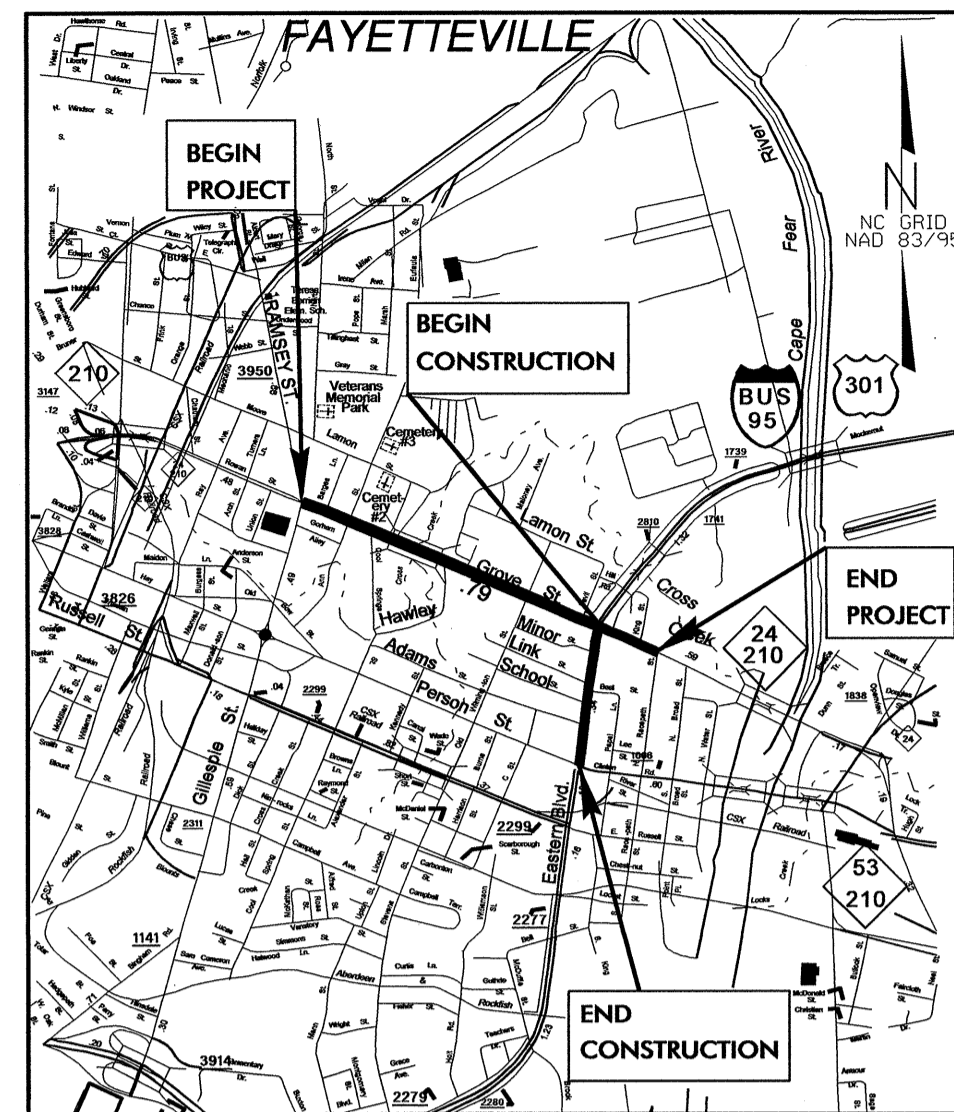


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

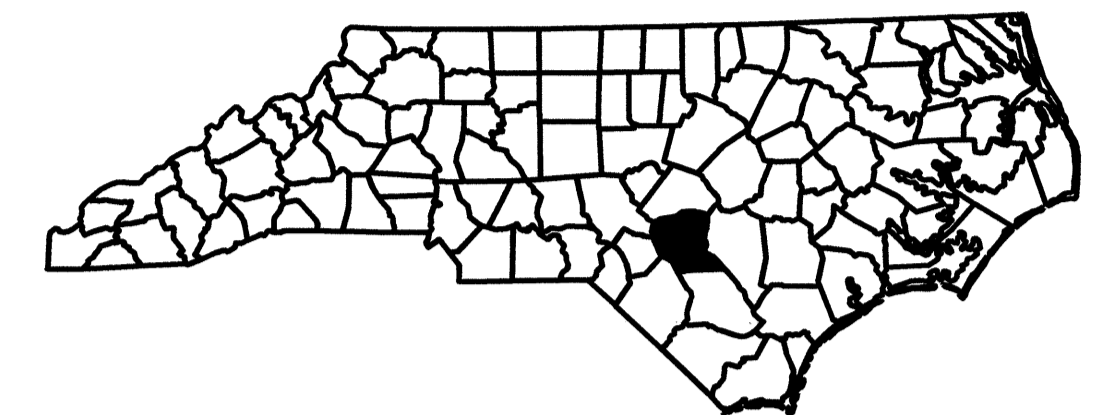
CUMBERLAND

**LOCATION: NC 24 /210 (GROVE ST.) AND US 301 /BUS 95
(EASTERN BLVD.)**

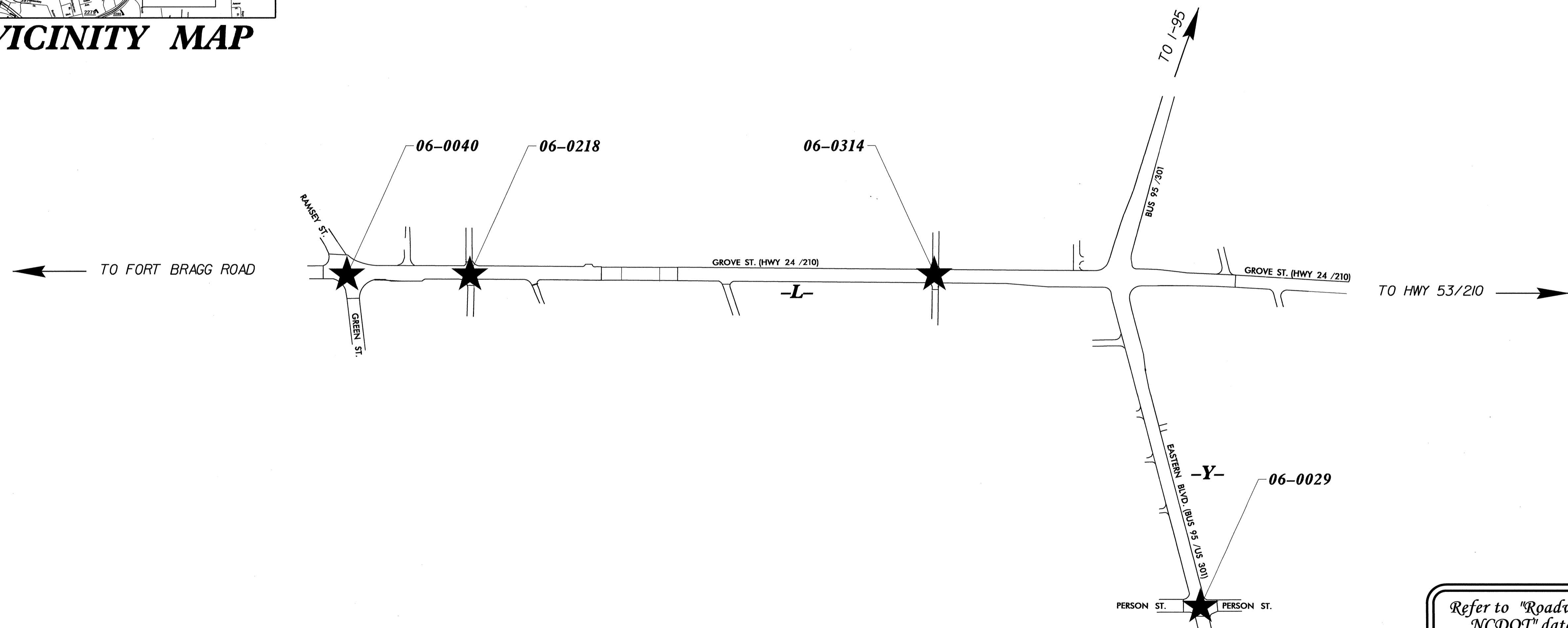
TYPE OF WORK: TRAFFIC SIGNALS



VICINITY MAP



TIP PROJECT: W-5335



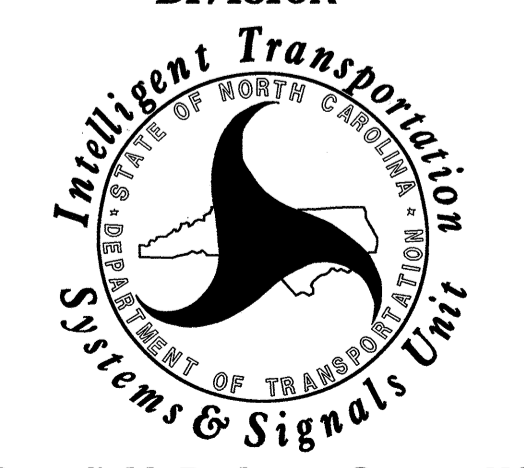
Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.

Sheet #	Reference #	Location/Description
Sig. 1		Title Sheet
Sig. 2-3	06-0040	NC 24-87-210 (Grove St./Rowan St.) at SR 2311 (Ramsey St./Green St.)
Sig. 4-6	06-0218	NC 24-210 (Grove Street) at Ann Street
Sig. 7-9	06-0314	NC 24-210 (Grove Street) at B Street
Sig. 10-11	06-0029	I-95 Bus-US 301 (Eastern Boulevard) at SR 1006 (Person Street)
Sig. 12-22	N/A	Cable Routing Plans
Sig. 23-25	N/A	Metal Pole Standards

INTELLIGENT TRANSPORTATION AND SIGNALS UNIT
Contacts:

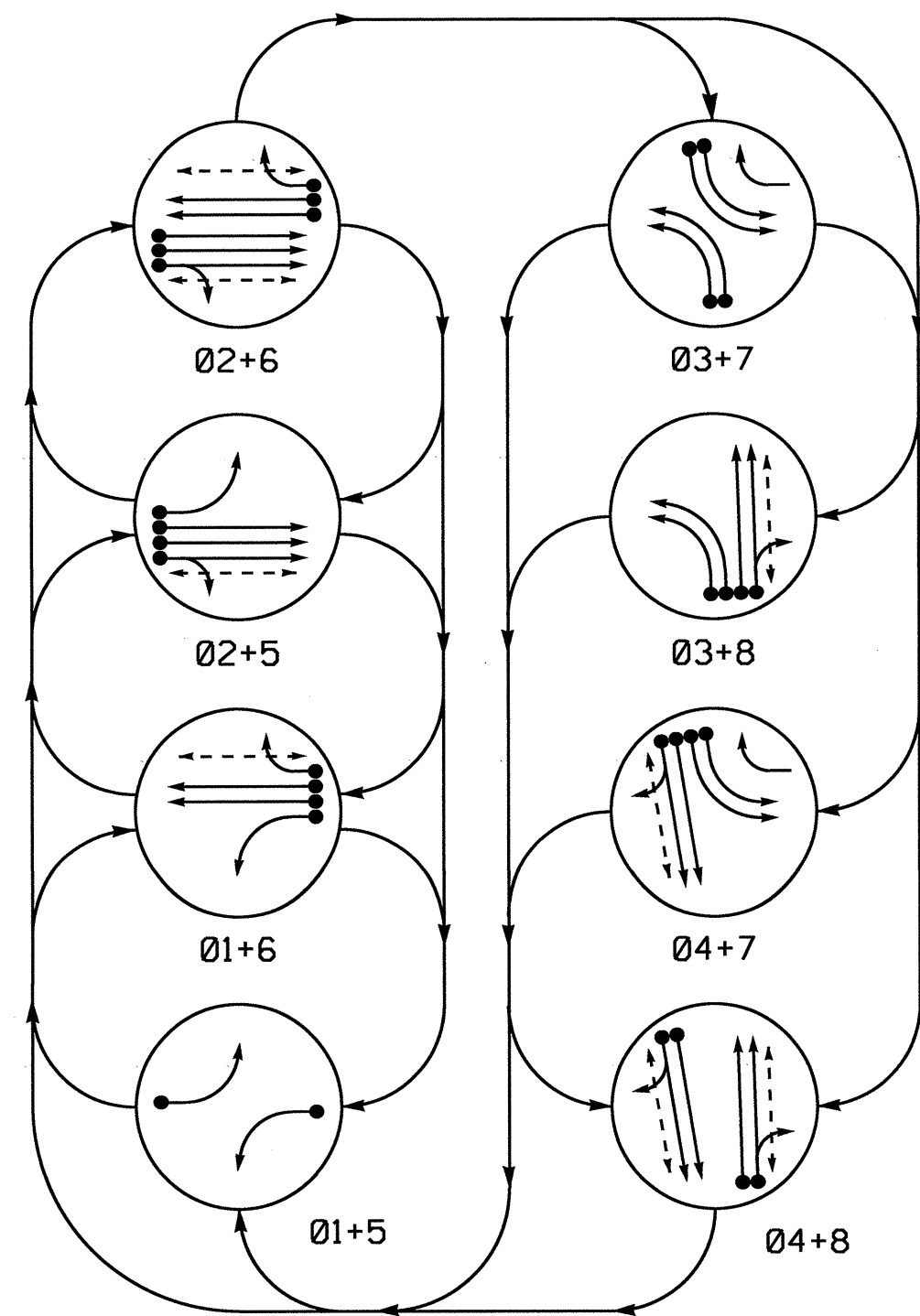
- Jason Galloway, PE - East Region Signals Project Engineer
- George Brown, PE - Signal Equipment Design Engineer
- Greg A. Fuller, PE - Intelligent Transportation Systems Engineer

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



11-JAN-2013 09:46 S:\NITS\SUN\ITS Signals\Signal Design Section\Eastern Region\Div-06\W-5335\W5335_Sig_1.fsh.dgn Jgalloway

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

DETECTED MOVEMENT
 UNDETECTED MOVEMENT (OVERLAP)
 UNSIGNALIZED MOVEMENT
 PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

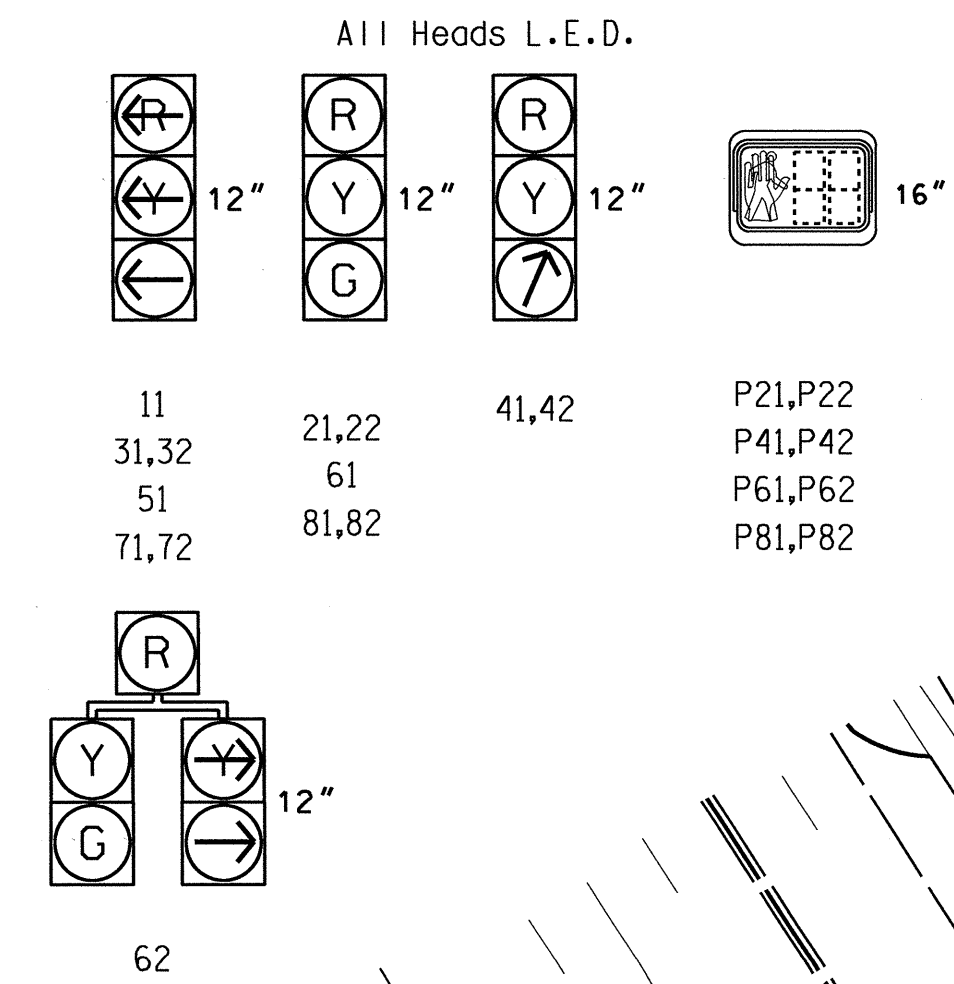


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8
11	---	---	RR	RR	RR	RR	RR	RR
21,22	RR	RR	GG	GG	RR	RR	RR	RR
31,32	RR	RR	RR	RR	---	---	---	---
41,42	RR	RR	RR	RR	RR	RR	RR	RR
51	---	---	RR	RR	RR	RR	RR	RR
61	RG	RG	GG	GG	RR	RR	RR	RR
62	RG	GG	GG	RR	RR	RR	RR	RR
71,72	RR	RR	RR	RR	---	---	---	---
81,82	RR	RR	RR	RR	GG	GG	GG	GG
P21,P22	DW	DW	W	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	W	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	DW	W	W	DRK

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

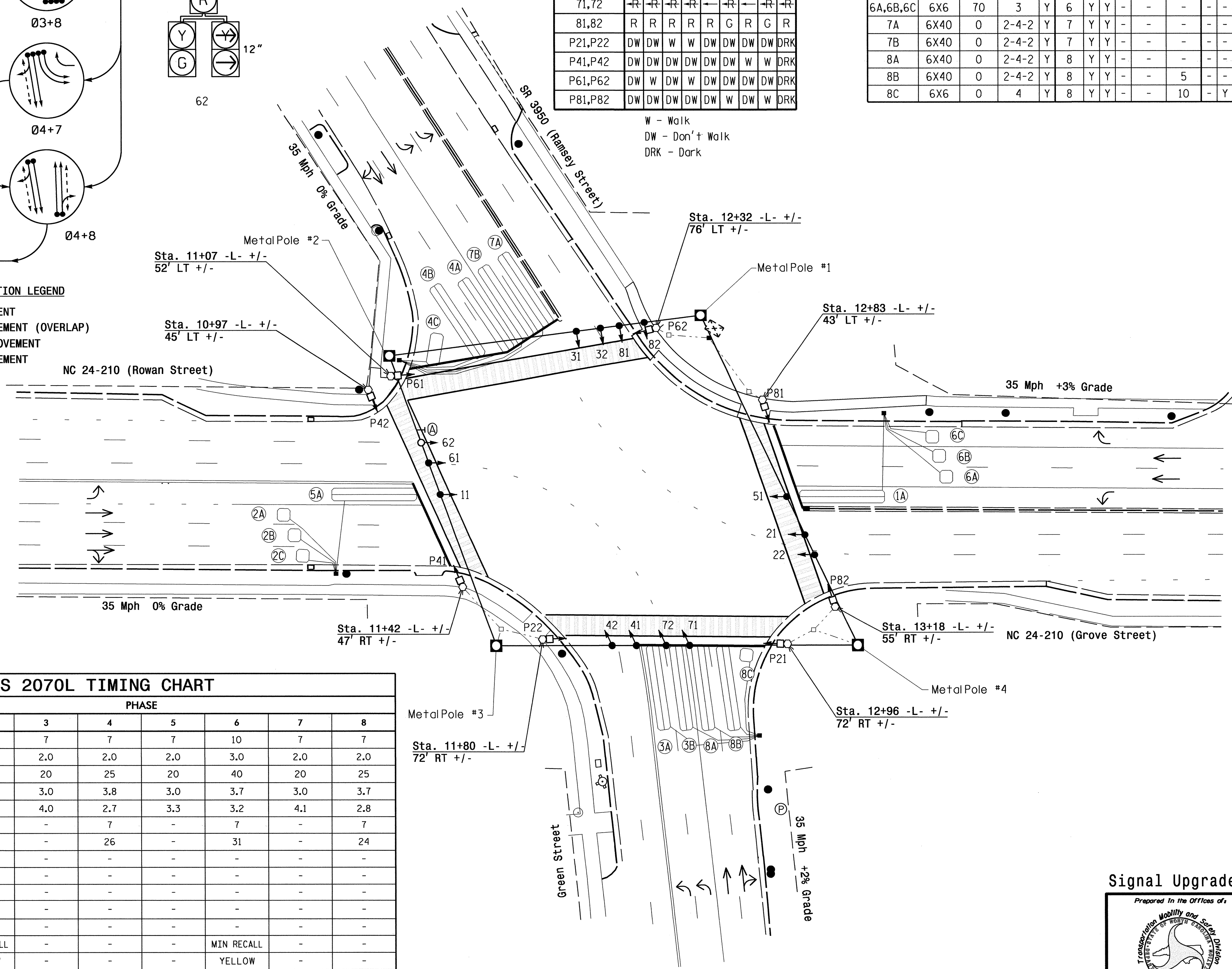
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	-	-
2A,2B,2C	6X6	70	4	Y	2	Y	Y	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	3	-
3B	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	5	-
4C	6X15	0	3	Y	4	Y	Y	-	-	10	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	3	-
6A,6B,6C	6X6	70	3	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	6X40	0	2-4-2	Y	8	Y	Y	-	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	5	-
8C	6X6	0	4	Y	8	Y	Y	-	-	10	Y

8 Phase Fully Actuated Fayetteville City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Pushbutton locations must be approved in the field by the Division Traffic Engineer prior to installation.



OASIS 2070L TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	10	7	7	7	10	7	7
Extension 1 *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max Green 1 *	20	40	20	25	20	40	20	25
Yellow Clearance	3.0	3.8	3.0	3.8	3.0	3.7	3.0	3.7
Red Clearance	3.3	3.2	4.0	2.7	3.3	3.2	4.1	2.8
Walk 1 *	-	7	-	7	-	7	-	7
Don't Walk 1	-	29	-	26	-	31	-	24
Seconds Per Actuation *	-	-	-	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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

LEGEND

PROPOSED	EXISTING
	N/A

Signal Upgrade

**NC 24-210 (Grove St./Rowan St.)
At
SR 3950 (Ramsey St.)/Green St.**

Division 6 Cumberland County Fayetteville

PLAN DATE: February 2012 REVIEWED BY: PLA

PREPARED BY: JPG REVIEWED BY:

SEAL

DATE: 1/2/13

SIGNATURE: [Signature]

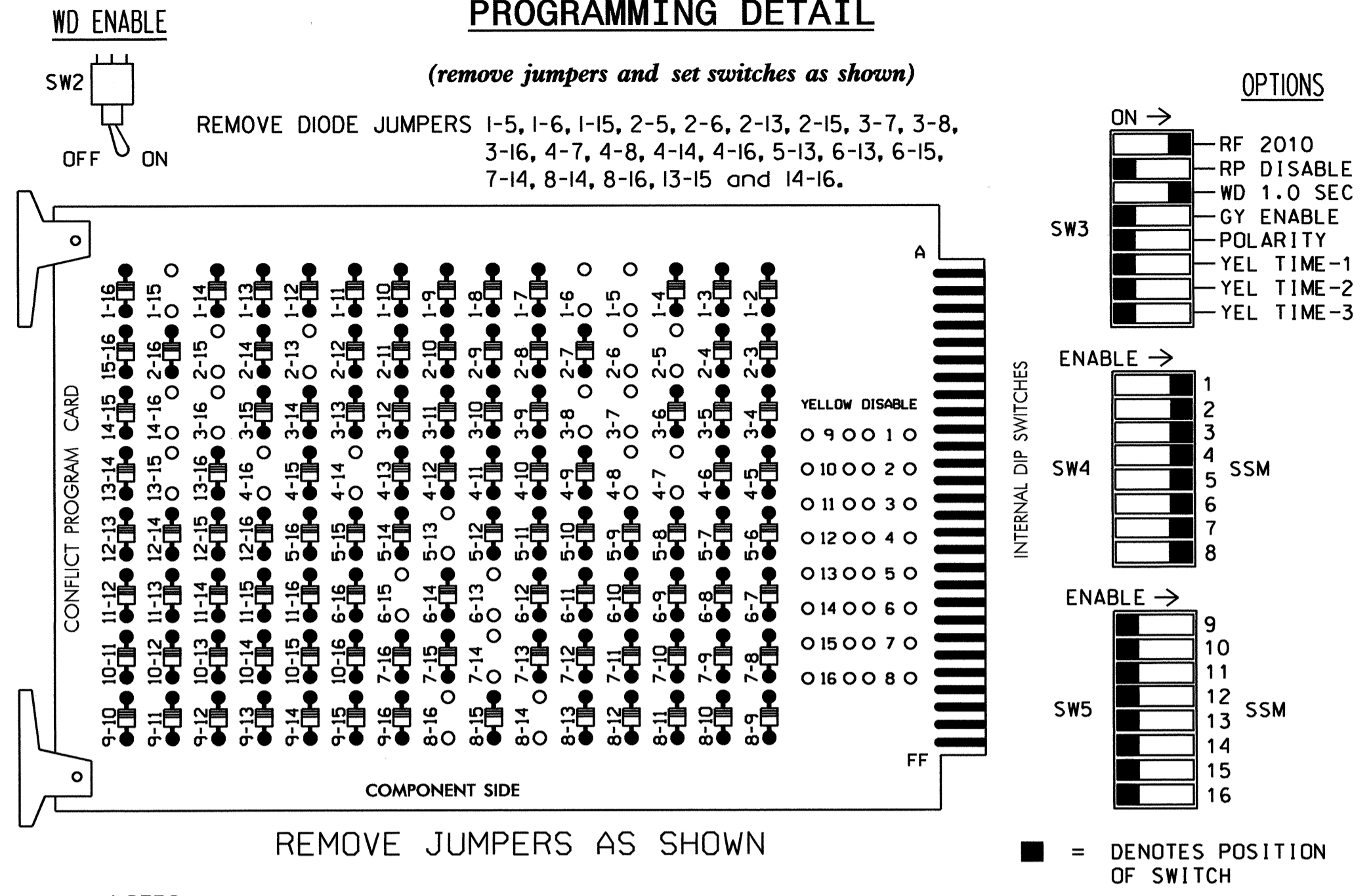
750 N. Greenfield Hwy, Garner, NC 27529

SCALE: 1"=30'

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EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



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

NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P,S7,S8,S8P
 PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED,6PED,8PED
 OVERLAPS.....NONE

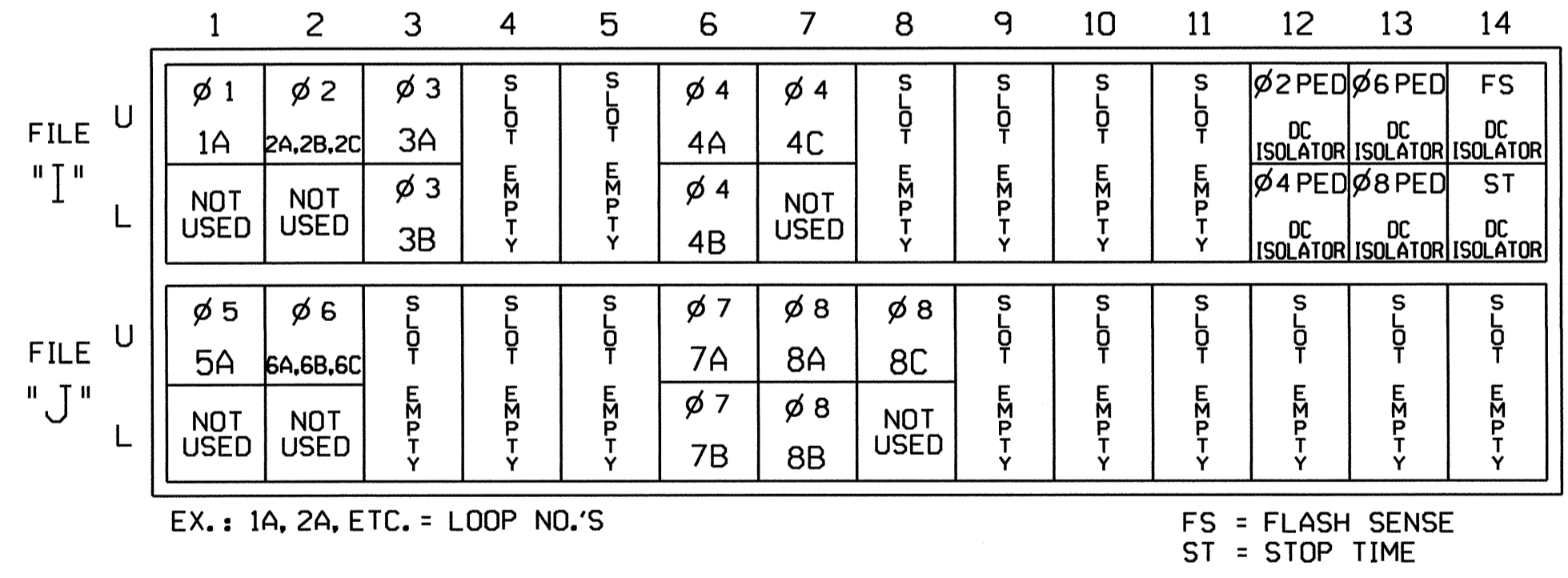
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	21,22	P21, P22	31,32	41,42	P41, P42	51	61,62	P61, P62	71,72	82	P81, P82
RED		128			101			134				107
YELLOW		129			102			135				108
GREEN		130						136				109
RED ARROW	125			116			131			122		
YELLOW ARROW	126			117			132			123	123	
GREEN ARROW	127			118	103		133			124	124	
Hand			113		104			119				110
Person			115		106			121				112

NU = Not Used

INPUT FILE POSITION LAYOUT

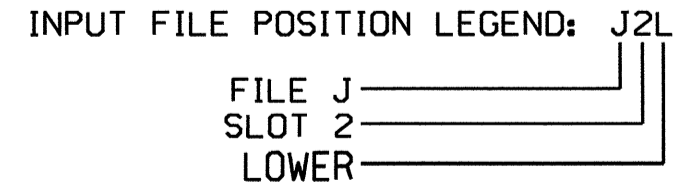
(front view)



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			
2A,2B,2C	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB2-9,10	I3U	63	25	32	3	Y	Y			3
3B	TB2-11,12	I3L	76	38	42	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			5
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
6A,6B,6C	TB3-5,6	J2U	40	2	6	6	Y	Y			
7A	TB5-9,10	J6U	42	4	8	7	Y	Y			
7B	TB5-11,12	J6L	46	8	18	7	Y	Y			
8A	TB7-1,2	J7U	66	28	38	8	Y	Y			
8B	TB7-3,4	J7L	79	41	48	8	Y	Y			5
8C	TB7-5,6	J8U	50	12	28	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29		PED 2		2 PED			
P41,P42	TB8-5,6	I12L	69	31		PED 4		4 PED			
P61,P62	TB8-7,9	I13U	68	30		PED 6		6 PED			
P81,P82	TB8-8,9	I13L	70	32		PED 8		8 PED			

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.



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: 06-0040
 DESIGNED: February 2012
 SEALED: 1-2-13
 REVISED: N/A

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

NC 24-210 (Grove St./Rowan St.) at SR 3950 (Ramsey St.)/Green St.

Division 6 Cumberland County Fayetteville

PLAN DATE: 01-02-13 REVIEWED BY: T. Spaulding

PREPARED BY: D.H. Spaulding REVIEWED BY:

REVISIONS: INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

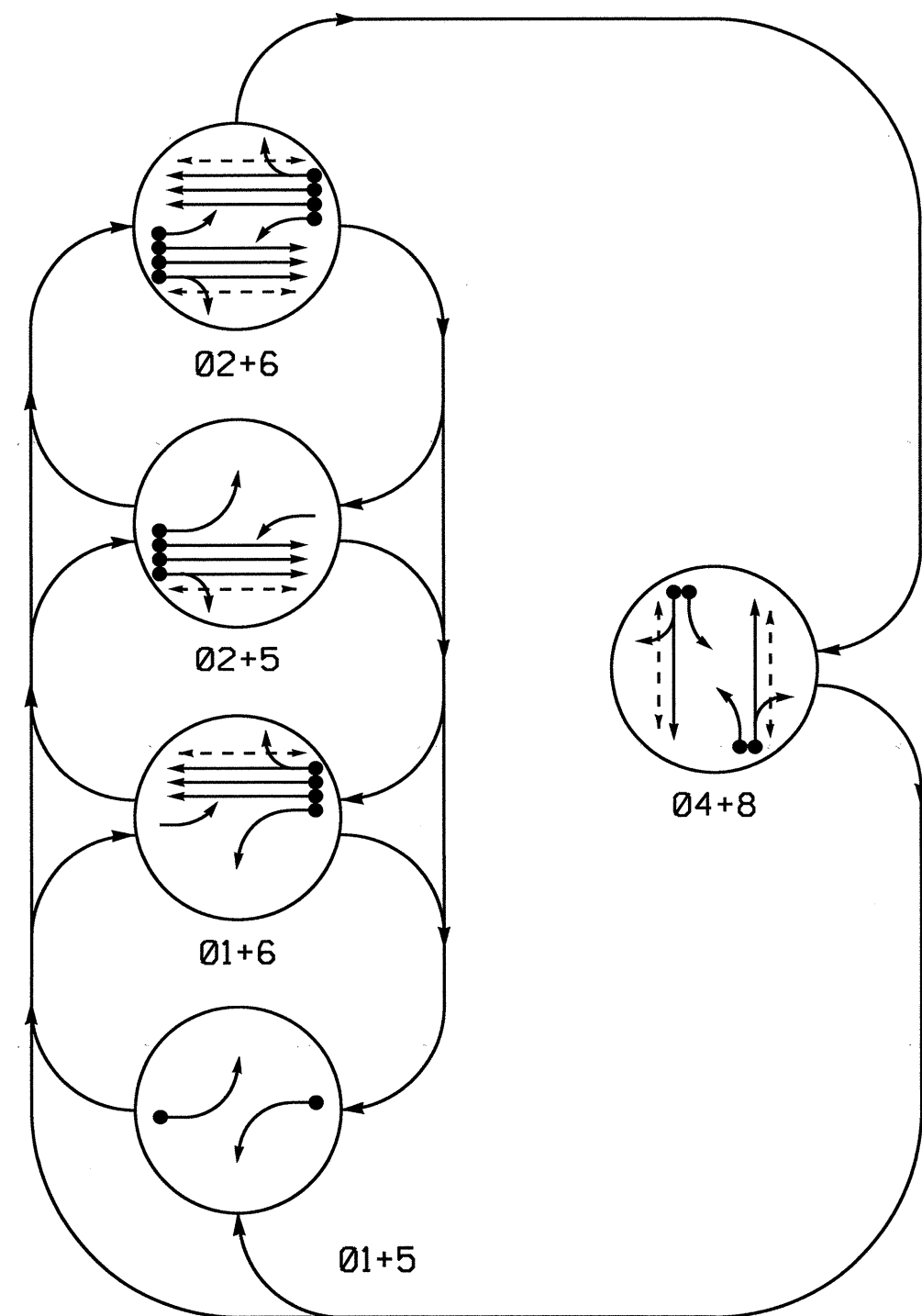
SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN

Signature: D.H. Spaulding 1/2/13

SIG. INVENTORY NO. 06-0040

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 08/04/13

PHASING DIAGRAM

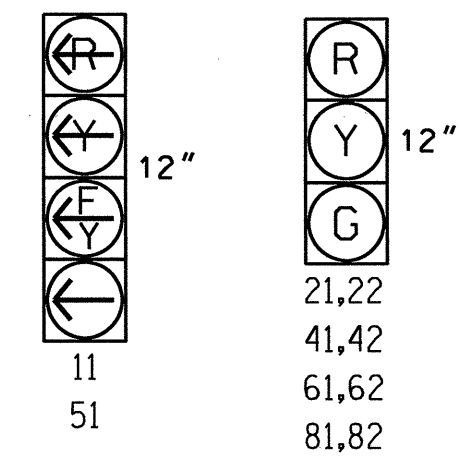


SIGNAL FACE	PHASE				FLASH
	01+5	02+5	02+6	04+8	
11	←	←	←	←	Y
21,22	R	R	G	G	Y
41,42	R	R	R	G	R
51	←	←	←	←	Y
61,62	R	G	R	G	Y
81,82	R	R	R	G	R
P21,P22	DW	DW	W	DW	DRK
P41,P42	DW	DW	DW	DW	DRK
P61,P62	DW	W	DW	DW	DRK
P81,P82	DW	DW	DW	DW	DRK

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

SIGNAL FACE I.D.

All Heads L.E.D.

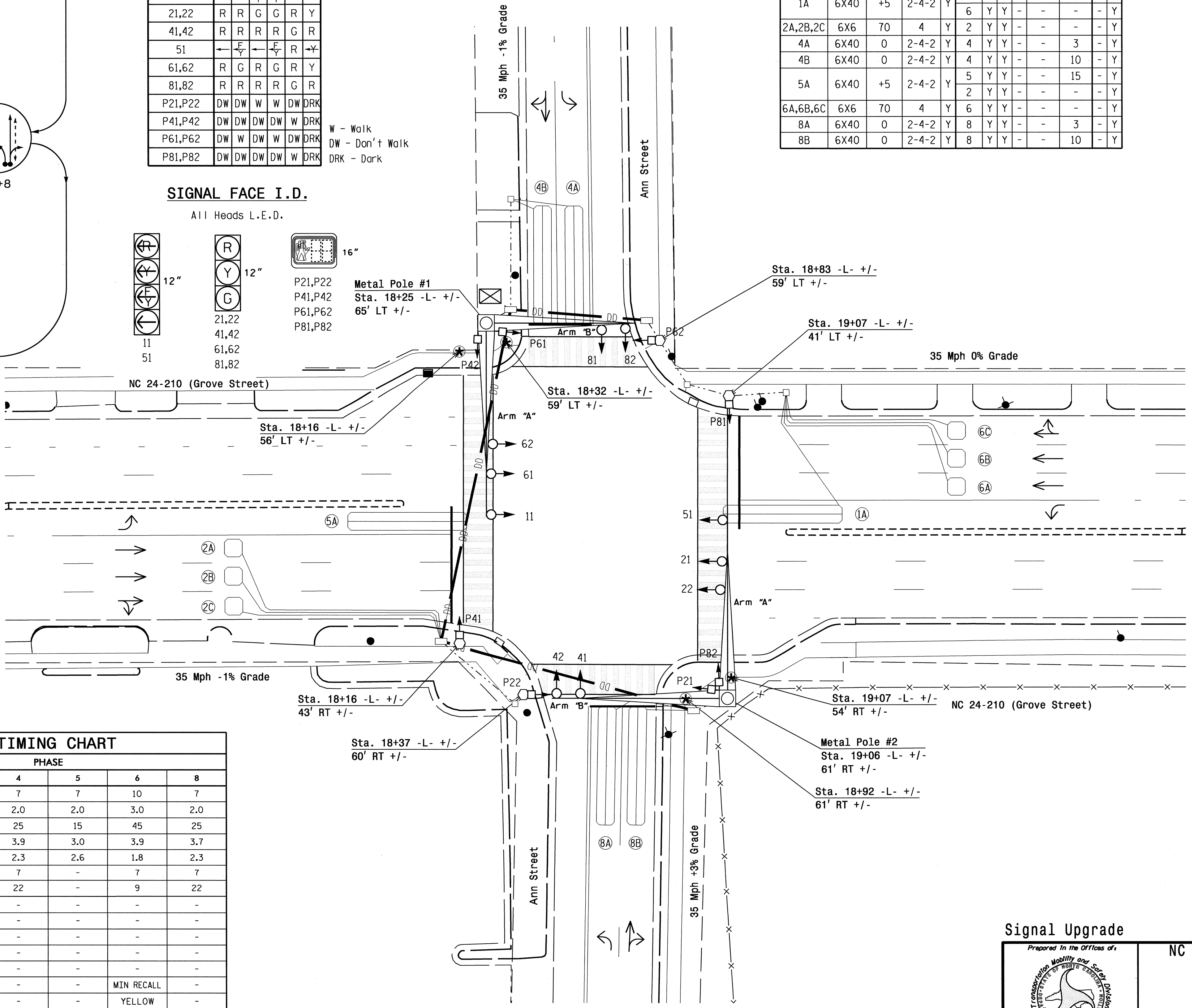
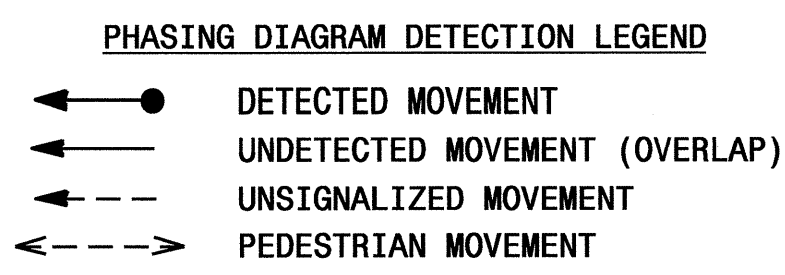


INDUCTIVE LOOPS				DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CAB		
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	URNS	PHASE	CALLING	EXTENSION	STRETCH TIME			DELAY TIME	
1A	6X40	+5	2-4-2	Y	1	Y	Y	-	15	-	Y
2A,2B,2C	6X6	70	4	Y	2	Y	Y	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	3	-	Y
4B	6X40	0	2-4-2	Y	4	Y	Y	-	10	-	Y
5A	6X40	+5	2-4-2	Y	5	Y	Y	-	15	-	Y
6A,6B,6C	6X6	70	4	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

5 Phase Fully Protected Fayetteville City System

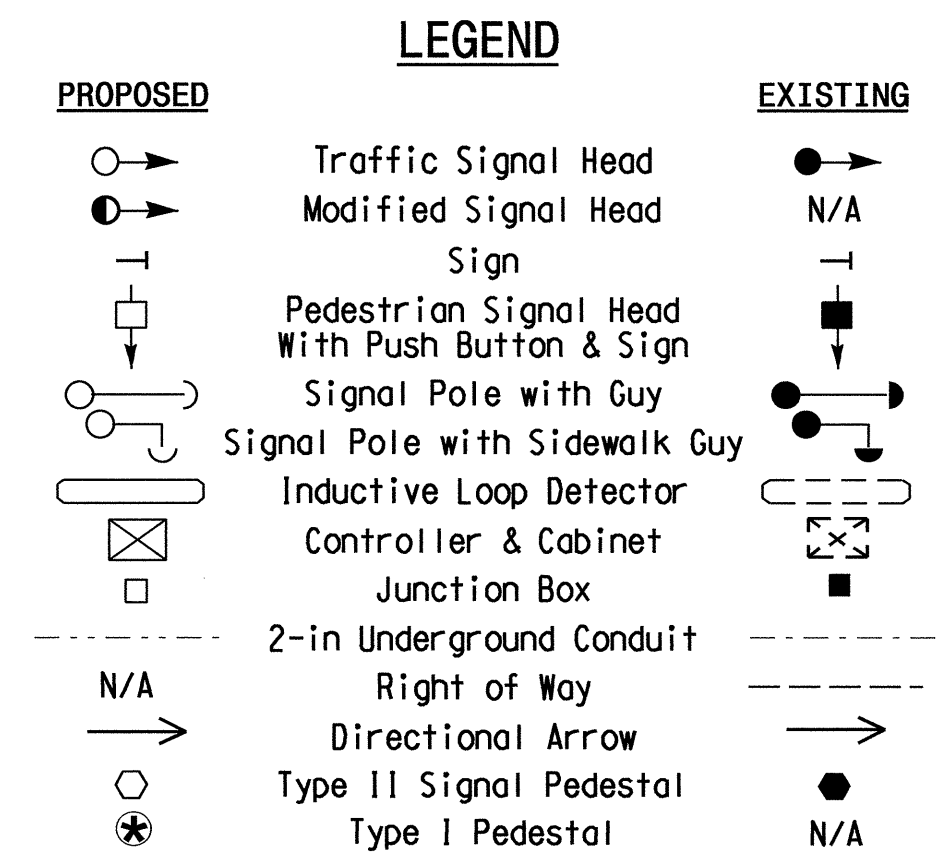
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Pushbutton locations must be approved in the field by the Division Traffic Engineer prior to installation.



FEATURE	PHASE							
	1	2	4	5	6	8		
Min Green 1*	7	10	7	7	10	7		
Extension 1*	2.0	3.0	2.0	2.0	3.0	2.0		
Max Green 1*	15	45	25	15	45	25		
Yellow Clearance	3.0	3.9	3.9	3.0	3.9	3.7		
Red Clearance	2.6	1.8	2.3	2.6	1.8	2.3		
Walk 1*	-	7	7	-	7	7		
Don't Walk 1	-	10	22	-	9	22		
Seconds Per Actuation*	-	-	-	-	-	-		
Max Variable Initial*	-	-	-	-	-	-		
Time Before Reduction*	-	-	-	-	-	-		
Time To Reduce*	-	-	-	-	-	-		
Minimum Gap	-	-	-	-	-	-		
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-		
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-		
Dual Entry	-	-	ON	-	-	ON		
Simultaneous Gap	ON	ON	ON	ON	ON	ON		

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



Signal Upgrade

Prepared in the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

NC 24-210 (Grove Street) At Ann Street

Division 6 Cumberland County Fayetteville
 PLAN DATE: February 2012 REVIEWED BY: PLA
 PREPARED BY: JPG REVIEWED BY: [Signature]

SCALE: 1"=20'

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER J. ALAN P. GALLOIA 29904

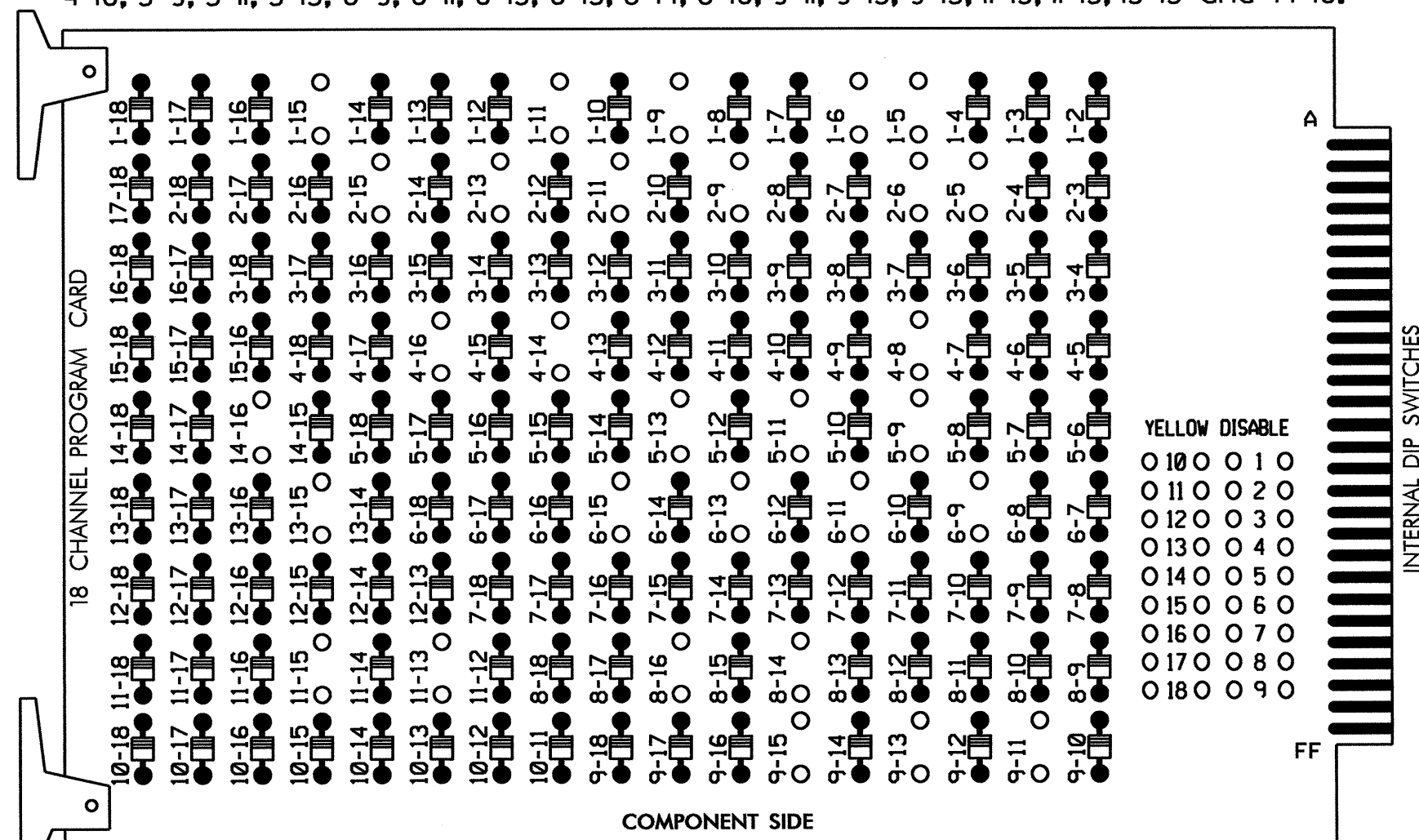
SIG. INVENTORY NO. 06-0218

02-JAN-2013 09:58 S:\ITS\SSU\ITS Signal\Signal Design_Sect1\on\eastern_Reg\on\01\vd-06\w-5335\060218.sig.dsn_20120402.dgn

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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

■ = 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.
- 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, 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 City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12,AUXS1,AUXS4.
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED.
 OVERLAP "A".....1+2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....NOT USED

INPUT FILE POSITION LAYOUT

(front view)

FILE U	1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	∅ 1	∅ 2	∅ 3	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14
L	1A	2A,2B,2C	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A
FILE U	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	∅ 17	∅ 18
"J"	5A	6A,6B,6C	7A	8A	9A	10A	11A	12A	13A	14A	15A	16A	17A	18A
L	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

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

FS = FLASH SENSE

Wired Input - Do not populate slot with detector card

ST = STOP TIME

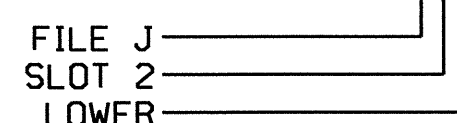
INPUT FILE CONNECTION & PROGRAMMING CHART

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 ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
		J4U	48	10	26	6	Y	Y			
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 ²	TB3-1,2	J1U	55	17	5	5	Y	Y			15
		I4U	47	9	22	2	Y	Y			
6A,6B,6C	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29		PED 2	2	PED			
P41,P42	TB8-5,6	I12L	69	31		PED 4	4	PED			
P61,P62	TB8-7,9	I13U	68	30		PED 6	6	PED			
P81,P82	TB8-8,9	I13L	70	32		PED 8	8	PED			

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

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

INPUT FILE POSITION LEGEND: J2L



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	P21, P22	NU	41,42	P41, P42	51	61,62	P61, P62	NU	81,82	P81, P82	11	NU	NU	51	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127							133										
Hand				113			104			119			110					
Person				115			106			121			112					

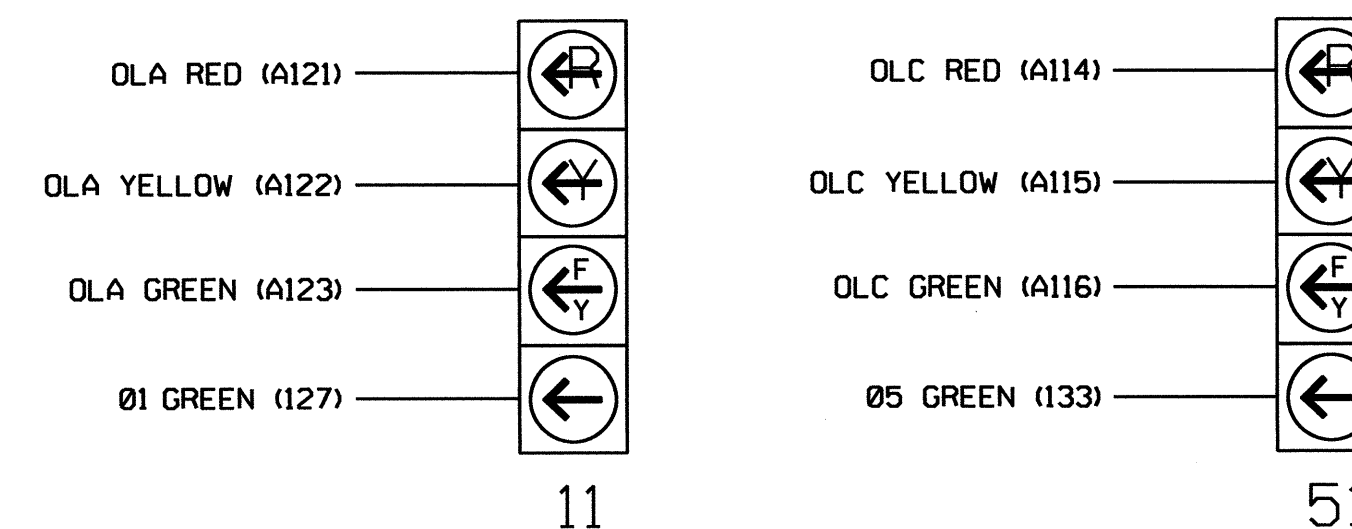
NU = Not Used

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

See pictorial of head wiring in detail below.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

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

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

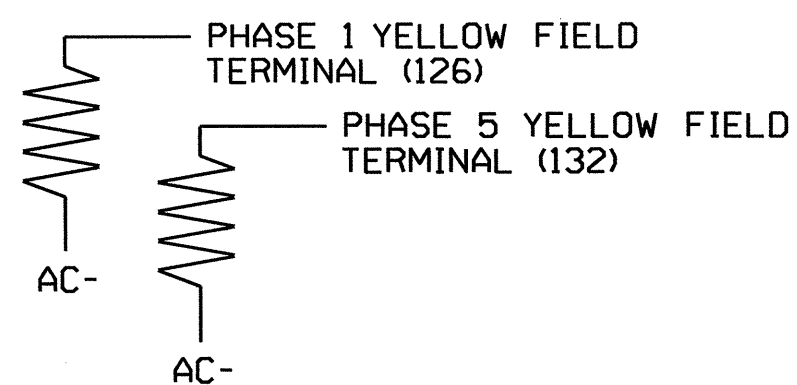
Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0218
 DESIGNED: February 2012
 SEALED: 4-2-12
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



Signal Upgrade Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: TRANSPORTATION MOBILITY AND SAFETY SOLUTIONS, INC. Signal Management Services 750 N. Greenfield Pkwy, Garner, NC 27529	NC 24-210 (Grove Street) at Ann Street		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN SIGNATURE DATE
	Division 6 PLAN DATE: 3-21-12 PREPARED BY: D.H. Spaulding	Cumberland County Fayetteville REVIEWED BY: T. J. [Signature] REVIEWED BY:	

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

(program controller as shown below)

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

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

↓
SCROLL DOWN

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

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

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

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

↓
SCROLL DOWN

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

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

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

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

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

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
 PHASE: |12345678910111213141516
 VEH OVL PARENTS: |XX
 VEH OVL NOT VEH: |:
 VEH OVL NOT PED: |:
 VEH OVL GRN EXT: |:
 STARTUP COLOR: - RED - YELLOW - GREEN
 FLASH COLORS: - RED - YELLOW X GREEN
 SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
 FLASH YELLOW IN CONTROLLER FLASH?...Y
 GREEN EXTENSION (0-255 SEC)...0
 YELLOW CLEAR (0=PARENT, 3-25.5 SEC)...0.0
 RED CLEAR (0=PARENT, 0.1-25.5 SEC)...0.0
 OUTPUT AS PHASE # (0=NONE, 1-16)...0

← NOTICE GREEN FLASH

PRESS '+' TWICE

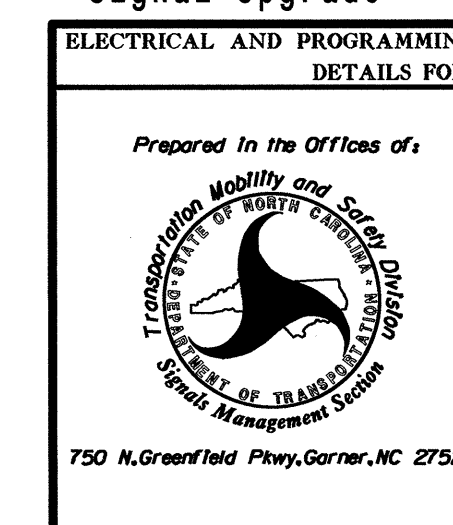
PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
 PHASE: |12345678910111213141516
 VEH OVL PARENTS: |XX
 VEH OVL NOT VEH: |:
 VEH OVL NOT PED: |:
 VEH OVL GRN EXT: |:
 STARTUP COLOR: - RED - YELLOW - GREEN
 FLASH COLORS: - RED - YELLOW X GREEN
 SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
 FLASH YELLOW IN CONTROLLER FLASH?...Y
 GREEN EXTENSION (0-255 SEC)...0
 YELLOW CLEAR (0=PARENT, 3-25.5 SEC)...0.0
 RED CLEAR (0=PARENT, 0.1-25.5 SEC)...0.0
 OUTPUT AS PHASE # (0=NONE, 1-16)...0

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0218
 DESIGNED: February 2011
 SEALED: 4-2-12
 REVISED: N/A

Signal Upgrade Sheet 2 of 2



ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 24-210 (Grove Street) at Ann Street	
Prepared In the Offices of:		Division 6 Cumberland County Fayetteville	
PLAN DATE: 3-21-12	REVIEWED BY: <i>T. Spaulding</i>	INIT.	DATE
PREPARED BY: D.H. Spaulding	REVIEWED BY: <i>T. Spaulding</i>		
REVISIONS			

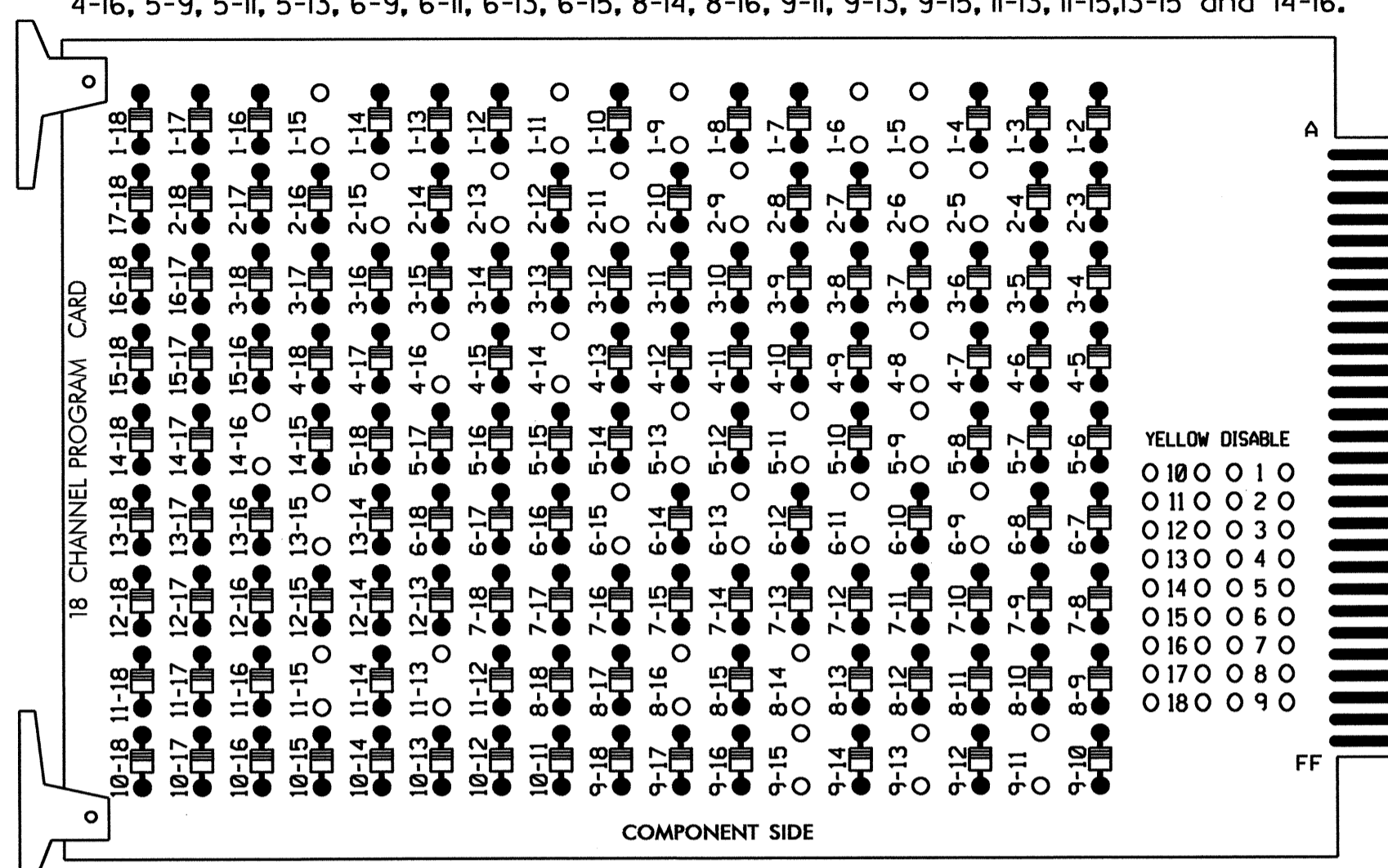
SEAL
 NORTH CAROLINA
 PROFESSIONAL ENGINEERS
 SEAL 022013
 ENGINEER
 GEORGE C. BROWN
 SIGNATURE: *George C. Brown* 4/9/12
 DATE

SIG. INVENTORY NO. 06-0218

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

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

■ = 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.
- 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, 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 City System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12,AUXS1,AUXS4.
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED.
 OVERLAP "A".....1+2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....NOT USED

INPUT FILE POSITION LAYOUT

(front view)

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

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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
2A,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 ²	TB3-1,2	J1U	55	17	5	5	Y	Y			15
6A,6B,6C	TB3-5,6	J2U	40	2	6	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2	PED				
P41,P42	TB8-5,6	I12L	69	31	PED 4	4	PED				
P61,P62	TB8-7,9	I13U	68	30	PED 6	6	PED				
P81,P82	TB8-8,9	I13L	70	32	PED 8	8	PED				

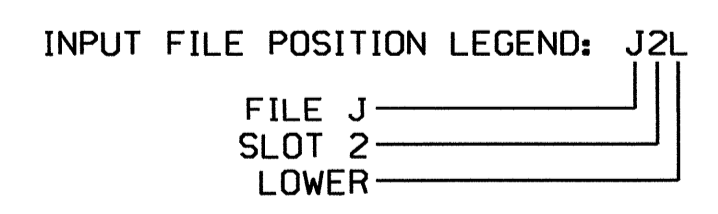
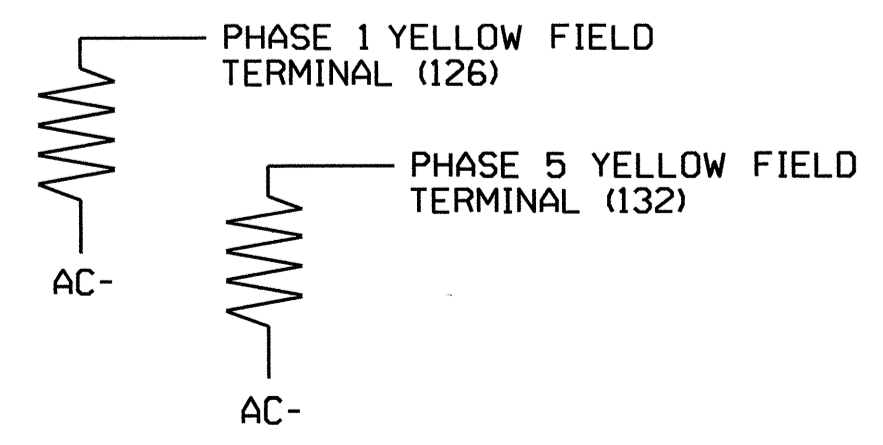
NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

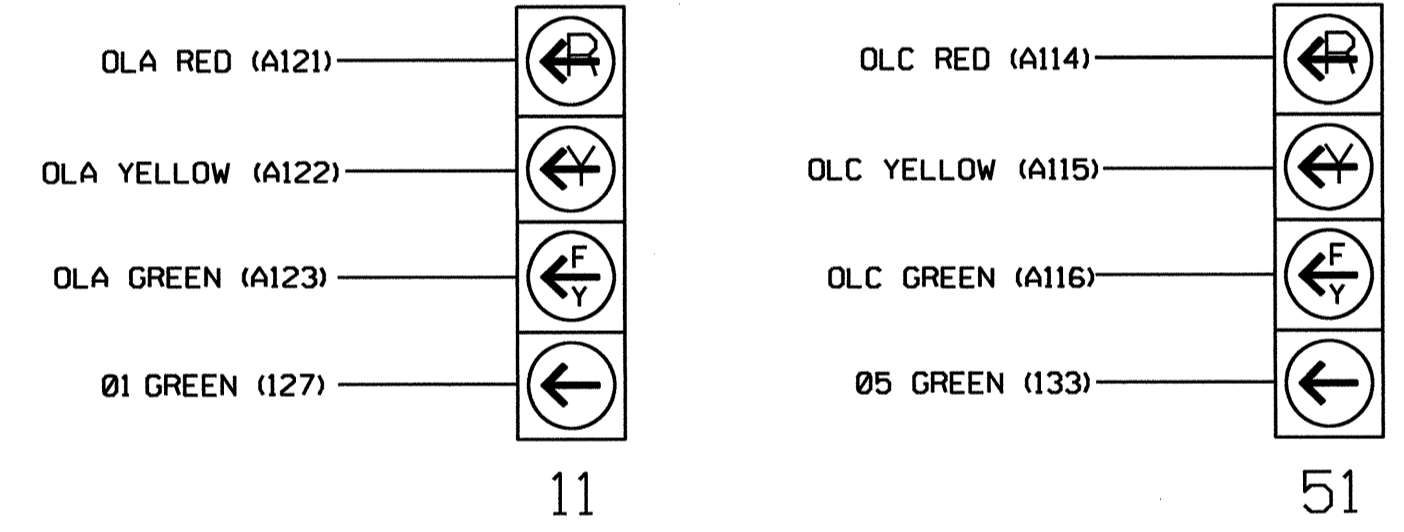
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	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	P21, P22	NU	41,42	P41, P42	51	61,62	P61, P62	NU	81,82	P81, P82	11	NU	NU	51	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121					A114
YELLOW ARROW													A122					A115
FLASHING YELLOW ARROW													A123					A116
GREEN ARROW	127							133										
Hand																		
Foot																		

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

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0314
 DESIGNED: February 2012
 SEALED: 4-2-12
 REVISED: N/A

ELECTRICAL DETAIL SHEET 1 OF 2

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

NC 24-210 (Grove Street) at B Street

Division 06 Cumberland County Fayetteville

PLAN DATE: 1-15-10 REVIEWED BY: T. J. Spaulding

PREPARED BY: D.H. Spaulding REVIEWED BY:

REVISIONS INIT. DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 022013
 GEORGE C. BROWN
 SIGNATURE DATE 4/4/12

SIG. INVENTORY NO. 06-0314

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

(program controller as shown below)

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

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

↓
SCROLL DOWN

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

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

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

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

↓
SCROLL DOWN

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

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

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

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

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

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

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

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

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

← NOTICE GREEN FLASH

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
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)...0.0

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

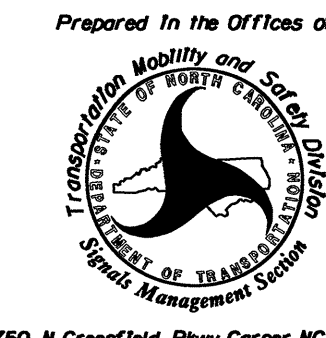
← NOTICE GREEN FLASH

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
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)...0.0

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0314
DESIGNED: February 2012
SEALED: 4-2-12
REVISED: N/A

ELECTRICAL DETAIL SHEET 2 OF 2

	<p>NC 24-210 (Grove Street) at B Street</p>	<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN</p>								
<p>Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Division 06 Cumberland County Fayetteville</p> <p>PLAN DATE: 1-15-10 REVIEWED BY: T. J. [Signature]</p> <p>PREPARED BY: D. H. Spaulding REVIEWED BY:</p>	<p>REVISIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NO.	DESCRIPTION	INIT.	DATE				
NO.	DESCRIPTION	INIT.	DATE							
<p>DATE: 4/4/12</p> <p>DATE: 4/4/12</p>		<p>DATE: 4/4/12</p>								
<p>SIG. INVENTORY NO. 06-0314</p>										

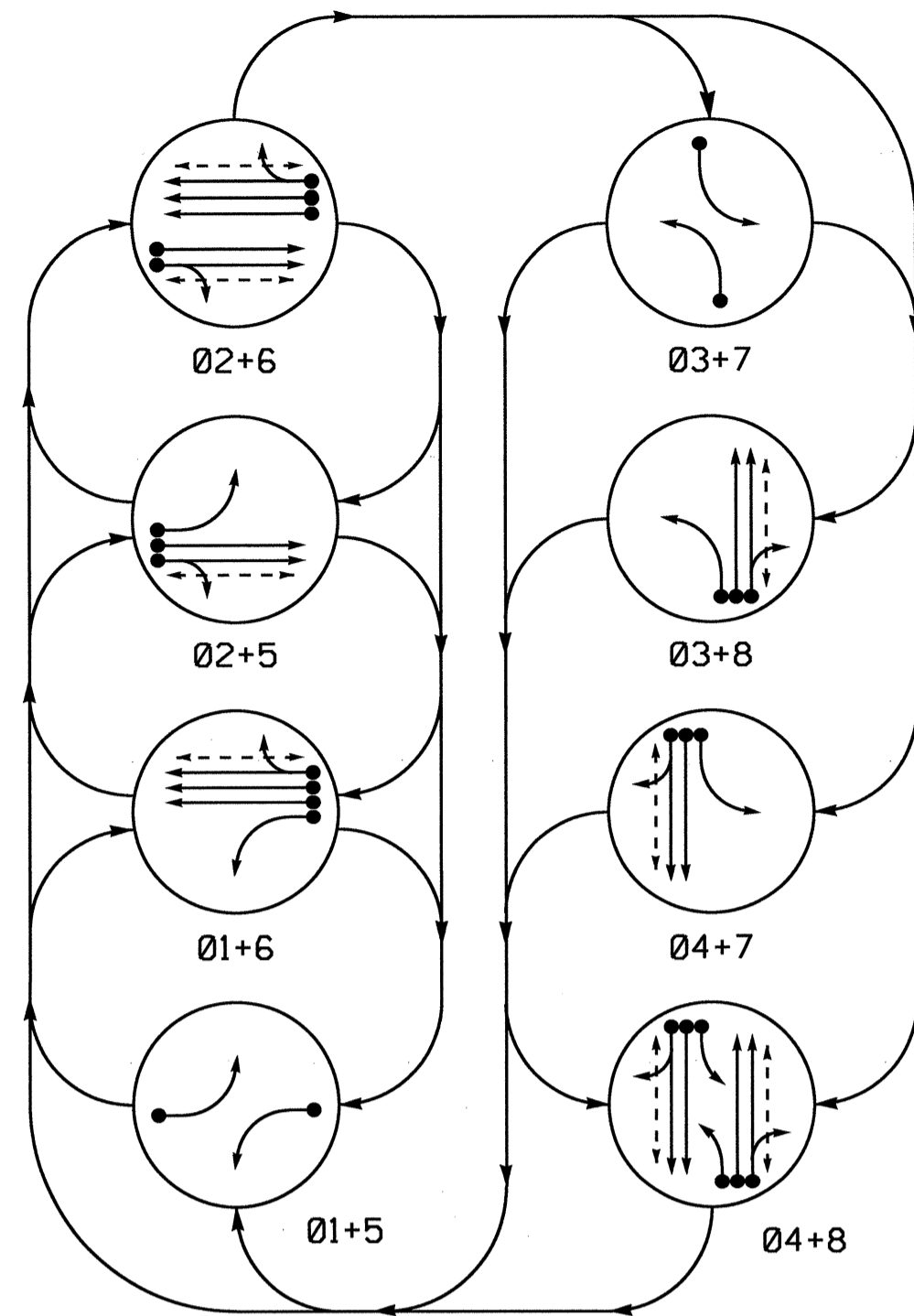
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8 Phase Fully Actuated Fayetteville City System

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Omit phase 3 during phase 4 on.
4. Omit phase 7 during phase 8 on.
5. Phase 1 and/or phase 5 may be lagged.
6. Set all detector units to presence mode.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Pushbutton locations must be approved in the field by the Division Traffic Engineer prior to installation.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

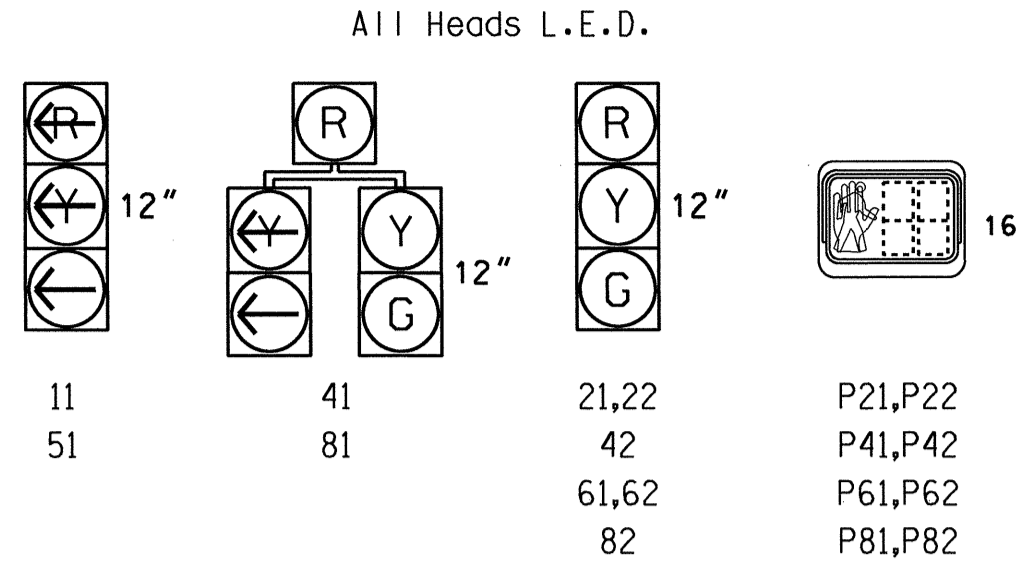
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	02+6	03+7	04+8	01+6	02+5	03+8	04+7
11	---	---	---	---	---	---	---	---
21,22	R	R	G	G	R	R	R	Y
41	R	R	R	R	R	R	G	R
42	R	R	R	R	R	R	G	R
51	---	---	---	---	---	---	---	---
61,62	R	G	R	G	R	R	R	Y
81	R	R	R	R	R	R	G	R
82	R	R	R	R	R	R	G	R
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	W	DW	W	DRK

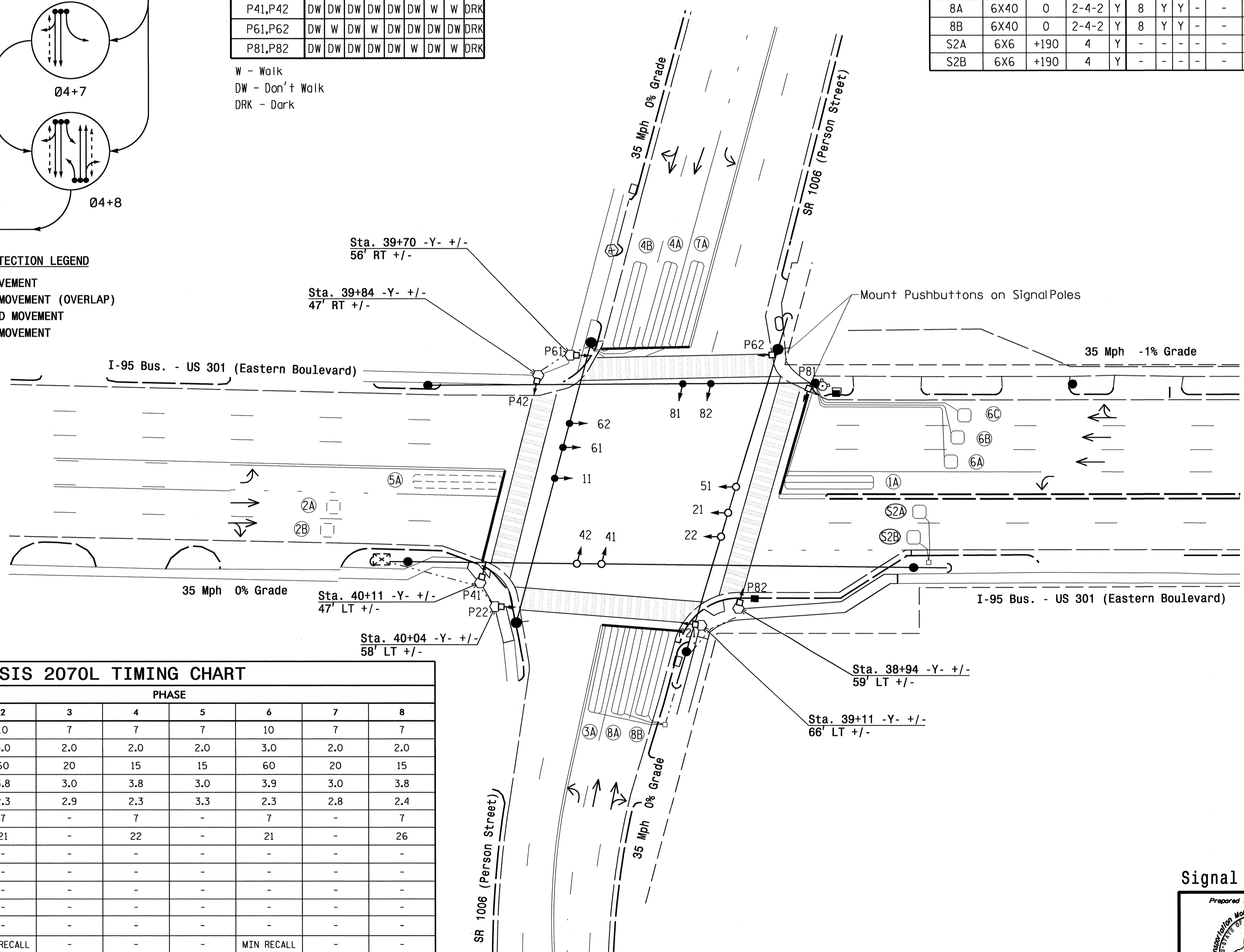
W - Walk
DW - Don't Walk
DRK - Dark

SIGNAL FACE I.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

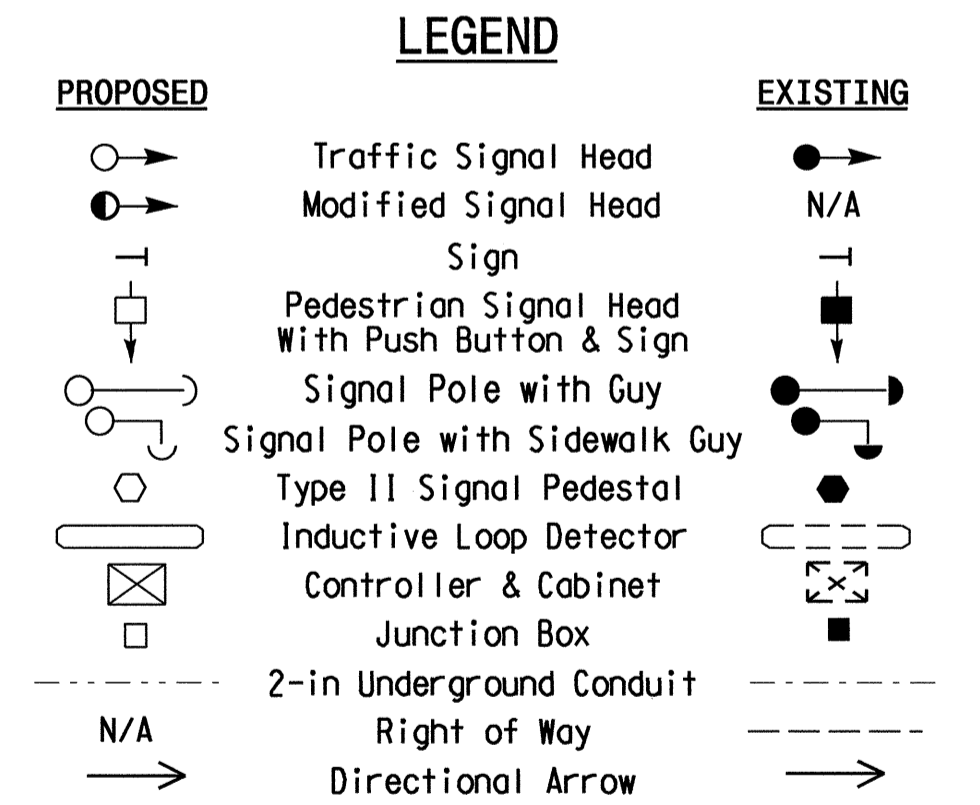
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY		
1A	6X40	0	2-4-2	Y	1	Y	Y	-	3	-
2A,2B	6X6	70	3	-	2	Y	Y	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	15	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	5	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	3	-
6A,6B,6C	6X6	70	4	Y	6	Y	Y	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	15	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	5	-
S2A	6X6	+190	4	Y	-	-	-	-	-	Y
S2B	6X6	+190	4	Y	-	-	-	-	-	Y



OASIS 2070L TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1*	7	10	7	7	7	10	7	7
Extension 1*	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max Green 1*	15	60	20	15	15	60	20	15
Yellow Clearance	3.0	3.8	3.0	3.8	3.0	3.9	3.0	3.8
Red Clearance	3.3	2.3	2.9	2.3	3.3	2.3	2.8	2.4
Walk 1*	-	7	-	7	-	7	-	7
Don't Walk 1	-	21	-	22	-	21	-	26
Seconds Per Actuation*	-	-	-	-	-	-	-	-
Max Variable Initial*	-	-	-	-	-	-	-	-
Time Before Reduction*	-	-	-	-	-	-	-	-
Time To Reduce*	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

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



Signal Upgrade

I-95 Bus - US 301 (Eastern Boulevard) At SR 1006 (Person Street)

Division 6 Cumberland County Fayetteville

PLAN DATE: February 2012 REVIEWED BY: PLA

PREPARED BY: JPG REVIEWED BY:

SCALE 1"=30'

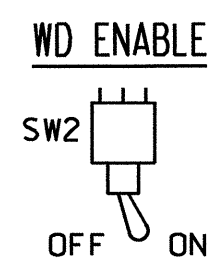
DATE 4/2/12

SIG. INVENTORY NO. 06-0029

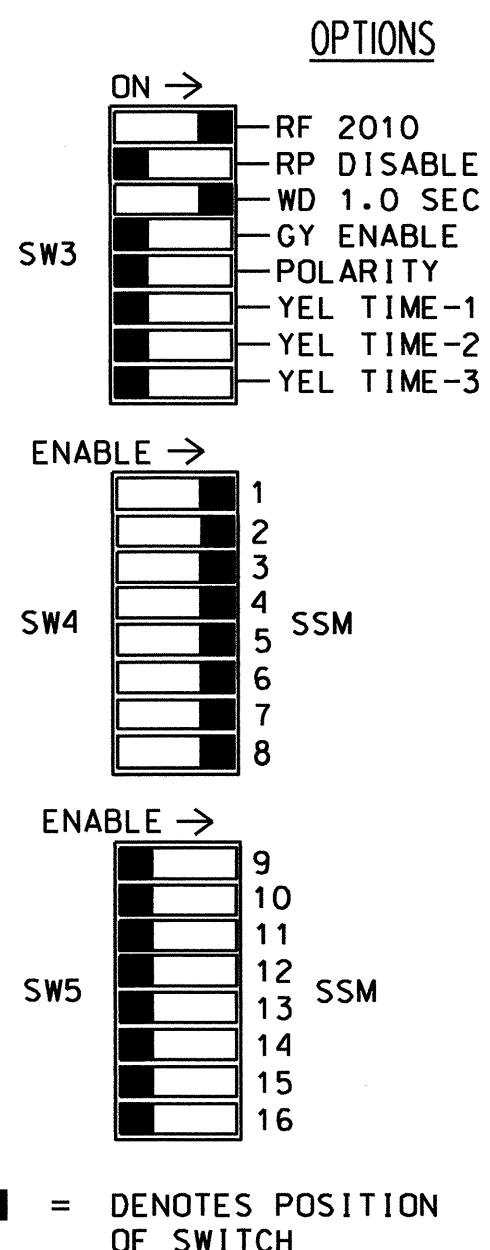
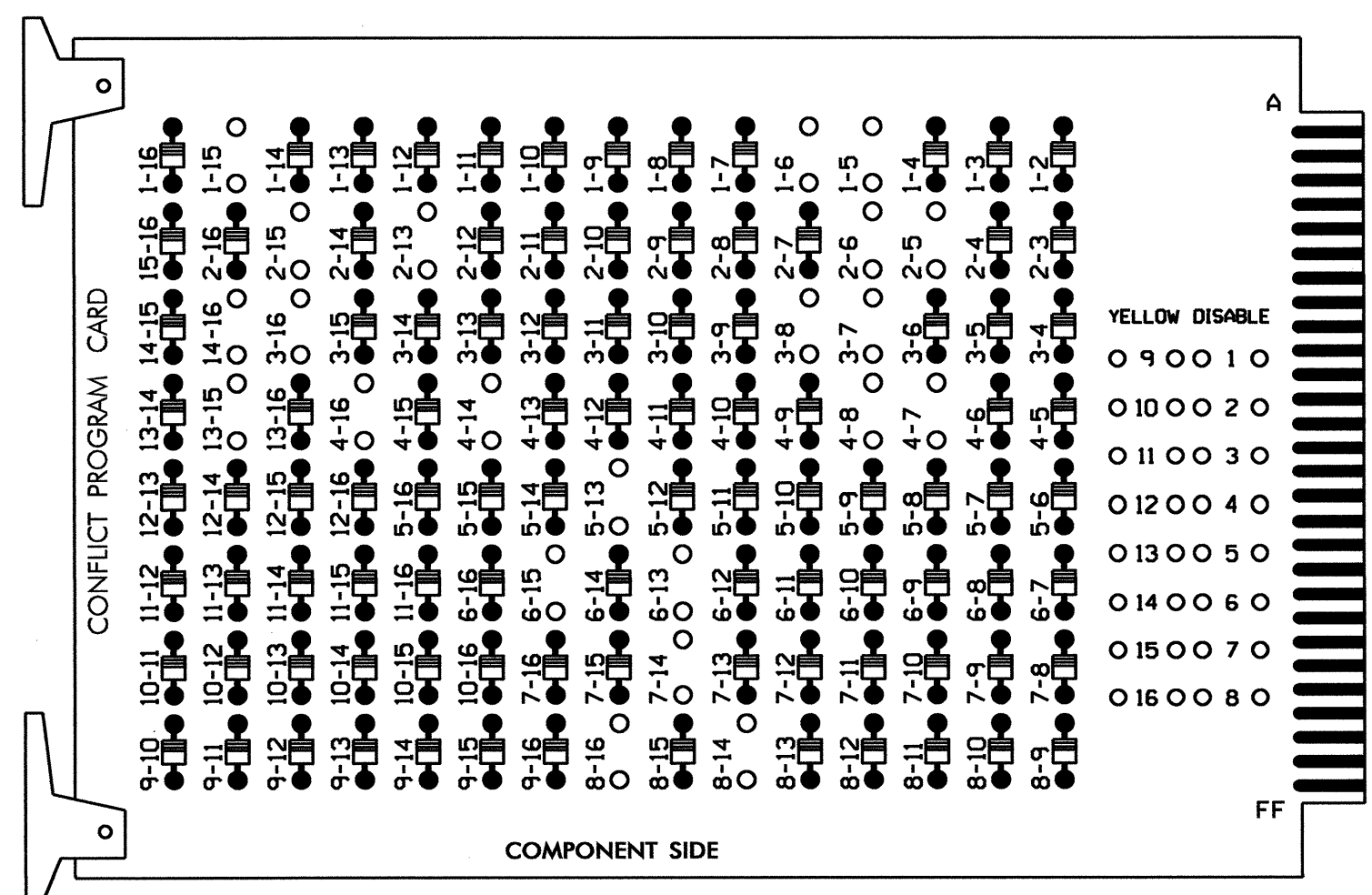
02-JAN-2013 09:11 S:\TSS\04\15 Signal\Signal Design\Sign\106\Eastern_Reg\com\lv-06\w-5335\060029.s1.g.dsn_20120402.dgn

EDI MODEL 2010ECL 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:

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

NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET332/W/AUX
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P,S7,S8,S8P
 PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED,6PED,8PED
 OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21, P22	81	41,42	P41, P42	51	61,62	P61, P62	41	81,82	P81, P82	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				117			132			123							
GREEN ARROW	127				118			133			124							
Hand icon					113			104			119							
Person icon					115			106			121							

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

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

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

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

PRESS 'NEXT'

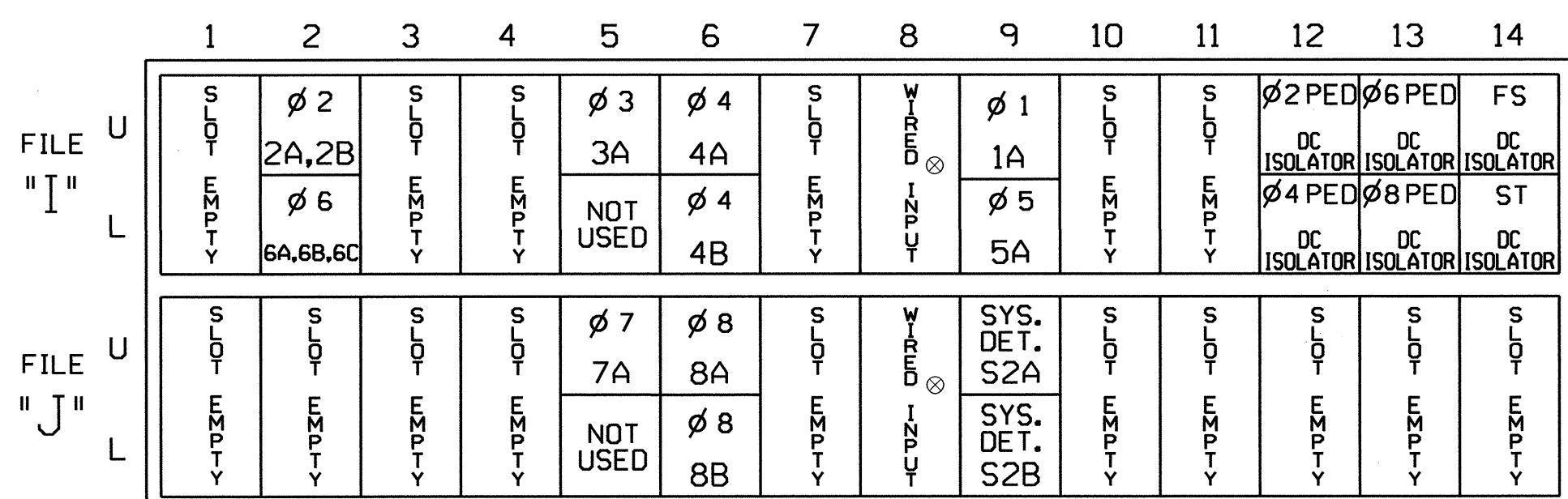
DYNAMIC/BACKUP CONTROL FUNCTION #02
 OVERLAPS: ABCDEFGHIJKLMNP
 IF OVERLAPS ARE ACTIVE: |
 OR PHASES: 12345678910111213141516
 IF PHASES ARE ON: X
 OMIT PHASES: | X
 CALL PHASES: |

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0029
 DESIGNED: February 2012
 SEALED: 4-2-12
 REVISED: N/A

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

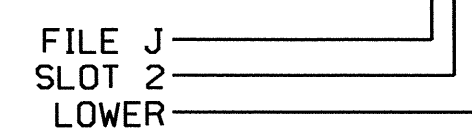
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
6A,6B,6C	TB2-7,8	I2L	43	5	12	6	Y	Y			
3A ¹	TB4-5,6	I5U	58	20	3	3	Y	Y			15
	-	J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			5
1A	TB6-9,10	I9U	60	22	11	1	Y	Y			3
5A	TB6-11,12	I9L	62	24	13	5	Y	Y			
7A ²	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			5
*S2A	TB7-9,10	J9U	59	21	15	SYS					
*S2B	TB7-11,12	J9L	61	23	17	SYS					
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

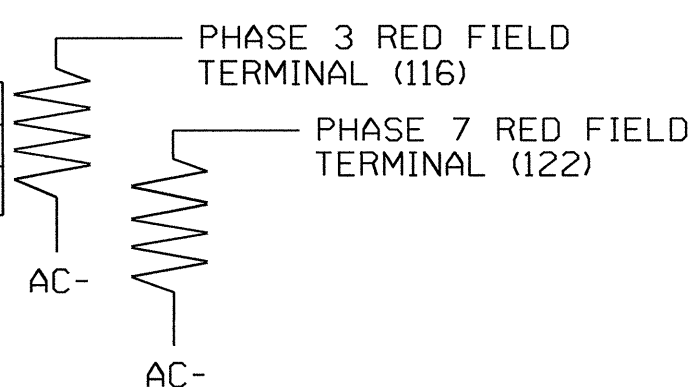
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

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



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

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
 Transportation Mobility and Safety Solutions
 A DIVISION OF HANSON CONSULTING GROUP
 Signal Management Group
 750 N. Greenfield Pkwy, Garner, NC 27529

I-95 Bus. - US 301 (Eastern Boulevard) at SR 1006 (Person Street)

Division 6 Cumberland County Fayetteville

PLAN DATE: 3-21-12 REVIEWED BY: T. J. J. J.

PREPARED BY: D. H. Spaulding REVIEWED BY:

REVISIONS: INIT. DATE

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

SIG. INVENTORY NO. 06-0029

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

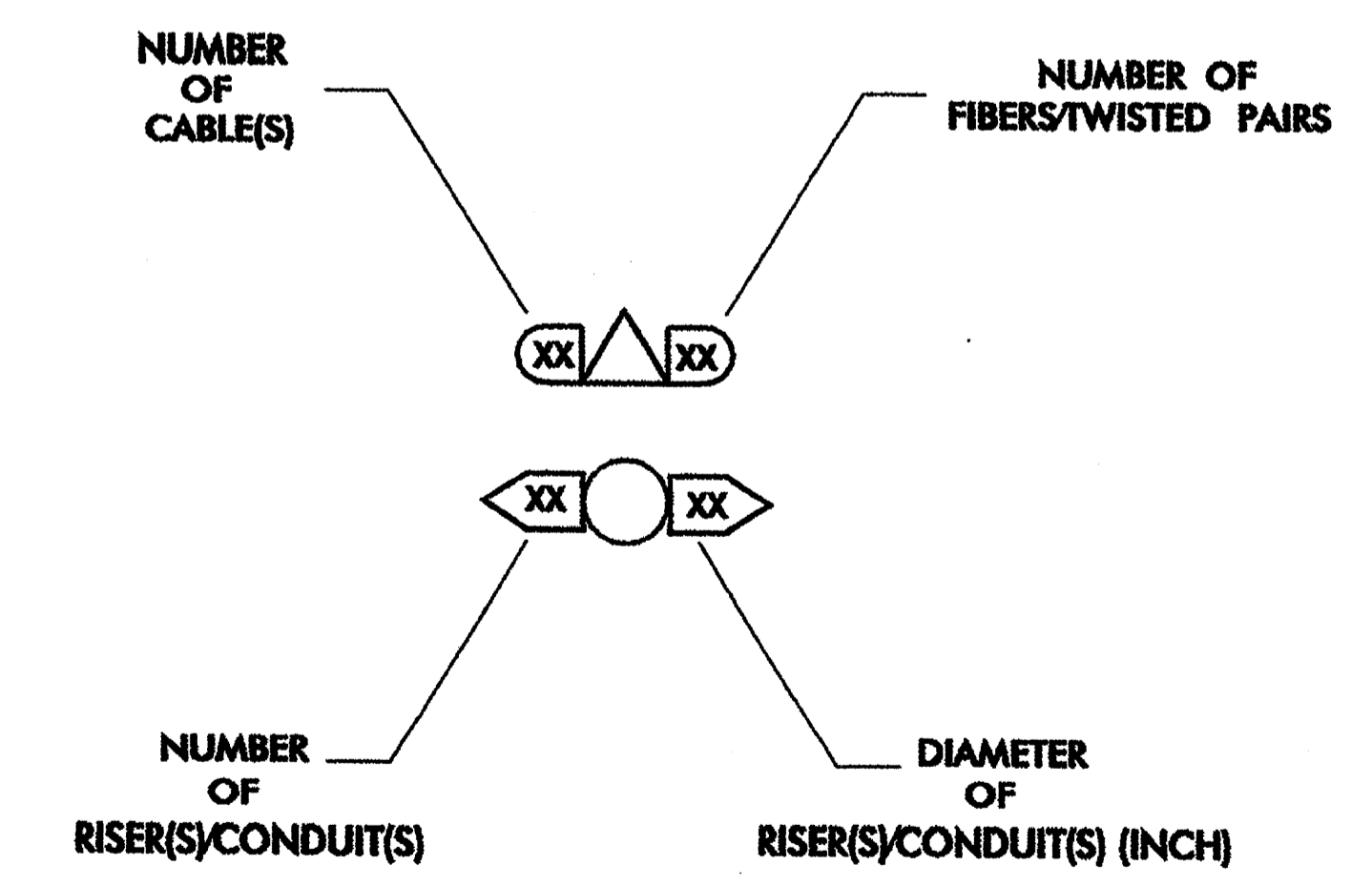
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL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

LEGEND

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

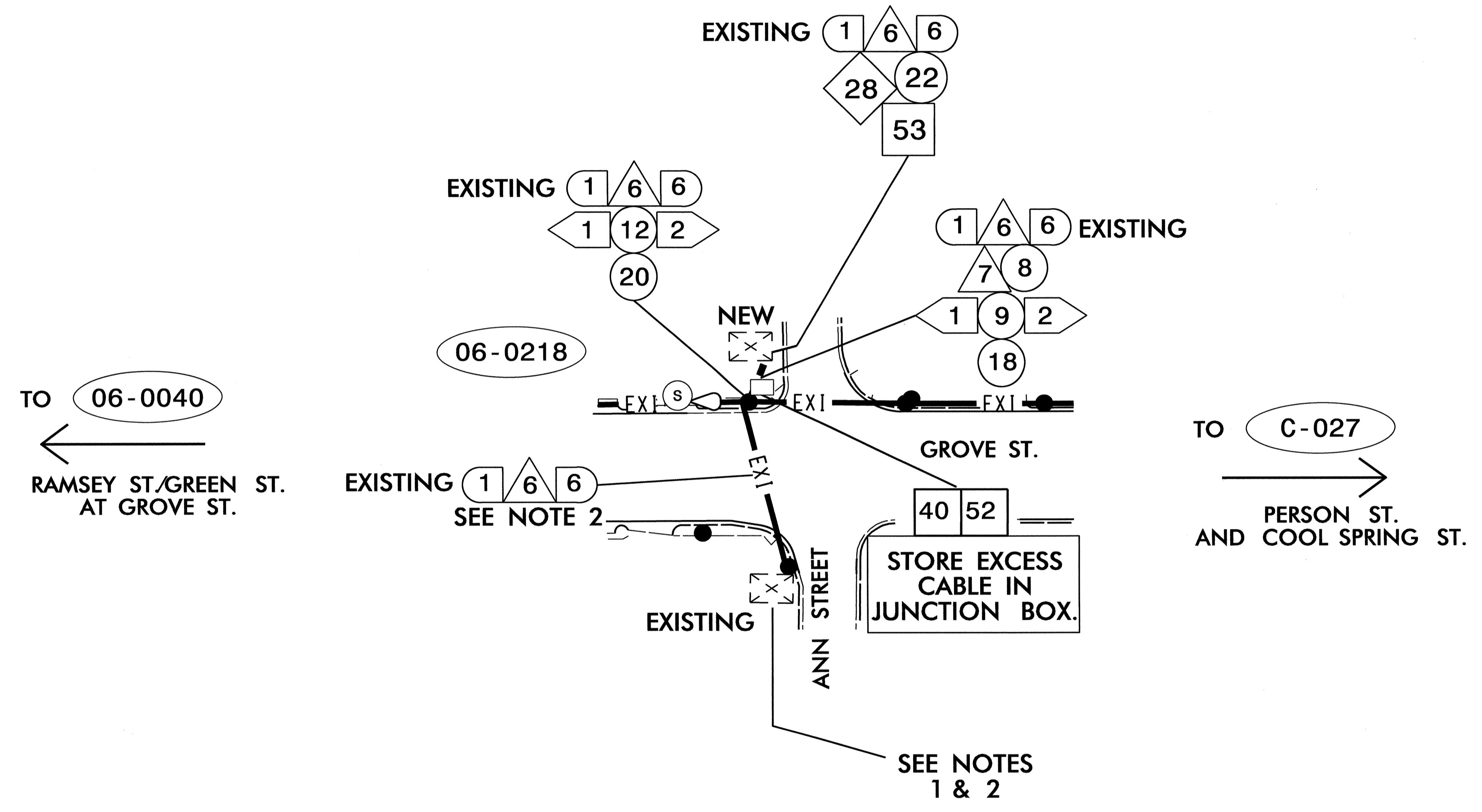
CONSTRUCTION NOTE SYMBOLOGY KEY

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



	CONSTRUCTION NOTES		
	PLAN DATE: _____ PREPARED BY: _____	REVIEWED BY: _____ REVIEWED BY: G. A. FULLER	
222 N. McDowell St., Raleigh, NC 27603 SCALE: _____	SIGNATURE: <i>Gregory A. Fuller</i> 10/31/02 DATE: _____		SEAL

CONTACT THE CITY OF FAYETTEVILLE TRAFFIC ENGINEER, LEE JERNIGAN, PE ((910) 433-1153) A MINIMUM OF FIVE (5) DAYS PRIOR TO DISCONNECTING FIBER OPTIC CABLE AT THIS LOCATION.



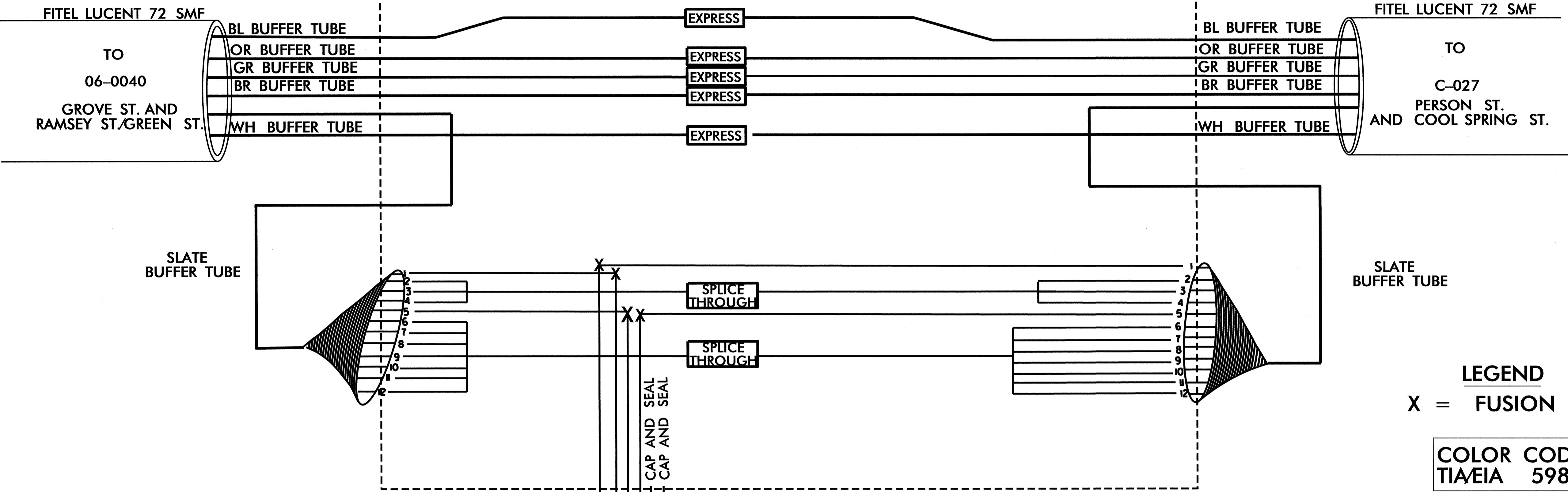
NOTES:

1. RECORD EXISTING SPLICES PRIOR TO DISCONNECTING FIBER OPTIC CABLE AND COMPARE WITH PROVIDED SPLICE PLANS. SUBMIT RECORDED SPLICE PLANS TO THE ENGINEER. IF DISCREPANCIES ARE NOTED BETWEEN THE RECORDED SPLICE PLANS AND THOSE PROVIDED UNDER THIS PROJECT RETERMINATE FIBERS TO MATCH THE RECORDED SPLICE PLANS.
2. DISCONNECT AND BACK PULL EXISTING "6-FIBER DROP CABLE" FROM THE EXISTING SIGNAL CABINET AND REROUTE TO NEW SIGNAL CABINET.
3. WORK IS NOT COMPLETE UNTIL INTERSECTION AND ALL EXISTING FIBER OPTIC CIRCUITS ARE COMMUNICATING AND FUNCTIONING PROPERLY IN EXISTING SIGNAL SYSTEM.

	CABLE ROUTING PLANS GROVE ST. AND N. EASTERN BLVD. I-95/US 301		SEAL
	DIVISION 06 CUMBERLAND FAYETTEVILLE	PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY	
PREPARED BY: H.T. BERGGREN	REVIEWED BY: G.A. FULLER, PE		SIGNATURE: <i>Gregory A. Fuller</i> DATE: 10/19/12
REVISIONS	INIT.	DATE	

EXISTING AERIAL
SPLICE ENCLOSURE
AT SIG # 06-0218
GROVE ST. AND ANN ST.

EXISTING AERIAL SPLICE ENCLOSURE

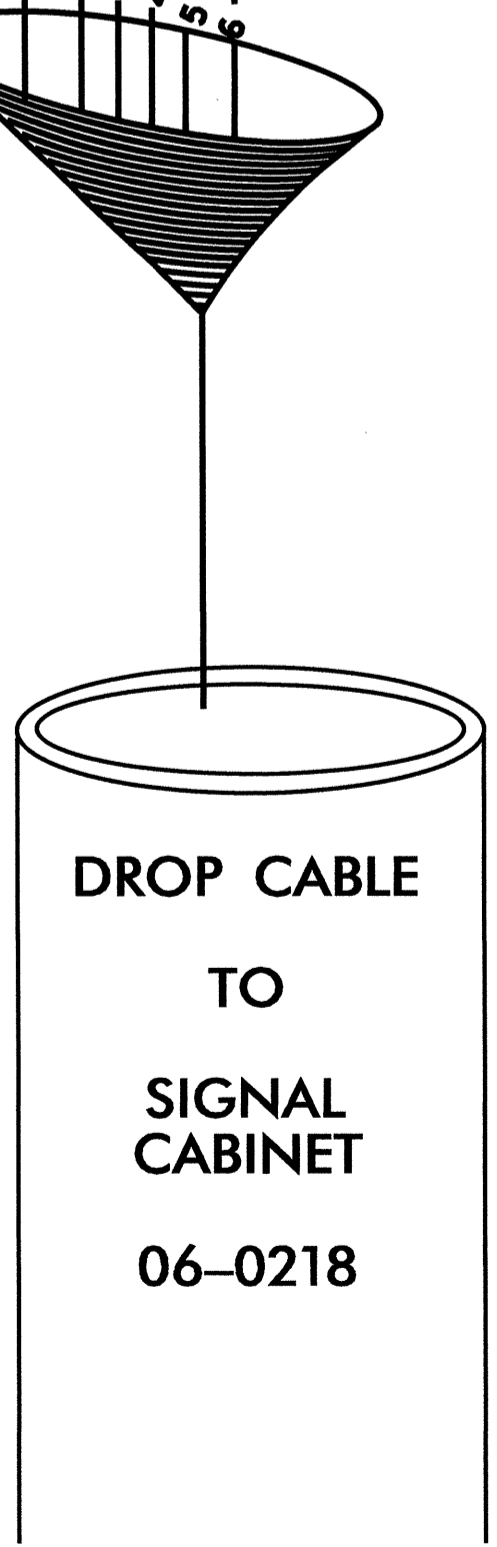
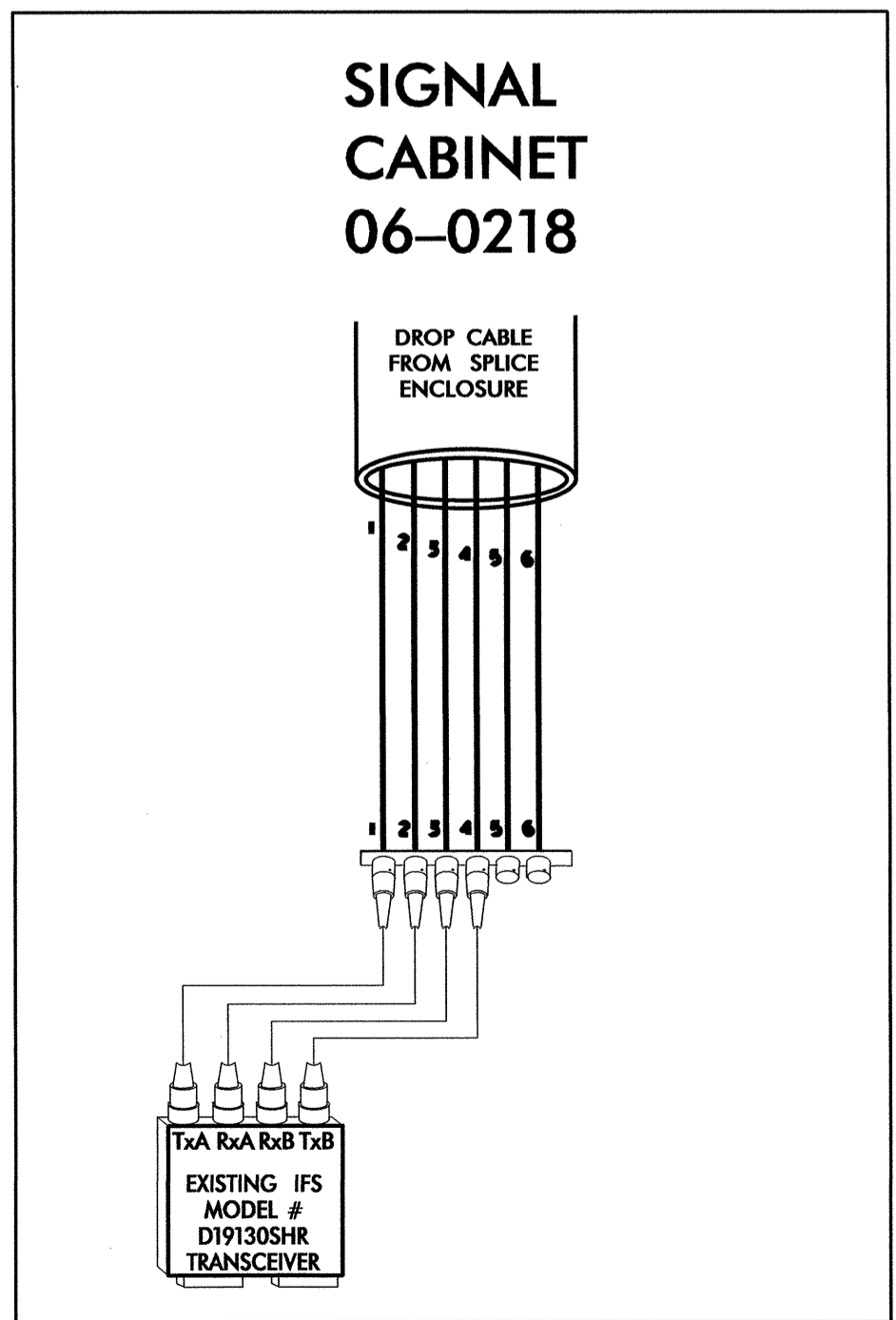


LEGEND
X = FUSION SPLICE

COLOR CODE
TIA/EIA 598-A

- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
- (6) WHITE
- (7) RED
- (8) BLACK
- (9) YELLOW
- (10) VIOLET
- (11) ROSE
- (12) AQUA

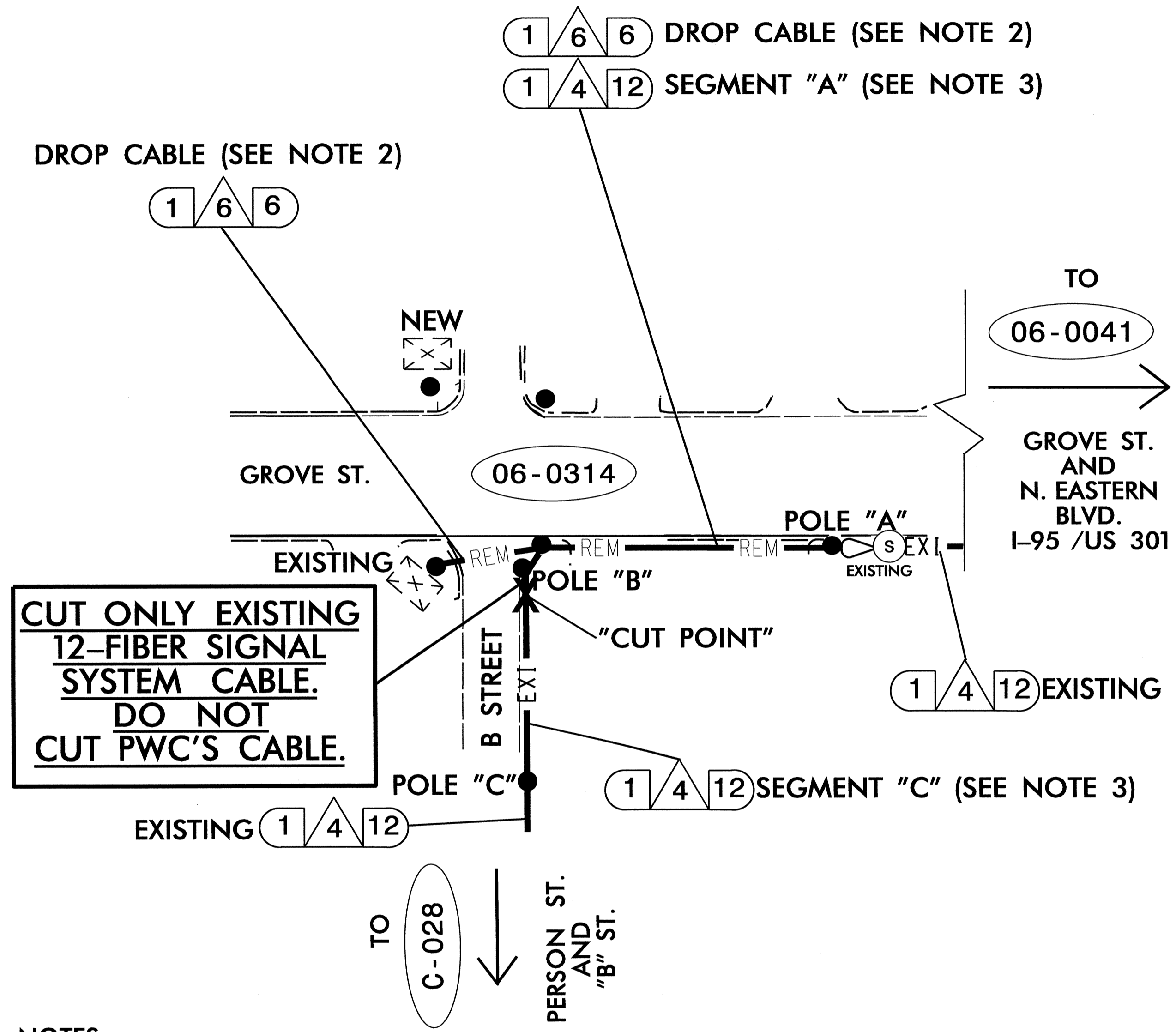
PERFORM SPlicing
AS SHOWN



	SPLICE PLAN	
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY PREPARED BY: H.T. BERGGREN REVIEWED BY: G.A. FULLER, PE	
SCALE 	REVISIONS INIT. DATE	SIGNATURE DATE

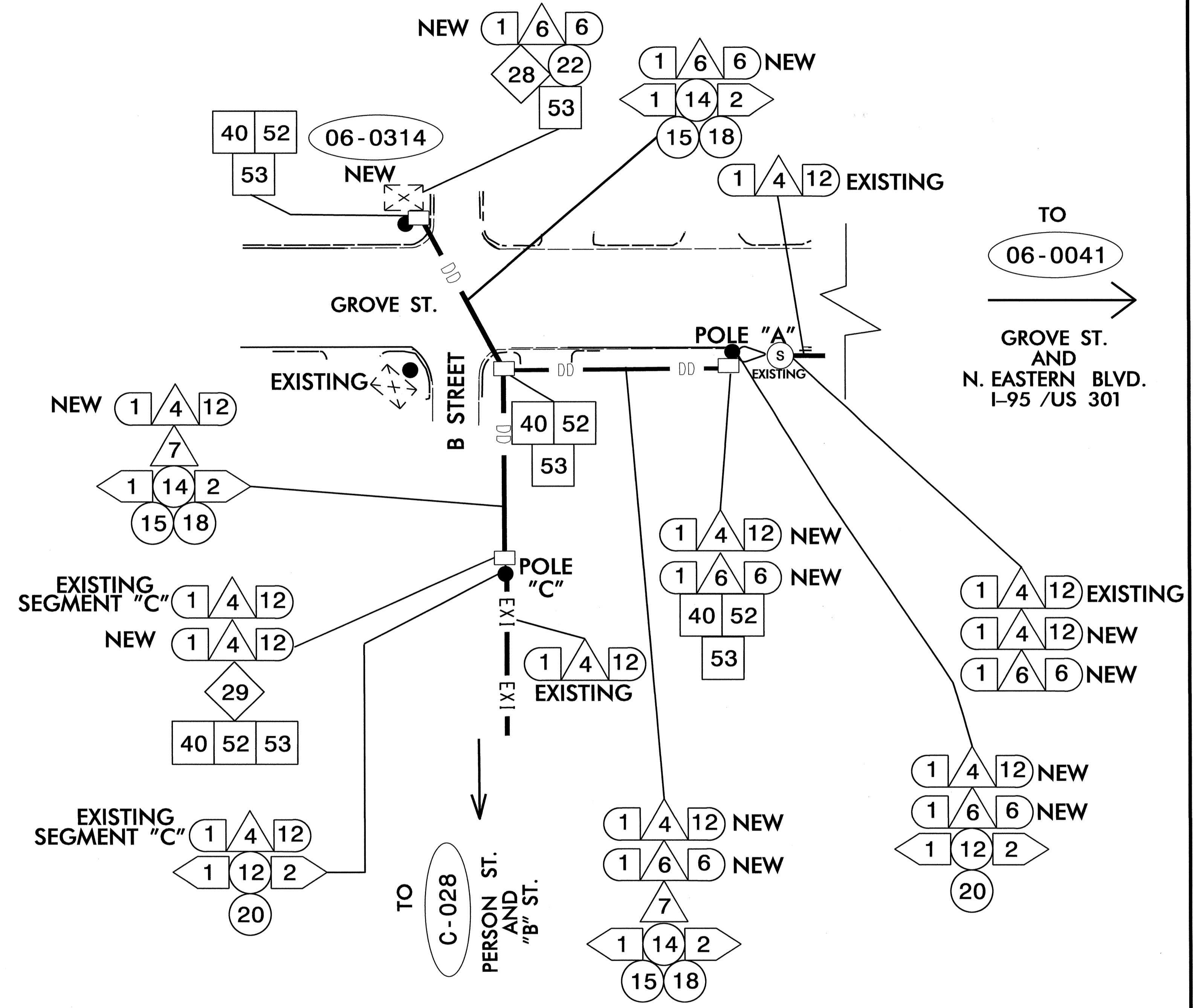
PHASE 1: BACKPULLING EXISTING FIBER OPTIC CABLE

CONTACT THE CITY OF FAYETTEVILLE TRAFFIC ENGINEER, LEE JERNIGAN, PE ((910) 433-1153) A MINIMUM OF FIVE (5) DAYS PRIOR TO DISCONNECTING FIBER OPTIC CABLE AT THIS LOCATION.



- NOTES:**
1. RECORD EXISTING SPLICES (IN AERIAL SPLICE ENCLOSURE AND IN SIGNAL CABINET) PRIOR TO DISCONNECTING FIBER OPTIC CABLE AND COMPARE WITH PROVIDED SPLICE PLANS. SUBMIT RECORDED SPLICE PLANS TO THE ENGINEER. IF DISCREPANCIES ARE NOTED BETWEEN THE RECORDED SPLICE PLANS AND THOSE PROVIDED UNDER THIS PROJECT RETERMINATE FIBERS TO MATCH THE RECORDED SPLICE PLANS.
 2. DISCONNECT, BACK PULL, AND REMOVE EXISTING "6-FIBER DROP" CABLE BETWEEN SIGNAL CABINET AND EXISTING AERIAL SPLICE ENCLOSURE LOCATED AT POLE "A".
 3. "CUT POINT": CUT 12-FIBER CABLE AT POLE "B". BACK PULL SEGMENT "C" TO POLE "C" AND COIL FOR FUTURE USE. DISCONNECT, BACK PULL, AND REMOVE SEGMENT "A" FROM THE "CUT POINT" TO THE AERIAL SPLICE ENCLOSURE LOCATED AT POLE "A".

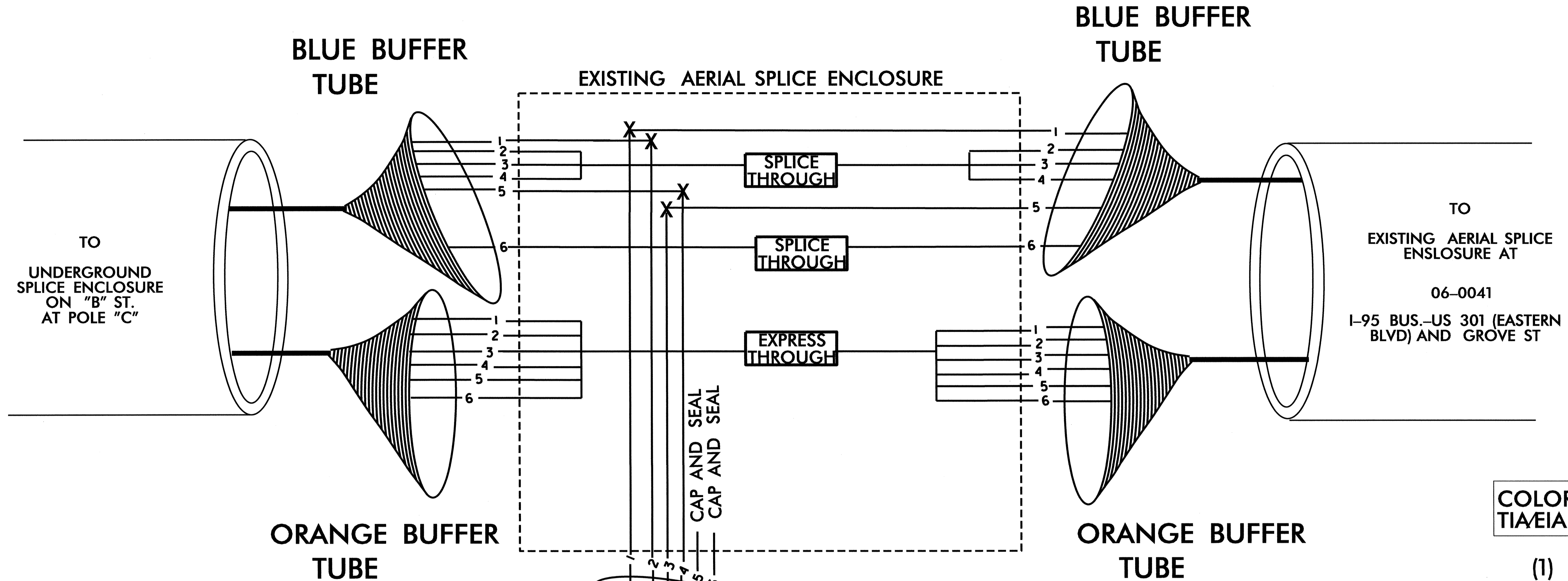
PHASE 2: REROUTING EXISTING FIBER OPTIC CABLE



- NOTES:**
1. WORK IS NOT COMPLETE UNTIL INTERSECTION AND ALL EXISTING FIBER OPTIC CIRCUITS ARE COMMUNICATING AND FUNCTIONING PROPERLY IN EXISTING SIGNAL SYSTEM.

	CABLE ROUTING PLANS GROVE ST. AND N. EASTERN BLVD. I-95/US 301		SEAL
	DIVISION 06 CUMBERLAND FAYETTEVILLE PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY PREPARED BY: H.T. BERGGREN REVIEWED BY: G.A. FULLER, PE	REVISIONS INIT. DATE	

EXISTING AERIAL
SPLICE ENCLOSURE
SIG # 06-0314
GROVE ST. AND "B" ST.
AT POLE "A"



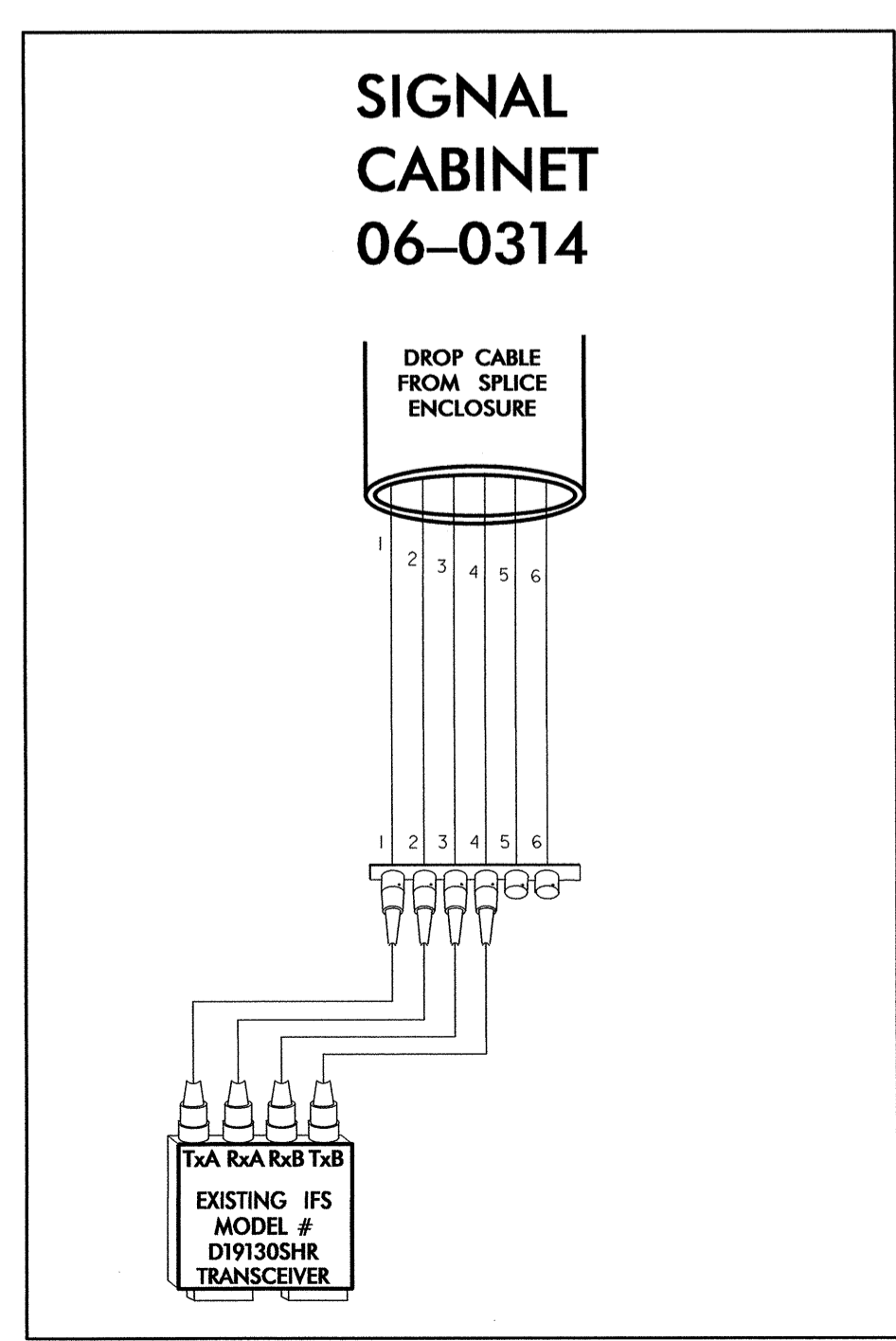
TO
EXISTING AERIAL SPLICE
ENCLOSURE AT
06-0041
I-95 BUS.-US 301 (EASTERN
BLVD) AND GROVE ST

COLOR CODE
TIA/EIA 598-A

LEGEND
X = FUSION SPLICE

- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
- (6) WHITE
- (7) RED
- (8) BLACK
- (9) YELLOW
- (10) VIOLET
- (11) ROSE
- (12) AQUA

PERFORM SPLICING
AS SHOWN



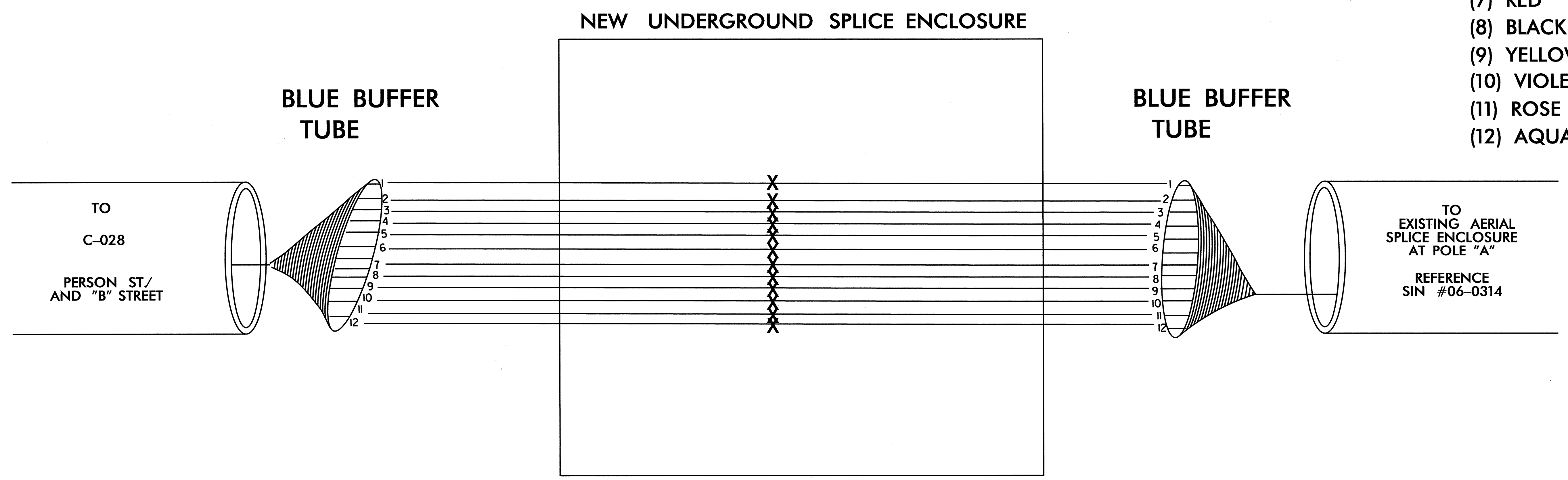
	SPLICE PLAN									
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY PREPARED BY: H.T. BERGGREN REVIEWED BY: G.A. FULLER, PE									
SCALE 	REVISIONS <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DESCRIPTION	INIT.	DATE					SIGNATURE DATE 10/19/12
NO.	DESCRIPTION	INIT.	DATE							

NEW UNDERGROUND
 SPLICE ENCLOSURE
 ALONG B STREET
 AT POLE "C"
 REFERENCE SIN #06-0314

LEGEND
 X = FUSION SPLICE

COLOR CODE
 TIA/EIA 598-A

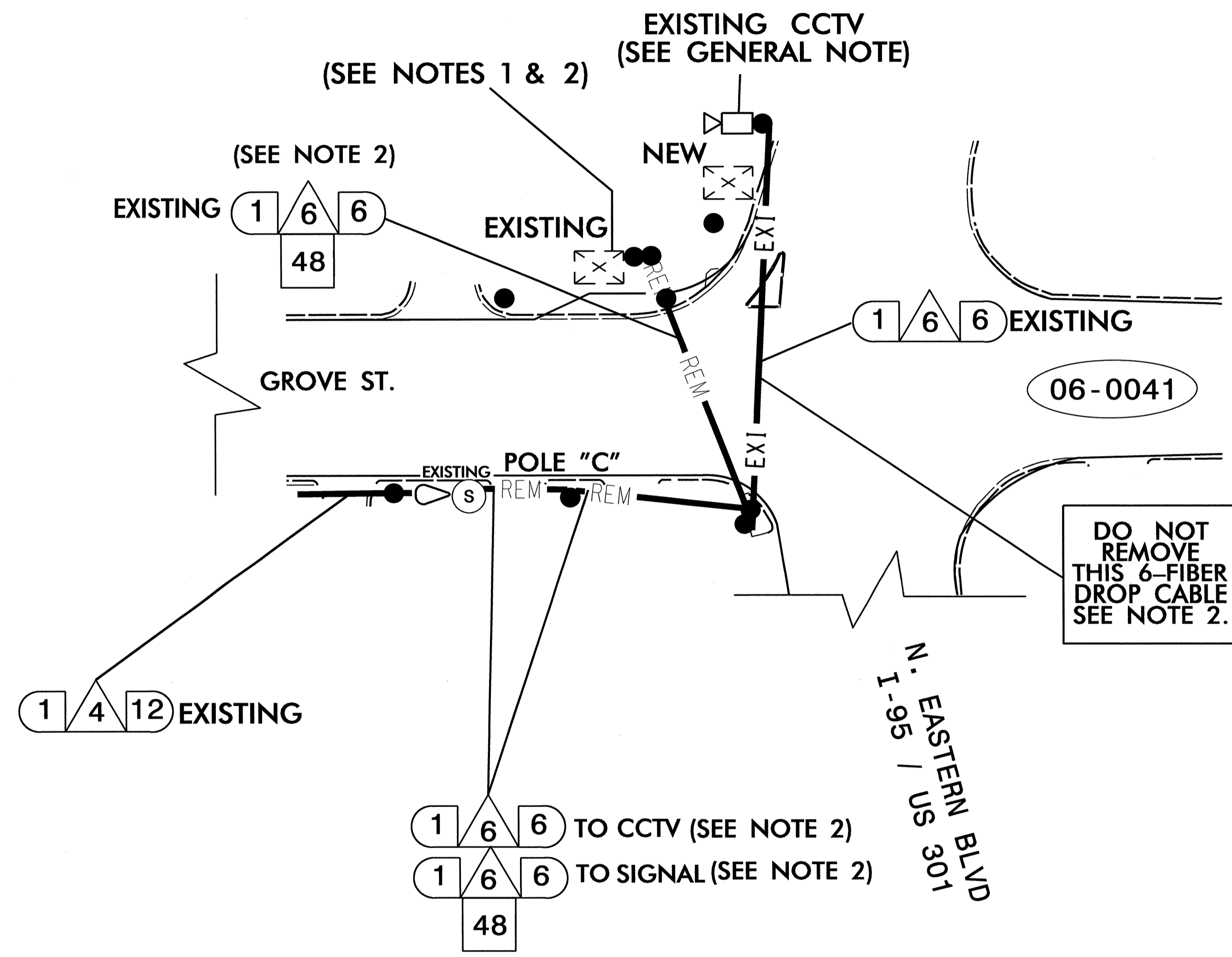
- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
- (6) WHITE
- (7) RED
- (8) BLACK
- (9) YELLOW
- (10) VIOLET
- (11) ROSE
- (12) AQUA



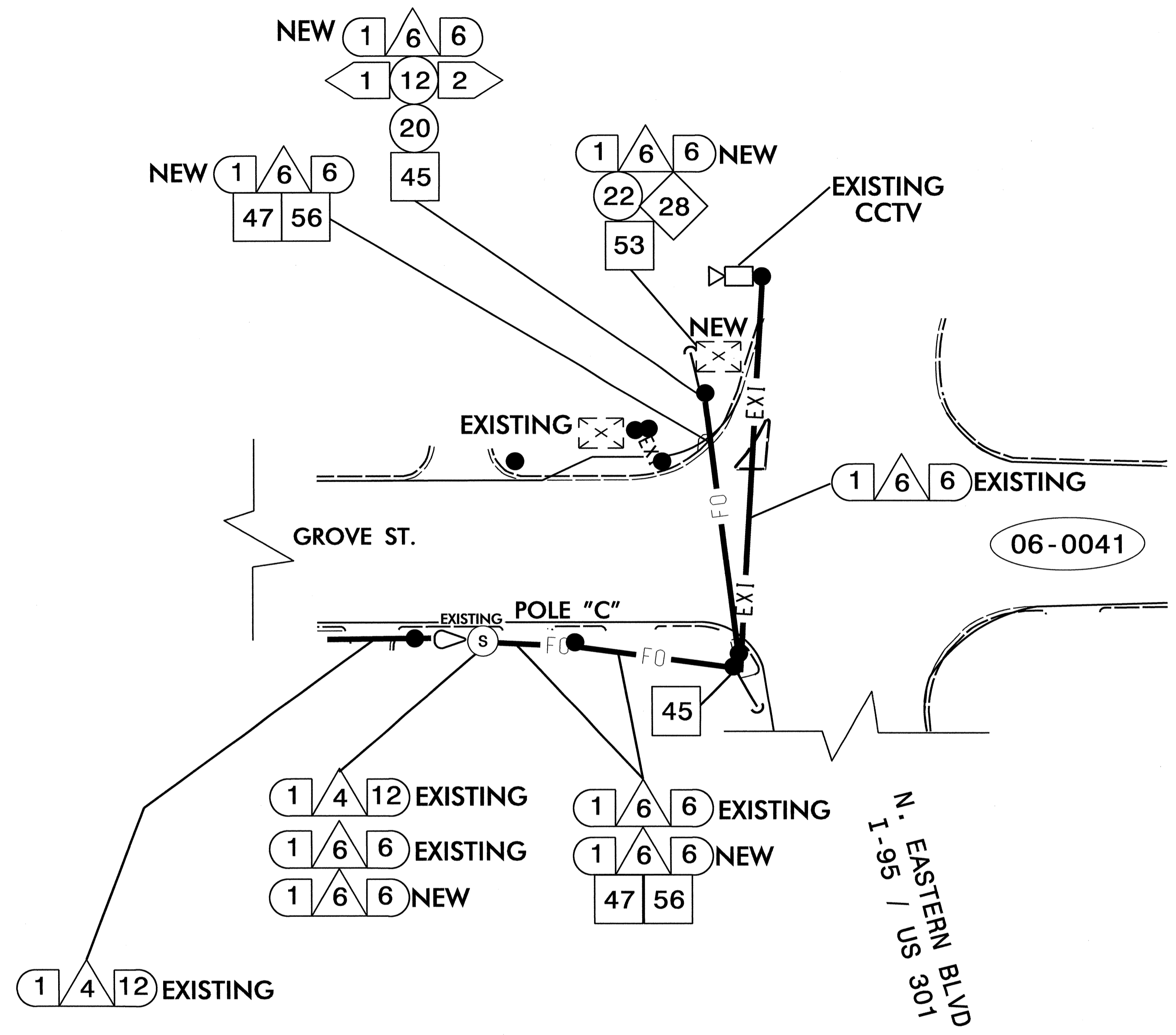
	SPLICE PLAN									
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY PREPARED BY: H. T. BERGGREN REVIEWED BY: G. A. FULLER, PE									
SCALE 	REVISIONS <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DATE	DESCRIPTION				INIT. DATE <table border="1"> <tr> <td> </td> <td> </td> </tr> </table>		
NO.	DATE	DESCRIPTION								
CADD Filename:		SIGNATURE DATE 10/19/12								

PHASE 1: BACKPULLING EXISTING FIBER OPTIC CABLE

CONTACT THE CITY OF FAYETTEVILLE TRAFFIC ENGINEER, LEE JERNIGAN, PE ((910) 433-1153) A MINIMUM OF FIVE (5) DAYS PRIOR TO DISCONNECTING FIBER OPTIC CABLE AT THIS LOCATION.



PHASE 2: REROUTING EXISTING FIBER OPTIC CABLE



GENERAL NOTE:

DIVISION 6 PERSONNEL TO MOVE EXISTING CCTV AND REROUTE AND RESPLICE EXISTING 6-FIBER DROP CABLE TO CCTV PRIOR TO LETTING.

NOTES:

- RECORD EXISTING SPLICES (IN AERIAL SPLICE ENCLOSURE AND IN SIGNAL CABINET) PRIOR TO DISCONNECTING FIBER OPTIC CABLE AND COMPARE WITH PROVIDED SPLICE PLANS. SUBMIT RECORDED SPLICE PLANS TO THE ENGINEER. IF DISCREPANCIES ARE NOTED BETWEEN THE RECORDED SPLICE PLANS AND THOSE PROVIDED UNDER THIS PROJECT RETERMINATE FIBERS TO MATCH THE RECORDED SPLICE PLANS.
- DISCONNECT, BACK PULL, AND REMOVE EXISTING "6-FIBER DROP CABLE" BETWEEN SIGNAL CABINET AND AERIAL SPLICE ENCLOSURE LOCATED AT POLE "C". DO NOT REMOVE 6-FIBER DROP CABLE TO EXISTING CCTV CAMERA.

NOTES:

- WORK IS NOT COMPLETE UNTIL INTERSECTION AND ALL EXISTING FIBER OPTIC CIRCUITS ARE COMMUNICATING AND FUNCTIONING PROPERLY IN EXISTING SIGNAL SYSTEM.

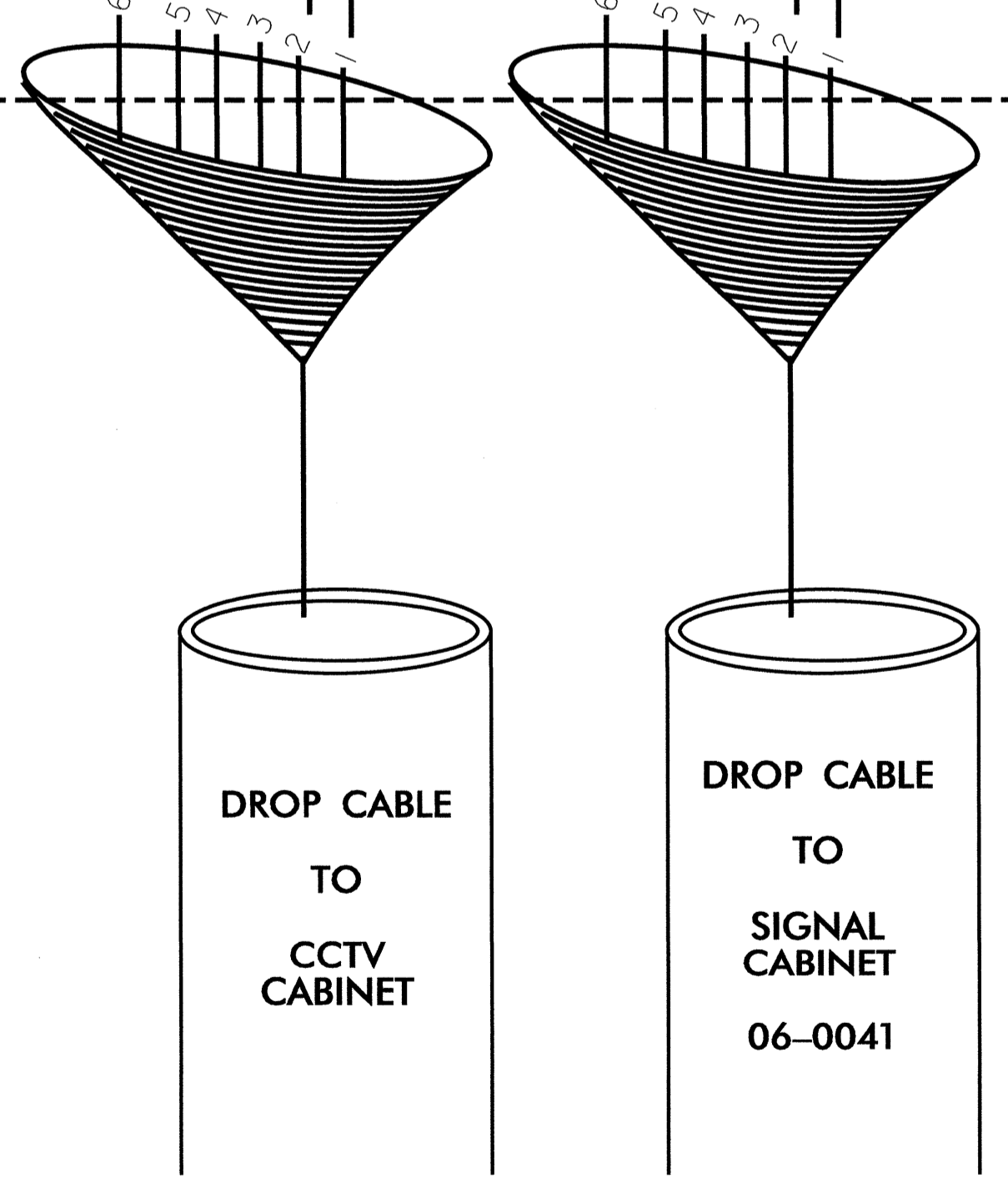
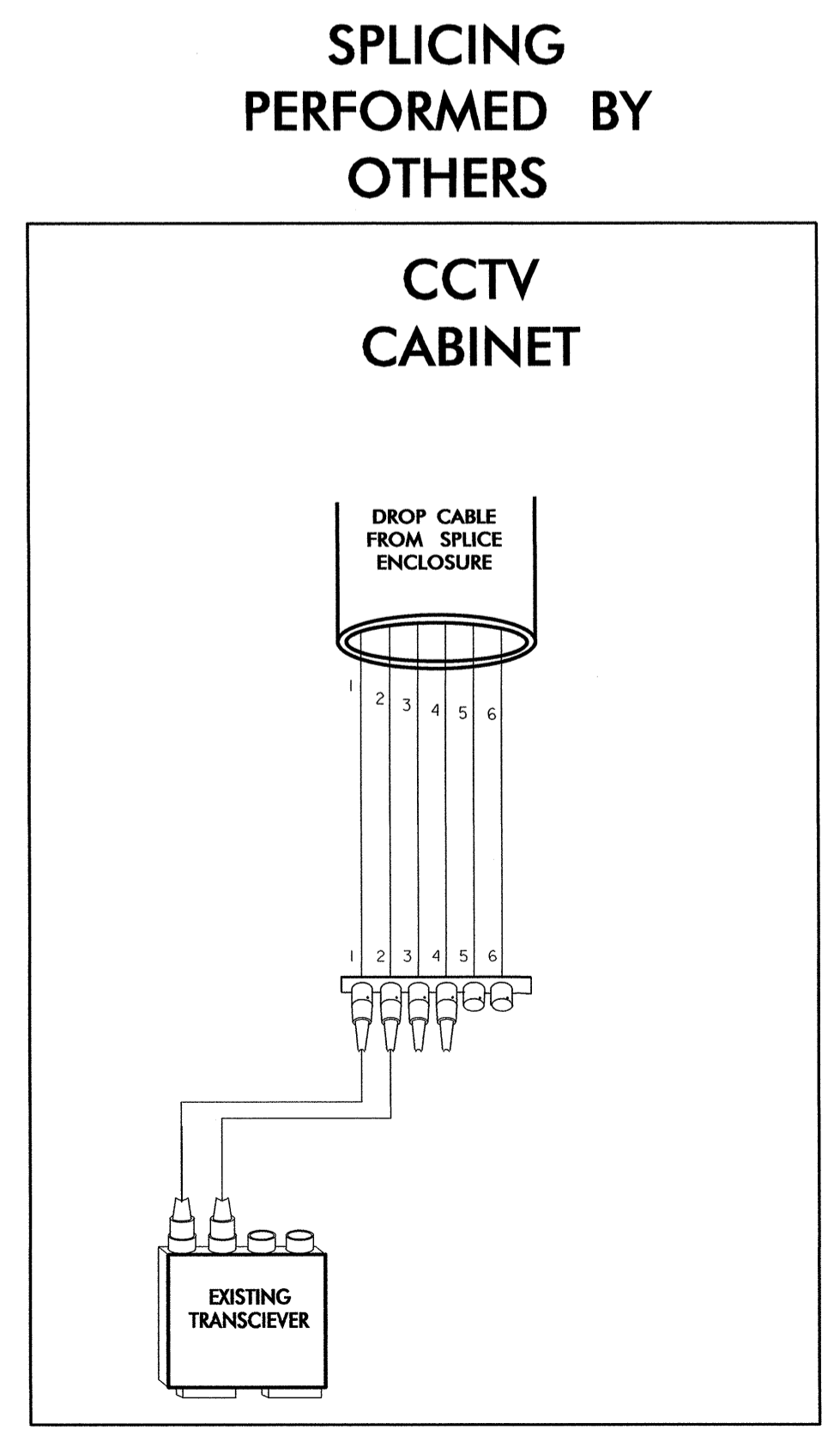
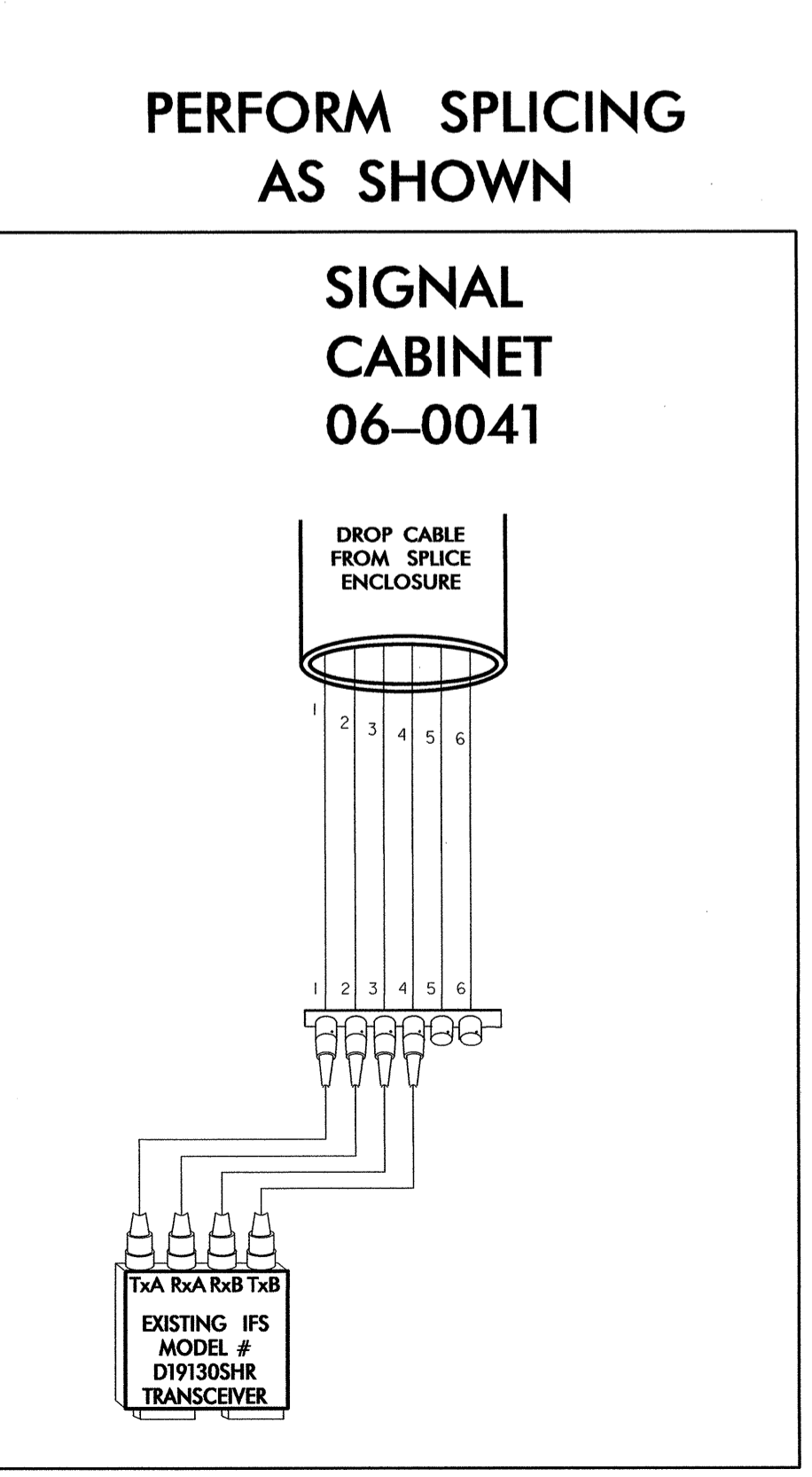
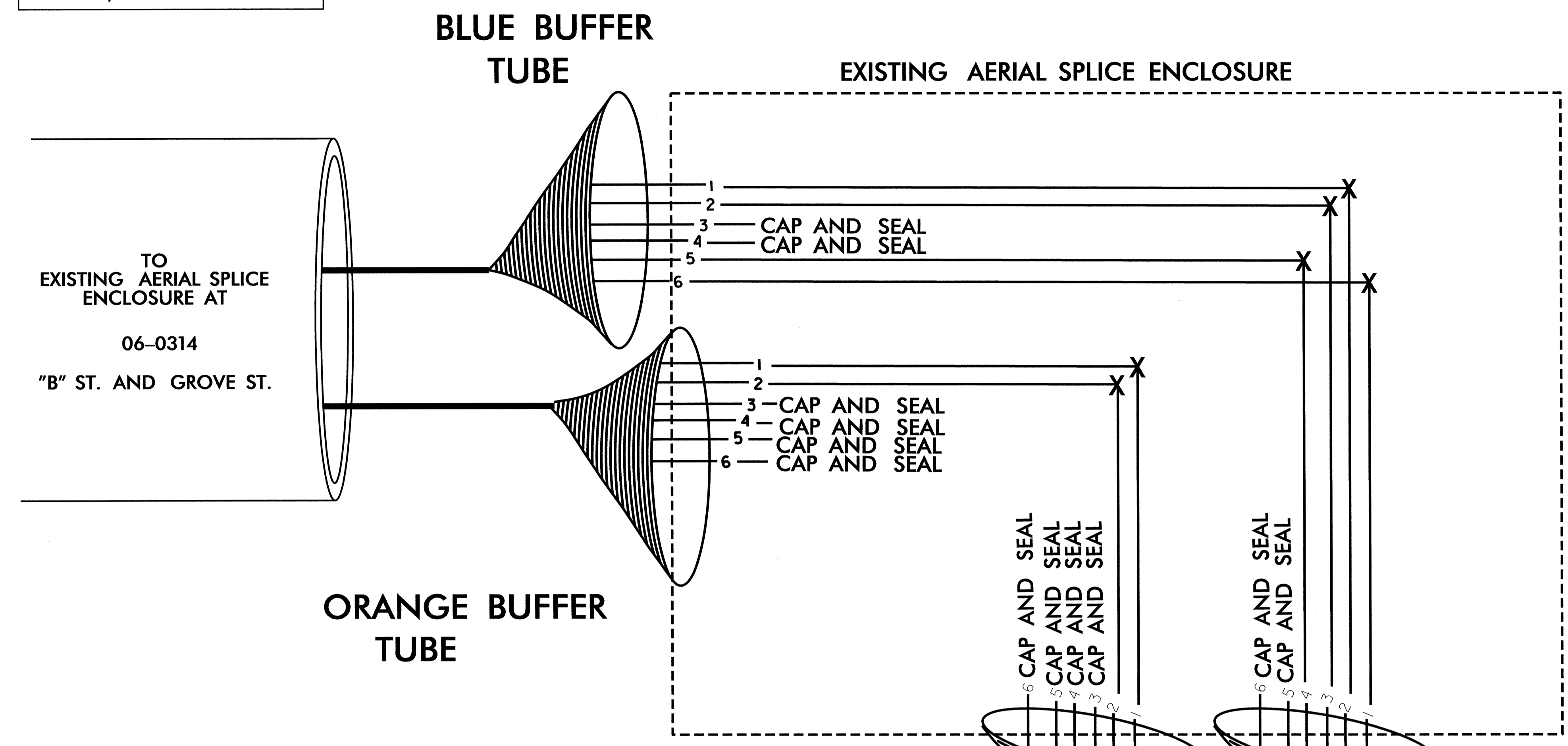
	CABLE ROUTING PLANS GROVE ST. AND N. EASTERN BLVD. I-95/US 301		SEAL
	DIVISION 06 CUMBERLAND FAYETTEVILLE	PLAN DATE: OCTOBER 2012	
750 N. Greenfield Pkwy., Garner, NC 27529	PREPARED BY: H.T. BERGGREN	REVIEWED BY: G.A. FULLER, PE	SIGNATURE: <i>Gregory A. Fuller</i> DATE: 10/19/12
SCALE: 0	REVISIONS:	INIT. DATE	CADD File name:

EXISTING AERIAL
SPLICE ENCLOSURE
AT SIG # 06-0041
I-95 BUS.-US 301 (EASTERN
BLVD.) AND GROVE ST.

LEGEND
X = FUSION SPLICE

COLOR CODE
TIA/EIA 598-A

- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
- (6) WHITE
- (7) RED
- (8) BLACK
- (9) YELLOW
- (10) VIOLET
- (11) ROSE
- (12) AQUA

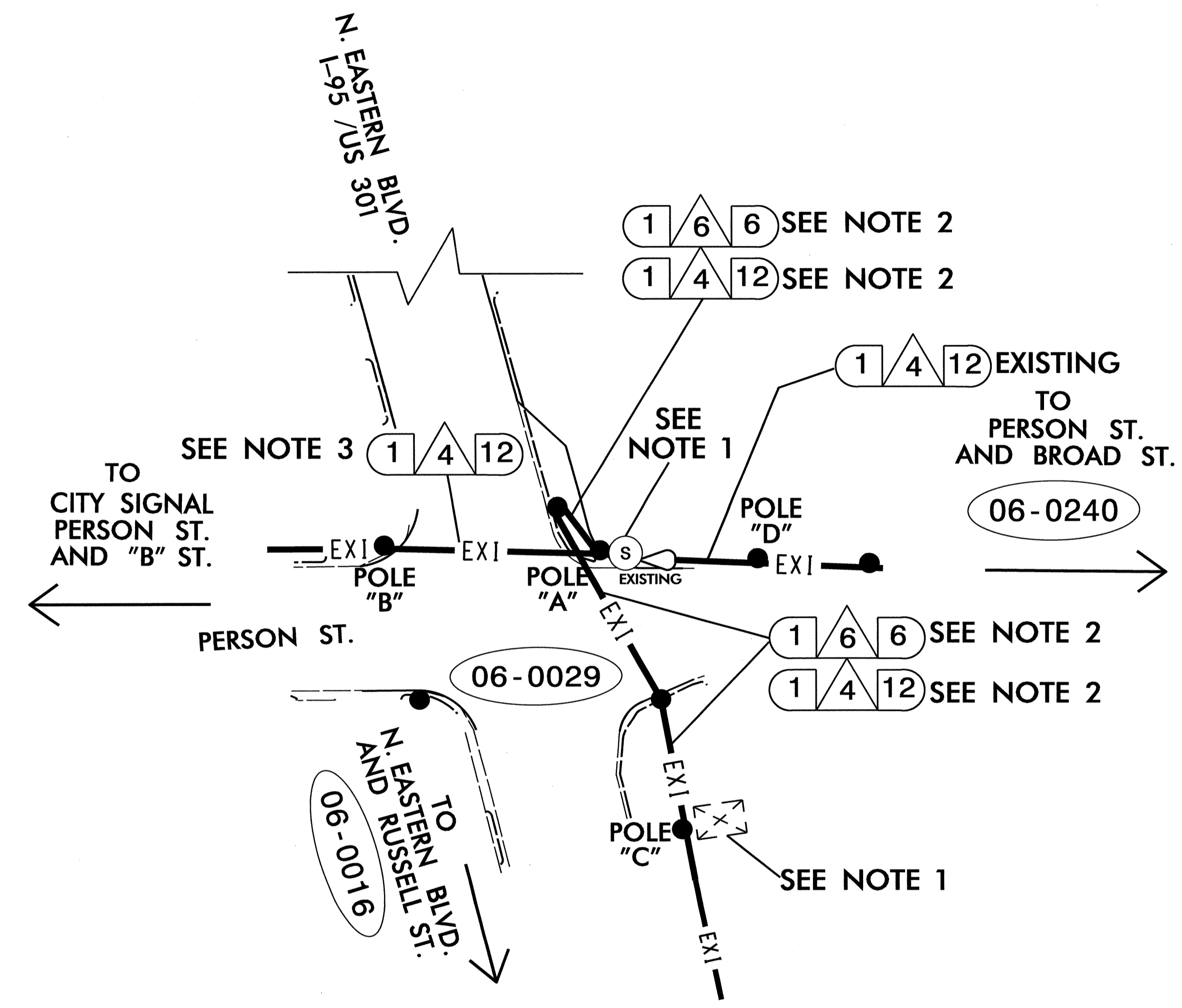


**DROP CABLE SPLICE TO
CCTV TO BE PERFORMED
BY DIVISION 6 PERSONNEL PRIOR
TO LETTING.**

	SPLICE PLAN	
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY PREPARED BY: H.T. BERGGREN REVIEWED BY: G.A. FULLER, PE	SCALE 0
Prepared in the Offices of:		SIGNATURE: <i>Gregory A. Fuller</i> DATE: 10/19/12 CADD Filename:

PHASE 1: BACKPULLING EXISTING FIBER OPTIC CABLE

CONTACT THE CITY OF FAYETTEVILLE TRAFFIC ENGINEER, LEE JERNIGAN, PE ((910) 433-1153) A MINIMUM OF FIVE (5) DAYS PRIOR TO DISCONNECTING FIBER OPTIC CABLE AT THIS LOCATION.

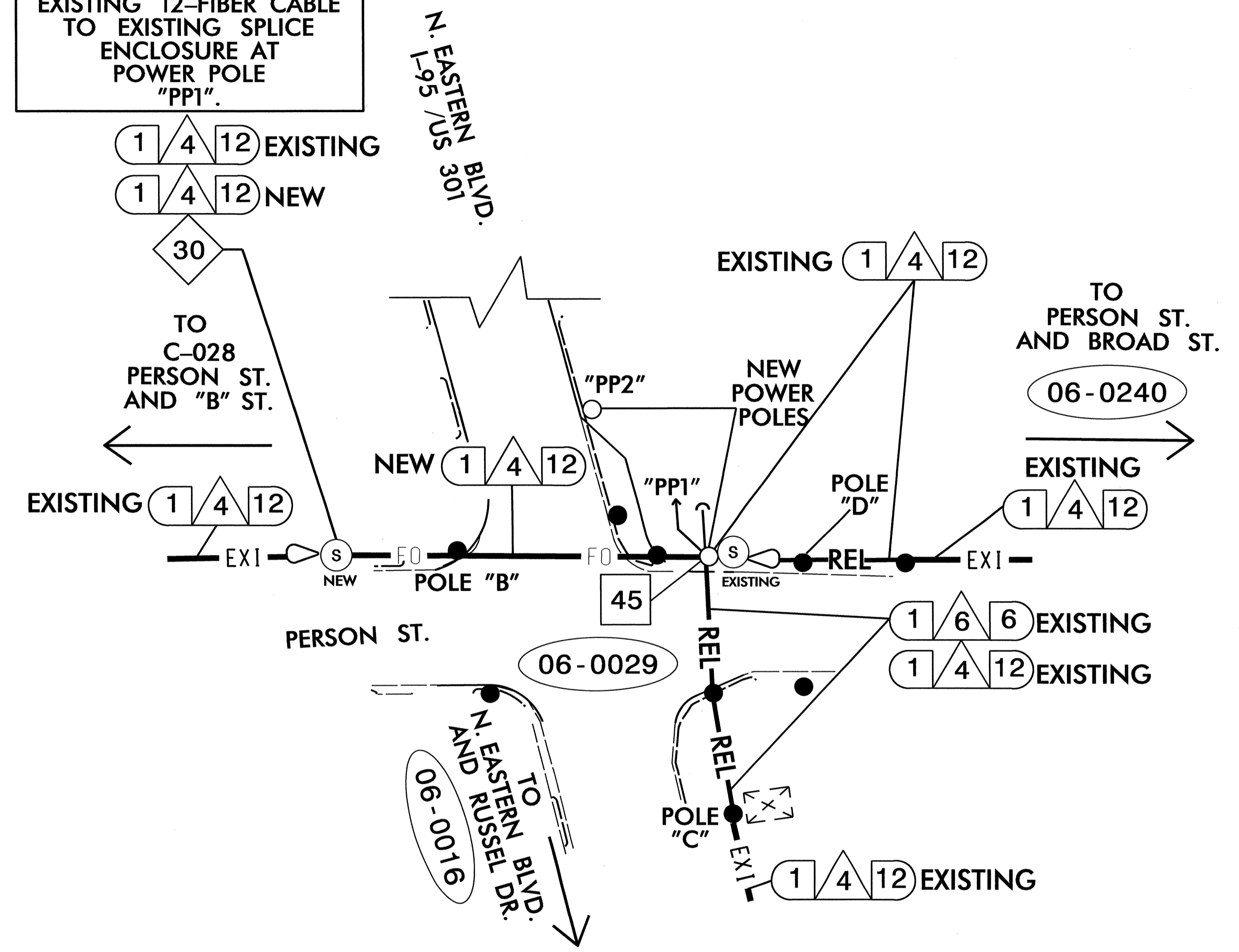


NOTES:

1. RECORD EXISTING SPLICES (IN AERIAL SPLICE ENCLOSURE AND IN SIGNAL CABINET) PRIOR TO DISCONNECTING FIBER OPTIC CABLE AND COMPARE WITH PROVIDED SPLICE PLANS. SUBMIT RECORDED SPLICE PLANS TO THE ENGINEER. IF DISCREPANCIES ARE NOTED BETWEEN THE RECORDED SPLICE PLANS AND THOSE PROVIDED UNDER THIS PROJECT RETERMINATE FIBERS TO MATCH THE RECORDED SPLICE PLANS.
2. DISCONNECT EXISTING "12-FIBER CABLE AND 6-FIBER DROP CABLE" FROM EXISTING AERIAL SPLICE ENCLOSURE, BACK PULL TO POLE "C", AND COIL FOR FUTURE USE.
3. DISCONNECT EXISTING "12-FIBER CABLE" FROM EXISTING AERIAL SPLICE ENCLOSURE, BACK PULL TO POLE "B", AND COIL FOR FUTURE USE.
4. BACK PULL EXISTING "12-FIBER AND SPLICE ENCLOSURE" TO EXISTING POWER POLE "D" TO ALLOW FOR FUTURE INSTALLATION OF NEW POWER POLE "PP1".

PHASE 2: REROUTING EXISTING FIBER OPTIC CABLE

IF SUFFICIENT SPARE 12-FIBER CABLE IS AVAILABLE DISREGARD INSTALLATION OF NEW AERIAL SPLICE ENCLOSURE AND REROUTE EXISTING 12-FIBER CABLE TO EXISTING SPLICE ENCLOSURE AT POWER POLE "PP1".



NOTES:

1. REINSTALL EXISTING "AERIAL SPLICE ENCLOSURE AND 12-FIBER CABLE" AT NEW POWER POLE "PP1".
2. INSTALL NEW "AERIAL SPLICE ENCLOSURE" TO JUST WEST SIDE OF POLE "B" FOR EXISTING 12-FIBER CABLE COILED AT POLE "B".
3. WORK IS NOT COMPLETE UNTIL INTERSECTION AND ALL EXISTING CIRCUITS ARE COMMUNICATING AND FUNCTIONING PROPERLY IN EXISTING SIGNAL SYSTEM.

	CABLE ROUTING PLANS PERSON ST. AND N. EASTERN BLVD. I-95/US 301		SEAL
	DIVISION 06 CUMBERLAND FAYETTEVILLE PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY PREPARED BY: H.T. BERGGREN REVIEWED BY: G.A. FULLER, PE	REVISIONS INIT. DATE	
750 N. Greenfield Pkwy., Garner, NC 27529 SCALE 	SIGNATURE 		DATE CADD File name

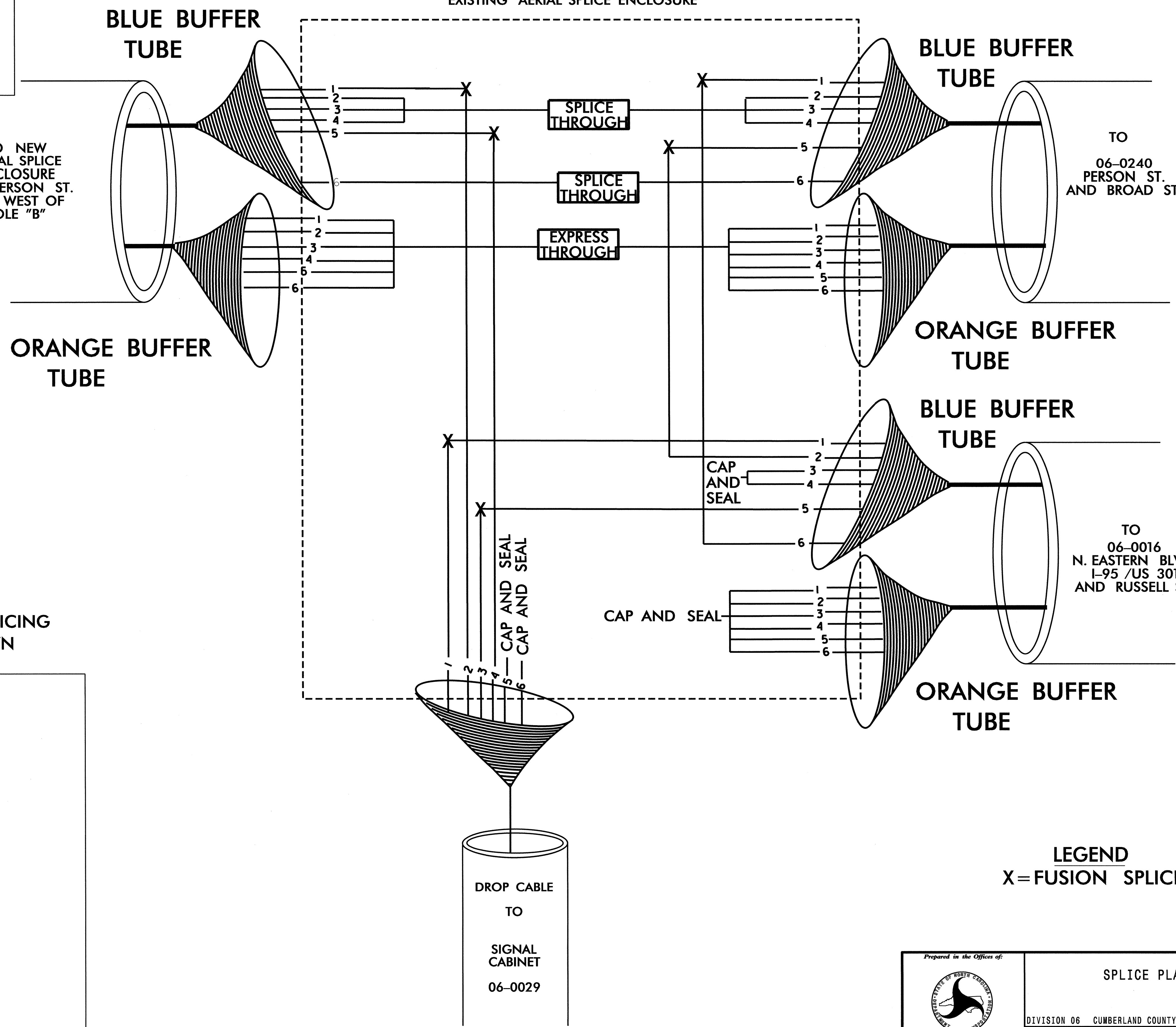
EXISTING AERIAL SPLICE ENCLOSURE AT SIG # 06-0029 AT NEW POWER POLE "PP1" I-95 BUS.-US 301 (EASTERN BLVD) AND PERSON ST.

TO NEW AERIAL SPLICE ENCLOSURE ON PERSON ST. JUST WEST OF POLE "B"

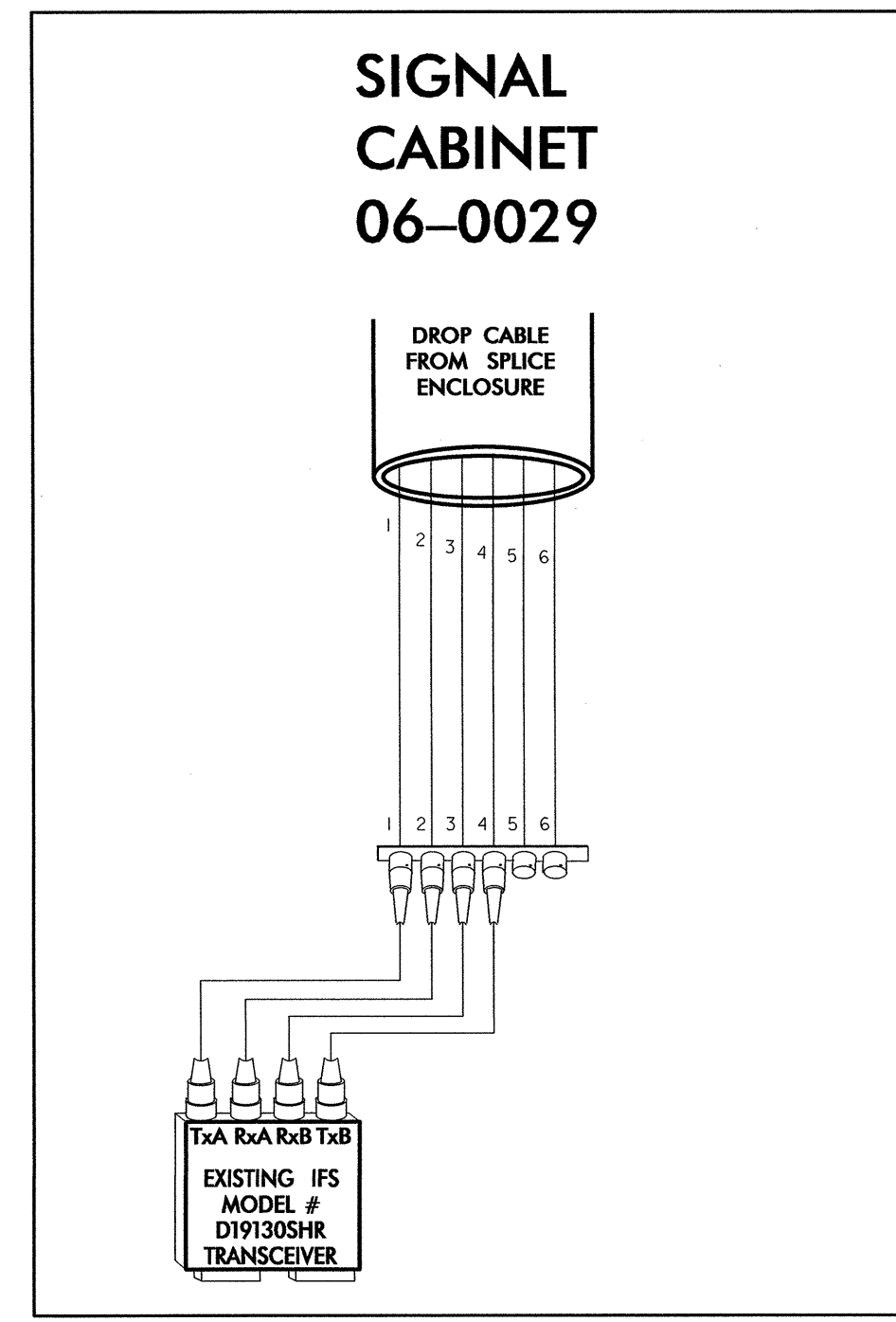
EXISTING AERIAL SPLICE ENCLOSURE

TO 06-0240 PERSON ST. AND BROAD ST.

TO 06-0016 N. EASTERN BLVD. I-95 /US 301 AND RUSSELL ST.



PERFORM SPLICING AS SHOWN



COLOR CODE TIA/EIA 598-A

- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
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- (7) RED
- (8) BLACK
- (9) YELLOW
- (10) VIOLET
- (11) ROSE
- (12) AQUA

LEGEND X = FUSION SPLICE

	SPLICE PLAN		
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY PREPARED BY: H. T. BERGGREN REVIEWED BY: G. A. FULLER, PE		
SCALE 0 _____	REVISIONS _____	INIT. _____	DATE _____

CADD File name: _____

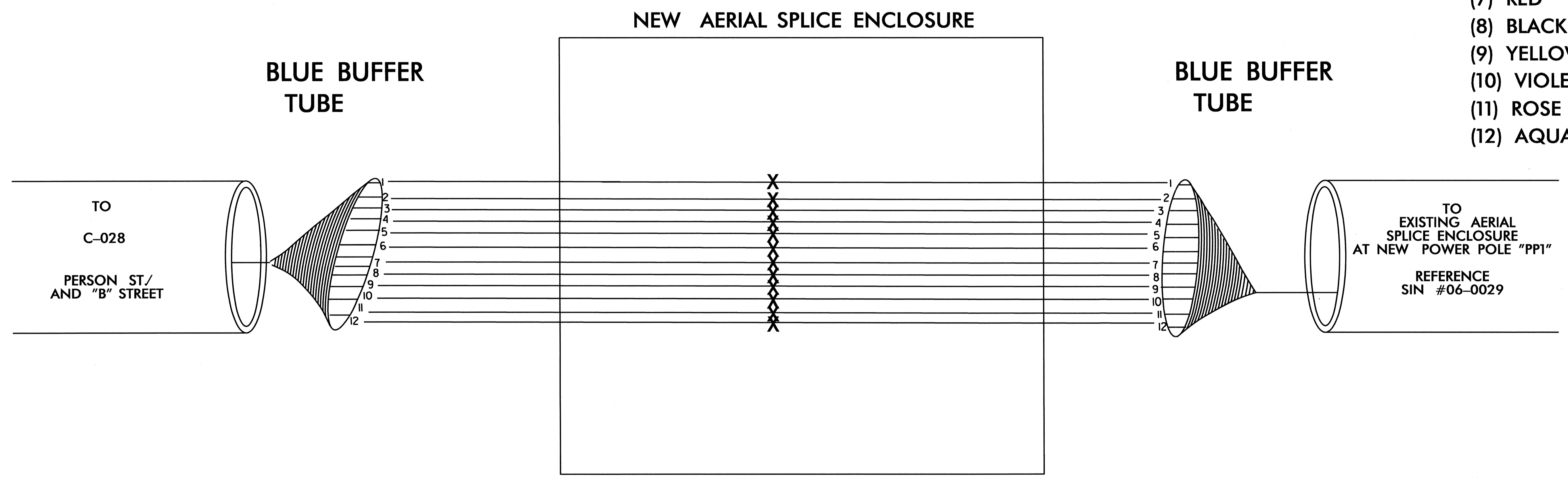
NEW AERIAL
 SPLICE ENCLOSURE
 ALONG PERSON ST.
 JUST WEST OF POLE "B"
 REFERENCE SIN #06-0029

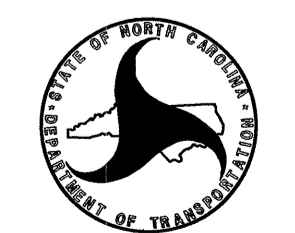

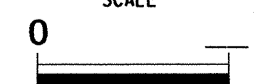

IF SUFFICIENT SPARE
 12-FIBER CABLE
 IS AVAILABLE
 DISREGARD INSTALLATION
 OF NEW AERIAL SPLICE
 ENCLOSURE AND REROUTE
 EXISTING 12-FIBER CABLE
 TO EXISTING SPLICE
 ENCLOSURE AT
 POWER POLE
 "PP1".

LEGEND
 X = FUSION SPLICE

COLOR CODE
 TIA/EIA 598-A

- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
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- (7) RED
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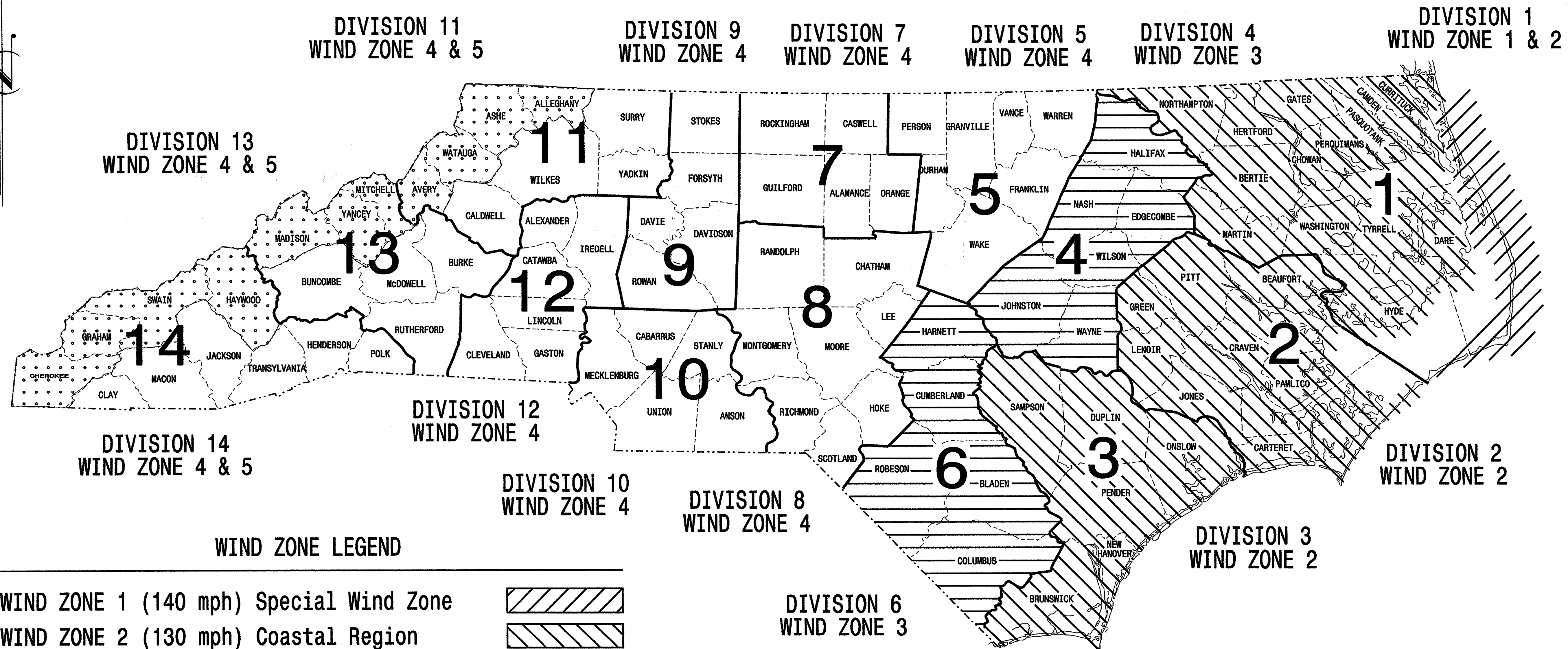


 <small>750 N. Greenfield Pkwy., Greensboro, NC 27429</small>	SPLICE PLAN							
	DIVISION 06 CUMBERLAND COUNTY FAYETTEVILLE PLAN DATE: OCTOBER 2012 REVIEWED BY: I. N. AVERY PREPARED BY: H. T. BERGGREN REVIEWED BY: G. A. FULLER, PE							
SCALE 	REVISIONS <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DESCRIPTION	DATE				SIGNATURE  DATE
NO.	DESCRIPTION	DATE						

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE	PROJECT NO.	SHEET NO.
N.C.	W-5335	Sig. 23
F. A. PROJ. NO.	M 1	
PROJECT ID. NO.		

STANDARD DRAWINGS FOR METAL POLES

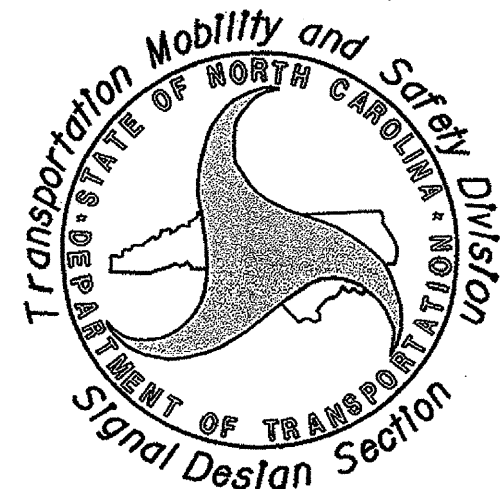


WIND ZONE LEGEND

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

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

Prepared In the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

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

AASHTO

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

INDEX OF PLANS

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

NCDOT CONTACTS:

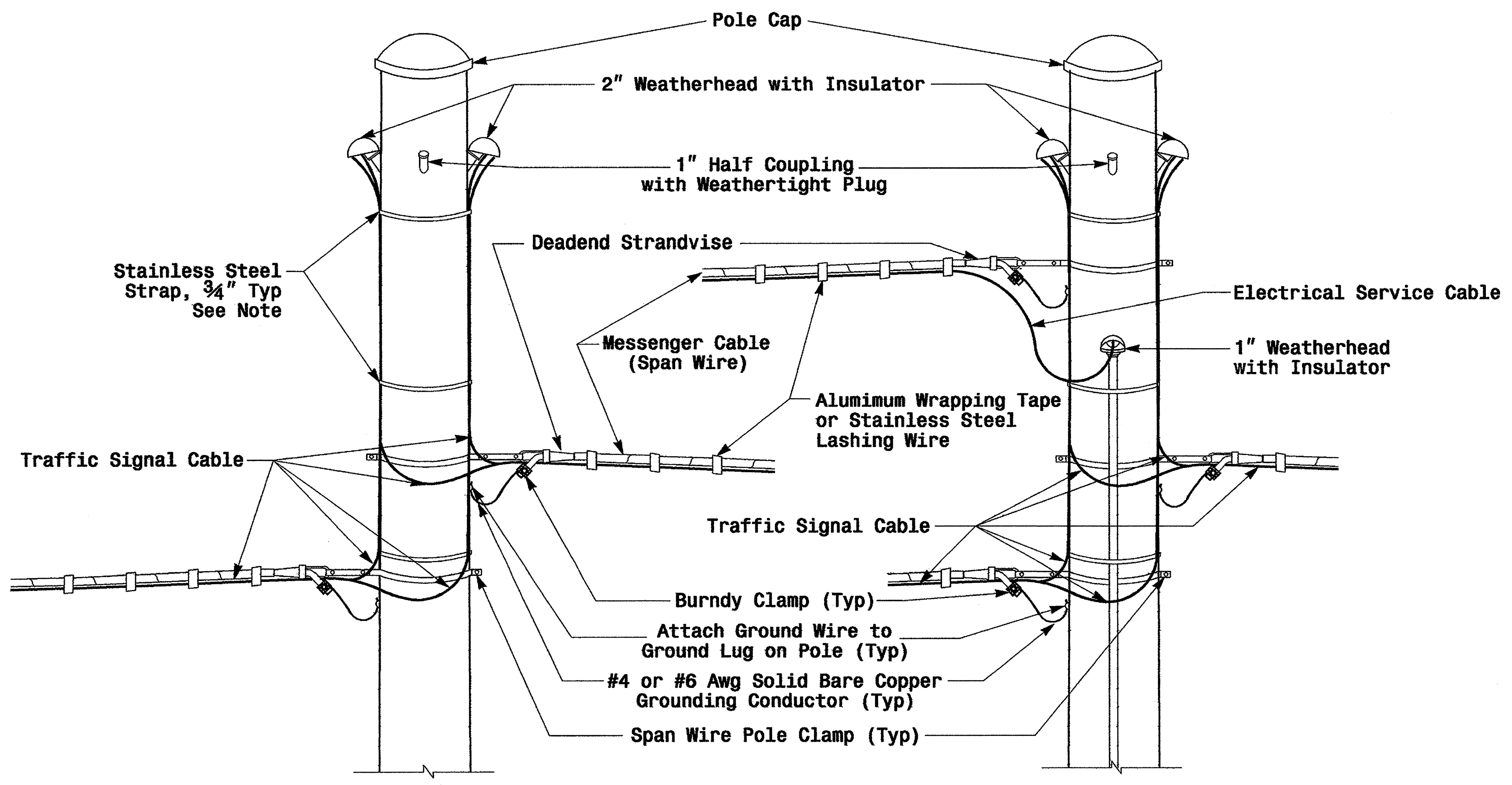
MOBILITY AND SAFETY DIVISION - ITS and SIGNALS UNIT

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

SEAL

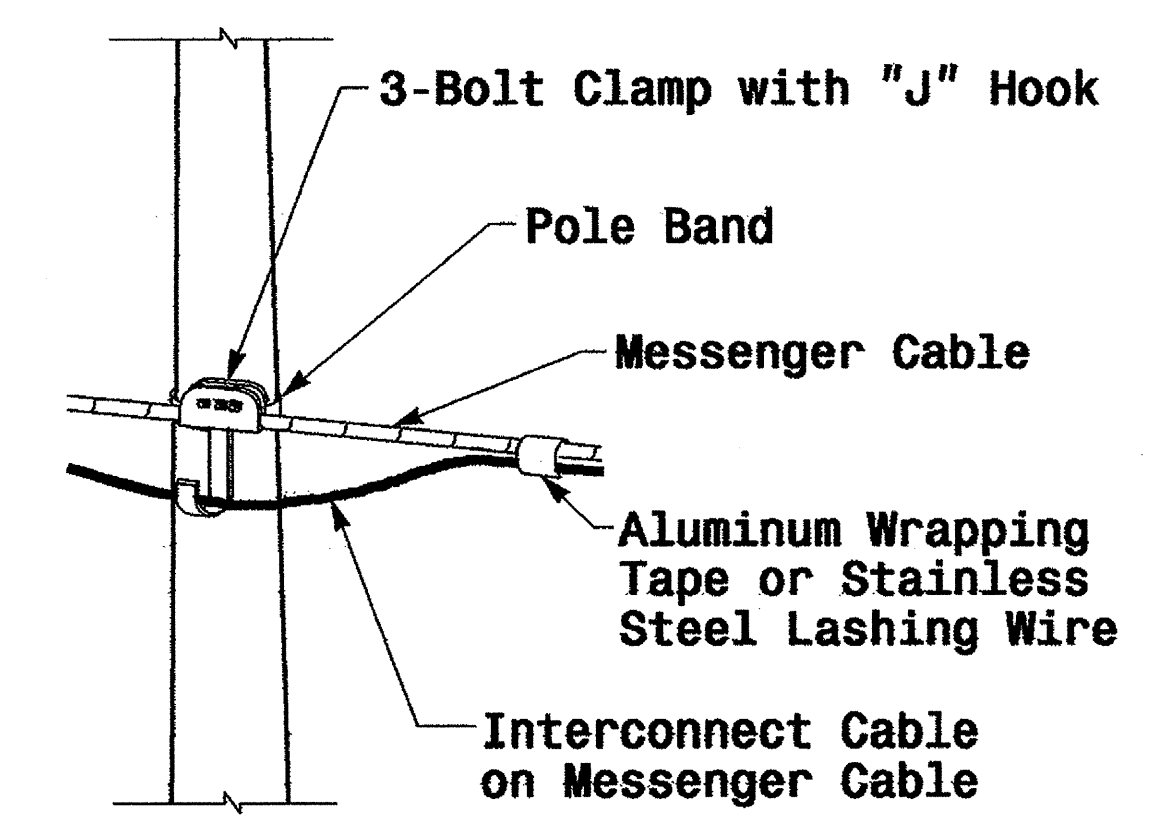


D. Sarkar 7.21.2009
SIGNATURE DATE

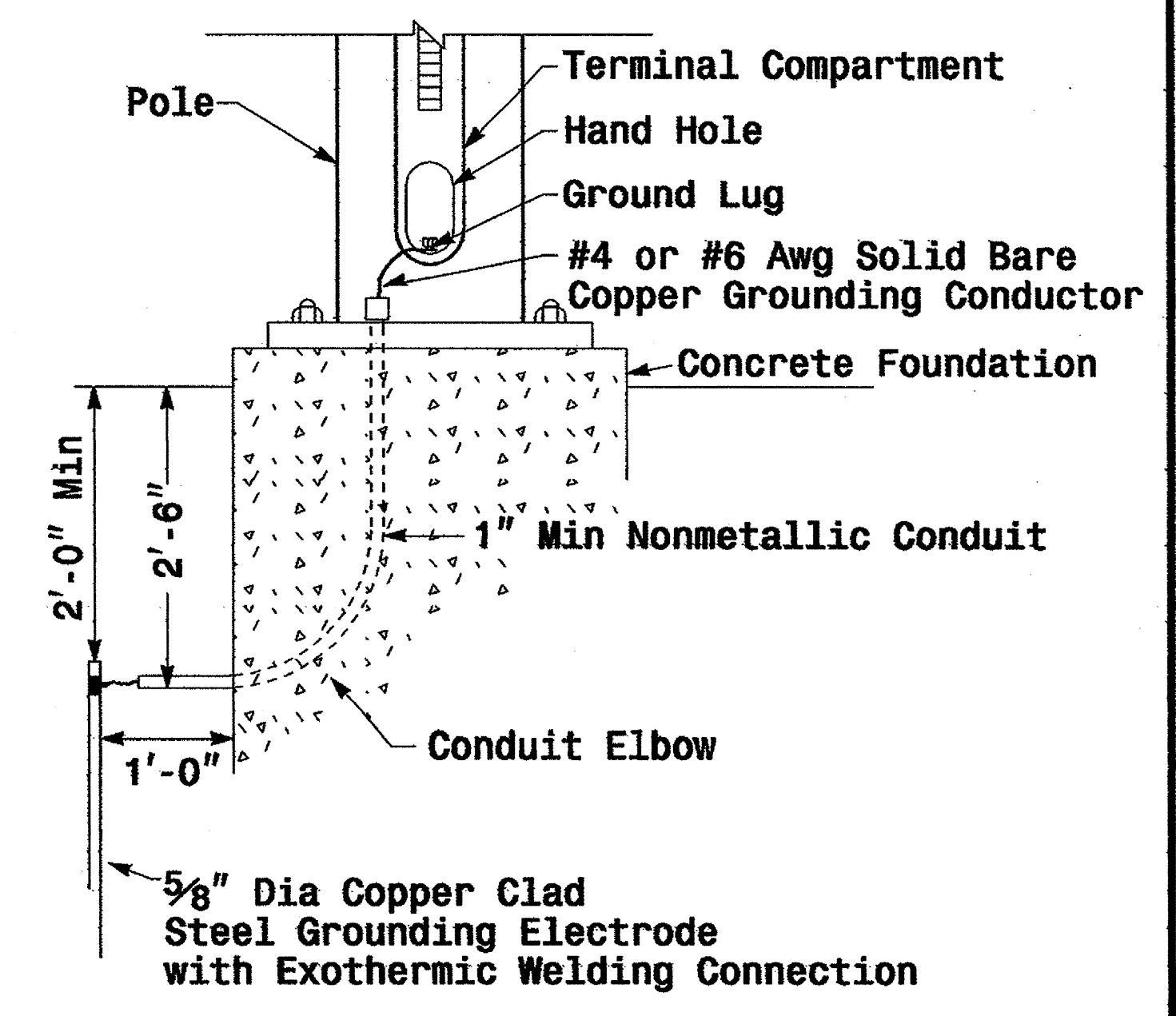


Note: Strap all signal cables to the side of the pole with 3/4\" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36\"

Strain Pole Attachments



Attachment of Cable to Intermediate Metal Pole

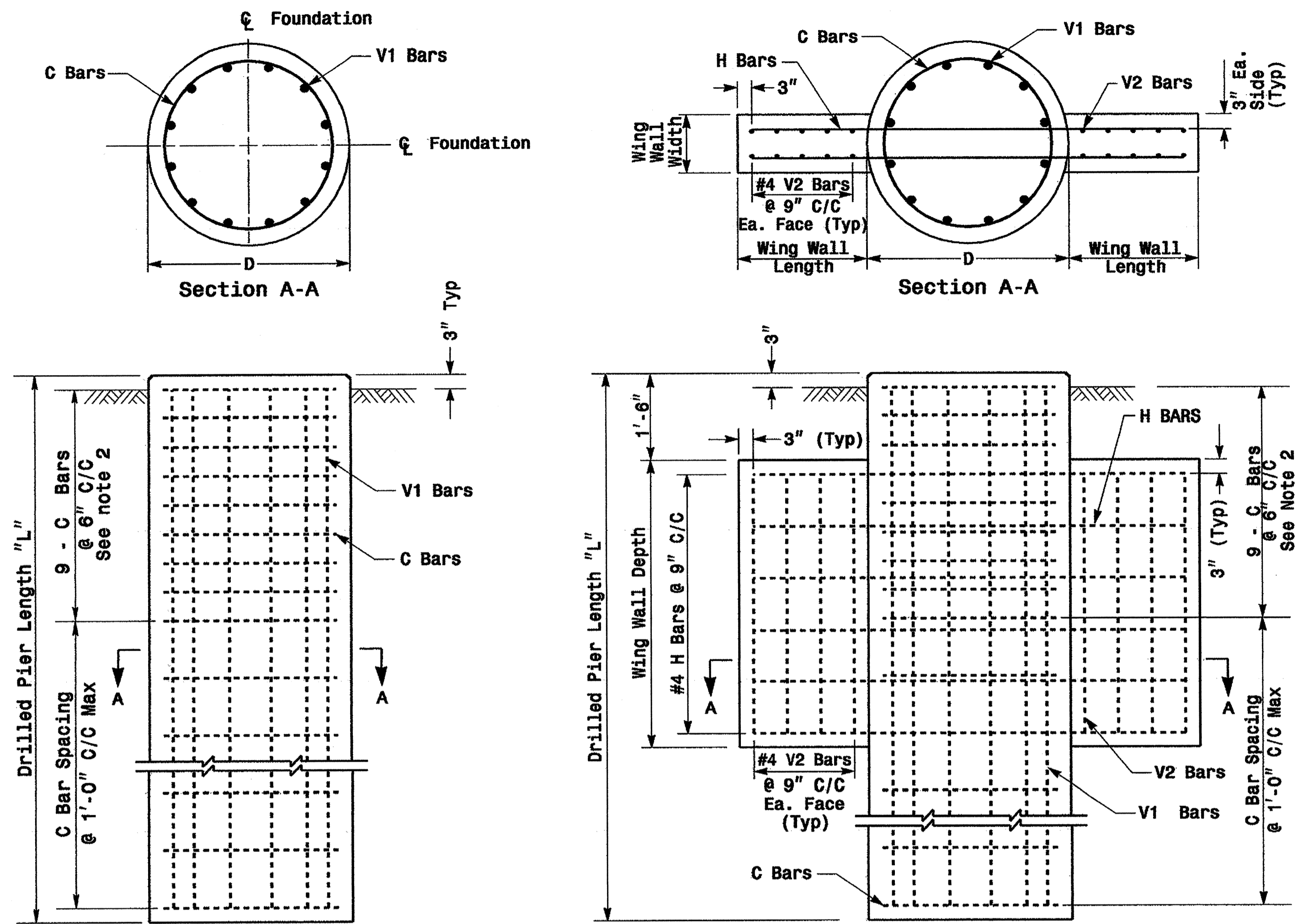


Metal Pole Grounding Detail

01-SEP-2005 15:33
 W:\projects\2005\W-5335\sig\24\m6.dgn
 P:\alexander

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

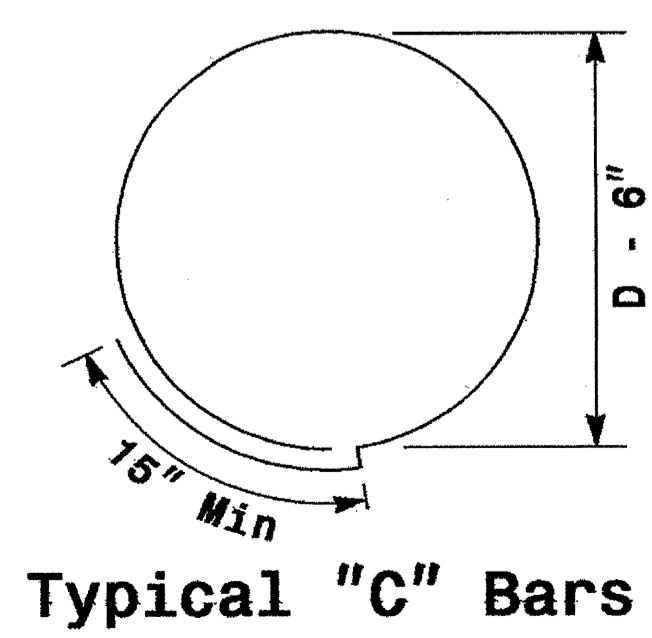
Reinforcing Steel Bars



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

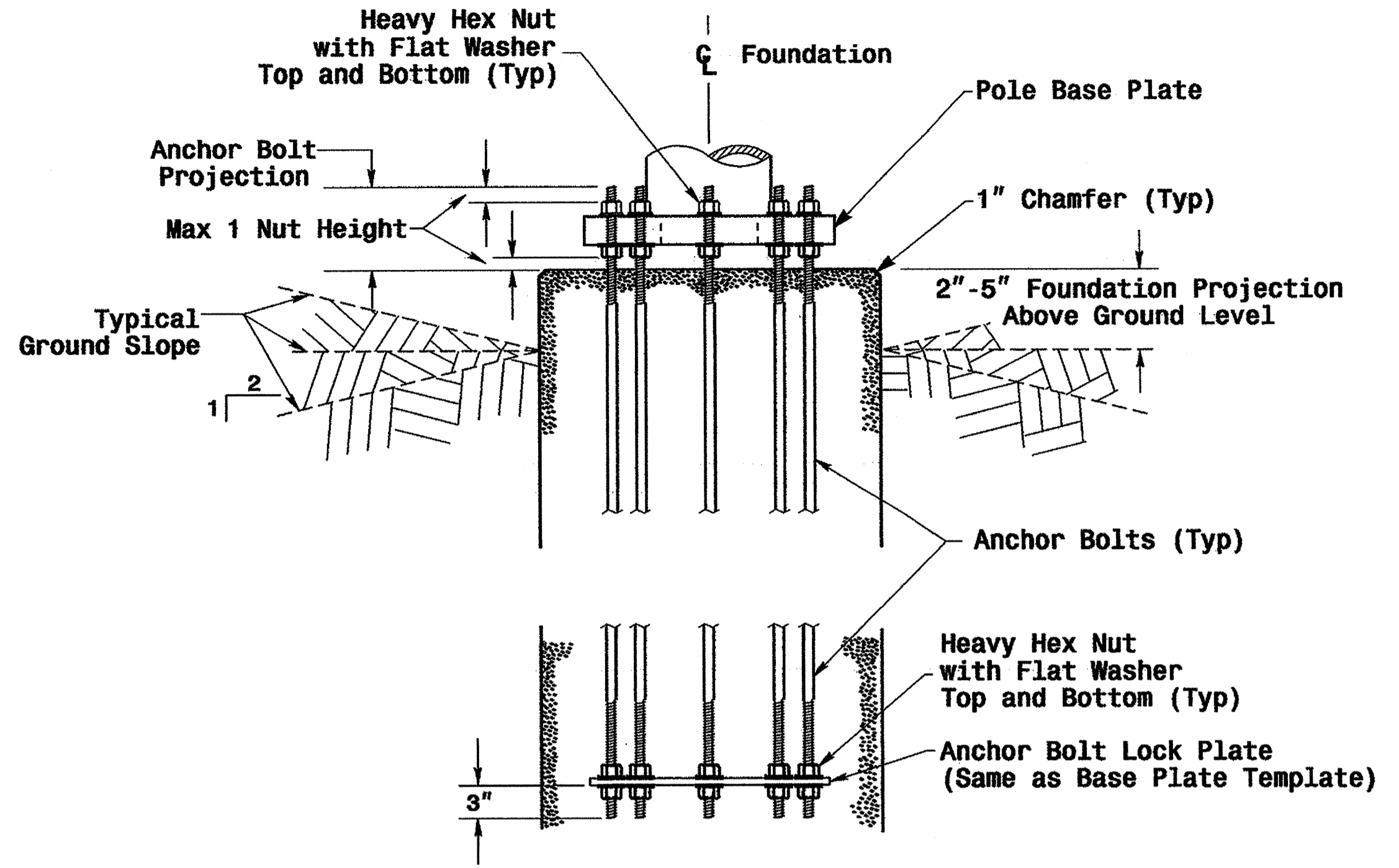
WING WALL DETAILS

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

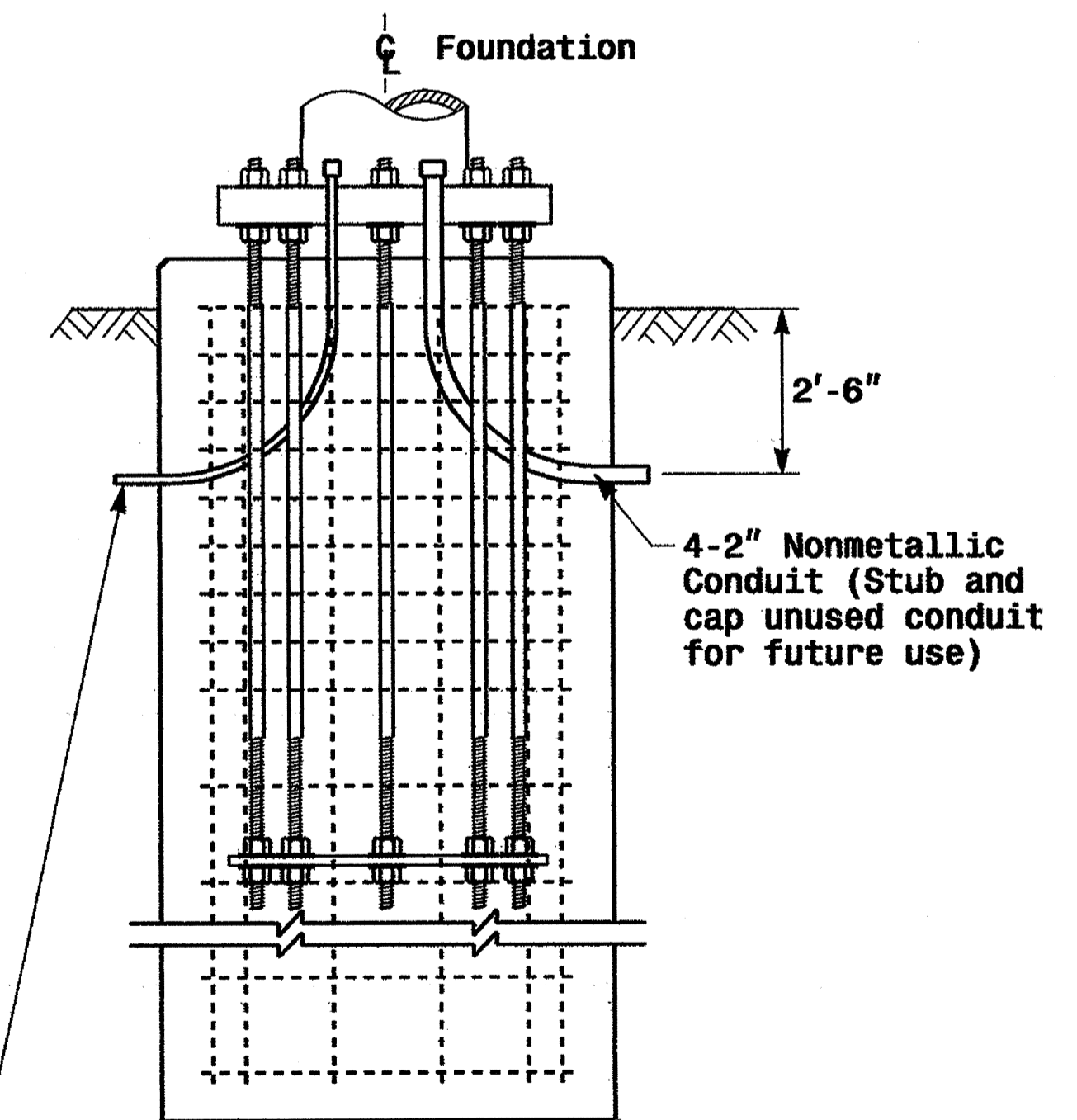
See Note No. 4

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

01-SEP-2005 11:48 w:\p001\88-un1\mcr\gr\p001\p01\standards\2004_mf.dgn pol alexander

Prepared in the Office of
 NORTH CAROLINA
 PROFESSIONAL ENGINEERS
 J. Sankar 9.2.2005
 SEAL 028034
 DATE

Construction Details Foundations

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

SCALE: NONE

SIGNATURE: [Signature] DATE: [Date]

SIG. INVENTORY NO.