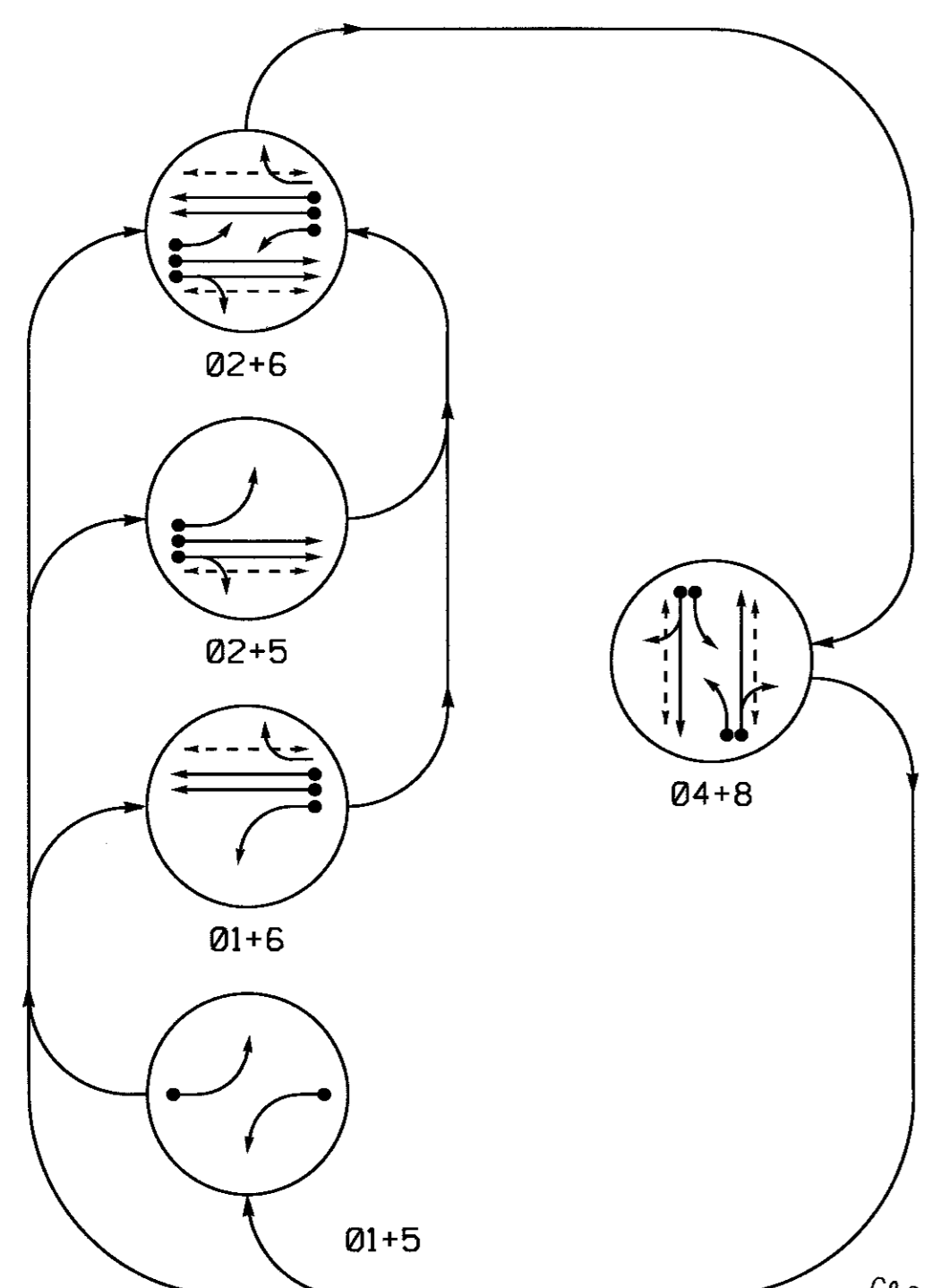


PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

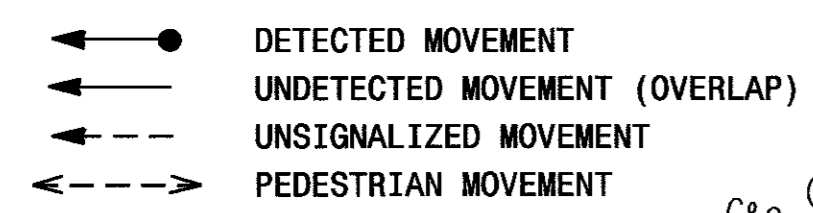


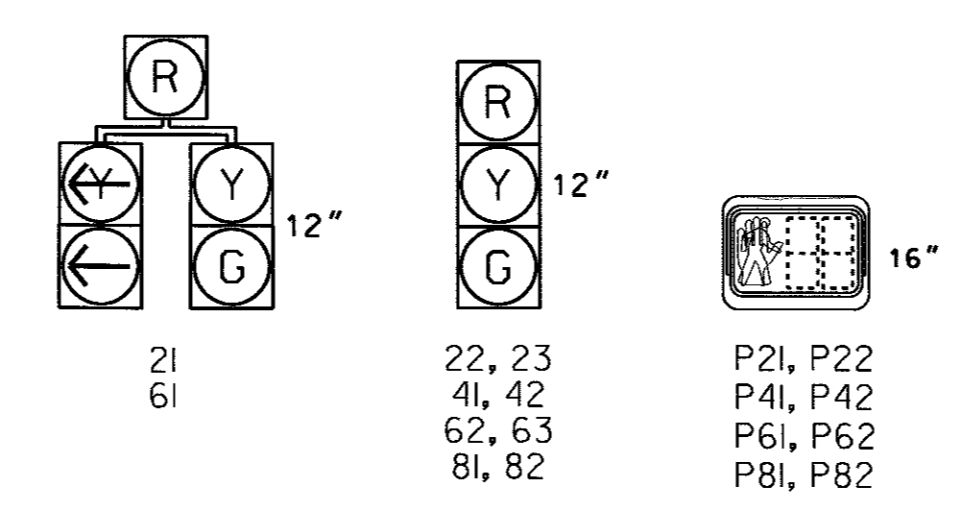
TABLE OF OPERATION

SIGNAL FACE	PHASE					
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8	F L HEADS
21	R	R	G	G	R	Y
22, 23	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
61	R	G	R	G	R	Y
62, 63	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R
P21, P22	DW	DW	W	W	DW	DRK
P41, P42	DW	DW	DW	DW	W	DRK
P61, P62	DW	W	DW	W	DW	DRK
P81, P82	DW	DW	DW	DW	W	DRK

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

SIGNAL FACE I.D.

All Heads L.E.D.



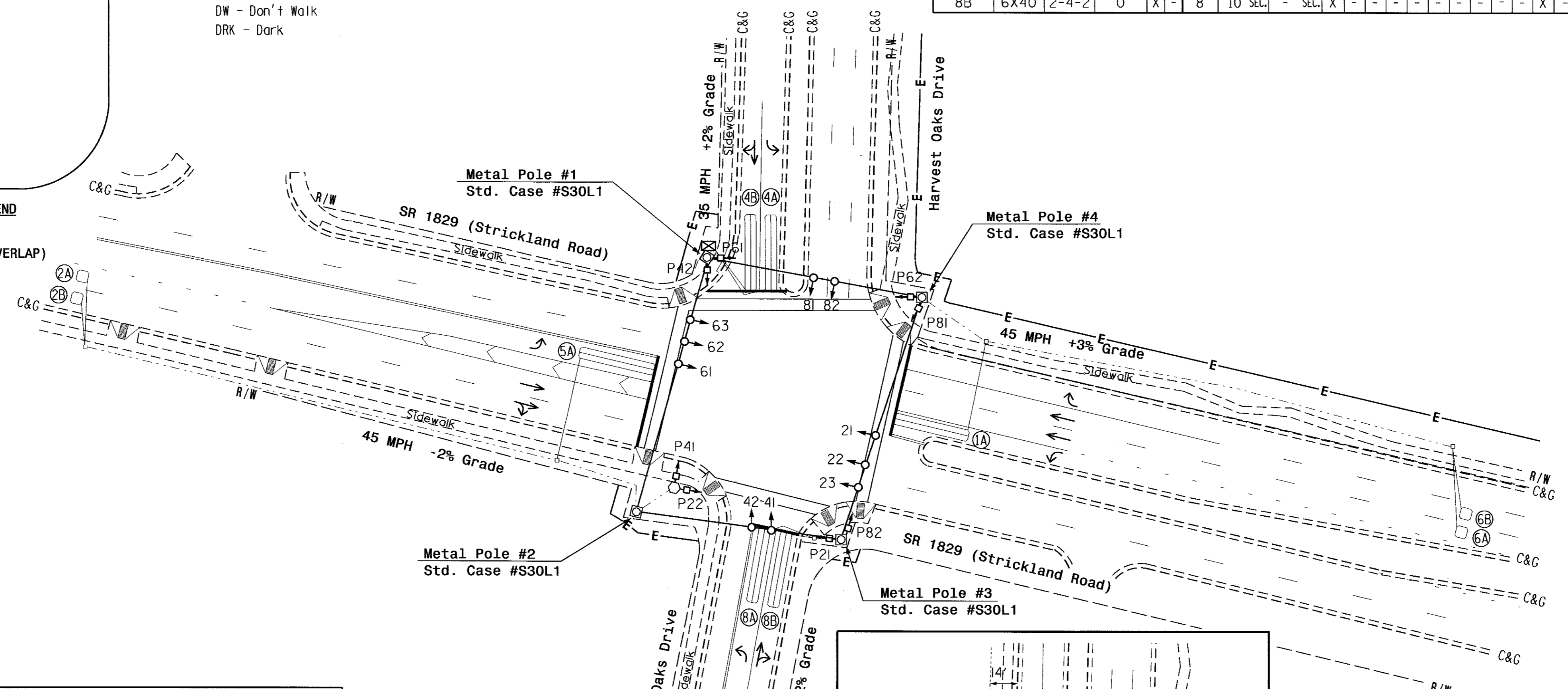
SE-PAC 2070 LOOP & DETECTOR UNIT INSTALLATION CHART

LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	ASSIGNED PHASE	DETECTOR PROGRAMMING										SYSTEM LOOPS	STATUS		
							TIMING		VEHICLE	PEDESTRIAN	OPERATION MODE					SWITCH			NEW	EXISTING
							DELAY	EXTEND (STRETCH)			1 CAL.	2	3	4	5					
1A	6X40	2-4-2	0	X	-	1	15 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
2A	6X6	5	300	X	-	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
2B	6X6	5	300	X	-	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
4A	6X40	2-4-2	0	X	-	4	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
4B	6X40	2-4-2	0	X	-	4	10 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
5A	6X40	2-4-2	0	X	-	5	15 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
6A	6X6	5	300	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
6B	6X6	5	300	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
8A	6X40	2-4-2	0	X	-	8	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	
8B	6X40	2-4-2	0	X	-	8	10 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-	

5 Phase Fully Actuated (Raleigh Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Omit phase 1 during phase 2 on.
- Omit phase 5 during phase 6 on.
- Program controller to clear from phase 2+6 to phase 1 and/or 5 by progressing through phase 4+8 (see Electrical Details).
- 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.

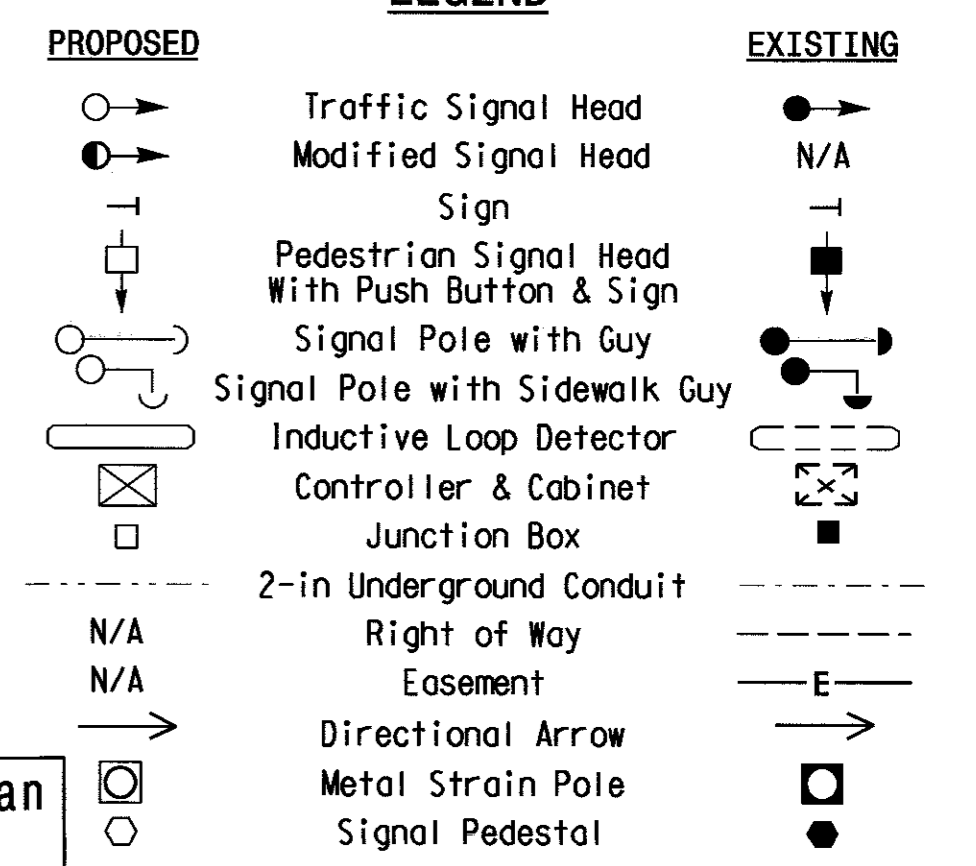


SE-PAC 2070 TIMING CHART

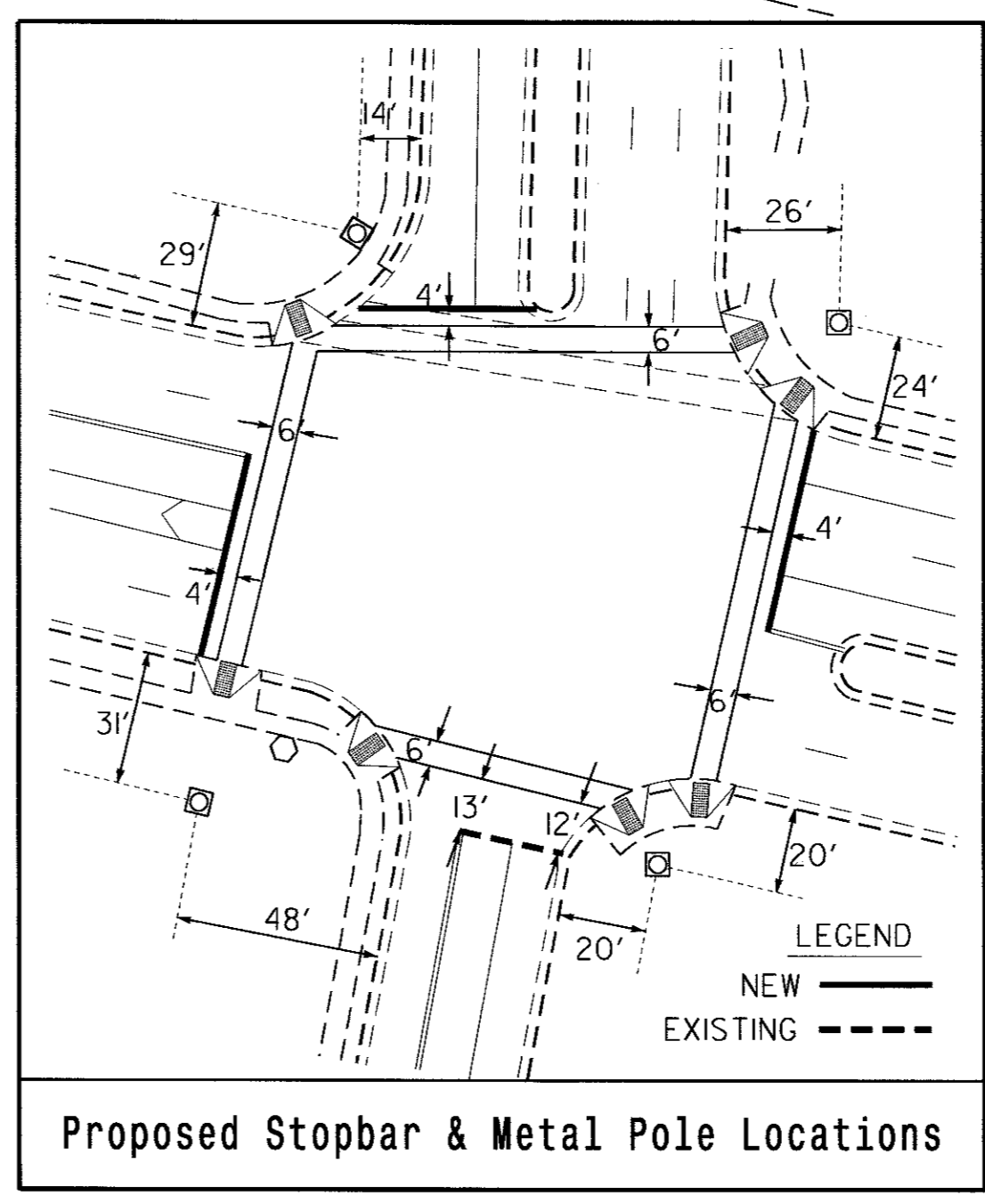
FEATURE	PHASE						
	1	2	4	5	6	8	
Min Green *	7	12	7	7	12	7	
Passage Gap *	2.0	6.0	2.0	2.0	6.0	2.0	
Maximum Green *	15	90	25	15	90	25	
Yellow Change	3.0	4.7	3.7	3.0	4.3	3.7	
Red Clear	2.9	1.9	2.6	3.1	1.9	2.6	
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	
Walk *	-	4	4	-	4	4	
Pedestrian Clear	-	12	19	-	25	22	
Added Initial *	-	1.5	-	-	1.5	-	
Maximum Initial *	-	34	-	-	34	-	
Time Before Reduction *	-	15	-	-	15	-	
Time To Reduce *	-	30	-	-	30	-	
Minimum Gap	-	3.2	-	-	3.2	-	
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	
Vehicle Call Memory	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	LOCK	NON-LOCK	
Dual Entry	-	-	ON	-	-	ON	
Simultaneous Gap	ON	ON	ON	ON	ON	ON	

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

LEGEND



This plan supersedes the plan sealed on 7/27/12.



New Installation

SR 1829 (Strickland Road)
at
Harvest Oaks Drive

Division 5 Wake County Raleigh

PLAN DATE: July 2012 REVIEWED BY:

PREPARED BY: C.E. Carter REVIEWED BY:

REVISIONS

NO.	DESCRIPTION	INIT.	DATE

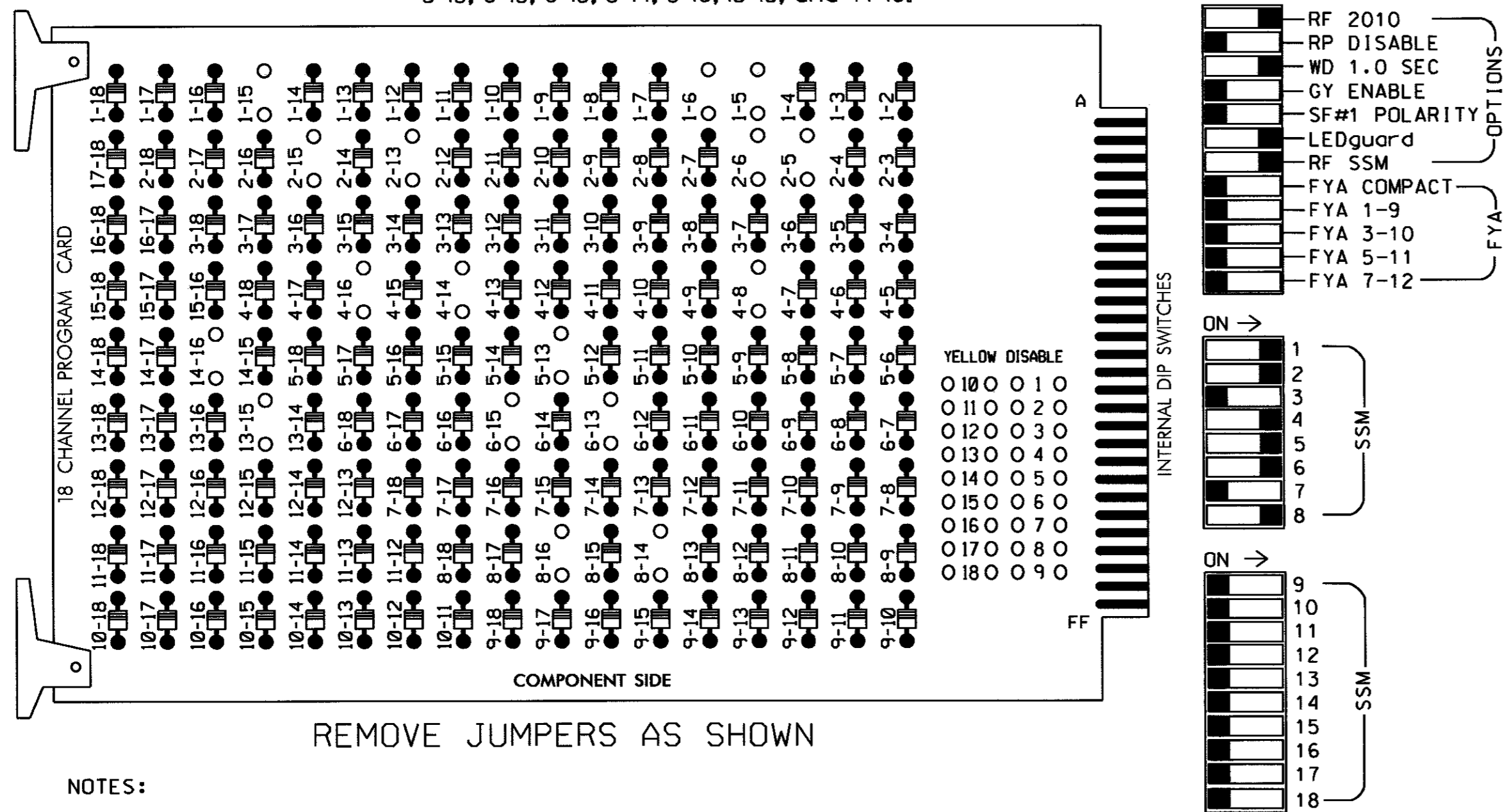
SCALE: 1" = 40'

DATE: 12/18/13

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

(remove jumpers and set switches as shown)

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



REMOVE JUMPERS AS SHOWN

NOTES:

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

■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phases 2 and 6 green.
3. Enable simultaneous gap-out feature, on controller unit, for all phases.
4. Program phases 4 and 8, on controller unit, for Dual Entry.
5. Program phases 2 and 6, on controller unit, for Volume Density operation.
6. The cabinet and controller are part of the Raleigh Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....SE-PAC2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
 OVERLAPS.....NONE

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61	21,22 23	P21, P22	NU	41,42	P41, P42	21	61,62 63	P61, P62	NU	81,82	P81, P82
RED	*	128			101		*	134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW	126						132					
GREEN ARROW	127						133					
Hand icon			113			104			119			110
Walking person icon			115			106			121			112

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

BACK-UP PROTECTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu, press '3' (Phase Data)

SE-PAC PHASE DATA	PRESS # DESIRED
1-VEHICLE TIMES	6-N.LOCK & MISC
2-DENSITY TIMES	7-SPEC. SEQUENCE
3-PEDEST. TIMES	8-SPEC. DETECTOR
4-INIT & N.A. RESP	9-PHASE COPY
5-V & P RECALLS	0-MISC PED OPTIONS
	F-PRIOR MENU

PHASE.....	1...	2...	3...	4...	5...	6...	7...	8
OMIT	2	0	0	0	6	0	0	0
-YEL	0	0	0	0	0	0	0	0
OCAL	4	0	0	0	4	0	0	0

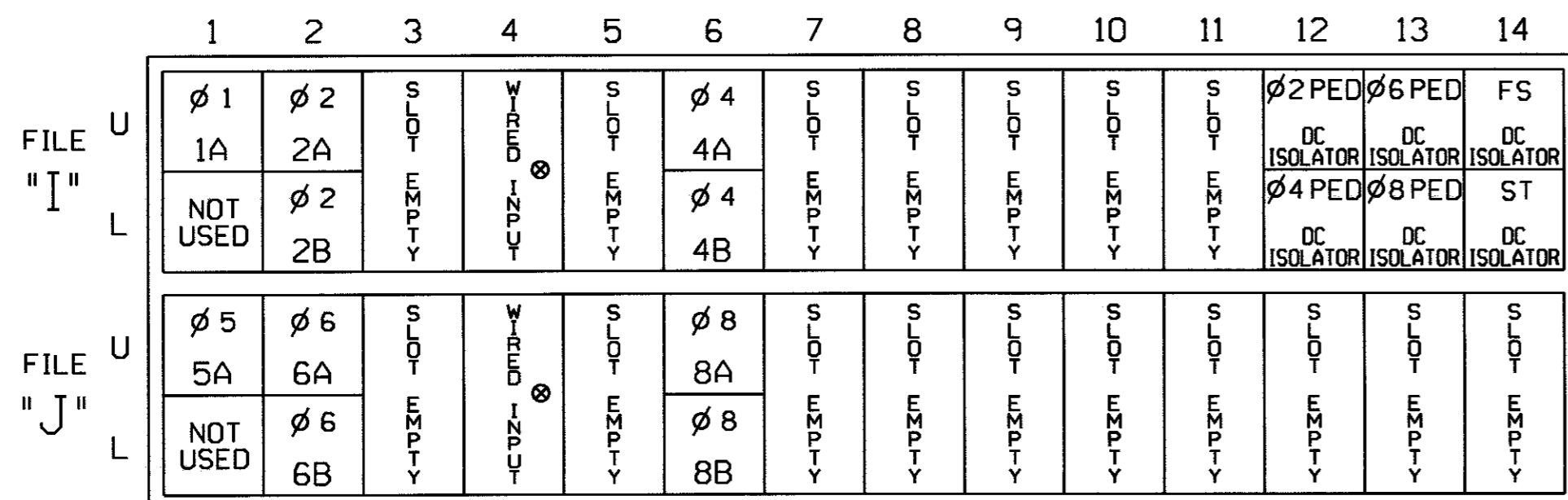
OMIT:## PHS ON OMITS THIS PHASE
 -YEL:## PHS YEL OMITS THIS PHS YEL
 OCAL: WHEN OMIT, DETS CALL## PHS

A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU

Special Sequence programming complete.

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

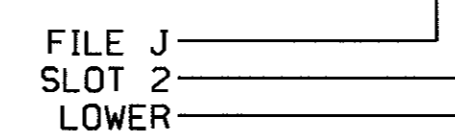
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
1A ¹	TB2-1,2	I1U	56	1	1	15	
	-	J4U	48	25	6		
2A	TB2-5,6	I2U	39	3	2		
2B	TB2-7,8	I2L	43	4	2		
4A	TB4-9,10	I6U	41	11	4		
4B	TB4-11,12	I6L	45	12	4	10	
5A ²	TB3-1,2	J1U	55	19	5	15	
	-	I4U	47	7	2		
6A	TB3-5,6	J2U	40	21	6		
6B	TB3-7,8	J2L	44	22	6		
8A	TB5-9,10	J6U	42	31	8	3	
8B	TB5-11,12	J6L	46	32	8	10	
PED PUSH BUTTONS							
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED		
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED		
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED		
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED		

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

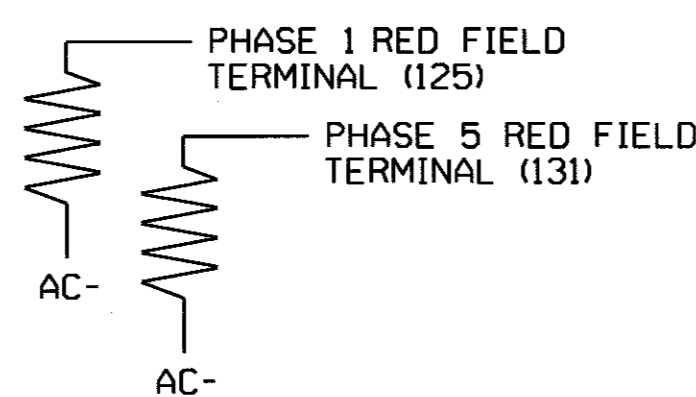
- ¹Add jumper from I1-W to J4-W, on rear of input file.
- ²Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

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



THIS ELECTRICAL DETAIL SUPERSEDES THE DETAIL ORIGINALLY SEALED ON 7/30/12.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-0043
 DESIGNED: July 2012
 SEALED: 12/18/13
 REVISED: N/A

New Installation

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1829 (Strickland Road) at Harvest Oaks Drive

Prepared in the Offices of:

Division 5 Wake County Raleigh
 PLAN DATE: December 2013 REVIEWED BY: JTK
 PREPARED BY: S. Armstrong REVIEWED BY:
 REVISIONS INIT. DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 008453 JOHN T. ROWE, JR. SIGNATURE DATE 12-19-13
 SIG. INVENTORY NO. 05-0043

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

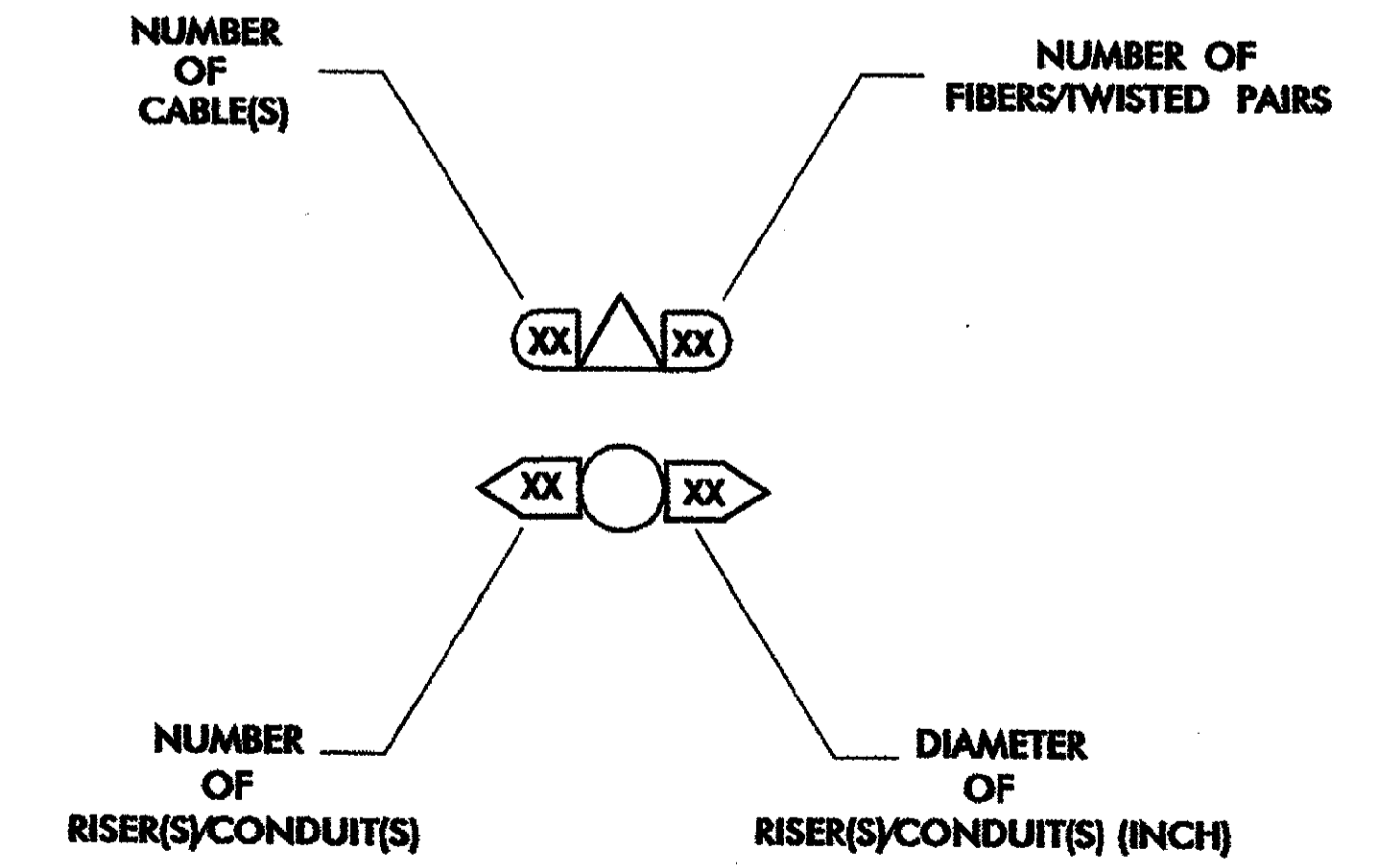
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL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

LEGEND

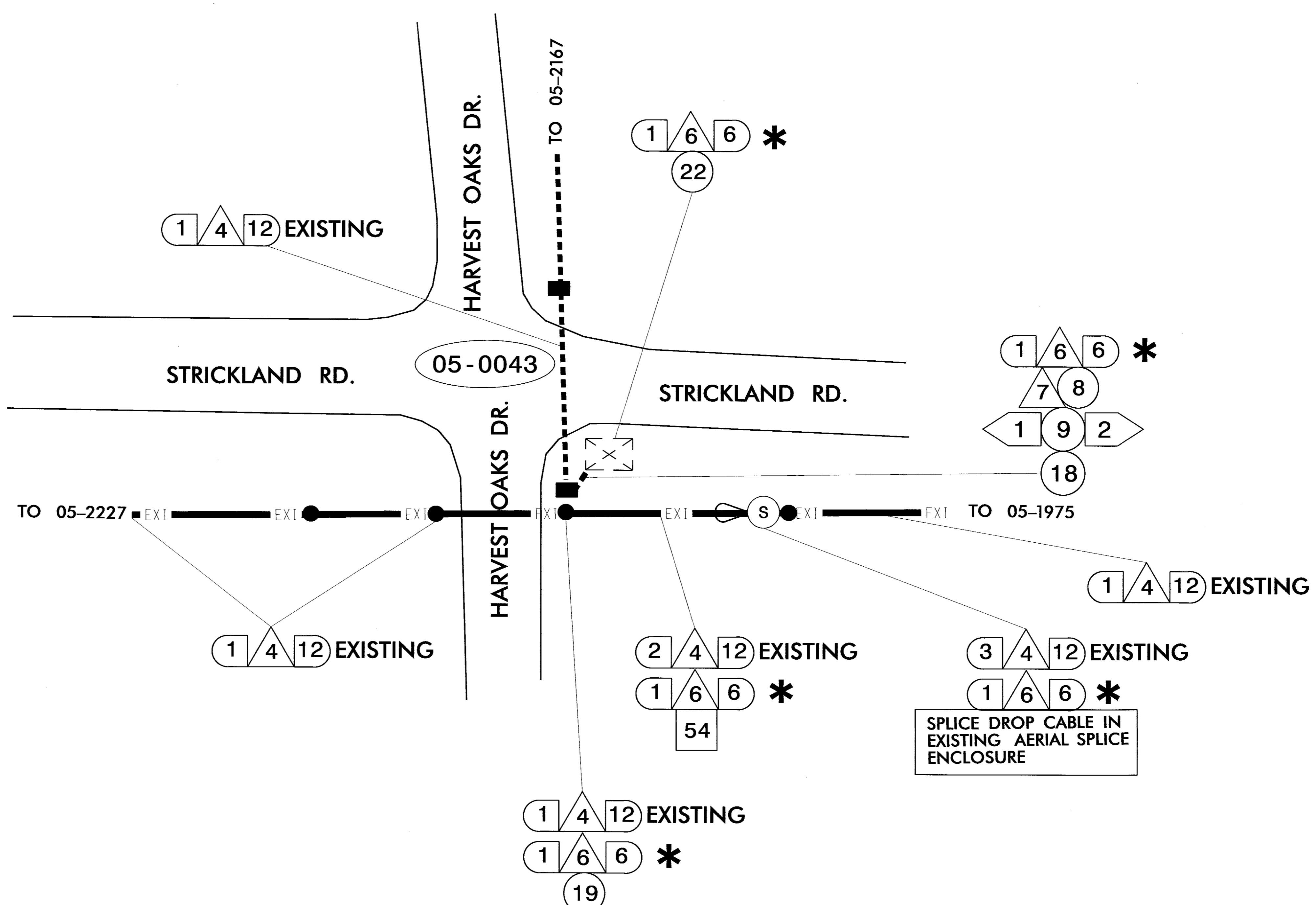
- FO NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST PR NEW TWISTED PAIR COMMUNICATIONS CABLE
- EXI EXISTING COMMUNICATIONS CABLE
- REM EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- DD NEW DIRECTIONAL DRILLED CONDUIT
- B&J NEW BORED AND JACKED CONDUIT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

CONSTRUCTION NOTE SYMBOLOGY KEY

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



	CONSTRUCTION NOTES		SEAL
	PLAN DATE:	REVIEWED BY:	
PREPARED BY:	REVIEWED BY: G. A. FULLER	SIGNATURE: <i>G. A. Fuller</i> DATE: 10/31/02	
SCALE: 0	REVISIONS:	INIT.:	DATE:
CAD FILENAME:			

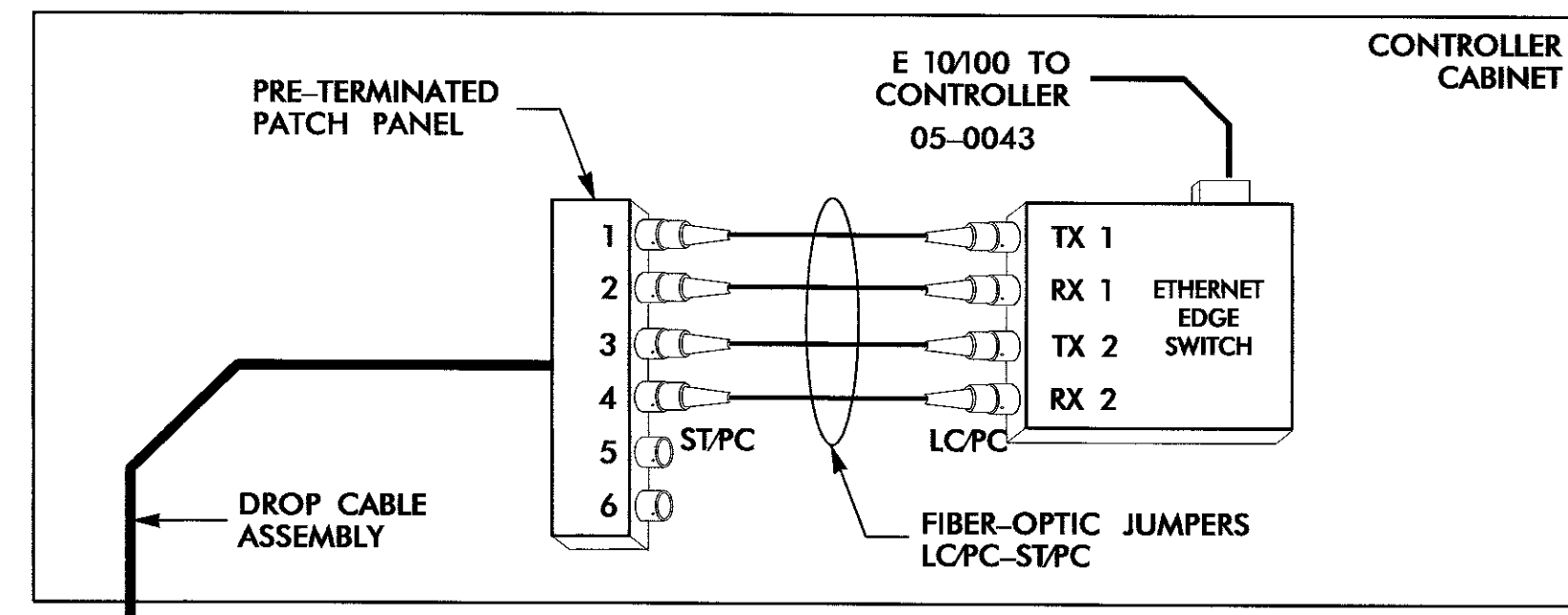


*DROP CABLE ASSEMBLY (PRE-ASSEMBLED)

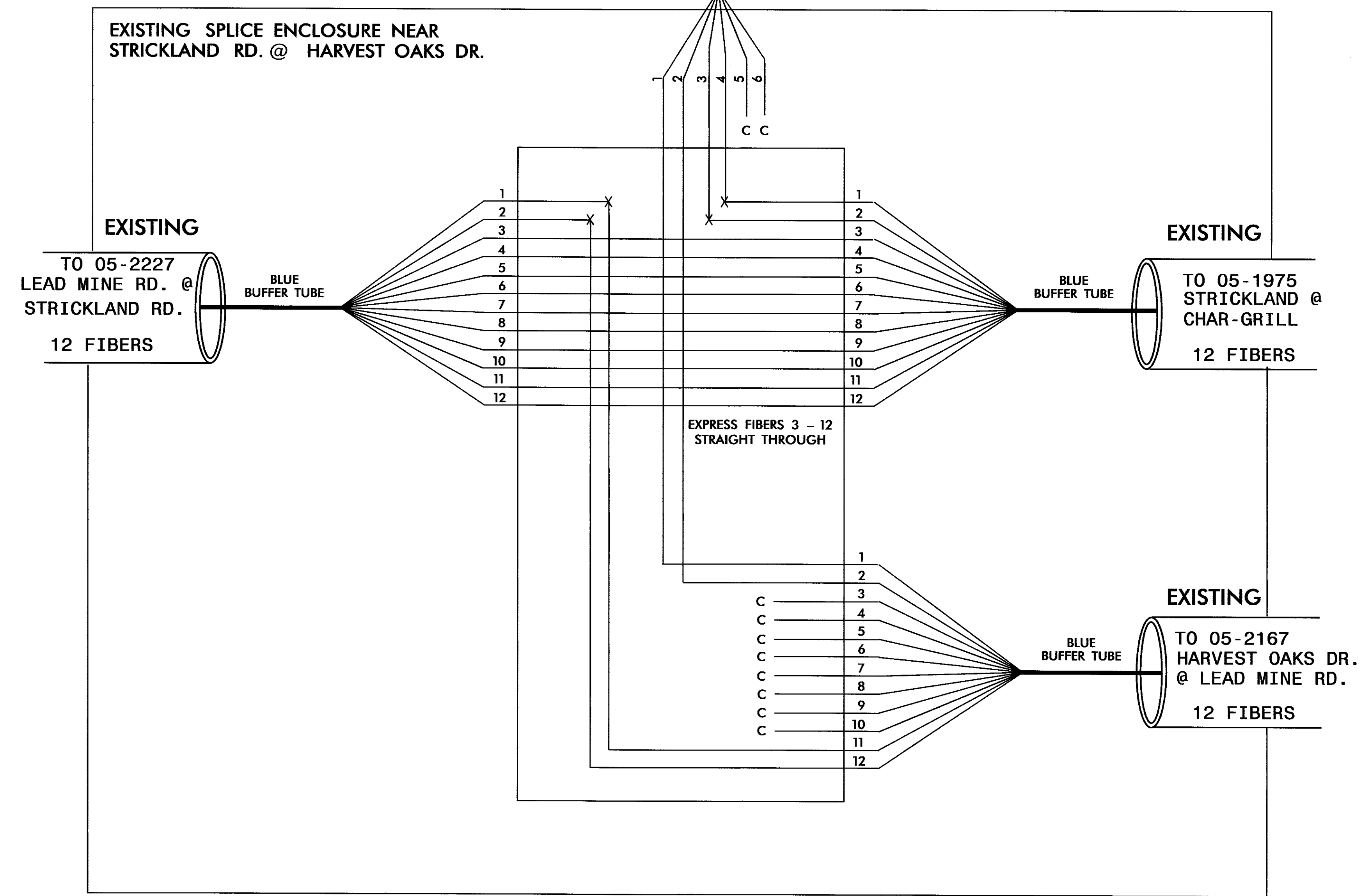
RESEAL RISER USING HEAT SHRINK TUBING RETROFIT KIT

	COMMUNICATIONS PLAN STRICKLAND ROAD AT HARVEST OAKS DRIVE			
	DIVISION 05 WAKE COUNTY RALEIGH	REVIEWED BY: I. N. AVERY		
	PLAN DATE: JULY 2012	REVIEWED BY: G.A. FULLER, PE		
PREPARED BY: P. C. LOUDER	REVISIONS:	INIT.	DATE	
<p>Signature: <i>P. C. Louder</i> Date: <i>7/12/12</i></p>				

**STRICKLAND RD. @
HARVEST OAKS DR.
SIN 05-0043**



NOTES:
 1) ETHERNET EDGE SWITCH TO BE PROVIDED BY THE CITY OF RALEIGH. CONTACT JED NIFFENEGGER, SENIOR TRANSPORTATION ENGINEER, AT 919-996-4039 TO OBTAIN EDGE SWITCH. PROVIDE 5 WORKING DAYS NOTICE.
 2) THE CITY OF RALEIGH WILL PROVIDE THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID'S FOR PROGRAMMING THE ETHERNET SWITCH.



	SPLICE PLAN STRICKLAND ROAD AT HARVEST OAKS DRIVE		
	DIVISION 05 WAKE COUNTY RALEIGH		
PLAN DATE: JULY 2012 PREPARED BY: P. C. LOUDER	REVIEWED BY: I. N. AVERY REVIEWED BY: G. A. FULLER, PE		SIGNATURE: <i>Gregory A. Fuller</i> DATE:
SCALE: 0	REVISIONS:	INIT. DATE	

W-5205F SR 1829 (Strickland Road) at Harvest Oaks Drive

NOT TO
SCALE

PROPOSED STRAIGHT ARROWS
AND STRAIGHT/RIGHT ARROWS ADJACENT
TO EXISTING LEFT TURN ARROWS

PROPOSED 24" x 120 MIL
WHITE THERMOPLASTIC
STOP BARS

PROPOSED 8" x 120 MIL WHITE
THERMOPLASTIC MARKINGS
PEDESTRIAN CROSSWALKS

PROPOSED 4" x 120 MIL
WHITE AND YELLOW
THERMOPLASTIC MARKINGS
AS DIRECTED BY THE ENGINEER

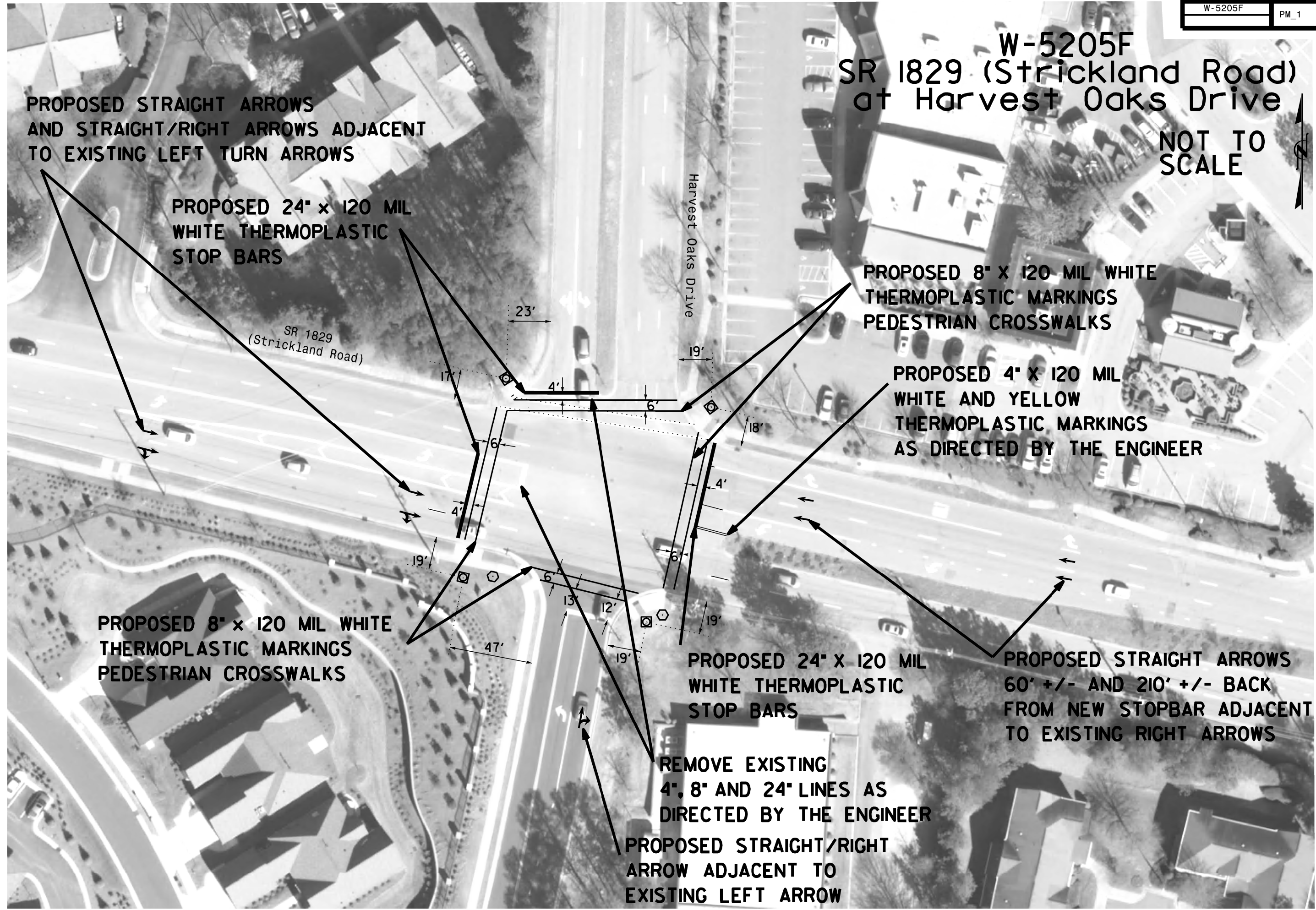
PROPOSED 8" x 120 MIL WHITE
THERMOPLASTIC MARKINGS
PEDESTRIAN CROSSWALKS

PROPOSED 24" x 120 MIL
WHITE THERMOPLASTIC
STOP BARS

PROPOSED STRAIGHT ARROWS
60' +/- AND 210' +/- BACK
FROM NEW STOPBAR ADJACENT
TO EXISTING RIGHT ARROWS

REMOVE EXISTING
4", 8" AND 24" LINES AS
DIRECTED BY THE ENGINEER

PROPOSED STRAIGHT/RIGHT
ARROW ADJACENT TO
EXISTING LEFT ARROW



W-5205F SR 1829 (Strickland Road) at Harvest Oaks Drive

NOT TO
SCALE

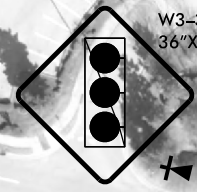
**36" Signal Ahead Sign
400'+/- Back from
Intersection or as
Directed by the Engineer**



W3-3
36"X36"

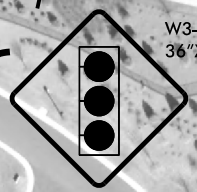


**36" Signal Ahead Sign
400'+/- Back from Intersection
or as Directed by the Engineer**



W3-3
36"X36"

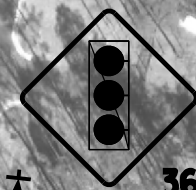
**36" Signal Ahead Sign
400'+/- Back from
Intersection or as
Directed by the Engineer**



W3-3
36"X36"



SR 1829 (Strickland Road)



W3-3
36"X36"

**36" Signal Ahead Sign
400'+/- Back from Intersection
or as Directed by the Engineer**

**Existing Sign System to be
Removed and Disposed
of by Contractor**

Harvest Oaks Drive