


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3656	1	

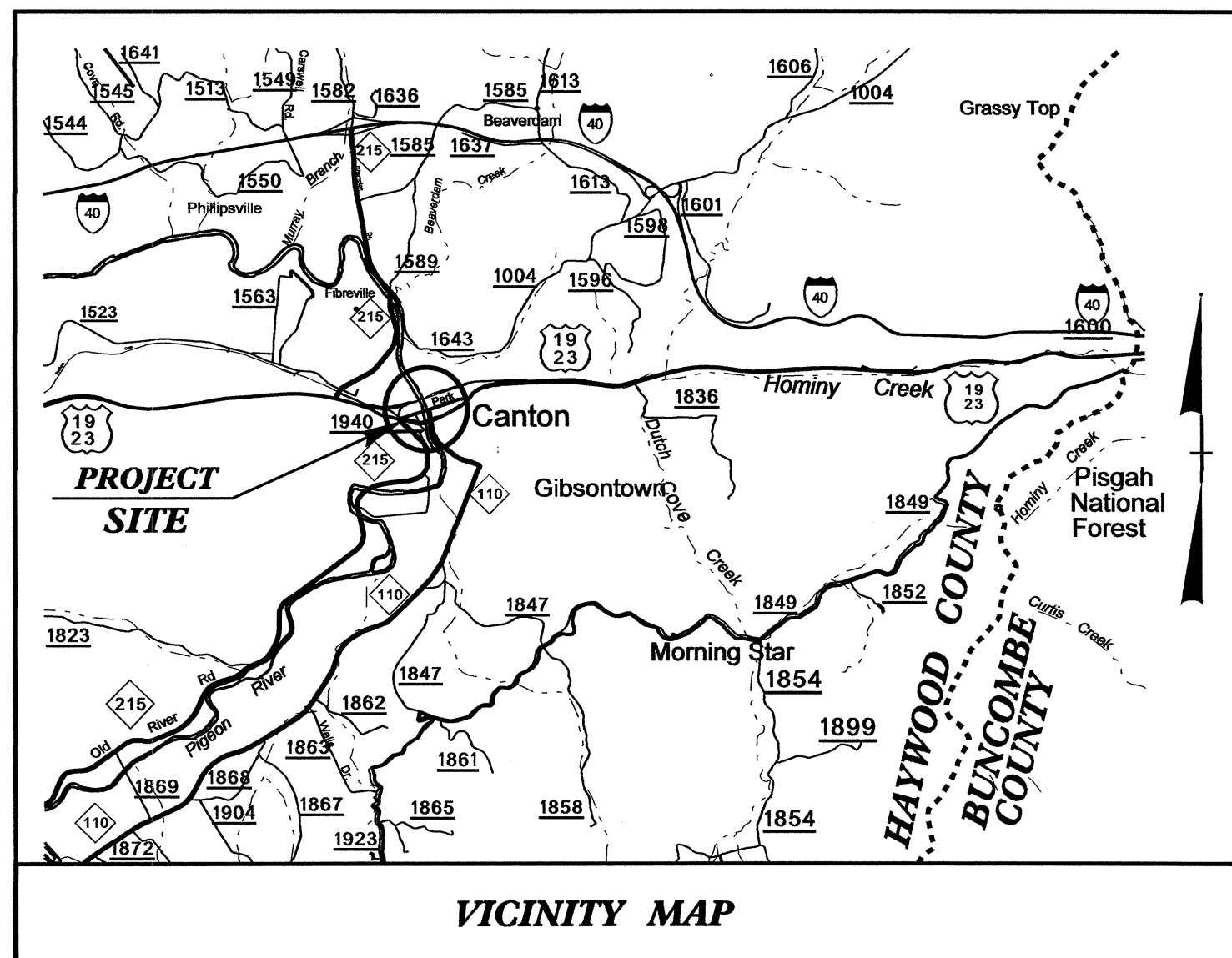


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

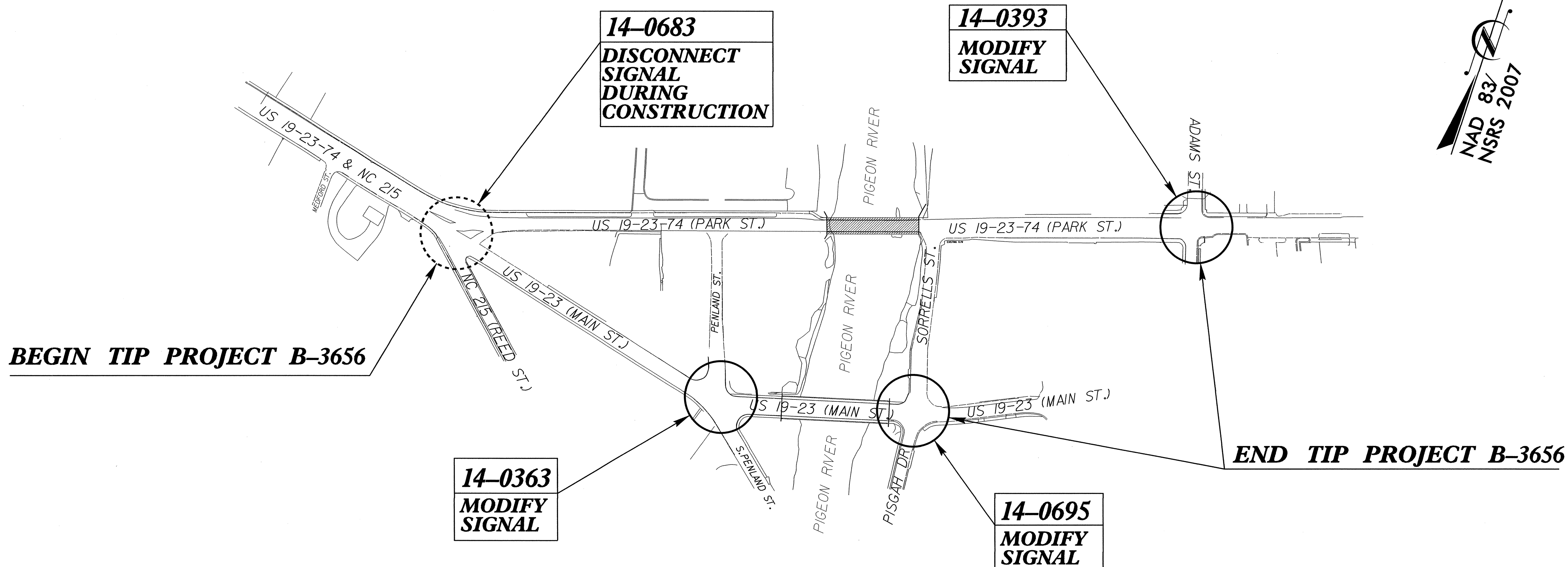
HAYWOOD COUNTY

LOCATION: BRIDGE 419 ON US 19-23 OVER PIGEON RIVER
IN CANTON

TYPE OF WORK: TRAFFIC SIGNALS AND FIBER OPTIC CABLE ROUTING



TIP PROJECT: B-3656



BEGIN TIP PROJECT B-3656

END TIP PROJECT B-3656

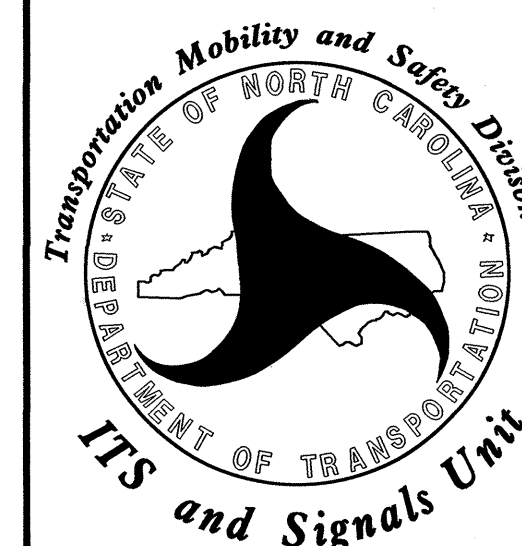
Index of Plans

Sheet Number	Signal Inventory Number	Location/Description
Sig. 1	N/A	Title Sheet
Sig. 2-5	14-0363	US 19 /23 (Main Street) at Penland Street
Sig. 6-9	14-0695	US 19 /23 (Main Street) at Sorrells Street /Pisgah Drive
Sig. 10-13	14-0393	US 19 /23 /74 (Park Street)at Adams Street
Sig. 14	N/A	Construction Notes
Sig. 15-16	N/A	Communication Cables and Conduit Routing Plans
Sig. 17	N/A	Splice Plan

INTELLIGENT TRANSPORTATION SYSTEMS AND SIGNALS UNIT

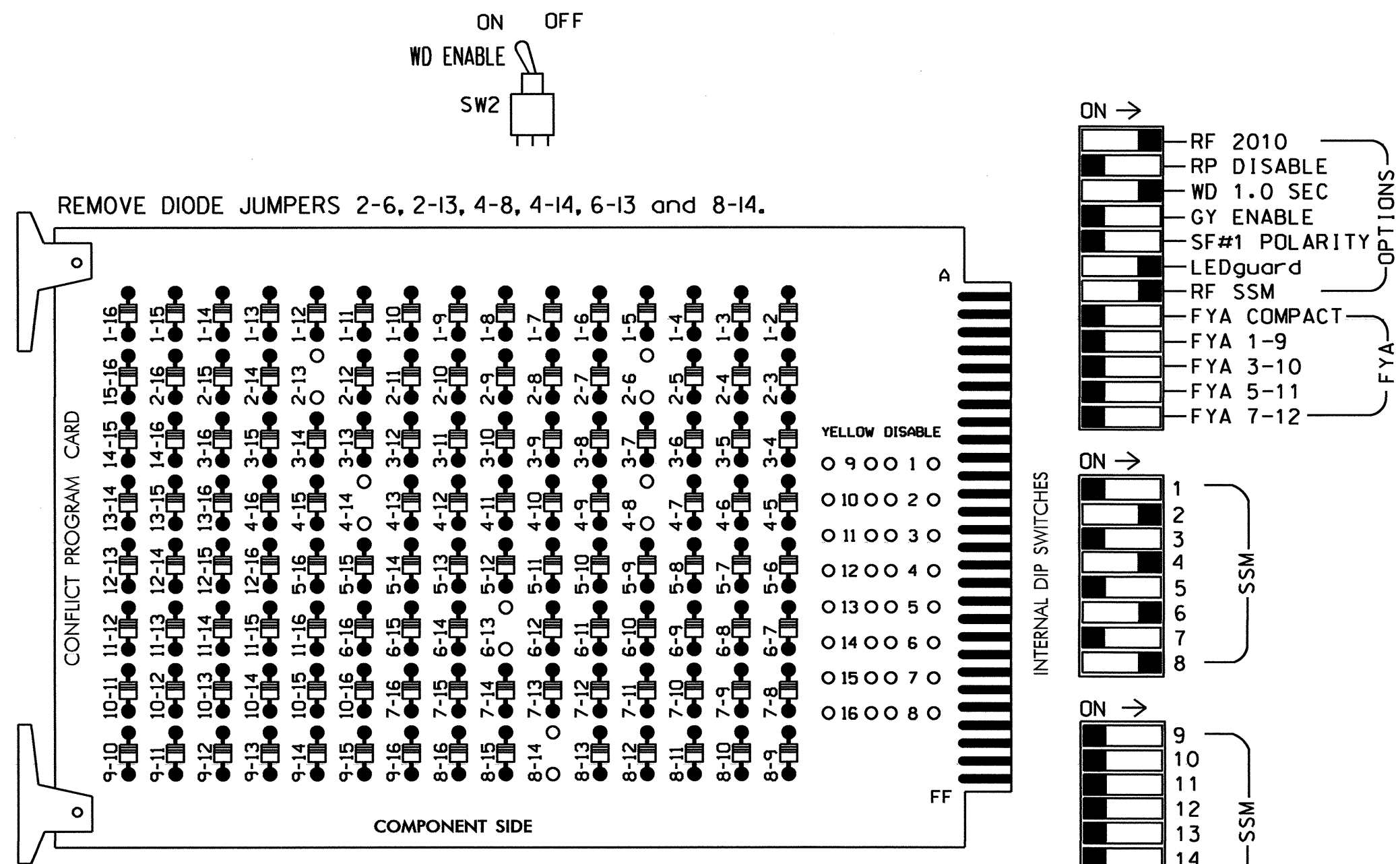
Contacts:

- Gregory A. Fuller, PE - STATE ITS & SIGNALS ENGINEER
- Timothy J. Williams, PE - WESTERN REGION SIGNALS ENGINEER
- George C. Brown, PE - SIGNAL EQUIPMENT DESIGN ENGINEER



EDI MODEL 2010ECL-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.
- 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 1,3,5,7,9,10,11,12,13,14,15 & 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 and 4 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the US-19/23 CLS.

EQUIPMENT INFORMATION

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

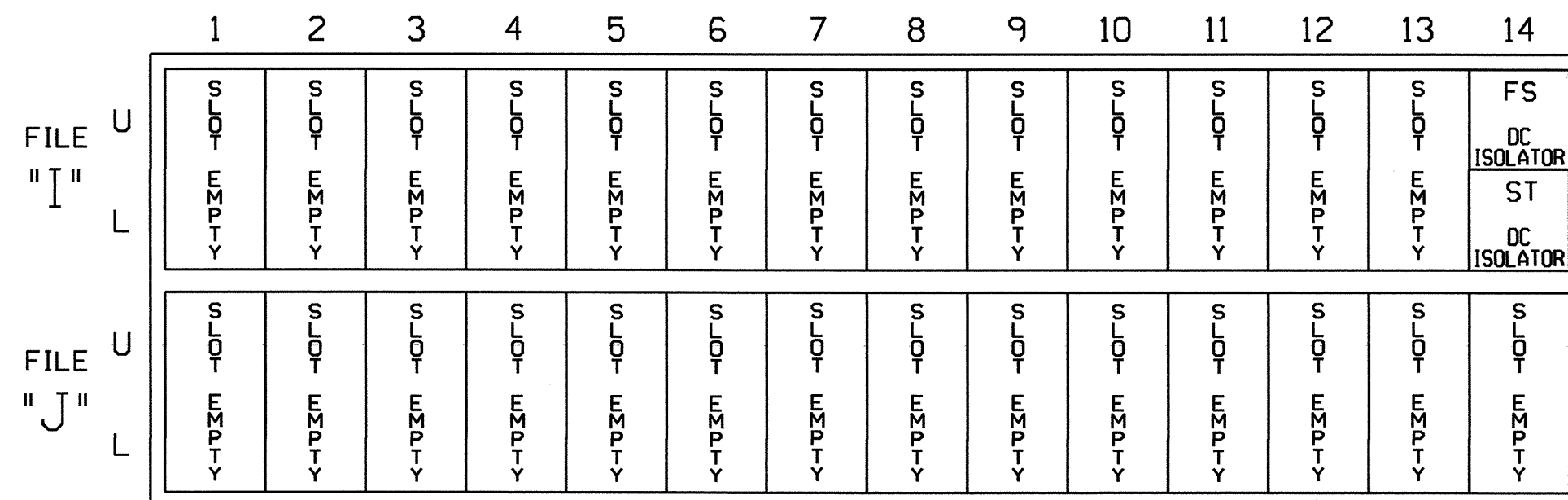
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	P21,P22 P23,P24	NU	41,42	P41, P42	NU	61,62	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
			113			104						
			115			106						

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

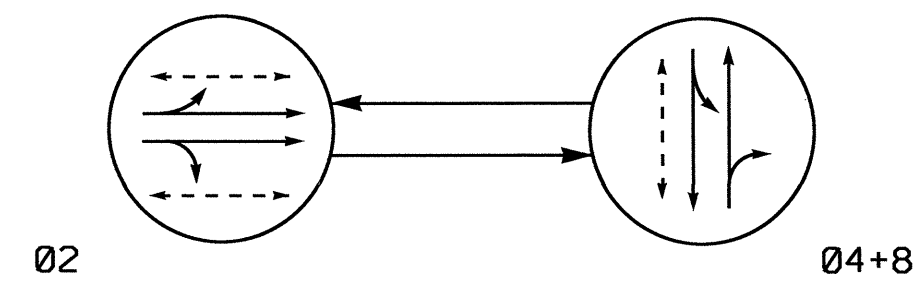
FS = FLASH SENSE
 ST = STOP TIME

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-0363 T
 DESIGNED: JULY 2010
 SEALED: 09-01-10
 REVISED: N/A

Signal Upgrade - Temporary Design 1

<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	ELECTRICAL AND PROGRAMMING DETAILS FOR:		US-19/23 (Main Street) at SR 1911 (Penland Street)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 008453 JOHN T. ROWE, JR. ENGINEER
	Prepared In the Offices of:		Division 14 Haywood County Canton		
	PLANNED BY: James Peterson		REVIEWED BY: JTR		
	PREPARED BY: James Peterson		REVIEWED BY:		
REVISIONS		INIT.	DATE		
				Signature: <i>John Rowe</i> 9-3-10 DATE: 9-3-10	
				SIG. INVENTORY NO. 14-0363 T	

PHASING DIAGRAM



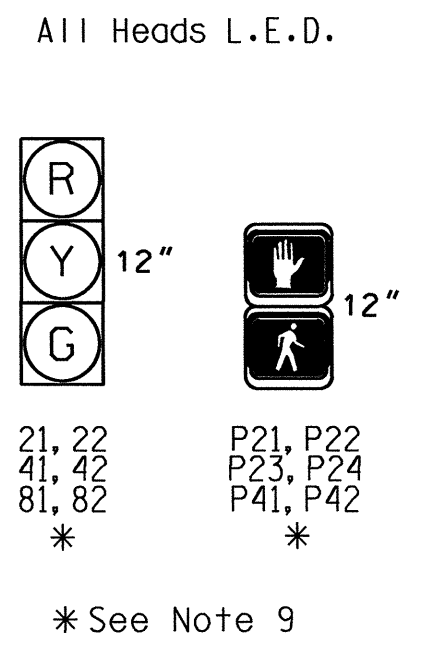
PHASING DIAGRAM DETECTION LEGEND
 ● DETECTED MOVEMENT
 ○ UNDETECTED MOVEMENT (OVERLAP)
 - - - UNSIGNALIZED MOVEMENT
 - - - PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	04+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
81, 82	R	G	R
P21, P22	W	DW	DRK
P23, P24	W	DW	DRK
P41, P42	DW	W	DRK

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

SIGNAL FACE I.D.



2 Phase
 Pre-timed
 US-19/23 (CLS)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition existing signal heads numbered 21 and 22.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Thirty days after implementation of the revised signal operation, the orange flags on signs A and B may be removed at the discretion of the Regional Traffic Engineer.
- Pavement markings are revised as shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 0363.
- All signal heads, pedestrian heads and pedestrian pedestals are black.

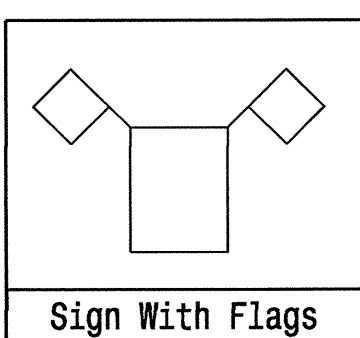
OASIS 2070L TIMING CHART

FEATURE	PHASE		
	2	4	8
Min Green 1 *	10	7	7
Extension 1 *	0.0	0.0	0.0
Max Green 1 *	40	25	25
Yellow Clearance	3.0	3.0	3.0
Red Clearance	3.3	2.6	2.6
Walk 1 *	7	7	-
Don't Walk 1	17	7	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	MAX/PED RECALL	MAX/PED RECALL	MAX RECALL
Vehicle Call Memory	-	-	-
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

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

LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
● → Modified Signal Head	□ → N/A
□ → Sign	□ → Pedestrian Signal Head With Push Button & Sign
□ → Pedestrian Signal Head With Push Button & Sign	□ → Signal Pole with Guy
□ → Signal Pole with Guy	□ → Signal Pole with Sidewalk Guy
□ → Signal Pole with Sidewalk Guy	□ → Inductive Loop Detector
□ → Inductive Loop Detector	□ → Controller & Cabinet
□ → Controller & Cabinet	□ → Junction Box
□ → Junction Box	□ → 2-in Underground Conduit
□ → 2-in Underground Conduit	□ → Right of Way
□ → Right of Way	→ → Directional Arrow
○ → Directional Arrow	● → Pedestrian Pedestal
○ → Pedestrian Pedestal	⊙ → No Left Turn Sign (R3-2) With Orange Flags
⊙ → No Left Turn Sign (R3-2) With Orange Flags	⊙ → No Right Turn Sign (R3-1) With Orange Flags
⊙ → No Right Turn Sign (R3-1) With Orange Flags	



Signal Upgrade - Final Design

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US-19/23 (Main Street) at SR 1911 (Penland Street)

Division 14 Haywood County Canton

PLAN DATE: July 2010 REVIEWED BY: M. K. Mahbooba

PREPARED BY: C. L. Carper REVIEWED BY:

REVISIONS

SCALE: 1"=20'

INIT. DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER 24393 TWENTY J. WILLIAMS

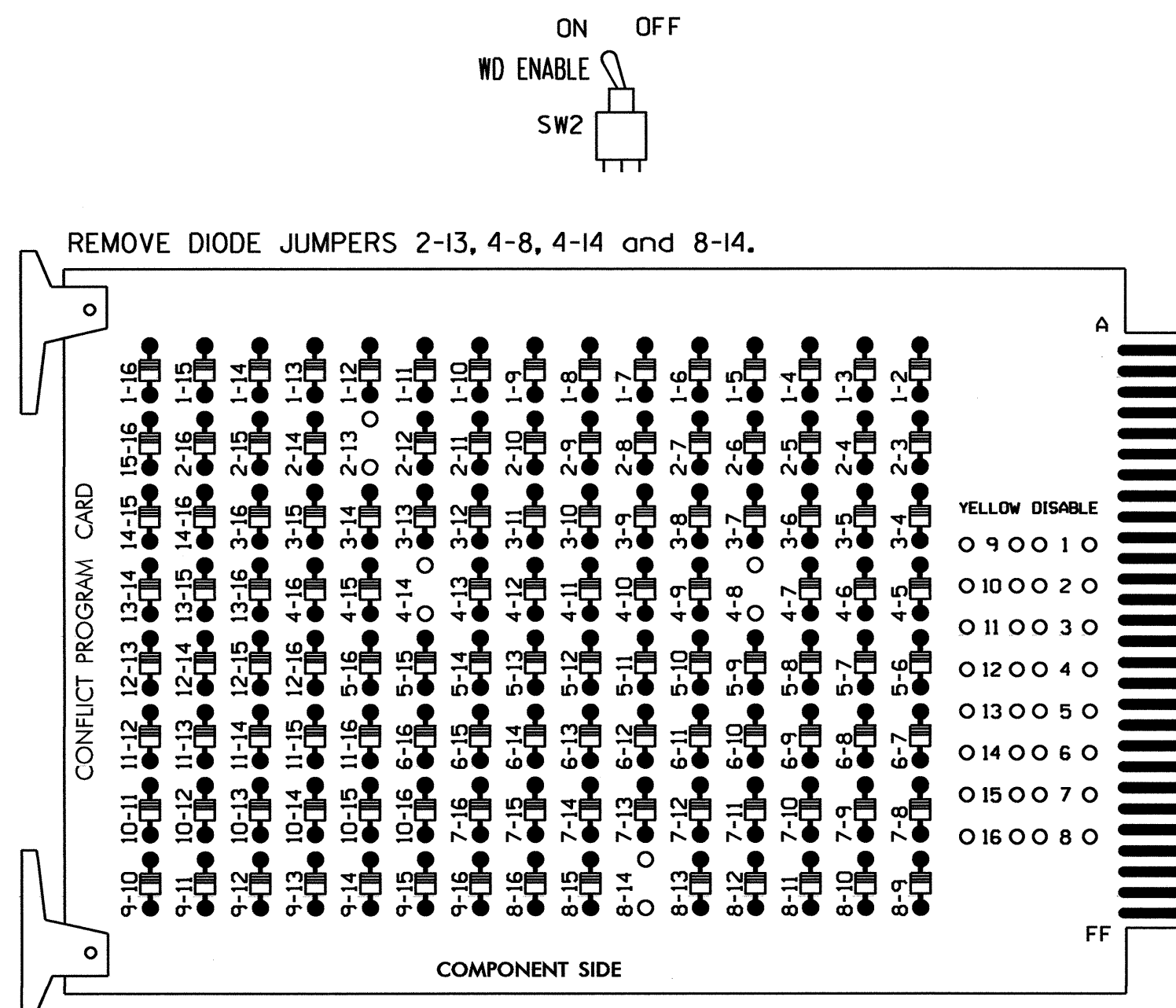
SIGNATURE: T. J. Williams DATE: 9/1/10

SIG. INVENTORY NO. 14-0363

01-Sep-2010 15:10:05
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 mmahbooba

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5, 6,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phase 2 for Start Up In Green.
5. Program phases 2 and 4 for 'STARTUP PED CALL'.
6. Program phase 2 for Yellow Flash.
7. The cabinet and controller are part of the US-19/23 CLS.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S2P,S4,S4P,S8
 PHASES USED.....2,4,8,2 PED,4 PED
 OVERLAPS.....NONE

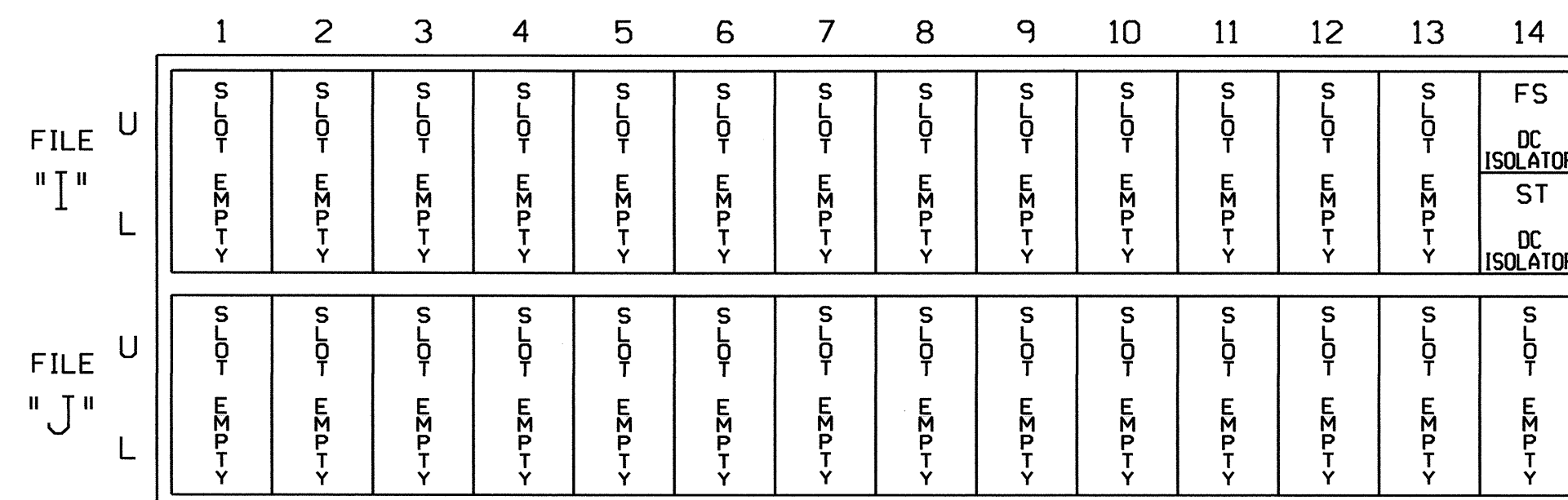
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	P21,P22 P23,P24	NU	41,42	P41, P42	NU	NU	NU	NU	81,82	NU
RED		128			101						107	
YELLOW		129			102						108	
GREEN		130			103						109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
			113			104						
			115			106						

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 14-0363
 DESIGNED: JULY 2010
 SEALED: 09-01-10
 REVISED: N/A

Signal Upgrade - Final

	ELECTRICAL AND PROGRAMMING DETAILS FOR:		US-19/23 (Main Street) at SR 1911 (Penland Street)		
	Prepared In the Offices of:				
	Division 14	Haywood County	Division 14	Haywood County	
	PLAN DATE: August 2010	REVIEWED BY: JTR	PREPARED BY: James Peterson	REVIEWED BY:	
REVISIONS		INIT.	DATE	Signature: <i>John T. Rowe</i> 9-3-10 Date: _____ Sig. Inventory No. 14-0363	

PHASING DIAGRAM

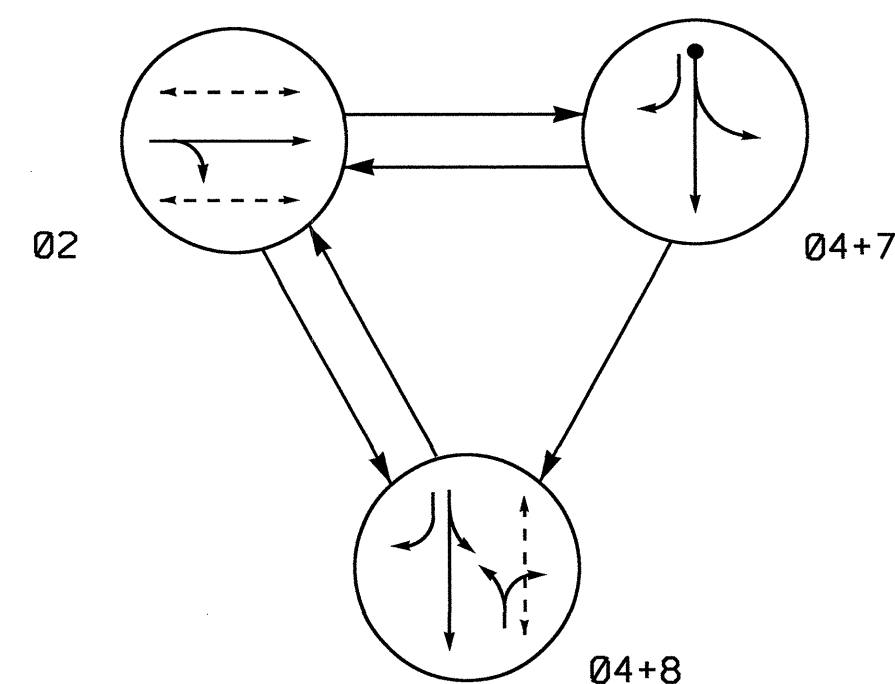


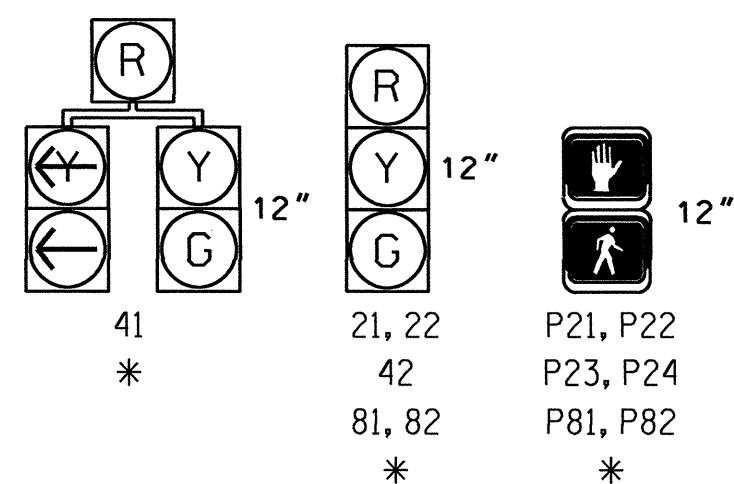
TABLE OF OPERATION

SIGNAL FACE	PHASE			
	02	04+7	04+8	FLASH
21, 22	G	R	R	Y
41	R	G	G	R
42	R	G	G	R
81, 82	R	R	G	R
P21, P22	W	DW	DW	DRK
P23, P24	W	DW	DW	DRK
P81, P82	DW	DW	W	DRK

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

SIGNAL FACE I.D.

All Heads L.E.D.



* See Note 10

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

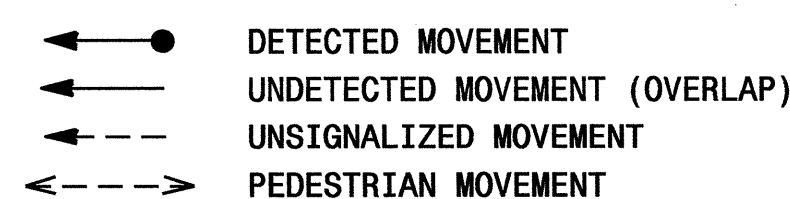
LOOP	INDUCTIVE LOOPS			DETECTOR PROGRAMMING								
	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
7A	6X15	50	3	Y	7	Y	Y	-	-	15	-	-
S03	6X6	+150	EXISTING	-	-	Y	Y	-	-	-	Y	-
S04	6X6	+150	EXISTING	-	-	Y	Y	-	-	-	Y	-

3 Phase Semi-Actuated US 19/23 CLS

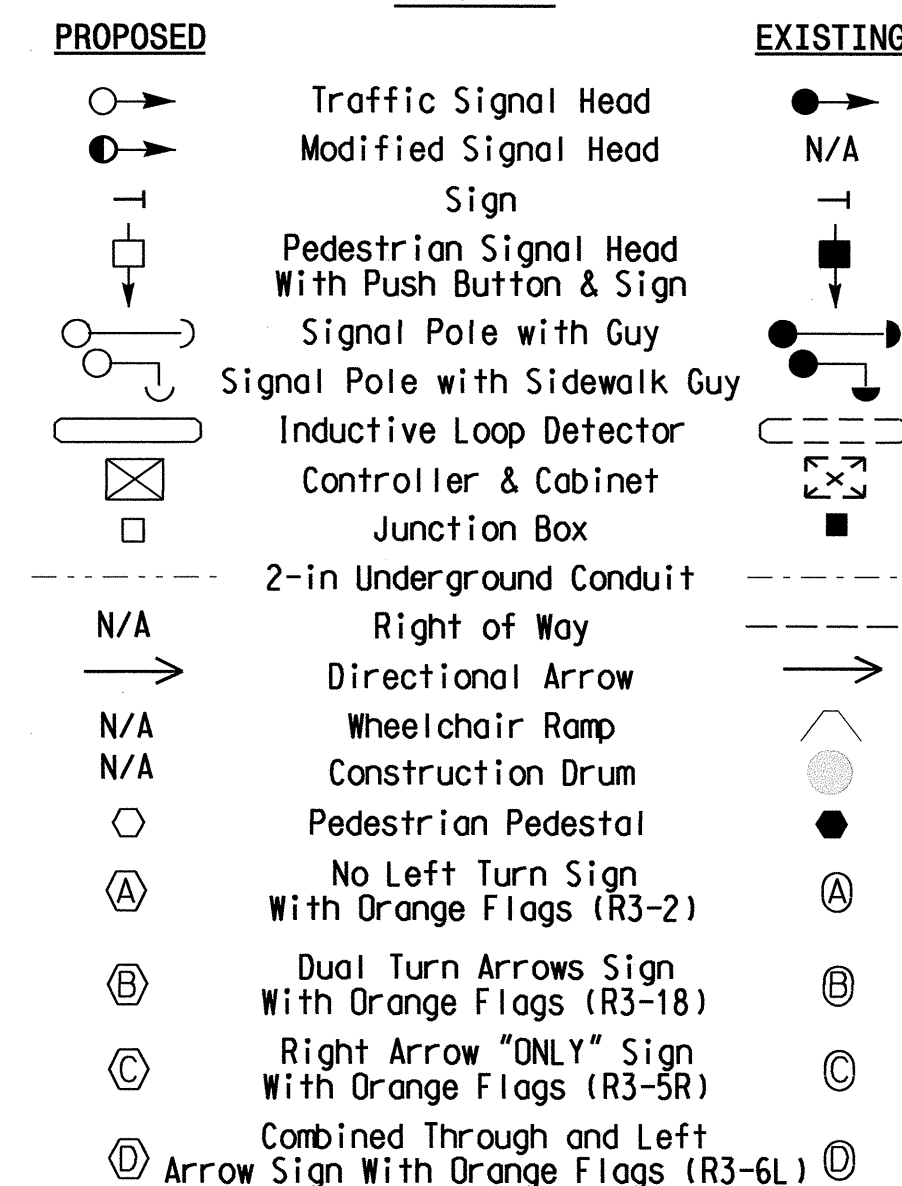
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Omit phase 7 during phase 8 on.
- Reposition existing signal heads numbered 21, 41 and 42.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Revise pavement markings as shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #0695
- All signal heads, pedestrian heads and pedestrian pedestals are black.

PHASING DIAGRAM DETECTION LEGEND



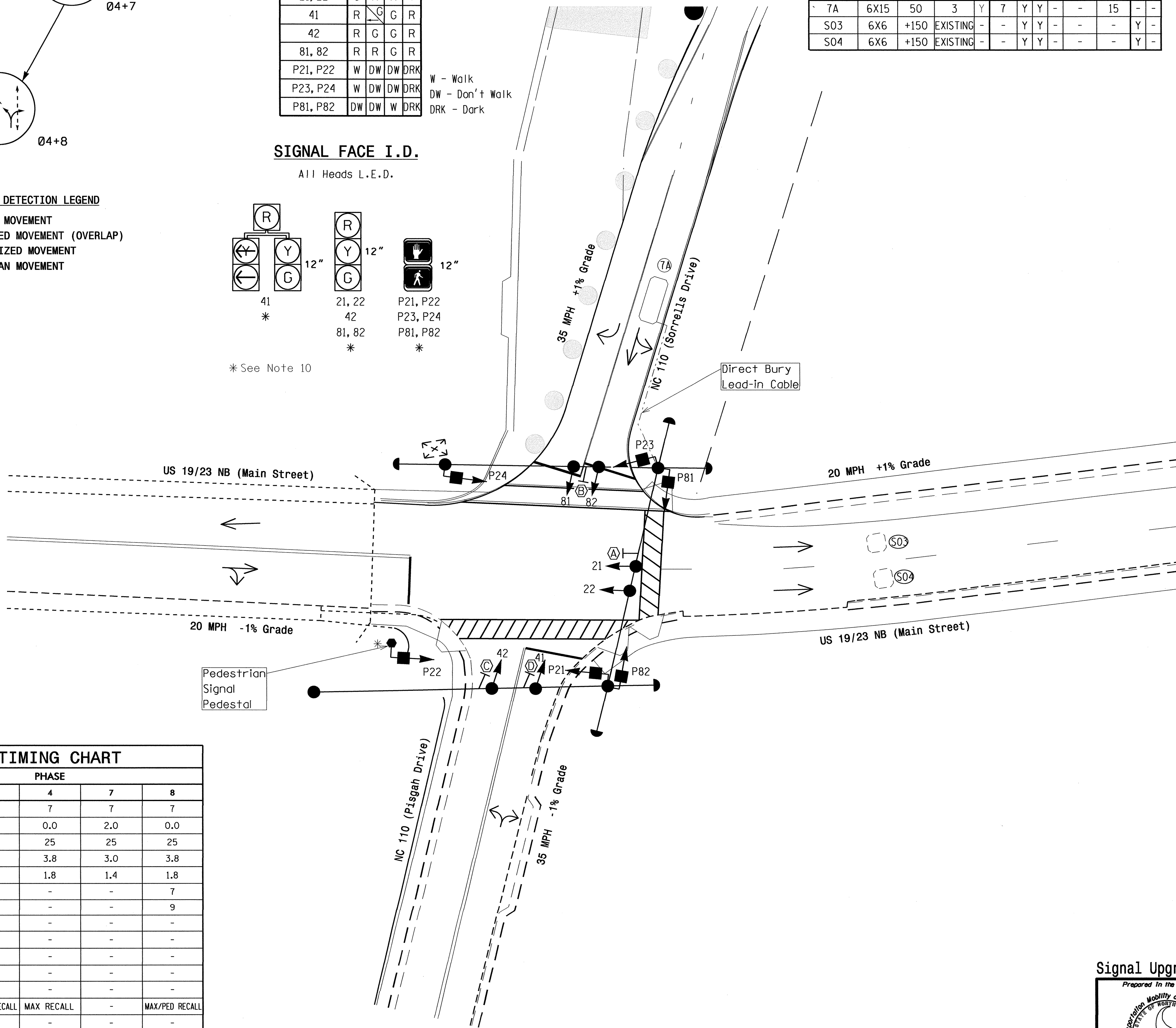
LEGEND



OASIS 2070L TIMING CHART

FEATURE	PHASE			
	2	4	7	8
Min Green 1 *	10	7	7	7
Extension 1 *	0.0	0.0	2.0	0.0
Max Green 1 *	40	25	25	25
Yellow Clearance	3.0	3.8	3.0	3.8
Red Clearance	2.8	1.8	1.4	1.8
Walk 1 *	7	-	-	7
Don't Walk 1	13	-	-	9
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MAX/PED RECALL	MAX RECALL	-	MAX/PED RECALL
Vehicle Call Memory	-	-	-	-
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

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



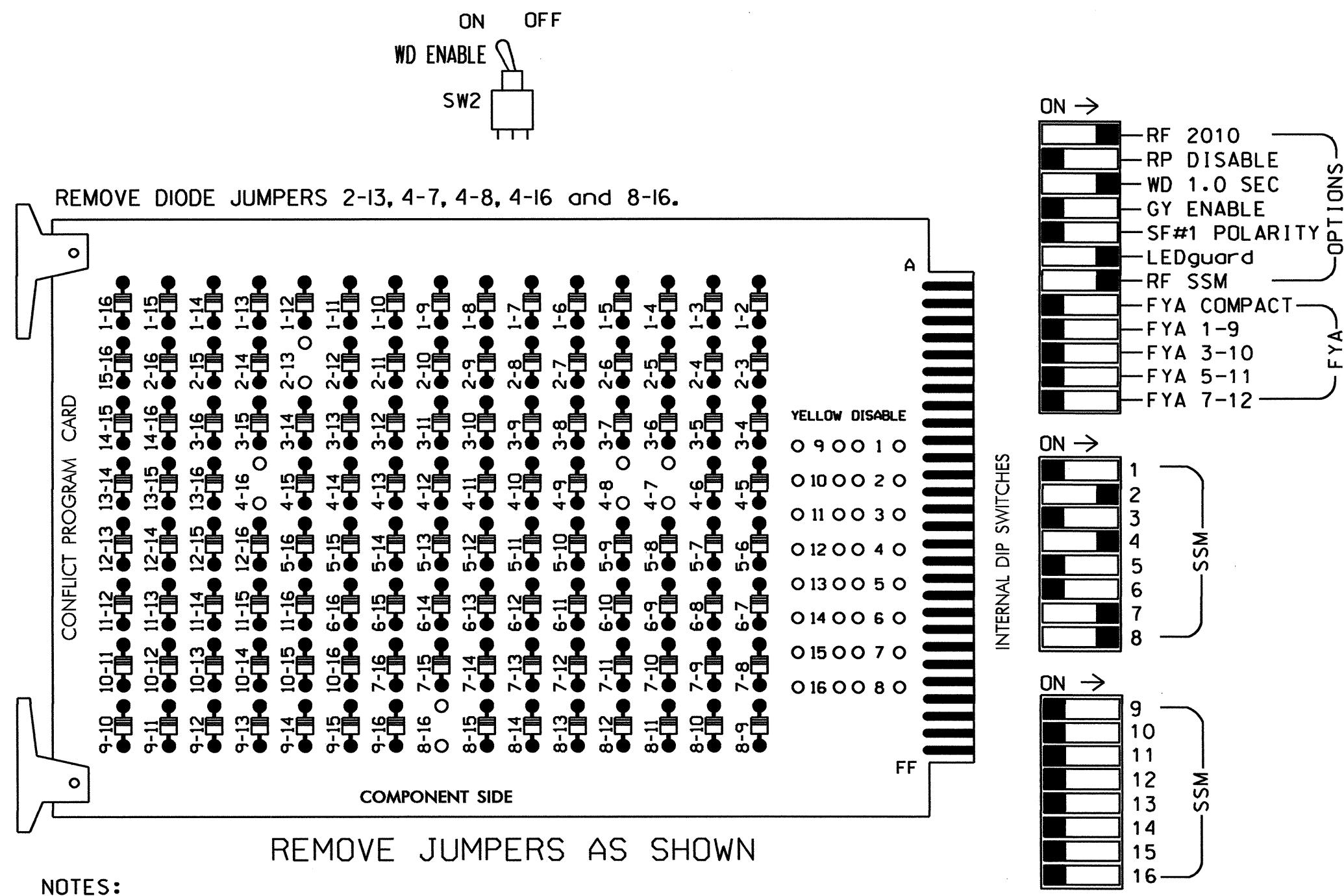
Signal Upgrade - Temporary Design 1 (TCP Phase I)

Prepared in the Offices of:

US 19/23 NB (Main Street) at NC 110 (Pisgah Drive/Sorrells Street)
 Division 14 Haywood County Canton
 PLAN DATE: July 2010 REVIEWED BY: M. K. Mahbooba
 PREPARED BY: C. L. Carper REVIEWED BY:
 SCALE: 1"=20'
 REVISIONS: _____ INIT. DATE
 SIGNATURE: *T. Williams* DATE: 9/1/10
 SIG. INVENTORY NO. 14-0695 T1

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

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,6,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Enable Simultaneous Gap-Out for all phases.
- Program phase 2 for Start Up In Green.
- Program phases 2 and 8 for 'STARTUP PED CALL'.
- Program phase 2 for Yellow Flash.
- The cabinet and controller are part of the US 19/23 CLS.

EQUIPMENT INFORMATION

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

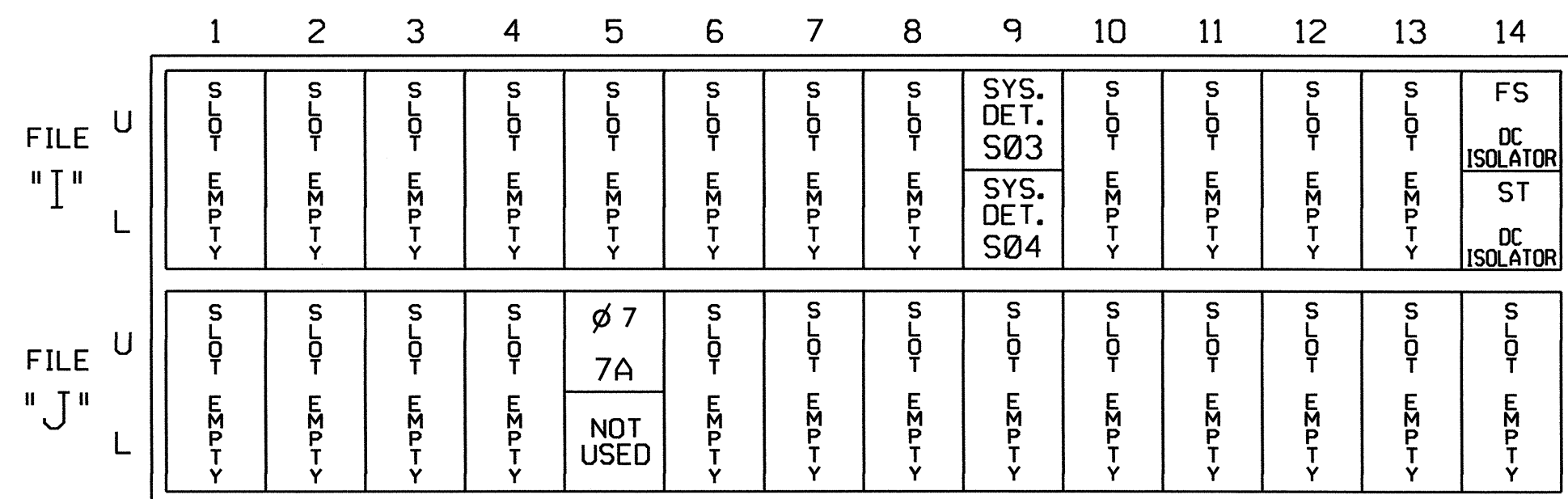
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	P21,P22 P23,P24	NU	41,42	NU	NU	NU	NU	41	81,82	P81, P82
RED		128			101					*	107	
YELLOW		129			102						108	
GREEN		130			103						109	
RED ARROW												
YELLOW ARROW											123	
GREEN ARROW											124	
												110
												112

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

INPUT FILE POSITION LAYOUT

(front view)

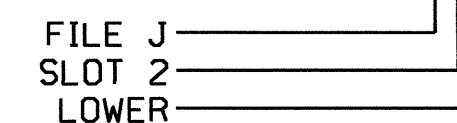


INPUT FILE CONNECTION & PROGRAMMING CHART

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
*S03	TB6-9,10	I9U	60	22	11	SYS					
*S04	TB6-11,12	I9L	62	24	13	SYS					
7A	TB5-5,6	J5U	57	19	7	7	Y	Y			15

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

INPUT FILE POSITION LEGEND: J2L



DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

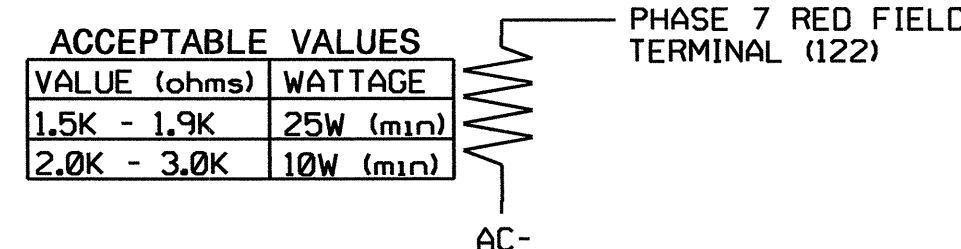
- From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Function 1.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

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

BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-0695
DESIGNED: July 2010
SEALED: 09-01-10
REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL



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

Signal Upgrade - Temporary Design 1, 2 and Final.

Electrical and Programming Details For:

US 19/23 NB (Main Street) at NC 110 (Pisgah Drive/Sorrells Street)

Division 14 Haywood County Canton

PLAN DATE: August 2010 REVIEWED BY: JTR

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS

INIT. DATE

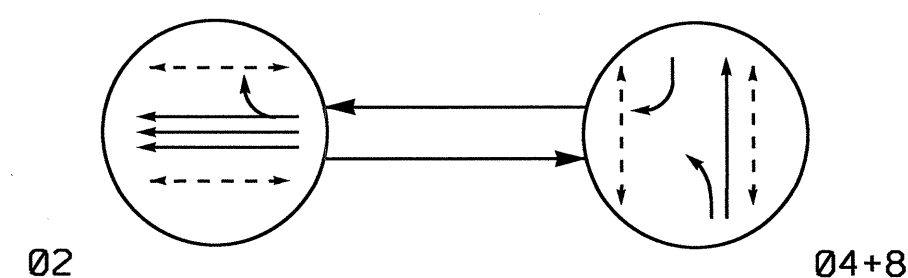
750 N. Greenfield Pkwy, Garner, NC 27529

Seal: JOHN T. ROWE, ENGINEER, SEAL 008453

Signature: John T. Rowe, 9-3-10

SIG. INVENTORY NO. 14-0695

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

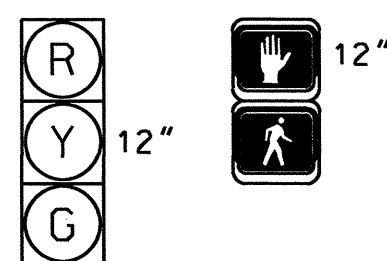
- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ←--- PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE		
	02	04+8	FLIGHT HEADS
21,22	G	R	Y
41,42	R	G	R
81,82	R	G	R
P21,P22	W	DW	DRK
P23,P24	W	DW	DRK
P41,P42	DW	W	DRK
P81,P82	DW	W	DRK

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

SIGNAL FACE I.D.

All Heads L.E.D.



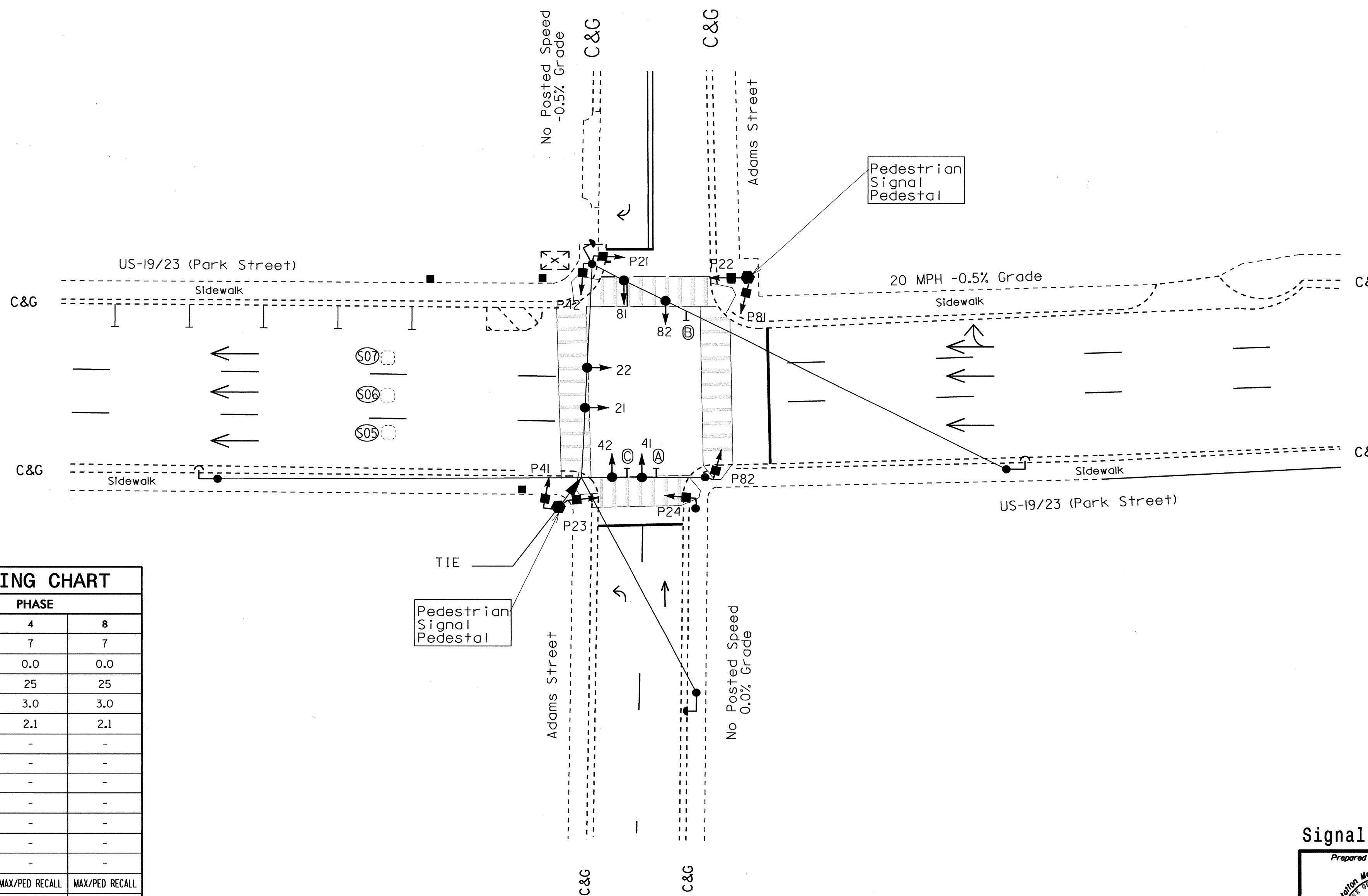
21, 22 P21, P22
 41, 42 P23, P24
 81, 82 P41, P42
 * P81, P82
 * See Note 8

LOOP	INDUCTIVE LOOPS			DETECTOR PROGRAMMING							
	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING EXTENSION	PULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
S05	6X6	+100	EXIST	-	-	-	-	-	-	Y	-
S06	6X6	+100	EXIST	-	-	-	-	-	-	Y	-
S07	6X6	+100	EXIST	-	-	-	-	-	-	Y	-

2 Phase
 Pre-timed
 US 19/23 CLS

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Pavement markings are revised as shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 0393.
- All signal heads, pedestrian heads and pedestrian pedestals are black.



OASIS 2070L TIMING CHART

FEATURE	PHASE		
	2	4	8
Min Green 1 *	10	7	7
Extension 1 *	0.0	0.0	0.0
Max Green 1 *	40	25	25
Yellow Clearance	3.0	3.0	3.0
Red Clearance	1.8	2.1	2.1
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	MAX/PED RECALL	MAX/PED RECALL	MAX/PED RECALL
Vehicle Call Memory	-	-	-
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

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

PROPOSED	LEGEND	EXISTING
○→	Traffic Signal Head	●→
●→	Modified Signal Head	N/A
□	Sign	□
○→	Pedestrian Signal Head With Push Button & Sign	●→
□	Signal Pole with Guy	□
□	Signal Pole with Sidewalk Guy	□
□	Inductive Loop Detector	□
□	Controller & Cabinet	□
□	Junction Box	□
---	2-in Underground Conduit	---
N/A	Right of Way	---
→	Directional Arrow	→
N/A	Wheelchair Ramp	→
○	Pedestrian Signal Pedestal	●
Ⓐ	No Left Turn Sign (R3-2)	Ⓐ
Ⓑ	No Right Turn Sign (R3-1)	Ⓑ
Ⓒ	Right Arrow "ONLY" Sign (R3-5R)	Ⓒ

Signal Upgrade - Final Design

	US 19/23 (Park Street) at SR 1941 (Adams Street)		SEAL TIMOTHY J. WILLIAMS PROFESSIONAL ENGINEER STATE OF NORTH CAROLINA LICENSE NO. 24393
	Division 14 Haywood County Canton	PLAN DATE: July 2010 REVIEWED BY:	
PREPARED BY: M. Mahbooba	REVIEWED BY:		SIGNATURE: <i>T. Williams</i> DATE: 9/1/10
SCALE: 1"=20'	REVISIONS:		

- 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

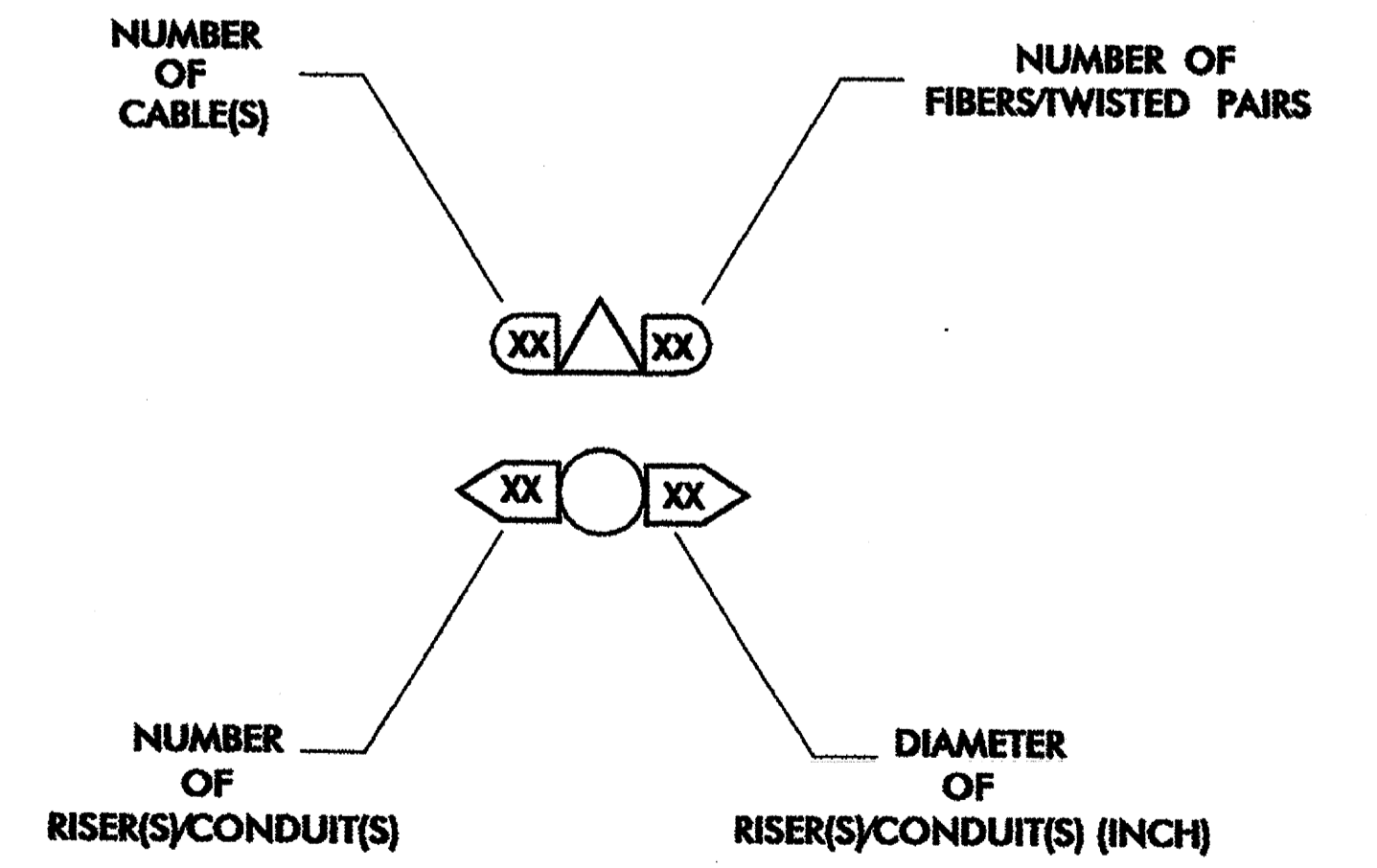
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL 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

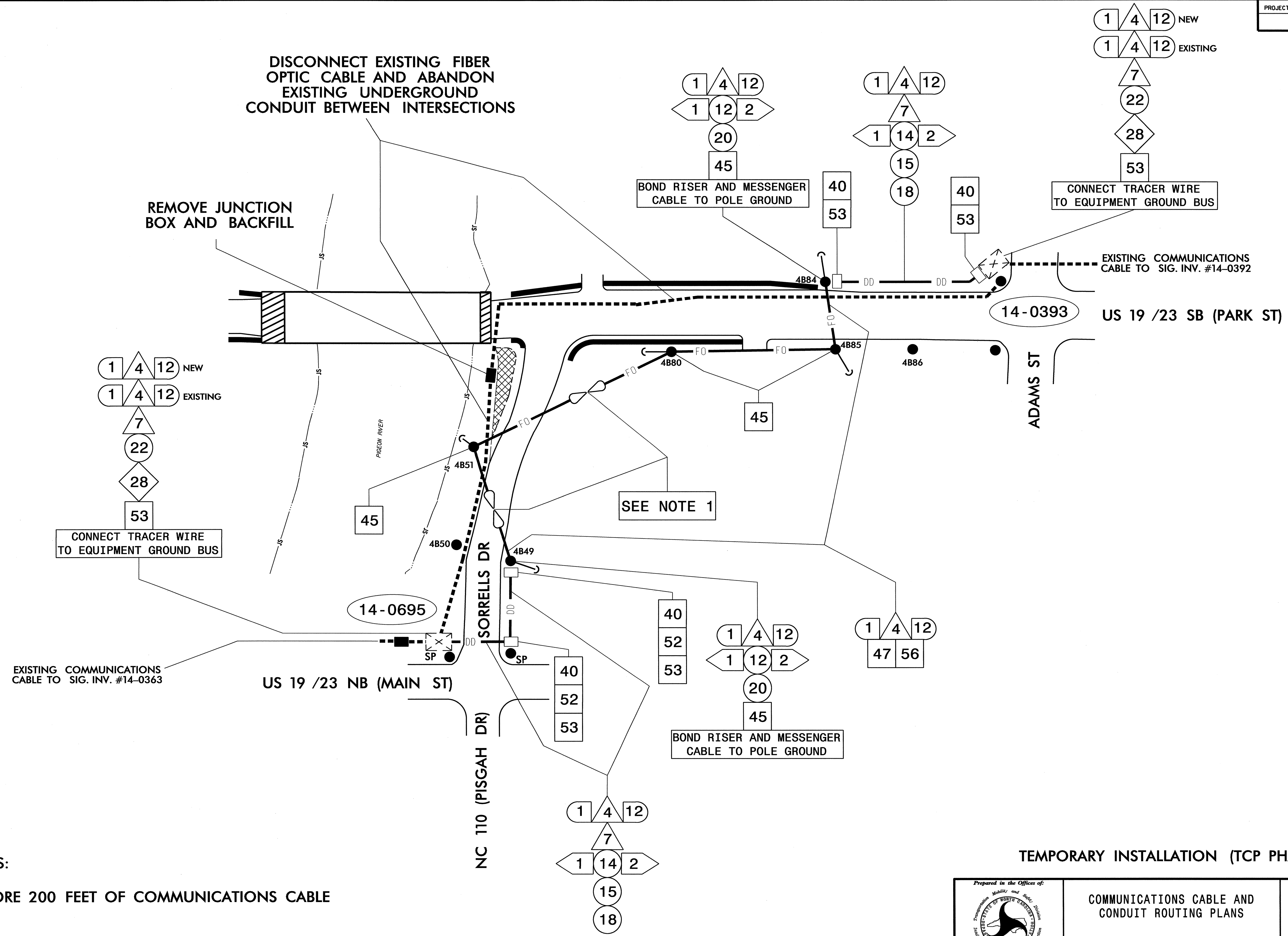
- FO NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST PR NEW TWISTED PAIR COMMUNICATIONS CABLE
- EXI EXISTING COMMUNICATIONS CABLE
- REM EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- DD NEW DIRECTIONAL DRILLED CONDUIT
- B&J NEW BORED AND JACKED CONDUIT
- 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		SEAL
	PLAN DATE: _____ PREPARED BY: _____ SCALE: _____	REVIEWED BY: _____ REVIEWED BY: G. A. FULLER REVISIONS: _____ INIT. DATE: _____	



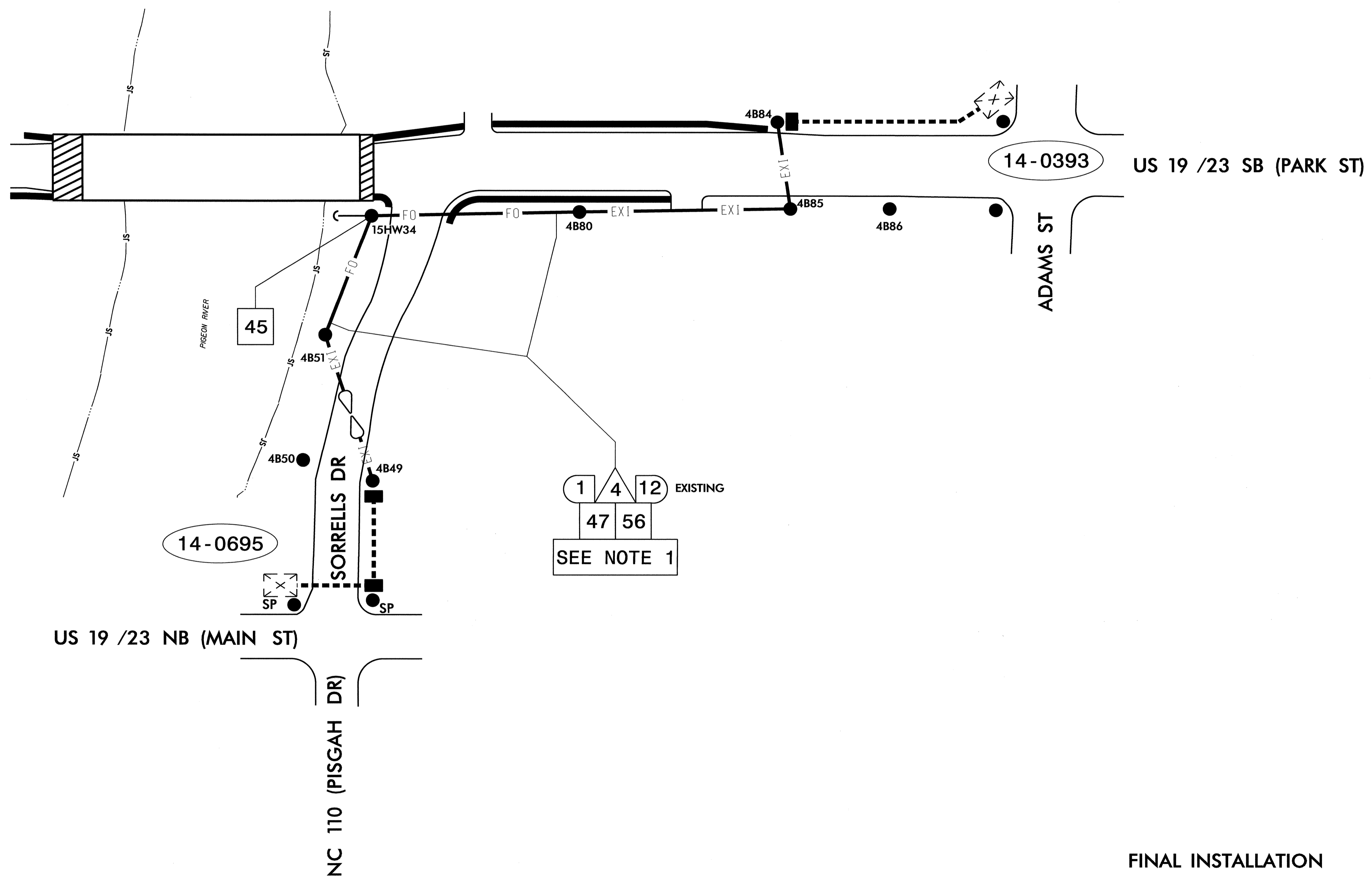
NOTES:

- 1. STORE 200 FEET OF COMMUNICATIONS CABLE

ALL NCDOT ATTACHMENT POINTS ARE 12" BELOW PHONE, FRONT SIDE OF POLE, UNLESS OTHERWISE NOTED.

TEMPORARY INSTALLATION (TCP PHASE I)

<p>Prepared in the Offices of: Transportation, Mobility, and Safety Division Division of Transportation Planning 750 N. Greenfield Pkwy., Garner, NC 27529</p>	<p>COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS</p>		
	<p>DIVISION 14 HAYWOOD COUNTY CANTON</p>		
	<p>PLAN DATE: AUGUST 2010</p>	<p>REVIEWED BY: I.N. AVERY</p>	
	<p>PREPARED BY: S.C. WARDLE</p>	<p>REVIEWED BY: G.A. FULLER</p>	
<p>SCALE: 0</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>	<p>SIGNATURE: Gregory A. Fuller DATE: 8/27/10</p>



NOTES:

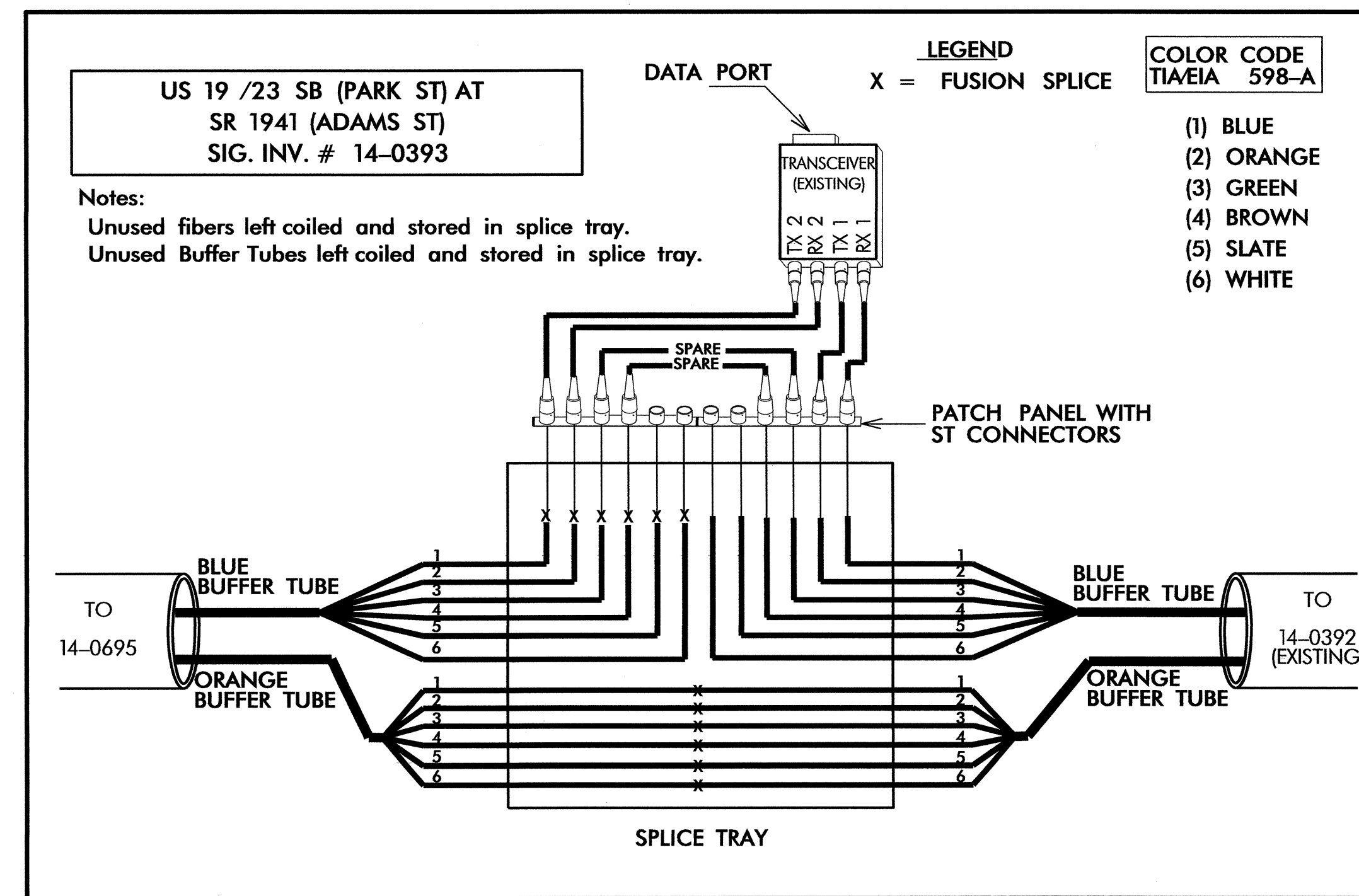
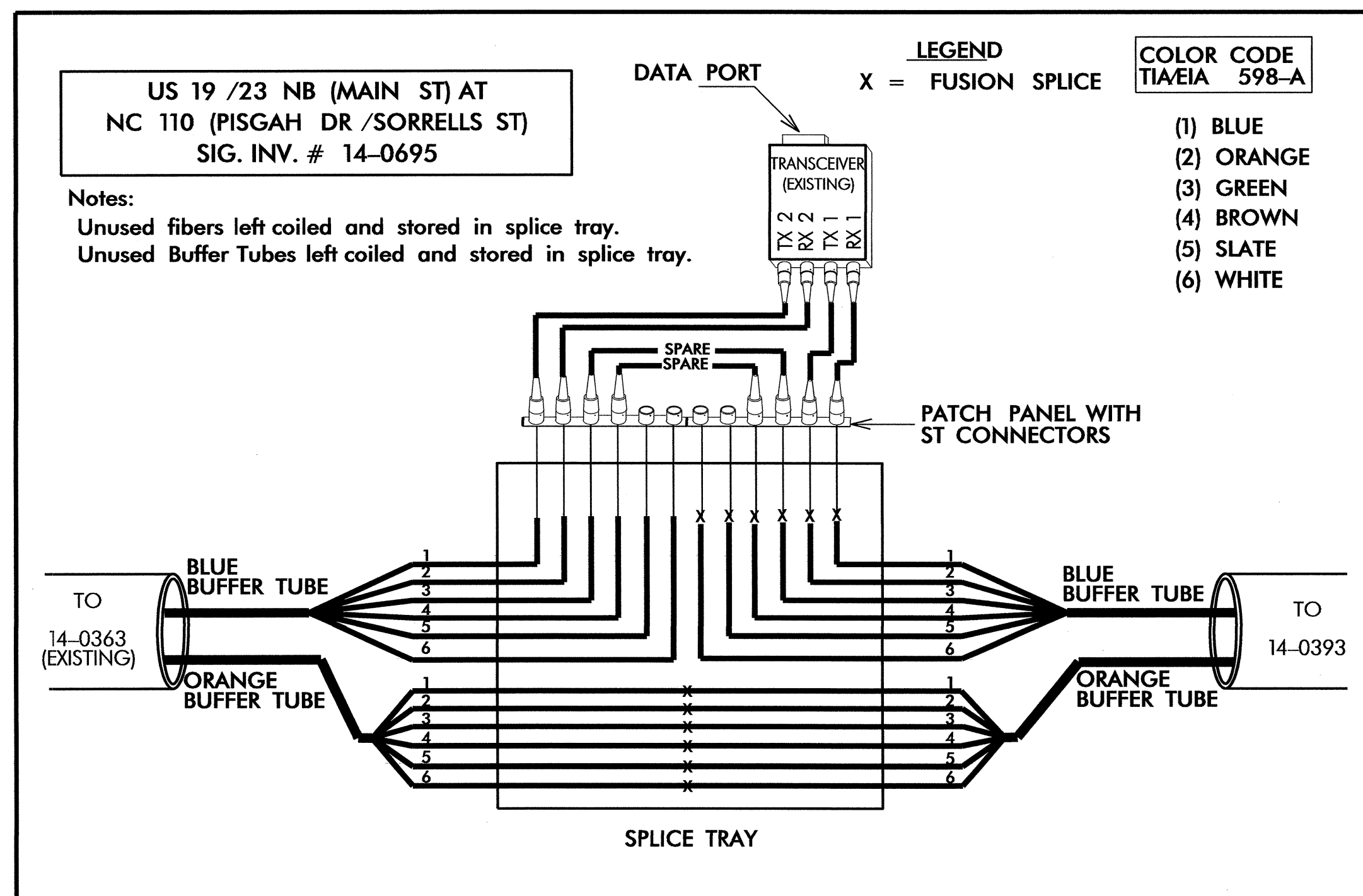
1. UNCOIL EXISTING SPARE COMMUNICATIONS CABLE AND RELOCATE TO NEW POLE 15HW34 AFTER UTILITY RELOCATION.

ALL NCDOT ATTACHMENT POINTS ARE 12" BELOW PHONE, FRONT SIDE OF POLE, UNLESS OTHERWISE NOTED.

FINAL INSTALLATION

	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS		
	DIVISION 14 HAYWOOD COUNTY CANTON		
PLAN DATE: AUGUST 2010	REVIEWED BY: I.N. AVERY		PREPARED BY: S.C. WARDLE REVIEWED BY: G.A. FULLER
SCALE: 0	REVISIONS	INIT. DATE	
SIGNATURE: <i>Gregory A. Fuller</i>			DATE:

FIBER OPTIC CABLE



TRANSCIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS

<p>Prepared in the Offices of: TRANSPORTATION SYSTEMS GROUP 750 N. Greenfield Pkwy., Garner, NC 27529</p>	SPLICE PLAN		
	DIVISION 14 HAYWOOD COUNTY CANTON PLAN DATE: AUGUST 2010 REVIEWED BY: I.N. AVERY PREPARED BY: S.C. WARDLE REVIEWED BY: G.A. FULLER		
SCALE 0	REVISIONS	INIT. DATE	SIGNATURE: <i>Gregory A. Fuller</i> DATE: 8/27/10 CADD File name: