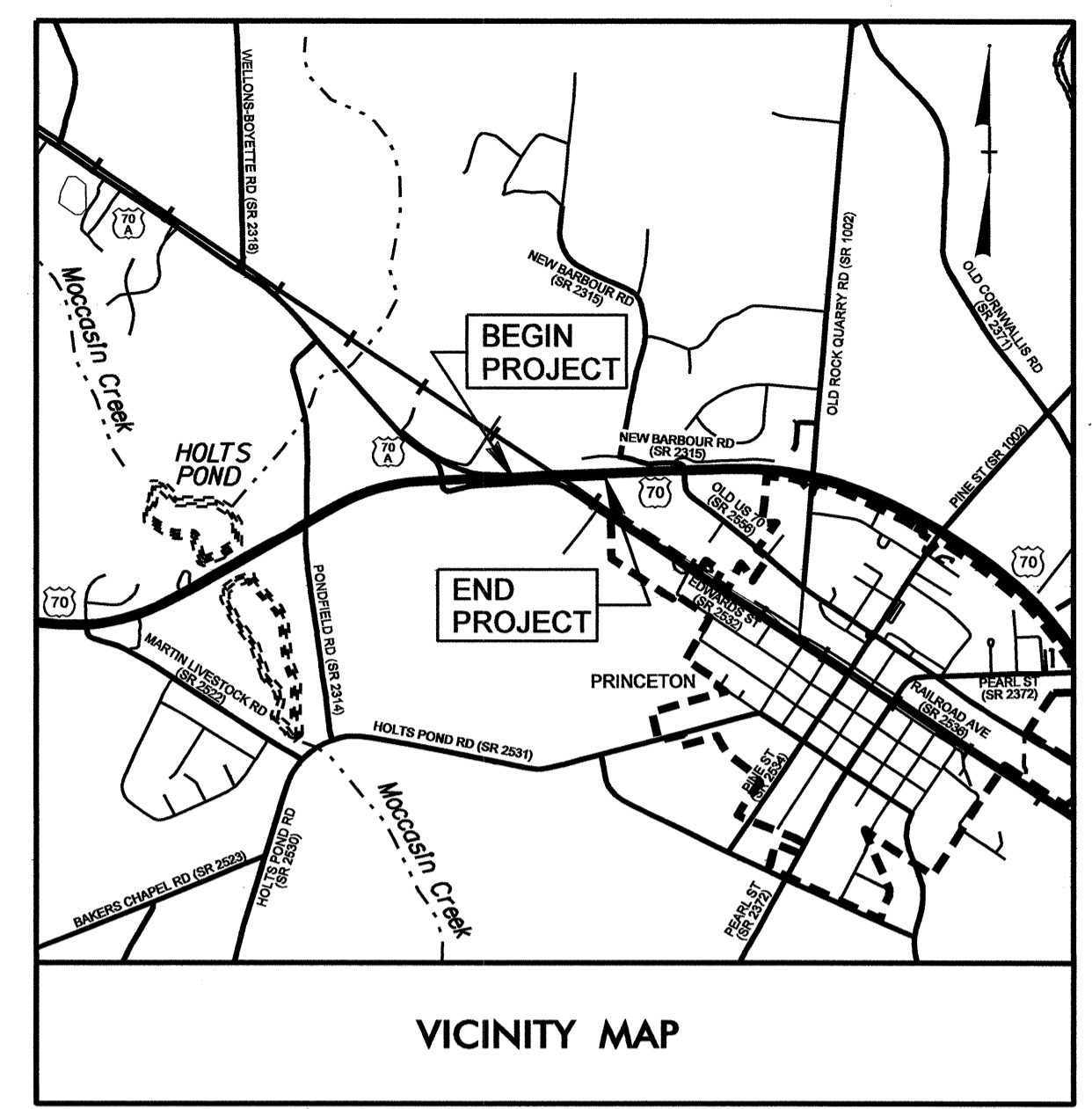


TIP: B-4555



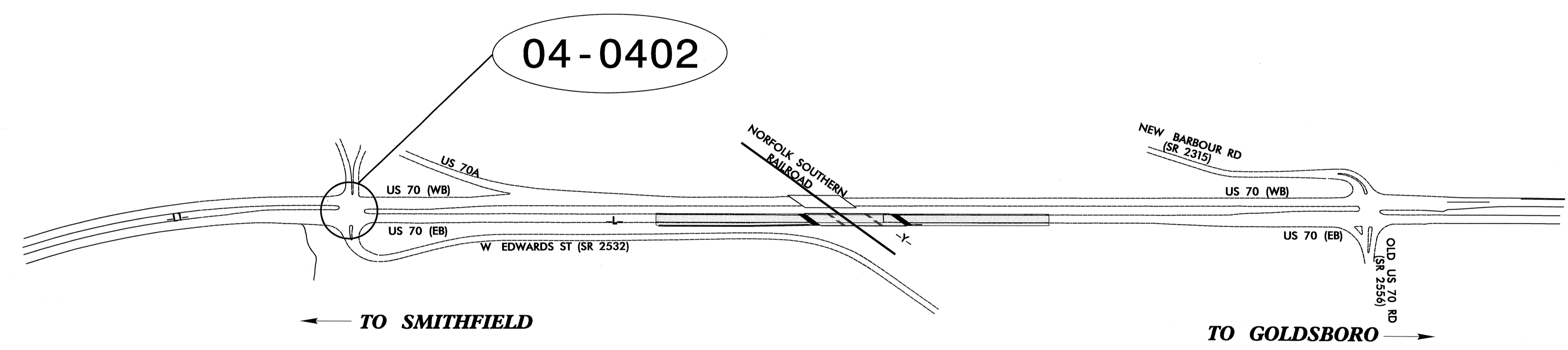
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

LOCATION: BRIDGE NO. 97 ON US 70 (EAST) OVER NORFOLK SOUTHERN RAILROAD

TYPE OF WORK: TRAFFIC SIGNALS.



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

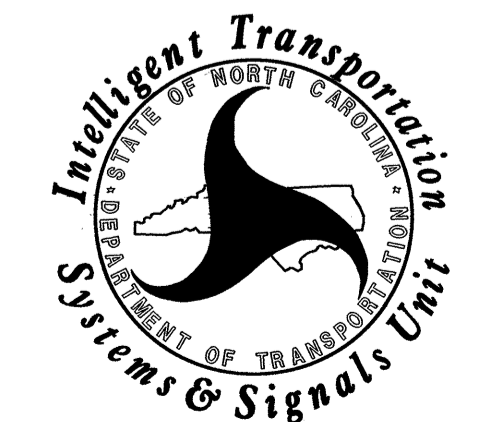
Sheet #	Reference #	Location/Description
Sig. 1	-----	Title Sheet
Sig. 2-5	04-0402	US 70 at US 70 Alt/SR 2532 (W. Edwards Street)
Sig. 6	-----	Sign Designs

INTELLIGENT TRANSPORTATION SYSTEMS AND SIGNALS UNIT

Contacts:

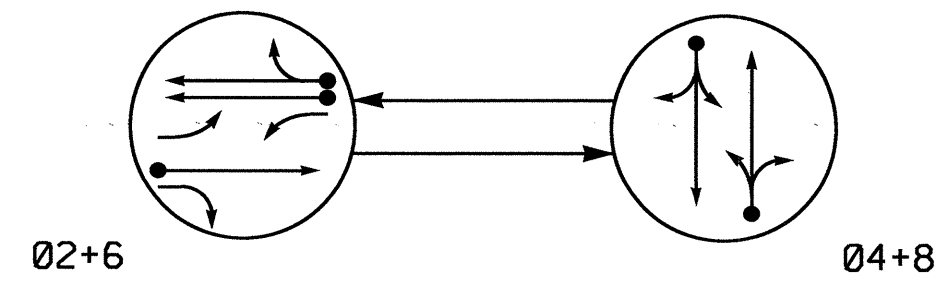
Jason P. Galloway, PE - East Region Signal Project Engineer
George C. Brown, PE - Signal Equipment Design Engineer

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



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PHASING DIAGRAM

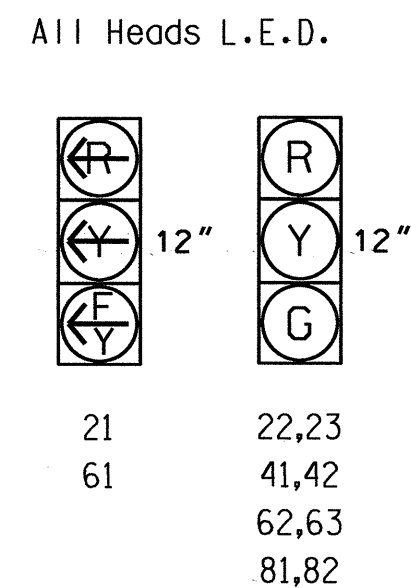


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE		
	02+6	04+8	FLASH
21	Y	R	Y
22,23	G	R	Y
41,42	R	G	R
61	Y	R	Y
62,63	G	R	Y
81,82	R	G	R

SIGNAL FACE I.D.

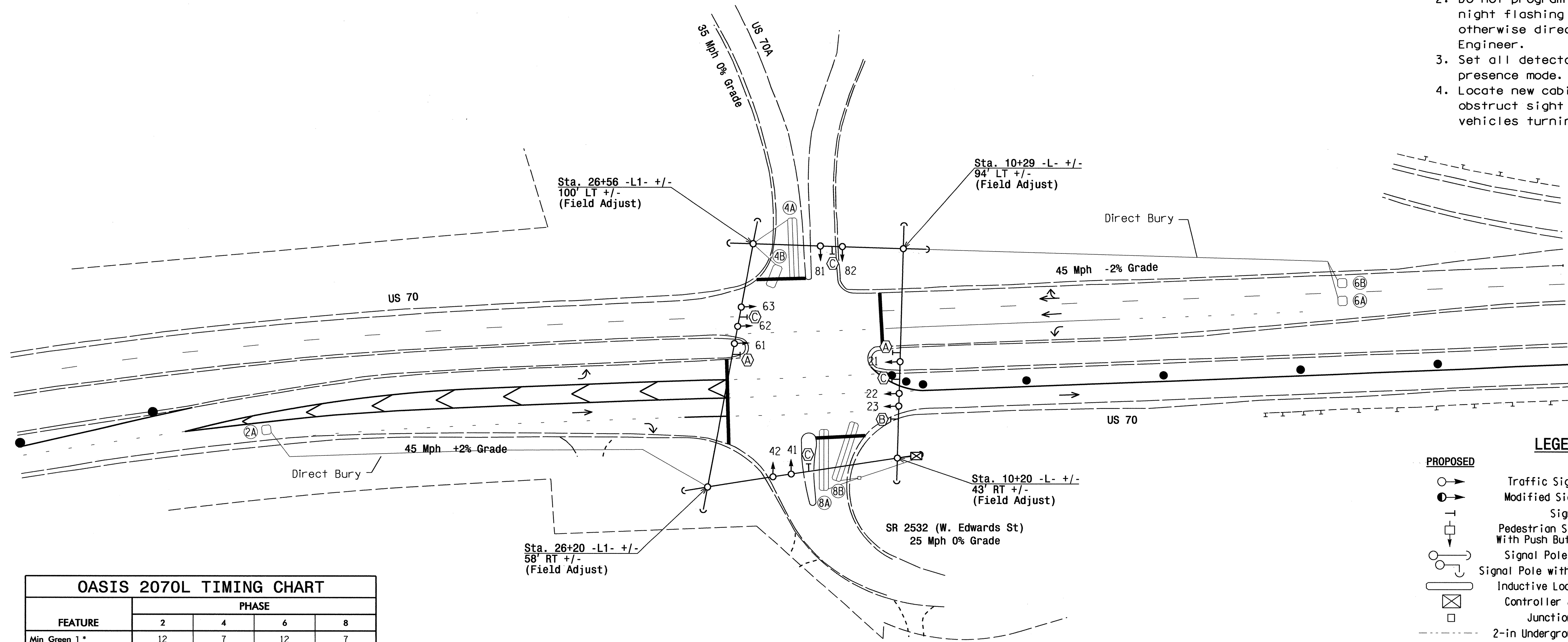


LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING									
				NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD	
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-	-	Y
4B	6X15	+5	3	Y	4	Y	Y	-	-	10	-	-	Y
6A	6X6	300	5	Y	6	Y	Y	-	-	-	-	-	Y
6B	6X6	300	5	Y	6	Y	Y	-	-	-	-	-	Y
8A	6X40	+5	2-4-2	Y	8	Y	Y	-	-	-	-	-	Y
8B	6X40	+10	2-4-2	Y	8	Y	Y	-	-	10	-	-	Y

2 Phase Fully Actuated TEMPORARY SIGNAL

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.



FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	12	7	12	7
Extension 1 *	6.0	2.0	6.0	2.0
Max Green 1 *	90	20	90	20
Yellow Clearance	4.7	3.8	4.7	3.2
Red Clearance	1.5	2.3	1.5	2.9
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.0	-	1.5	-
Max Variable Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	45	-	45	-
Minimum Gap	3.0	-	3.0	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

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

PROPOSED	EXISTING
○→ Traffic Signal Head	●→ N/A
●→ Modified Signal Head	○→ N/A
⊥ Sign	⊥ N/A
⊥ Pedestrian Signal Head With Push Button & Sign	⊥ N/A
○ Signal Pole with Guy	● Signal Pole with Guy
○ Signal Pole with Sidewalk Guy	● Signal Pole with Sidewalk Guy
⊠ Inductive Loop Detector	⊠ Inductive Loop Detector
⊠ Controller & Cabinet	⊠ Controller & Cabinet
□ Junction Box	□ Junction Box
--- 2-in Underground Conduit	--- 2-in Underground Conduit
N/A Right of Way	N/A Right of Way
→ Directional Arrow	→ Directional Arrow
Ⓐ Left Arrow "ONLY" Sign (R3-5L)	Ⓐ Left Arrow "ONLY" Sign (R3-5L)
Ⓑ Right Arrow "ONLY" Sign (R3-5R)	Ⓑ Right Arrow "ONLY" Sign (R3-5R)
Ⓒ "TEMPORARY SIGNAL" Sign ()	Ⓒ "TEMPORARY SIGNAL" Sign ()

Signal Upgrade - Temporary Signal

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 70 at US 70 Alt/SR 2532 (W. Edwards Street)

Division 4 Johnston County Princeton

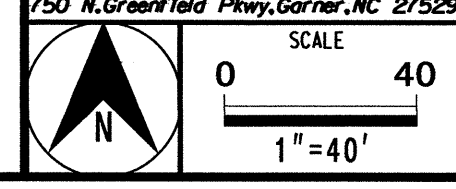
PLAN DATE: January 2012 REVIEWED BY: PLA

PREPARED BY: JPG REVIEWED BY:

SEAL

DATE: 2/8/12

STG-INVENTORY NO. 04-0402

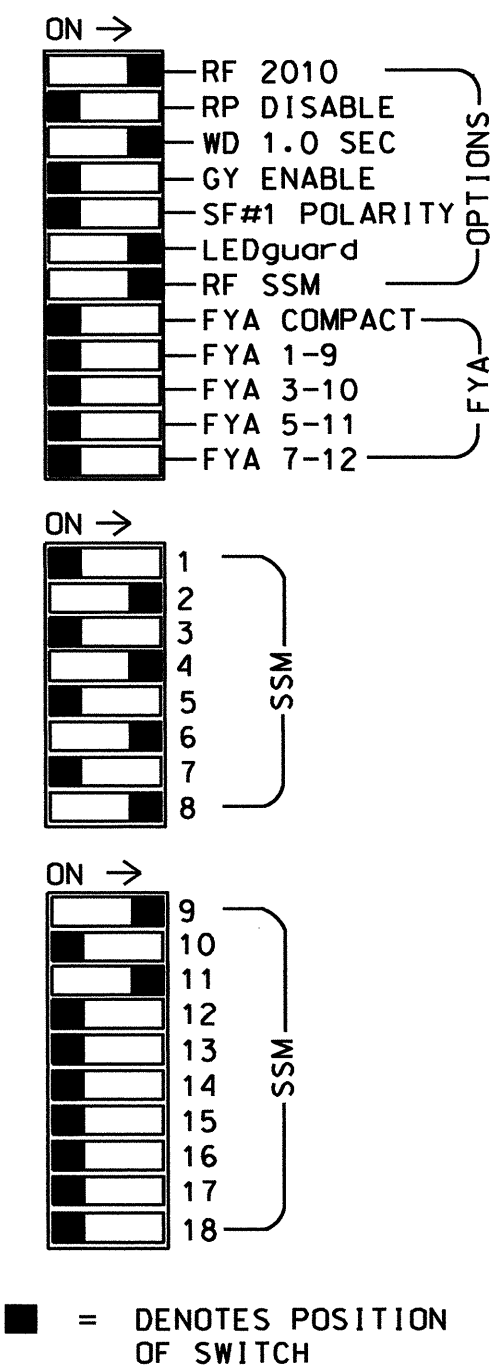
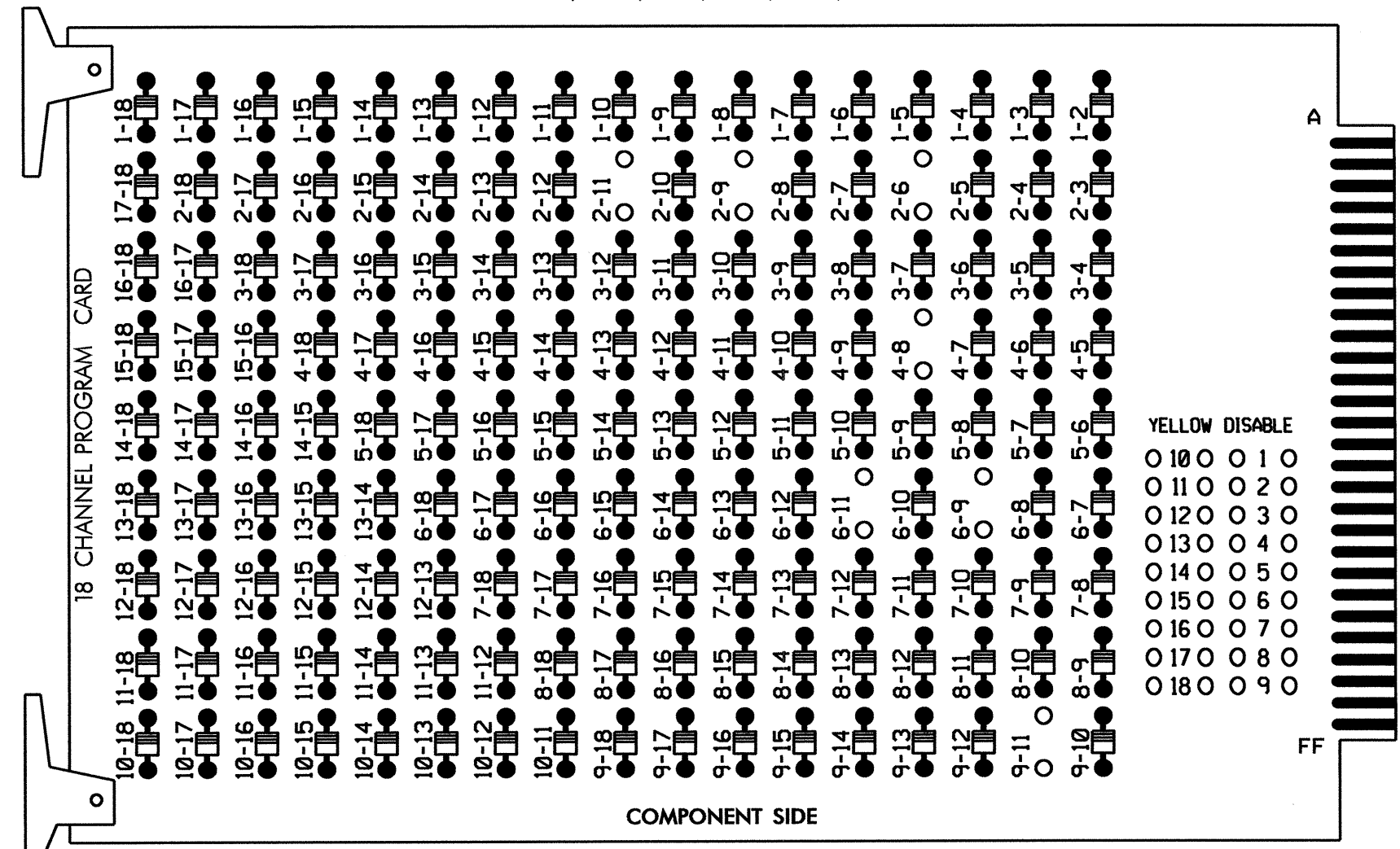


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**EDI MODEL 2018ECL-NC CONFLICT MONITOR
PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-6, 2-9, 2-11, 4-8, 6-9, 6-11 and 9-11.



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	22,23	NU	NU	41,42	NU	NU	62,63	NU	NU	81,82	NU	61	NU	NU	21	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW																		

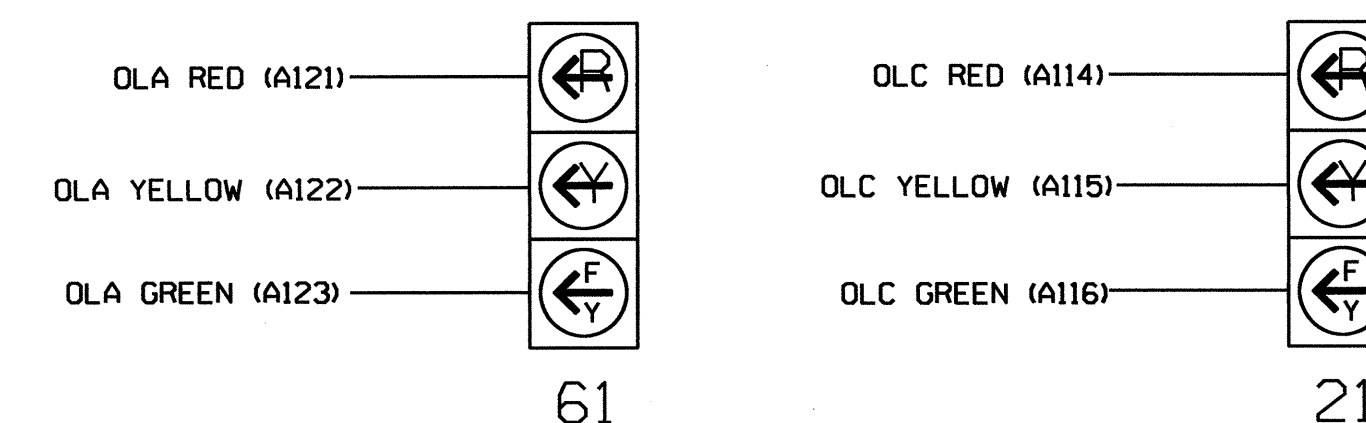
NU = Not Used
★ See pictorial of head wiring in detail below.

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.....S2,S5,S8,S11,AUX S1,AUX S4
PHASES USED.....2,4,6,8
OVERLAP "A".....2
OVERLAP "B".....NOT USED
OVERLAP "C".....6
OVERLAP "D".....NOT USED

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 2	2A	∅ 3	∅ 4	∅ 5	4A	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	FS
L	NOT USED					4B								DC ISOLATOR
U	∅ 6	6A	∅ 7	∅ 8	∅ 9	8A	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	DC ISOLATOR
L	∅ 6					8B								ST

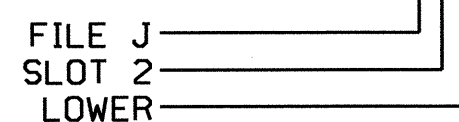
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10

INPUT FILE POSITION LEGEND: J2L



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

← NOTICE GREEN FLASH

PRESS '+' TWICE

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

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

Electrical Detail - Temporary Signal

Electrical and Programming Details For:

Prepared In the Offices of:
Transportation Mobility and Safety Solutions
Division of Transportation Planning and Management Services
750 N. Greenfield Pkwy, Garner, NC 27529

US 70
at
US 70 Alt/SR 2532
(W. Edwards Street)

Division 4 Johnston County Princeton

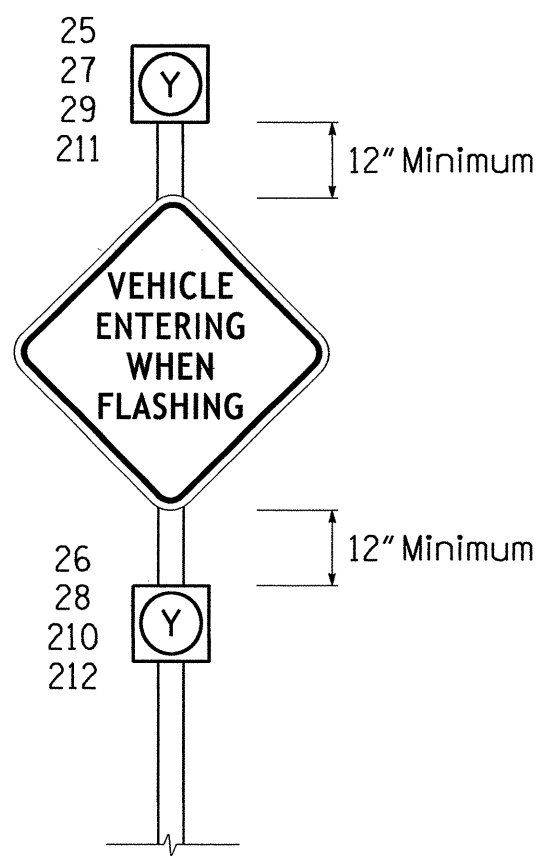
PLAN DATE: January 2012 REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland REVIEWED BY:
REVISIONS INIT. DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 022013
GEORGE C. BROWN

Signature: George C. Brown 2/8/12
DATE: 2/8/12
SIG. INVENTORY NO. 04-0402

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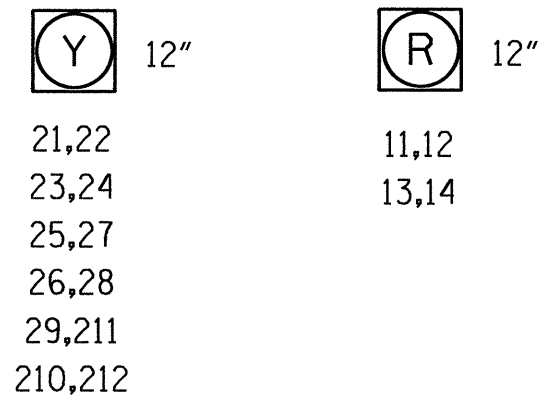
FIGURE 1



SIGNAL FACE	INTERVAL	
	1	2
11,12	ON	OFF
13,14	OFF	ON
21,22	ON	OFF
23,24	OFF	ON
25,27	ON	OFF
26,28	OFF	ON
29,211	ON	OFF
210,212	OFF	ON

SIGNAL FACE I.D.

All Heads L.E.D.

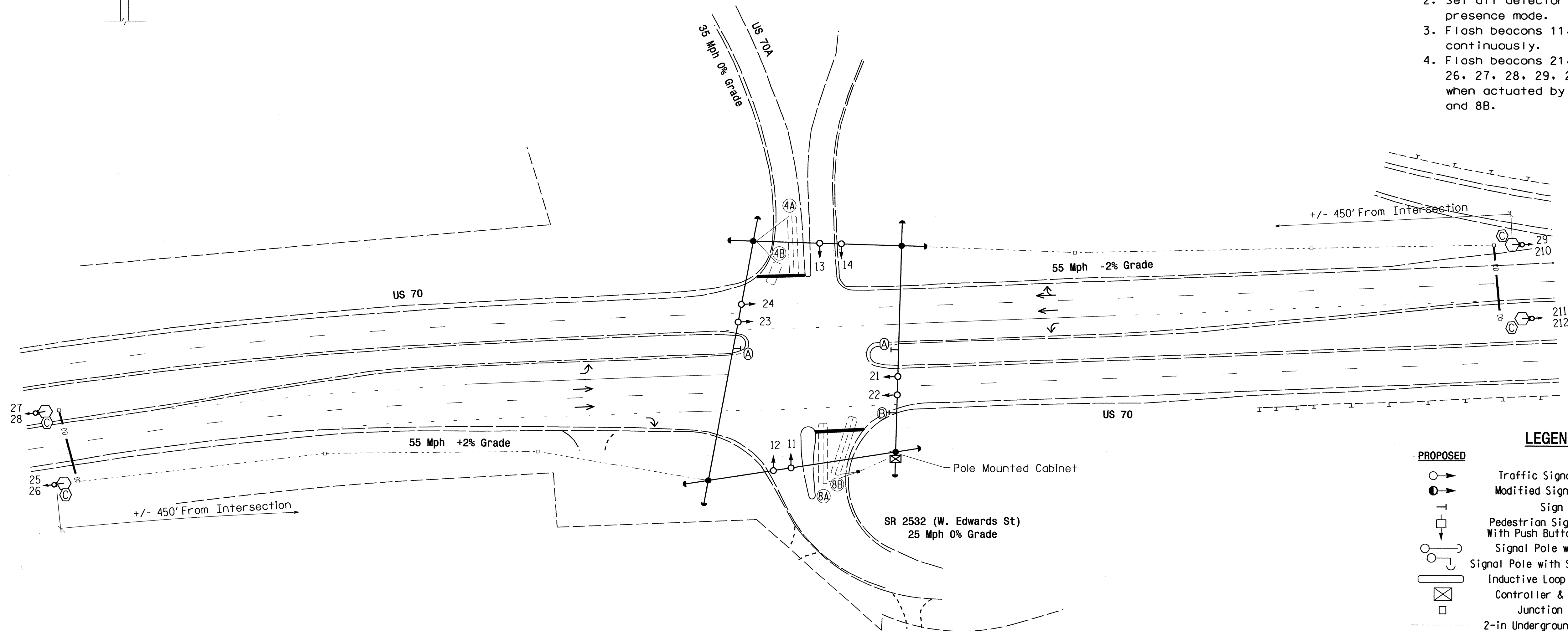


LOOP & DETECTOR UNIT INSTALLATION CHART														
LOOP NO.	SIZE (ft)	INDUCTIVE LOOPS				DETECTOR UNITS								
		DIST. FROM STOPBAR (ft)	TURNS	NEW	EXISTING	UNIT NO.	NEW	EXISTING	CHANNEL	NEMA PHASE	TIMING FEATURE	TIME	PLACE CALL DURING PHASE	INHIBIT DELAY DURING GREEN
4A	6X40	0	2-4-2	-	X	1	X	-	1	-	Extend	5	-	-
4B	6X15	+5	3	-	X	1	X	-	2	-	Extend	5	-	-
8A	6X40	+5	2-4-2	-	X	2	X	-	1	-	Extend	5	-	-
8B	6X40	+10	2-4-2	-	X	2	X	-	2	-	Extend	5	-	-

Actuated Flasher

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Set all detector units to presence mode.
3. Flash beacons 11, 12, 13, and 14 continuously.
4. Flash beacons 21, 22, 23, 24, 25, 26, 27, 28, 29, 210, 211, and 212 when actuated by loops 4A, 4B, 8A, and 8B.



PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
● → Modified Signal Head	— Sign
⊥ Pedestrian Signal Head With Push Button & Sign	⊥ Signal Pole with Guy
○ ⊥ Signal Pole with Guy	● ⊥ Signal Pole with Sidewalk Guy
⊥ Inductive Loop Detector	⊥ Controller & Cabinet
⊥ Junction Box	⊥ Junction Box
⊥ 2-in Underground Conduit	⊥ Right of Way
→ Directional Arrow	→ Signal Pedestal
○ Left Arrow "ONLY" Sign (R3-5L)	● Left Arrow "ONLY" Sign (R3-5L)
○ Right Arrow "ONLY" Sign (R3-5R)	● Right Arrow "ONLY" Sign (R3-5R)
○ "Vehicle Entering When Flashing" Sign (see Figure 1)	● "Vehicle Entering When Flashing" Sign (see Figure 1)

Signal Upgrade - Final Flasher

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 70
at
US 70 Alt/SR 2532
(W. Edwards Street)

Division 4 Johnston County Princeton

PLAN DATE: January 2012 REVIEWED BY: PLA

PREPARED BY: JPG REVIEWED BY:

SEAL

2/8/12

SIGNATURE DATE

SIG. INVENTORY NO. 04-0402

SCALE: 1" = 40'

REVISIONS: _____ INIT. DATE

