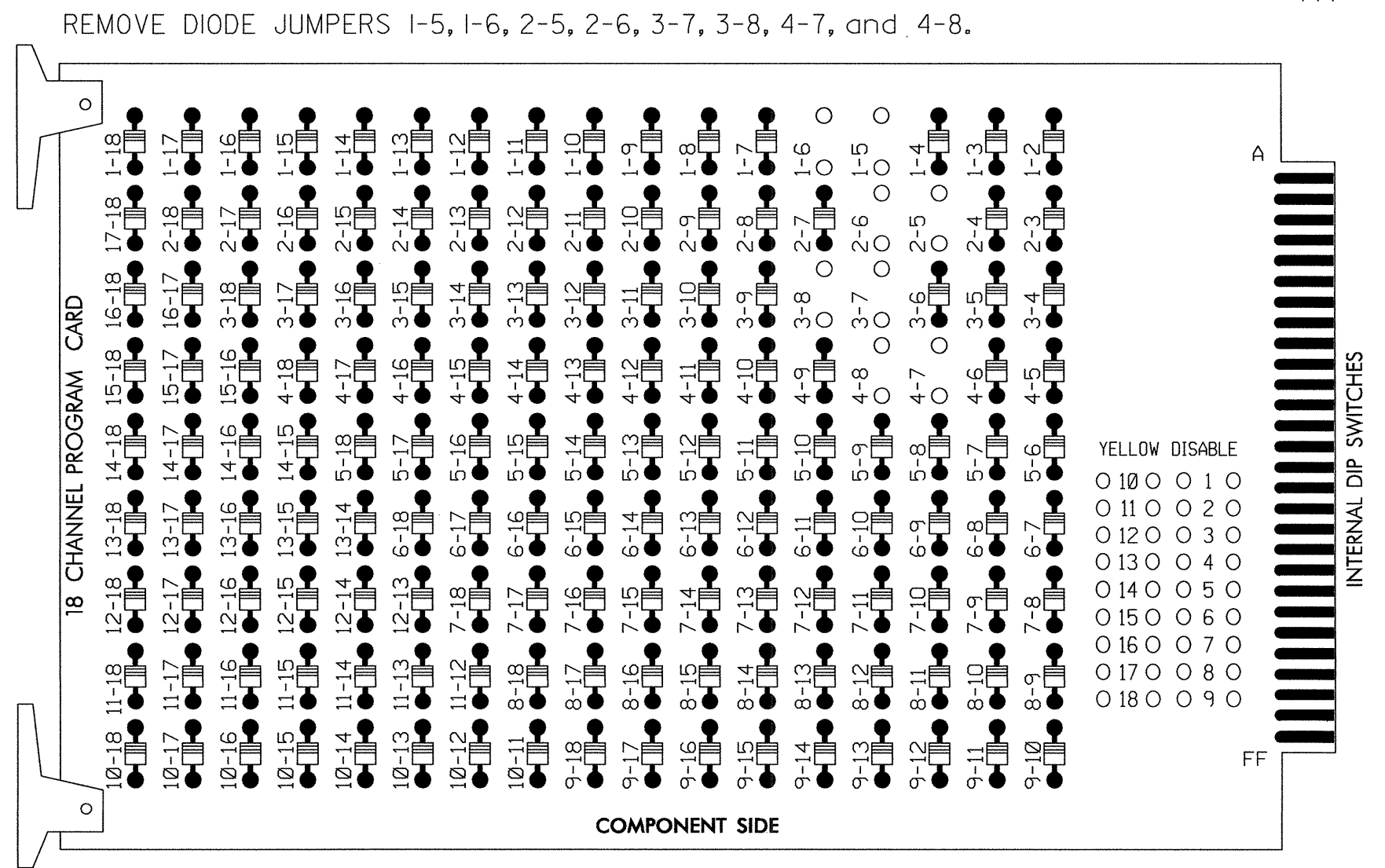
SIG. INVENTORY NO. 06-0335T1

VHB Engineering NC, P.C.
 Transportation Land Development Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705



**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. Enable Simultaneous Gap-Out for all phases.
3. Program phases 2 and 6 for Variable Initial.
4. Program phases 2, 4, 6, and 8 for 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 SR 1344 (Black & Decker Rd) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22 23	NU	22	31	41,42 43	NU	51,52	61,62 63	NU	62	71,72	81,82 83	NU	NU	NU	NU	NU
RED		128				101			134				107					
YELLOW		129				102			135				108					
GREEN		130				103			136				109					
RED ARROW	125				116			131				122						
YELLOW ARROW	126			117	117			132			123	123						
GREEN ARROW	127			118	118			133			124	124						
Hand icon																		
Person icon																		

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S10,S11
 PHASES USED.....1,2,3,4,5,6,7,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 2	∅ 3	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14
L	1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A
U	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	∅ 17	∅ 18
L	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A	15A	16A	17A	18A

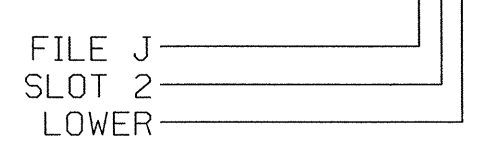
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4		Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y	Y	2.0	5
4C	TB6-1,2	I7U	65	27	34	4	Y	Y	Y	2.0	5
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
5B	TB3-3,4	J1L	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8		Y			
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

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0335T1
 DESIGNED: Mar 2013
 SEALED: 8-22-2013
 REVISED: N/A

Signal Upgrade - Temporary 1 - TCP Phase I, Step 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1344 (Natal St/Mid-Pine Rd) at SR 1003 (Camden Rd)

Prepared for the Offices of:
 Transportation Mobility and Safety Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

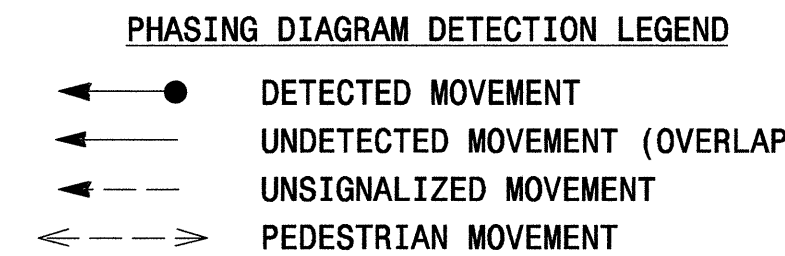
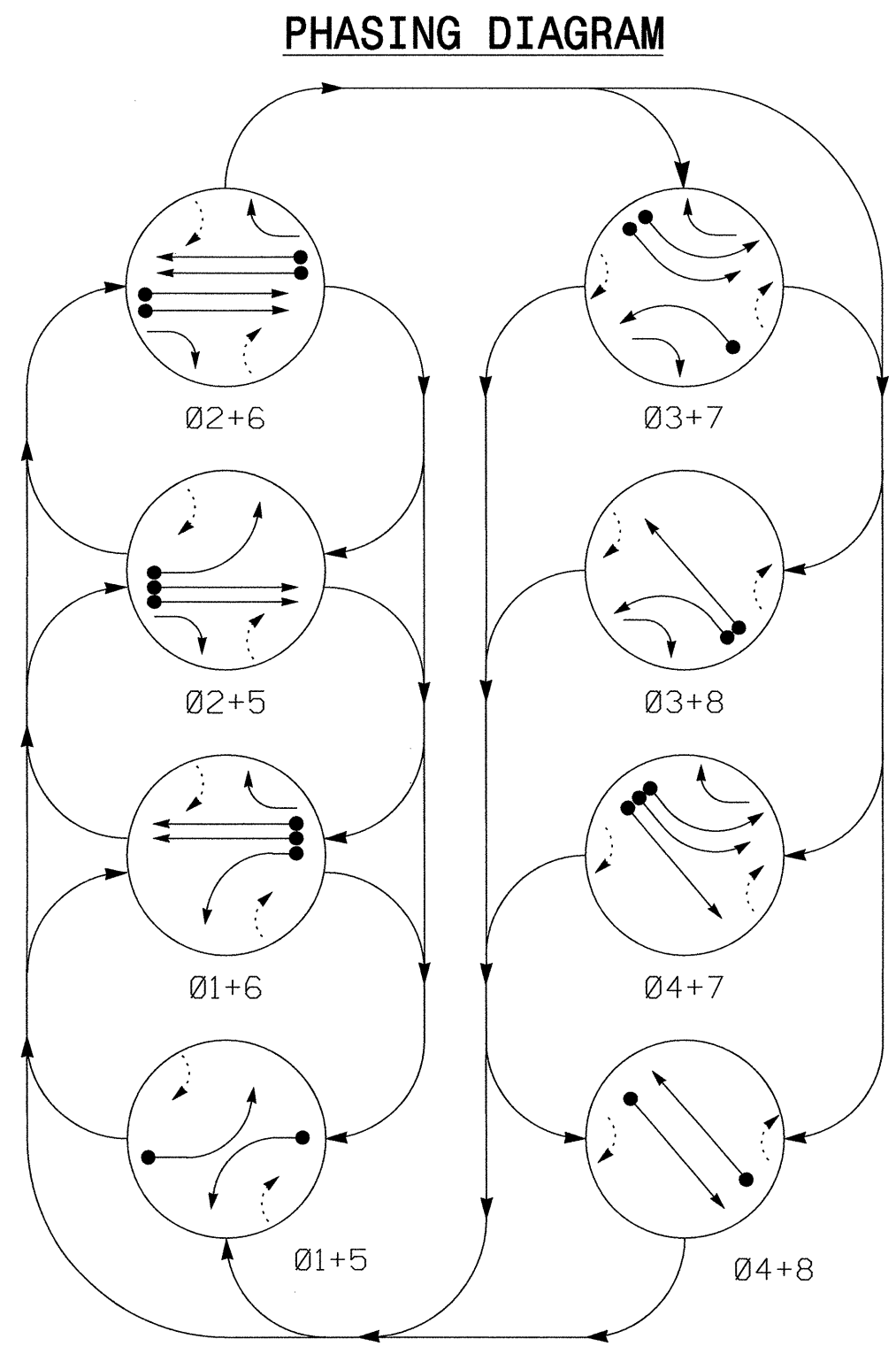
VHB Engineering NC, PC.
 Transportation Land Development Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705

Division 6 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO: 38276.00

REVISIONS	INIT.	DATE

SIGNATURE DATE
 8-22-2013
 SIG. INVENTORY NO. 06-0335T1

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



SIGNAL FACE I.D.

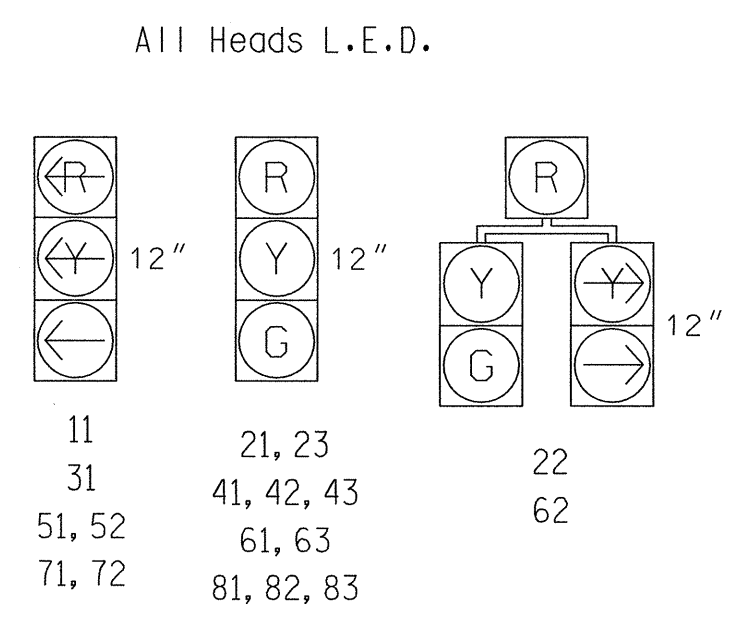


TABLE OF OPERATION

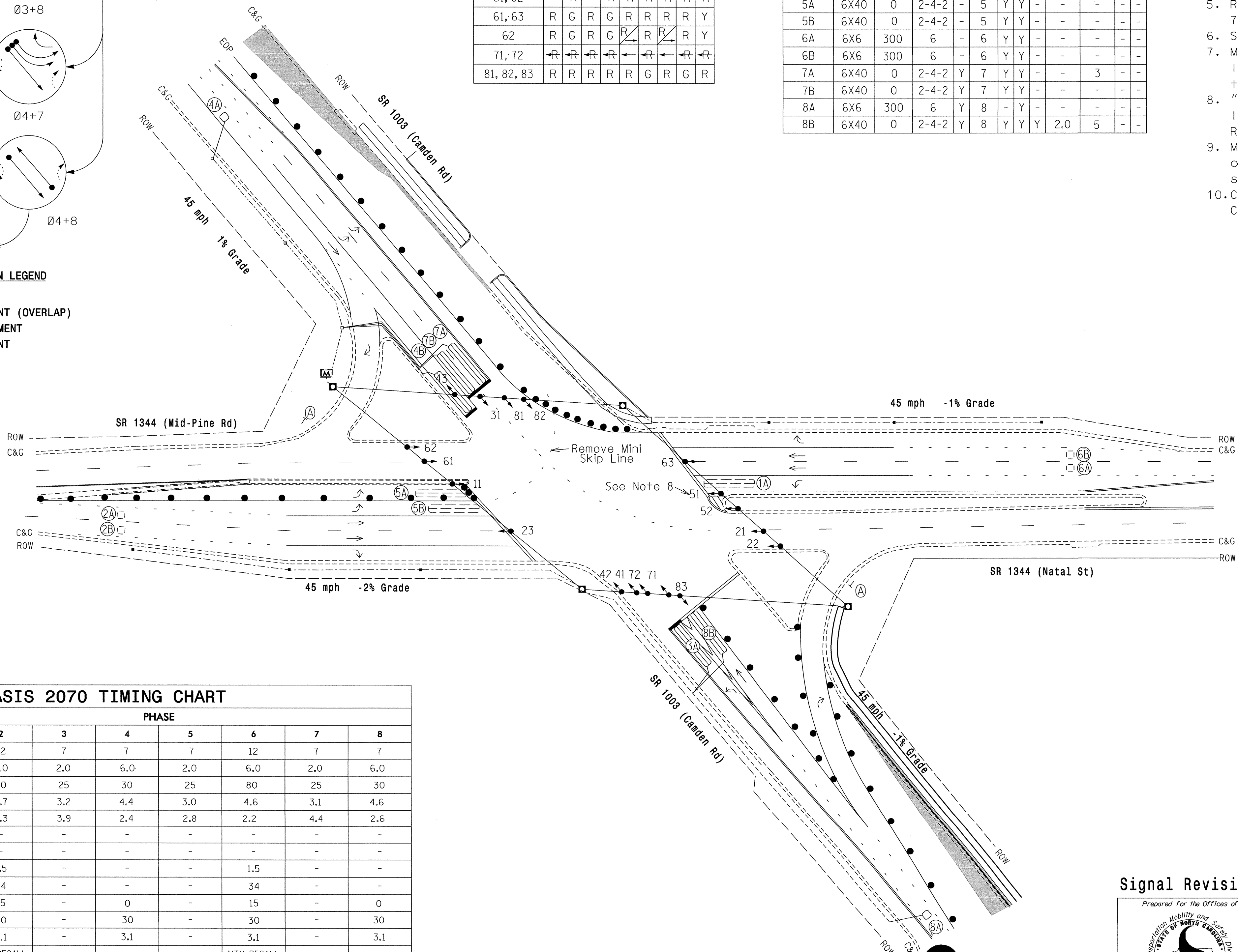
SIGNAL FACE	PHASE								FLASH
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3 + 7	Ø 3 + 8	Ø 4 + 7	Ø 4 + 8	
11	←	←	←	←	←	←	←	←	←
21, 23	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R	R	R	R	Y
31	←	←	←	←	←	←	←	←	←
41, 42, 43	R	R	R	R	R	R	G	G	R
51, 52	←	←	←	←	←	←	←	←	←
61, 63	R	G	R	G	R	R	R	R	Y
62	R	G	R	G	R	R	R	R	Y
71, 72	←	←	←	←	←	←	←	←	←
81, 82, 83	R	R	R	R	R	G	R	G	R

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

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

NOTES

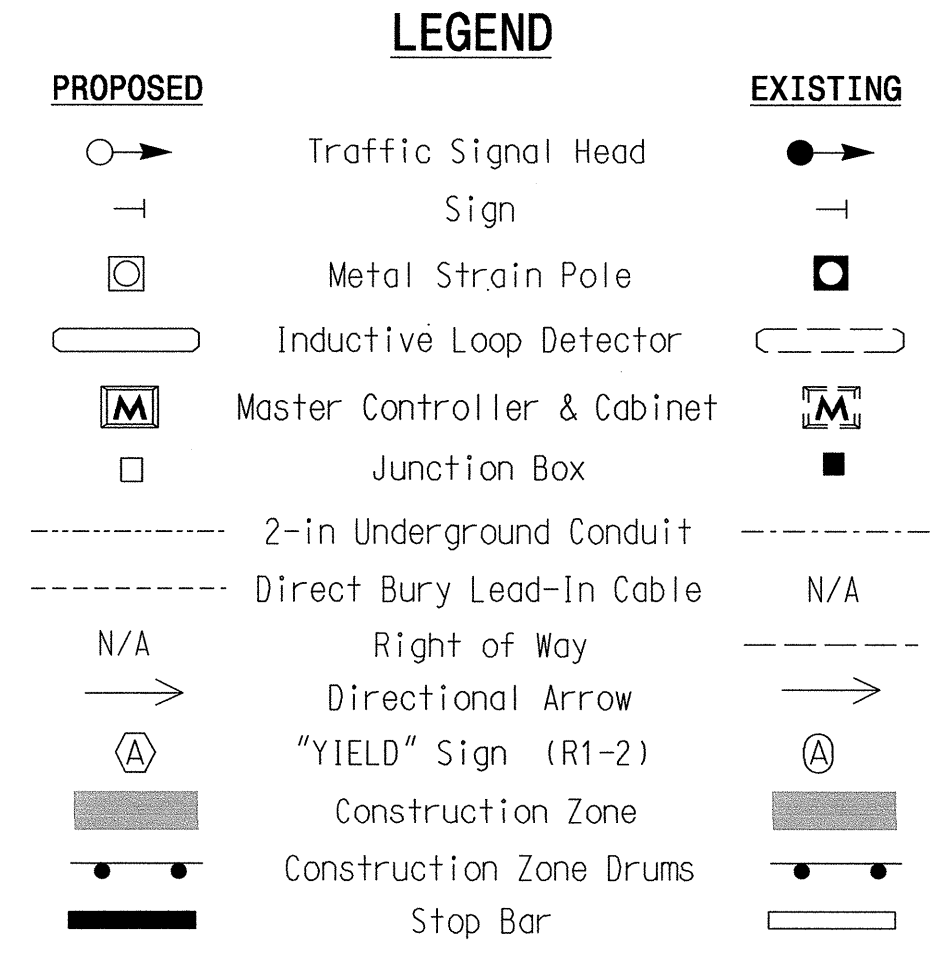
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Reposition existing signal heads numbered 31, 41, 42, 43, 71, 72, 81, 82 and 83.
- Set all detector units to presence mode.
- Maintain detection during construction, installing new loops and temporary direct bury lead-in as directed by the engineer.
- "Bag" signal head 51 and close off the inside northbound left turn lane (Loop 5A) during TCP Phase I, Step 4. Remove Mini-Skip line as noted.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Master Asset #10608, Controller Asset #0335.



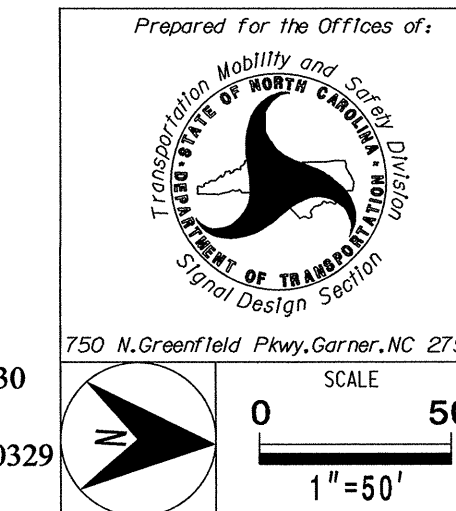
OASIS 2070 TIMING CHART

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	30	25	80	25	30
Yellow Clearance	3.0	4.7	3.2	4.4	3.0	4.6	3.1	4.6
Red Clearance	3.2	2.3	3.9	2.4	2.8	2.2	4.4	2.6
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	0	-	15	-	0
Time To Reduce *	-	30	-	30	-	30	-	30
Minimum Gap	-	3.1	-	3.1	-	3.1	-	3.1
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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



Signal Revision - Temporary 2 - TCP Phase I, Step 4



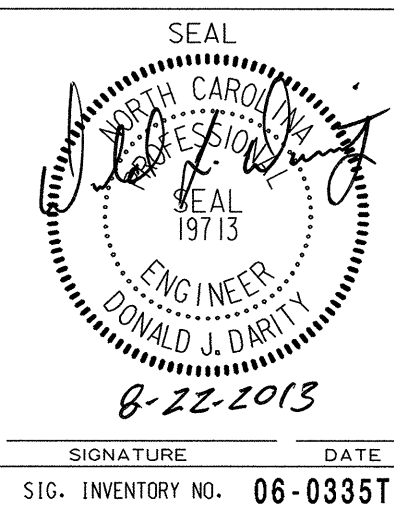
SR 1344 (Natal St/Mid-Pine Rd) at SR 1003 (Camden Rd)

Division 6 Cumberland County Fayetteville

PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity VHB PROJECT NO: 38276.00

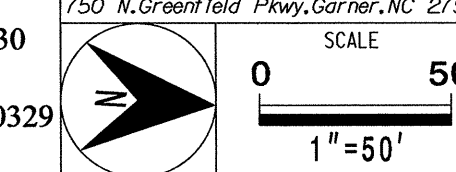
REVISIONS	INIT.	DATE



VHB Engineering NC, P.C.

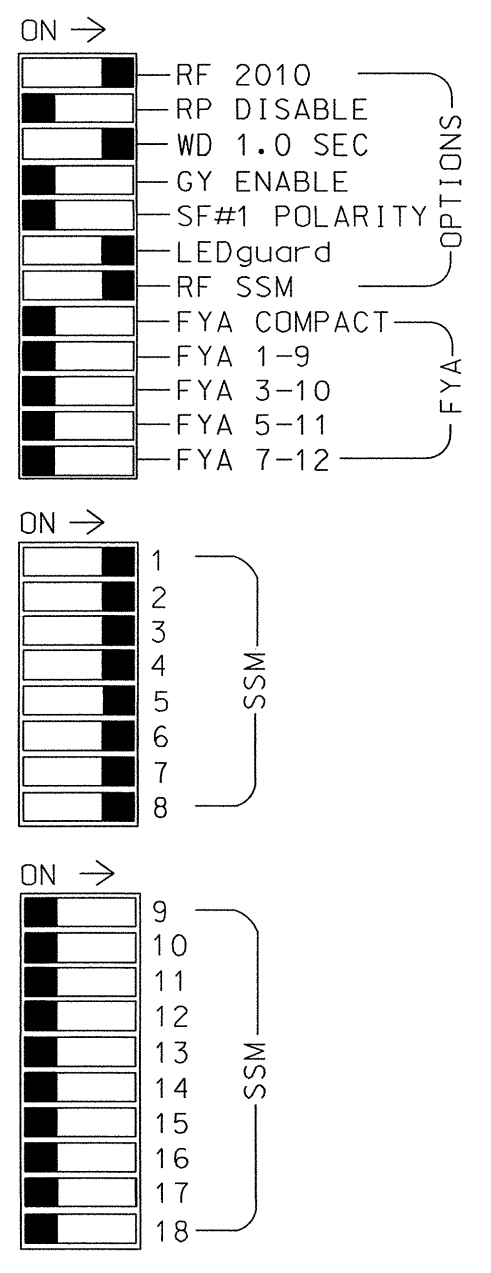
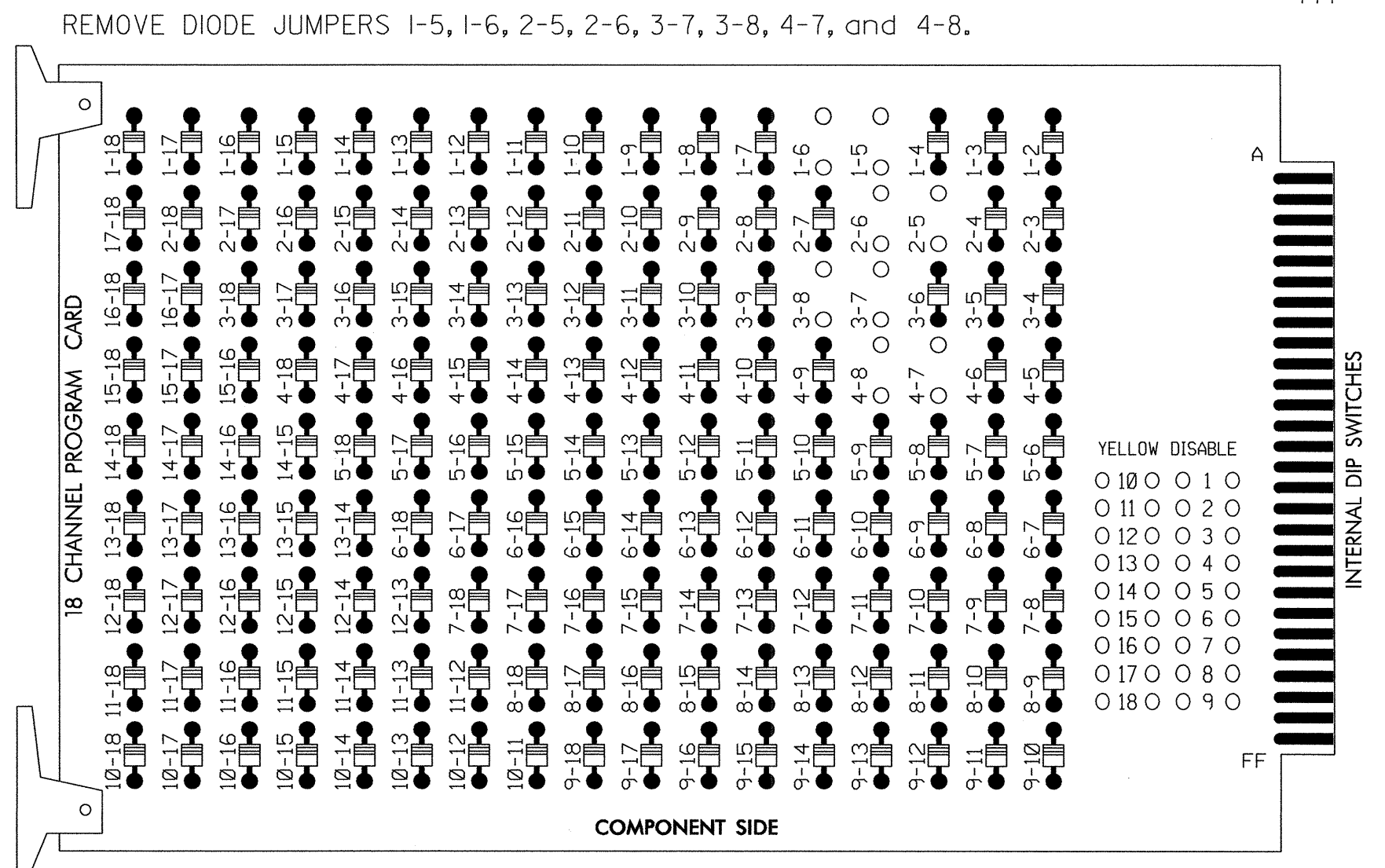
Transportation Land Development Environmental Services

4000 WestChase Blvd, Suite 530 Raleigh, North Carolina 27607 919.829.0328 • FAX 919.829.0329 NC Lic No. C-3705



**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. Enable Simultaneous Gap-Out for all phases.
3. Program phases 2 and 6 for Variable Initial.
4. Program phases 2, 4, 6, and 8 for 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 SR 1344 (Black & Decker Rd) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CHU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22 23	NU	22	31	41,42 43	NU	51,52	61,62 63	NU	62	71,72	81,82 83	NU	NU	NU	NU	NU
RED		128				101			134				107					
YELLOW		129				102			135				108					
GREEN		130				103			136				109					
RED ARROW	125				116			131				122						
YELLOW ARROW	126			117	117			132			123	123						
GREEN ARROW	127			118	118			133			124	124						
Hand icon																		
Person icon																		

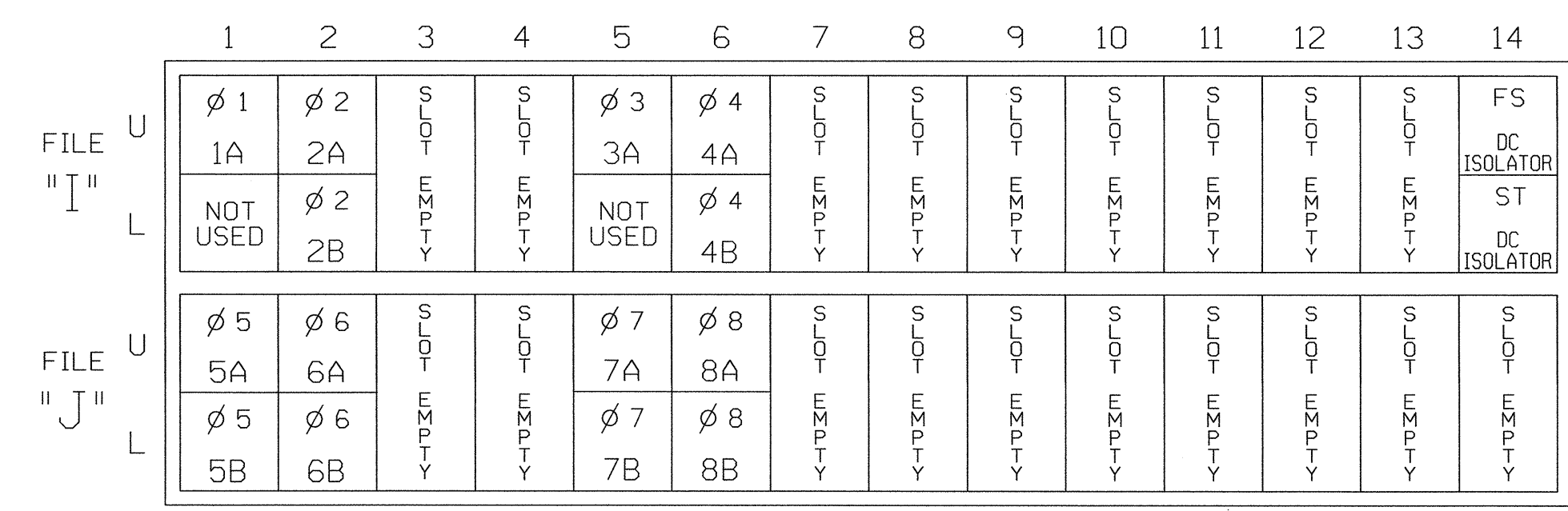
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S10,S11
 PHASES USED.....1,2,3,4,5,6,7,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



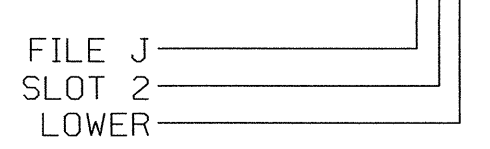
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4		Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y	Y	2.0	5
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
5B	TB3-3,4	J1L	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y	Y	2.0	5

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0335T2
 DESIGNED: Mar 2013
 SEALED: 8-22-2013
 REVISED: N/A

Signal Upgrade - Temporary 2 - TCP Phase I, Step 4

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1344 (Natal St/Mid-Pine Rd) at SR 1003 (Camden Rd)

Prepared for the Offices of:
 Transportation Mobility and Safety Division
 DEPARTMENT OF TRANSPORTATION
 Signal Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

Division 6 Cumberland County Fayetteville

PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity VHB PROJECT NO: 38276.00

REVISIONS INIT. DATE

8-22-2013

SIGNATURE DATE

SIG. INVENTORY NO. 06-0335T2

VHB Engineering NC, P.C.
 Transportation
 Land Development
 Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705

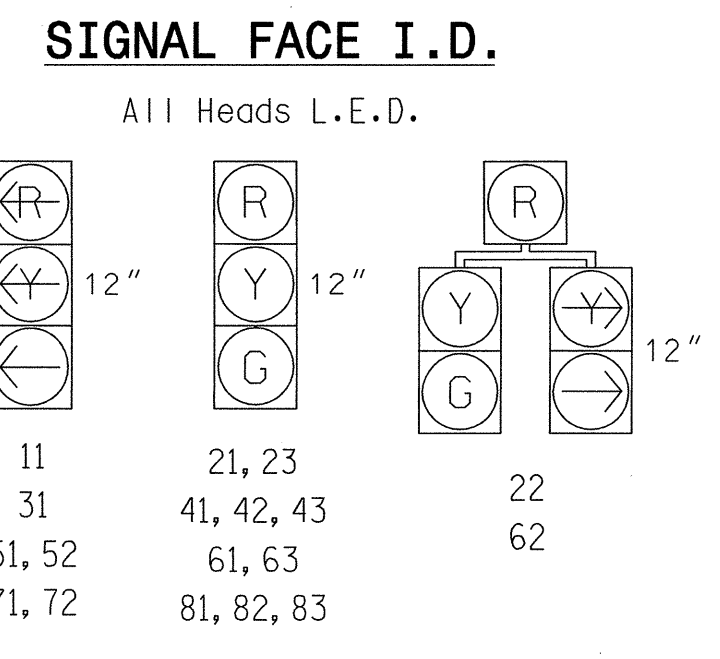
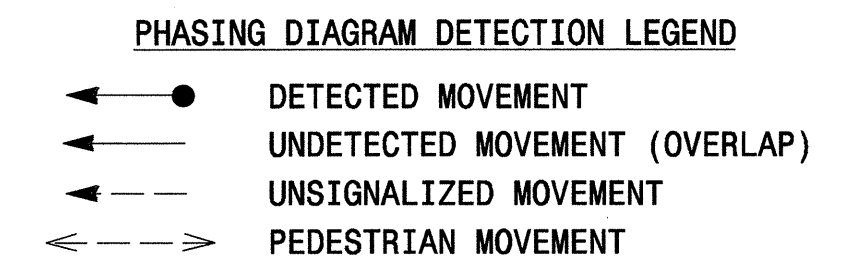
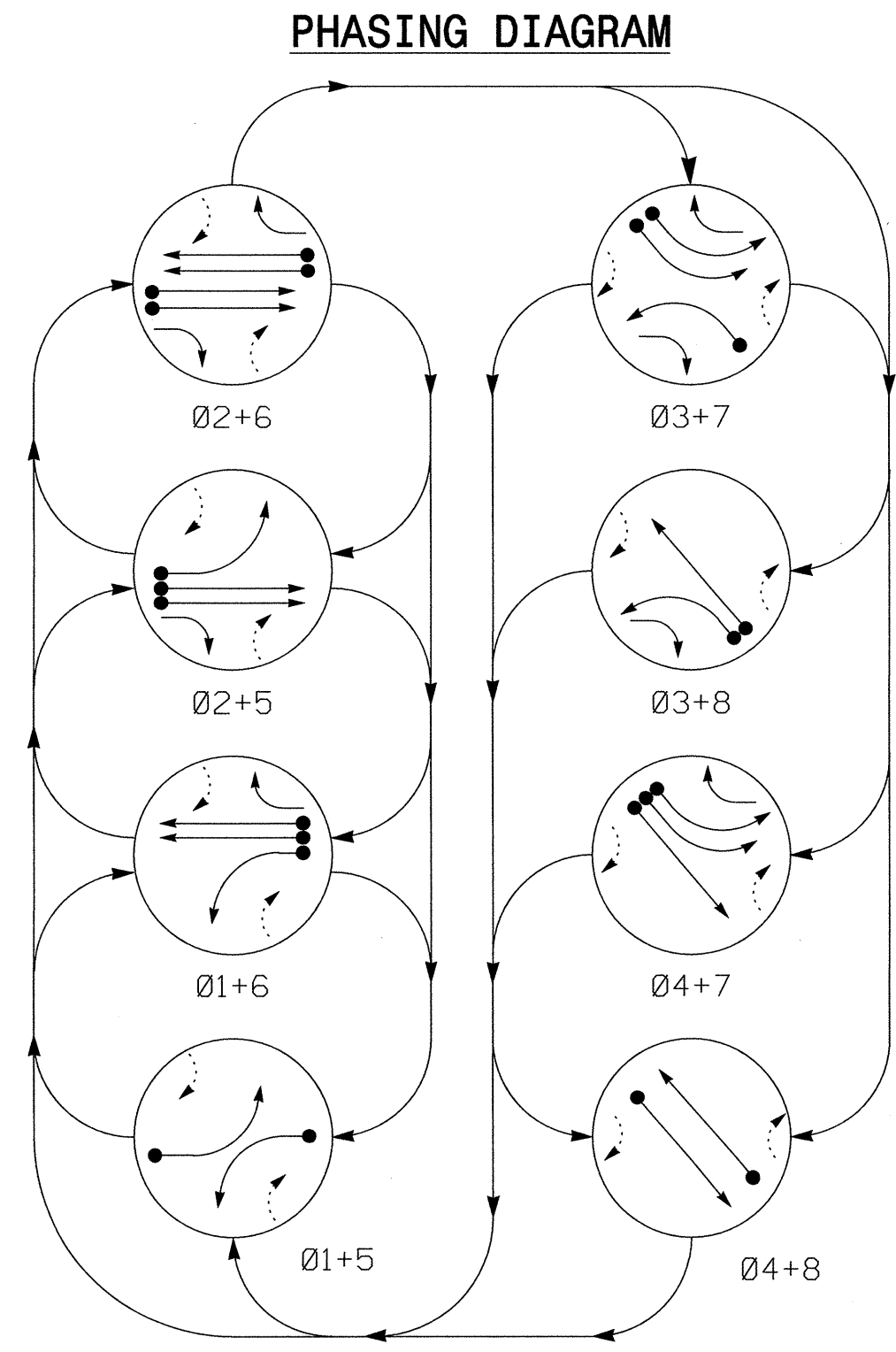


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3 + 7	Ø 3 + 8	Ø 4 + 7	Ø 4 + 8
11	←	←	←	←	←	←	←	←
21, 23	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
31	←	←	←	←	←	←	←	←
41, 42, 43	R	R	R	R	R	R	G	G
51, 52	←	←	←	←	←	←	←	←
61, 63	R	G	R	G	R	R	R	Y
62	R	G	R	G	R	R	R	Y
71, 72	←	←	←	←	←	←	←	←
81, 82, 83	R	R	R	R	R	G	R	G

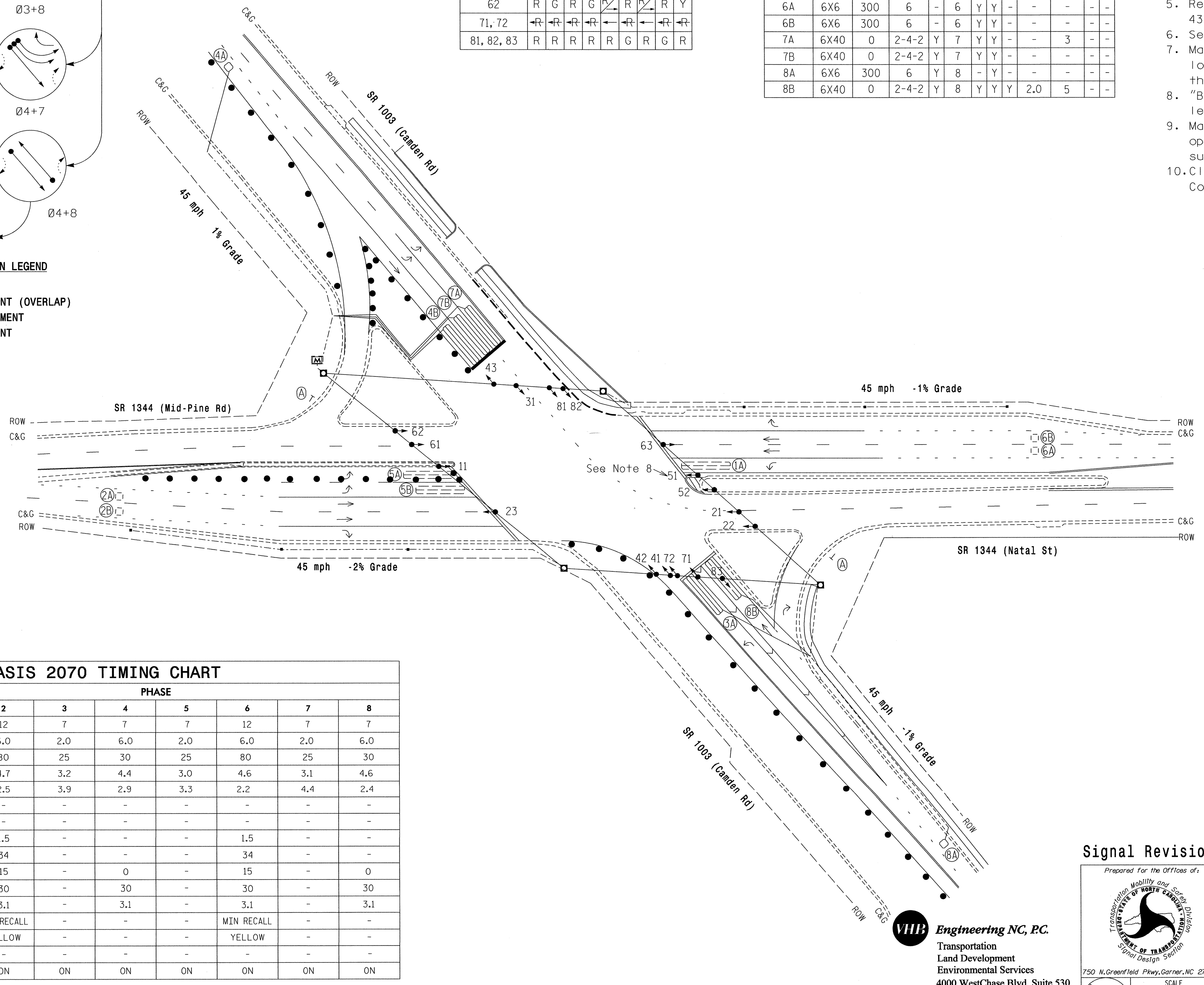
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

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

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

NOTES

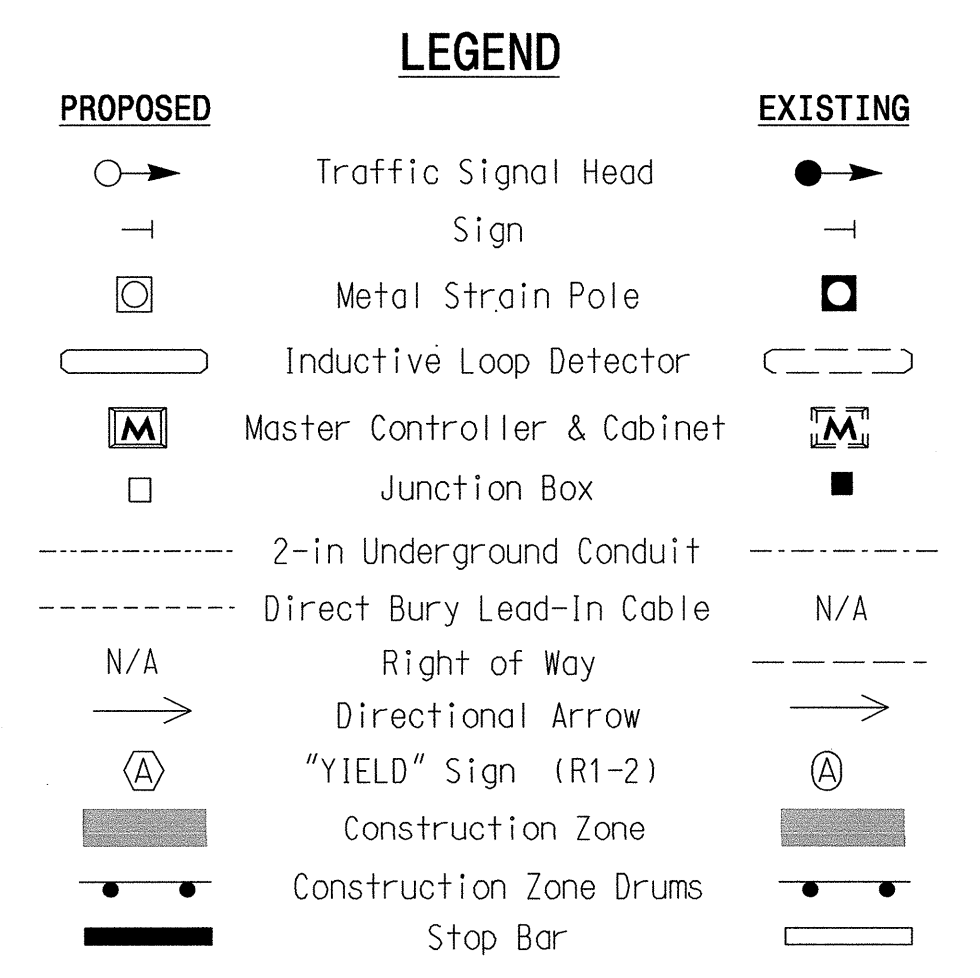
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 31, 41, 42, 43, 71, 72, 81, 82, and 83.
6. Set all detector units to presence mode.
7. Maintain detection during construction, installing new loops and temporary direct bury lead-in as directed by the engineer.
8. "Bag" signal head 51 and close off the inside northbound left turn lane (Loop 5A) during TCP Phase II.
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: Master Asset #10608, Controller Asset #0335.



OASIS 2070 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	30	25	80	25	30
Yellow Clearance	3.0	4.7	3.2	4.4	3.0	4.6	3.1	4.6
Red Clearance	2.4	2.5	3.9	2.9	3.3	2.2	4.4	2.4
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	0	-	15	-	0
Time To Reduce *	-	30	-	30	-	30	-	30
Minimum Gap	-	3.1	-	3.1	-	3.1	-	3.1
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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



Signal Revision - Temporary 3 - TCP Phase 2

VHB Engineering NC, P.C.
Transportation Land Development Environmental Services
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Raleigh, North Carolina 27607
919.829.0328 • FAX 919.829.0329
NC Lic No. C-3705

SR 1344 (Natal St/Mid-Pine Rd) at SR 1003 (Camden Rd)

Division 6 Cumberland County Fayetteville

PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity VHB PROJECT NO: 38276.00

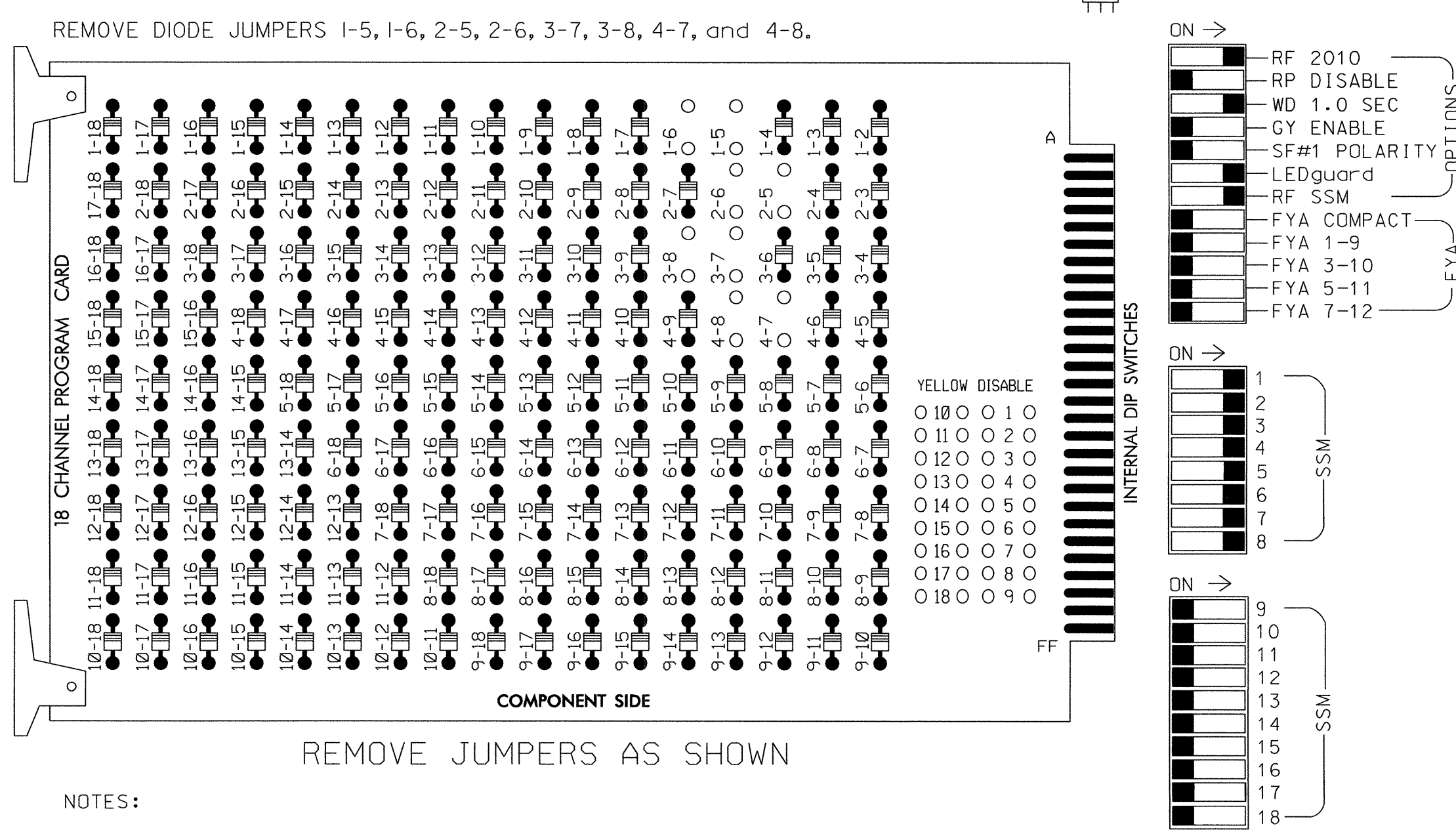
REVISIONS: INIT. DATE

SEAL
DONALD J. DARTY
ENGINEER
19713

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE: 0 50
1"=50'

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL
(remove jumpers and set switches as shown)



- REMOVE DIODE JUMPERS 1-5, 1-6, 2-5, 2-6, 3-7, 3-8, 4-7, and 4-8.
- REMOVE JUMPERS AS SHOWN
- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

■ = 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.
- 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 and 6 for Yellow Flash.
- The cabinet and controller are part of the SR 1344 (Black & Decker Rd) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22 23	NU	22	31	41,42 43	NU	51,52 63	61,62 63	NU	62	71,72	81,82 83	NU	NU	NU	NU	NU
RED		128				101			134				107					
YELLOW		129				102			135				108					
GREEN		130				103			136				109					
RED ARROW	125				116			131					122					
YELLOW ARROW	126			117	117			132					123	123				
GREEN ARROW	127			118	118			133					124	124				
Hand icon																		
Person icon																		

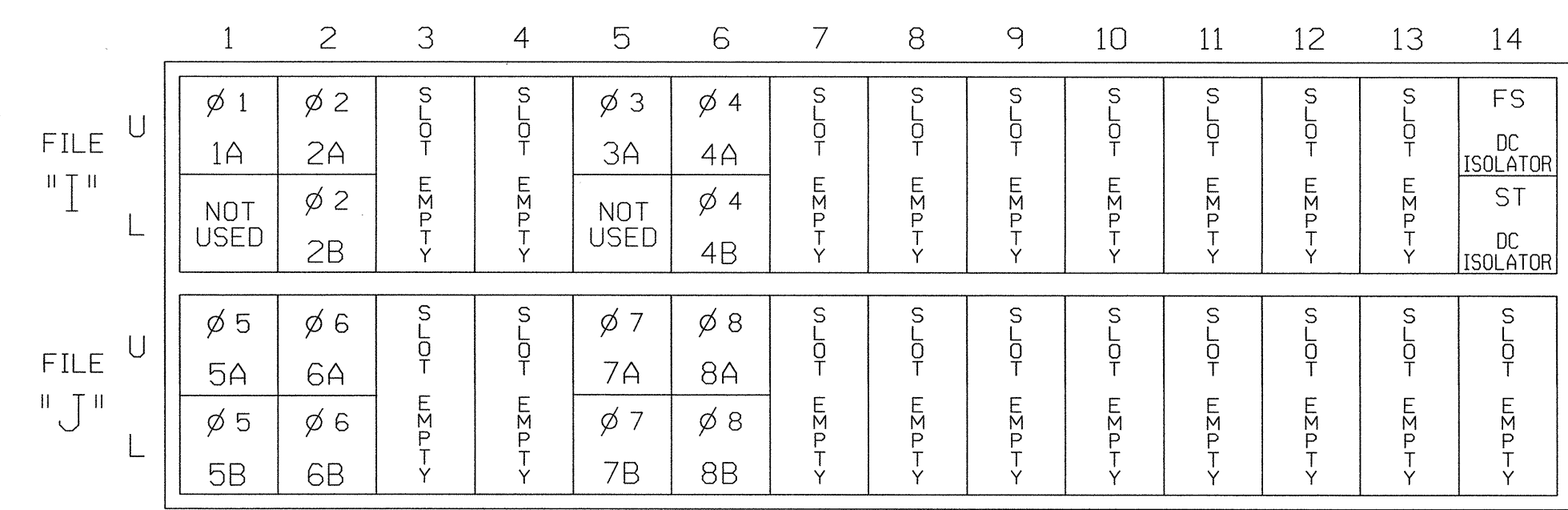
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S10,S11
 PHASES USED.....1,2,3,4,5,6,7,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4					
4B	TB4-11,12	I6L	45	7	14	4	Y	Y	Y	2.0	5
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
5B	TB3-3,4	J1L	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			3
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8					
8B	TB5-11,12	J6L	46	8	18	8	Y	Y	Y	2.0	5

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0335T3
 DESIGNED: Mar 2013
 SEALED: 8-22-2013
 REVISED: N/A

Signal Upgrade - Temporary 3 - TCP Phase 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1344 (Natal St/Mid-Pine Rd) at SR 1003 (Camden Rd)

Prepared For the Offices of:
 Transportation Land Development Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705

Division 6 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO: 38276.00

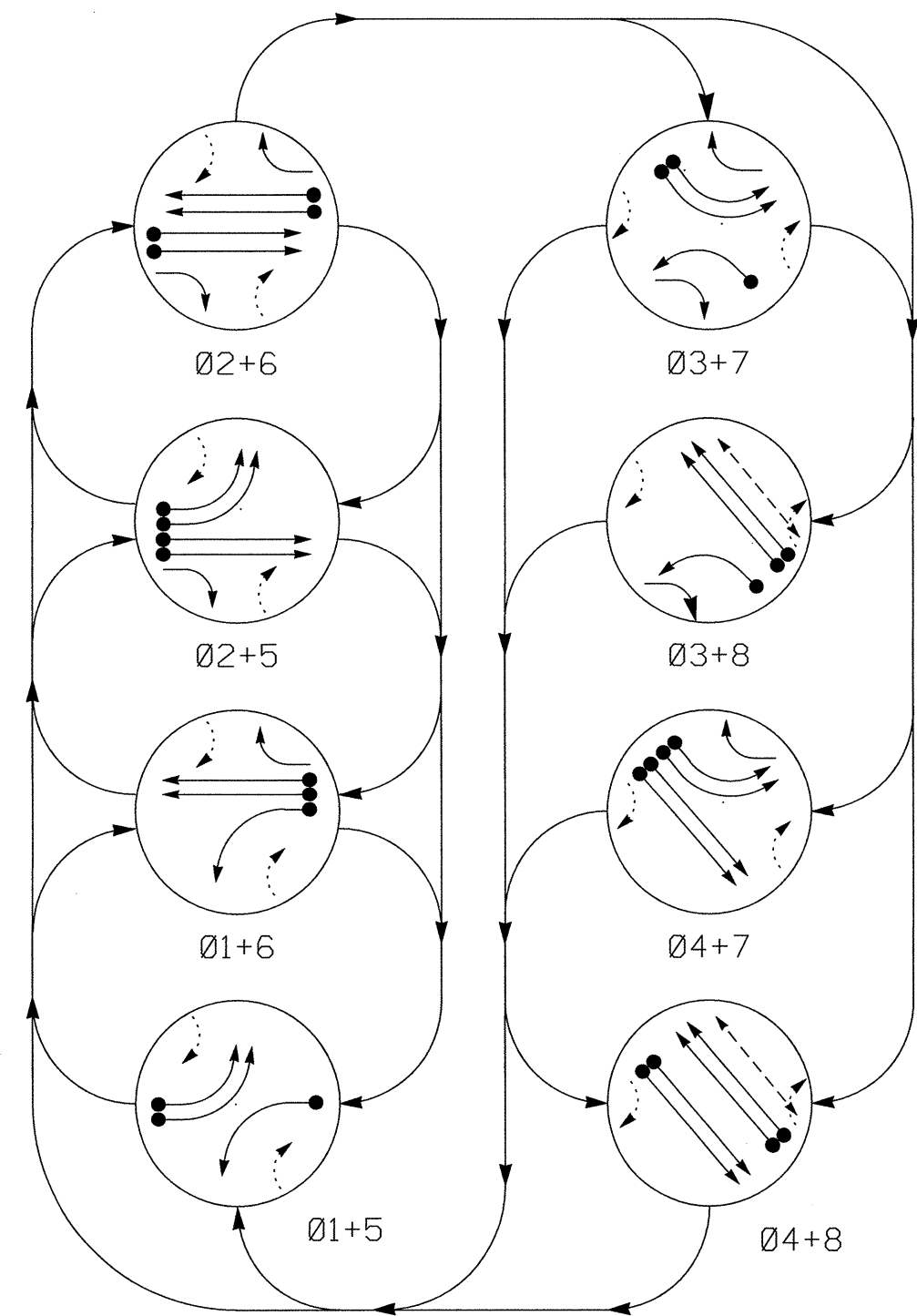
REVISIONS	INIT.	DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
 NORTH CAROLINA
 DONALD J. DARITY
 ENGINEER
 SEAL
 1973
 8-22-2013

SIGNATURE DATE
 SIG. INVENTORY NO. 06-0335T3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

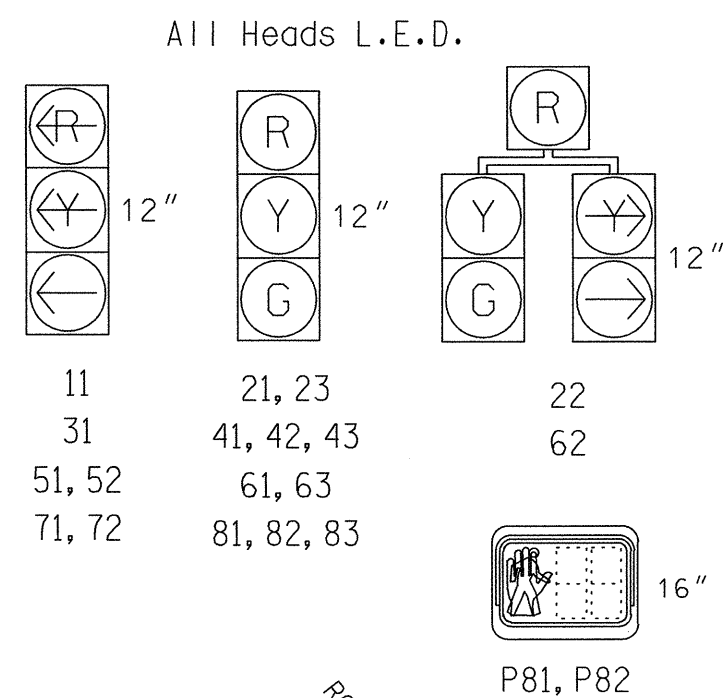


TABLE OF OPERATION

SIGNAL FACE	PHASE								FLASH	
	Ø 1 + 5	Ø 2 + 6	Ø 3 + 7	Ø 4 + 8	Ø 1 + 6	Ø 2 + 5	Ø 3 + 8	Ø 4 + 7		
11	←	←	←	←	←	←	←	←	←	
21, 23	R	R	G	G	R	R	R	R	Y	
22	R	R	G	G	R	R	R	R	Y	
31	←	←	←	←	←	←	←	←		
41, 42, 43	R	R	R	R	R	R	G	G	R	
51, 52	←	←	←	←	←	←	←	←		
61, 63	R	G	R	G	R	R	R	R	Y	
62	R	G	R	G	R	R	R	R	Y	
71, 72	←	←	←	←	←	←	←	←		
81, 82, 83	R	R	R	R	R	G	R	G	R	
P81, P82	DW	DW	DW	DW	DW	DW	W	DRK		

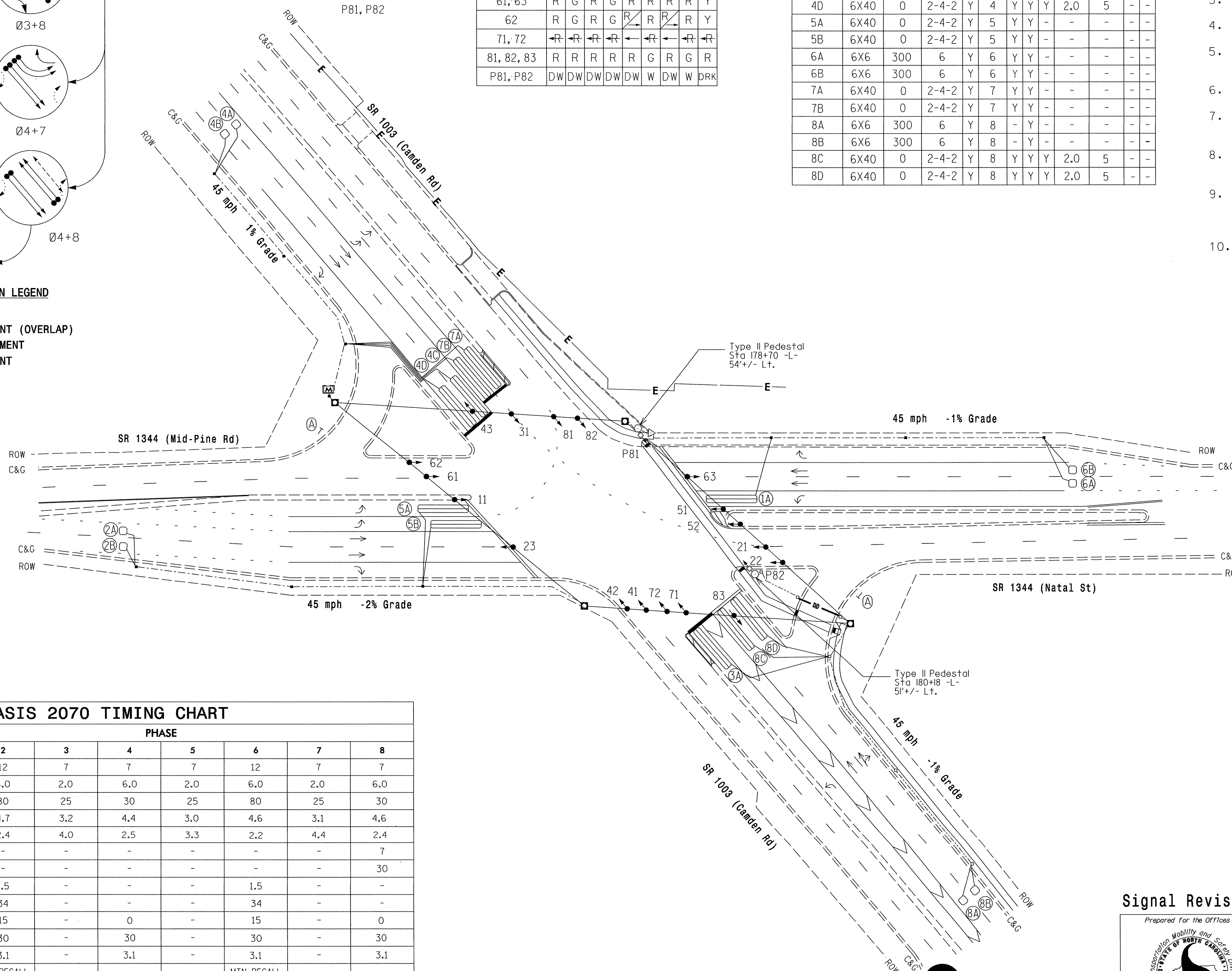
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

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	Y	1	Y	Y	-	-	-	-	-
2A	6X6	300	6	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	6	Y	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	-
4A	6X6	300	4	Y	4	-	Y	-	-	-	-	-
4B	6X6	300	4	Y	4	-	Y	-	-	-	-	-
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	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
6A	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	-
8A	6X6	300	6	Y	8	-	Y	-	-	-	-	-
8B	6X6	300	6	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 Rd) 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.
- Reposition existing signal heads numbered 31, 41, 42, 43, 71, 72, 81, 82 and 83.
- 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: Master Asset #10608, Controller Asset #0335.



OASIS 2070 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	30	25	80	25	30
Yellow Clearance	3.0	4.7	3.2	4.4	3.0	4.6	3.1	4.6
Red Clearance	2.9	2.4	4.0	2.5	3.3	2.2	4.4	2.4
Walk 1 *	-	-	-	-	-	-	-	7
Don't Walk 1	-	-	-	-	-	-	-	30
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	0	-	15	-	0
Time To Reduce *	-	30	-	30	-	30	-	30
Minimum Gap	-	3.1	-	3.1	-	3.1	-	3.1
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 | | Existing Traffic Signal Head |
| | Proposed Modified Signal Head | | Existing Modified Signal Head |
| | Proposed Pedestrian Signal Head | | Existing Pedestrian Signal Head |
| | 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 Master Controller & Cabinet | | Existing Master Controller & Cabinet |
| | Proposed Junction Box | | Existing Junction Box |
| | Proposed 2-in Underground Conduit | | Existing 2-in Underground Conduit |
| | Proposed Right of Way | | Existing Right of Way |
| | Proposed Directional Arrow | | Existing Directional Arrow |
| | Proposed Metal Strain Pole | | Existing Metal Strain Pole |
| | Proposed Pedestal | | Existing Pedestal |
| | Proposed Curb Ramp | | Existing Curb Ramp |
| | Proposed Stop Bar | | Existing Stop Bar |
| | Proposed "YIELD" Sign (R1-2) | | Existing "YIELD" Sign (R1-2) |

Signal Revision - Final Signal

VHB Engineering NC, P.C.
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Raleigh, North Carolina 27607
919.829.0328 • FAX 919.829.0329
NC Lic No. C-3705

SR 1344 (Natal St/Mid-Pine Rd)
at
SR 1003 (Camden Rd)

Division 6 Cumberland County Fayetteville

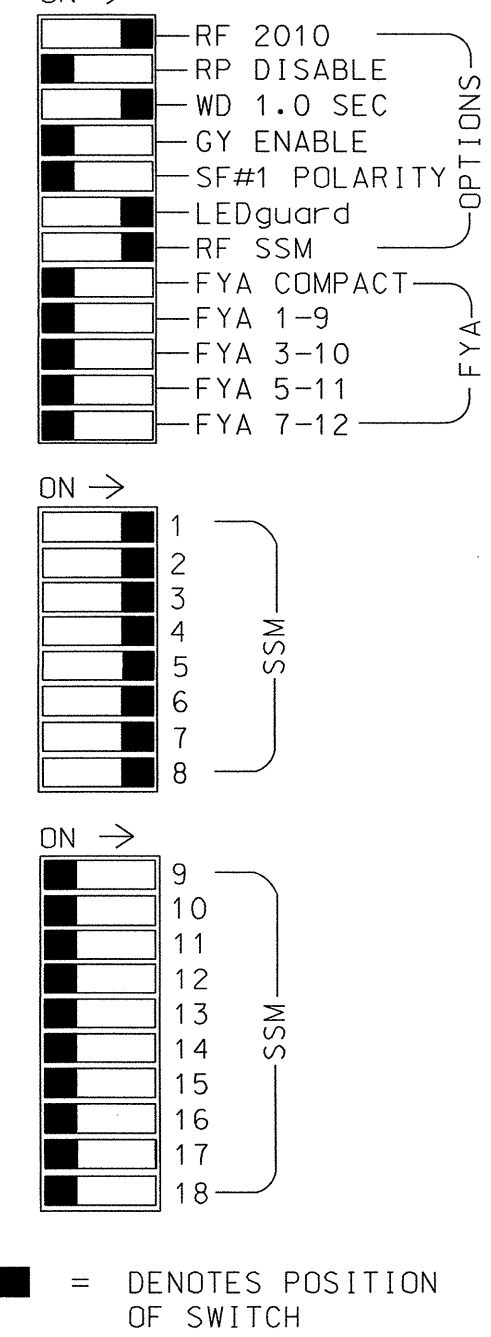
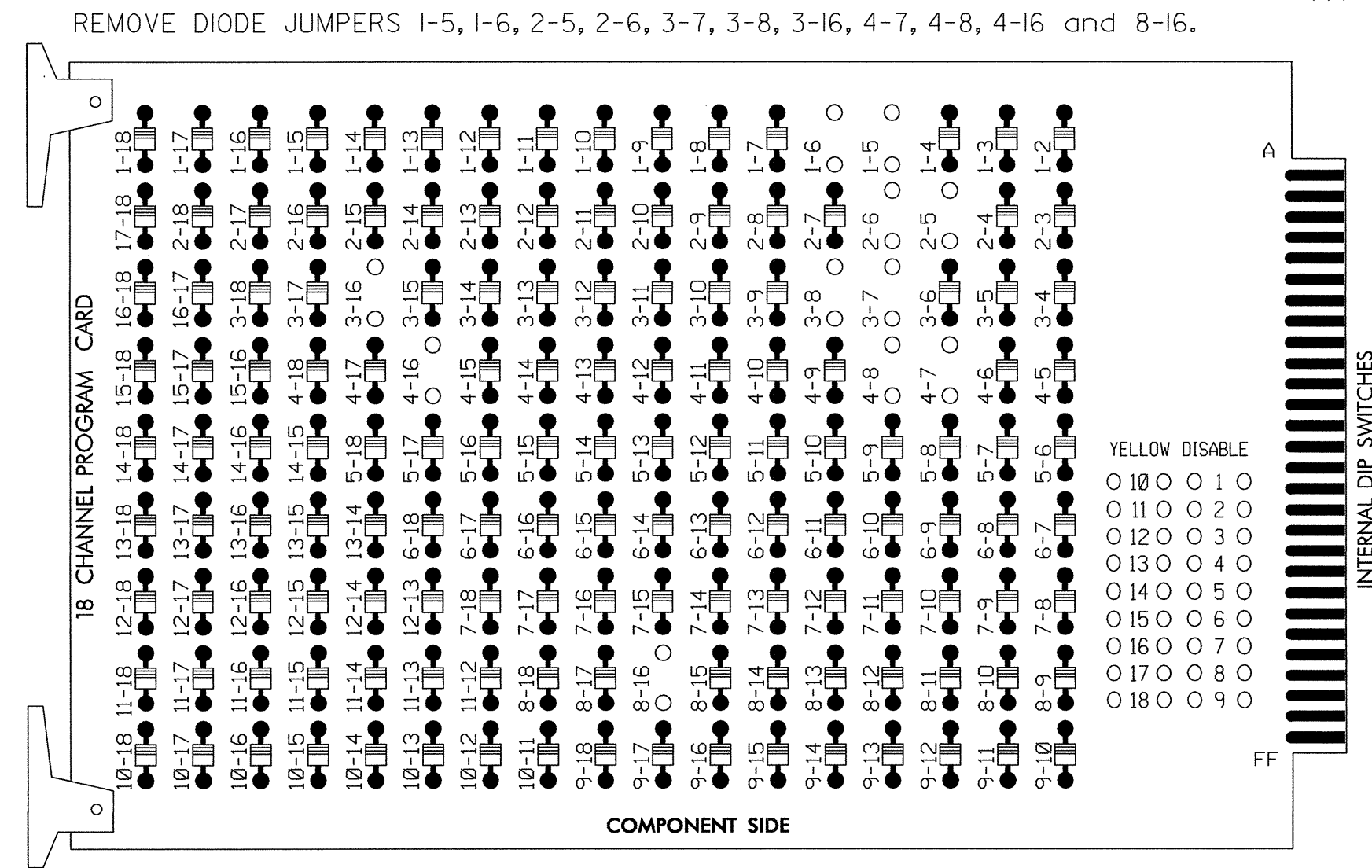
PLAN DATE: Mar 2013 REVISIONS: _____ INIT. DATE: _____

PREPARED BY: D.J. Darity VHB PROJECT NO: 38276.00

SCALE: 0 50
1" = 50'

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

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.
- 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 phase 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the SR 1344 (Black & Decker Rd) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO. CMU CHANNEL NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
PHASE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SIGNAL HEAD NO.	11	21,22,23	NU	22	31	41,42,43	NU	51,52	61,62,63	NU	62	71,72	81,82,83	P81, P82	NU	NU	NU	NU
RED		128				101			134			107						
YELLOW		129				102			135			108						
GREEN		130				103			136			109						
RED ARROW	125				116			131			122							
YELLOW ARROW	126			117	117			132			123	123						
GREEN ARROW	127			118	118			133			124	124						
													110					
																		112

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S10,S11,S12
 PHASES USED.....1,2,3,4,5,6,7,8,8PED
 OVERLAPS.....NONE

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

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	∅ 3	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4
L	1A	2A	3A	4A	4C	4B	4D	4E	4F	4G	4H	4I	4J	4K
	NOT USED	∅ 2	NOT USED	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4	∅ 4
		2B		4B	4D	4E	4F	4G	4H	4I	4J	4K	4L	4M
U	∅ 5	∅ 6	∅ 7	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8
L	5A	6A	7A	8A	8C	8B	8D	8E	8F	8G	8H	8I	8J	8K
	∅ 5	∅ 6	∅ 7	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8	∅ 8
	5B	6B	7B	8B	8D	8E	8F	8G	8H	8I	8J	8K	8L	8M

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

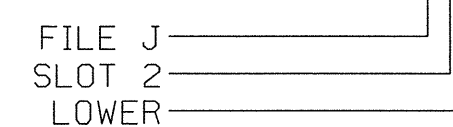
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4		Y			
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	5
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
5B	TB3-3,4	J1L	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8		Y			
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											
P81, P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

NOTE:
 INSTALL DC ISOLATOR IN INPUT FILE SLOT 113.

INPUT FILE POSITION LEGEND: J2L



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 Transportation Land Development Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
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 NC Lic No. C-3705

Signal Upgrade - Final Signal

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1344 (Natal St/Mid-Pine Rd) at SR 1003 (Camden Rd)

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

Division 6 Cumberland County Fayetteville

PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO: 38276.00

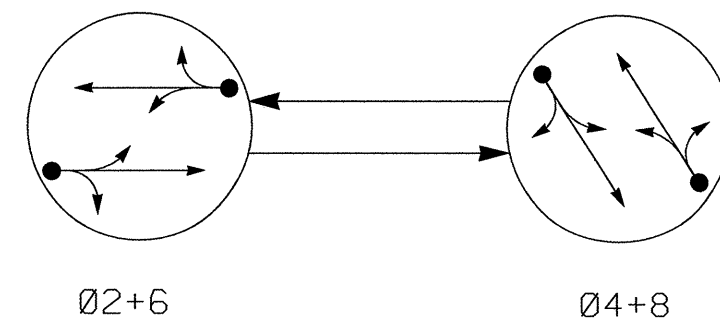
REVISIONS: INIT. DATE

SIGNATURE: DATE: 8-22-2013
 SIG. INVENTORY NO. 06-0335

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0335
 DESIGNED: Mar 2013
 SEALED: 8-22-2013
 REVISED: N/A

2 Phase Fully Actuated (Fayetteville Signal System)

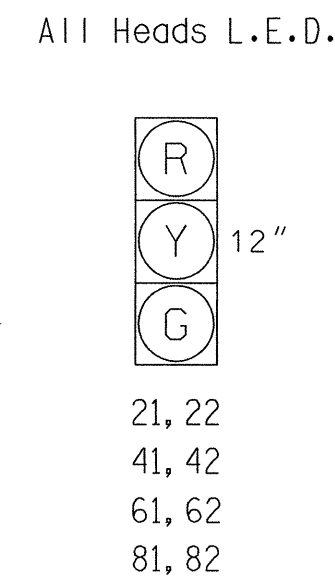
PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND
 ● DETECTED MOVEMENT
 ◀ UNDETECTED MOVEMENT (OVERLAP)
 ▶ UNSIGNALIZED MOVEMENT
 ⇄ PEDESTRIAN MOVEMENT

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

SIGNAL FACE I.D.

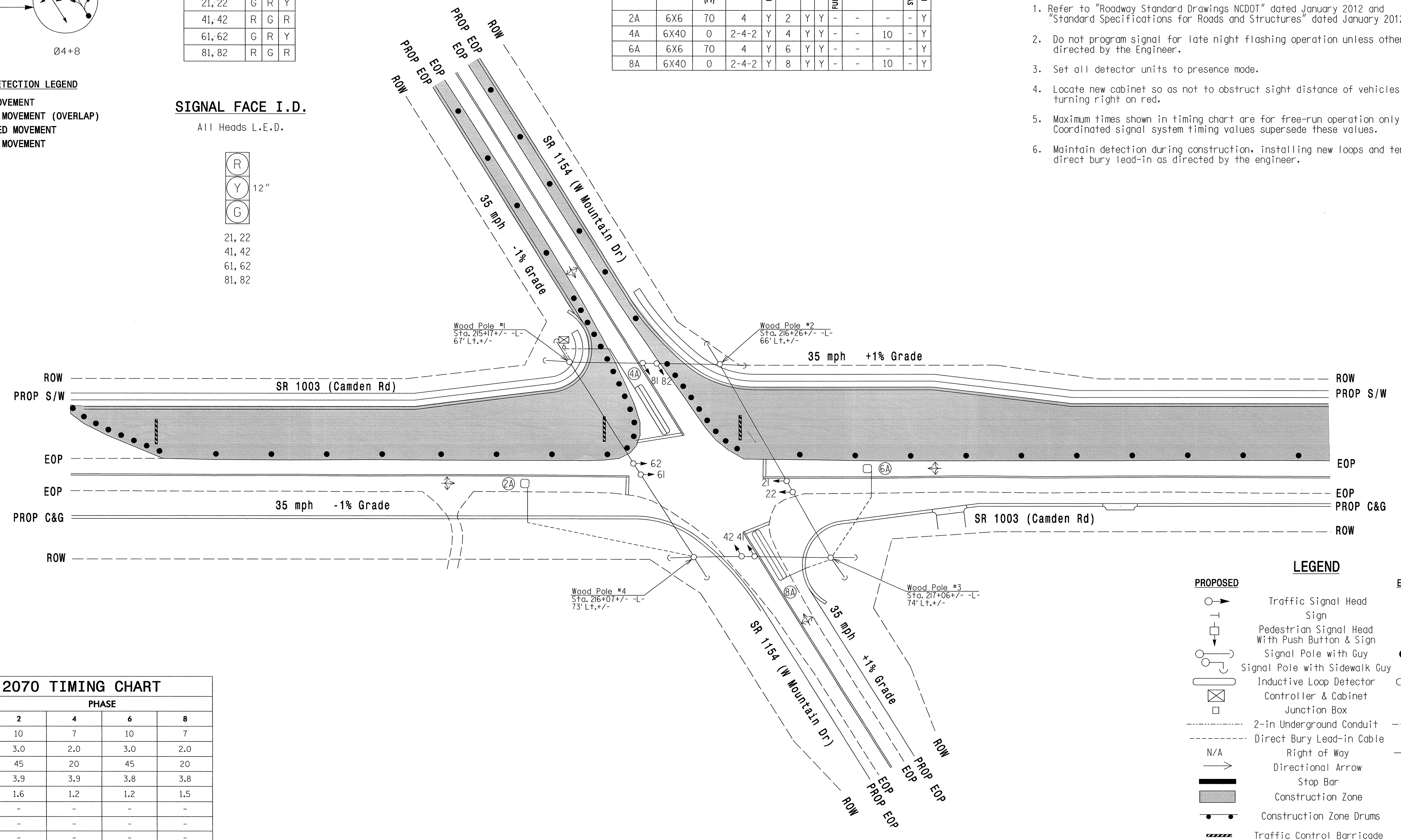


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

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	70	4	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
6A	6X6	70	4	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y

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.
- Maintain detection during construction, installing new loops and temporary direct bury lead-in as directed by the engineer.



OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	20	45	20
Yellow Clearance	3.9	3.9	3.8	3.8
Red Clearance	1.6	1.2	1.2	1.5
Red Revert	-	-	-	-
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

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

LEGEND

PROPOSED	EXISTING

Signal Revision - Temporary 1 - TCP Phase I, Step 2

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 Transportation Land Development Environmental Services
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 NC Lic No. C-3705

Prepared for the Offices of:

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

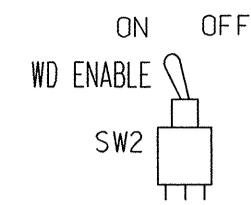
SR 1003 (Camden Road) at SR 1154 (W Mountain Drive)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO.: 38278.00
 REVISIONS: INIT. DATE

SEAL

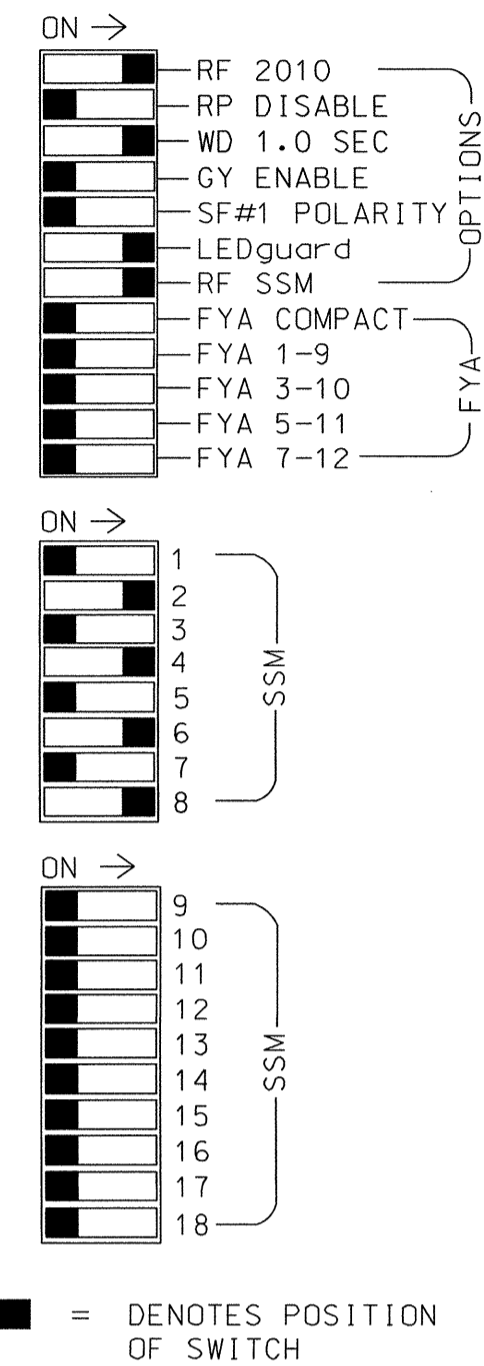
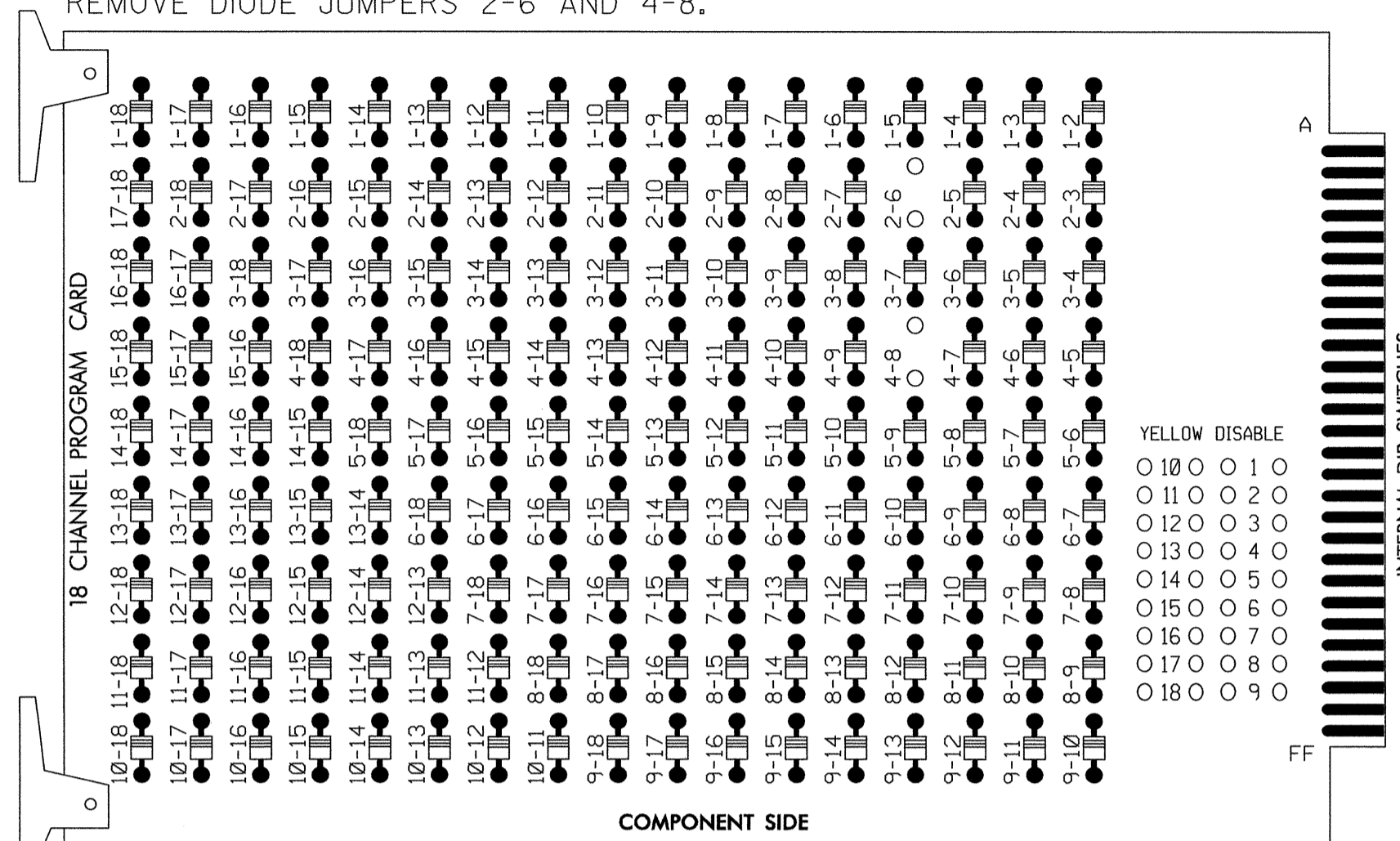
 DONALD J. DARTY
 ENGINEER
 8-28-2013
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-1195T1

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 2-6 AND 4-8.



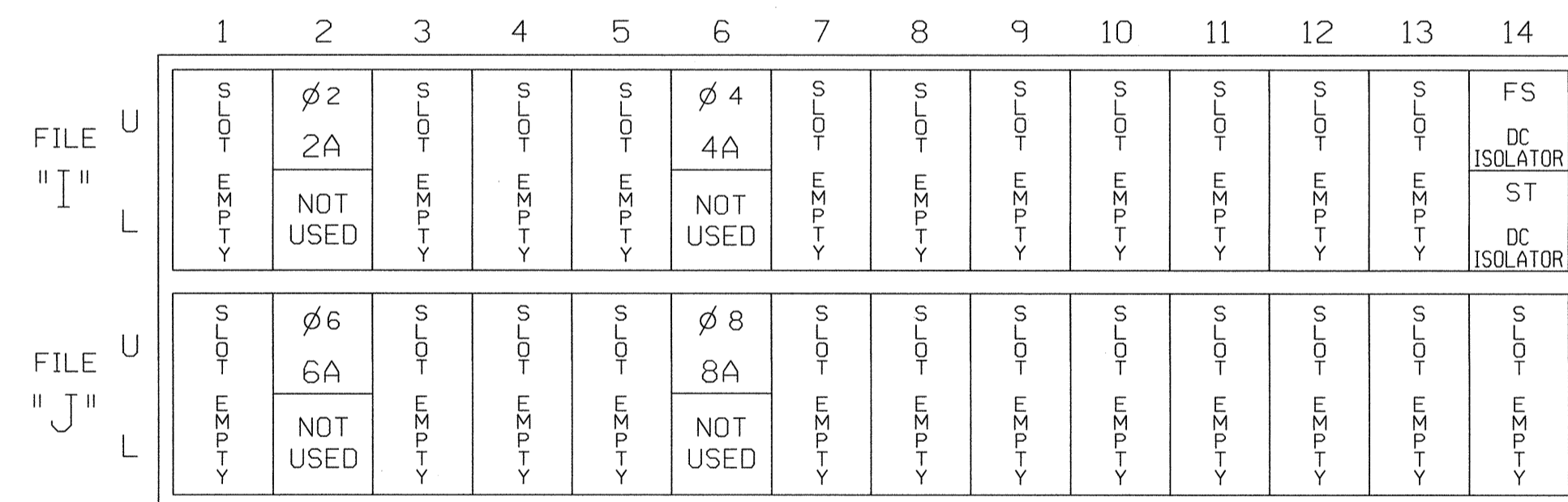
NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

REMOVE JUMPERS AS SHOWN

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

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.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- 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	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
FLASHING YELLOW ARROW																		
GREEN ARROW																		

NU = NOT USED

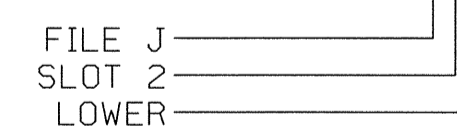
EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

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			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10

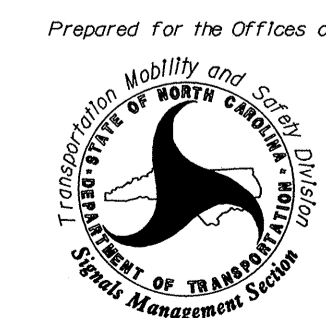
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1195T1
 DESIGNED: Mar 2013
 SEALED: 8-22-2013
 REVISED:

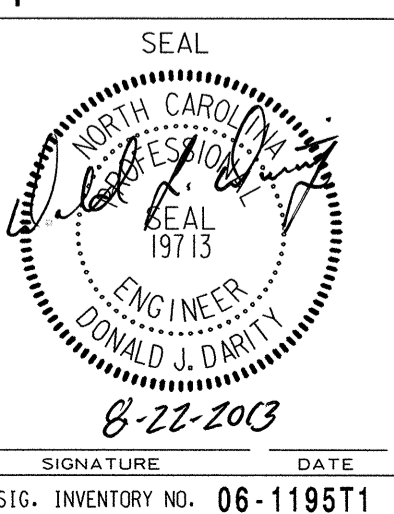
Signal Revision - Temporary 1 - TCP Phase I, Step 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:



750 N. Greenfield Pkwy, Garner, NC 27529

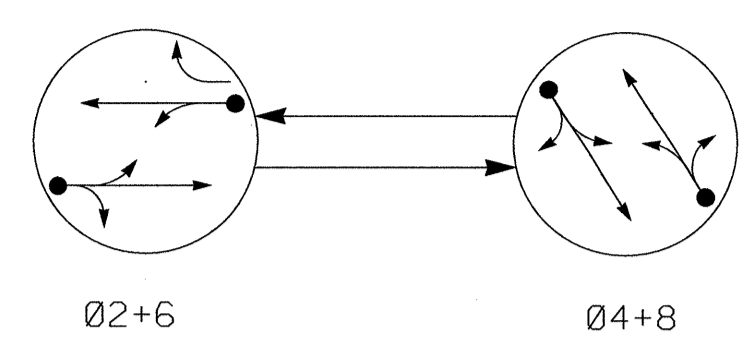
SR 1003 (Camden Road)		at	
SR 1154 (W. Mountain Drive)			
Division 06	Cumberland County	Fayetteville	
PLAN DATE: Mar 2013	REVIEWED BY: D.J. Darity		
PREPARED BY: D.J. Darity	VHB PROJ. NO.: 38276.00		
REVISIONS	INIT.	DATE	



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 NC Lic No. C-3705

**2 Phase
Fully Actuated
(Fayetteville Signal System)**

PHASING DIAGRAM



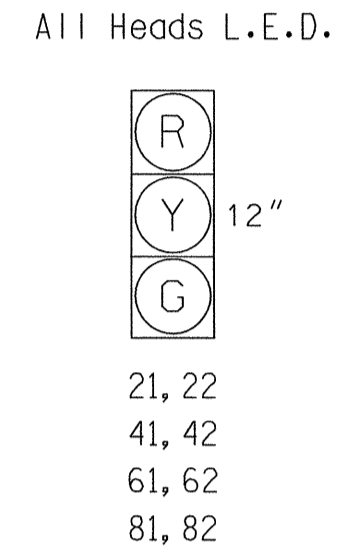
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

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

SIGNAL FACE I.D.

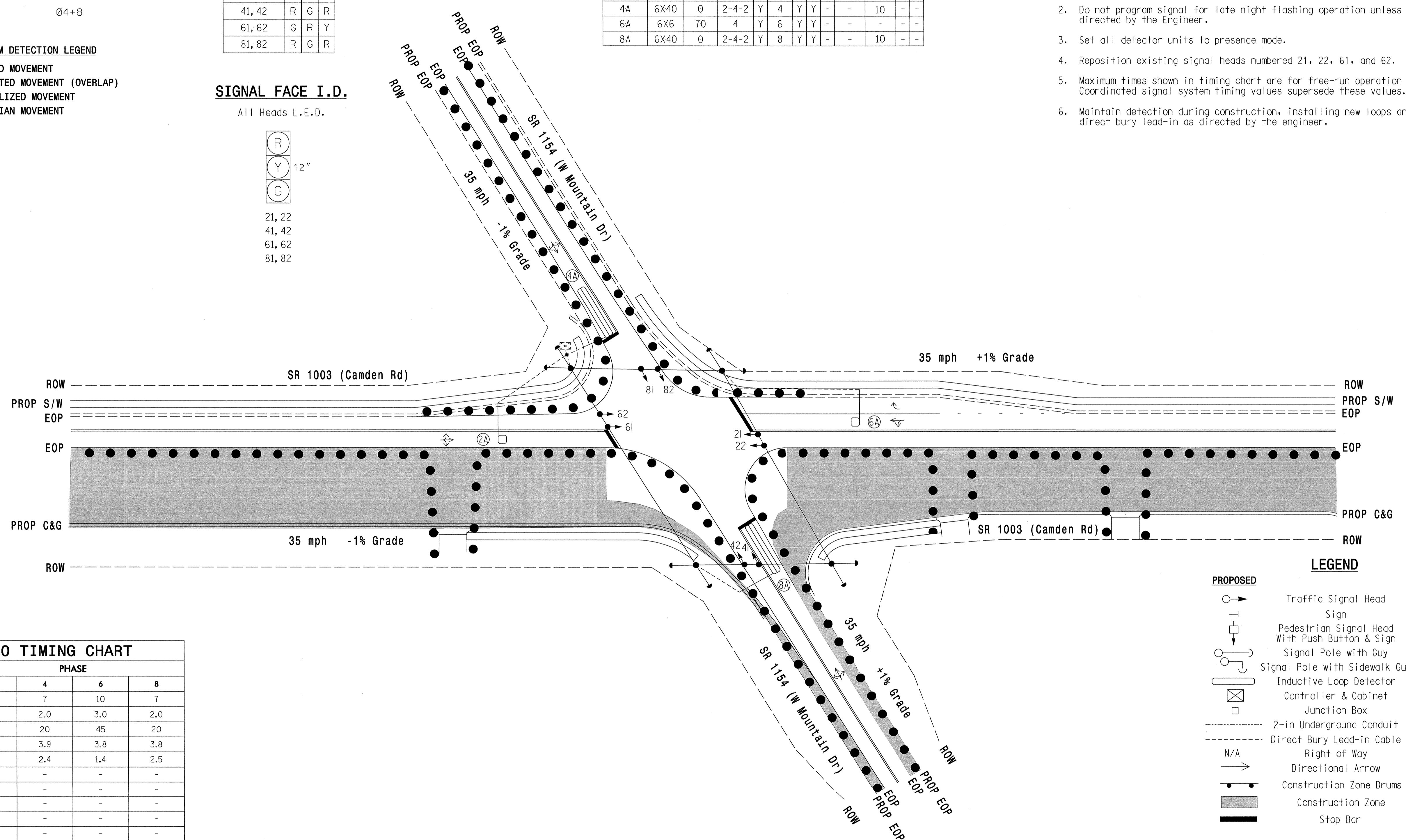


OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
2A	6X6	70	4	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	-
6A	6X6	70	4	Y	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	-

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.
- Reposition existing signal heads numbered 21, 22, 61, and 62.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Maintain detection during construction, installing new loops and temporary direct bury lead-in as directed by the engineer.



OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	20	45	20
Yellow Clearance	3.9	3.9	3.8	3.8
Red Clearance	1.4	2.4	1.4	2.5
Red Revert	-	-	-	-
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

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

LEGEND

PROPOSED	EXISTING

Signal Revision - Temporary 2 - TCP Phase 2

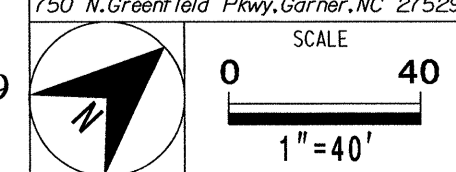
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 NC Lic No. C-3705

**SR 1003 (Camden Road)
at
SR 1154 (W Mountain Drive)**

Division 6 Cumberland County Fayetteville

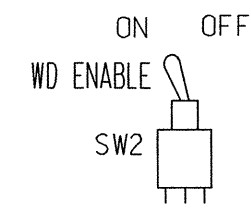
PLAN DATE: Mar 2013	REVIEWED BY: D.J. Darity
PREPARED BY: D.J. Darity	VHB PROJECT NO.: 38276.00
REVISIONS	INIT. DATE

SEAL
 DONALD J. DARITY
 ENGINEER
 9-22-2013
 SIGNATURE DATE
 516. INVENTORY NO. 06-1195T2

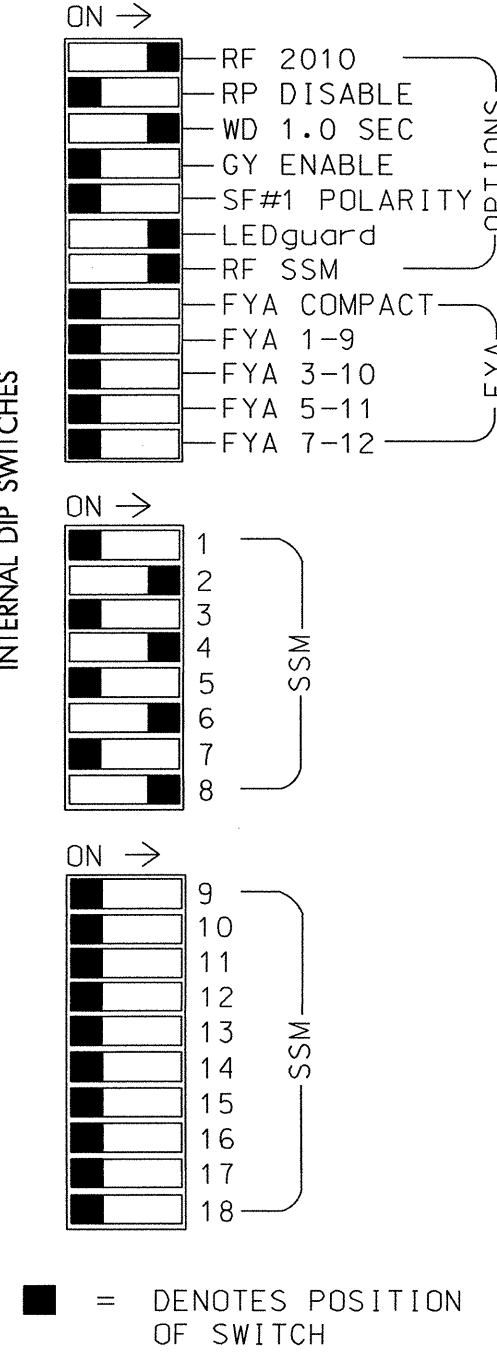
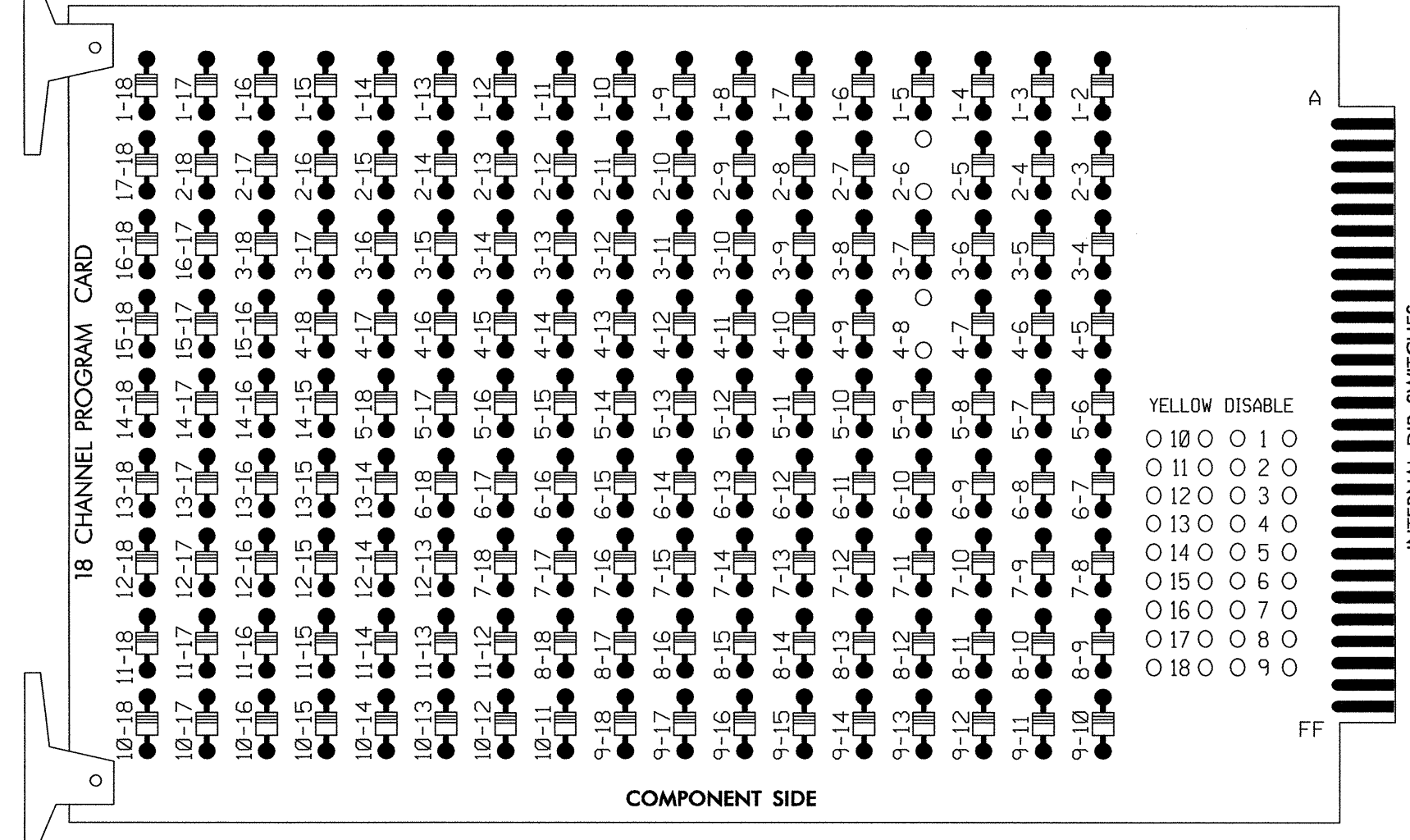


EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 2-6 AND 4-8.



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

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.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- 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	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
FLASHING YELLOW ARROW																		
GREEN ARROW																		

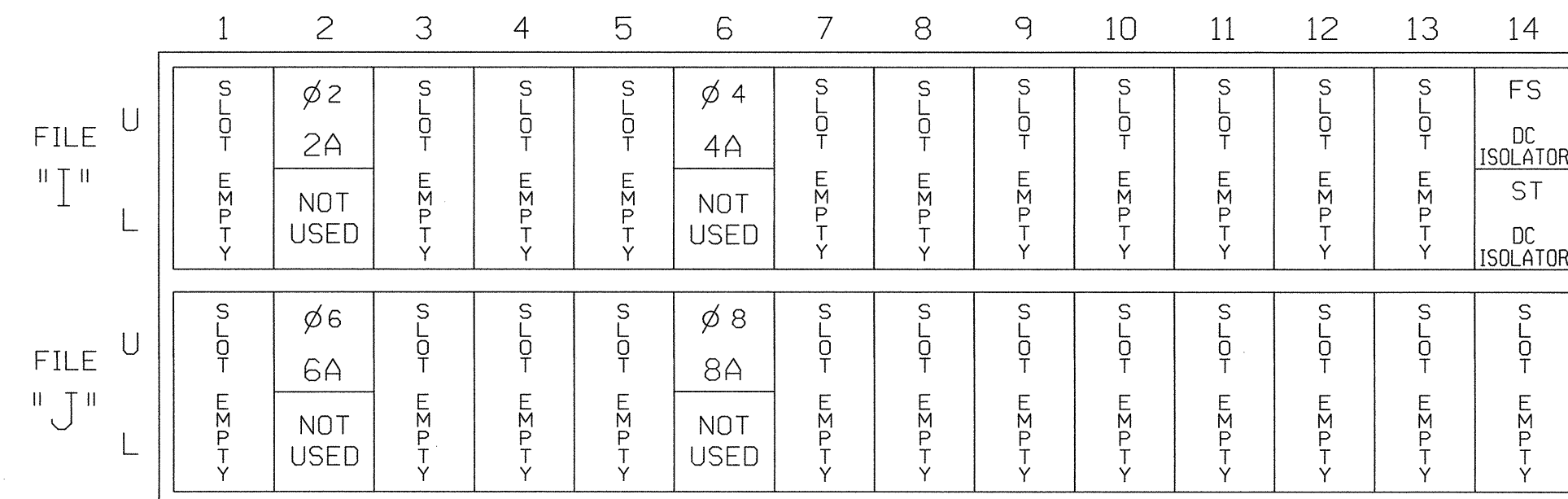
NU = NOT USED

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



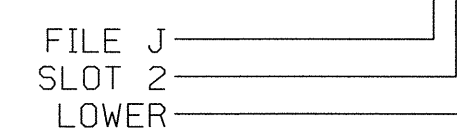
EX.: 1A, 2A, ETC. = LOOP NO.'S

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			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10

INPUT FILE POSITION LEGEND: J2L

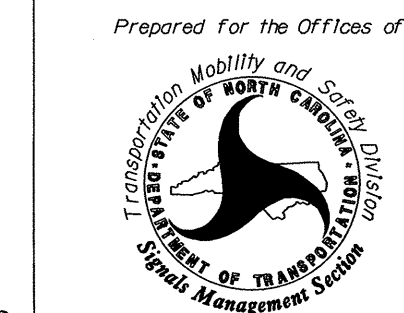


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1195T2
 DESIGNED: Mar 2013
 SEALED: 8-22-2013
 REVISED:

Signal Revision - Temporary 2 - TCP Phase 2

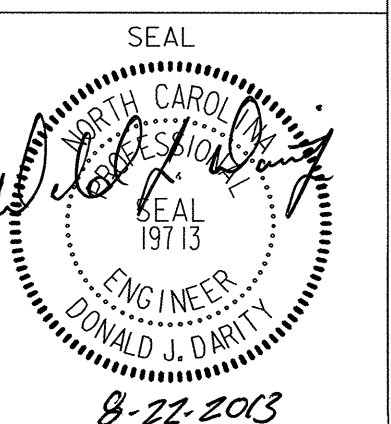
ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1003 (Camden Road)
 at
 SR 1154 (W. Mountain Drive)



Division 06 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJ. NO.: 38276.00

REVISIONS	INIT.	DATE

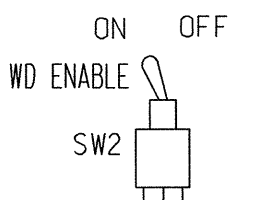


SIGNATURE DATE
 8-22-2013
 SIG. INVENTORY NO. 06-1195T2

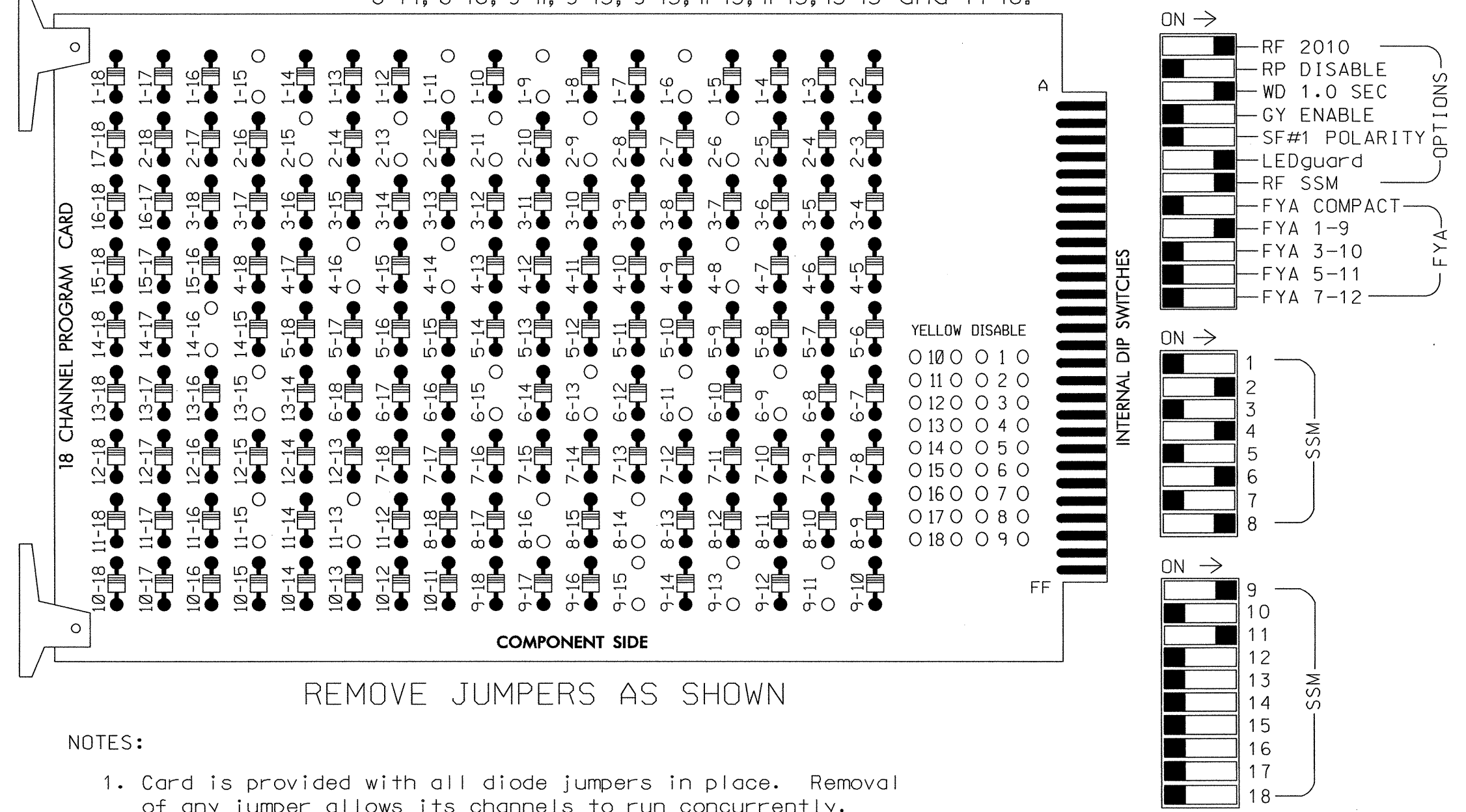
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 Transportation Land Development Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-6, 1-9, 1-11, 1-15, 2-6, 2-9, 2-11, 2-13, 2-15, 4-8, 4-14, 4-16, 6-9, 6-11, 6-13, 6-15, 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.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

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.
- 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, 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 Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S8,S9,S11,S12,AUXS1,AUXS4
 PHASES USED.....1,2,2PED,4,4PED,6,6PED,8,8PED
 OVERLAP "A".....1+2
 OVERLAP "B".....NONE
 OVERLAP "C".....6
 OVERLAP "D".....NONE

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

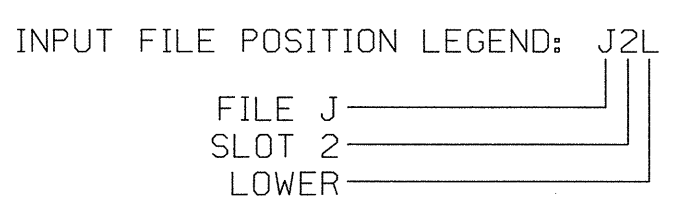
Countdown Ped Signals are required to display timing only during Ped Clearance interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			15
		J4U	48	10	26	6	Y	Y	Y		3
2A/S1	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S2	TB2-7,8	I2L	43	5	12	2/SYS	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			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A/S3	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S4	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTON											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

Note: Install DC Isolators in input file slots I12 and I13.

Add jumper from I1W to J4W, on rear of input file.



INPUT FILE POSITION LAYOUT

(front view)

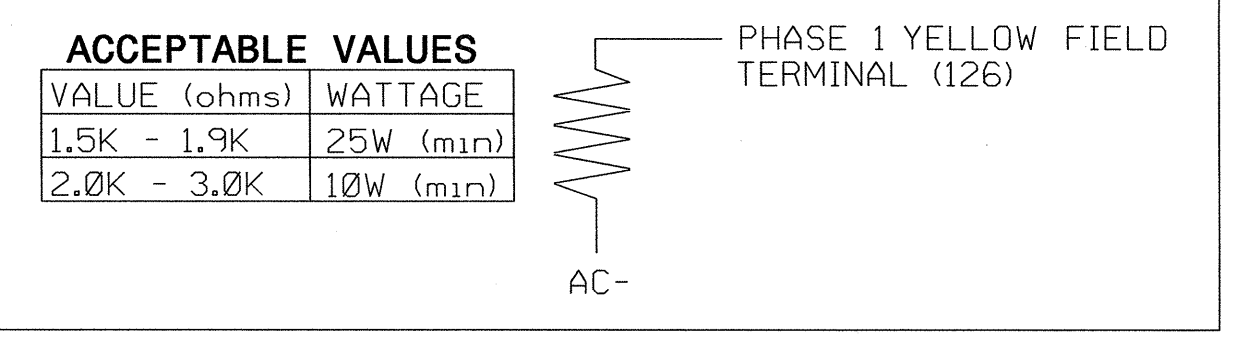
FILE	U	1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	∅ 1 1A	∅ 2/SYS 2A/S1	∅ 2C 2C	∅ 4A 4A	∅ 4B 4B	∅ 8A 8A	∅ 8B 8B	∅ 2PED DC ISOLATOR	∅ 6PED DC ISOLATOR	∅ 4PED DC ISOLATOR	∅ 8PED DC ISOLATOR	FS DC ISOLATOR	ST DC ISOLATOR	
	L	NOT USED	∅ 2/SYS 2B/S2	NOT USED	∅ 4 4B	∅ 4 4B	∅ 8 8B	∅ 8 8B	∅ 2PED DC ISOLATOR	∅ 6PED DC ISOLATOR	∅ 4PED DC ISOLATOR	∅ 8PED DC ISOLATOR	FS DC ISOLATOR	ST DC ISOLATOR	
"J"	U	∅ 6/SYS 6A/S3	∅ 6/SYS 6B/S4	∅ 8 8A	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B
	L	∅ 6/SYS 6A/S3	∅ 6/SYS 6B/S4	∅ 8 8A	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B	∅ 8 8B

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

LOAD RESISTOR INSTALLATION DETAIL



SIGNAL HEAD HOOK-UP CHART

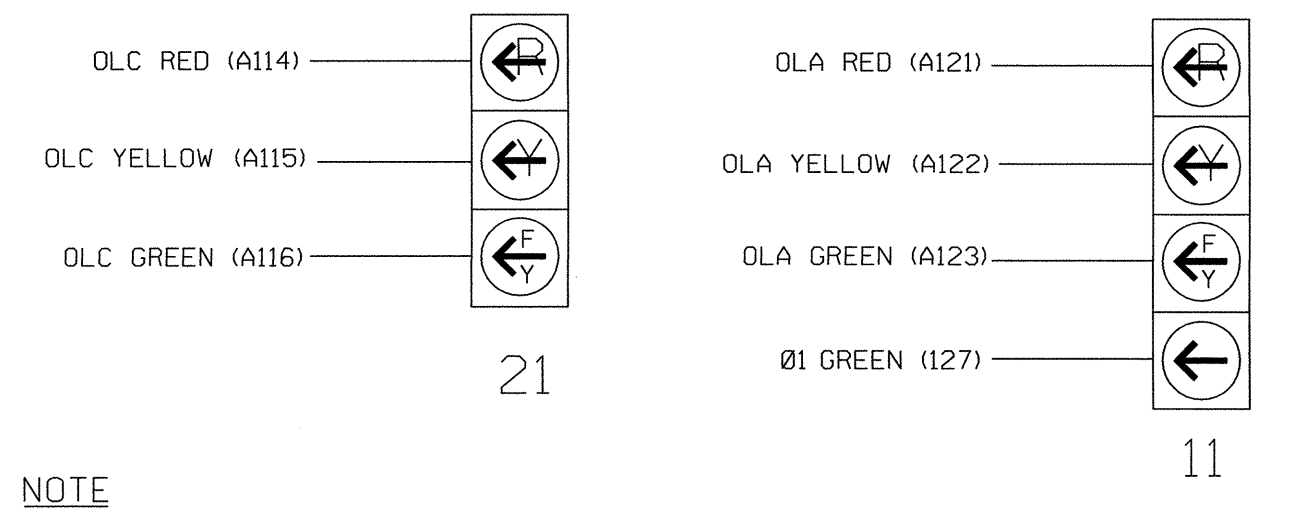
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	22,23	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	P81, P82	11	NU	NU	21	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121				A114	
YELLOW ARROW													A122				A115	
FLASHING YELLOW ARROW													A123				A116	
GREEN ARROW	127																	
Hand icon					113			104			119						110	
Walking person icon					115			106			121						112	

NU = NOT USED

* Denotes install load resistor. See Load Resistor Installation Detail this page.
 * Denotes see pictorial of head wiring in detail below.

3 AND 4 SECTION FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. The sequence display for signal head 11 requires special logic programming. See sheet 2 of 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1195
 DESIGNED: Mar 2013
 SEALED: 8-22-2013
 REVISED:

Electrical Detail Sheet 1 of 2

Signal Revision - Final Signal

Electrical and Programming Details For:
SR 1003 (Camden Road) at SR 1154 (W. Mountain Drive)

Division 06 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJ. NO.: 38276.00

Signature: *Donald J. Darity*
 Date: 8-22-2013

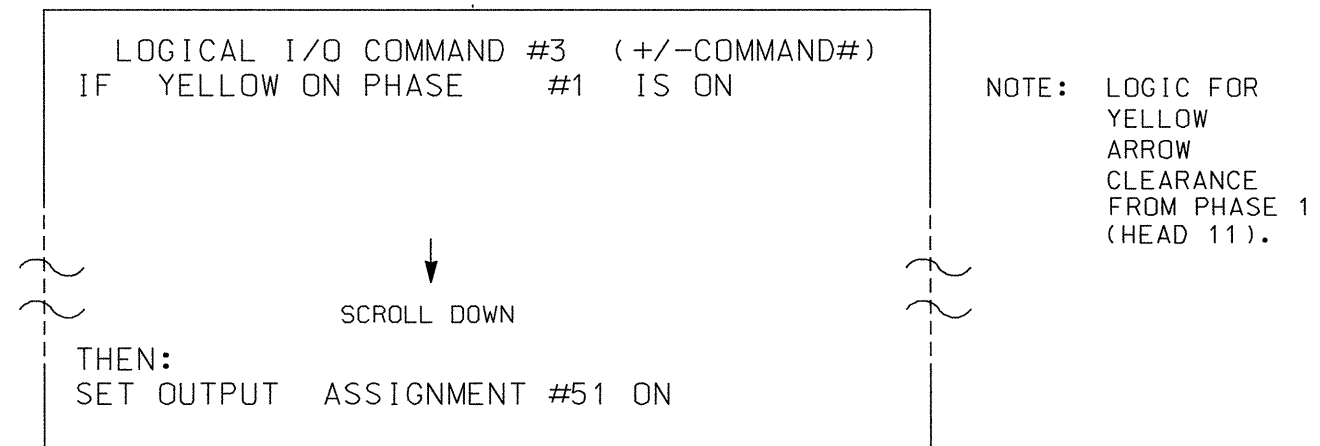
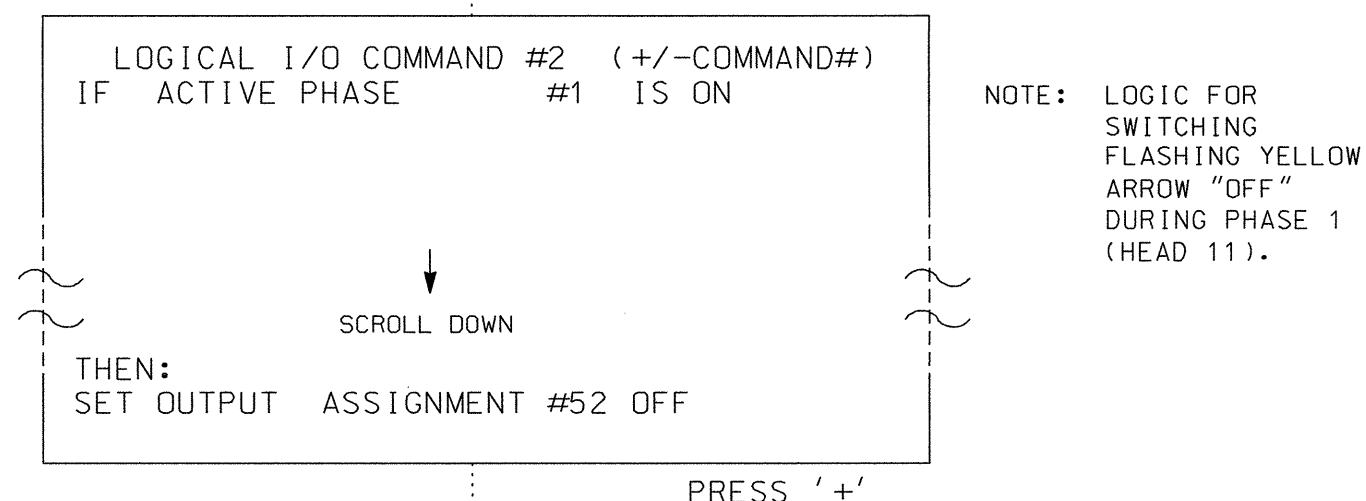
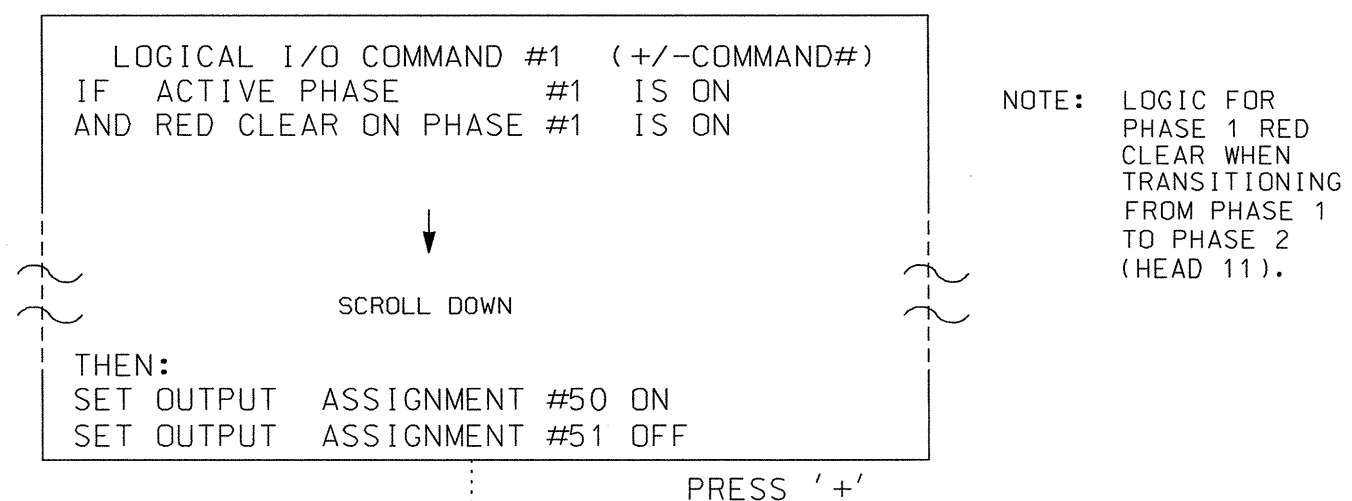
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 NC Lic No. C-3705

SEAL
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 DONALD J. DARTY
 19713

**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 AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

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: | X
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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1195
DESIGNED: Mar 2013
SEALED: 8-22-2013
REVISED:

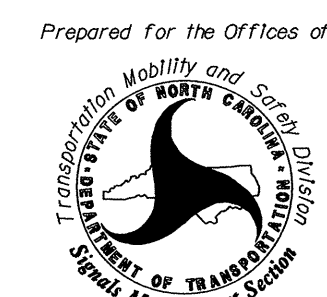
Electrical Detail Sheet 2 of 2

Signal Revision - Final Signal

VHB Engineering NC, P.C.
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4000 WestChase Blvd, Suite 530
Raleigh, North Carolina 27607
919.829.0328 • FAX 919.829.0329
NC Lic No. C-3705

ELECTRICAL AND PROGRAMMING DETAILS FOR:

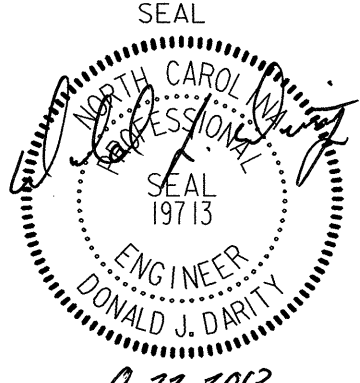
Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1003 (Camden Road)		at	
SR 1154 (W. Mountain Drive)			
Division 06	Cumberland County	Fayetteville	
PLAN DATE: Mar 2013	REVIEWED BY: D.J. Darity		
PREPARED BY: D.J. Darity	VHB PROJ. NO.: 38276.00		
REVISIONS	INIT.	DATE	

SEAL



8-22-2013

SIGNATURE DATE

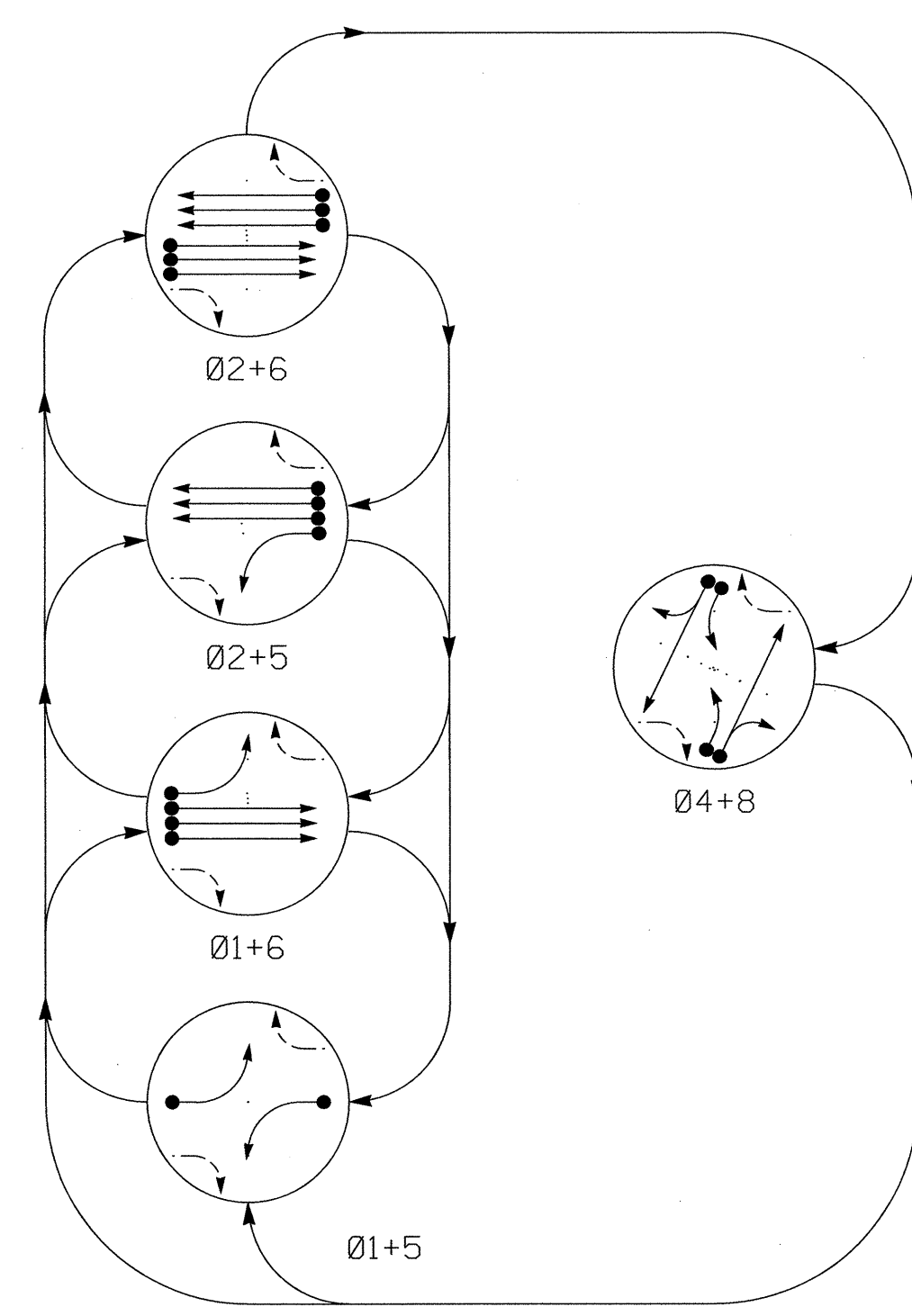
SIG. INVENTORY NO. 06-1195

5 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. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Maintain detection during construction, installing new loops and temporary direct bury lead-in cable as directed by the engineer.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM



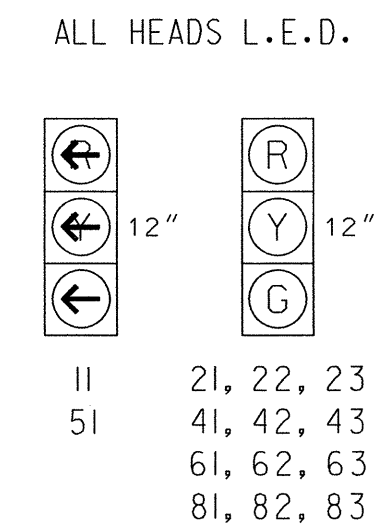
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

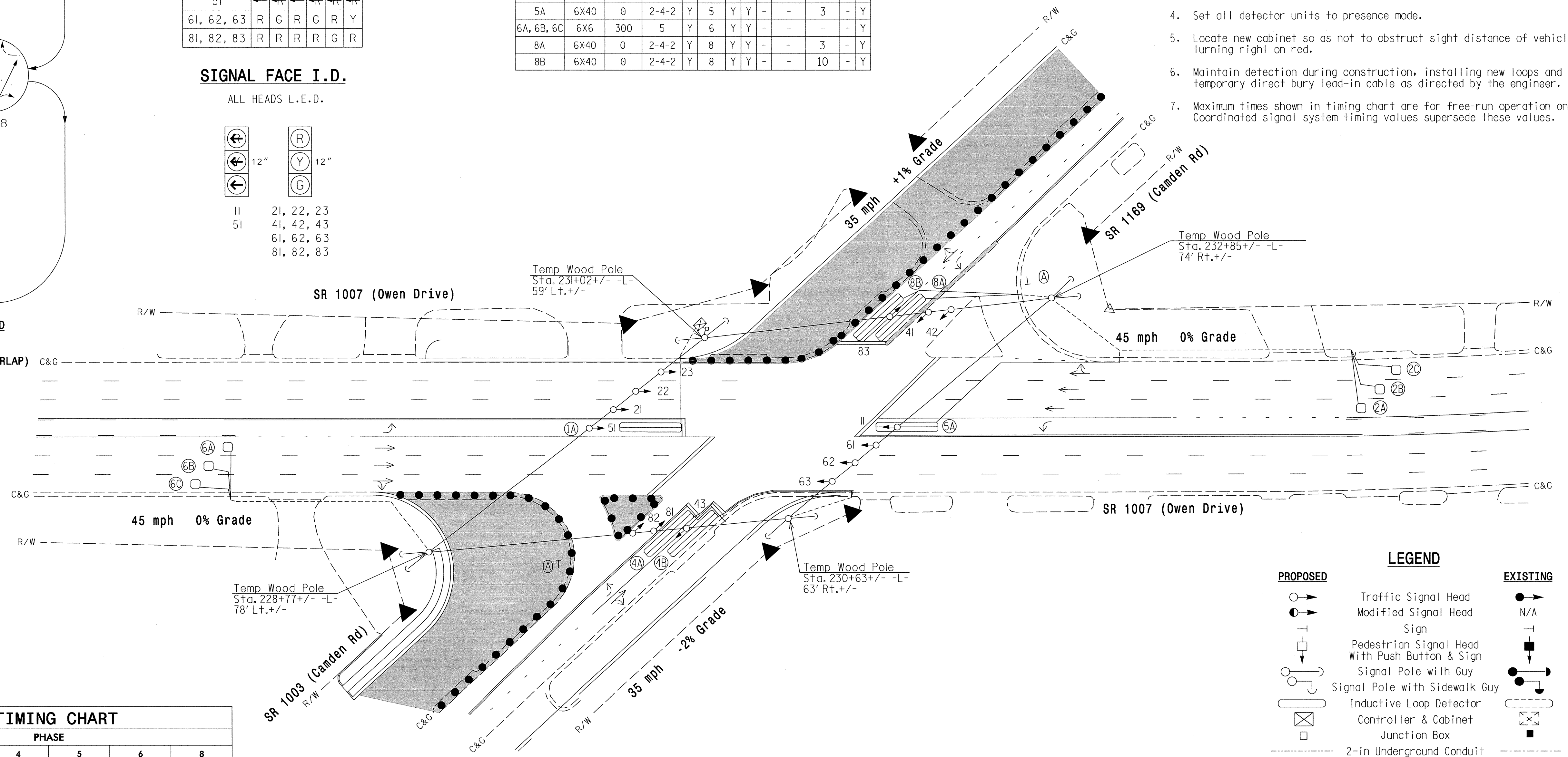
SIGNAL FACE	PHASE					
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 4+8	F
II	←	←	←	←	←	←
21, 22, 23	R	R	G	G	R	Y
41, 42, 43	R	R	R	R	G	R
51	←	←	←	←	←	←
61, 62, 63	R	G	R	G	R	Y
81, 82, 83	R	R	R	R	G	R

SIGNAL FACE I.D.



OASIS 2070 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 CAB
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	3	-	Y
2A, 2B, 2C	6X6	300	5	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	3	-	Y
6A, 6B, 6C	6X6	300	5	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	Y



OASIS 2070 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	15	80	25	15	80	25
Yellow Clearance	3.2	4.5	4.0	3.2	4.5	3.8
Red Clearance	3.4	1.3	3.1	3.3	1.1	3.0
Red Revert	-	-	-	-	-	-
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.2	-	-	1.2	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

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

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 |
| --- Direct Bury Lead-in Cable | --- N/A |
| --- Right of Way | --- N/A |
| → Directional Arrow | → N/A |
| ■ Stopbar | ■ N/A |
| ■ Construction Zone | ■ N/A |
| △ "YIELD" Sign (R1-2) | △ N/A |
| ● Construction Zone Drums | ● N/A |

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Signal Revision - Temporary 1 - TCP Phase I, Step 2

SR 1007 (Owen Drive) at SR 1003/1169 (Camden Road)

Division 6 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO.: 38276.00

750 N. Greenfield Pkwy, Garner, NC 27529

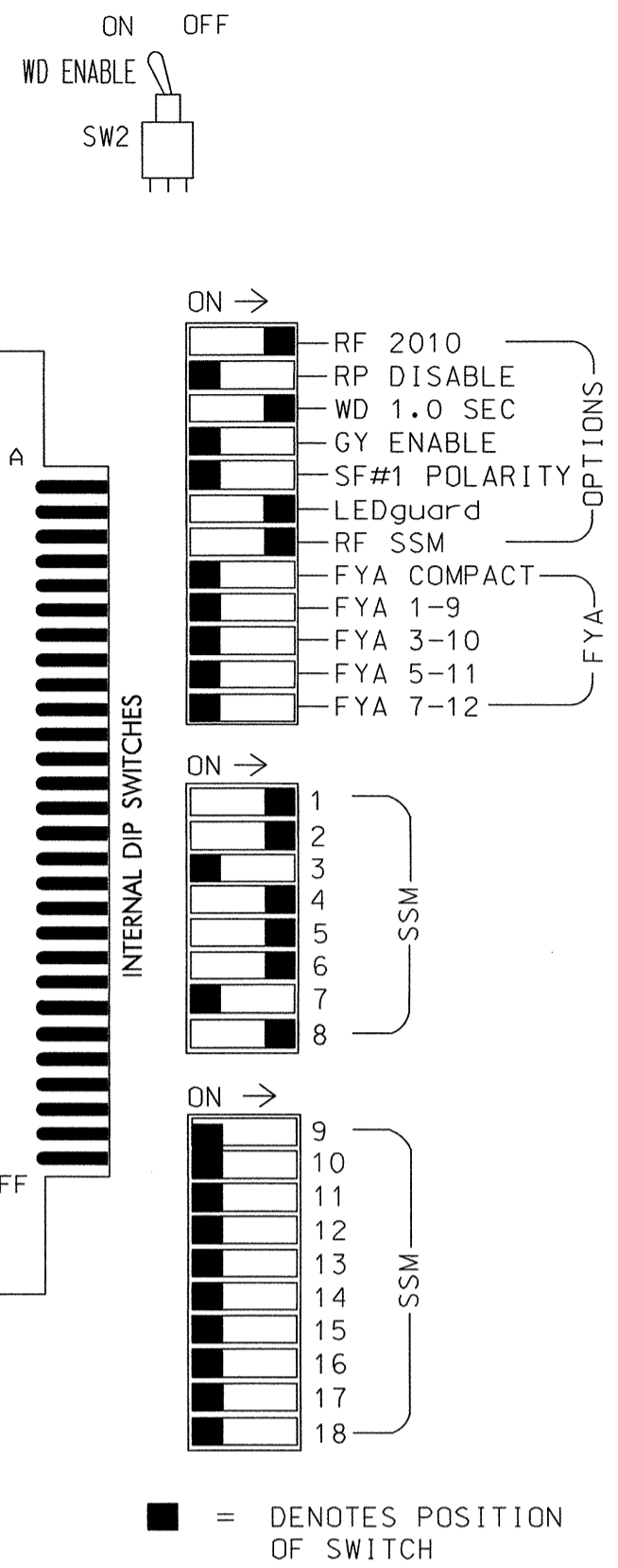
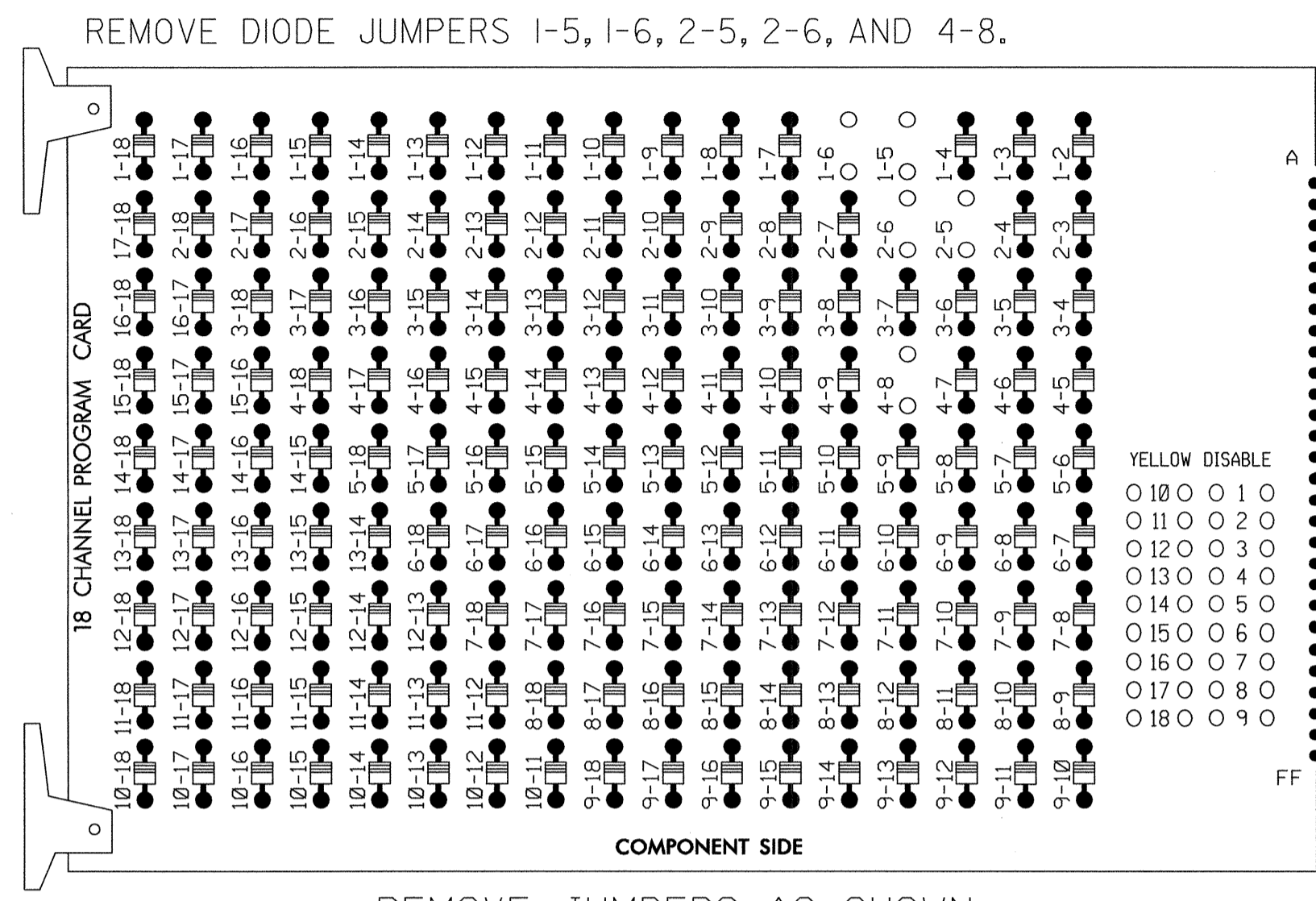
SCALE: 1"=40'

SIGNATURE: DATE: 8-22-2013

SIG. INVENTORY NO. 06-0289T1

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

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.
- 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.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11
 PHASES USED.....1,2,4,5,6,8
 OVERLAPS.....NONE

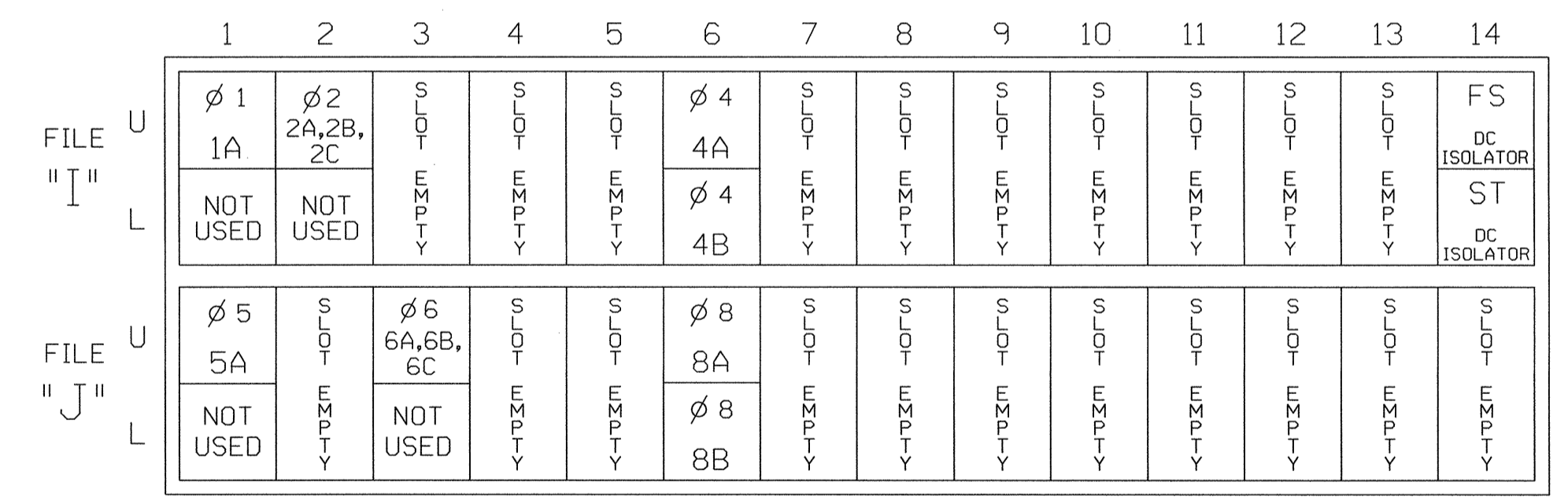
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22 23	NU	NU	41,42 43	NU	51	61,62 63	NU	NU	81,82 83	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125							131										
YELLOW ARROW	126							132										
GREEN ARROW	127							133										
Hand icon																		
Person icon																		

NU = NOT USED

INPUT FILE POSITION LAYOUT

(front view)



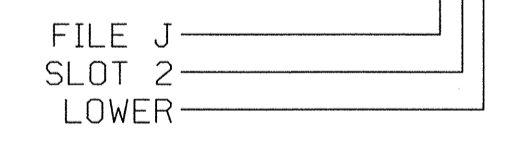
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A,2B,2C	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A,6B,6C	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0289T1
 PREPARED: Mar 2013
 SEALED: 8-22-2013
 REVISED:

Signal Revision - Temporary 1 - TCP Phase I, Step 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:

SR 1007 (Owen Drive) at SR 1003/SR 1169 (Camden Road)

Division 6 Cumberland County Fayetteville

PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO.: 38276.00

REVISIONS	INIT.	DATE

750 N.Greenfield Pkwy, Garner, NC 27529

VHB Engineering NC, P.C.
 Transportation Mobility and Safety Division
 Land Development
 Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705

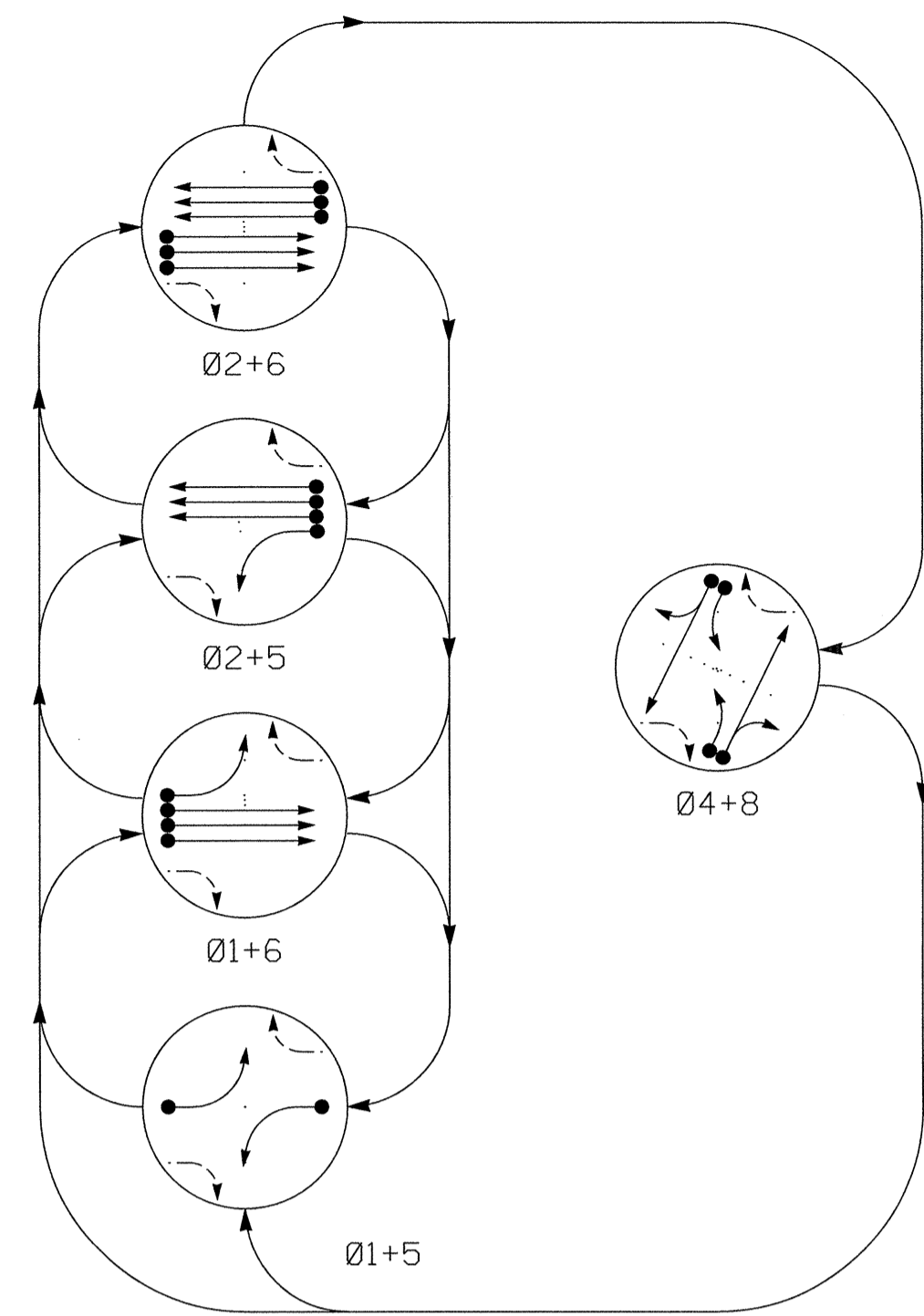
SIGNATURE DATE
 06-0289T1

5 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. Phase 1 and/or phase 5 may be lagged.
4. Reposition existing signal heads numbered 41, 42, 43, 81, 82 and 83.
5. Relocate existing signs "A".
6. Set all detector units to presence mode.
7. Maintain detection during construction, installing new loops and temporary direct bury lead-in as directed by the engineer.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

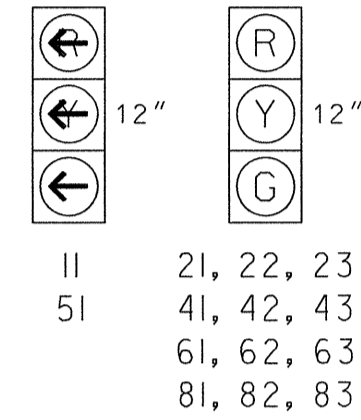
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE				
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 4+8
H	←	←	←	←	←
21, 22, 23	R	R	G	G	R
41, 42, 43	R	R	R	R	G
51	←	←	←	←	←
61, 62, 63	R	G	R	G	R
81, 82, 83	R	R	R	R	G

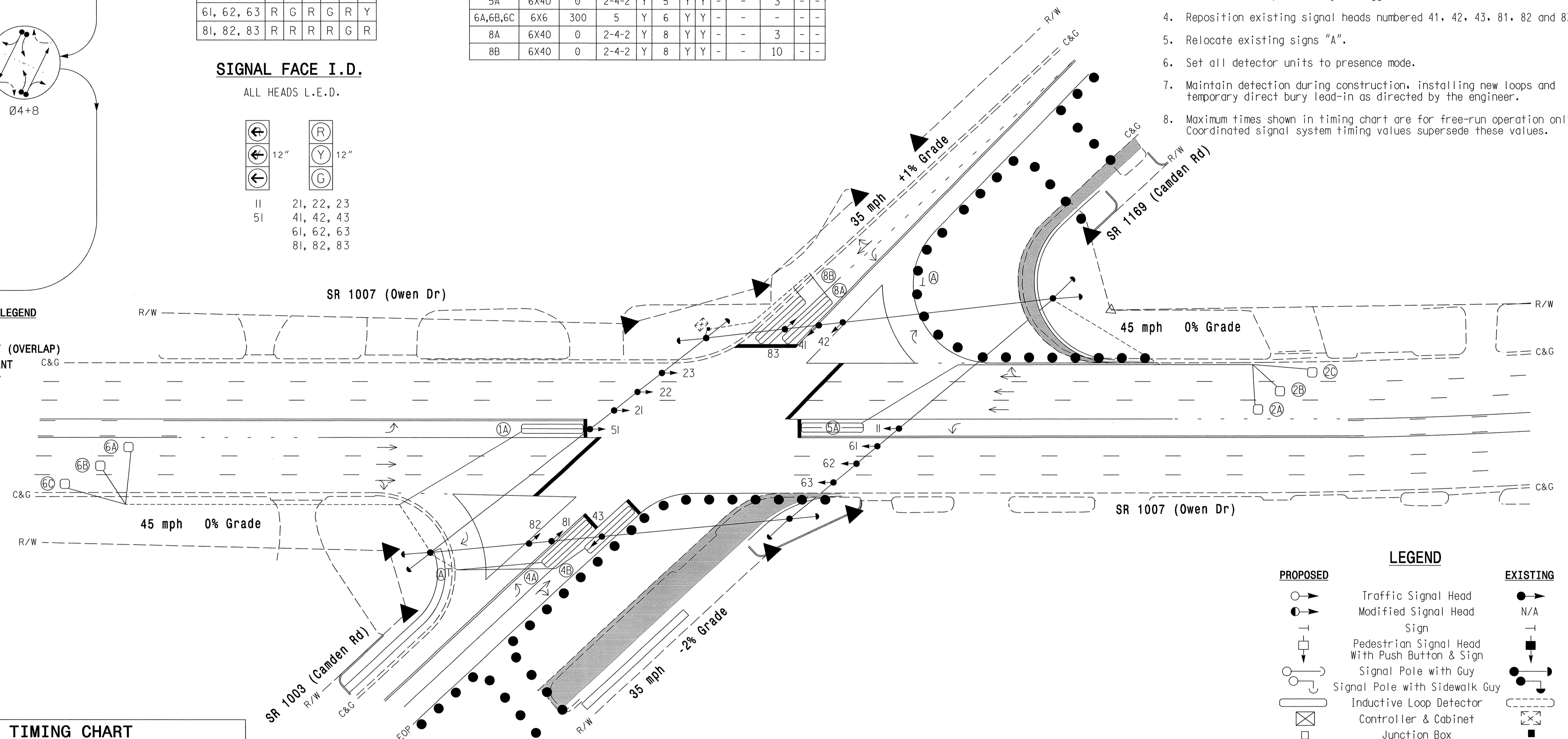
SIGNAL FACE I.D.

ALL HEADS L.E.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						
					PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CAD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	3	-
2A,2B,2C	6X6	300	5	Y	2	Y	Y	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	3	-
6A,6B,6C	6X6	300	5	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	-	-	10	-



OASIS 2070 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	15	80	25	15	80	25
Yellow Clearance	3.2	4.5	4.0	3.2	4.5	3.8
Red Clearance	3.4	1.3	2.8	3.5	1.3	2.9
Red Revert	-	-	-	-	-	-
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.2	-	-	1.2	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

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

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
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| | |

Signal Revision - Temporary 2 - TCP Phase 2

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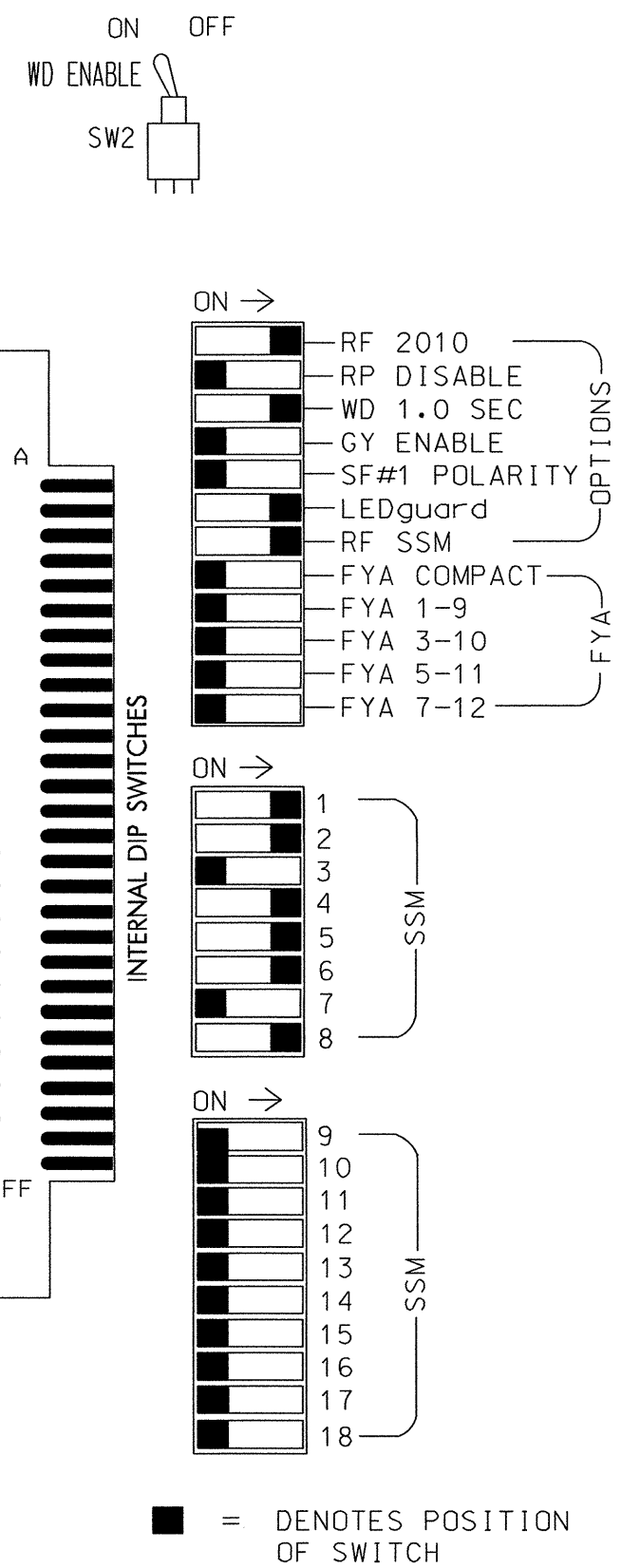
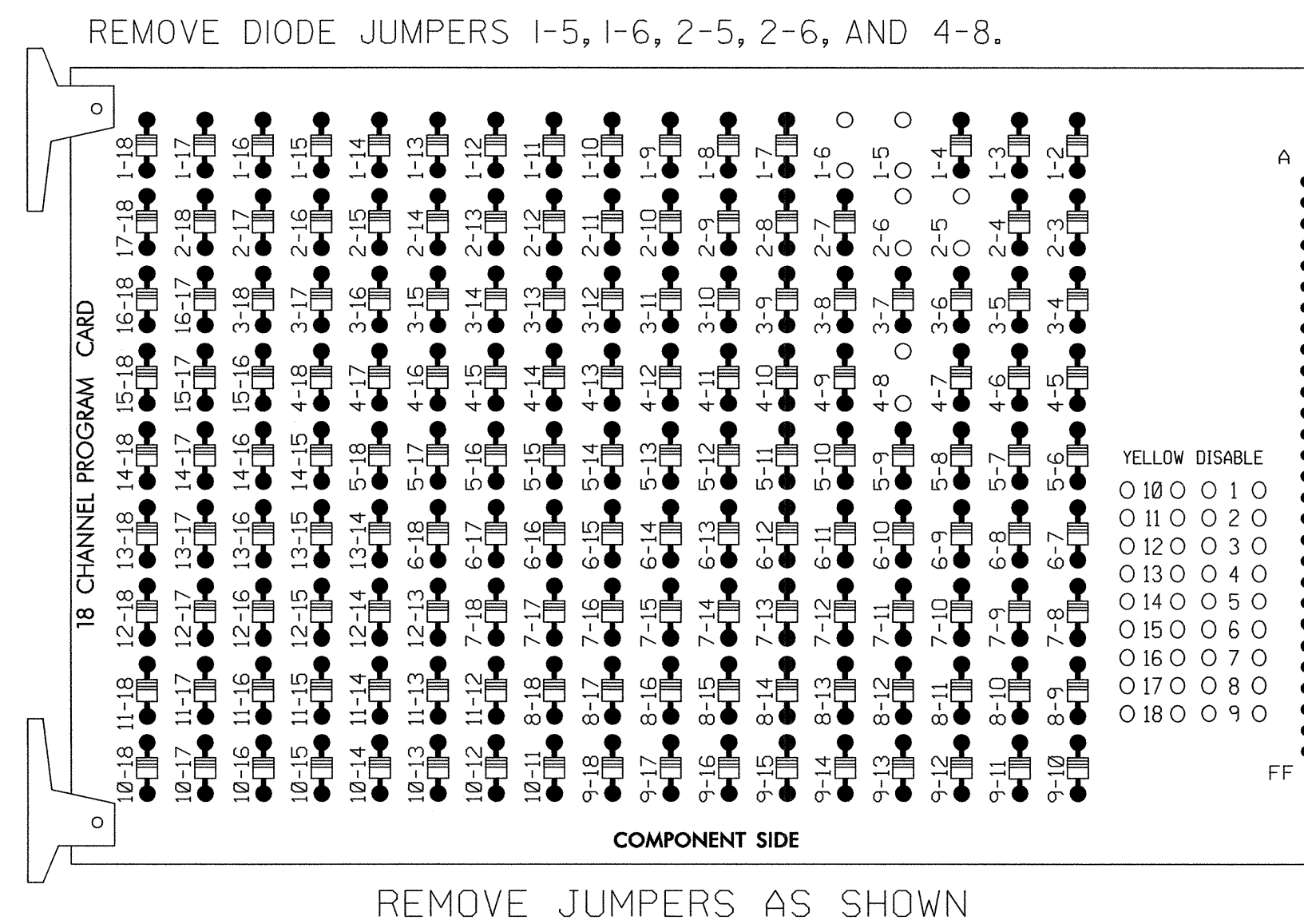
750 N. Greenfield Pkwy, Garner, NC 27529
 TRANSPORTATION MOBILITY AND SAFETY DIVISION
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section
 SCALE 1"=40'

SR 1007 (Owen Drive)
 at
 SR 1003/1169 (Camden Road)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO.: 38276.00

REVISIONS	INIT.	DATE

SEAL
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 DONALD J. DARITY
 8-22-2013
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0289T2

**EDI MODEL 2018ECL-NC CONFLICT MONITOR
PROGRAMMING DETAIL**
(remove jumpers and set switches as shown)



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

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.
- 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.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11
 PHASES USED.....1,2,4,5,6,8
 OVERLAPS.....NONE

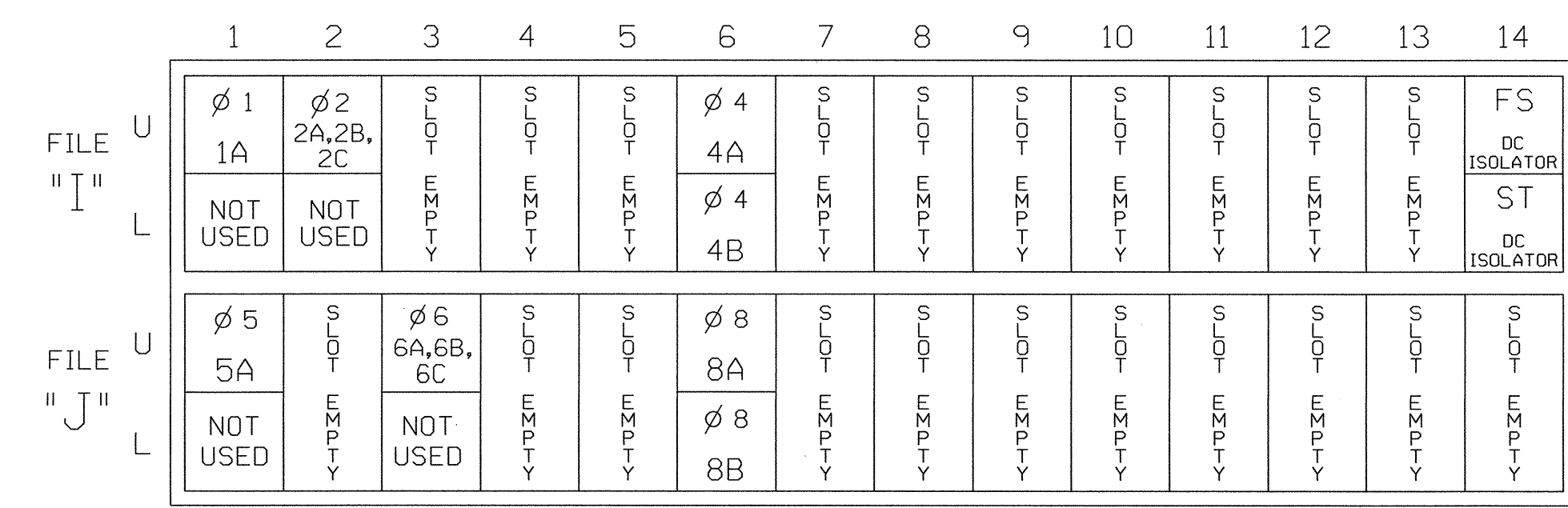
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22 23	NU	NU	41,42 43	NU	51	61,62 63	NU	NU	81,82 83	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125							131										
YELLOW ARROW	126							132										
GREEN ARROW	127							133										

NU = NOT USED

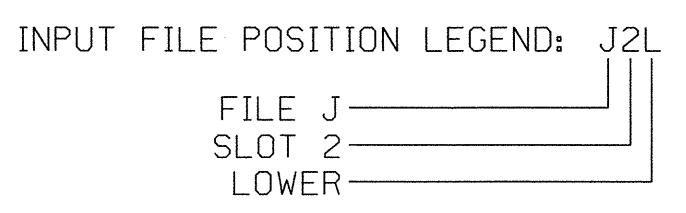
INPUT FILE POSITION LAYOUT

(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
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A,2B,2C	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A,6B,6C	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0289T2
 PREPARED: Mar 2013
 SEALED: 8-22-2013
 REVISED:

Signal Revision - Temporary 2 - TCP Phase 2

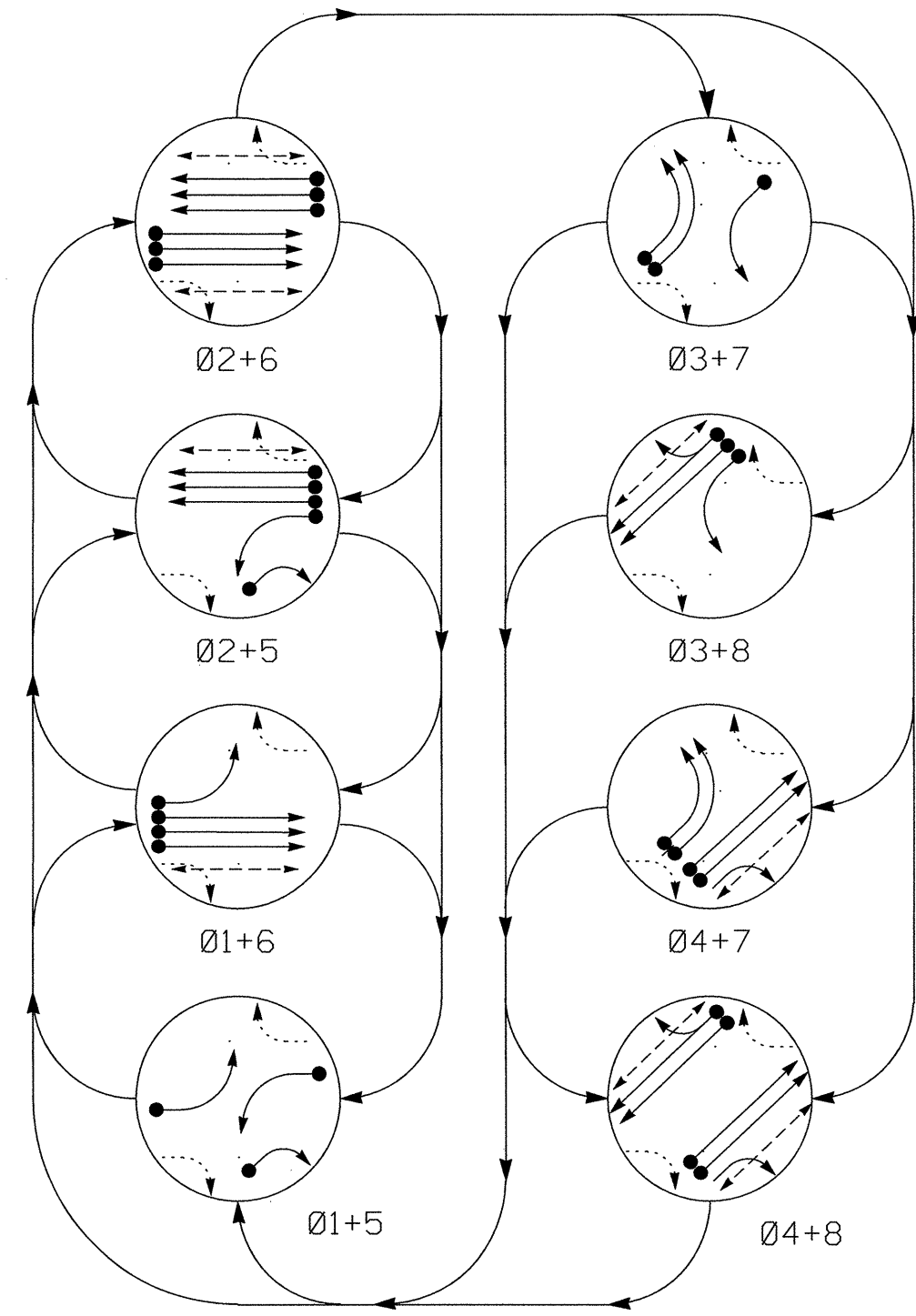
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 Transportation Land Development Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705

Electrical and Programming Details For:
SR 1007 (Owen Drive) at SR 1003/SR 1169 (Camden Road)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO.: 38276.00
 SIGNATURE: [Signature] DATE: 8-22-2013
 SEAL: [Seal] ENGINEER DONALD J. DARTY
 516. INVENTORY NO. 06-0289T2

8 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. Phase 1 and/or phase 5 may be lagged.
 4. Phase 3 and/or phase 7 may be lagged.
 5. Relocate existing signs "A" as shown.
 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.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

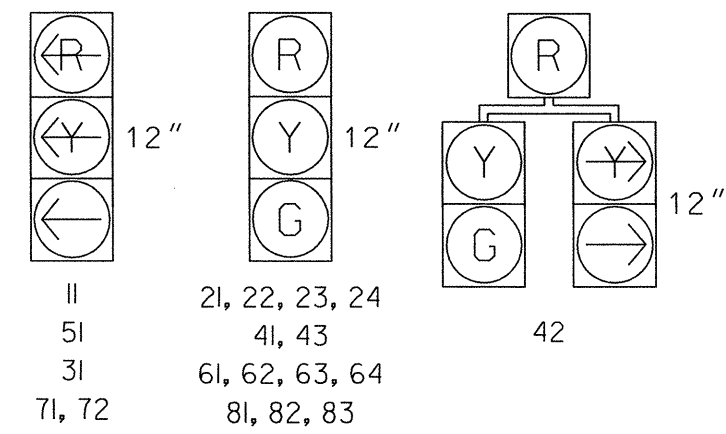
- DETECTED MOVEMENT
- ◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄ UNSIGNALIZED MOVEMENT
- ◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8
II	←	←	←	←	←	←	←	←
21, 22, 23, 24	R	R	G	G	R	R	R	Y
31	←	←	←	←	←	←	←	←
41, 43	R	R	R	R	R	R	G	R
42	←	←	R	R	R	R	G	R
51	←	←	←	←	←	←	←	←
61, 62, 63, 64	R	G	R	G	R	R	R	Y
71, 72	←	←	←	←	←	←	←	←
81, 82, 83	R	R	R	R	R	G	R	R

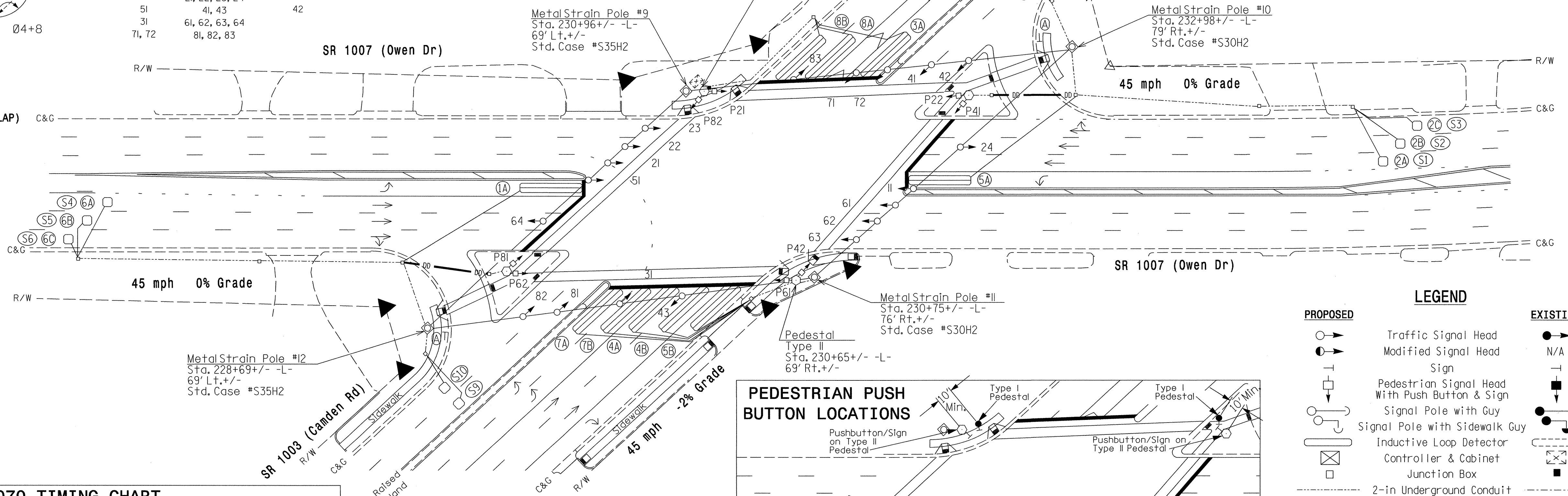
SIGNAL FACE I.D.

All Heads L.E.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	3	-	-
2A/S1	6X6	300	5	Y	2	Y	Y	-	-	-	Y	-
2B/S2	6X6	300	5	Y	2	Y	Y	-	-	-	Y	-
2C/S3	6X6	300	5	Y	2	Y	Y	-	-	-	Y	Y
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	3	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	15	-	Y
6A/S4	6X6	300	5	Y	6	Y	Y	-	-	-	Y	-
6B/S5	6X6	300	5	Y	6	Y	Y	-	-	-	Y	-
6C/S6	6X6	300	5	Y	6	Y	Y	-	-	-	Y	Y
7A	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	Y
7B	6X40	0	2-4-2	Y	7	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-	Y
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	-
S7	6X6	+300	5	Y	-	-	-	-	-	-	Y	Y
S8	6X6	+300	5	Y	-	-	-	-	-	-	Y	Y
S9	6X6	+300	5	Y	-	-	-	-	-	-	Y	Y
S10	6X6	+300	5	Y	-	-	-	-	-	-	Y	Y



OASIS 2070 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 *	15	80	15	25	15	80	20	25
Yellow Clearance	3.2	4.5	3.0	4.7	3.2	4.5	3.0	4.4
Red Clearance	4.2	2.7	2.8	2.9	4.3	2.9	3.1	2.9
Red Revert	-	-	-	-	-	-	-	-
Walk 1 *	-	7	-	7	-	7	-	7
Don't Walk 1	-	35	-	29	-	39	-	33
Seconds Per Actuation *	-	1.0	-	-	-	1.0	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

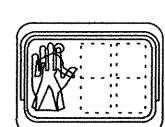
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

TABLE OF OPERATION

PEDESTRIAN FACE	PHASE							
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8
P21, P22	DW	DW	W	W	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DW	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	DW	W	DW	DRK

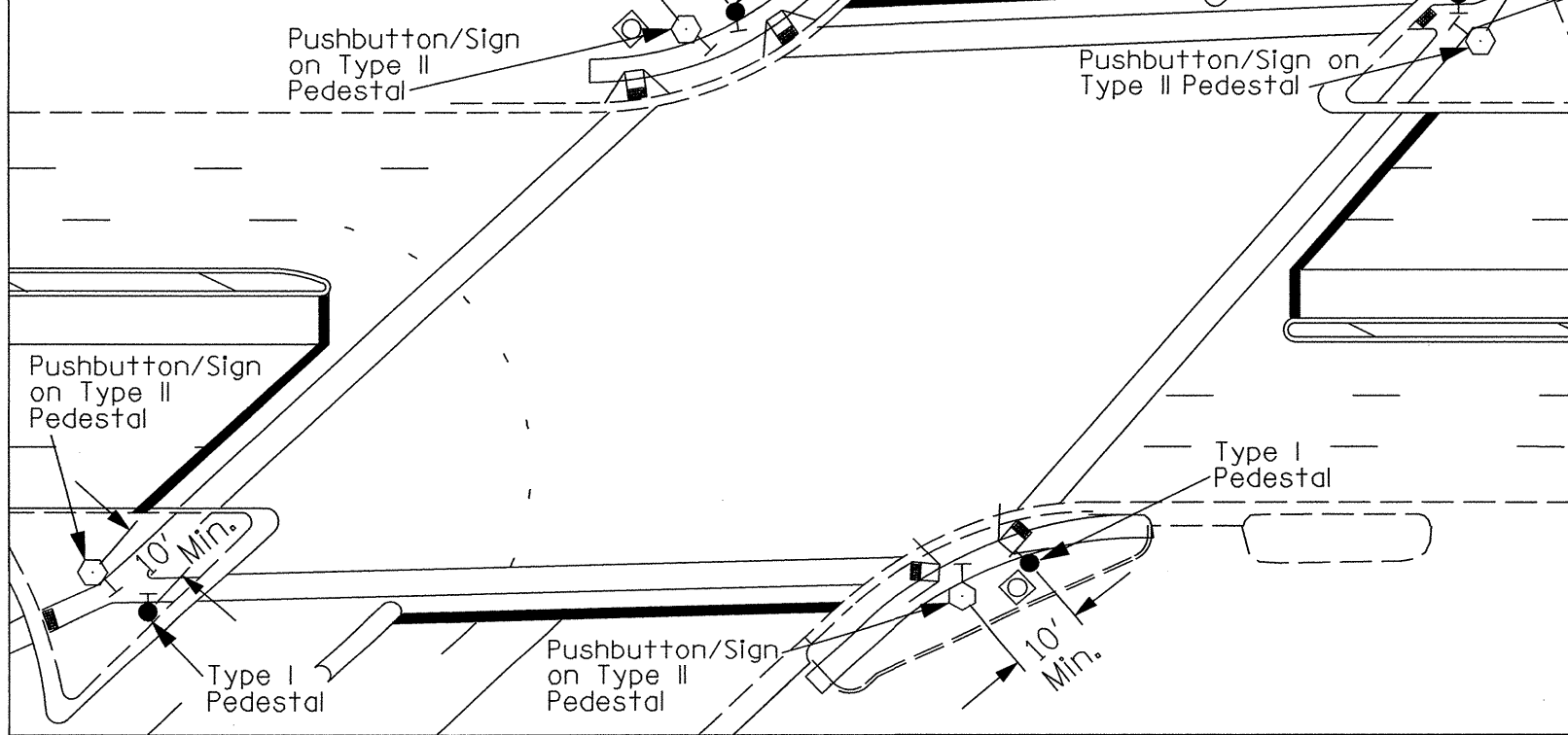
PEDESTRIAN FACE I.D.

All Heads L.E.D.



P21, P22
P41, P42
P61, P62
P81, P82

PEDESTRIAN PUSH BUTTON LOCATIONS



- LEGEND**
- | PROPOSED | EXISTING |
|--|----------|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ○ → Pedestrian Signal Head With Push Button & Sign | ○ → N/A |
| ○ → Signal Pole with Guy | ○ → N/A |
| ○ → Inductive Loop Detector | ○ → N/A |
| ○ → Controller & Cabinet | ○ → N/A |
| ○ → Junction Box | ○ → N/A |
| ○ → 2-in Underground Conduit | ○ → N/A |
| ○ → Directional Drill | ○ → N/A |
| ○ → Right of Way | ○ → N/A |
| ○ → Directional Arrow | ○ → N/A |
| ○ → Metal Strain Pole | ○ → N/A |
| ○ → Type I Pedestal With Pushbutton and Sign | ○ → N/A |
| ○ → Type II Pedestal | ○ → N/A |
| ○ → Crosswalk Ramp | ○ → N/A |
| ○ → "YIELD" Sign R1-2 | ○ → N/A |

Signal Revision - Final Signal

VHB Engineering NC, P.C.
 Transportation Land Development Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705

Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE 1" = 40'

SR 1007 (Owen Drive) at SR 1003/1169 (Camden Road)
 Division 6 Cumberland County Fayetteville
 PLAN DATE: Mar 2013 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity VHB PROJECT NO.: 38276.00
 REVISIONS INIT. DATE

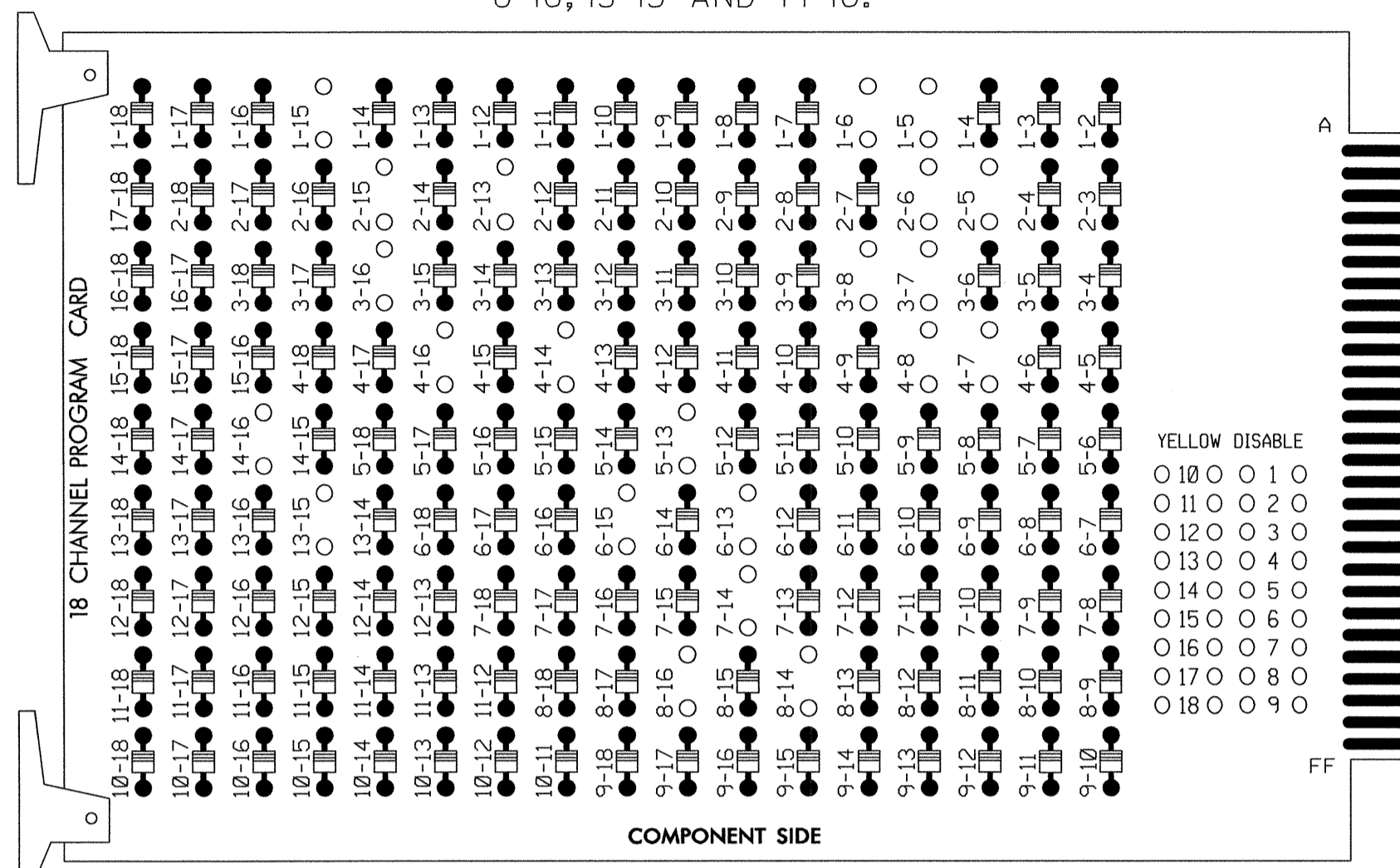
SEAL

 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0289

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

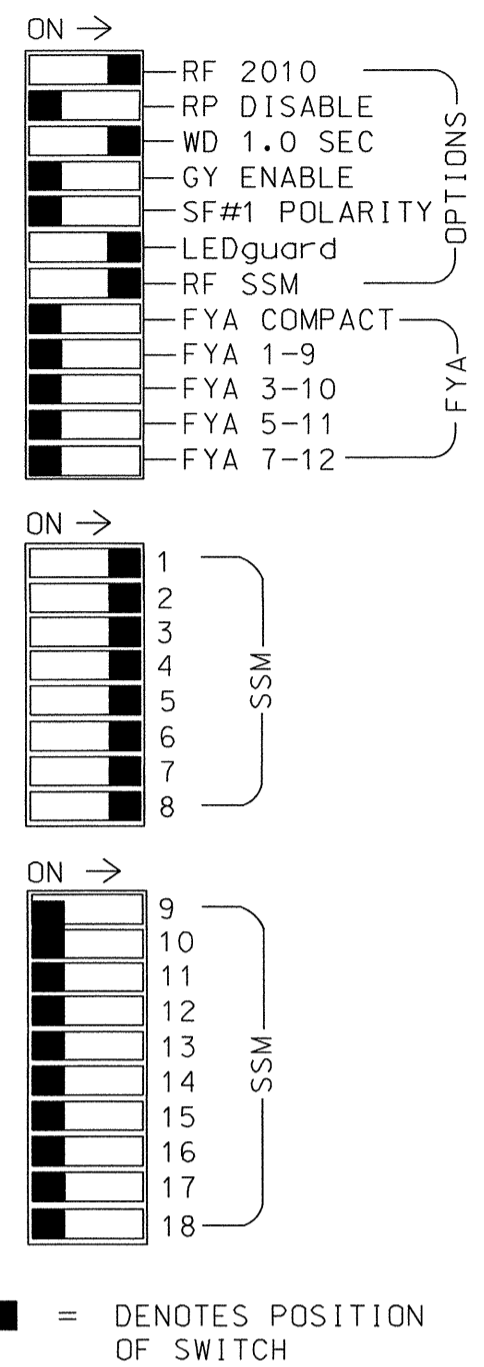
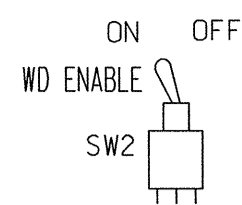
REMOVE DIODE JUMPERS 1-5, 1-6, 1-15, 2-5, 2-6, 2-13, 2-15, 3-7, 3-8, 3-16, 4-7, 4-8, 4-14, 4-16, 5-13, 6-13, 6-15, 7-14, 8-14, 8-16, 13-15 AND 14-16.



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. Enable Simultaneous Gap-Out for all phases.
3. Program phases 2 and 6 for Variable Initial and Gap Reduction.
4. Program phases 2 and 6 for Start Up In Green.
5. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 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,S7,S8,S9,
 S10,S11,S12
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,
 7,8,8PED
 OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22, 23,24	P21, P22	31	41,42, 43	P41, P42	51	42	61,62, 63,64	P61, P62	71,72	81,82, 83	P81, P82	NU	NU	NU	NU	NU
RED		128			101				134			107						
YELLOW		129			102				135			108						
GREEN		130			103				136			109						
RED ARROW	125			116			131				122							
YELLOW ARROW	126			117			132	132			123							
GREEN ARROW	127			118			133	133			124							
Hand icon				113			104				119							110
Walking person icon				115			106				121							112

NU = NOT USED

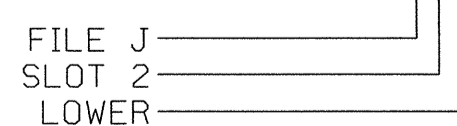
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			3
2A/S1	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S2	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
2C/S3	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
6A/S4	TB3-9,10	J3U	64	26	36	6/SYS	Y	Y			
6B/S5	TB3-11,12	J3L	77	39	46	6/SYS	Y	Y			
6C/S6	TB5-1,2	J4U	48	10	26	6/SYS	Y	Y			
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			
7B	TB5-7,8	J5L	57	19	7	7	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
* S7	TB6-9,10	I9U	60	22	11	SYS					
* S8	TB6-11,12	I9L	62	24	13	SYS					
* S9	TB7-9,10	J9U	59	21	15	SYS					
* S10	TB7-11,12	J9L	61	23	17	SYS					
PED PUSH BUTTON											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

Note: Install DC Isolators in input file slots I12 and I13.

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

INPUT FILE POSITION LEGEND: J2L



INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
∅ 1	∅2/SYS	∅2/SYS	∅3	∅4	∅5	∅6	∅7	∅8	SYS. DET. S7	SYS. DET. S8	∅2PED	∅6PED	FS	
NOT USED	∅2/SYS	NOT USED	NOT USED	∅4	∅7	∅8	SYS. DET. S9	SYS. DET. S10	∅4PED	∅8PED	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR	ST
FILE "J"	∅5	∅5	∅6/SYS	∅6/SYS	∅7	∅8	SYS. DET. S9	SYS. DET. S10	∅6/SYS	∅7	∅8	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
NOT USED	NOT USED	∅6/SYS	NOT USED	∅7	∅8	∅8	SYS. DET. S10		∅6/SYS	∅7	∅8	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR

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

FS = FLASH SENSE
 ST = STOP TIME

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

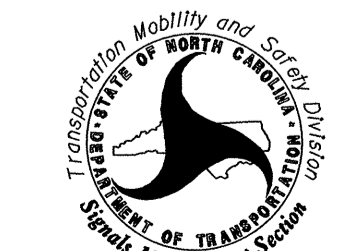
Countdown Ped Signals are required to display timing only during Ped Clearance interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0289
 PREPARED: Mar 2013
 SEALED: 8-22-2013
 REVISED:

Signal Revision - Final Signal

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared For the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1007 (Owen Drive) at SR 1003/SR 1169 (Camden Road)

Division 6	Cumberland County	Fayetteville
PLAN DATE: Mar 2013	REVIEWED BY: D.J. Darity	
PREPARED BY: D.J. Darity	VHB PROJECT NO.: 38276.00	
REVISIONS	INIT.	DATE



SIGNATURE: DATE: S16. INVENTORY NO. 06-0289

VHB Engineering NC, PC.
 Transportation Land Development Environmental Services
 4000 WestChase Blvd, Suite 530
 Raleigh, North Carolina 27607
 919.829.0328 • FAX 919.829.0329
 NC Lic No. C-3705

- 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 STUBOUTS
- 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

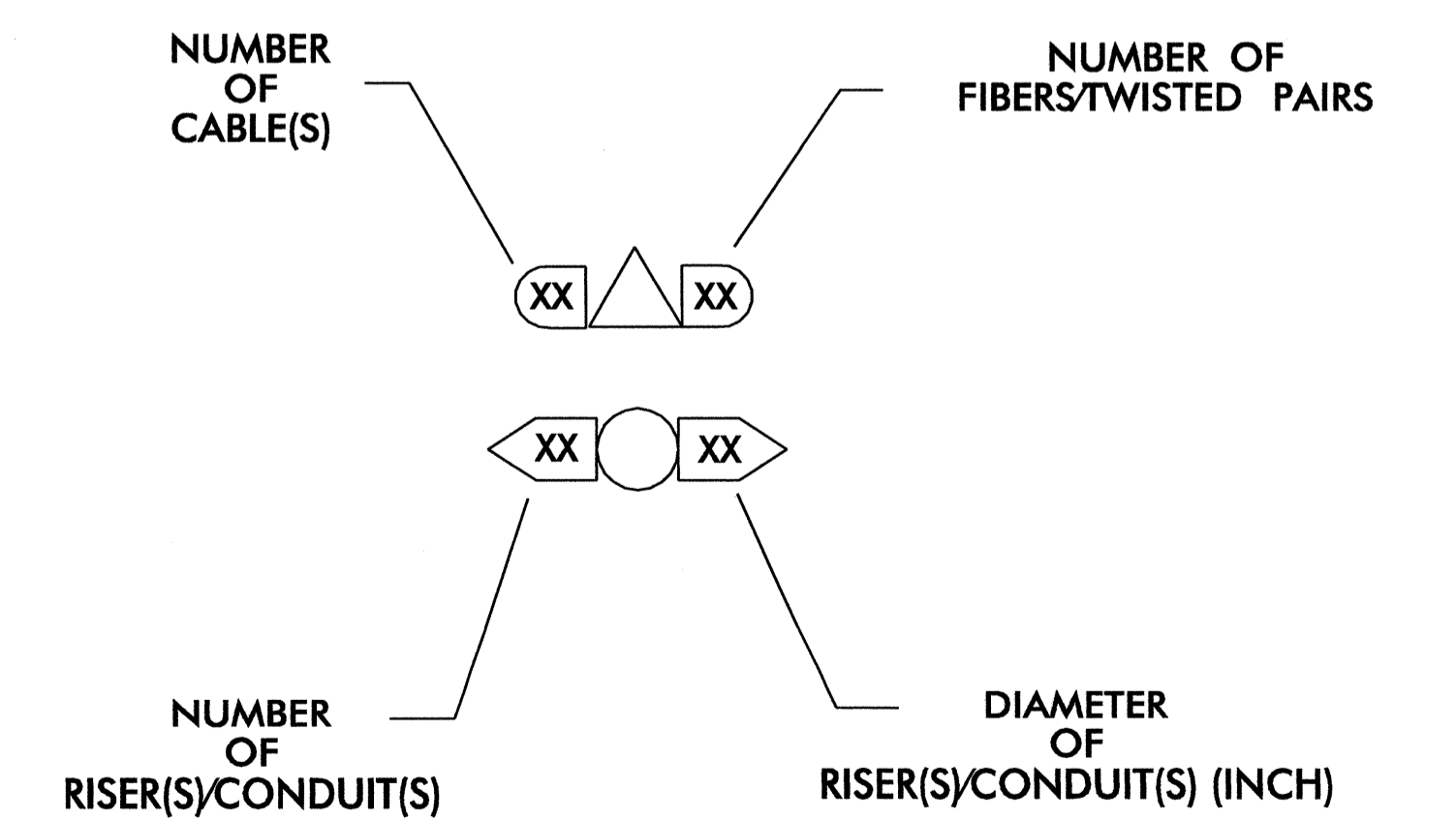
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 REMOVE EXISTING WOOD POLE
- 44 INSTALL AERIAL GUY ASSEMBLY
- 45 INSTALL STANDARD GUY ASSEMBLY
- 46 INSTALL SIDEWALK GUY ASSEMBLY
- 47 INSTALL MESSENGER CABLE
- 48 REMOVE EXISTING COMMUNICATIONS CABLE AND MESSENGER CABLE
- 49 REMOVE EXISTING COMMUNICATIONS 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

	NEW FIBER OPTIC COMMUNICATIONS CABLE
	NEW TWISTED PAIR COMMUNICATIONS CABLE
	EXISTING COMMUNICATIONS CABLE
	EXISTING COMMUNICATIONS CABLE TO BE REMOVED
	NEW AERIAL GUY ASSEMBLY
	NEW CONDUIT
	EXISTING CONDUIT
	NEW DIRECTIONAL DRILLED CONDUIT
	NEW BORED AND JACKED CONDUIT
	NEW JUNCTION BOX
	EXISTING JUNCTION BOX
	NEW WOOD POLE
	EXISTING WOOD POLE
	NEW AERIAL SPlice ENCLOSURE
	NEW METAL POLE
	EXISTING METAL POLE
	NEW CCTV CAMERA ASSEMBLY
	NEW STANDARD GUY ASSEMBLY
	NEW STANDARD GUY USING EXISTING ANCHOR
	NEW SIDEWALK GUY ASSEMBLY
	NEW CABLE STORAGE RACKS (SNOW SHOES)
	NEW AERIAL SPlice ENCLOSURE W/CABLE STORAGE RACKS
	EXISTING AERIAL SPlice ENCLOSURE W/CABLE STORAGE RACKS
	EXISTING CONTROLLER AND CABINET
	EXISTING SPlice CABINET
	NEW SPlice CABINET
	SIGNAL POLE
	SIGNAL INVENTORY NUMBER

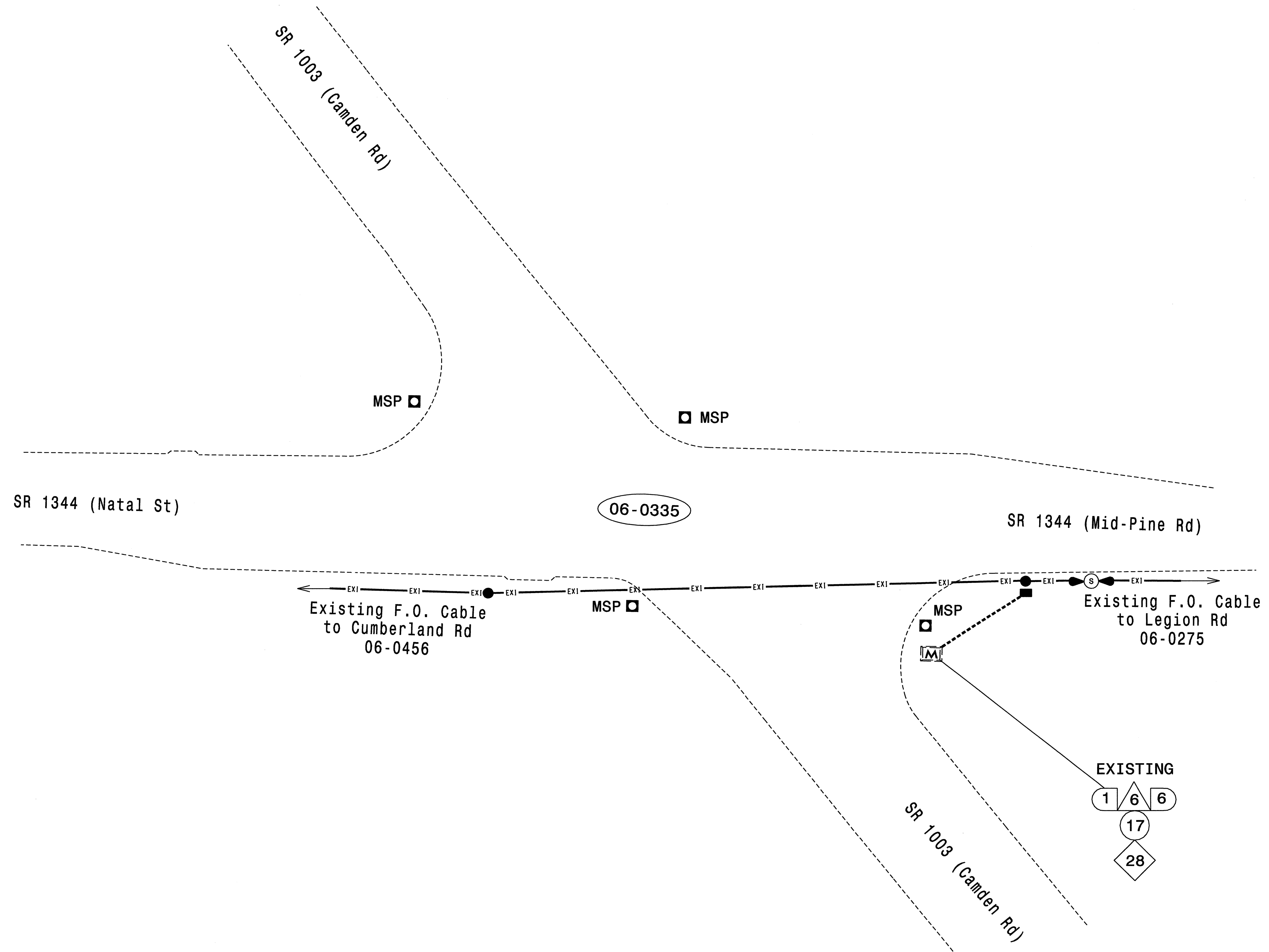
CONSTRUCTION NOTE SYMBOLOGY KEY

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



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Fax. 919.829.0329
NC License No. 0-3486

		CONSTRUCTION NOTES		SEAL 	
Prepared for the Offices of: 		Division 6 Cumberland County Fayetteville		SIGNATURE DATE 3-12-2012	
PLAN DATE: January 2012		REVIEWED BY: D.J. Darity		CADD FILE NAME	
PREPARED BY: J. Ma		MAB PROJECT NO: 2011055_01		REVISIONS	
SCALE 0 N/A		INIT. DATE		DATE	



NOTE:

1. Disconnect existing 6-fiber drop cable from the controller cabinet at 06-0335. Coil and store the existing 6-fiber drop cable at the existing controller cabinet. Once the new master controller cabinet has been installed on the existing base pad, reconnect existing 6-fiber drop cable to the new interconnect center inside the cabinet.

Black & Decker Closed Loop System



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NC License No. C-3456

Prepared For the Offices of:

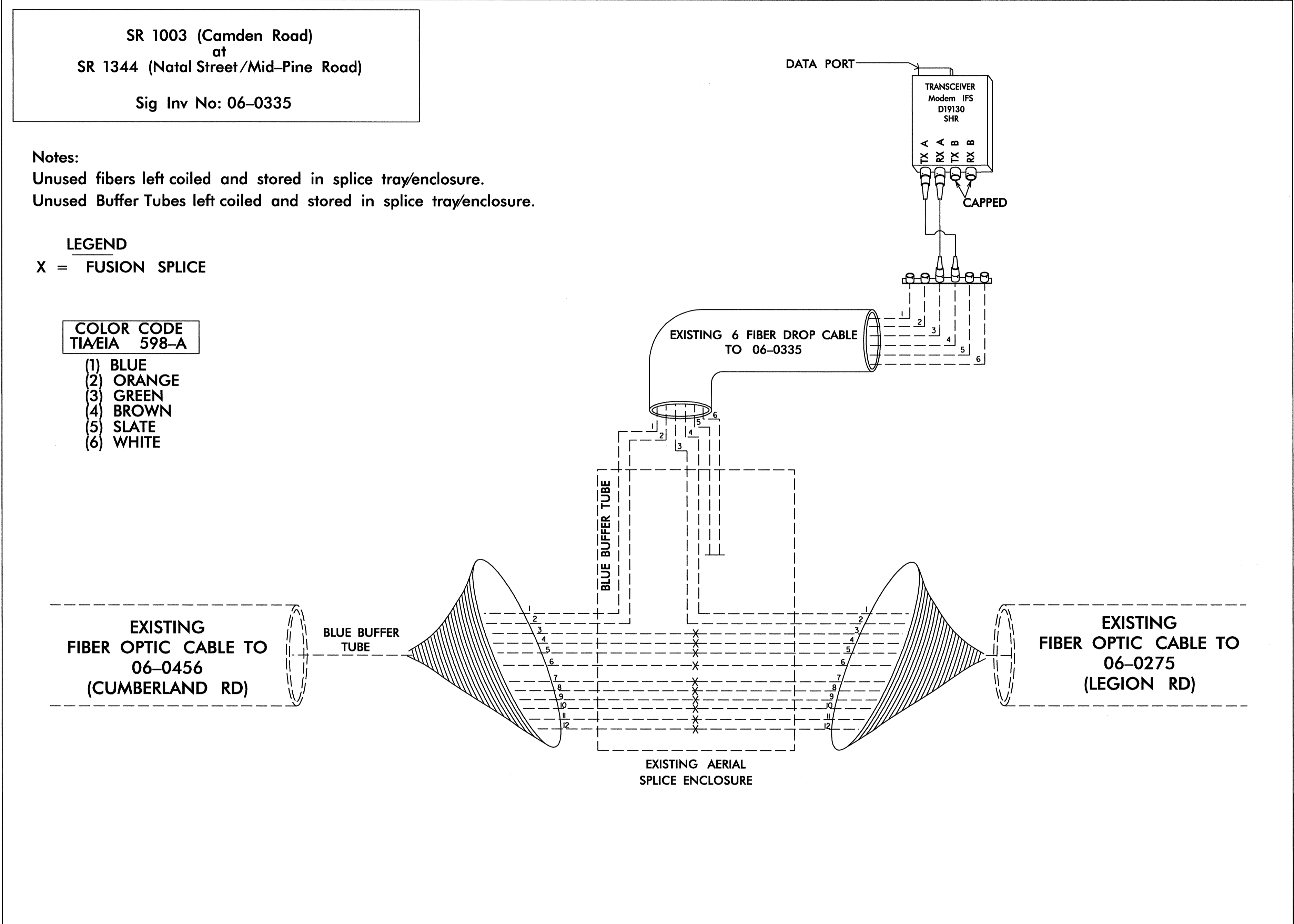
750 N. Greenfield Pkwy, Garner, NC 27529

Camden Rd & Mid-Pine/Natal St Communication Cable and Conduit Routing Plans	
Division 6	Cumberland County Fayetteville
PLAN DATE: January 2012	REVIEWED BY: D.J. Darity
PREPARED BY: J. Ma	MAB PROJECT NO.: 2011055.01
REVISIONS	INIT. DATE

SEAL

SEAL 19713
ENGINEER
DONALD J. DARITY
3-22-2012

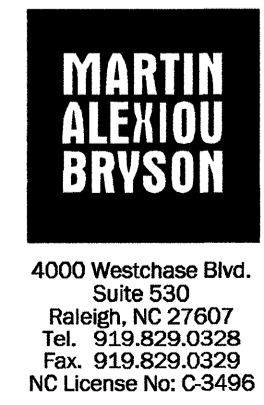
SIGNATURE DATE
SIG. INVENTORY NO. 06-0335



NOTES:

1. CONTRACTOR TO INSTALL AN IFS# D19130SHR TRANSCEIVER TYPE COMPATIBLE WITH THE EXISTING SIGNAL SYSTEM.
2. TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING/ENSURING PROPER TERMINATIONS.

Black & Decker Closed Loop System



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Tel. 919.829.0328
Fax. 919.829.0329
NC License No: C-3496

Prepared For the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE
0
N/A

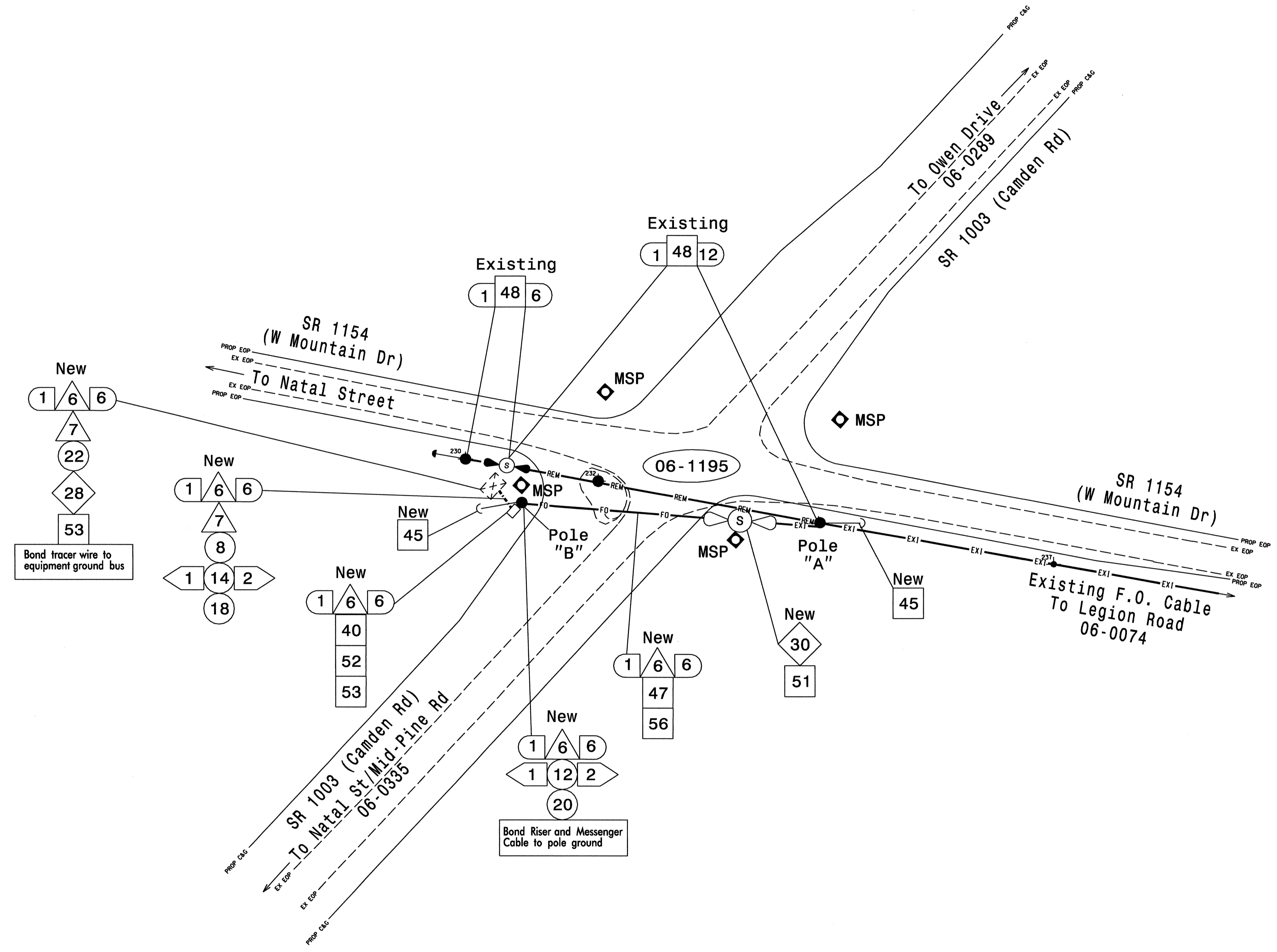
Camden Rd & Mid-Pine/Natal St Splice Details	
Division 6	Cumberland County Fayetteville
PLAN DATE: January 2012	REVIEWED BY: D.J. Darity
PREPARED BY: J. Ma	MAG PROJECT NO.: 2011055.01
REVISIONS	INIT. DATE

SEAL

3-11-2012

SIGNATURE DATE

SIG. INVENTORY NO. 06-0335

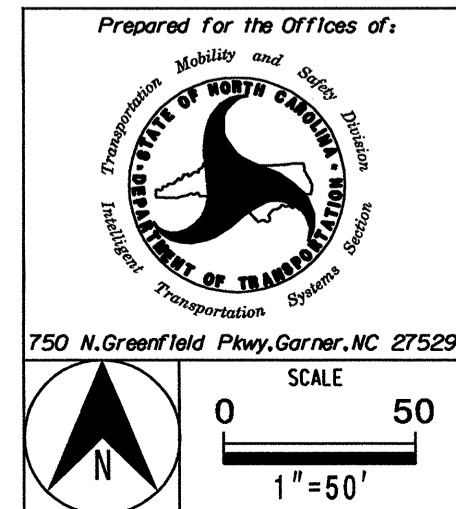


NOTES:

1. Disconnect existing 6-fiber drop cable from existing Aerial Splice Enclosure. Remove and discard both the Aerial Splice Enclosure and the 6-fiber drop cable.
2. Back pull and discard existing 12-fiber cable to existing pole "A". Leave enough spare 12-fiber cable to install new Aerial Splice Enclosure.
3. Install new 6-fiber drop cable from new Aerial Splice Enclosure to new pole "B" and new controller cabinet location.

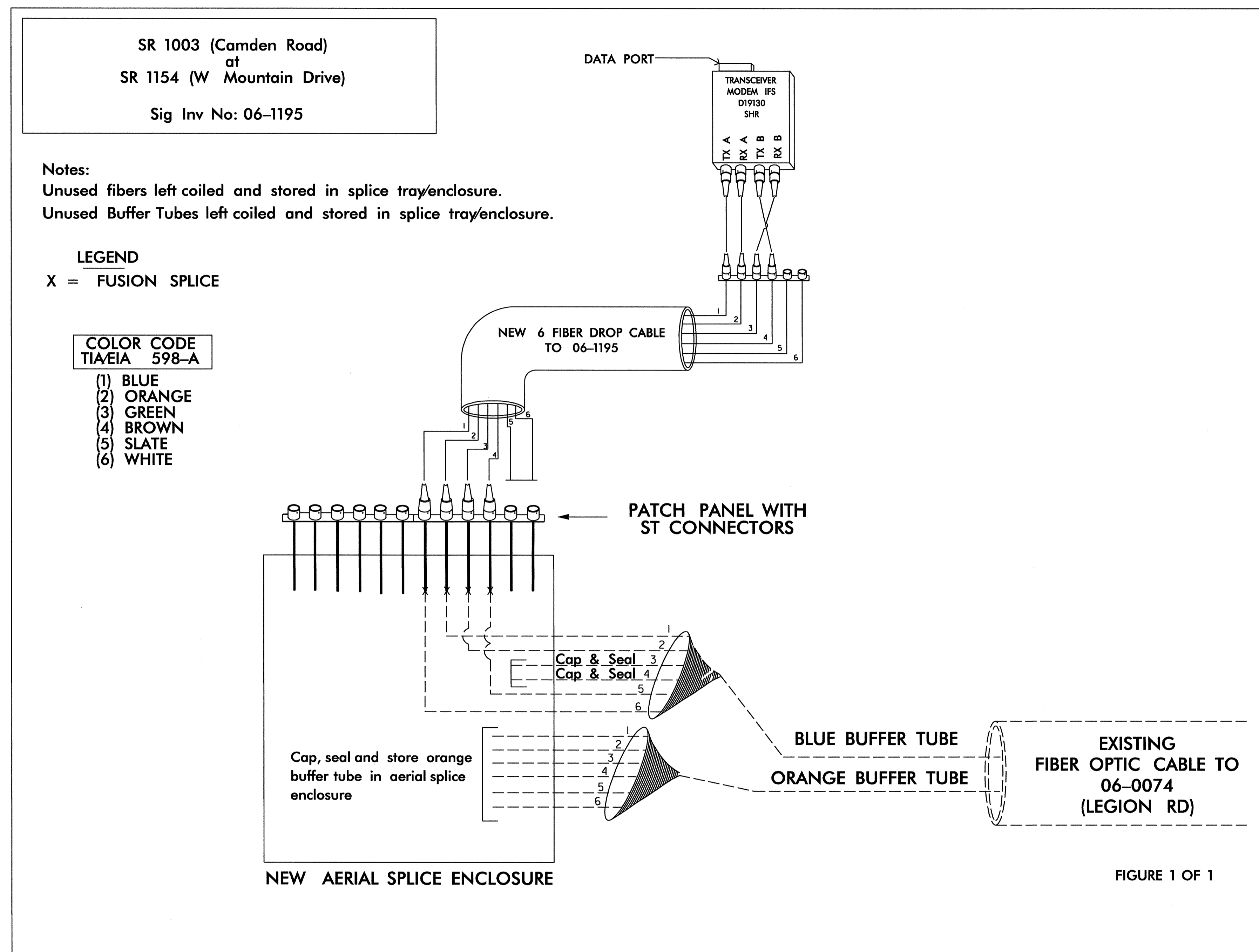
Fayetteville Signal System

MARTIN ALEXIOU BRVSON
 4000 Westchase Blvd.
 Suite 530
 Raleigh, NC 27607
 Tel. 919.829.0328
 Fax. 919.829.0329
 NC License No: C-34496



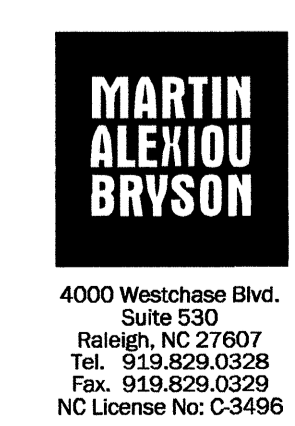
Prepared for the Offices of:		Camden Road & W Mountain Drive Communication Cable and Conduit Routing Plans	
Division 6	Cumberland County	Fayetteville	
PLAN DATE:	January 2012	REVIEWED BY:	D.J. Darby
PREPARED BY:	J. Ma	MAB PROJECT NO.:	2011055.01
REVISIONS	INIT.	DATE	

SEAL
 DONALD J. DARBY
 PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA
 LICENSE NO. 19713
 3-22-2012
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-1195



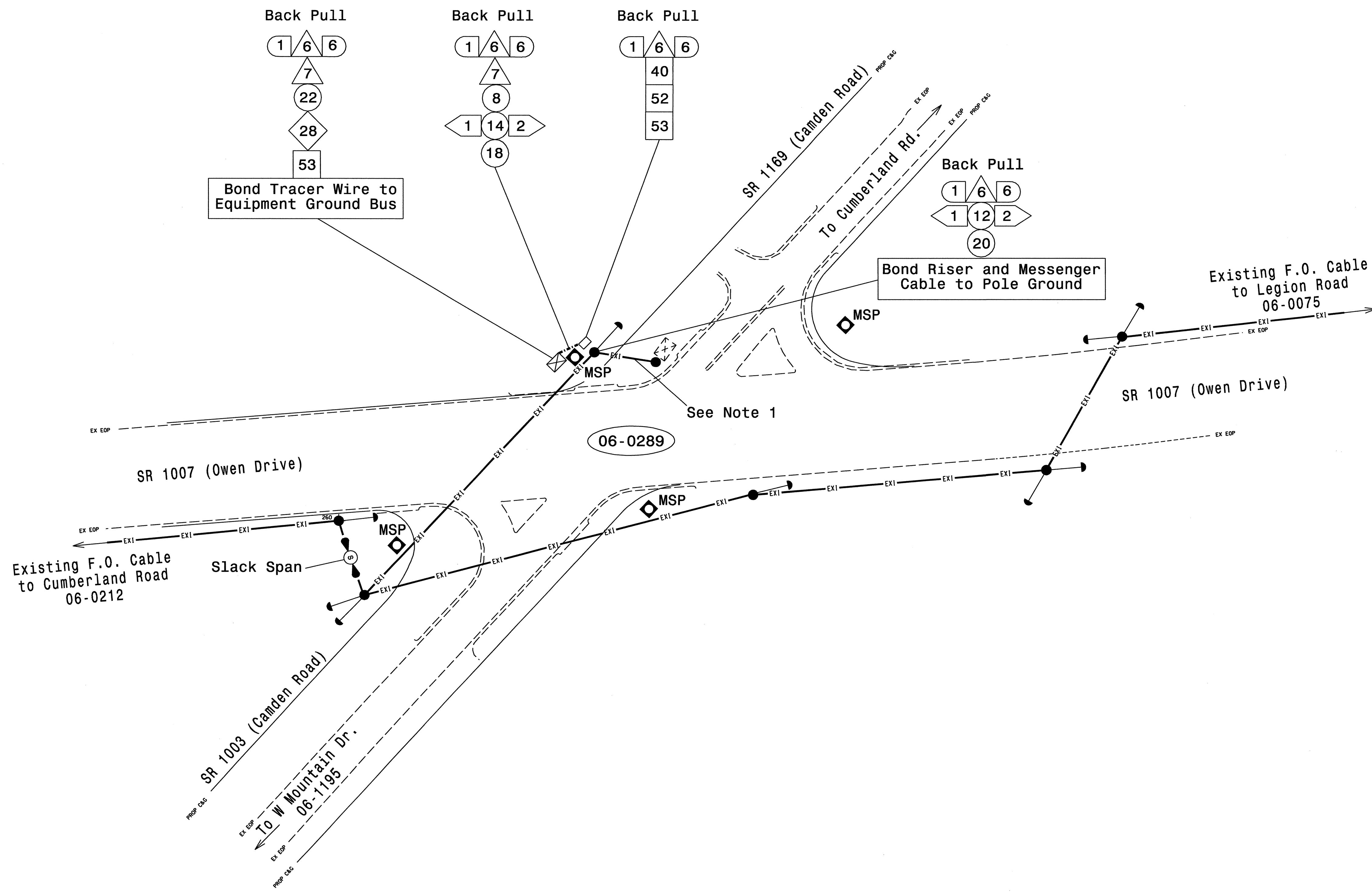
NOTES:

1. CONTRACTOR TO INSTALL AN IFS# D19130SHR TRANSCEIVER OR OTHER APPROVED EQUIVALENT TYPE COMPATIBLE WITH THE EXISTING SIGNAL SYSTEM.
2. TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING/ENSURING PROPER TERMINATIONS.



Fayetteville Signal System

 Prepared for the Offices of: Transportation, Mobility and Safety Division DEPARTMENT OF TRANSPORTATION STATE OF NORTH CAROLINA	Camden Road & W Mountain Drive Splice Details Division 6 Cumberland County Fayetteville PLAN DATE: January 2012 REVIEWED BY: D.J. Darity PREPARED BY: J. Ma MAB PROJECT NO.: 2011055.01	SEAL DONALD J. DARITY ENGINEER 3-12-2012												
4000 Westchase Blvd. Suite 530 Raleigh, NC 27607 Tel. 919.829.0328 Fax. 919.829.0329 NC License No: C-3496	750 N. Greenfield Pkwy, Corner, NC 27529 SCALE N/A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REVISIONS	INIT.	DATE									
REVISIONS	INIT.	DATE												
SIGNATURE		DATE												
SIG. INVENTORY NO. 06-1195														



NOTES:

1. The Contractor shall back pull existing 6-Fiber Drop cable from existing controller cabinet at 06-0289 and install in new riser as necessary to the new controller cabinet location.
2. The Contractor shall coil and store 20 feet of spare 6-Fiber Drop cable in the new controller cabinet location at 06-0289.

Fayetteville Signal System - Final Plan



4000 Westchase Blvd.
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Raleigh, NC 27607
Tel. 919.829.0328
Fax. 919.829.0329
NC License No: C-3496

Prepared for the Offices of:

 750 N. Greenfield Pkwy., Garner, NC 27529
 SCALE 0 50
 1"=50'

Owen Drive & Camden Road Communication Cable and Conduit Routing Plans	
Division 6 Cumberland County Fayetteville	
PLAN DATE: January 2012	REVIEWED BY: D.J. Darity
PREPARED BY: J. Ma	M&B PROJECT NO.: 2011055.01
REVISIONS	INIT. DATE

SEAL

 DONALD J. DARTY
 ENGINEER
 3-22-2012
 SIGNATURE DATE
 SIG. INVENTORY NO. 06-0289

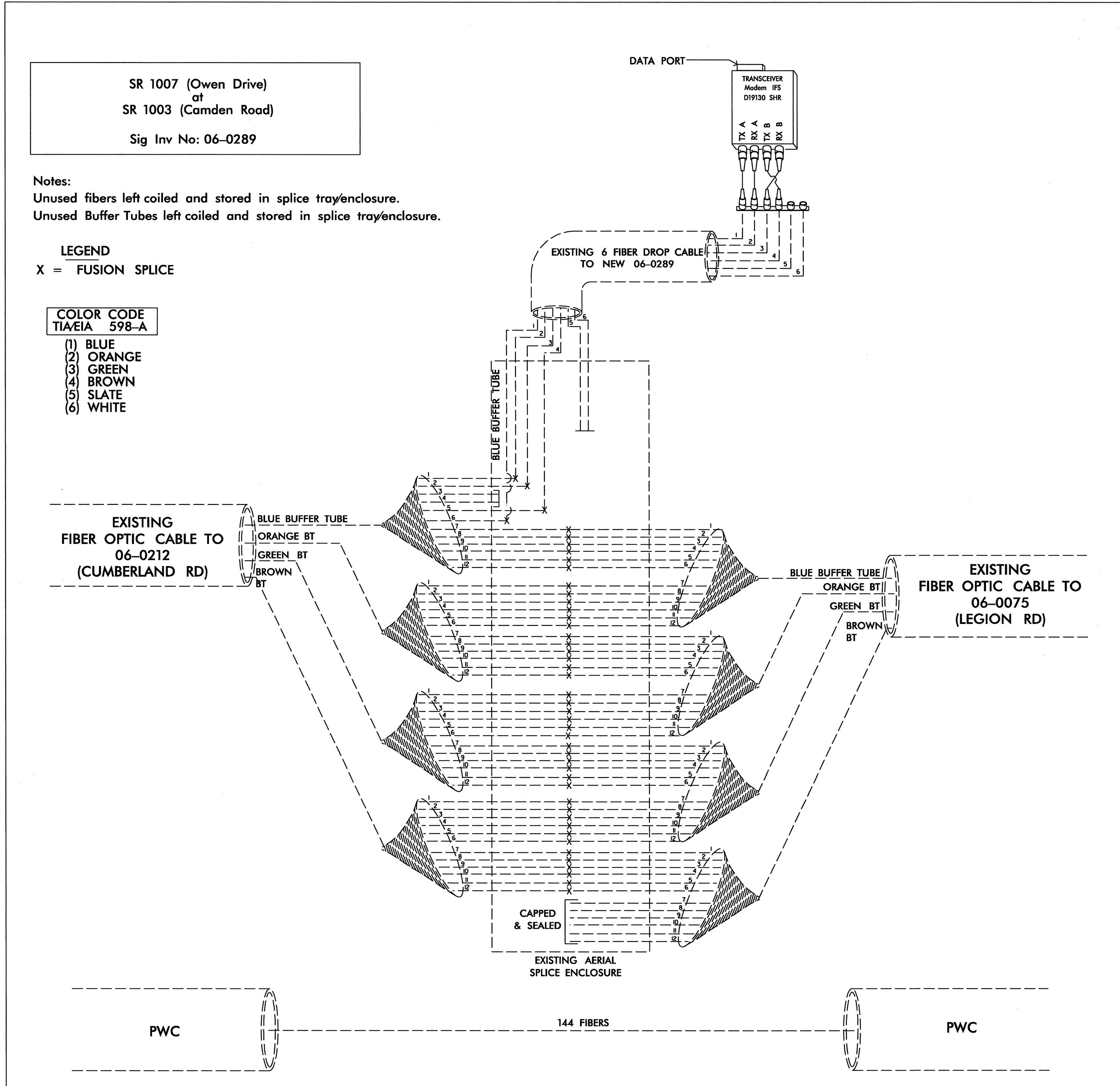
SR 1007 (Owen Drive)
at
SR 1003 (Camden Road)
Sig Inv No: 06-0289

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 SPICE

COLOR CODE
TIA/EIA 598-A

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



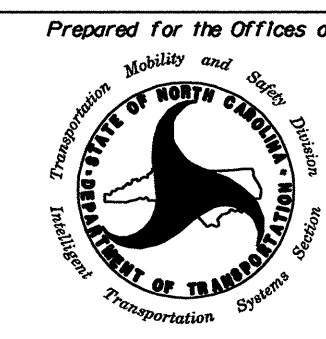
NOTES:

- CONTRACTOR TO INSTALL AN IFS# D19130SHR TRANSCEIVER OR OTHER APPROVED EQUIVALENT TYPE COMPATIBLE WITH THE EXISTING SIGNAL SYSTEM.
- TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING/ENSURING PROPER TERMINATIONS.

Fayetteville Signal System - Final Plan



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NC License No: C-3496



Owen Drive & Camden Road
Splice Details

Division 6 Cumberland County Fayetteville	
PLAN DATE: January 2012	REVIEWED BY: D.J. Darity
PREPARED BY: J. Ma	M&B PROJECT NO.: 2011055.01
REVISIONS	INIT. DATE
SIGNATURE	DATE

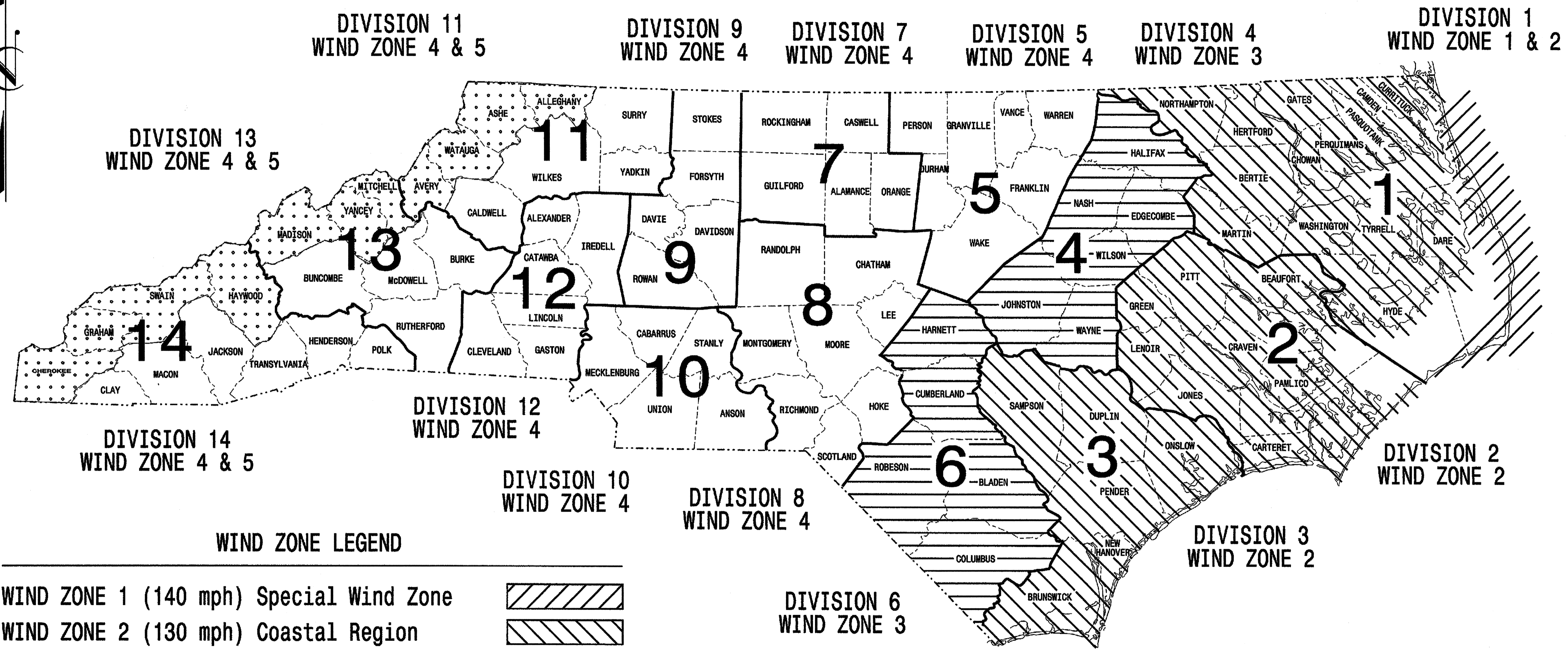
SEAL
NORTH CAROLINA
DONALD J. DARTY
ENGINEER
19713
3-22-2012
SIGNATURE DATE
SIG. INVENTORY NO. 06-0289

NCDOT METAL POLE STANDARDS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE	PROJECT NO.	SHEET NO.
N.C.	U-2810 C	Sig. 28
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

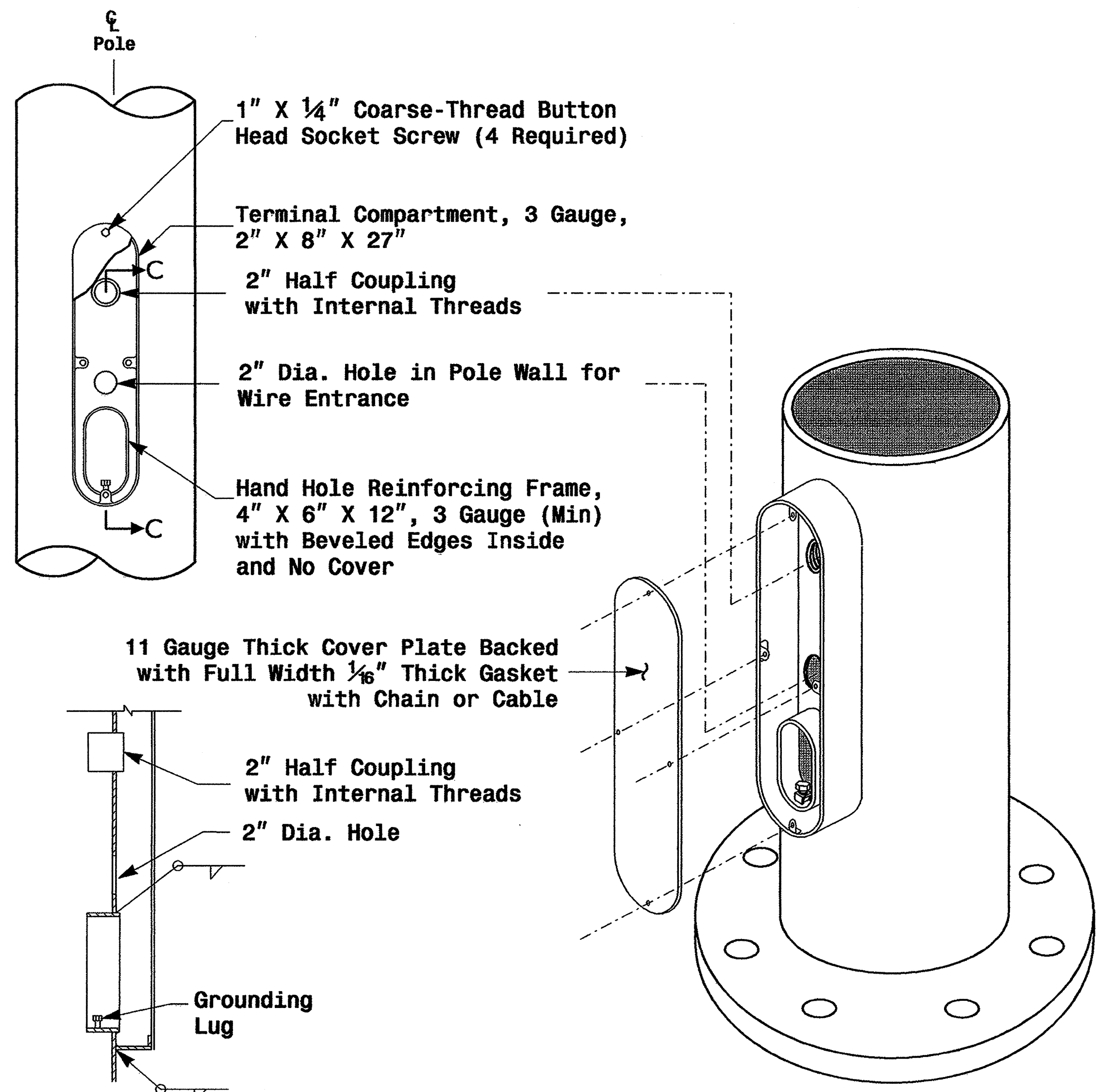
DRAWING NUMBER	DESCRIPTION
M 1	Title Sheet
M 2	Fabrication Details - All Poles
M 3	Fabrication Details - Strain Poles
M 4,5	Fabrication Details - Mast Arm Poles
M 6	Construction Details - Strain Poles
M 7	Construction Details - Foundations
M 8	Standard Strain Poles

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

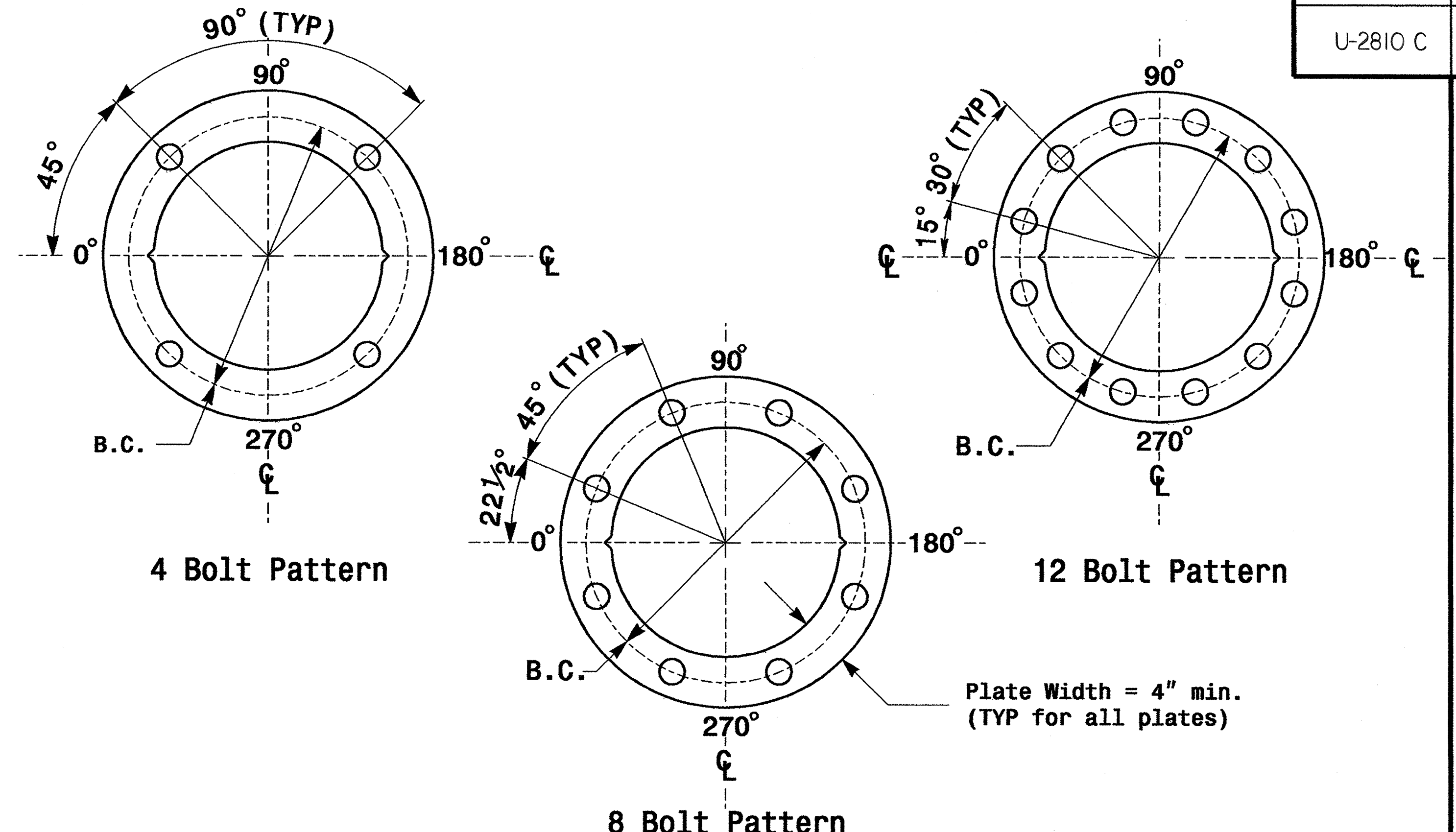
SEAL

7.21.2009
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

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

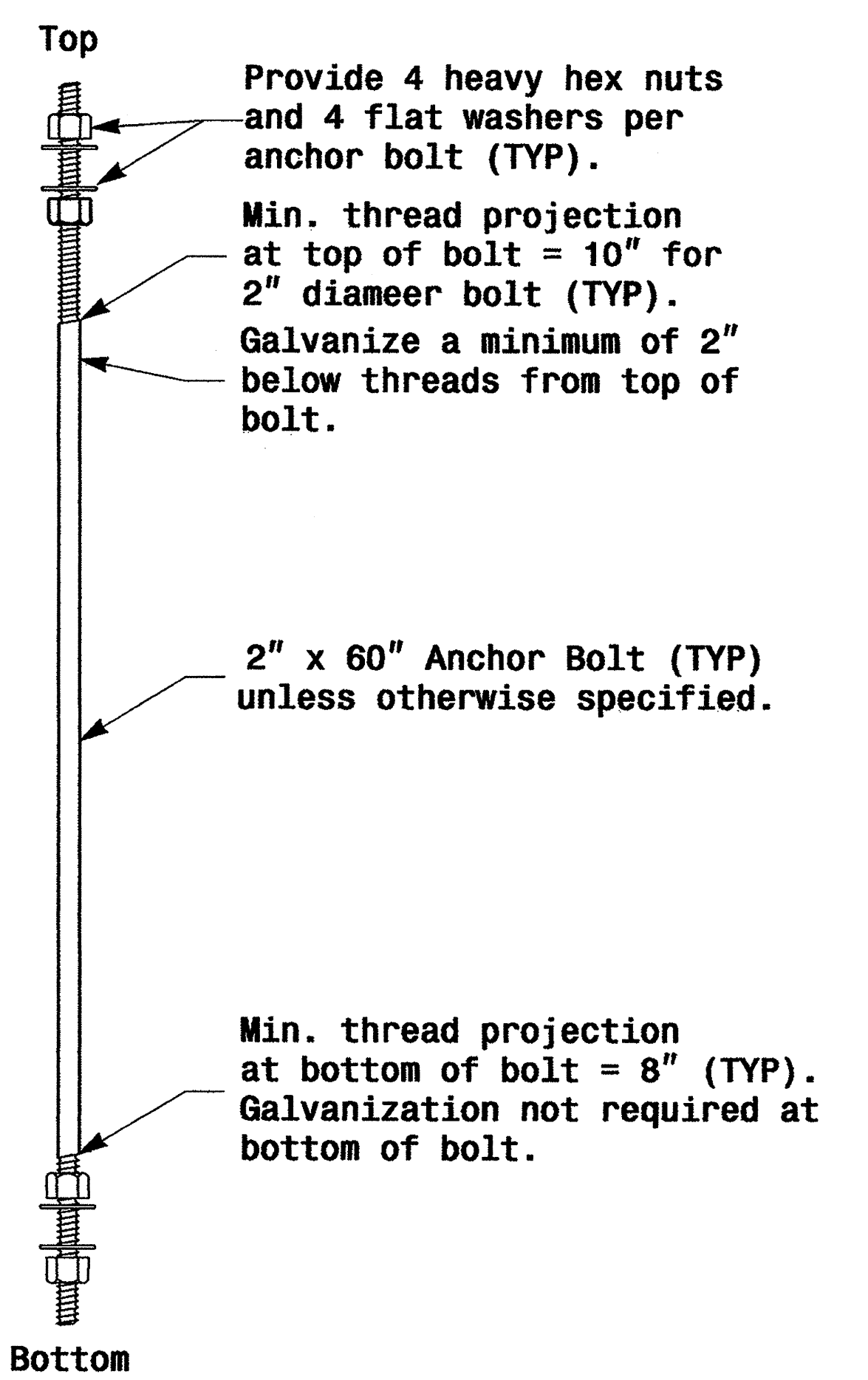
MFG	_____	MFG. DATE: MM/YY
SHAFT	D/T/L/Y	_____
ARM-A	D/T/L/Y	_____
ARM-B	D/T/L/Y	_____
A.B. DIA./B.C./L/Y	_____	_____
NCDOT STANDARD	_____	_____

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

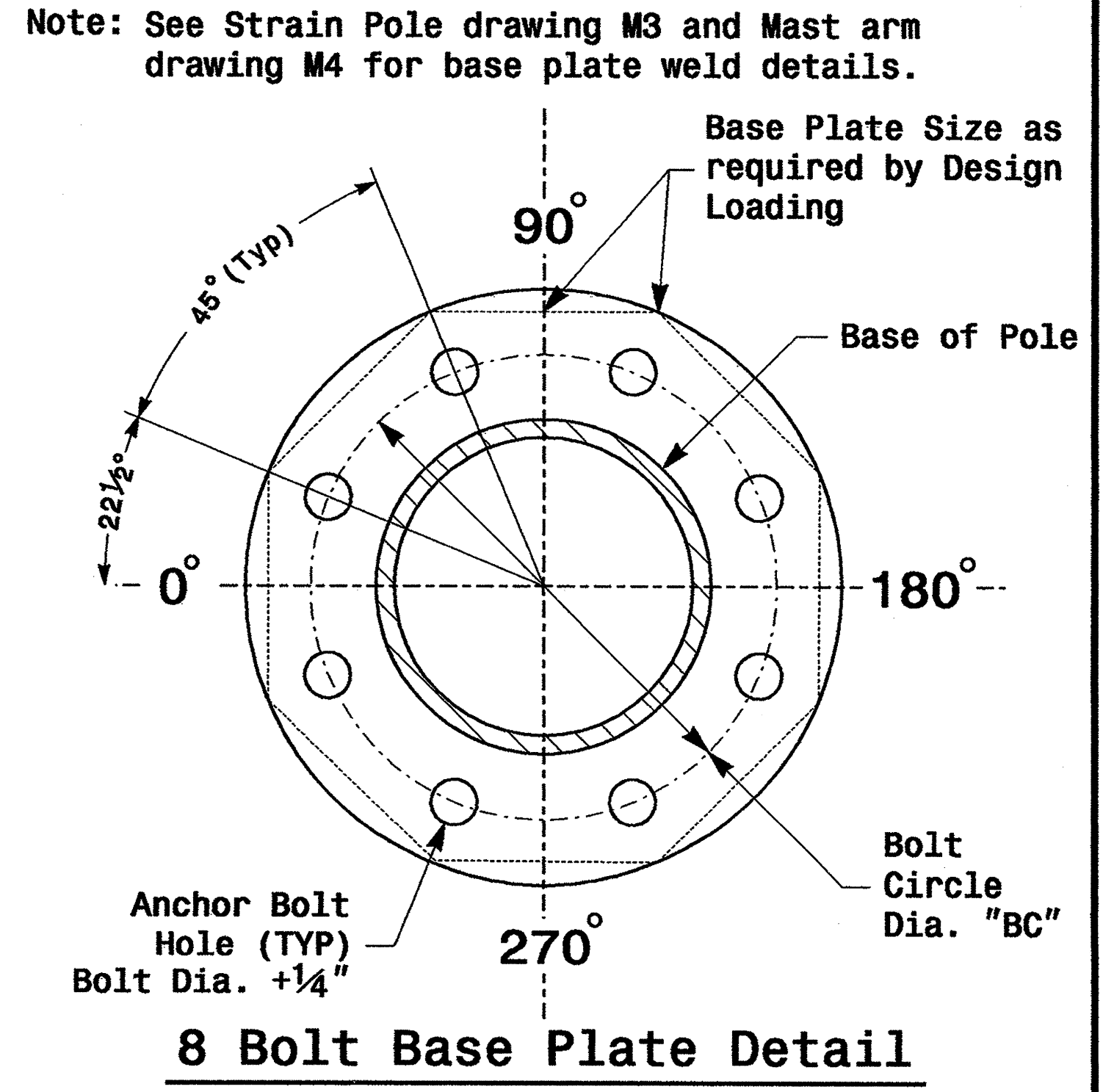
MFG	_____	MFG. DATE: MM/YY
SECTION	D/T/L/Y	_____
NCDOT STANDARD	_____	_____

- 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



Prepared in the Office of:

Typical Fabrication Details Common To All Metal Poles

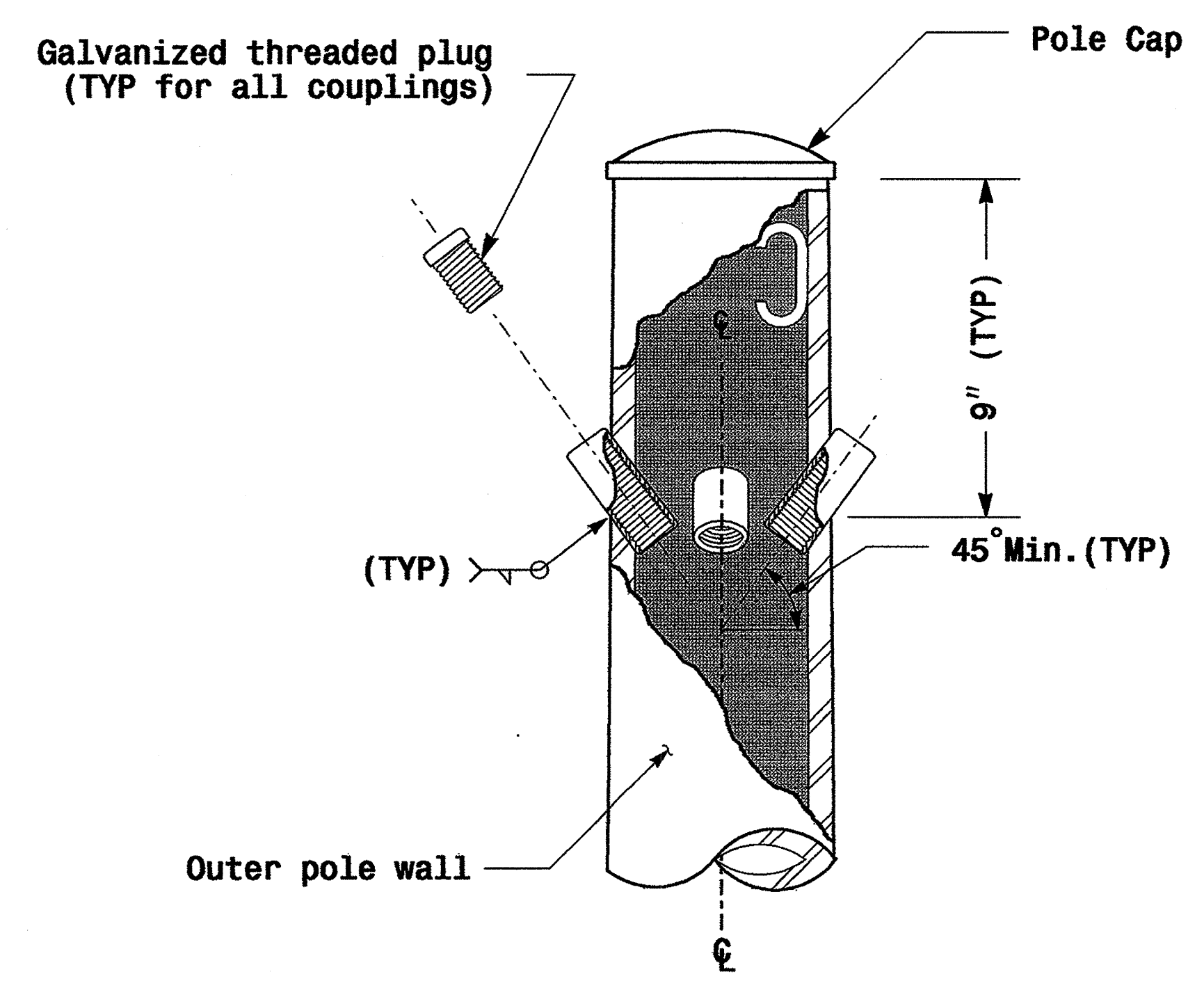
PLAN DATE: May 2005 REVIEWED BY: C.F. Andrews
PREPARED BY: P.L. Alexander REVIEWED BY: A.M. Esposito

SCALE: NONE

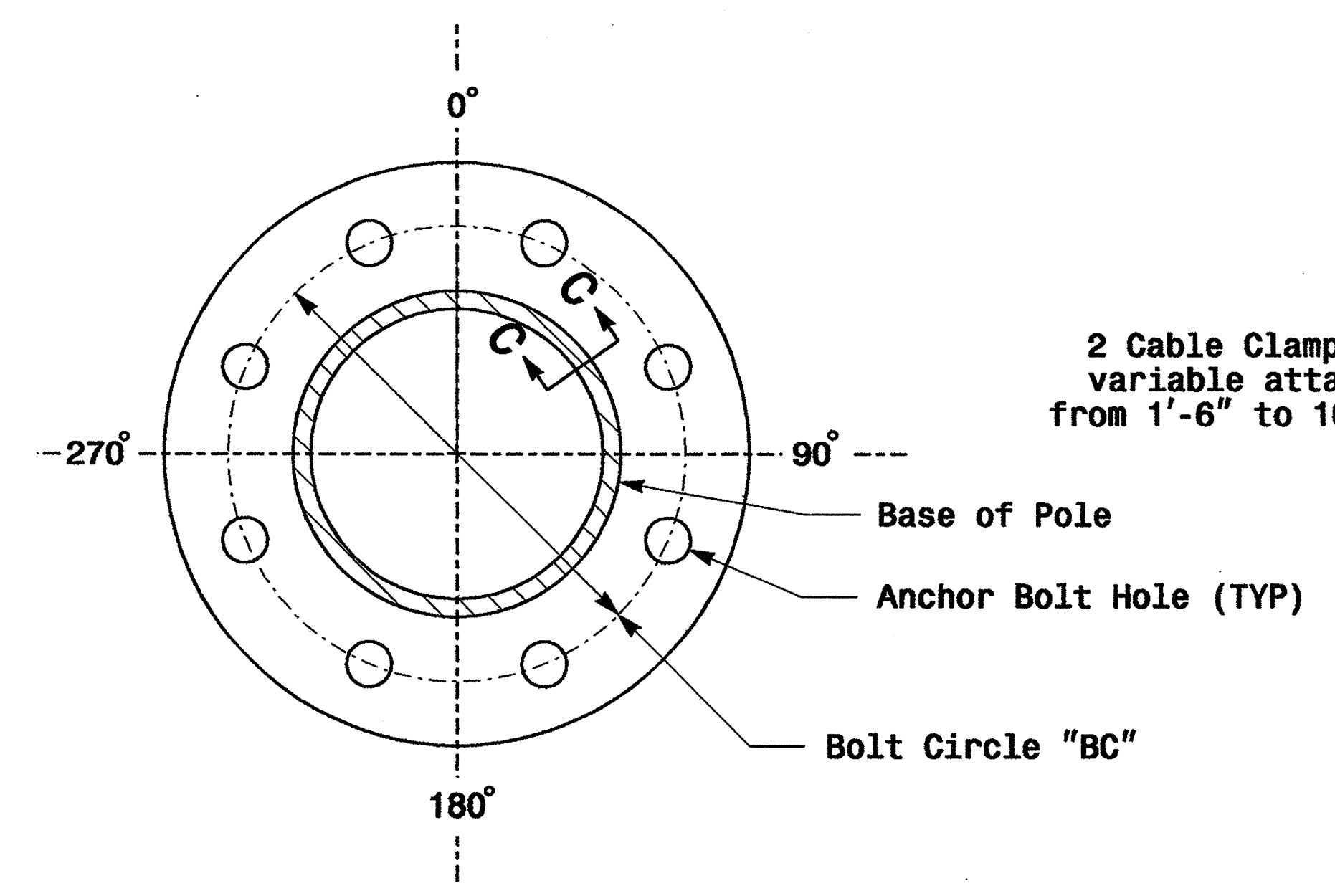
Signature: D. Sankar, 9.2.2005

Fabrication Details - All Poles

01-SEP-2005 16:22 D:\2004_Mast of Pole Standards\2004 m2 thru m5.dgn

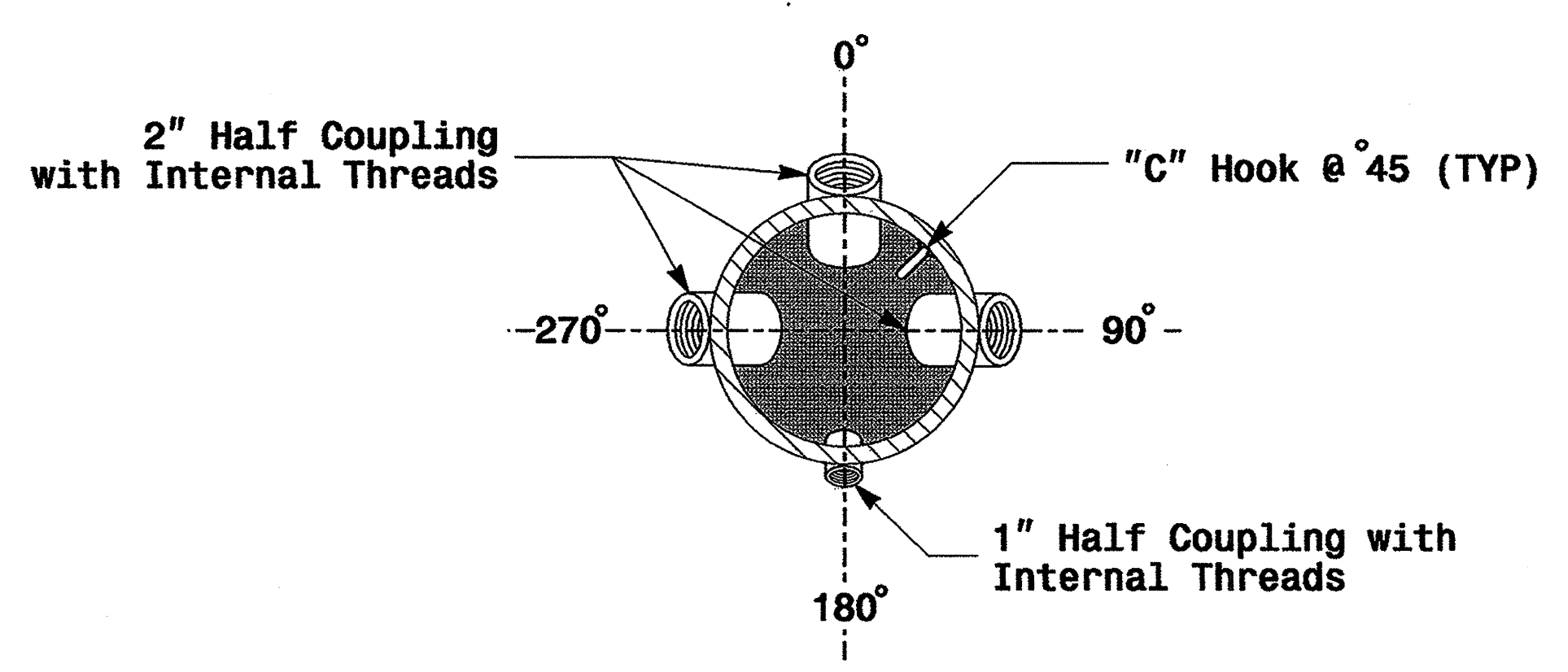
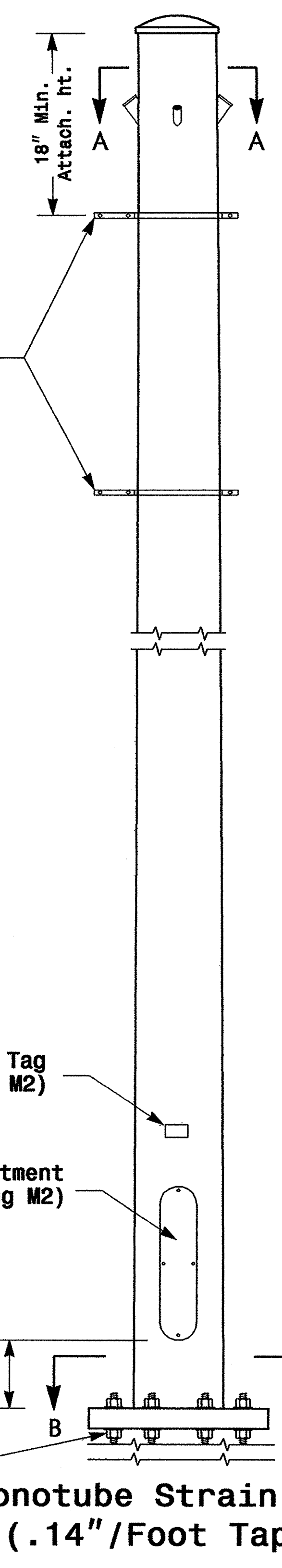


Cable Entrances at Top of Pole

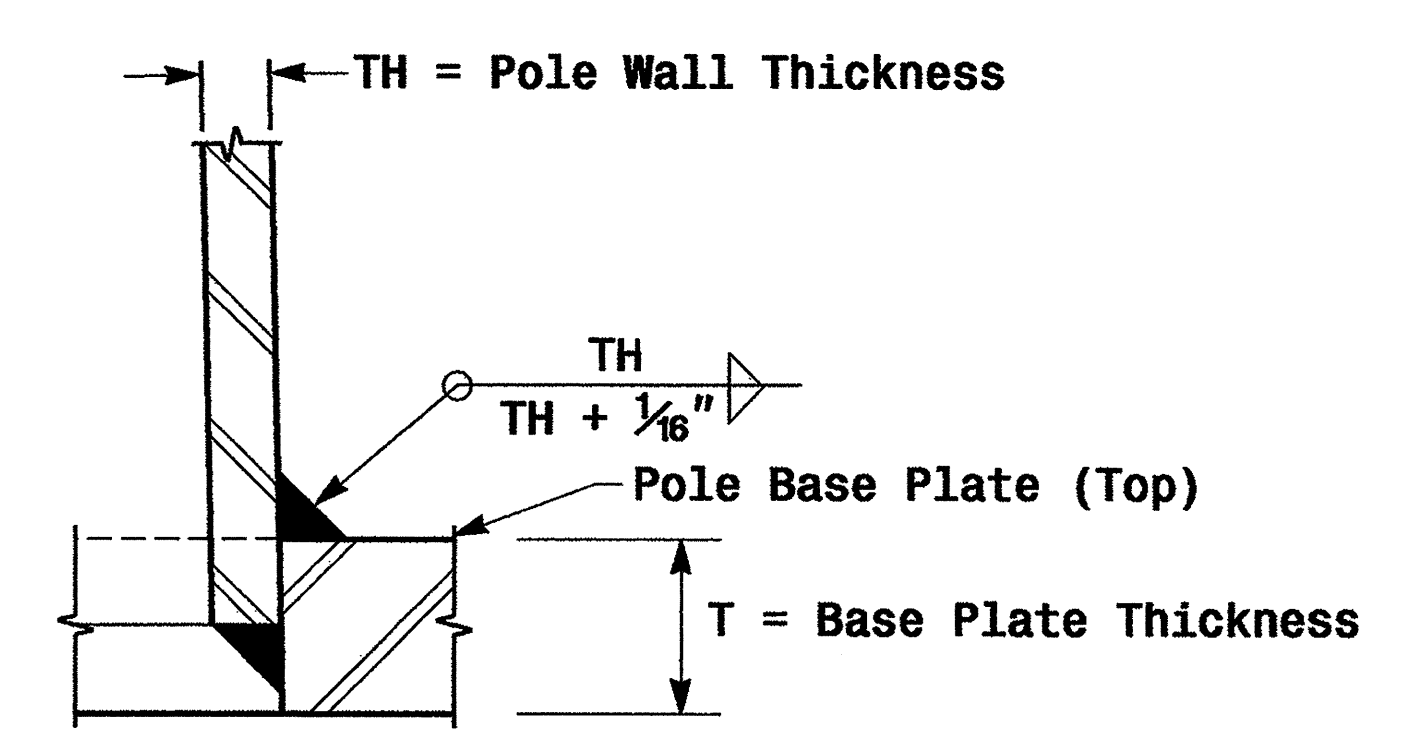


Section B-B
Pole Base Plate
(See drawing M2)

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



Radial Orientation for Factory Installed Accessories at Top of Pole



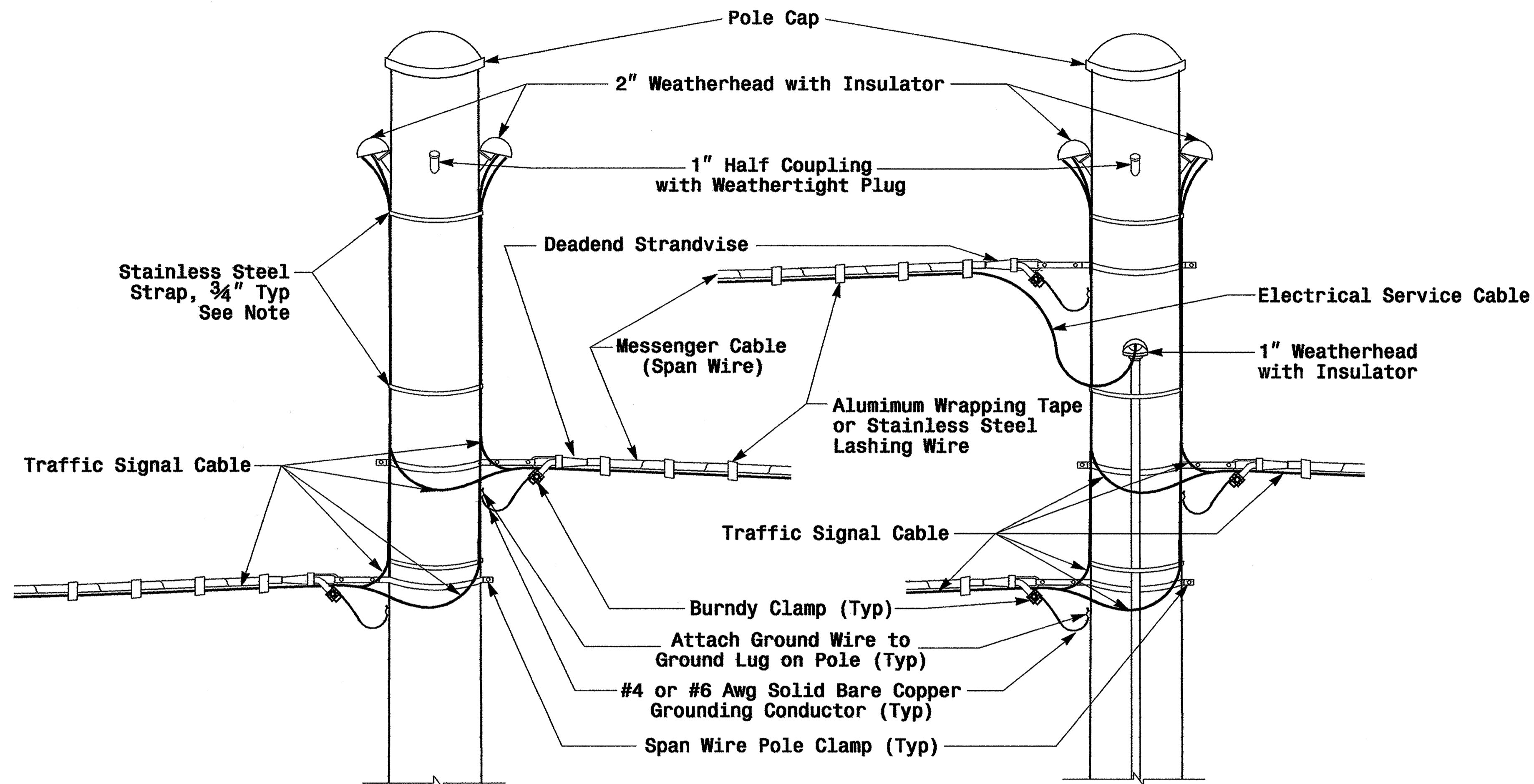
Socket Connection Weld Detail

Monotube Strain Pole
(.14\"/>

Fabrication Details - Strain Poles

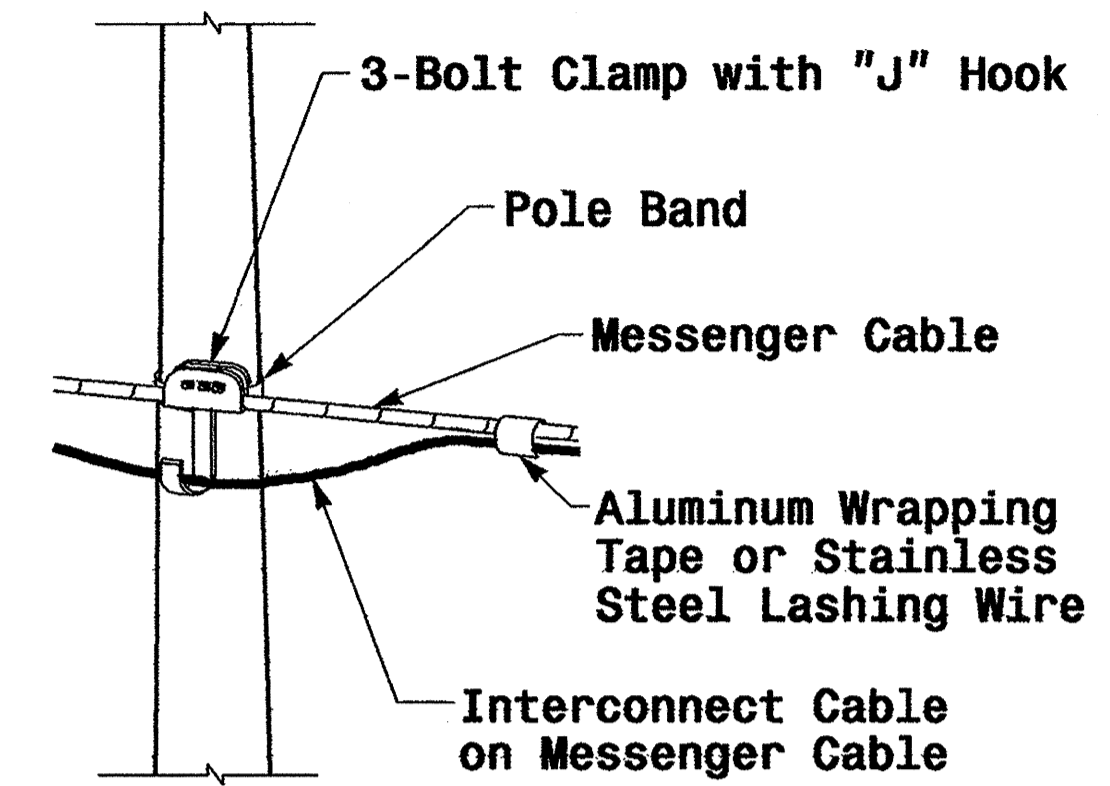
01-SEP-2005 14:07 \\msc01\apps\m1\mchrcaps\2004 metal pole standard\2004 m3.dgn p.l.alexander

	Typical Fabrication Details For Strain Poles		
	PLAN DATE: May 2005	REVIEWED BY: C.F. Andrews	
PREPARED BY: P.L. Alexander	REVIEWED BY: A.M. Esposito	SIGNATURE: <i>D. Sarker</i>	DATE: 9.2.2005
SCALE: NA NONE	REVISIONS	INIT.	DATE
			SIG. INVENTORY NO.

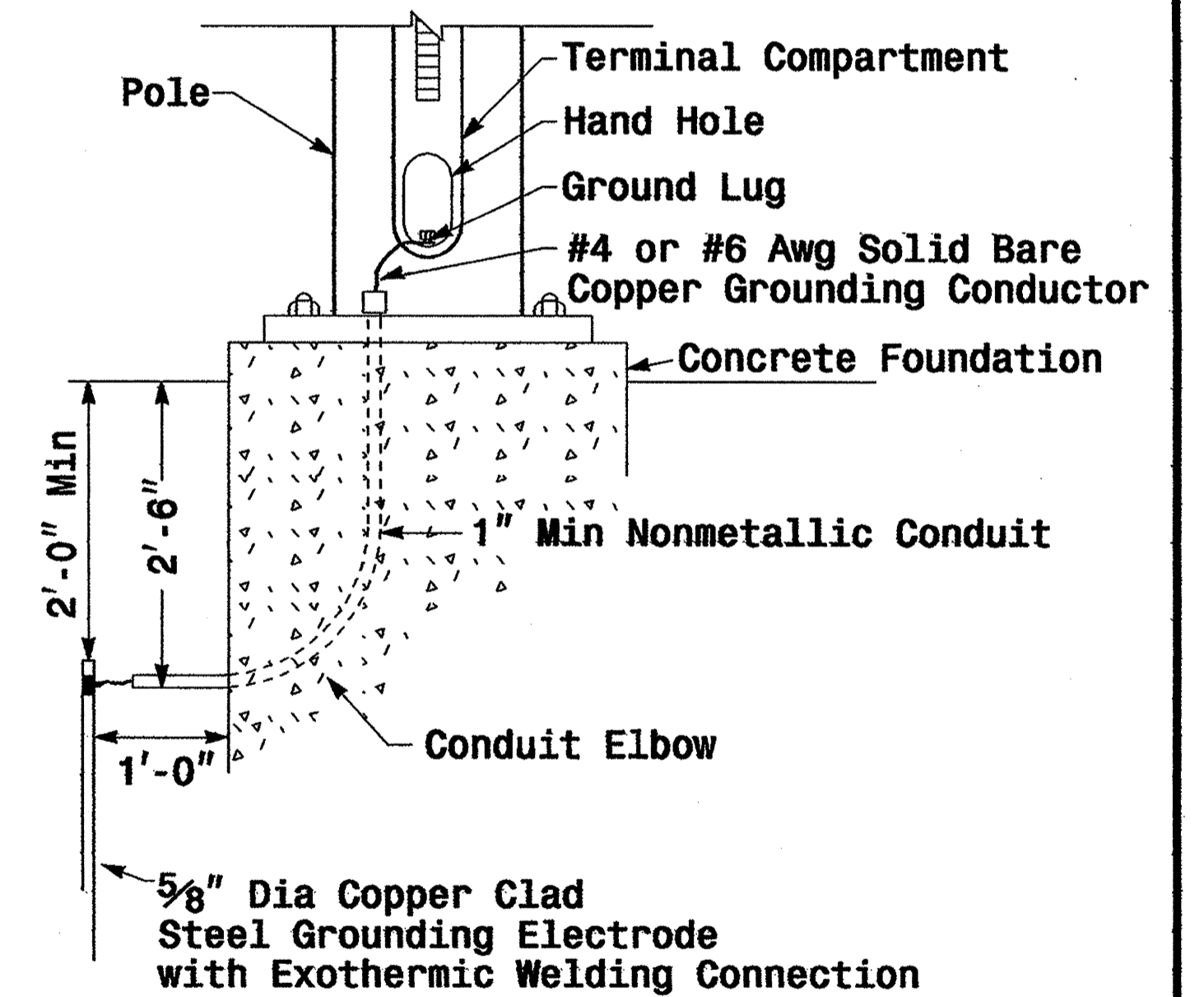


Note: Strap all signal cables to the side of the pole with 3/4\" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36\"

Strain Pole Attachments



Attachment of Cable to Intermediate Metal Pole



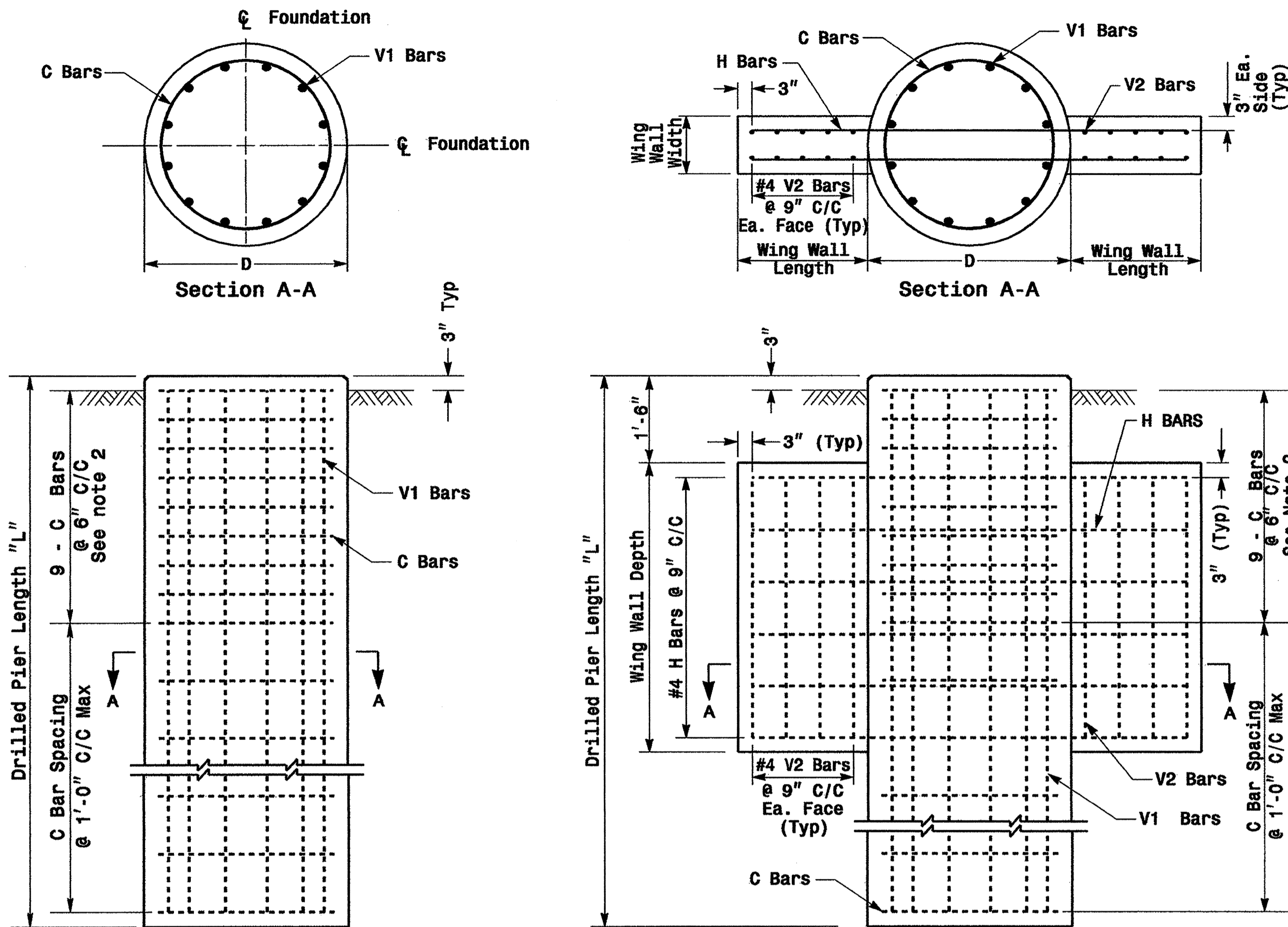
Metal Pole Grounding Detail

Construction Details - Strain Poles

01-SEP-2005 16:13
w:\p001\es-un1\workgroups\2004\metal pole standard\ds#2004.mg.dgn
p01.tex:ender

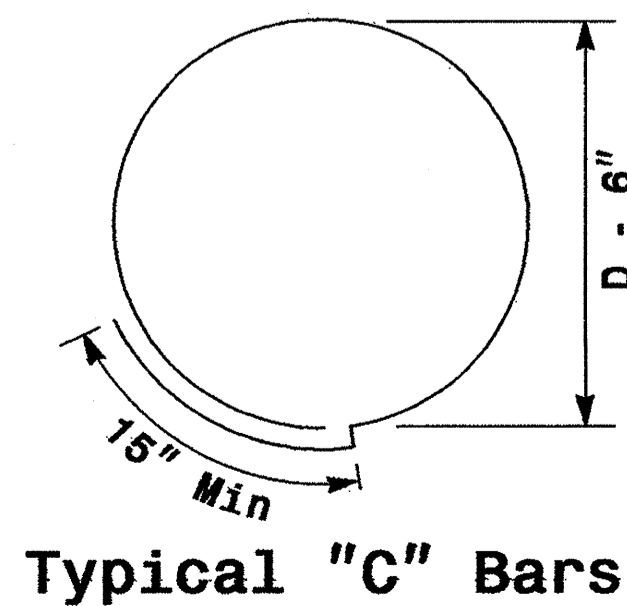
	Construction Details Strain Poles		
	PLAN DATE: May 2005 PREPARED BY: C.F. ANDREWS	REVIEWED BY: P.L. ALEXANDER REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	REVISIONS: _____ INIT: _____ DATE: _____	SIGNATURE: <i>P.L. Alexander</i> DATE: 9-1-05	SIG. INVENTORY NO.

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"	

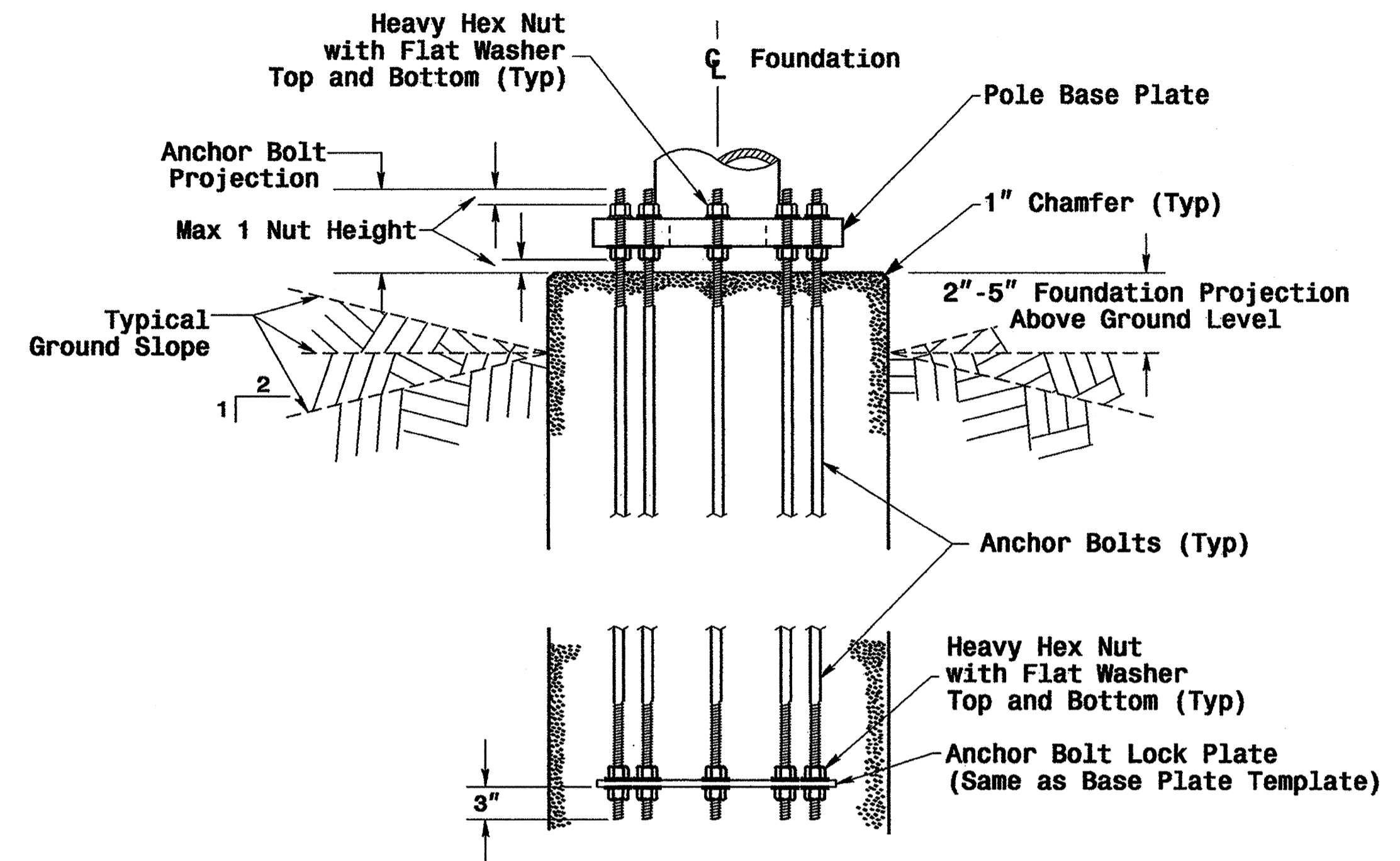
* See Note No. 1
** See Note No. 3

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

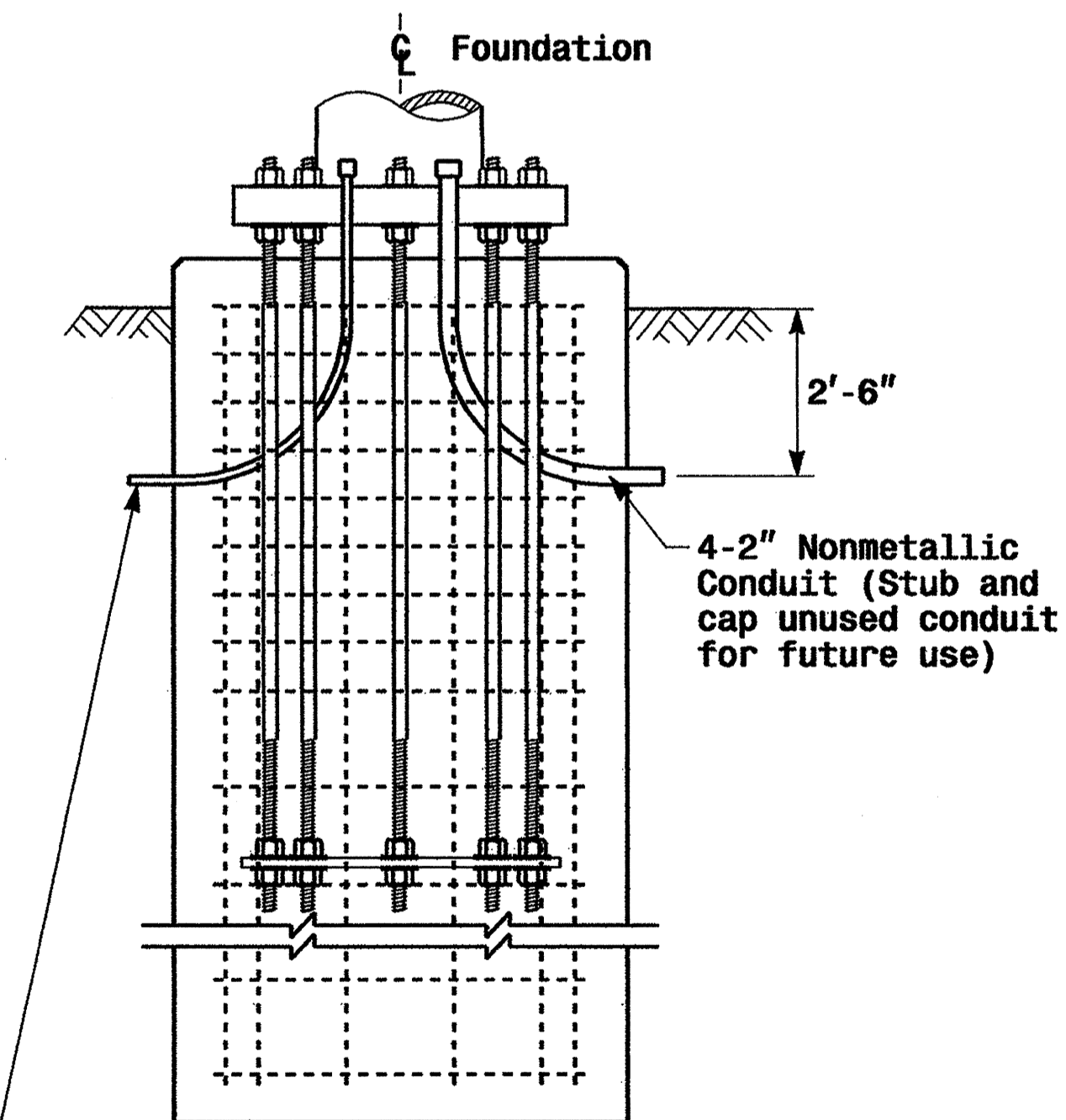
See Note No. 4

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		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028094 DIBESH C. SARKAR
	PLAN DATE: May 2005 PREPARED BY: C.F. ANDREWS	REVIEWED BY: P.L. ALEXANDER REVIEWED BY: A.W. ESPOSITO	SCALE: 0 NA NONE

Construction Details - Foundations

		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	14.0
		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	13.5
		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	13.0
		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	13.5
		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:

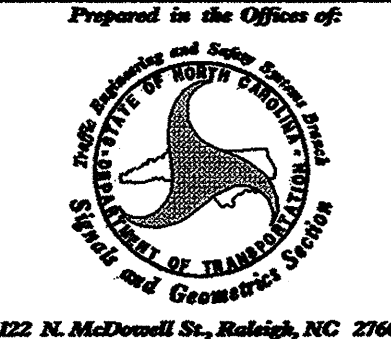
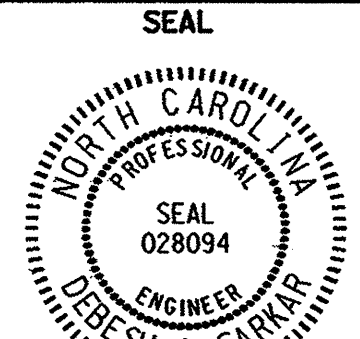
1. Values shown in "Moment at the Pole Base" column represents the minimum acceptable capacity allowable for design using a design CSR of 1.
2. Base plate thickness (T) is 2.0 inches.

Foundation Selection:

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from sheet M 1.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate pole case load number from the plans or from the Engineer.
5. 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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vs:peca14e-cm11-worhpgrps#2004 metal pole standard#2004 mg std strain pole.dgn
pol:evardr

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