

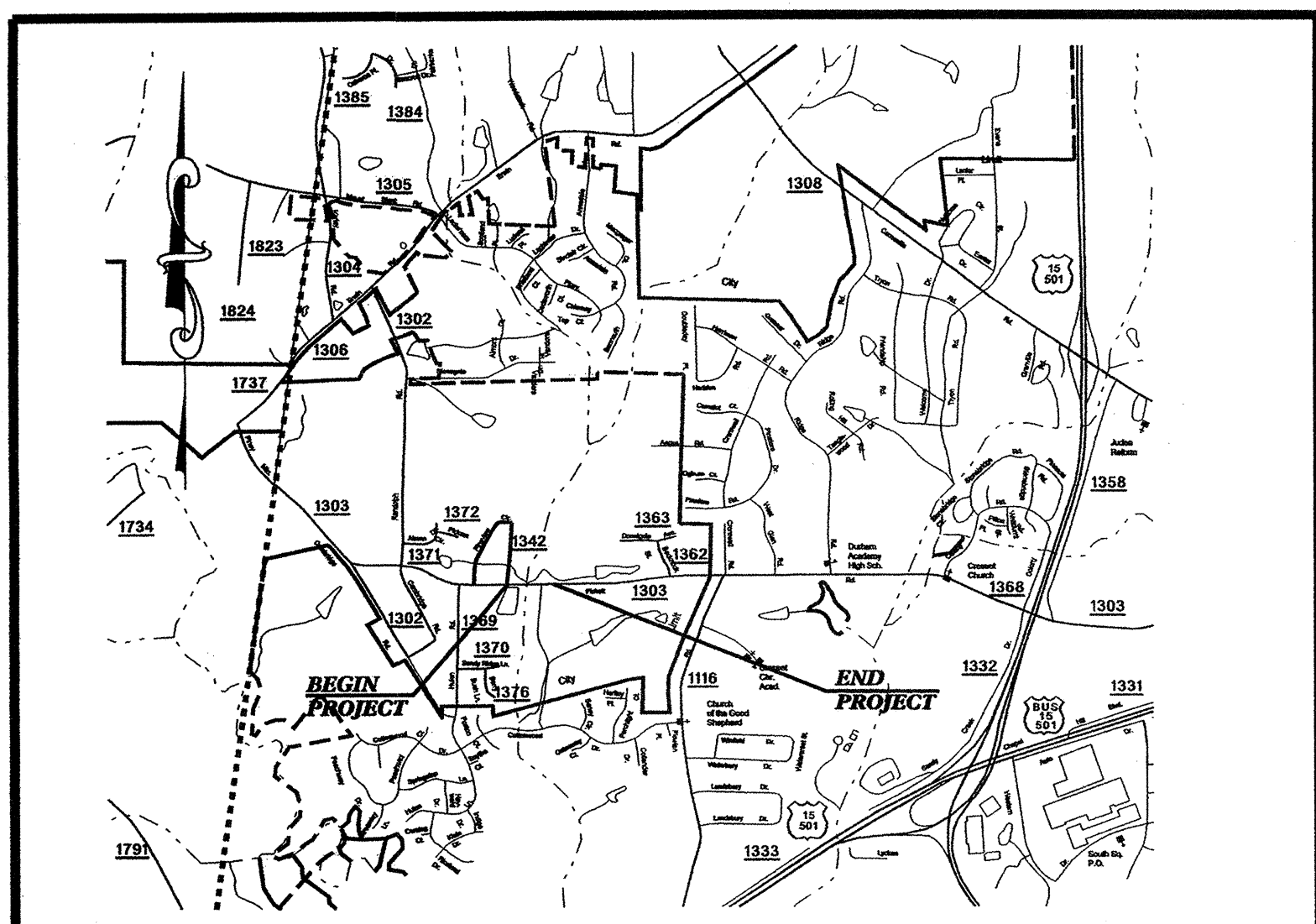
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# DURHAM COUNTY

LOCATION: SR 1303 (PICKETT RD.) AT SR 1358 (WESTERN BLVD.) /PETTY RD.

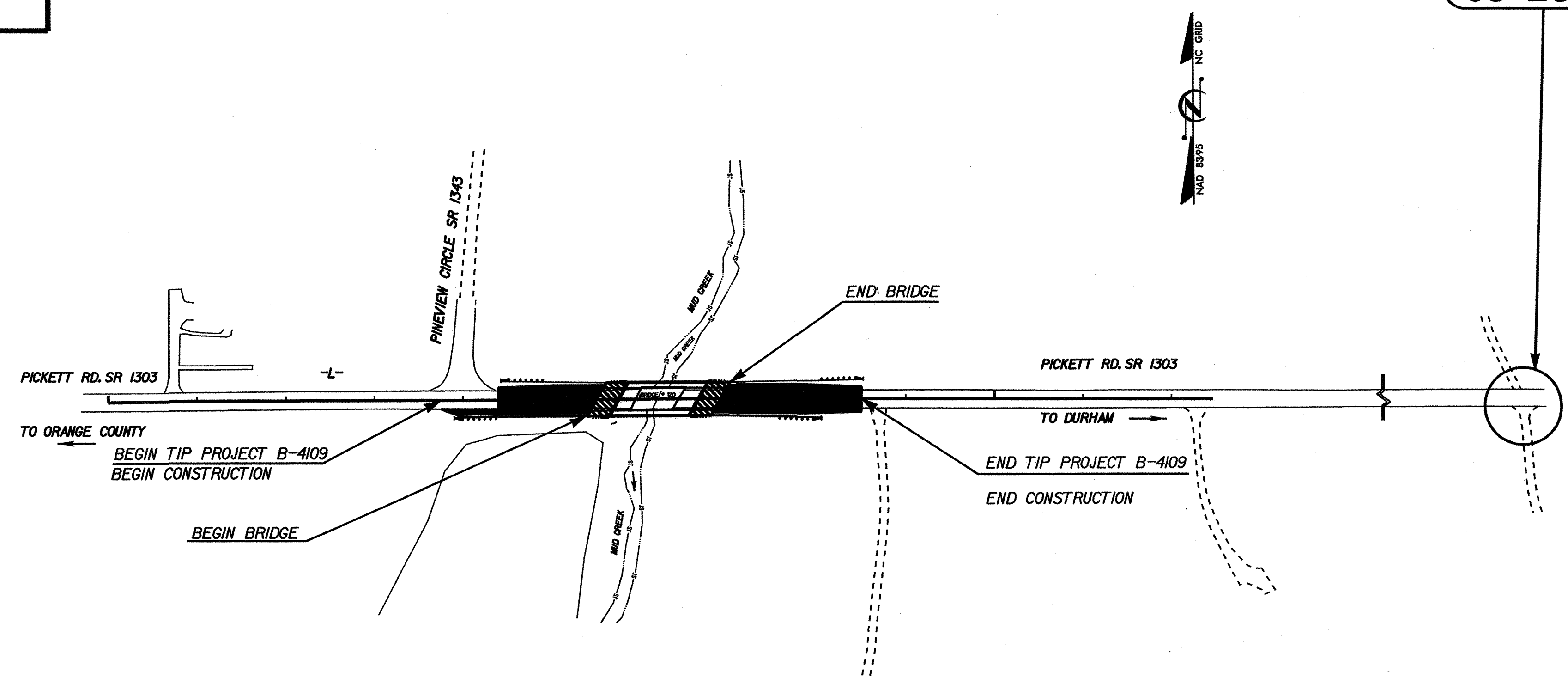
TYPE OF WORK: NEW TRAFFIC SIGNAL

TIP: B-4109



VICINITY MAP

05-2328



Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.

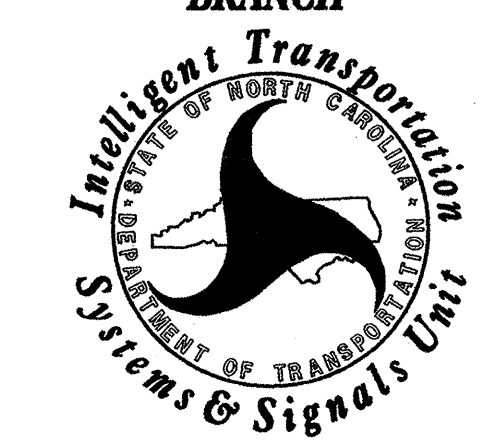
**Index of Plans**

Sheet #	Reference #	Location/Description
Sig. 1	-----	Title Sheet
Sig. 2-3	05-2328	SR 1303 (Pickett Rd.) at SR 1358 (Western Blvd.) / Petty Rd.
Sig. 4-6	N/A	Communications Cable Routing Plan
Sig. 7-9	N/A	Inductive Detection Loops Details

**INTELLIGENT TRANSPORTATION SYSTEMS & SIGNALS UNIT**

Contacts:  
 Timothy J. Williams, PE - S&G Contracts Engineer  
 George C. Brown, PE - Signal Equipment Design Engineer

Prepared In the Office of:  
 DIVISION OF HIGHWAYS  
 TRAFFIC ENGINEERING AND SAFETY SYSTEMS  
 BRANCH



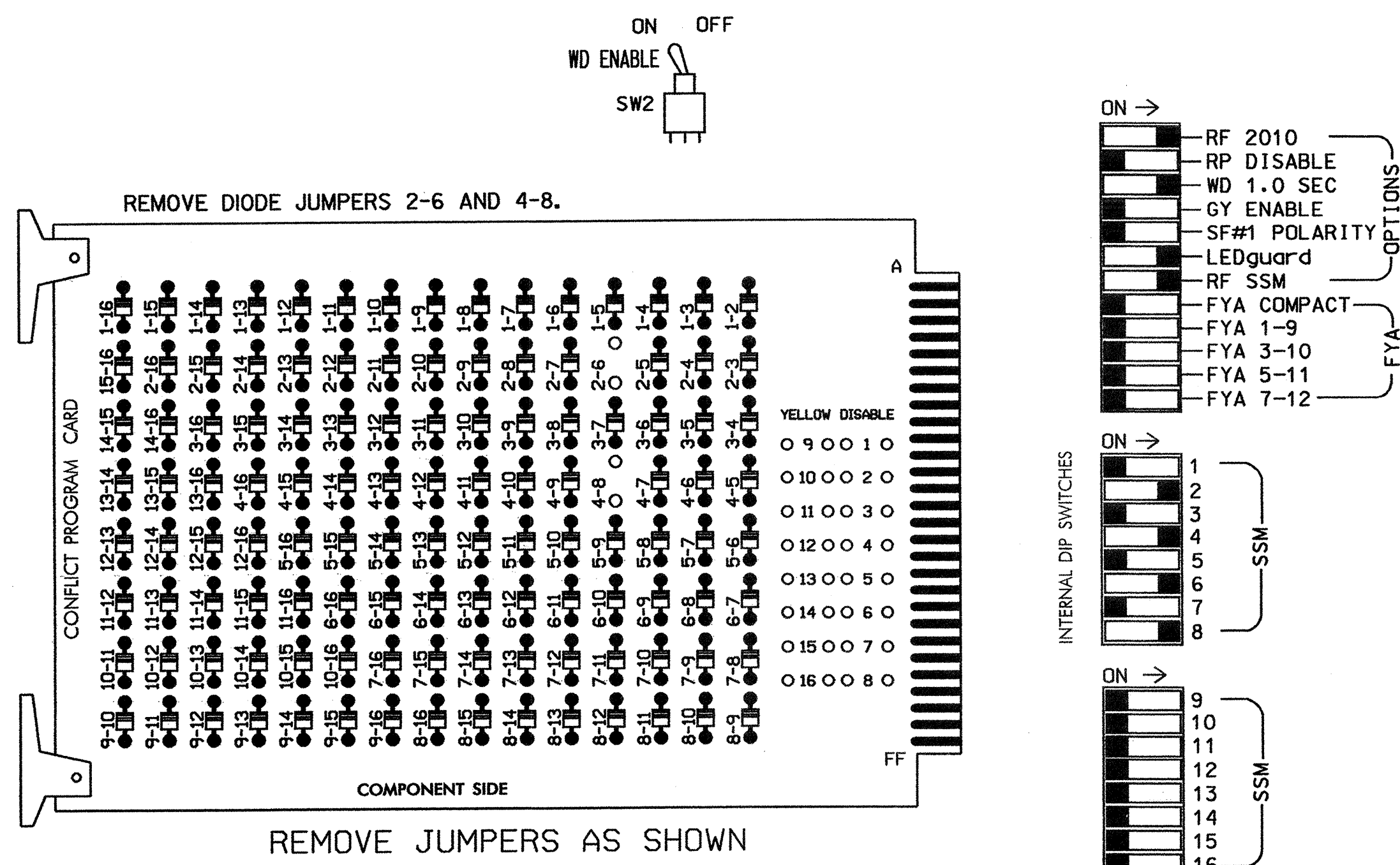
750 N. Greenfield Parkway, Garner, NC 27529





### 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. 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.
- PROGRAM CONTROLLER TO START UP IN PHASES 2 AND 6 GREEN.
- SET POWER-UP FLASH TIME TO 10 SECONDS AND IMPLEMENT WITHIN THE CONTROLLER PROGRAMMING.
- ENABLE SIMULTANEOUS GAP-OUT FEATURE, ON CONTROLLER UNIT, FOR ALL PHASES.
- PROGRAM PHASES 4 AND 8, ON CONTROLLER UNIT, FOR DOUBLE ENTRY.
- SET ALL DETECTOR CARD CHANNELS TO 'PRESENCE' MODE.
- THIS CABINET AND CONTROLLER ARE TO BE WIRED AND PROGRAMMED AS PART OF THE DURHAM CITY SIGNAL SYSTEM.

#### 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	NU	NU	41,42 43	NU	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												

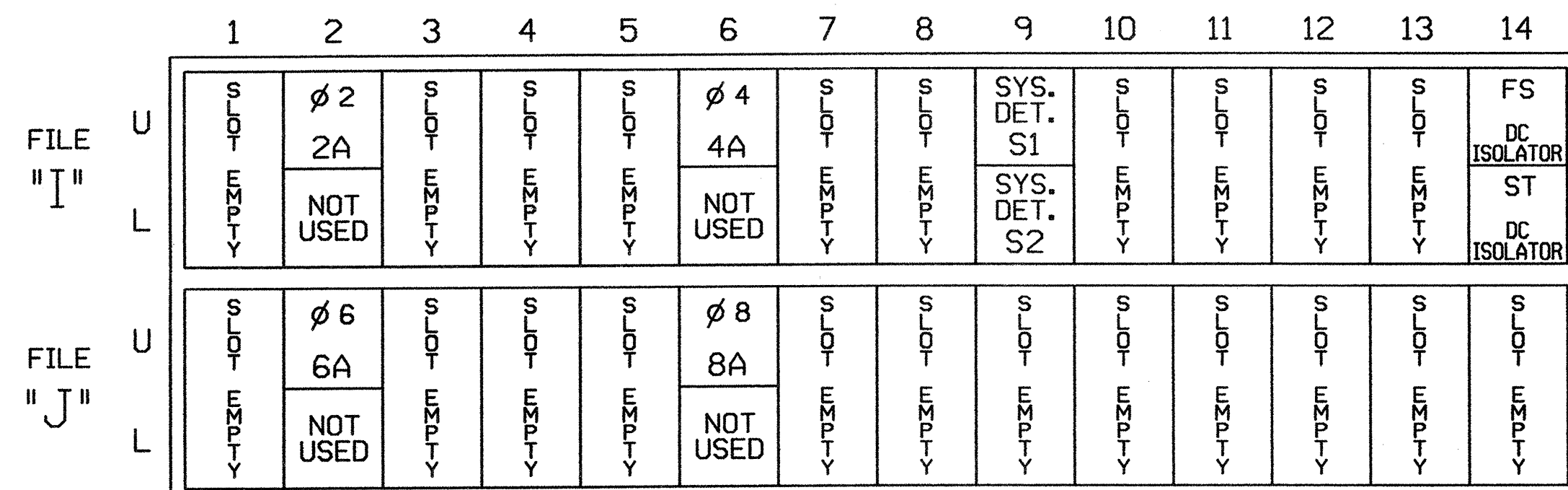
NU = Not Used

### EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 170E  
 CABINET.....CONTRACTOR SUPPLIED 332  
 SOFTWARE.....BI TRANS 233NC2  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S4,S6,S8  
 PHASES USED.....2,4,6,8  
 OVERLAPS.....NONE

### INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE  
 ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	DETECTOR NO.	PIN NO.	ATTRIBUTES	NEMA PHASE
2A	TB2-5,6	I2U	1	39	5 7	2
4A	TB4-9,10	I6U	2	41	5 7	4
6A	TB3-5,6	J2U	3	40	5 7	6
8A	TB5-9,10	J6U	4	42	5 7	8
SYSTEM LOOPS						
S1	TB6-9,10	I9U		60		SYS1 *
S2	TB6-11,12	I9L		62		SYS2 *

NOTE: PROGRAM DETECTOR DELAY AND CARRYOVER TIMES AS SPECIFIED ON SIGNAL DESIGN PLANS.

### \*SYSTEM DETECTOR PROGRAMMING NOTES

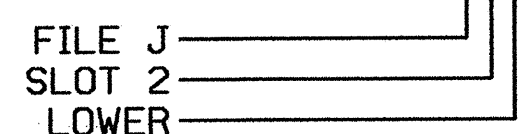
IN ORDER FOR SYSTEM LOOPS TO OPERATE PROPERLY, THEIR PIN ASSIGNMENTS WILL HAVE TO BE RE-ASSIGNED ON 170E CONTROLLER AS DESCRIBED BELOW.

- IN ORDER TO ASSURE THAT THESE PINS ARE CLEARED FROM THEIR DEFAULT FUNCTION, PROGRAM AS FOLLOWS:  
 PIN 60 - E/126+4+1=0  
 PIN 62 - E/126+4+3=0
- AFTER FOLLOWING STEP 'A' ABOVE, PROGRAM PINS FOR SYSTEM DETECTORS AS FOLLOWS:  
 SYS1 - E/126+B+1=60  
 SYS2 - E/126+B+2=62

### DETECTOR ATTRIBUTES LEGEND:

- FULL TIME DELAY
- PED CALL
- RESERVED
- COUNTING
- EXTENSION
- TYPE 3
- CALLING
- ALTERNATE

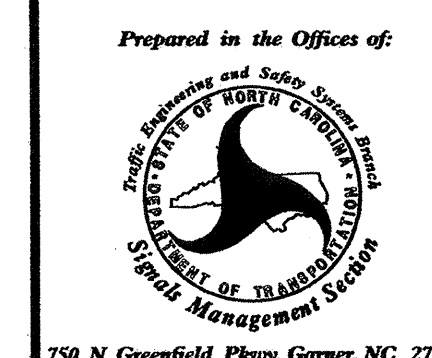
### INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-2328  
 DESIGNED: DECEMBER 2007  
 SEALED: 1/16/08  
 REVISED: N/A

SIGNAL SYSTEM DATA :	
INTERSECTION NUMBER	2328
LOCAL TELEMETRY ADDRESS	68
CHANNEL NUMBER	C-4

ELECTRICAL AND PROGRAMMING DETAILS FOR:



SR 1303 (Pickett Rd.)  
 at  
 SR 1358 (Western Blvd.)  
 /Petty Rd.

Division 05	Durham County	Durham
PLAN DATE: January 2008	REVIEWED BY: YLR	
PREPARED BY: F.E. RUSS	REVIEWED BY:	
REVISIONS	INIT.	DATE

SEAL  
 JOHN T. ROWE, JR.  
 PROFESSIONAL ENGINEER  
 STATE OF NORTH CAROLINA  
 LICENSE NO. 008453  
 SIGNATURE: *John T. Rowe, Jr.* DATE: 1-22-08  
 S1G. INVENTORY NO. 05-2328

- 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

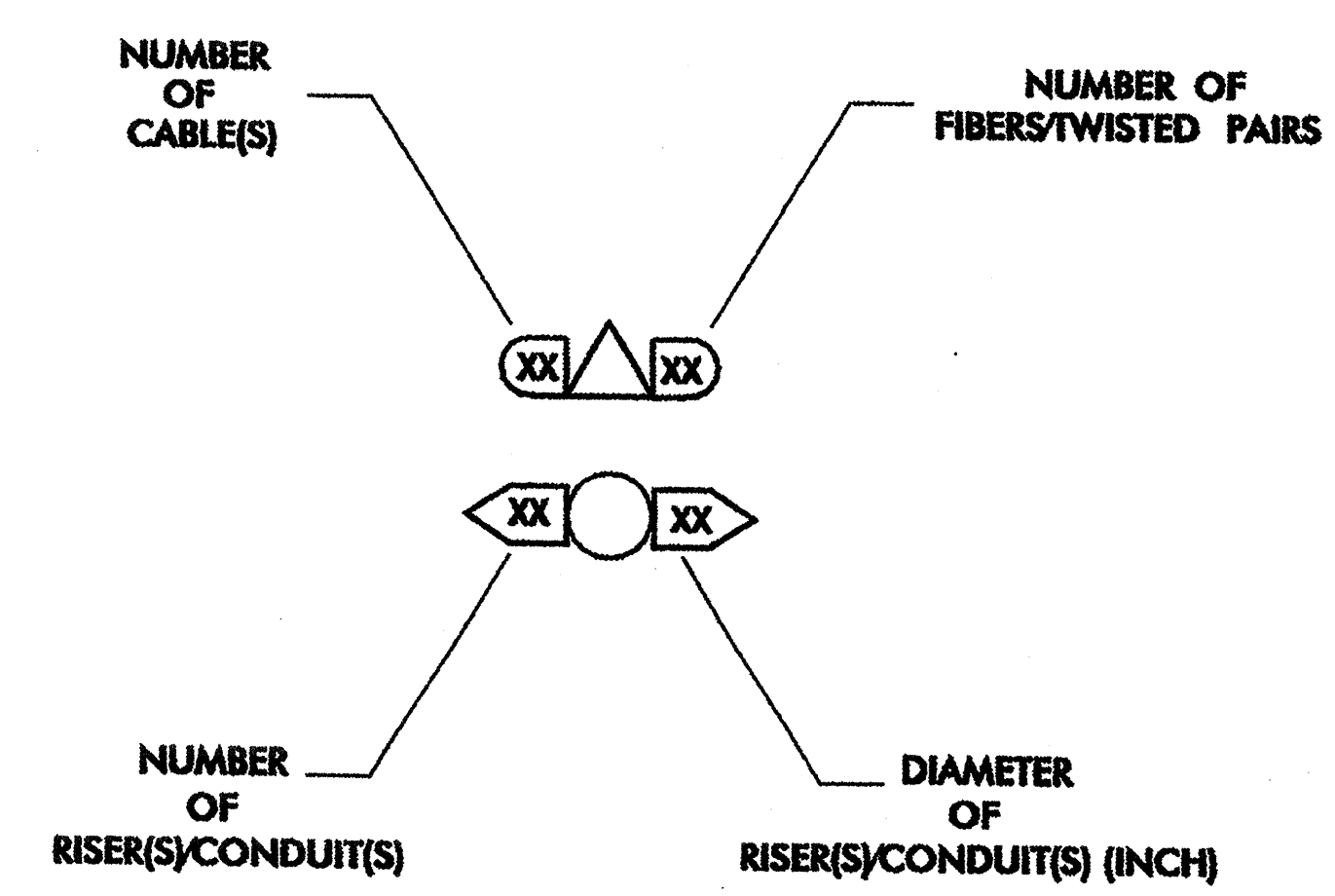
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL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

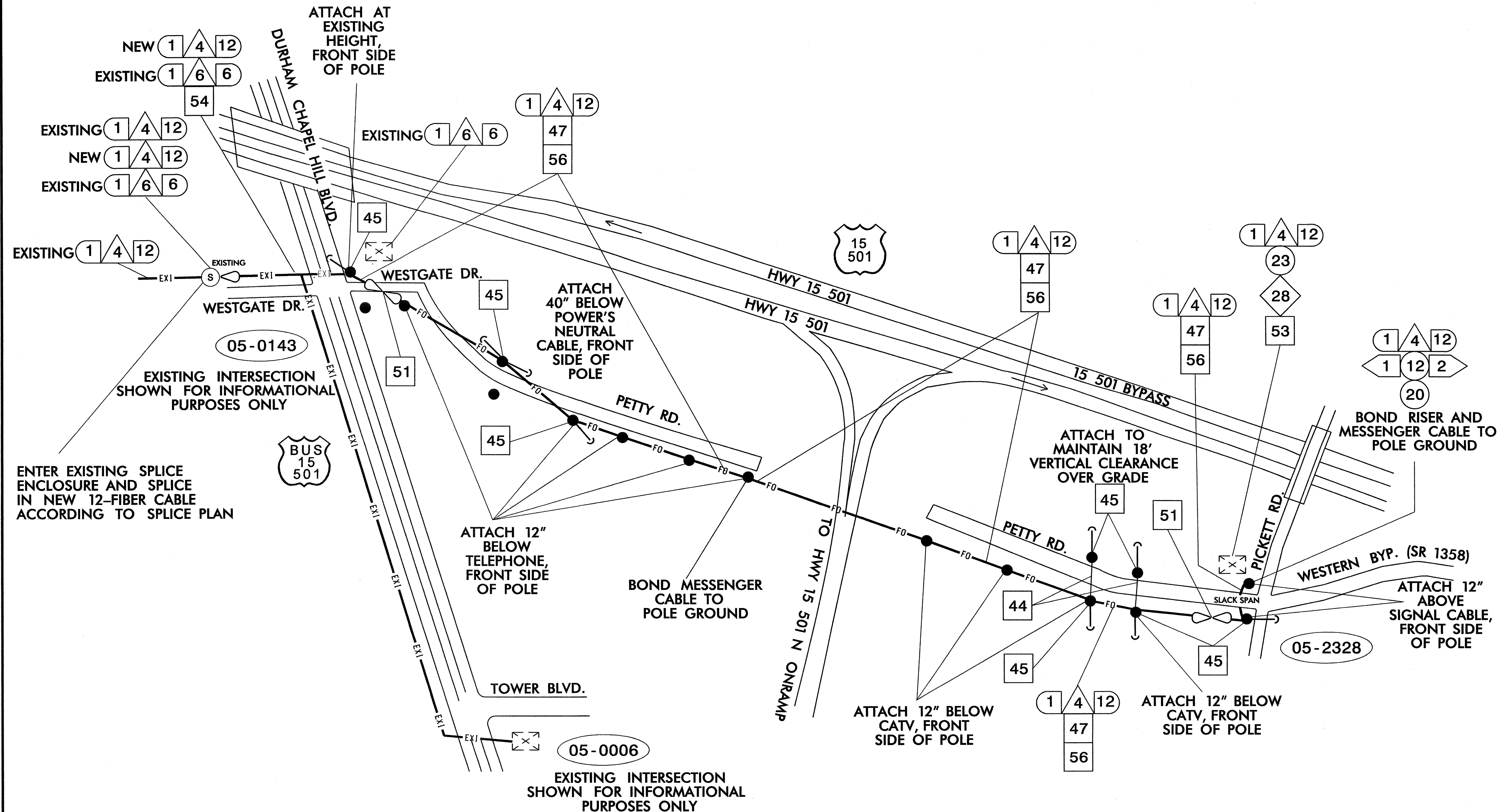
**CONSTRUCTION NOTE SYMBOLOGY KEY**

- 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)



	<b>CONSTRUCTION NOTES</b>		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER GREGORY J. FULLER License No. 023919
	PLAN DATE: _____ PREPARED BY: _____ SCALE: _____	REVIEWED BY: _____ REVIEWED BY: <b>G. A. FULLER</b> INITIALS: _____ DATE: _____	



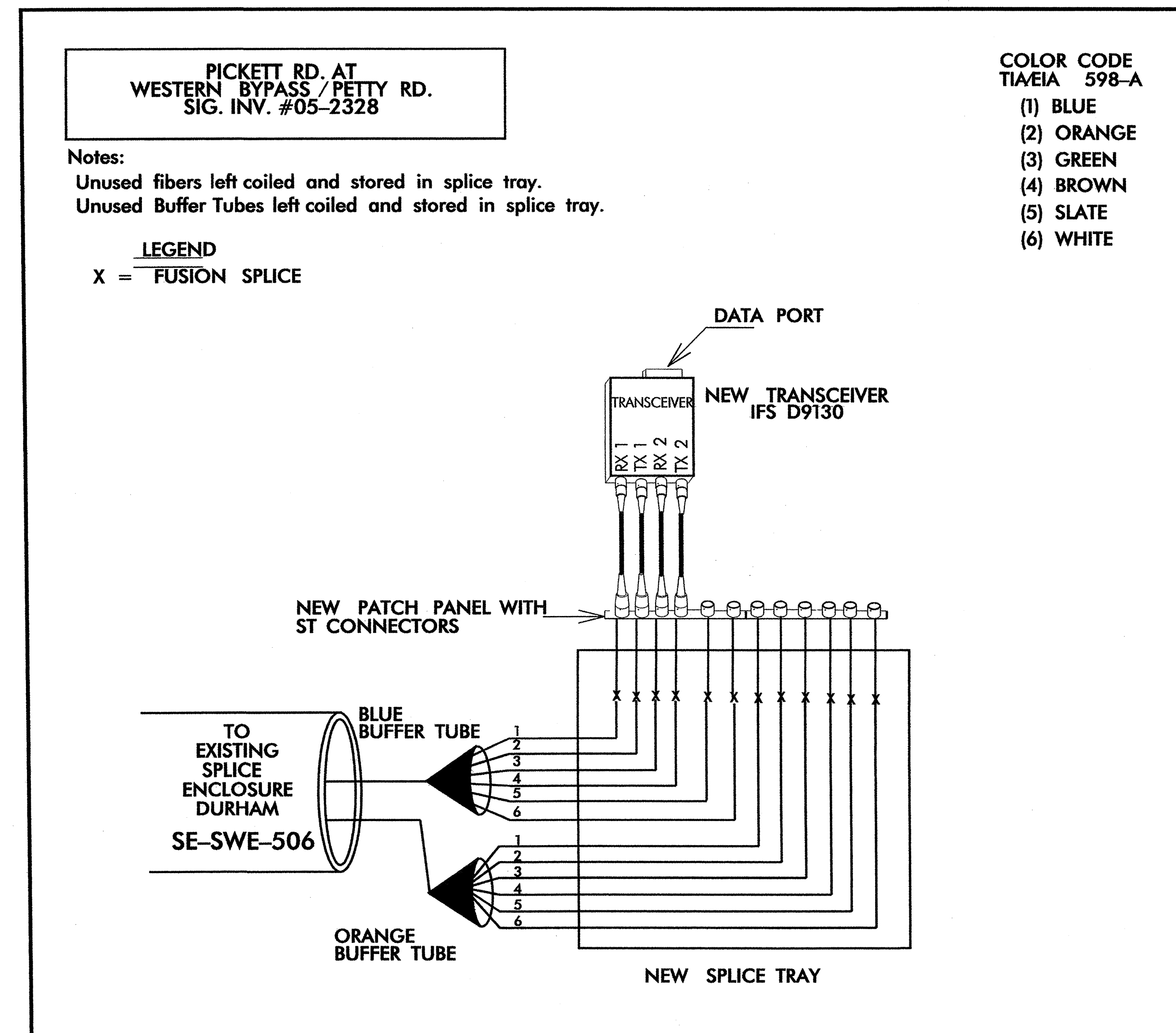
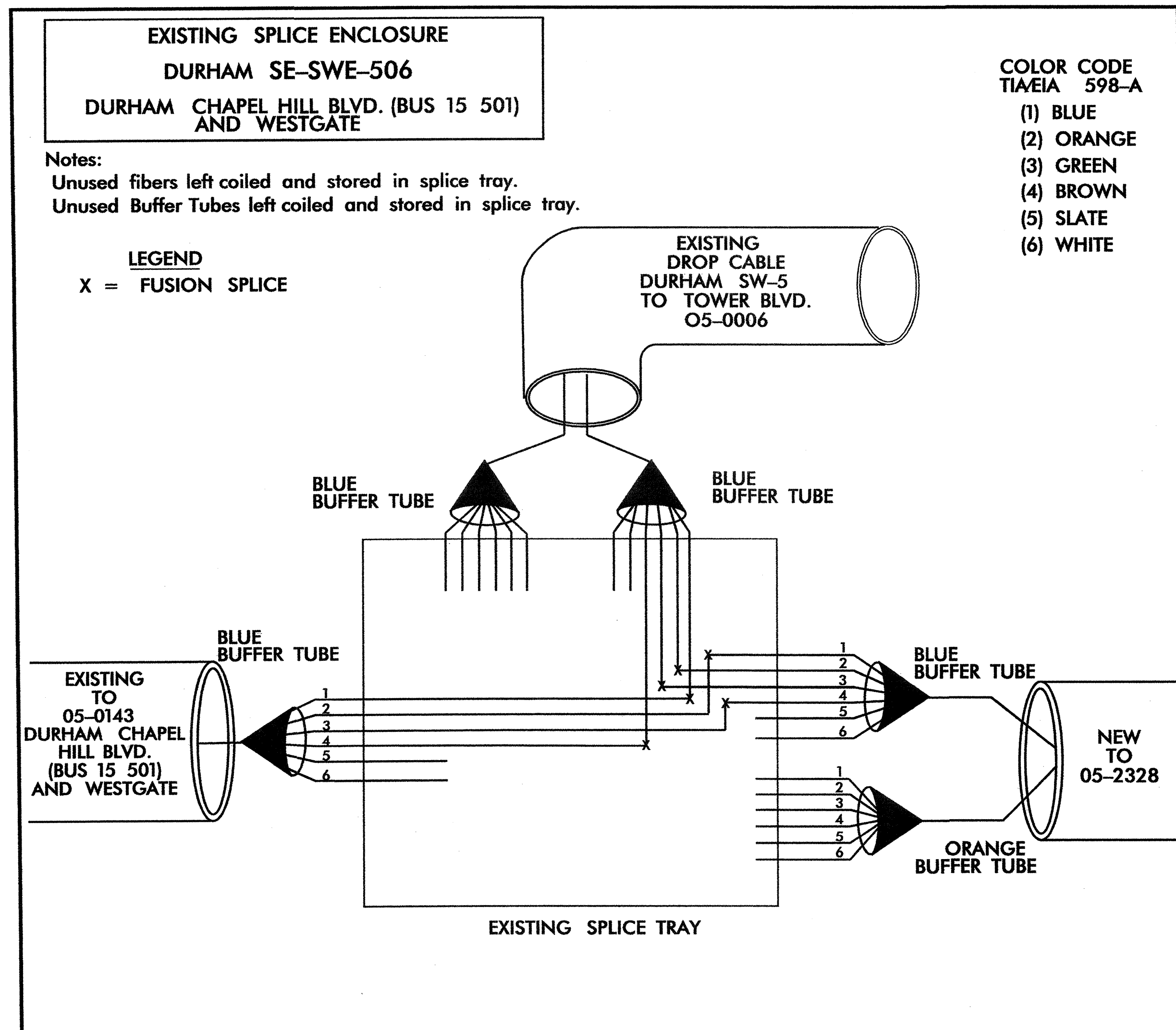


ENTER EXISTING SPLICE ENCLOSURE AND SPLICE IN NEW 12-FIBER CABLE ACCORDING TO SPLICE PLAN

EXISTING INTERSECTION SHOWN FOR INFORMATIONAL PURPOSES ONLY

EXISTING INTERSECTION SHOWN FOR INFORMATIONAL PURPOSES ONLY

	<b>COMMUNICATIONS CABLE ROUTING</b>		
	<b>PICKETT RD. AT WESTERN BYPASS/PETTY RD.</b>		
Prepared in the Offices of: I. N. Avery PROFESSIONAL ENGINEER STATE OF NORTH CAROLINA No. 14543	DIVISION 05 WAKE CO. DURHAM PLAN DATE: JANUARY 2008 PREPARED BY: HEIDI TOMA BERGGREN REVISIONS: _____	REVIEWED BY: I. N. AVERY REVIEWED BY: G.G. MURR, JR., PE INIT. DATE _____	SEAL STATE OF NORTH CAROLINA PROFESSIONAL ENGINEER G. G. MURR, JR. No. 14543 SIGNATURE: _____ DATE: 1-24-08



**NOTES:**

1. THE CONTRACTOR SHALL INSTALL TRANSCEIVER MODEL IFS D9130 FOR COMPATIBILITY WITH EXISTING SYSTEM.
2. TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING / ENSURING PROPER TERMINATIONS.
3. THE CONTRACTOR SHALL NOTIFY THE CITY OF DURHAM TRAFFIC ENGINEERING DEPARTMENT (LARRY McGLOTHLIN, 919-560-4366) PRIOR TO BEGINNING WORK. ANY REVISIONS TO THE CABLE ROUTING AND SPLICE PLANS SHALL BE APPROVED BY THE ENGINEER PRIOR TO BEGINNING WORK. THE CONTRACTOR SHALL PROVIDE ALL AS-BUILT CABLE ROUTING AND SPLICE PLANS TO THE CITY OF DURHAM BEFORE ACCEPTANCE OF THE PROJECT.
4. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING / ASSURING STABLE COMMUNICATIONS FROM PICKETT DR. AT WESTERN BYPASS UP TO DURHAM CHAPEL HILL BLVD. (BUS 15 501) AND WESTGATE. AND BACK TO THE DURHAM TRAFFIC OPERATIONS CENTER DURING CONSTRUCTION OF CABLE ROUTING, SPLICING, AND UPON COMPLETION OF THE PROJECT.

<p><small>Prepared in the Office of:</small></p> <p><small>750 N. Greenfield Pkwy., Garner, NC 27529</small></p>	<p><b>SPLICE PLAN</b>  <b>PICKETT RD. AT</b>  <b>WESTERN BYPASS/PETTY RD.</b></p> <p>DIVISION 05 DURHAM CO. DURHAM</p> <p>PLAN DATE: JANUARY 2008 REVIEWED BY: I. N. AVERY</p> <p>PREPARED BY: HEIDI T. BERGGREN REVIEWED BY: G. G. MURR, JR., PE</p>	<p>SEAL</p> <p>SEAL 14543</p> <p>GENE C. MURR, JR.</p>									
<p>SCALE</p> <p>0</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REVISIONS	INIT.	DATE							<p>1-24-08</p> <p>SIGNATURE DATE</p> <p>CADD File name:</p>
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STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

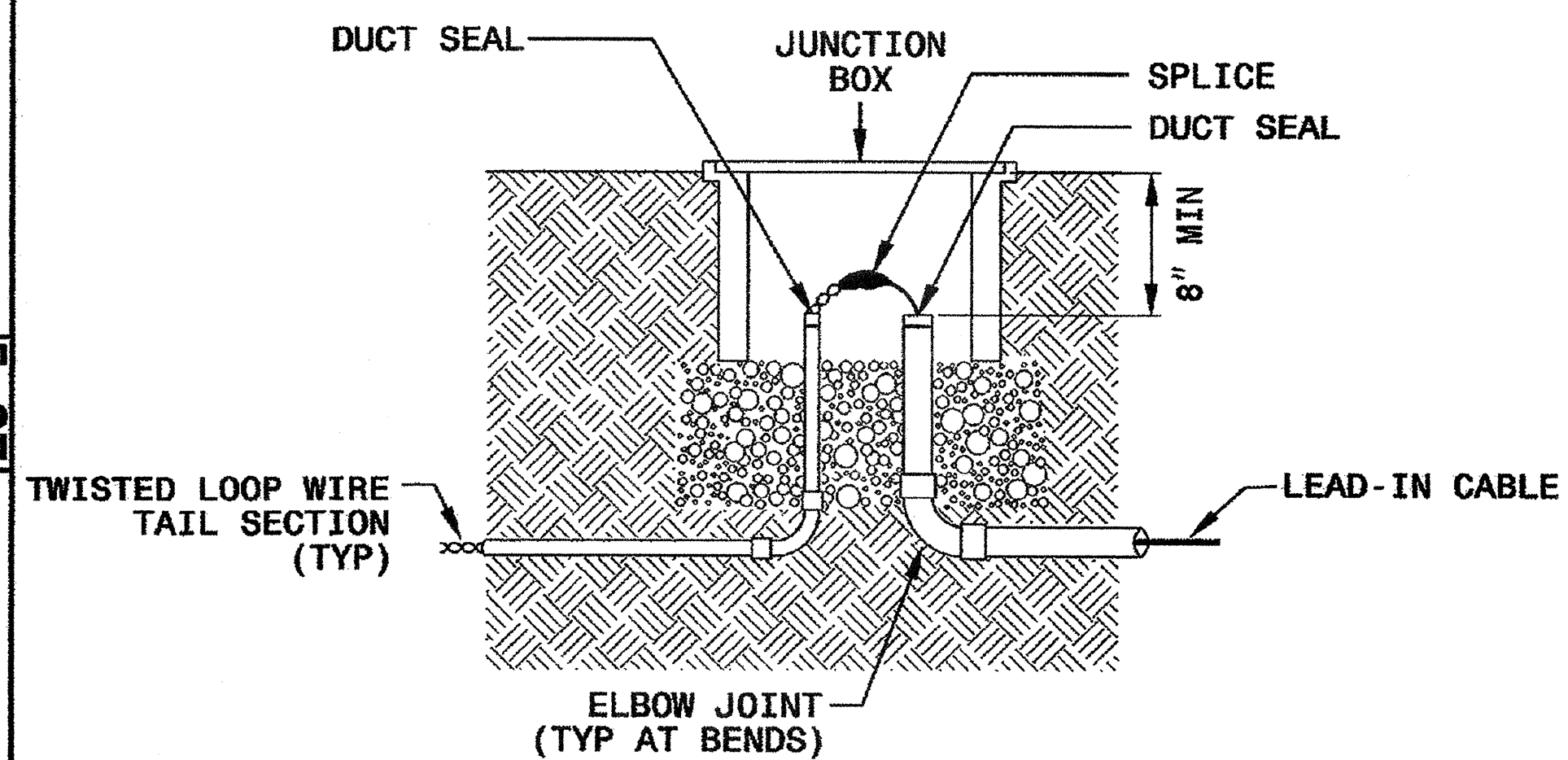
5-07

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
 LOOP WIRE DETAILS

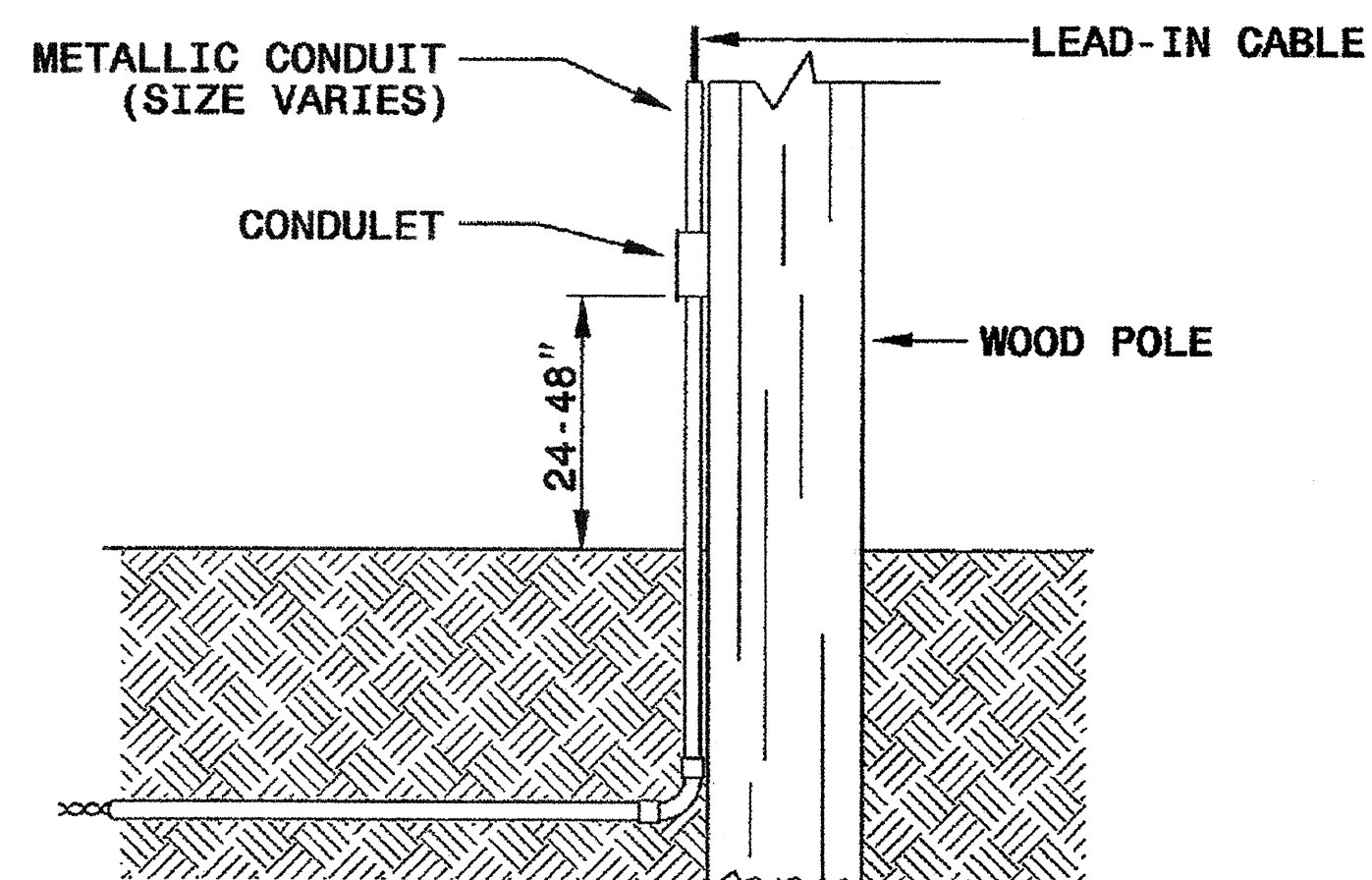
SHEET 2 OF 3  
**1725D01**

**LOOP WIRE SPLICE POINT DETAILS**

**LOOP WIRE AT JUNCTION BOX**



**LOOP WIRE AT POLE**

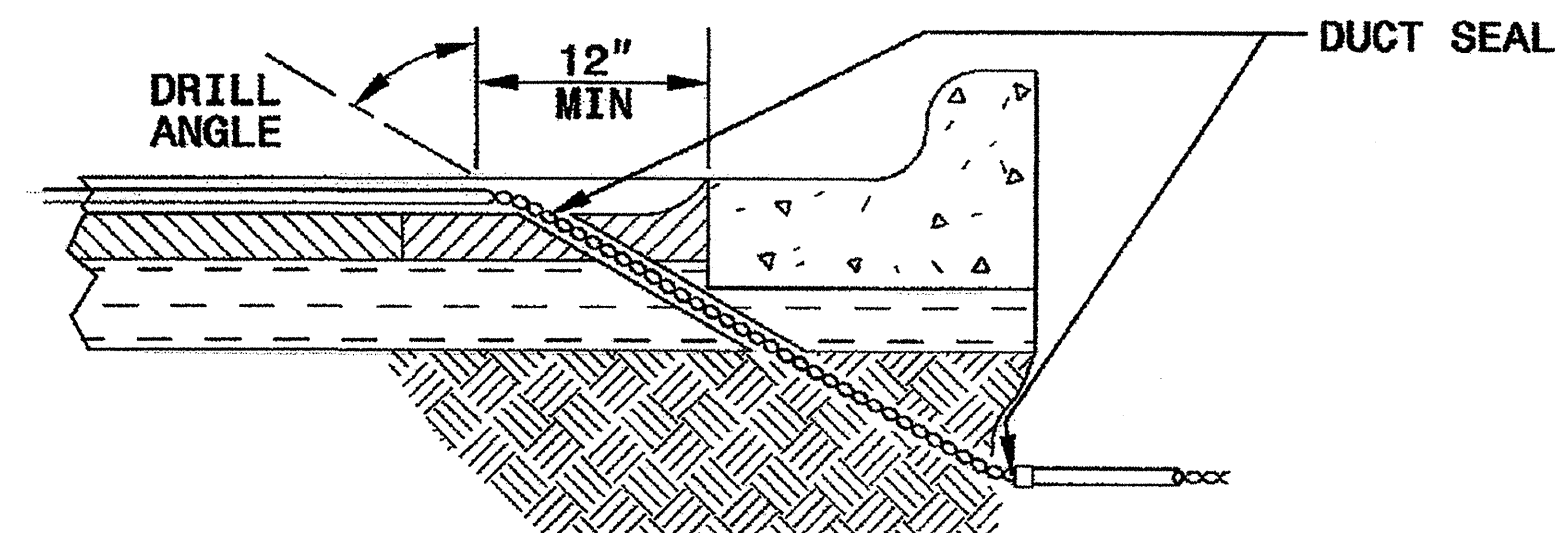


**NOTE**

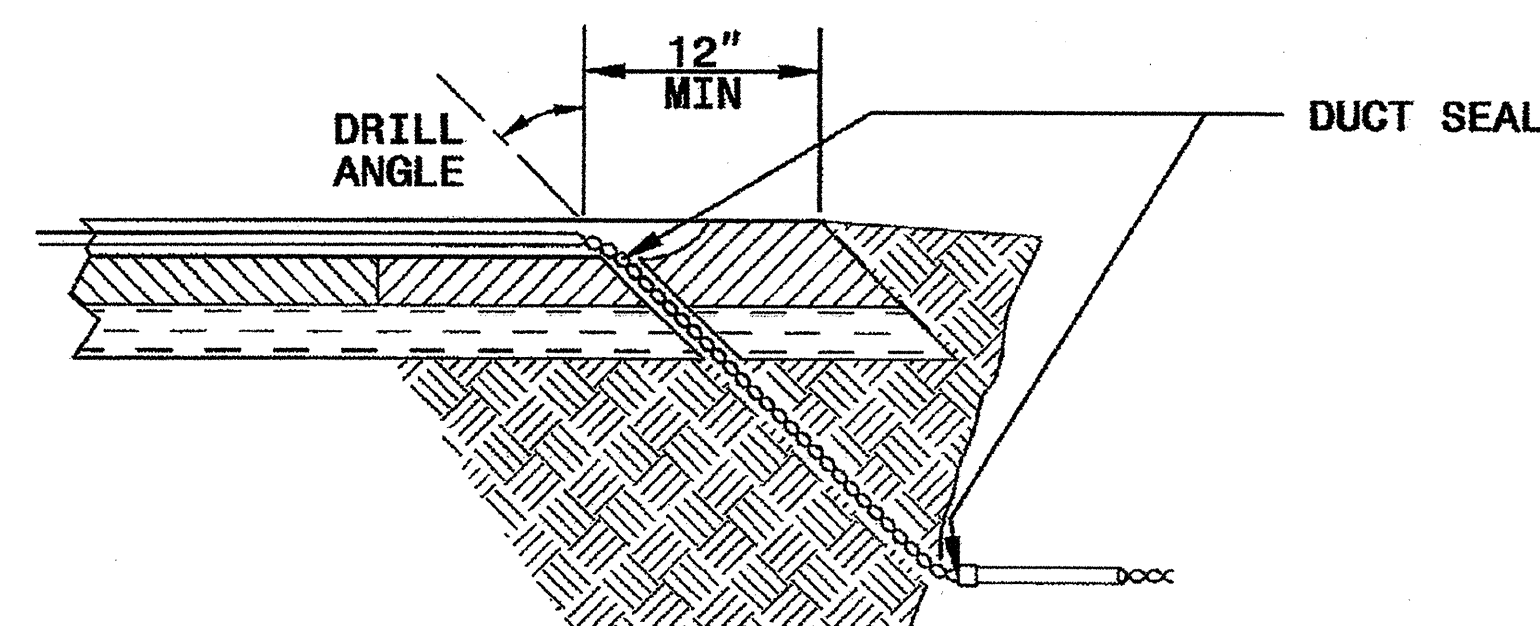
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

**LOOP WIRE PAVEMENT EDGE DETAILS**

**LOOP WIRE AT CURB & GUTTER SECTION**



**LOOP WIRE AT PAVEMENT SECTION**



**NOTES**

- DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
- TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
- BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

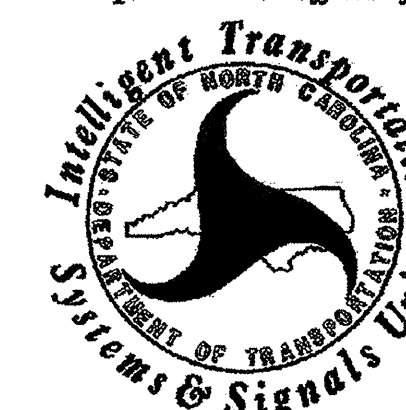
5-07

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
 LOOP WIRE DETAILS

SHEET 2 OF 3  
**1725D01**

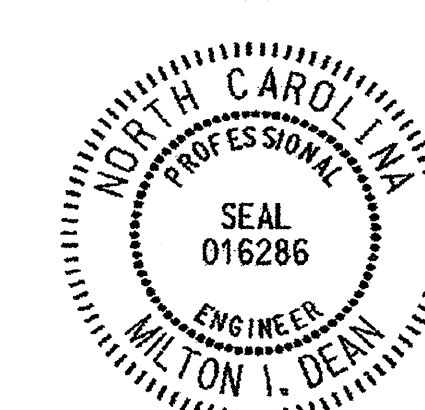
See Plate for Title

Prepared in the Offices of:



750 N. Greenfield Parkway  
Garner, NC 27529

SEAL



Milton I. Dean 9/5/07  
SIGNATURE DATE



