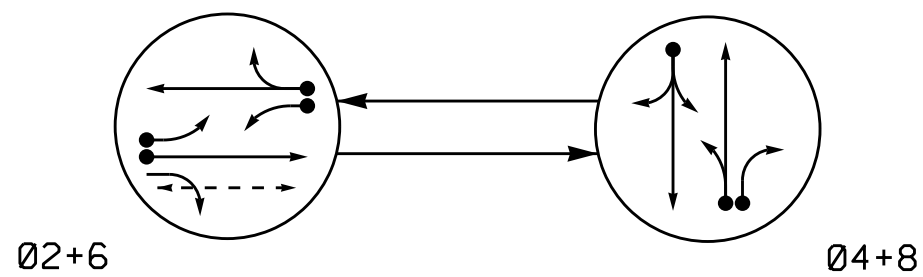


PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

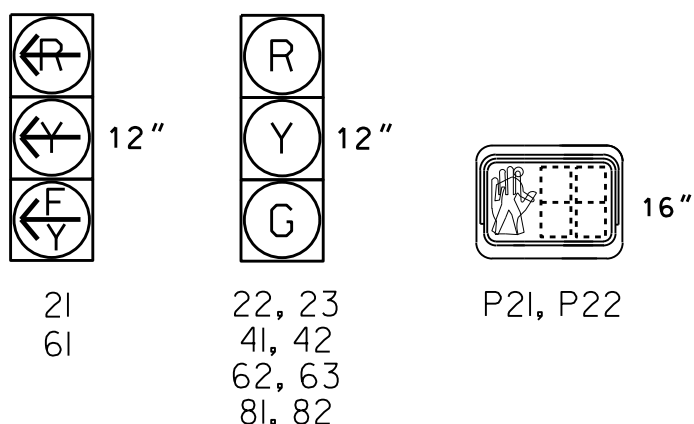
TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+6	04+8	FL
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
P21, P22	W	DW	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

INDUCTIVE LOOPS					DETECTOR PROGRAMMING													
					ASSIGNED PHASE	TIMING		VEHICLE	OPERATION MODE							SYSTEM	STATUS	
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW		DELAY	EXTEND (STRETCH)		1 CALL	2	3	4	5	6	7		NEW	EXISTING
2A	6X6	5	300	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-
2B	6X40	2-4-2	0	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-
4A	6X40	2-4-2	0	X	4	5 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-
6A	6X6	5	300	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-
6B	6X40	2-4-2	0	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-
8A	6X40	2-4-2	0	X	8	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-
8B	6X40	2-4-2	0	X	8	15 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	X	-

2 Phase
Fully Actuated
(Raleigh Signal System)

NOTES

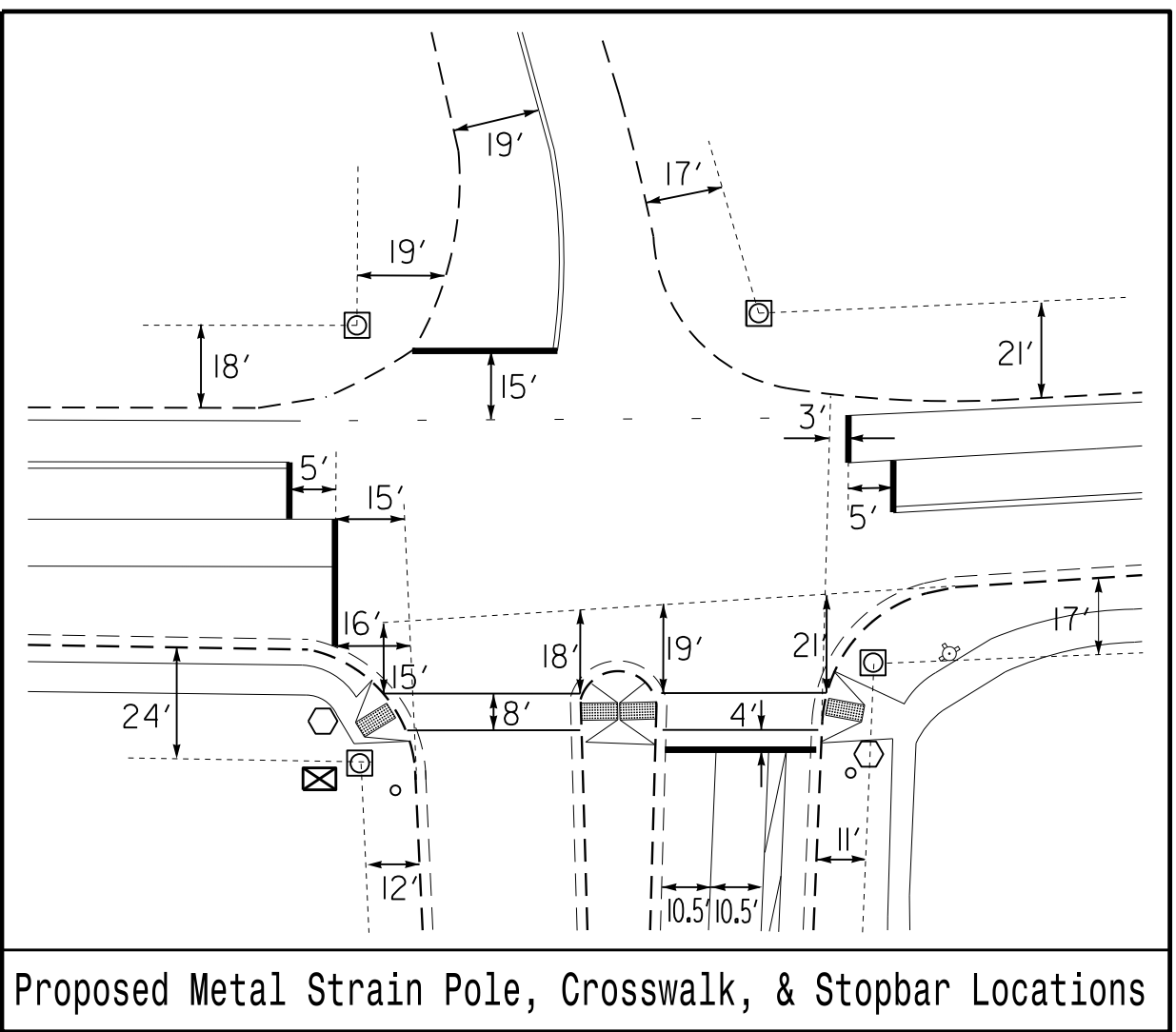
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet 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.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

PROPOSED	EXISTING

SE-PAC 2070 TIMING CHART				
FEATURE	PHASE			
	2	4	6	8
Min Green *	12	7	12	7
Passage Gap *	6.0	2.0	6.0	2.0
Maximum Green *	90	30	90	30
Yellow Change	4.7	3.5	4.7	3.7
Red Clear	1.6	2.4	1.6	2.5
Walk *	7	-	-	-
Pedestrian Clear	22	-	-	-
Added Initial *	2.5	-	2.5	-
Maximum Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	LOCK	NON-LOCK	LOCK	NON-LOCK
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.

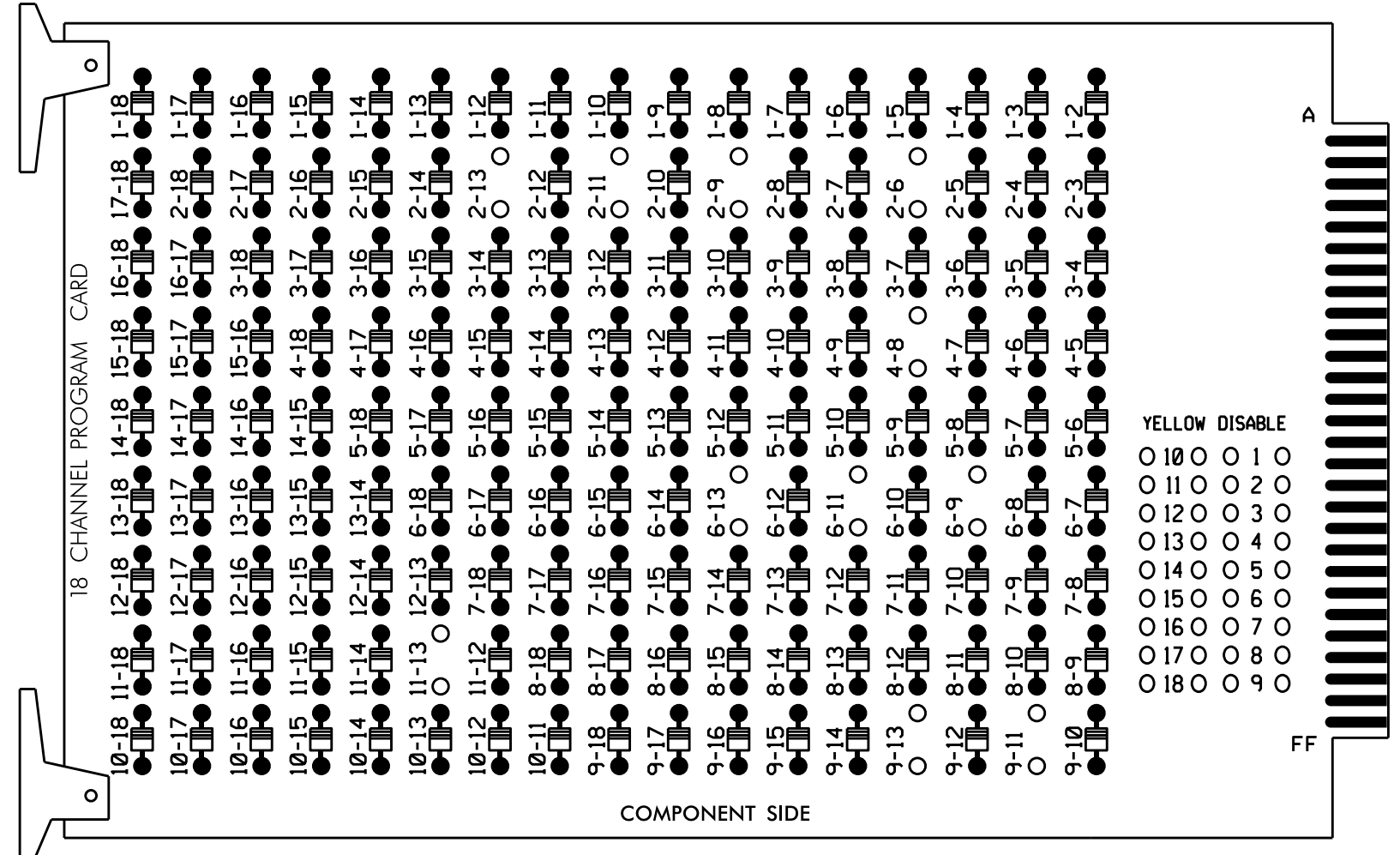
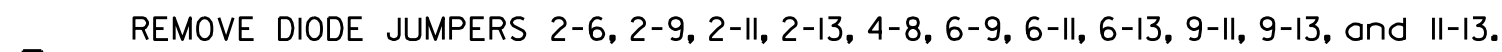


New Installation

	SR 2000 (Old Falls of Neuse Road) at Wakefield Plantation Drive and Wakefalls Drive		
	Wake County Raleigh		
Division 5	PLAN DATE: September 2016	REVIEWED BY:	
PREPARED BY: C.E. Carter	REVIEWED BY:	INIT.	DATE
REVISIONS			
SCALE: 0 40 1"=40'			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ROBERT J. ZIEGLER 11/10/2016 DATE SIG. INVENTORY NO. 05-2009	

(remove jumpers and set switches as shown)

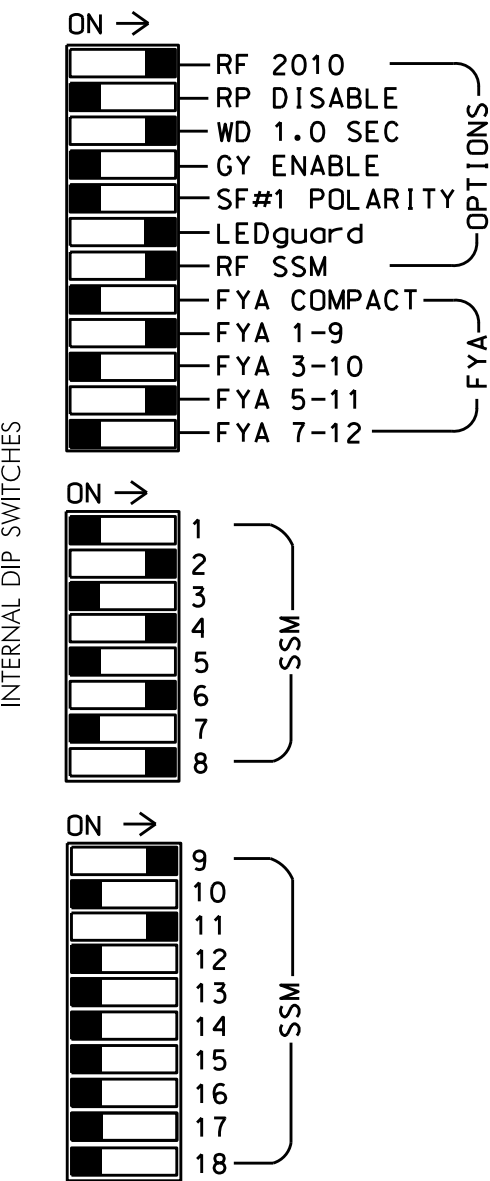
ON OFF
WD ENABLE
SW2



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.



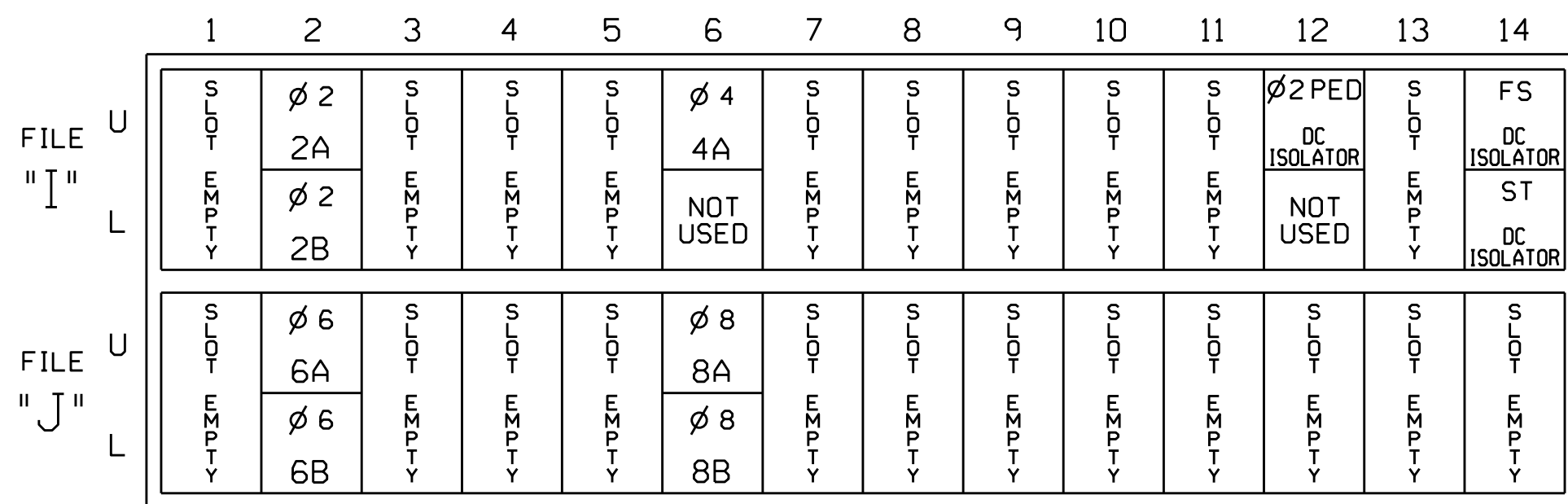
■ = DENOTES POSITION
OF SWITCH

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 SignalSystem.

```
CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....SE-PAC2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S3,S5,S8,S11,AUX S1,AUX S4
PHASES USED.....2,4,6,8
OVERLAP A.....*
OVERLAP B.....NOT USED
OVERLAP C.....*
OVERLAP D.....NOT USED
```

* SEE SHEET 2 FOR OVERLAP PROGRAMMING

(front view)



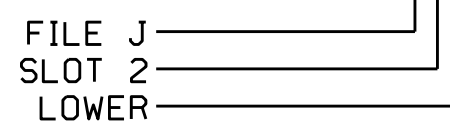
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
2A	TB2-5,6	I2U	39	3	2		
2B	TB2-7,8	I2L	43	4	2		
4A	TB4-9,10	I6U	41	11	4	5	
6A	TB3-5,6	J2U	40	21	6		
6B	TB3-7,8	J2L	44	22	6		
8A	TB5-9,10	J6U	42	31	8		
8B	TB5-11,12	J6L	46	32	8	15	
PED PUSH BUTTONS						NOTE: INSTALL	
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED		

NOTE:
INSTALL DC ISOLATOR
IN INPUT FILE SLOT
I12.

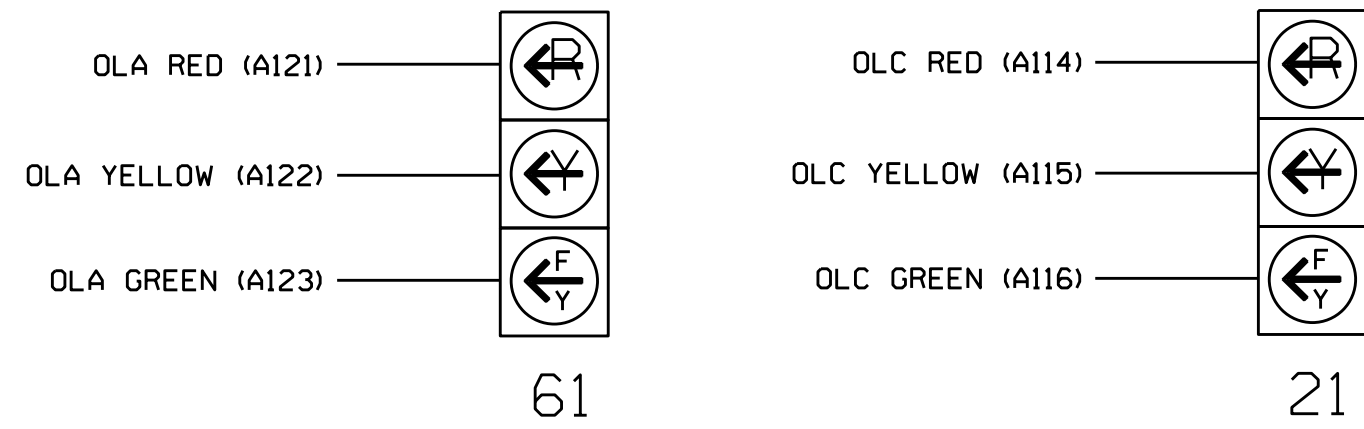
INPUT FILE POSITION LEGEND: J2L

[illegible]

NU = Not Used

★ See pictorial of head wiring in detail below.

(wire signal heads as shown)



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: 05-2009
DESIGNED: September 2016
SEALED: 11/10/2016
REVISED: N/A

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

SR 2000 (Old Falls of Neuse Rd.)	
----------------------------------	--

at
Wakefield Plantation Drive and
Wakefalls Drive

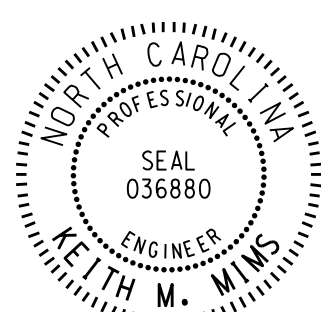
Division 5 Wake County Raleigh

PLAN DATE: November 2016	REVIEWED BY: BAS
PREPARED BY: S. Armstrong	REVIEWED BY:

REVISIONS	INIT.	DATE
-----------	-------	------

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SEAL



DocuSigned by:

Keith M. Mims 11/14/2016

SIC INVENTORY NO 05-2009

STG. INVENTORY NO. 05-2009

PROTECTED AND PERMISSIVE PHASES FOR FLASHING YELLOW ARROW

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```

SE-PAC UNIT DATA                                PRESS # DESIRED
1-STARTUP & MISC                                6-ALT SEQUENCES
2-REMOTE FLASH                                  7-PORT 1 DATA
3-OVERLAP STANDARD                             8-I/O MISC
4-OVERLAP SPECIAL                             9-SIG DRV OUT
5-RING STRUCTURE

F-PRIOR MENU

```

SE-PAC	OVLP.	A...	B...	C...	D...	E...	F...	G...	H...
TR GRN	0	0	0	0	0	0	0	0	0
YEL/10	40	40	40	40	40	40	40	40	40
RED/10	20	20	20	20	20	20	20	20	20
-G/Y	1	0	5	0	0	0	0	0	0
+GRN	2	0	6	0	0	0	0	0	0

(-) #-PH G/Y KILLS OVLP= (+) #-PH G STR

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

NOTE: THIS PROGRAMMING IS REQUIRED FOR
SIGNAL HEADS 21 AND 61 SO THAT THE
FLASHING YELLOW ARROWS TURN ON EXCLUSIVELY
DURING PERMITTED GREEN PHASES 2 & 6.

PPLT DEFINITION PROGRAMMING COMPLETE

PRESS 'F' TO RETURN TO UNIT DATA

SE-PAC2070 CONTROLLED OVERLAP PROGRAMMING

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

```
SE-PAC UNIT DATA          PRESS # DESIRED

1-STARTUP & MISC          6-ALT SEQUENCES
2-REMOTE FLASH            7-PORT 1 DATA
3-OVERLAP STANDARD        8-I/O MISC
4-OVERLAP SPECIAL        9-SIG DRV OUT
5-RING STRUCTURE

                          F-PRIOR MENU
```

DO NOT
enter any
OVL PHASES! ➡

```
SE-PAC  OVERLAP  -  A                               (O-NO/1-YES)

OVL  PHASES:  000000000  00000000
      PHS/CHN: 123456789  0123456789  01234
OVL  CHN(S):  000000000  000100000  00000

A-UP  B-DN  D-DspChn  E-EDIT  F-PRIOR  MEN
```

DO NOT
enter any
OVL PHASES! ➡

```
SE-PAC  OVERLAP  -  C                               (O=NO/1=YES)

OVL  PHASES:  000000000  0000000
      PHS/CHN:  123456789  0123456789  01234
OVL  CHN(S):  000000000  000001000  00000

A-UP  B-DN  D-DspChn  E-EDIT  F-PRIOR  MEN
```

OVERLAP PROGRAMMING COMPLETE

PRESS 'F' TO RETURN TO UNIT DATA

INIT & N.A. RESP 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
```

Phases
1,3,5,7
NOT used!

```

PHASE.....1...2...3...4...5...6...7...8...
  INITIAL    0    4    0    1    0    4    0    1
  NA RESP    0    1    0    2    0    1    0    0

CODES.....0....1....2....3....4....5
  INITIAL  NONE  INACT  RED   YEL   GRN   DRK
  NA RESP  NONE  NA1   NA2  BOTH   ---   ---
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU



```

INIT & N.A. RESP programming complete.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-2009
DESIGNED: September 2016
SEALED: 11/10/2016
REVISED: N/A

Signal Upgrade - Sheet 2 of 2

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETE**

ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 2000 (Old Falls of Neuse Rd.) at Wakefield Plantation Drive and Wakefalls Drive	SEAL 														
Prepared In the Offices of:	Raleigh															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Division 5 Wake County</td> </tr> <tr> <td style="width: 50%;">PLAN DATE: November 2016</td> <td style="width: 50%;">REVIEWED BY: BAS</td> </tr> <tr> <td style="width: 50%;">PREPARED BY: S. Armstrong</td> <td style="width: 50%;">REVIEWED BY:</td> </tr> <tr> <td style="text-align: center;">REVISONS</td> <td style="text-align: center;">INIT. DATE</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>		Division 5 Wake County		PLAN DATE: November 2016	REVIEWED BY: BAS	PREPARED BY: S. Armstrong	REVIEWED BY:	REVISONS	INIT. DATE						
Division 5 Wake County																
PLAN DATE: November 2016	REVIEWED BY: BAS															
PREPARED BY: S. Armstrong	REVIEWED BY:															
REVISONS	INIT. DATE															
750 N. Greenfield Pkwy, Garner, NC 27529	Digitized by: <u>Keith M. Mims</u> 11/14/2011 <div style="display: flex; justify-content: space-between;"> 2F80788BEC034A5 DATE </div> SIG. INVENTORY NO. 05-2009															





- 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

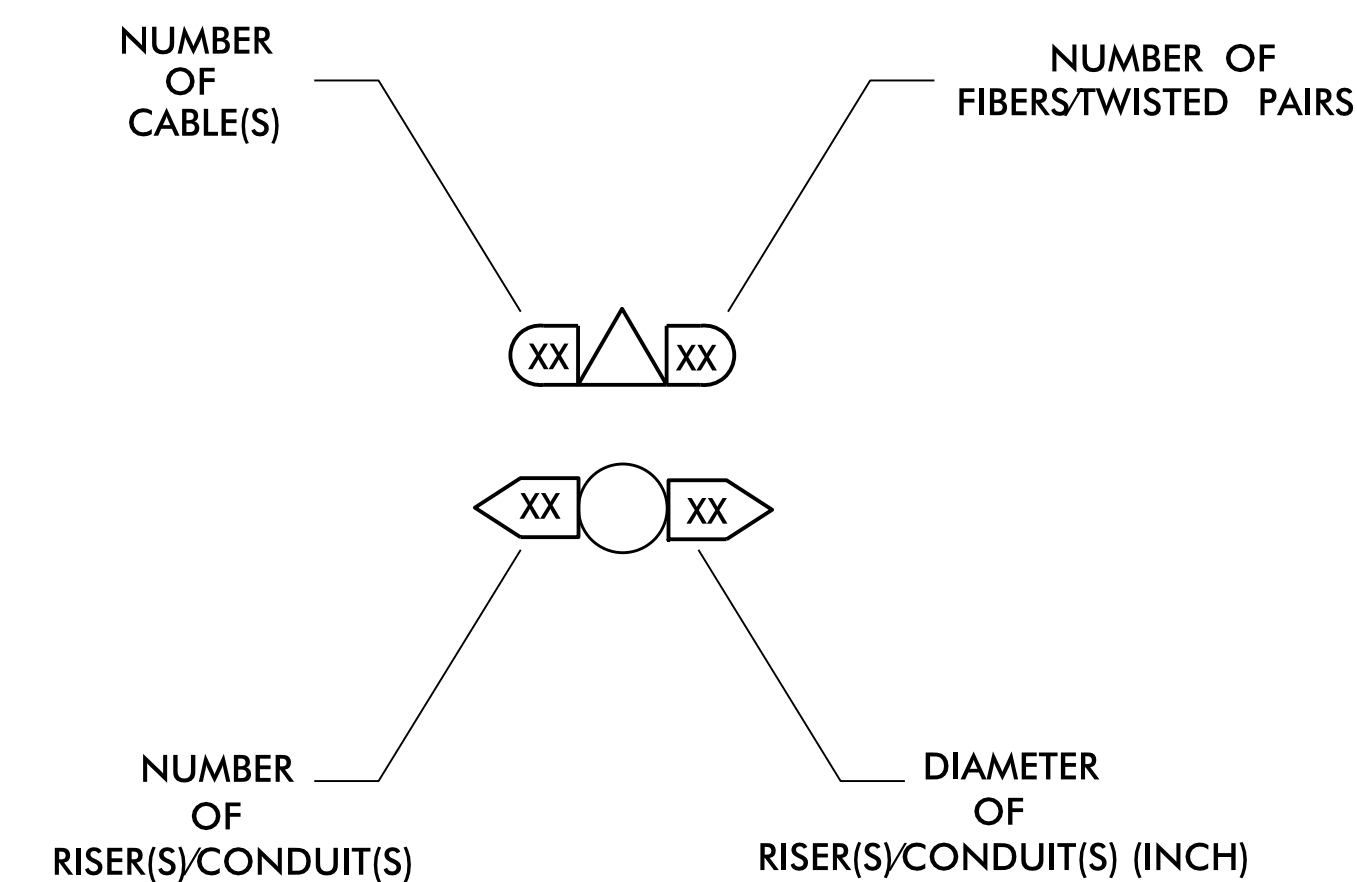
- | | |
|----|--|
| 34 | INSTALL CABINET FOUNDATION |
| 35 | REMOVE EXISTING CABINET FOUNDATION |
| 36 | INSTALL CCTV CAMERA ASSEMBLY |
| 37 | INSTALL CCTV CAMERA WOOD POLE |
| 38 | INSTALL CCTV CAMERA METAL POLE AND FOUNDATION |
| 39 | INSTALL JUNCTION BOX |
| 40 | INSTALL OVERSIZED JUNCTION BOX |
| 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 |
| 59 | INSTALL ETHERNET EDGE SWITCH |

LEGEND



- | | |
|--|---|
| | NEW FIBER OPTIC COMMUNICATIONS CABLE |
| | NEW TWISTED PAIR COMMUNICATIONS CABLE |
| | EXISTING COMMUNICATIONS CABLE |
| | EXISTING COMMUNICATIONS CABLE TO BE REMOVED |
| | NEW AERIAL GUY ASSEMBLY |
| | NEW CONDUIT |
| | EXISTING CONDUIT |
| | NEW DIRECTIONAL DRILLED CONDUIT |
| | NEW BORED AND JACKED CONDUIT |
| | NEW JUNCTION BOX |
| | EXISTING JUNCTION BOX |
| | NEW WOOD POLE |
| | EXISTING WOOD POLE |
| | AERIAL/UNDERGROUND 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 CABLE STORAGE RACKS (SNOW SHOES) |
| | EXISTING CONTROLLER AND CABINET |
| | EXISTING SPLICE CABINET |
| | NEW SPLICE CABINET |
| | SIGNAL POLE |
| | SIGNAL INVENTORY NUMBER |

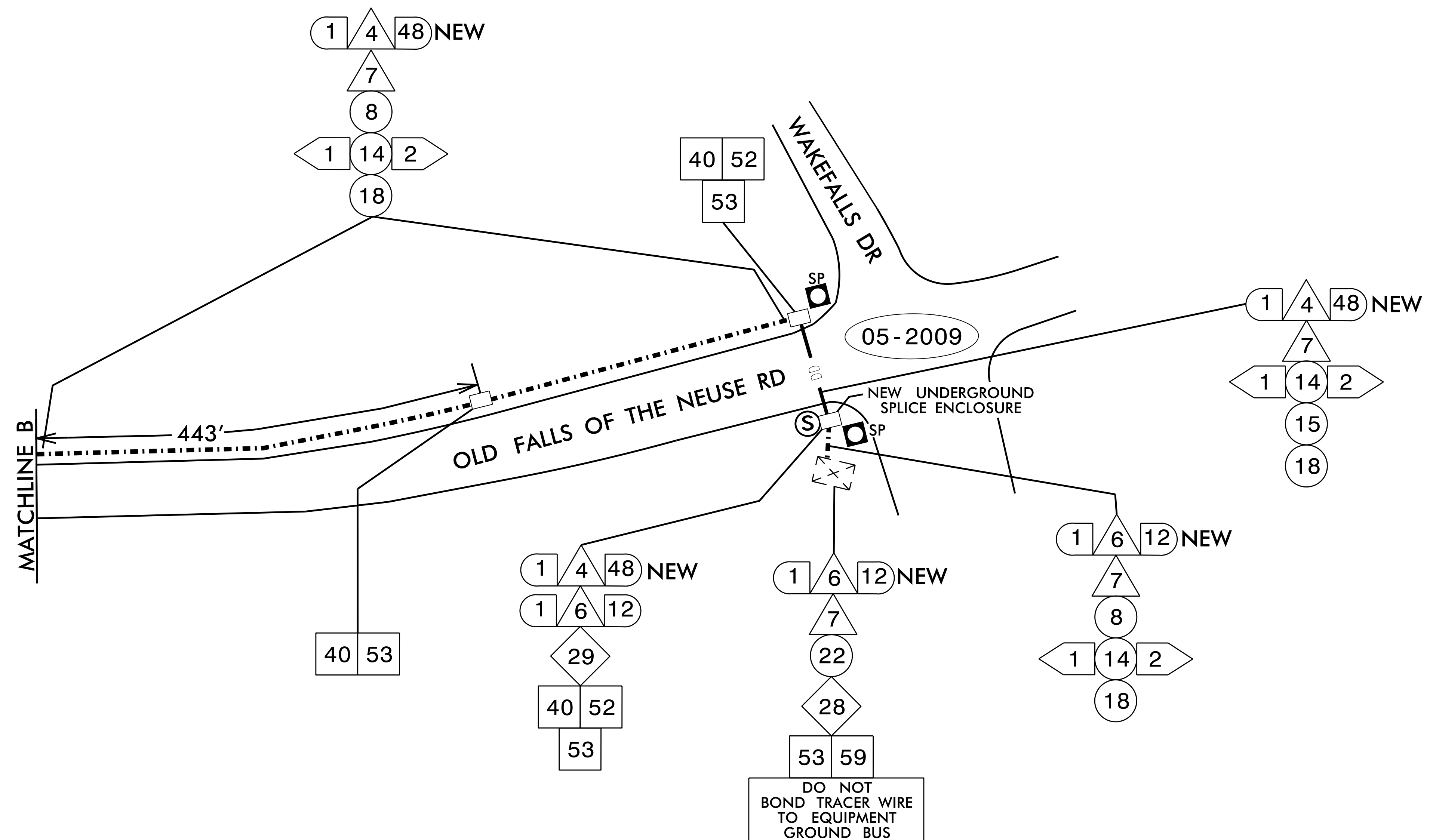
CONSTRUCTION NOTE SYMBOLLOGY KEY

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



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

<p>Prepared in the Offices of:</p> <div style="text-align: center;">  </div> <p>250 N. Greenfield Place, Garner, NC 27529</p>	<h2 style="margin: 0;">COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS</h2>	<p style="text-align: center;">SEAL</p> <div style="text-align: center;">  </div>																																	
<div style="display: flex; justify-content: space-between;"> <div> <p>DIVISION 05 WAKE CO.</p> <p>PLAN DATE: NOVEMBER 2016 REVIEWED BY: <i>Neil Avery</i></p> <p>PREPARED BY: H. T. BERGGREN REVIEWED BY: <i>Gregory A. Fuller</i></p> </div> <div style="border: 1px solid black; padding: 2px; font-size: small;"> Documented by: RALEIGH 08F5D04CDE0D3443 </div> </div>																																			
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<div style="display: flex; justify-content: space-between;"> <div> <p style="text-align: right;">Documented by:</p> <p><i>Gregory A. Fuller</i> 11/21/2016</p> <p style="font-size: x-small;">7032CA0AE874FF</p> </div> <div style="text-align: right;"> <p>DATE</p> </div> </div>																																			

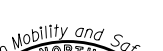


NOTES:

1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF RALEIGH SENIOR TRANSPORTATION ENGINEER, JED NIFFENEGER, AT 919-996-4039 TO ARRANGE FOR THE CITY OF RALEIGH TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE SENIOR TRANSPORTATION ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**


Prepared in the Offices of:



759 N. Greenfield Pkwy., Garner, NC. 27529


COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS

SEAL



DIVISION 05		WAKE CO.		DocuSigned by: RALEIGH	
PLAN DATE: NOVEMBER 2016		REVIEWED BY: <i>Nel Avery</i>		<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">DocuSigned by:</div> <div style="border: 1px solid black; padding: 5px;"> Gregory A. Fuller 11/21/2016 7032CDAEE874FE... </div>	
PREPARED BY: H. T. BERGGREN		REVIEWED BY: -06F5D0ACBED3443.			



REVISIONS	INIT.	DATE



SCALE

050

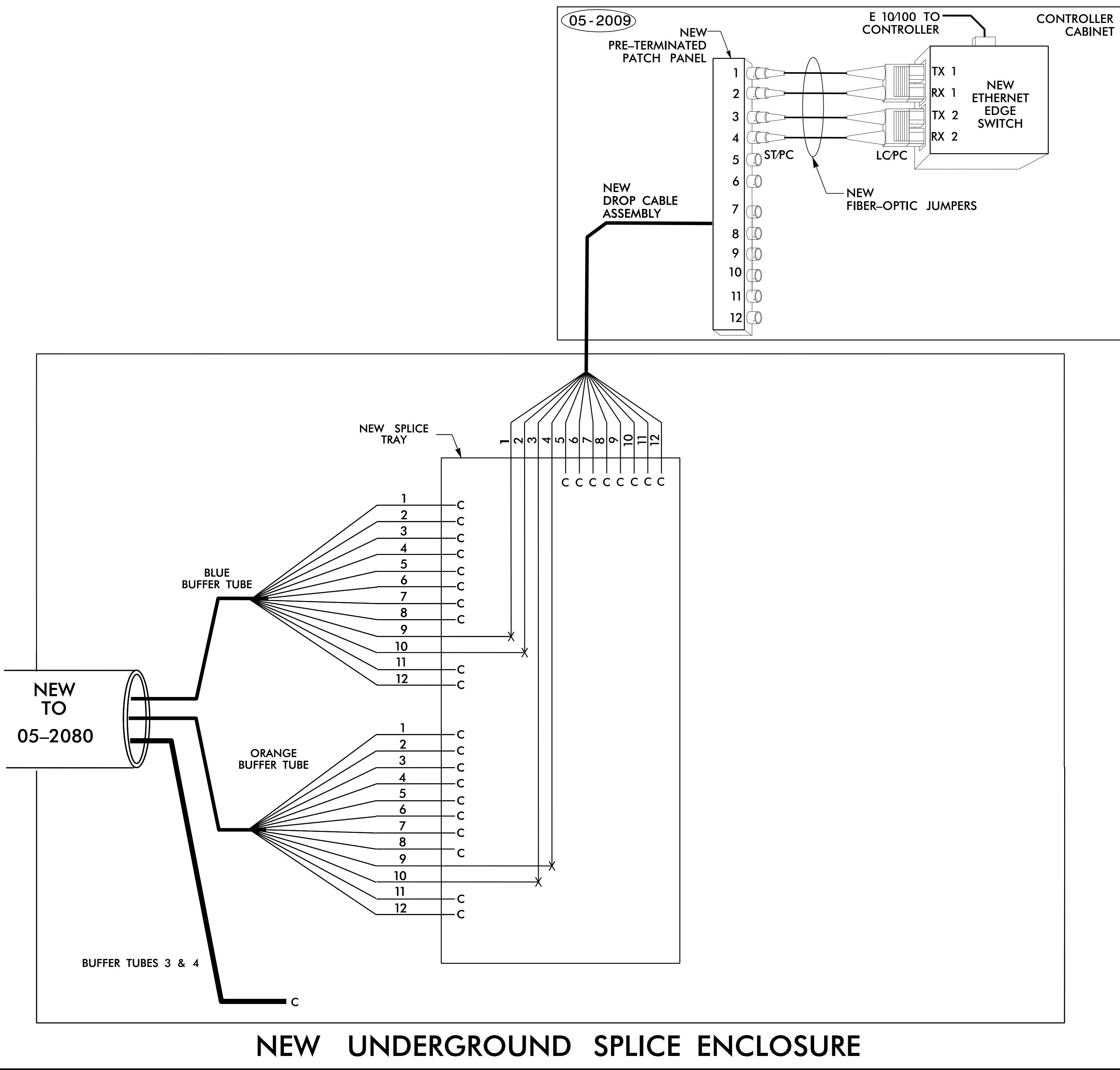
1" = 50'

<p><i>Prepared in the Offices of:</i></p> 	<h2>SPLICE PLANS</h2>	 SEAL NORTH CAROLINA PROFESSIONAL ENGINEER GREGORY A. FULLER 023919
<div style="float: left; width: 40%;">DIVISION 05 WAKE CO.</div> <div style="clear: both;"></div>		
<div style="float: left; width: 40%;">PLAN DATE: NOVEMBER 2016</div> <div style="float: right; width: 60%;">REVIEWED BY: <u>Nel Avery</u> <small>[DocSigned by: RALEIGH]</small></div> <hr/> <div style="float: left; width: 40%;">PREPARED BY: H. T. BERGGREN</div> <div style="float: right; width: 60%;">REVIEWED BY: _____ <small>(DIF-SDCABCEB3443)</small></div>		
<p align="center">SCALE</p> <div style="margin-left: auto; margin-right: auto;"> O ————— I N/A </div>	Drawing area	

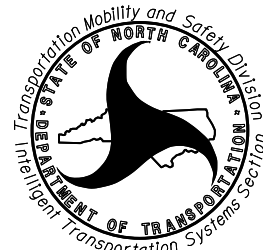
NEW UNDERGROUND SPLICE ENCLOSURE
WAKEFALLS DR @
OLD FALLS OF THE NEUSE RD
SIG. INV. # 05-2009

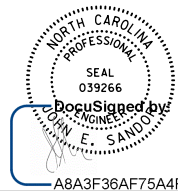
Notes:
Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

- NOTES:
- 1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF RALEIGH SENIOR TRANSPORTATION ENGINEER, JED NIFFENEGGER, AT 919-996-4039 TO ARRANGE FOR THE CITY OF RALEIGH TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE SENIOR TRANSPORTATION ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- 2) ETHERNET EDGE SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
- 3) INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING (REFERENCE SECTION 1731 - "FIBER OPTIC SPLICE ENCLOSURE"):
- 1) SPLICE LOCATION
 - 2) DATE
 - 3) COMPANY NAME
 - 4) NAME OF INDIVIDUAL PERFORMING THE SPLICING
- PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.



COLOR CODE TIA/EIA 598-A		LEGEND	
(1) BLUE	(7) RED	ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING /ENSURING PROPER TERMINATION	
(2) ORANGE	(8) BLACK	X - FUSION INDIVIDUAL FIBER	
(3) GREEN	(9) YELLOW	C - CAP, COIL, & SEAL SPARE FIBER IN SPLICE TRAY	
(4) BROWN	(10) VIOLET	BUFFER TUBE - FUSION SPLICE LIKE FIBERS OR EXPRESS ENTIRE BUFFER TUBE(S) AS NOTED	
(5) SLATE	(11) ROSE		
(6) WHITE	(12) AQUA		

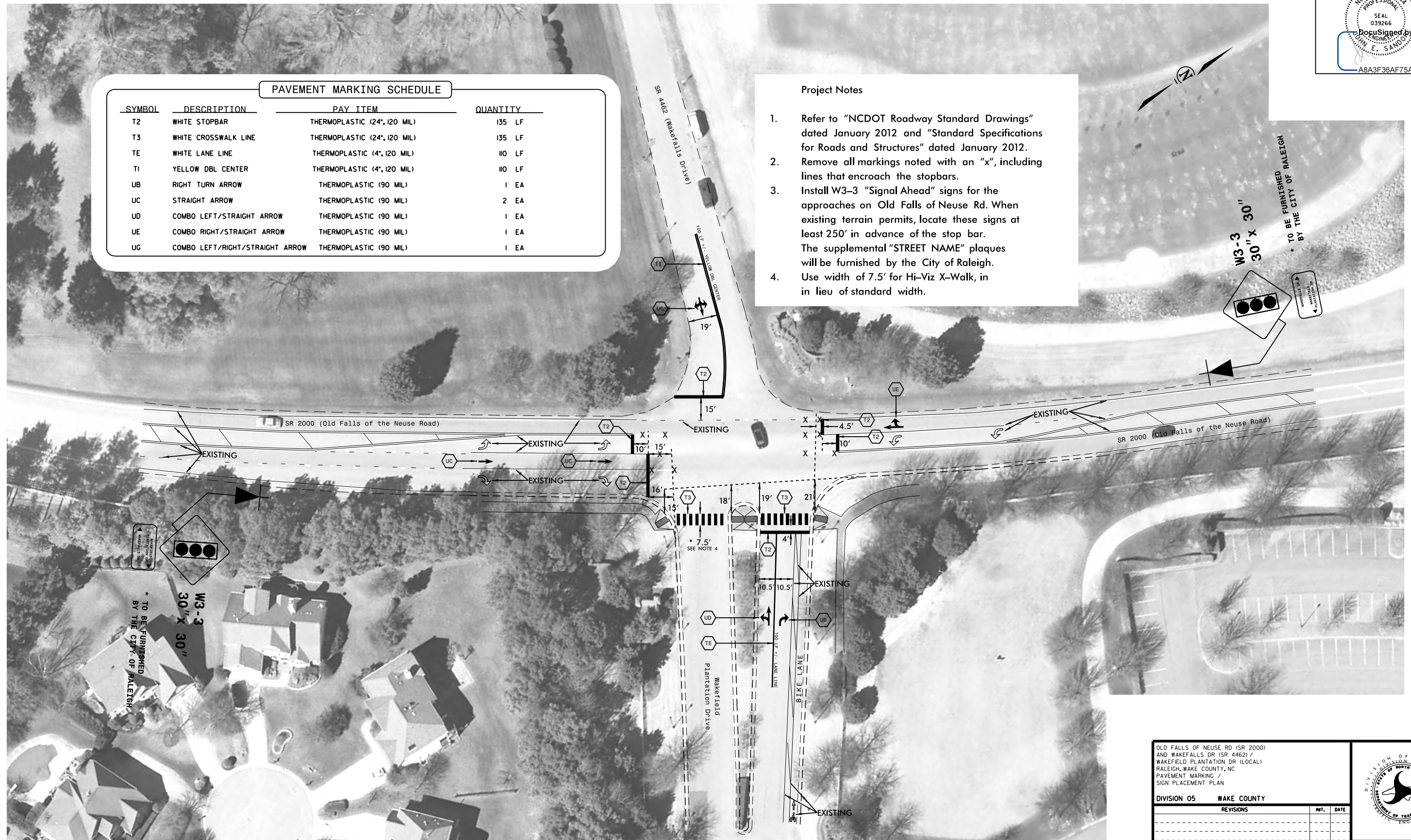
Prepared in the Offices of:  750 N. Greenfield Phwy., Garner, NC 27529		DIVISION 05 WAKE CO. PLAN DATE: NOVEMBER 2016 PREPARED BY: H. T. BERGGREN REVISIONS SCALE 0 N/A		SPLICE PLANS REVIEWED BY: <i>Neil Ivany</i> REVIEWED BY: 09F50B4CBED3443 INIT. DATE DATE		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL SEAL 023919 ENGINEER GREGORY A. FULLER DocuSigned by: Gregory A. Fuller 11/21/2016 7032CADAE87AFF DATE	
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SYMBOL	DESCRIPTION	PAY ITEM	QUANTITY
T2	WHITE STOPBAR	THERMOPLASTIC (24", 120 MIL)	135 LF
T3	WHITE CROSSWALK LINE	THERMOPLASTIC (24", 120 MIL)	135 LF
TE	WHITE LANE LINE	THERMOPLASTIC (4", 120 MIL)	110 LF
T1	YELLOW DBL CENTER	THERMOPLASTIC (4", 120 MIL)	110 LF
UB	RIGHT TURN ARROW	THERMOPLASTIC (90 MIL)	1 EA
UC	STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	2 EA
UD	COMBO LEFT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA
UE	COMBO RIGHT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA
UG	COMBO LEFT/RIGHT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA

Project Notes

1. Refer to "NCDOT Roadway Standard Drawings" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Remove all markings noted with an "x", including lines that encroach the stopbars.
3. Install W3-3 "Signal Ahead" signs for the approaches on Old Falls of Neuse Rd. When existing terrain permits, locate these signs at least 250' in advance of the stop bar. The supplemental "STREET NAME" plaques will be furnished by the City of Raleigh.
4. Use width of 7.5' for Hi-Viz X-Walk, in lieu of standard width.



OLD FALLS OF NEUSE RD (SR 2000)
AND WAKEFALLS DR (SR 4462) /
WAKEFIELD PLANTATION DR (LOCAL)
RALEIGH, WAKE COUNTY, NC
PAVEMENT MARKING /
SIGN PLACEMENT PLAN

DIVISION 05 WAKE COUNTY

REVISIONS	REV.	DATE

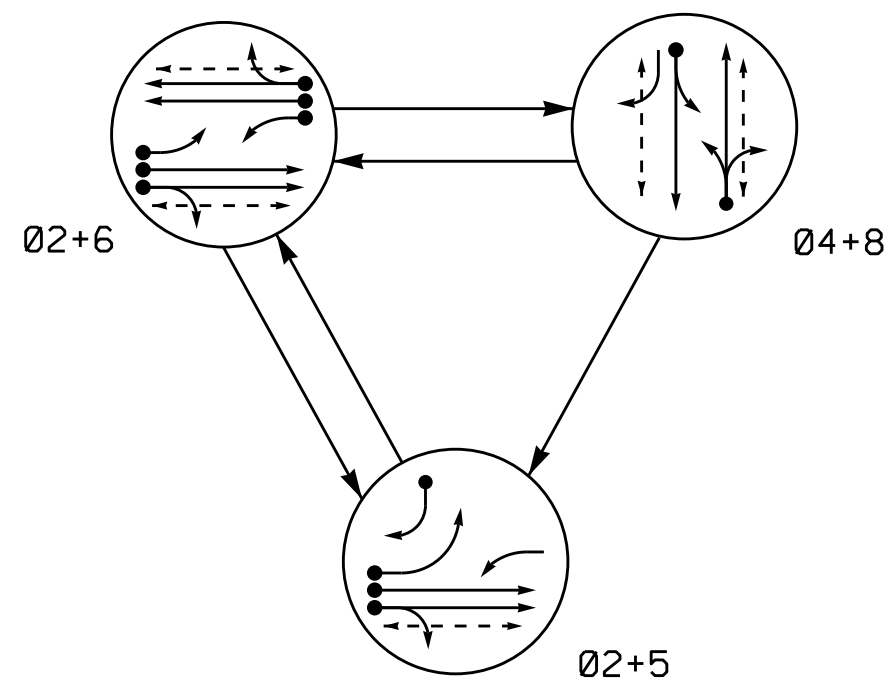
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
DIVISION FIVE TRAFFIC ENGINEERING



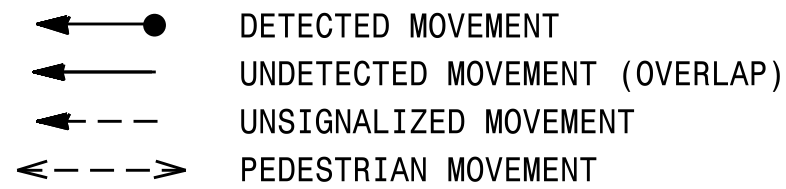
SCALE: 60' = 1" DATE: 16 DEC 2016

PREPARED BY: S.J.L.
REVIEWED BY: J.E.S.
REVIEWED BY:

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

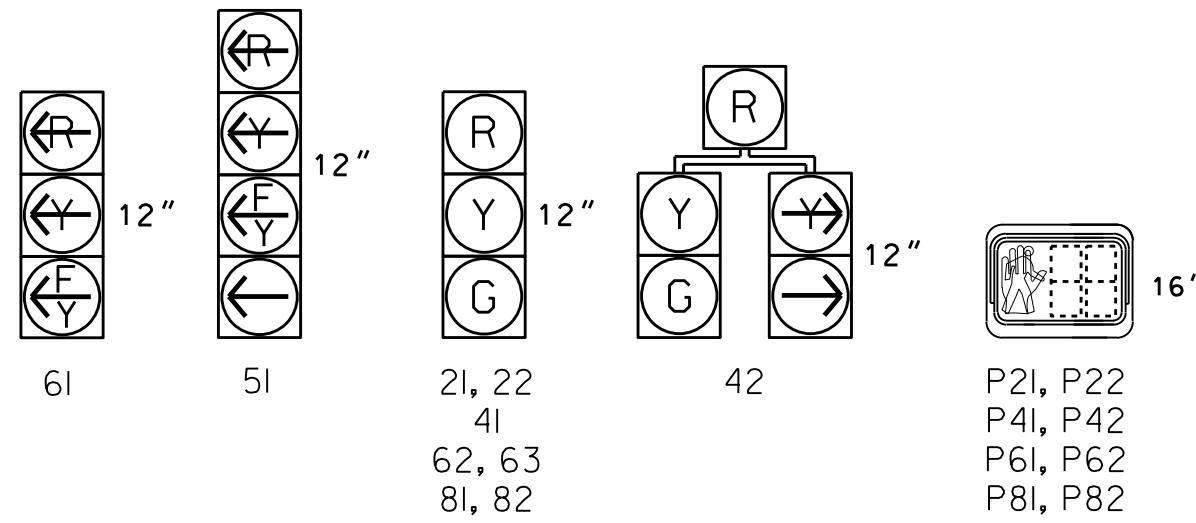


SIGNAL FACE	PHASE				FLASHER
	Ø2+5	Ø2+6	Ø4+8	Ø5+8	
2L, 22	G	G	R	Y	
4L	R	R	G	R	
42		R	G	R	
5L		F	R	Y	
6L	F	F	R	Y	
62, 63	R	G	R	Y	
8L, 82	R	R	G	R	
P2L, P22	W	W	DW	DRK	
P4L, P42	DW	DW	W	DRK	
P6L, P62	DW	W	DW	DRK	
P8L, P82	DW	DW	W	DRK	

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

SIGNAL FACE I.D.

All Heads L.E.D.



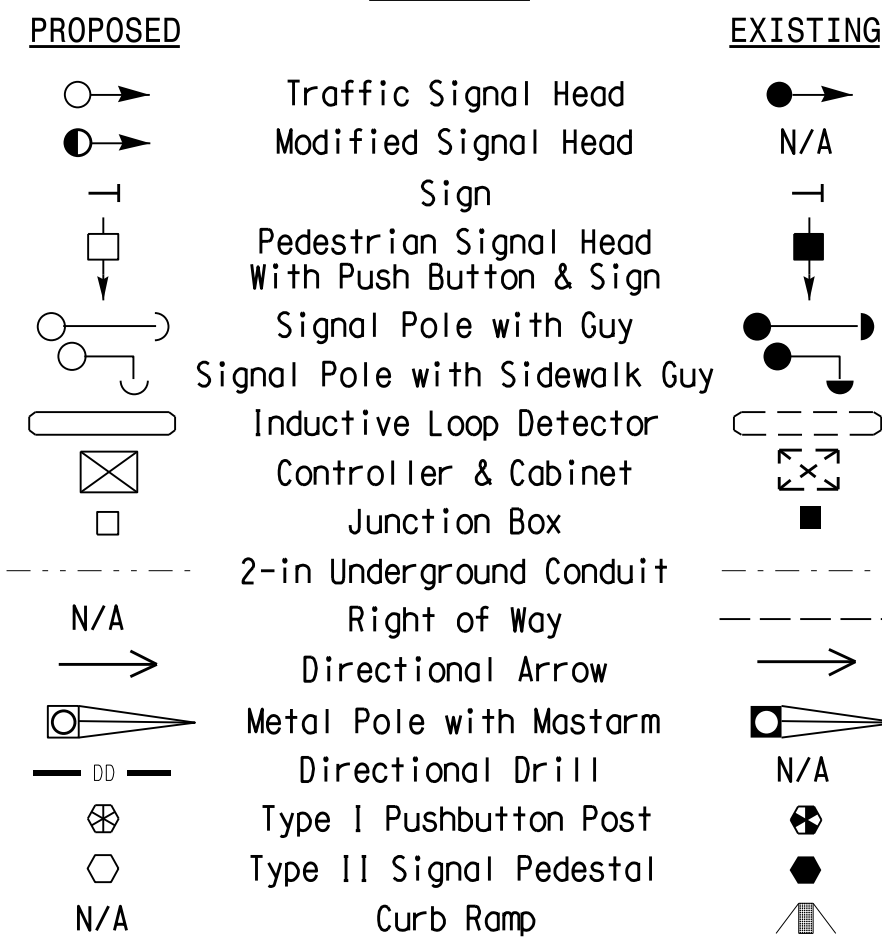
LOOP & DETECTOR INSTALLATION CHART										
ASC/3-2070LN2 CONTROLLER w/ TS-2 CABINET										
INDUCTIVE LOOPS						DETECTOR UNITS				
LOOP NO.	SIZE (ft)	DIST. FROM STOPBAR (ft)	TURNS	NEW EXISTING	NEMA PHASE	NEW EXISTING	TIMING		DET. TYPE	
							FEATURE	TIME (sec.)		
2A	6X6	300	5	X -	2	X -	-	-	N	
2B	6X6	300	5	X -	2	X -	-	-	N	
4A	6X40	0	2-4-2	X -	4	X -	-	-	S	
5A	6X40	0	2-4-2	X -	5	X -	DELAY	15	S	
5B	6X40	0	2-4-2	X -	5	X -	DELAY	15	S	
6A	6X6	300	5	X -	6	X -	-	-	N	
6B	6X6	300	5	X -	6	X -	-	-	N	
6C	6X40	0	2-4-2	X -	6	X -	DELAY	3	G	
8A	6X40	0	2-4-2	X -	8	X -	DELAY	5	S	

3 Phase Fully Actuated (Cary Signal System)

NOTES

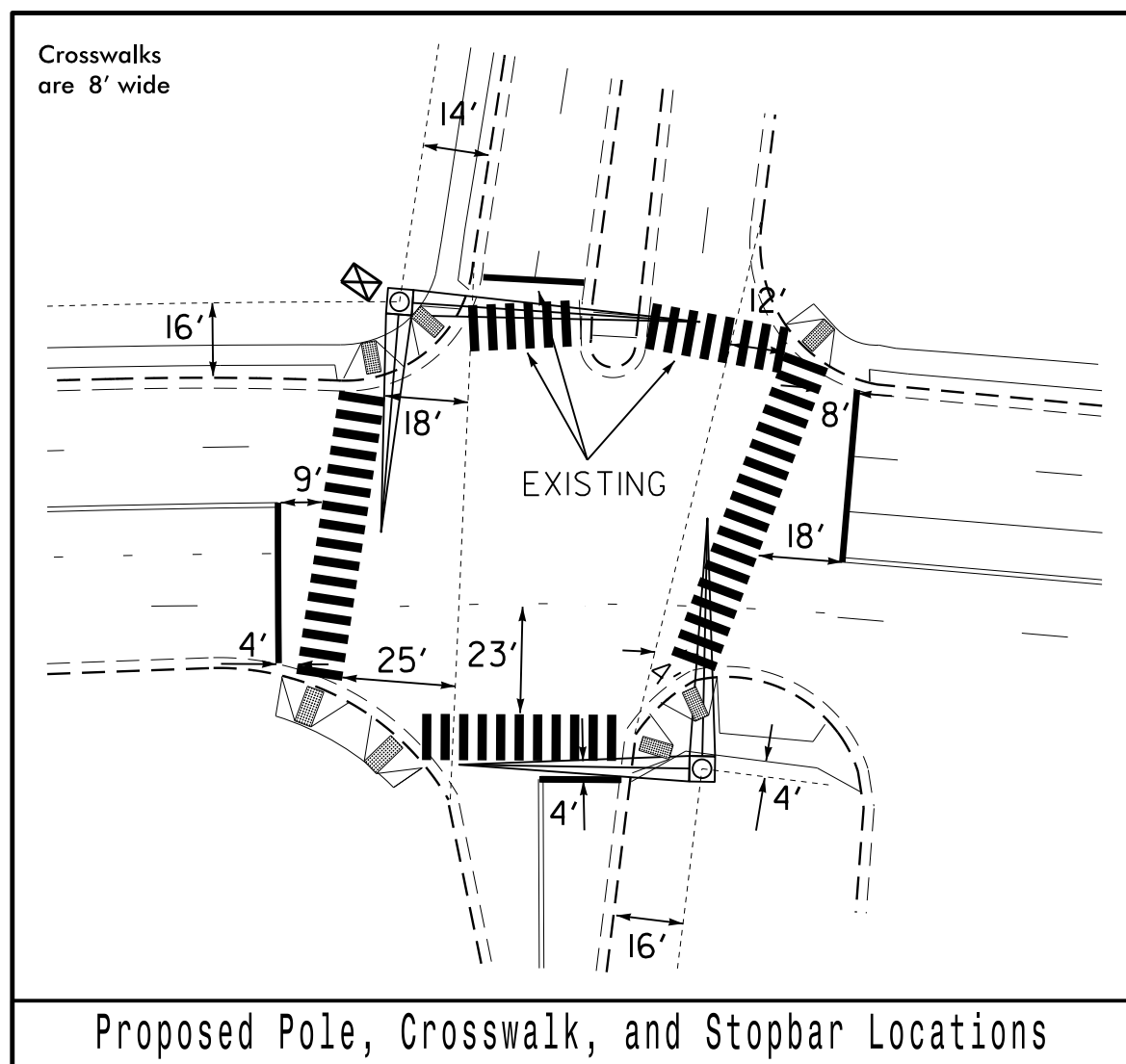
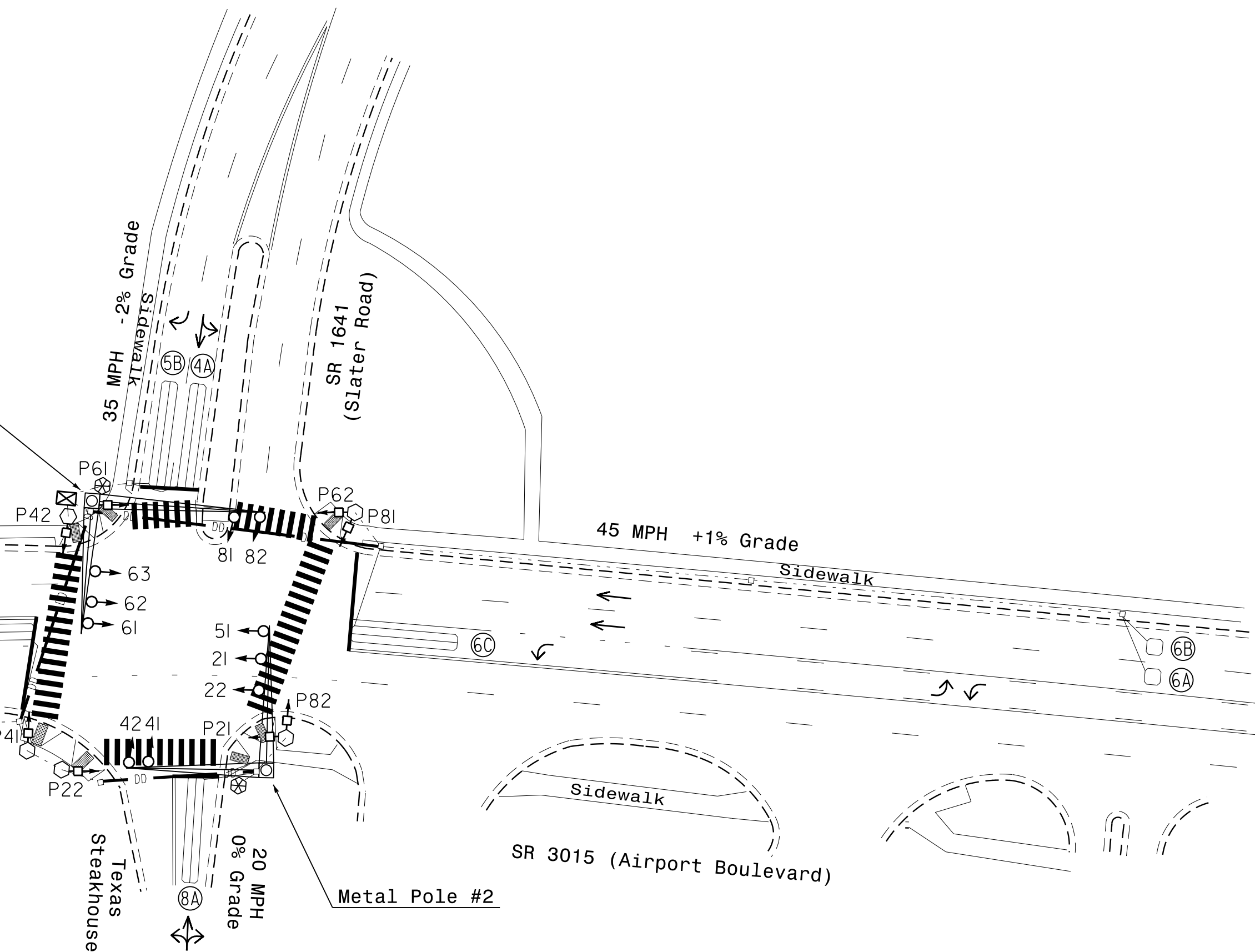
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence 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.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
- Pavement markings are existing unless otherwise shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND



TIMING CHART					
ASC/3-2070LN2 CONTROLLER					
PHASE	Ø2	Ø4	Ø5	Ø6	Ø8
MINIMUM GREEN *	12 SEC.	7 SEC.	7 SEC.	12 SEC.	7 SEC.
VEHICLE EXT. *	6.0 SEC.	2.0 SEC.	2.0 SEC.	6.0 SEC.	2.0 SEC.
YELLOW CHANGE INT.	4.6 SEC.	4.0 SEC.	3.0 SEC.	4.6 SEC.	3.5 SEC.
RED CLEARANCE	1.7 SEC.	1.9 SEC.	3.2 SEC.	1.7 SEC.	3.2 SEC.
MAX. I *	90 SEC.	30 SEC.	15 SEC.	90 SEC.	30 SEC.
RECALL POSITION	MIN. RECALL	NONE	NONE	MIN. RECALL	NONE
LOCK DET.	ON	OFF	OFF	ON	OFF
WALK *	7 SEC.	7 SEC.	- SEC.	7 SEC.	7 SEC.
PED. CLEAR	10 SEC.	16 SEC.	- SEC.	18 SEC.	19 SEC.
VOLUME DENSITY	OFF	OFF	OFF	OFF	OFF
ACTUATION B4 ADD *	0 VEH.	- VEH.	- VEH.	0 VEH.	- VEH.
SEC. PER ACTUATION *	1.5 SEC.	- SEC.	- SEC.	1.5 SEC.	- SEC.
MAX. INITIAL *	34 SEC.	- SEC.	- SEC.	34 SEC.	- SEC.
TIME B4 REDUCTION *	15 SEC.	- SEC.	- SEC.	15 SEC.	- SEC.
TIME TO REDUCE *	30 SEC.	- SEC.	- SEC.	30 SEC.	- SEC.
MINIMUM GAP	3.0 SEC.	- SEC.	- SEC.	3.0 SEC.	- SEC.
DUAL ENTRY	OFF	ON	OFF	OFF	ON
SIMULTANEOUS GAP	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.



New Installation

Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529		SR 3015 (Airport Boulevard) at SR 1641 (Slater Road)		Division 5 Wake County Morrisville	
PLAN DATE: May 2016		REVIEWED BY:		PREPARED BY: C.E. Carter	
REVISIONS		INIT.		DATE	
0		SCALE 1"=40'		7/6/2016	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		SEAL		SEAL	
SIGNED BY:		SIGNED BY:		DATE	
SIG. INVENTORY NO. 05-2088		DATE		DATE	

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL
(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED . X

PROTECT

PED PRTC

NOT OVLP

FLSH GRN . 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE:PPLT FYA

PROTECTED PHASE (LEFT TURN)..... 5

PERMISSIVE PHASE (OPPOSING THRU).... 6

FLASHING ARROW OUTPUT.....CH15 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

ECONOLITE ASC/3-2070 SPECIAL MMU PROGRAMMING
(program controller as shown)

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 4. PORT 1 (SDLC)
3. From PORT 1 (SDLC) Submenu select 2. MMU PROGRAM

CAUTION!

Set intersection to Flash before attempting to enter or change any MMU programming data.

This programming and that of the MMU programming card must match exactly. If they do not, the intersection will be placed into Flash.

MMU PROGRAM [MANUAL]

CH 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2

1

2 . X . X . X . . X X . .

3

4 X . X . X . . .

5 . X . X . . . X . . .

6 . X . X . X . X . .

7

8 X . X .

9 . X . X . X .

10 X .

11 . X . X .

12

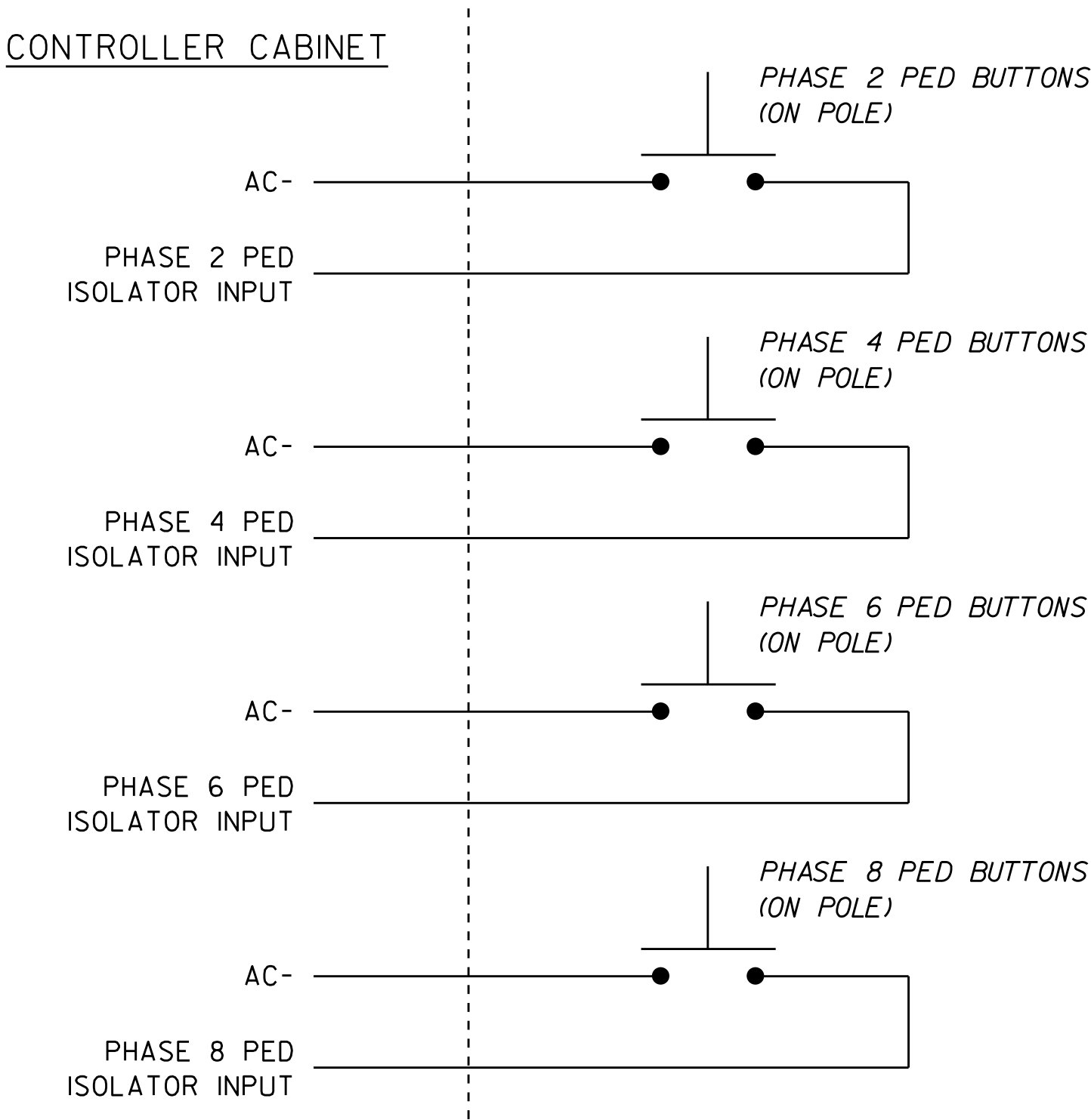
13 . X .

14 . .

15 .

END PROGRAMMING

PEDESTRIAN PUSH BUTTON WIRING DETAIL
(wire push buttons as shown)



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: 05-2088
DESIGNED: May 2016
SEALED: 7-06-16
REVISED: N/A

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Electrical AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

Public Engineering and Safety Systems, Inc.

Divisions of NORTH CAROLINA

Department of TRANSPORTATION

Signal Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 3015 (Airport Boulevard)
at
SR 1641 (Slater Road)

Division 5Wake CountyMorrisville

PLAN DATE: July 2016REVIEWED BY:

PREPARED BY: James PetersonREVIEWED BY:

REVISIONSINIT.DATE

SIG. INVENTORY NO. 05-2088

SEAL

NORTH CAROLINA

PROFESSIONAL

SEAL 036880

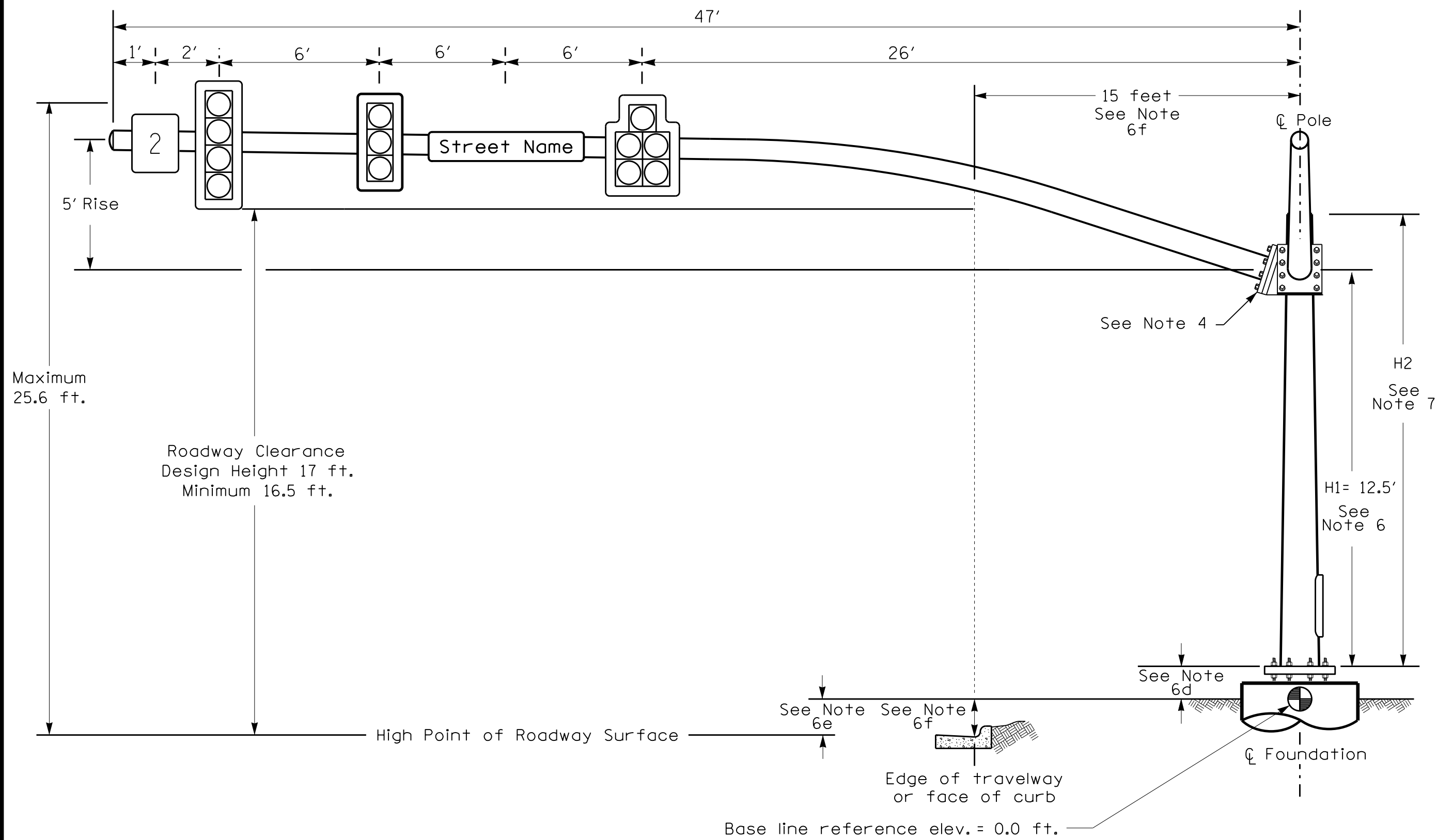
ENGINEER

KEITH M. MIMS

DocuSigned by:

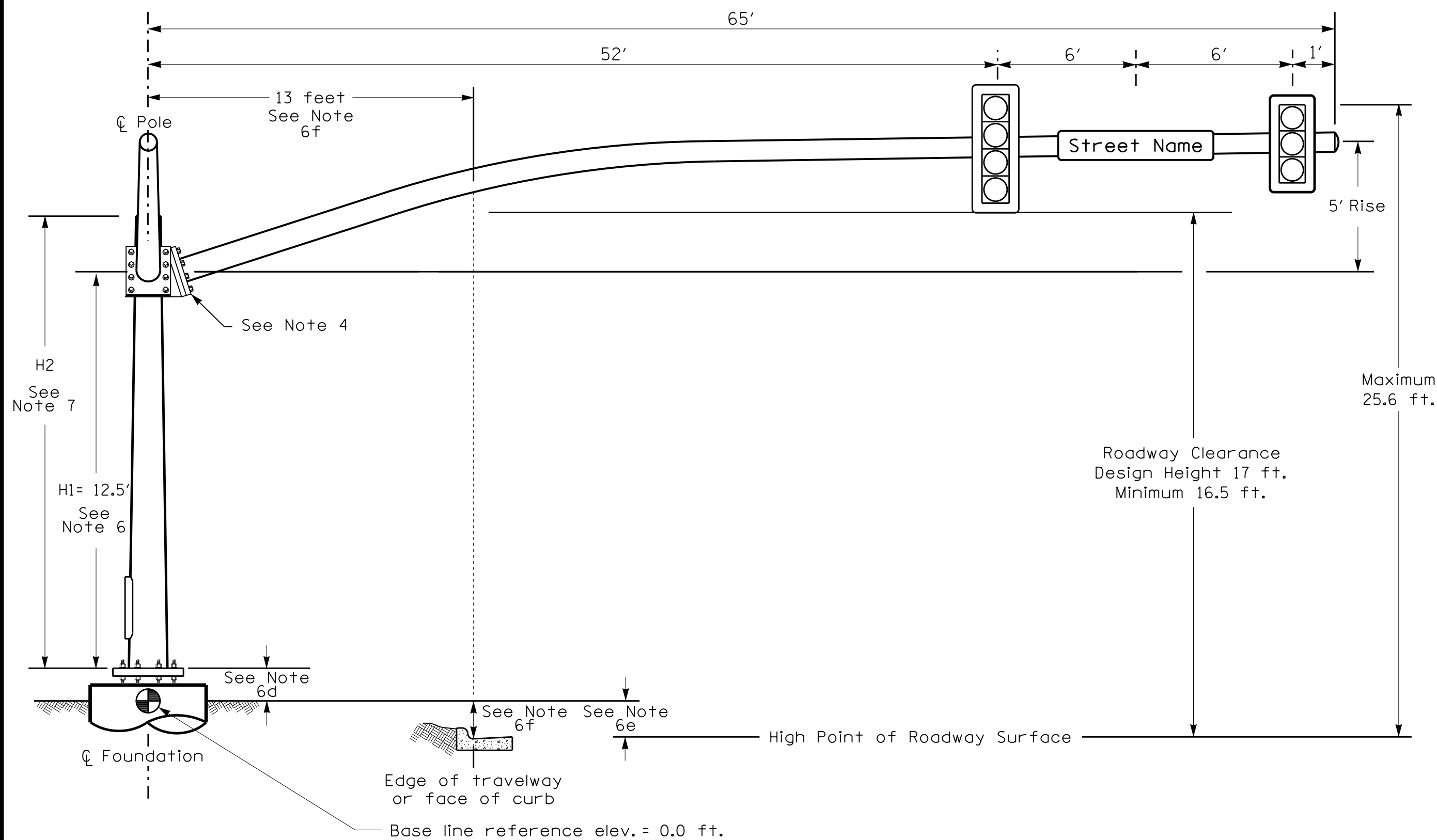
Keith M. Mims7/7/2016

Design Loading for METAL POLE NO. 1, MAST ARM A



Elevation View @ 270°

Design Loading for METAL POLE NO. 1, MAST ARM B



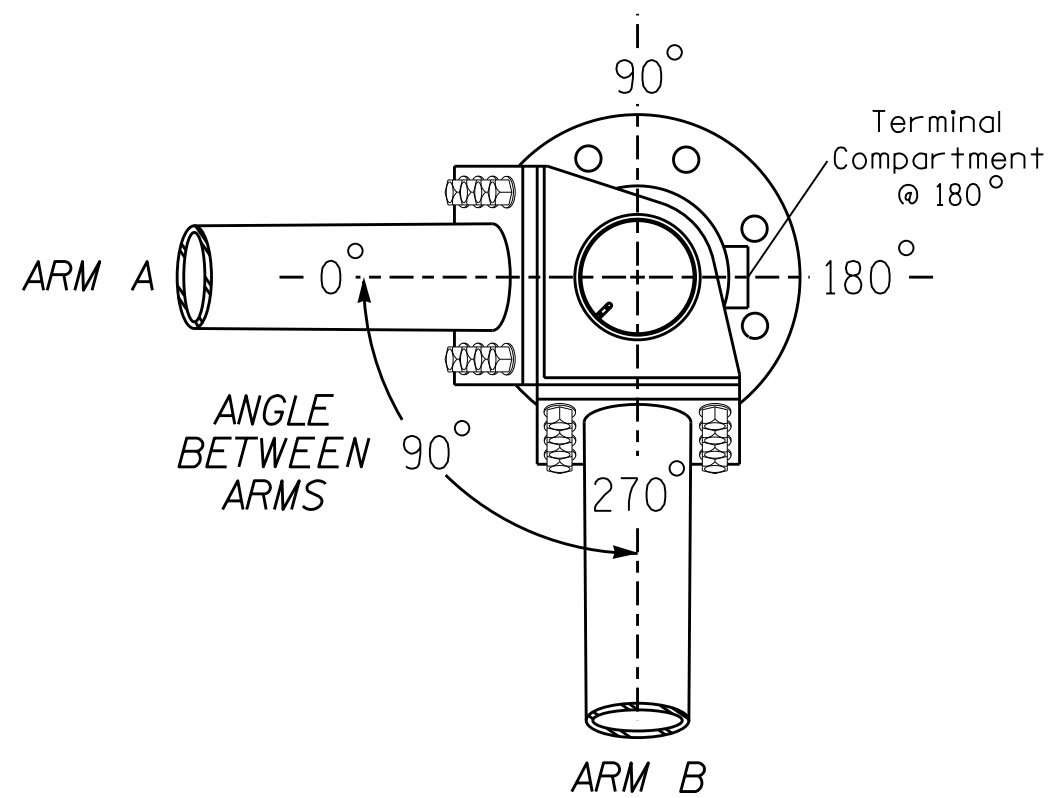
Elevation View @ 0°

SPECIAL NOTE

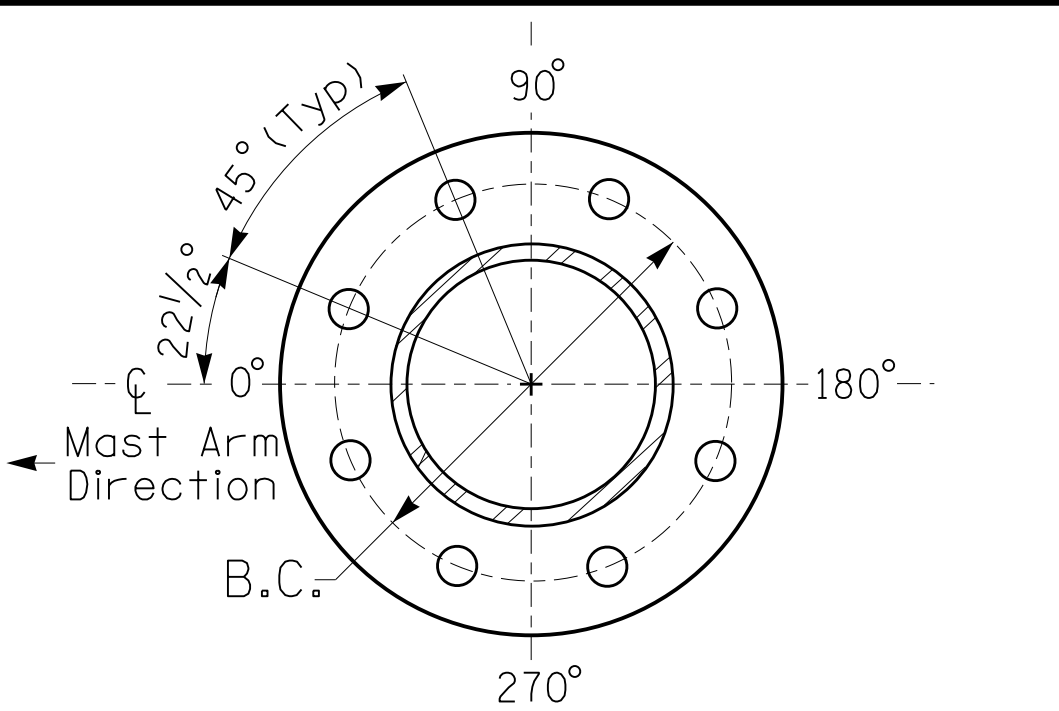
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm A	Arm B
Baseline reference point at \odot Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-1.8 ft.	-1.6 ft.
Elevation difference at Edge of travelway or face of curb	-0.6 ft.	0.0 ft.

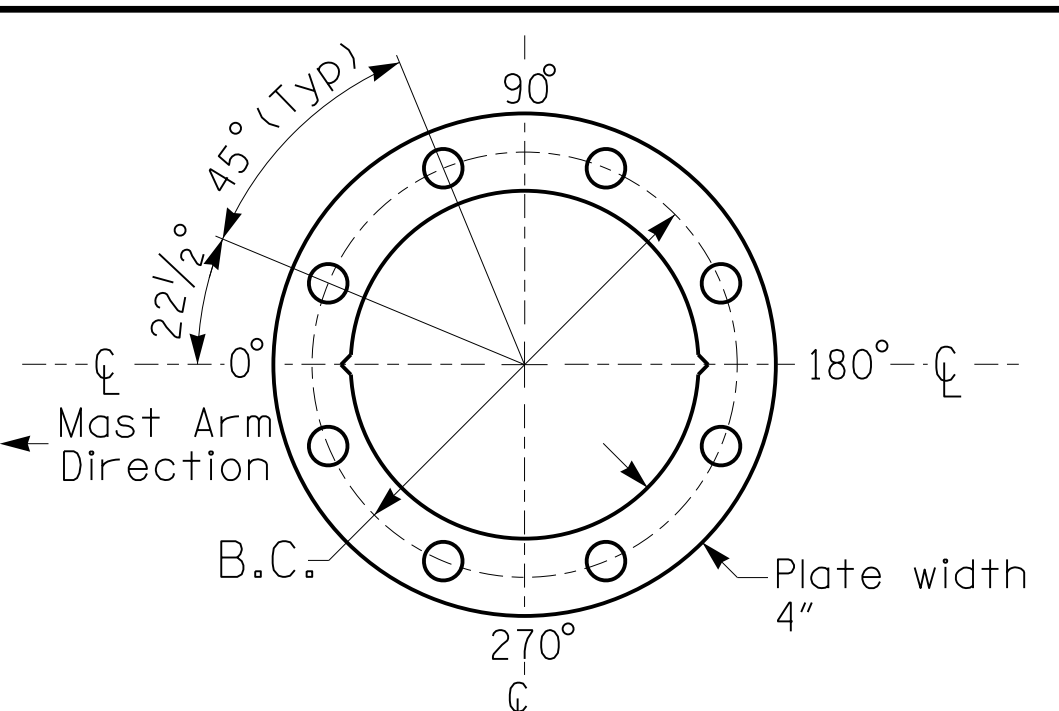


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 5



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 1

PROJECT REFERENCE NO.	SHEET NO.
W-5601EZ	Sig. 4

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0" W X 56.0" L	103 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2012 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

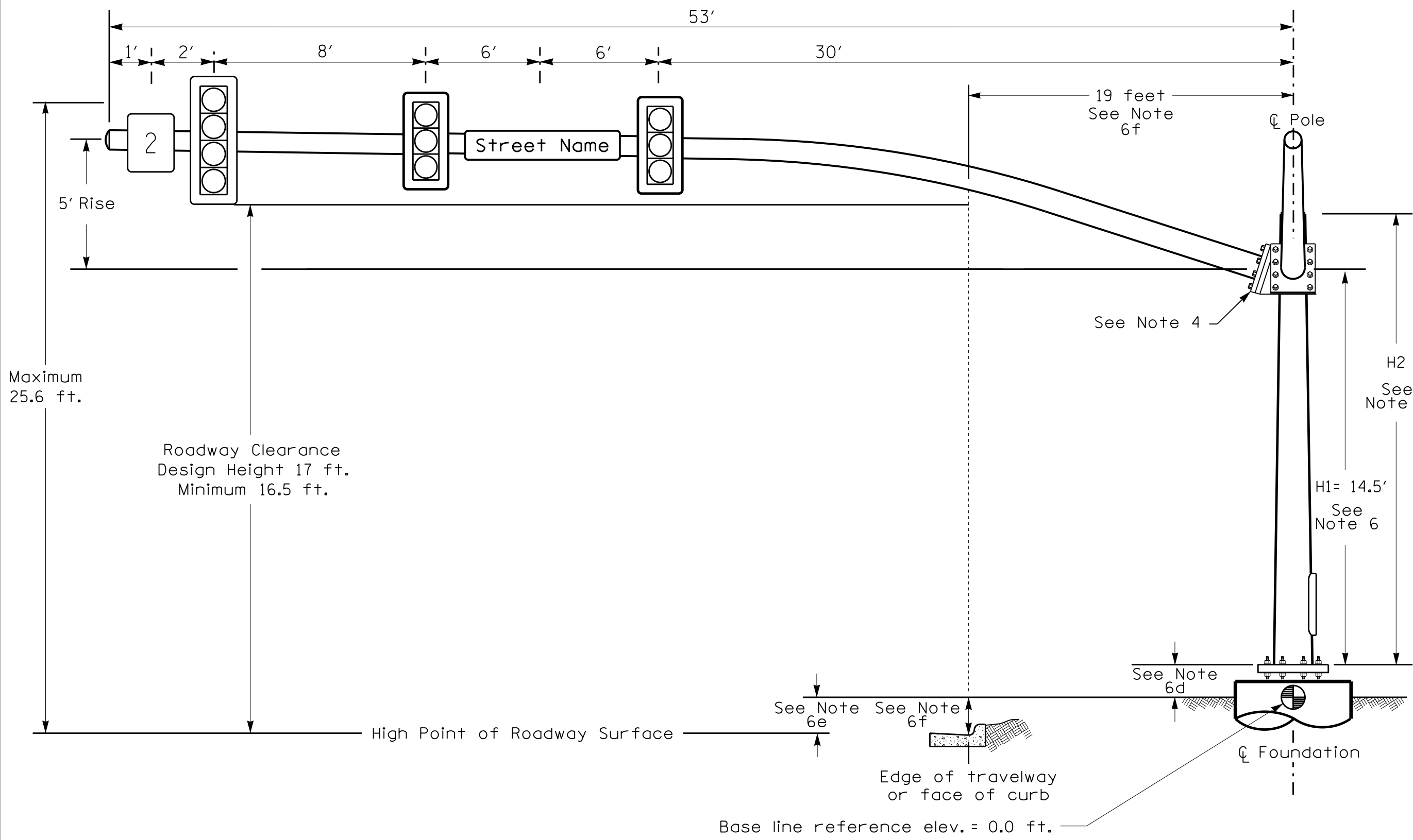
- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate connection points.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
 - Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 773-2800.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

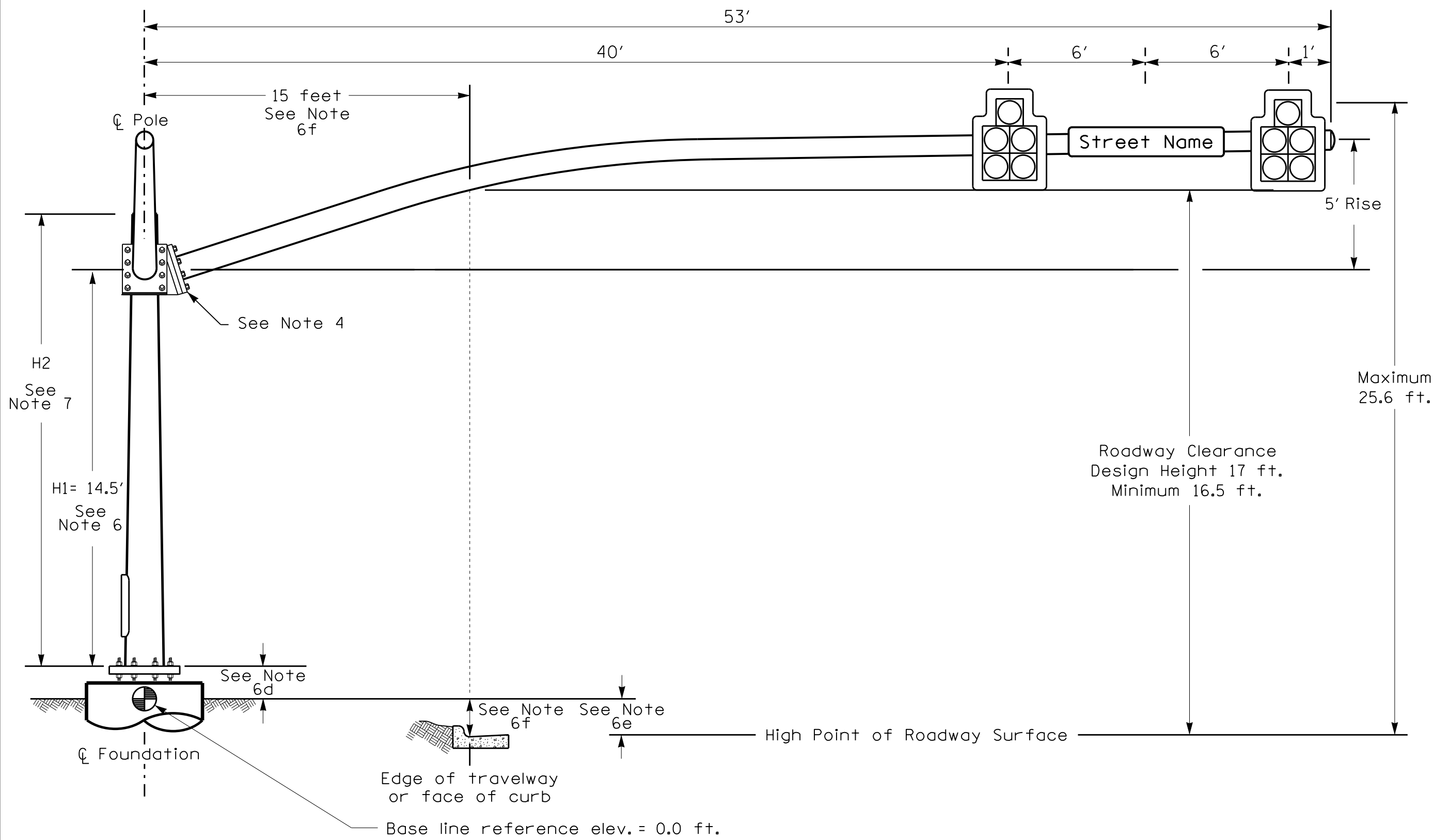
 Prepared In the Offices of: TRANSPORTATION MOBILITY AND SAFETY DIVISION SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529	SR 3015 (Airport Boulevard) at SR 1641 (Slater Road)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ROBERT J. ZIEGLER 026486
	Division 5 Wake County Morrisville	PLAN DATE: August 2016 REVIEWED BY:	
SCALE 0 N/A N/A	REVISIONS	INIT.	DATE
8/12/2016			SIG. INVENTORY NO. 05-2088

Design Loading for METAL POLE NO. 2, MAST ARM A



Elevation View @ 270°

Design Loading for METAL POLE NO. 2, MAST ARM B



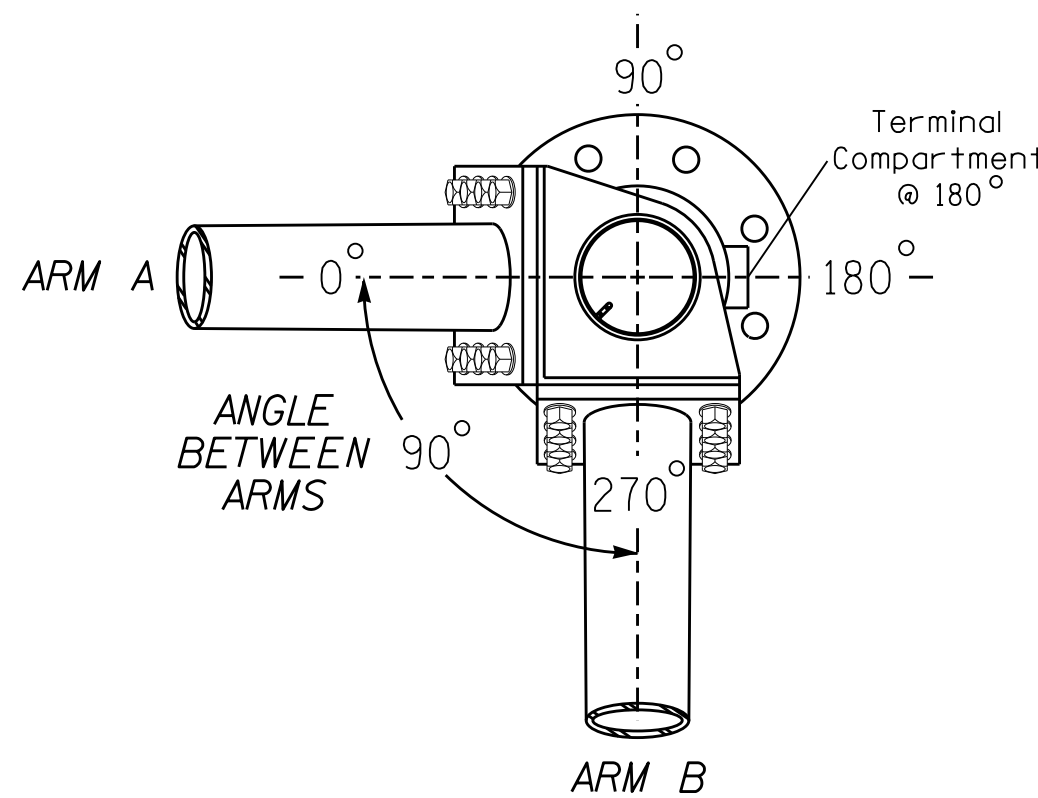
Elevation View @ 0°

SPECIAL NOTE

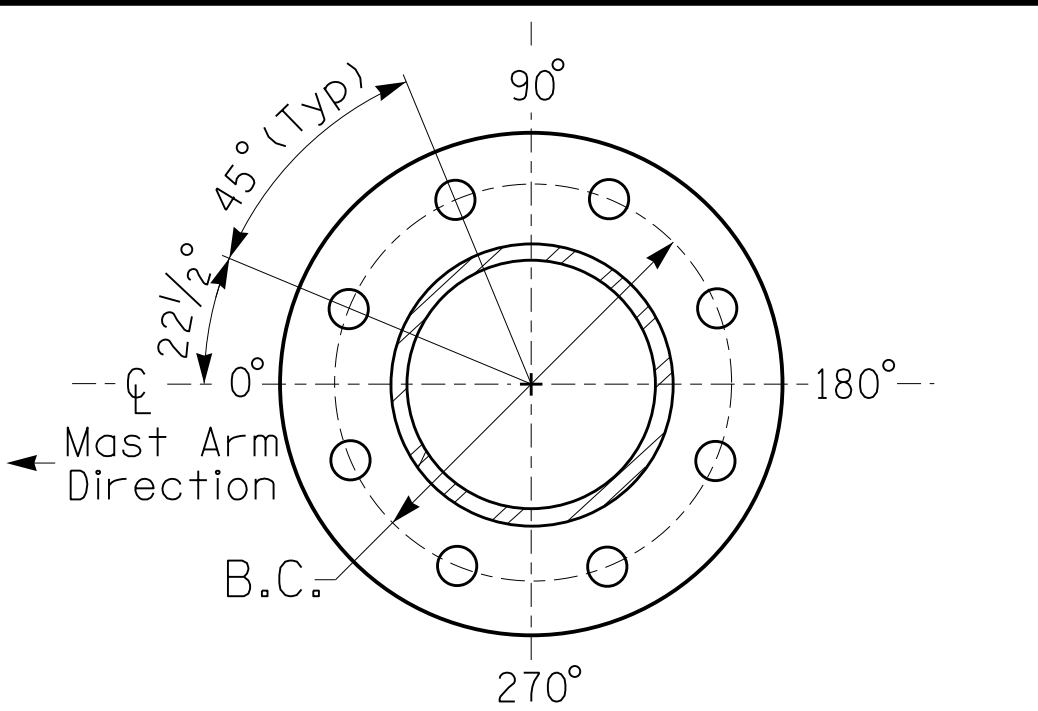
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm A	Arm B
Baseline reference point at \varnothing Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+0.5 ft.	+0.3 ft.
Elevation difference at Edge of travelway or face of curb	-0.2 ft.	+0.2 ft.

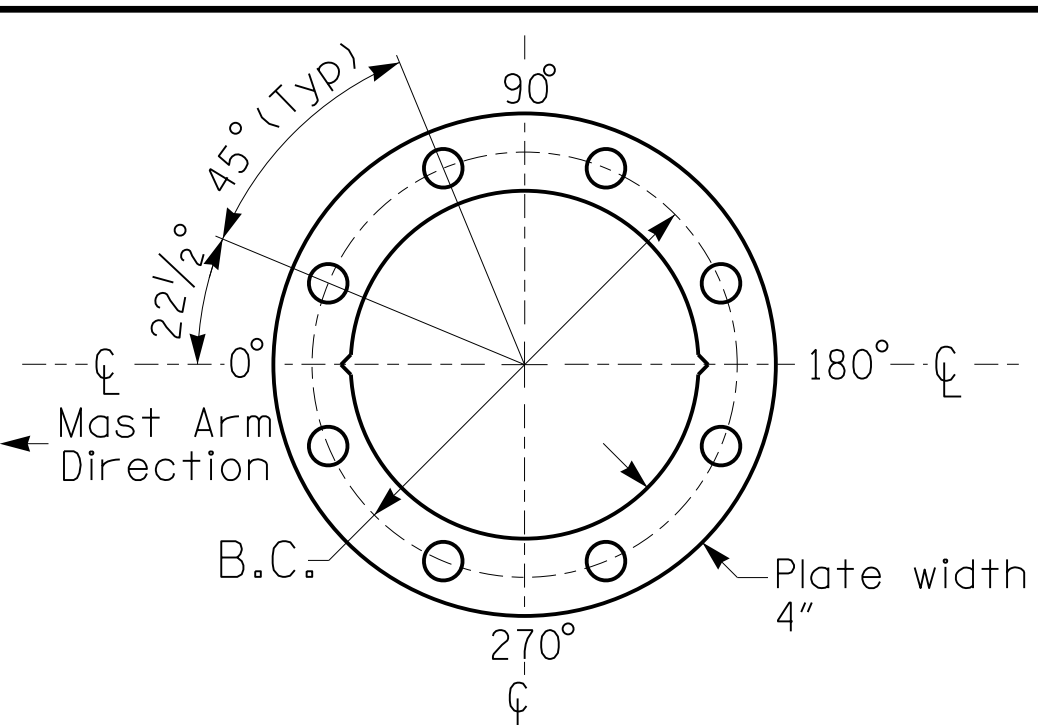


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 5



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 2

PROJECT REFERENCE NO.	SHEET NO.
W-5601EZ	Sig. 5

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0" W X 56.0" L	103 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2012 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate connection points.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
 - Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 773-2800.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

 Prepared In the Offices of: TRANSPORTATION MOBILITY AND SAFETY DIVISION SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529	SR 3015 (Airport Boulevard) at SR 1641 (Slater Road)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ROBERT J. ZIEMBA 026486
	Division 5 Wake County Morrisville	PLAN DATE: August 2016 REVIEWED BY:	
SCALE 0 N/A N/A	REVISIONS	INIT.	DATE
8/12/2016		DATE	
SIG. INVENTORY NO.		05-2088	

- 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
- 59

INSTALL ETHERNET EDGE SWITCH

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

S

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 CABLE STORAGE RACKS (SNOW SHOES)

X

EXISTING CONTROLLER AND CABINET

S

EXISTING SPLICE CABINET

S

NEW SPLICE CABINET

SP

SIGNAL POLE

XX-XXXX

SIGNAL INVENTORY NUMBER

CONSTRUCTION NOTE SYMBOLOGY KEY

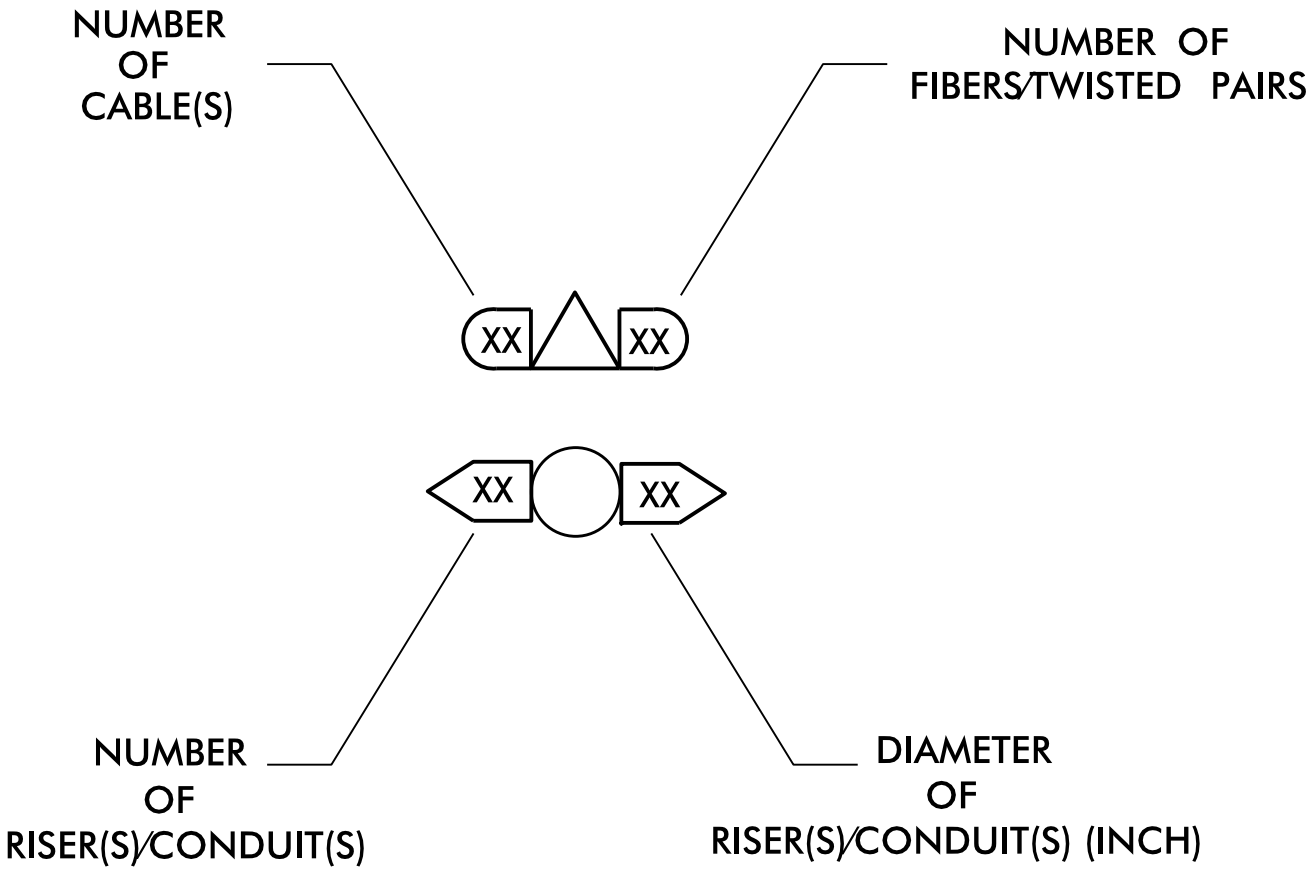
- XX

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)



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

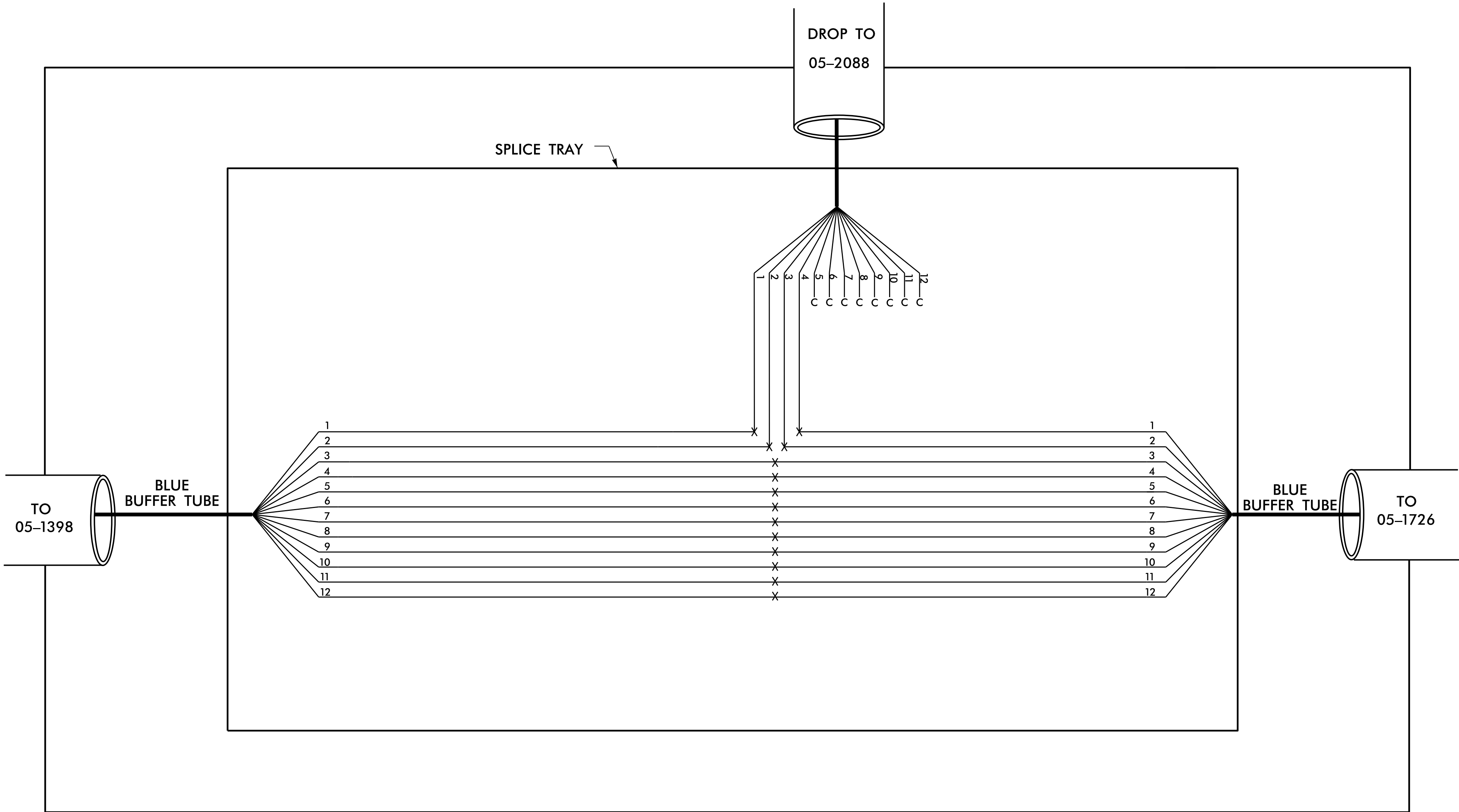
<div><div><div>Prepared in the Offices of:</div><div><div><div><div><div></div><div>750 N. Greenfield Phwy., Garner, NC 27529</div></div><div><div><div>North Carolina Department of Transportation</div><div>Division 5</div></div></div></div></div></div></div></div>	CONSTRUCTION NOTES		SEAL	
	DIVISION 5 WAKE CO. MORRISVILLE		<div><div><div>Seal of Gregory A. Fuller</div><div>SEAL 023919</div><div>ENGINEER</div><div>GREGORY A. FULLER</div></div></div>	
	PLAN DATE: AUGUST 2016	REVIEWED BY:		
	PREPARED BY: H. T. BERGGREN	REVIEWED BY:		
	REVISIONS			
		INIT.	DATE	

NEW AERIAL SPLICE ENCLOSURE
ALONG AIRPORT BLVD
BETWEEN SORRELLS GROVE CHURCH RD
AND SLATER RD

Notes:

- Unused fibers left coiled and stored in splice tray.
- Unused Buffer Tubes left coiled and stored in splice tray.

COLOR CODE TIA/EIA 598-A	
(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
(3) GREEN	(9) YELLOW
(4) BROWN	(10) VIOLET
(5) SLATE	(11) ROSE
(6) WHITE	(12) AQUA



NOTES:

- 1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE TOWN OF CARY OPERATIONS COORDINATOR, MIKE BILLINGS, AT (919) 460-3145. NOTIFY THE TOWN OF CARY OPERATIONS COORDINATOR AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- 2) INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING (REFERENCE SECTION 1731 – "FIBER OPTIC SPLICE ENCLOSURE"):
 - 1) SPLICE LOCATION
 - 2) DATE
 - 3) COMPANY NAME
 - 4) NAME OF INDIVIDUAL PERFORMING THE SPLICINGPRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

Prepared in the Offices of:		DIVISION 5		WAKE CO.		MORRISVILLE	
750 N. Greenfield Pkwy., Garner, NC 27529		PLAN DATE: AUGUST 2016		REVIEWED BY:		REVIEWED BY:	
SCALE		PREPARED BY: H. T. BERGGREN		REVISIONS		INIT. DATE	
SEAL		SEAL 023919		SEAL 023919		SEAL 023919	
Gregory A. Fuller		Gregory A. Fuller		Gregory A. Fuller		Gregory A. Fuller	
8/17/2016		8/17/2016		8/17/2016		8/17/2016	

AIRPORT BLVD @
SLATER RD
SIG. INV. # 05-2088

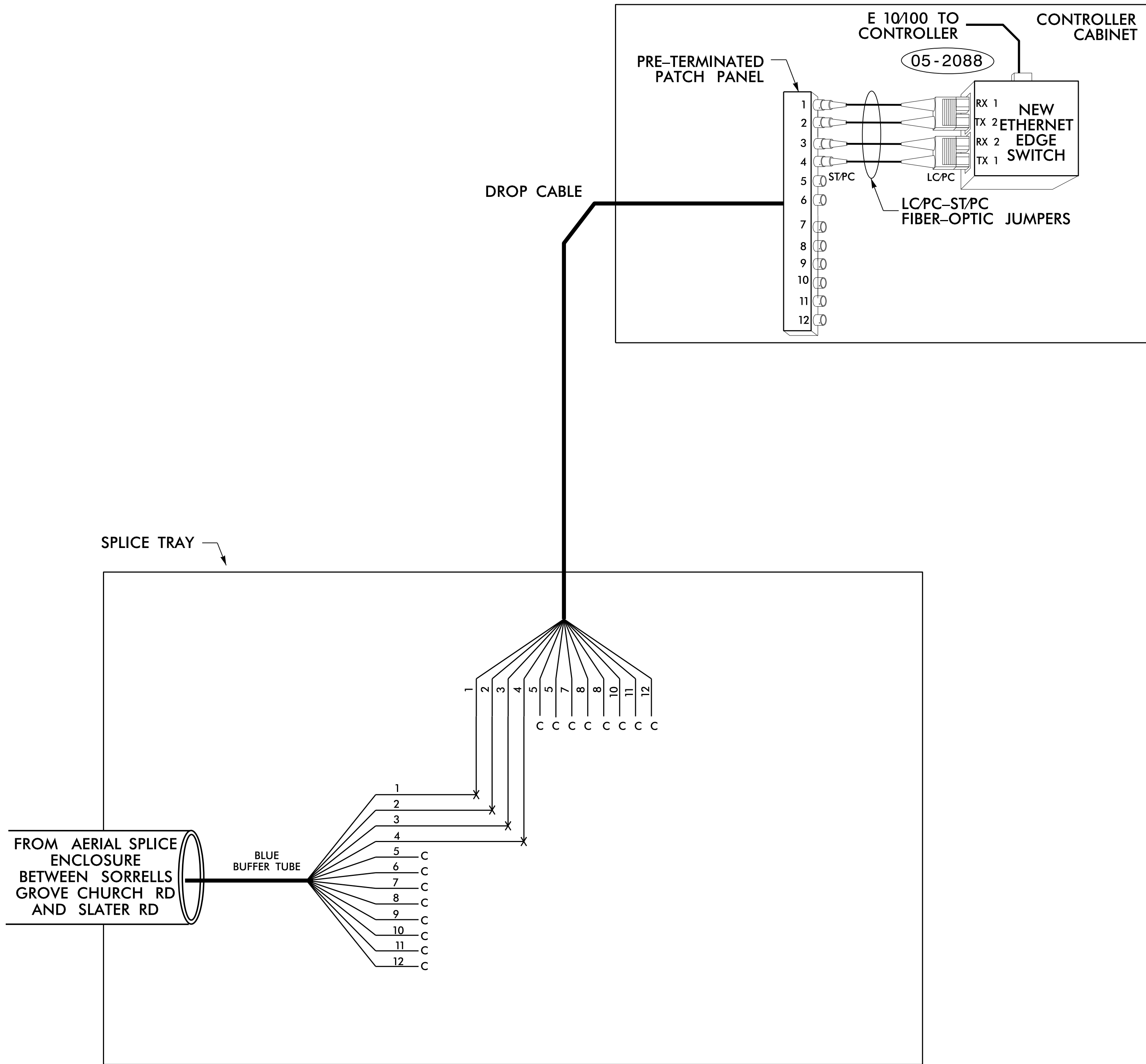
Notes:

Unused fibers left coiled and stored in splice tray.
Unused Buffer Tubes left coiled and stored in splice tray.

COLOR CODE TIA/EIA 598-A	
(1) BLUE	(7) RED
(2) ORANGE	(8) BLACK
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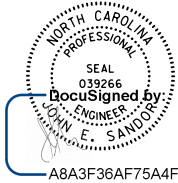
NOTES:

- 1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE TOWN OF CARY OPERATIONS COORDINATOR, MIKE BILLINGS, AT (919) 460-3145 TO ARRANGE FOR THE TOWN OF CARY TO PROGRAM THE NEW FIELD ETHERNET SWITCH WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE TOWN OF CARY OPERATIONS COORDINATOR AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- 2) ETHERNET EDGE SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
- 3) INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING (REFERENCE SECTION 1731 – “FIBER OPTIC SPLICE ENCLOSURE”):
 - 1) SPLICE LOCATION
 - 2) DATE
 - 3) COMPANY NAME
 - 4) NAME OF INDIVIDUAL PERFORMING THE SPLICINGPRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

	SPlice DETAILS		
	DIVISION 5 WAKE CO. MORRISVILLE		
	PLAN DATE: AUGUST 2016	REVIEWED BY:	
	PREPARED BY: H. T. BERGGREN	REVIEWED BY:	
SCALE	REVISIONS	INIT.	DATE
DocuSigned by: Gregory A. Fuller 8/17/2016 7032C0A0E874FF... DATE			

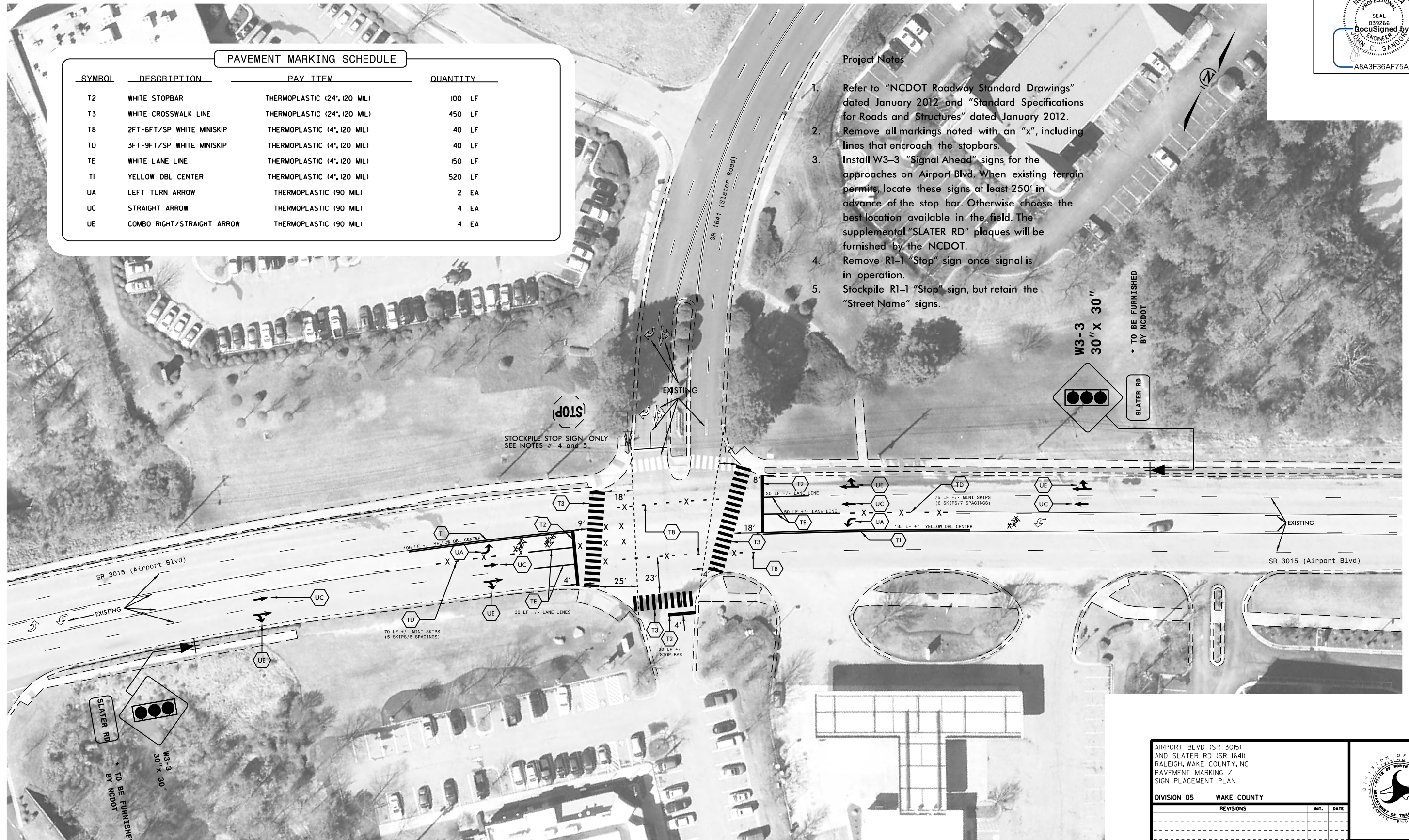


PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM	QUANTITY
T2	WHITE STOPBAR	THERMOPLASTIC (24", 120 MIL)	100 LF
T3	WHITE CROSSWALK LINE	THERMOPLASTIC (24", 120 MIL)	450 LF
T8	2FT-6FT/SP WHITE MINISKIP	THERMOPLASTIC (4", 120 MIL)	40 LF
TD	3FT-9FT/SP WHITE MINISKIP	THERMOPLASTIC (4", 120 MIL)	40 LF
TE	WHITE LANE LINE	THERMOPLASTIC (4", 120 MIL)	150 LF
TI	YELLOW DBL CENTER	THERMOPLASTIC (4", 120 MIL)	520 LF
UA	LEFT TURN ARROW	THERMOPLASTIC (90 MIL)	2 EA
UC	STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	4 EA
UE	COMBO RIGHT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	4 EA

Project Notes

1. Refer to "NCDOT Roadway Standard Drawings" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Remove all markings noted with an "x", including lines that encroach the stopbars.
3. Install W3-3 "Signal Ahead" signs for the approaches on Airport Blvd. When existing terrain permits, locate these signs at least 250' in advance of the stop bar. Otherwise choose the best location available in the field. The supplemental "SLATER RD" plaques will be furnished by the NCDOT.
4. Remove R1-1 "Stop" sign once signal is in operation.
5. Stockpile R1-1 "Stop" sign, but retain the "Street Name" signs.



AIRPORT BLVD (SR 3015)
AND SLATER RD (SR 1641)
RALEIGH, WAKE COUNTY, NC
PAVEMENT MARKING /
SIGN PLACEMENT PLAN

DIVISION 05 WAKE COUNTY

REVISIONS	REV.	DATE

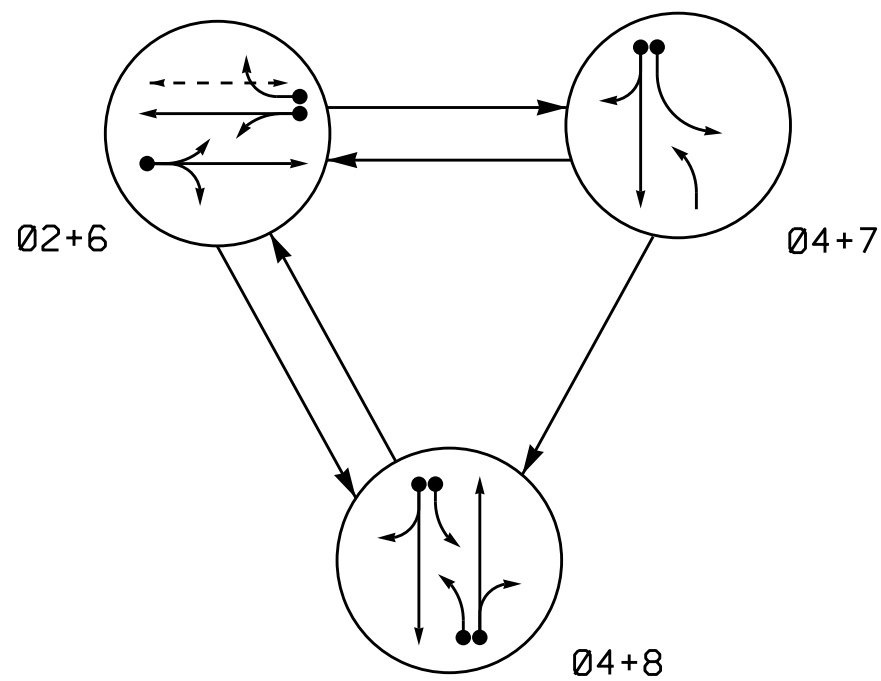
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
DIVISION FIVE TRAFFIC ENGINEERING



SCALE: 60' = 1" DATE: 16 DEC 2016

PREPARED BY: SJL
REVIEWED BY: JES
REVIEWED BY: JES

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

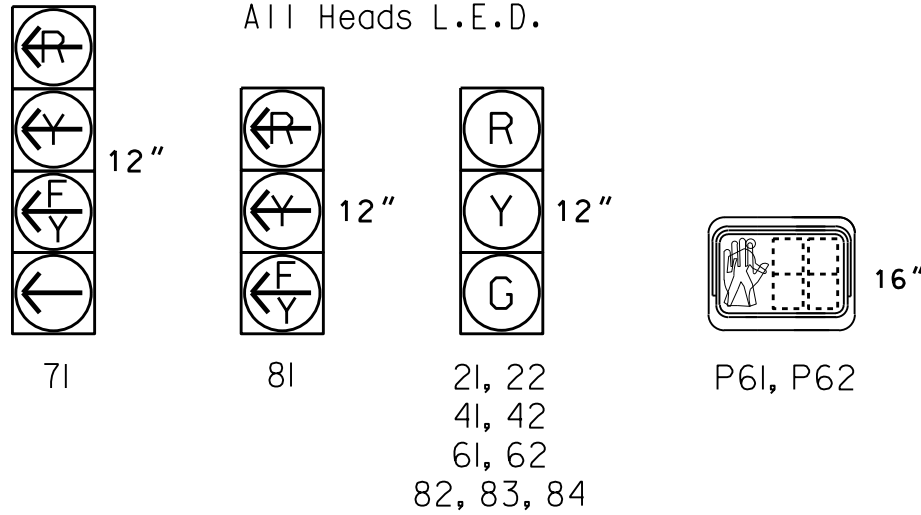
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE			
	0 2 + 6	0 4 + 7	0 4 + 8	F I
2l, 22	G	R	R	Y
4l, 42	R	G	G	R
6l, 62	G	R	R	Y
7l	R	R	R	R
8l	R	R	R	R
82, 83, 84	R	R	G	R
P6l, P62	W	DW	DW	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

INDUCTIVE LOOPS						DETECTOR PROGRAMMING																
						ASSIGNED PHASE	TIMING		OPERATION MODE										SWITCH	SYSTEM LOOPS	STATUS	
									0	1	2	3	4	5	6	7	NEW	EXISTING				
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	DELAY	EXTEND (STRETCH)	VEHICLE	PEDESTRIAN	1 CALL	STOP A	STOP B	PROTECTOR	LEFT TURN	RIGHT TURN	THROUGH	AND	SWITCH	SYSTEM LOOPS	NEW	EXISTING	
2A	6X6	4	70	X	-	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X	-	
4A	6X40	2-4-2	0	X	-	4	10 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X	-	
6A	6X6	4	70	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X	-	
7A	6X40	2-4-2	0	X	-	7	15 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X	-	
						4	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	X	-
8A	6X40	2-4-2	+5	X	-	8	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X	-	
8B	6X40	2-4-2	0	X	-	8	10 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X	-	

3 Phase
Fully Actuated
(Raleigh Signal System)

NOTES

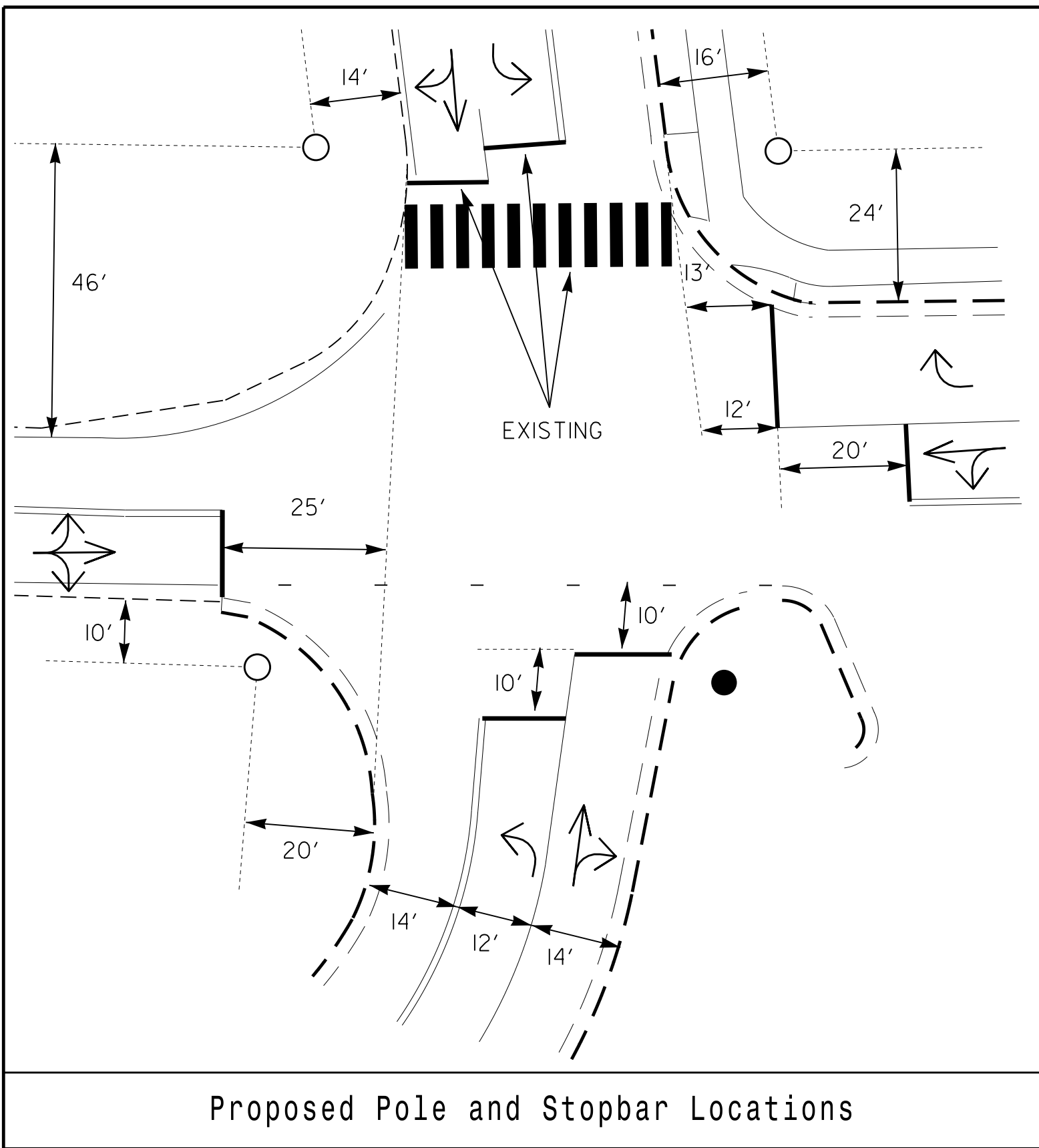
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 7 may be logged.
- Set all detector units to presence 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.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
- Pavement markings are existing unless otherwise shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

- | PROPOSED | EXISTING |
|----------|----------|
| | |
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SE-PAC 2070 TIMING CHART					
FEATURE	PHASE				
	2	4	6	7	8
Min Green *	10	7	10	7	7
Passage Gap *	3.0	2.0	3.0	2.0	2.0
Maximum Green *	90	30	90	15	30
Yellow Change	3.7	3.7	3.8	3.0	3.7
Red Clear	1.9	1.7	1.6	2.3	1.7
Walk *	-	-	7	-	-
Pedestrian Clear	-	-	10	-	-
Added Initial *	-	-	-	-	-
Maximum Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-	-
Vehicle Call Memory	LOCK	NON-LOCK	LOCK	NON-LOCK	NON-LOCK
Dual Entry	-	ON	-	-	ON
Simultaneous Gap	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 be no lower than 4 seconds.



New Installation

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1670 (Blue Ridge Road)
at
Crabtree Valley Avenue and
Summit Park Lane

Division 5
Wake County
Raleigh

PLAN DATE: May 2016
PREPARED BY: C.E. Carter
REVIEWED BY:

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
026486
ROBERT J. ZIEMBA

DocuSign by: [Signature]
DATE: 7/7/2016
SIG. INVENTORY NO. 05-0744

(remove jumpers and set switches as shown)

(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. 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.

INPUT FILE POSITION LAYOUT

(front view)



FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

LOAD RESISTOR INSTALLATION DETAIL

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

PHASE 7 YELLOW FIELD
TERMINAL (123)

AC-

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. The cabinet and controller are part of the Raleigh City Signal System.

EQUIPMENT INFORMATION

```
CONTROLLER.....2070
CABINET.....332 /W/ AUX
SOFTWARE.....SE-PAC2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S5,S8,S9,S10,S11,AUX S2,AUX S5
PHASES USED.....2,4,6,7,8,6 PED
OVERLAP "A".....NOT USED
OVERLAP "B".....*
OVERLAP "C".....NOT USED
OVERLAP "D".....*
```

*See Sheet 2 for Overlap and Protected & Premissive Phases programming.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
2A	TB2-5,6	I2U	39	3	2		
4A	TB4-9,10	I6U	41	11	4	10	
6A	TB3-5,6	J2U	40	21	6		
7A ¹	TB5-5,6	J5U	57	29	7	15	
	-	I8U	49	15	4	3	
8A	TB5-9,10	J6U	42	31	8	3	
8B	TB5-11,12	J6L	46	32	8	10	
PED PUSH BUTTONS							NOTE: INSTALL
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED		

NOTE:
INSTALL DC ISOLATOR IN
INPUT FILE SLOT 113.

¹ Add jumper from J5-W to I8-W, on rear of input file.



INPUT FILE POSITION LEGEND: J2L

FILE J _____
SLOT 2 _____
LOWER _____

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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	P61, P62	71★	82,83 84	NU	NU	81★	NU	NU	71★	NU
RED		128			101			134			107							
YELLOW		129			102			135		*	108							
GREEN		130			103			136			109							
RED ARROW														A124			A101	
YELLOW ARROW														A125			A102	
FLASHING YELLOW ARROW														A126			A103	
GREEN ARROW										124								
									119									
									121									

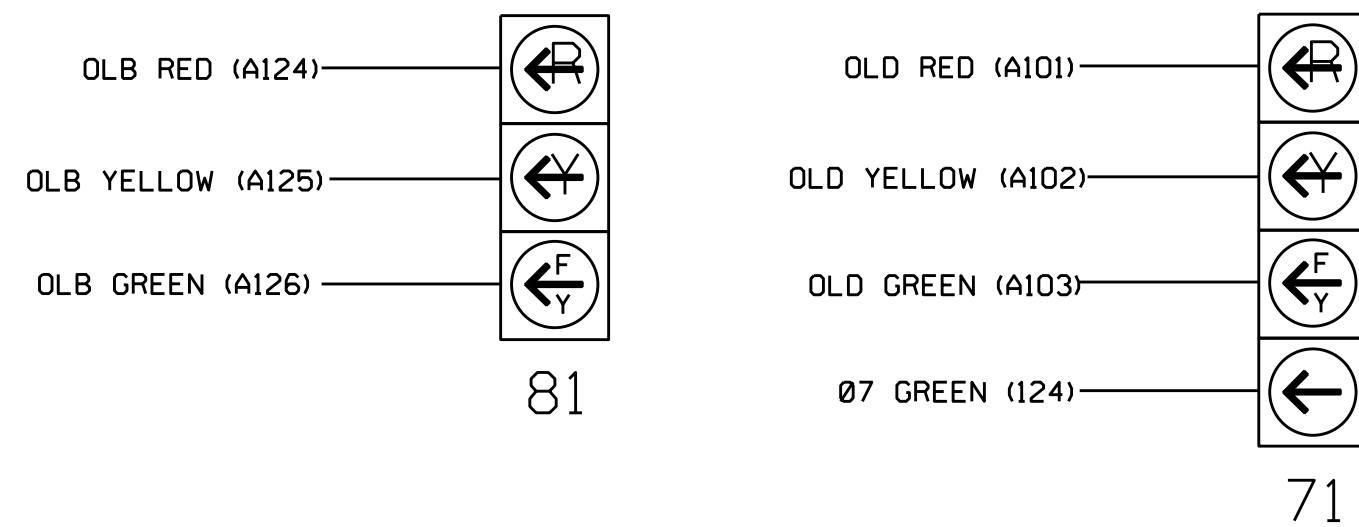
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



Electrical Detail - Sheet 1 of 2

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 1670 (Blue Ridge Road) at Crabtree Valley Avenue and Summit Park Lane	SEAL 																																	
Prepared In the Offices of:																																			
	Division 5 Wake County Raleigh																																		
PLAN DATE: June 2016 REVIEWED BY: DTJ																																			
PREPARED BY: James Peterson REVIEWED BY:																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">REVISIONS</th> <th style="width: 20%;">INIT.</th> <th style="width: 20%;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>			REVISIONS	INIT.	DATE																														
REVISIONS	INIT.	DATE																																	
750 N. Greenfield Pkwy, Garner, NC 27529																																			
<div style="display: flex; justify-content: space-between;"> <div> DocuSigned by: Keith M. Mims mySIGNATURE </div> <div> 7/18/2016 DATE </div> </div>																																			
SIG. INVENTORY NO. 05-0744																																			

```
8-JUL-2016 11:40
*:ITSU*ITS Signals*Workgroups*Sig Man*Peterson*050744_sm_ele_xxx.dgn
+peterson
```


FLASHING YELLOW ARROW
PROTECTED/PERMISSIVE SEQUENCE
FOR
OVERLAPS "B" & "D"

(program controller as shown below)
FROM MAIN MENU PRESS 4 (UNIT DATA)

SE-PAC UNIT DATA	PRESS # DESIRED
1-STARTUP & MISC	6-ALT SEQUENCES
2-REMOTE FLASH	7-PORT 1 DATA
3-OVERLAP STANDARD	8-I/O MISC
4-OVERLAP SPECIAL	9-SIG DRV OUT
5-RING STRUCTURE	
F-PRIOR MENU	

PRESS "B"

SE-PAC OVERLAP - B	(0-NO/1-YES)
OVL PHASES: 000000000 0000000	
PHS/CHN: 123456789 0123456789 01234	
OVL CHN(S): 000000000 0000100000 00000	
A-UP B-DN D-DspChn E-EDIT F-PRIOR MENU	

PRESS "B" TWICE

SE-PAC OVERLAP - D	(0-NO/1-YES)
OVL PHASES: 000000000 0000000	
PHS/CHN: 123456789 0123456789 01234	
OVL CHN(S): 000000000 0000001000 00000	
A-UP B-DN D-DspChn E-EDIT F-PRIOR MENU	

OVERLAP PROGRAMMING COMPLETE
PRESS 'F' TO RETURN TO UNIT DATA

INIT & N.A. RESP 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	

Note Phases 1, 3
and 5 NOT used!

PHASE.....1...2...3...4...5...6...7...8	
INITIAL 0 4 0 1 0 4 1 1	
NA RESP 0 1 0 2 0 1 0 2	
CODES.....0....1....2....3....4....5	
INITIAL NONE INACT RED YEL GRN DRK	
NA RESP NONE NA1 NA2 BOTH --- ---	
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU	

INIT & N.A. RESP programming complete.

PROTECTED AND PERMISSIVE PHASES
FOR
FLASHING YELLOW ARROW

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

SE-PAC UNIT DATA	PRESS # DESIRED
1-STARTUP & MISC	6-ALT SEQUENCES
2-REMOTE FLASH	7-PORT 1 DATA
3-OVERLAP STANDARD	8-I/O MISC
4-OVERLAP SPECIAL	9-SIG DRV OUT
5-RING STRUCTURE	
F-PRIOR MENU	

PROTECTED PHASES
PERMISSIVE PHASES

SE-PAC OVLP.A...B...C...D...E...F...G...H.	
TR GRN 0 0 0 0 0 0 0 0	
YEL/10 40 40 40 40 40 40 40	
RED/10 20 20 20 20 20 20 20	
-G/Y 0 3 0 7 0 0 0 0	
+GRN 0 4 0 8 0 0 0 0	
(-) #-PH G/Y KILLS OVL= (+) #-PH G STRT	
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU	

PPLT DEFINITION PROGRAMMING COMPLETE
PRESS 'F' TO RETURN TO UNIT DATA

NOTE: THIS PROGRAMMING IS REQUIRED FOR
SIGNAL HEAD 71 SO THAT THE SOLID
GREEN ARROW TURNS ON EXCLUSIVELY DURING
PROTECTED GREEN PHASE 7, AND THE FLASHING
YELLOW ARROW ONLY TURNS ON EXCLUSIVELY
DURING PERMITTED GREEN PHASE 8.

FLASHER CIRCUIT MODIFICATION DETAIL

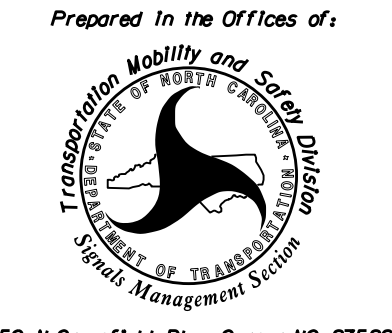
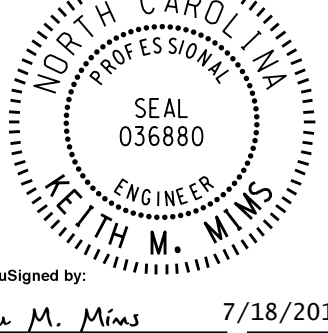
IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE
SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Grant Field Pkwy, Garner, NC 27529	SR 1670 (Blue Ridge Road) at Crabtree Valley Avenue and Summit Park Lane		SEAL 
	Division 5	Wake County	Raleigh
	PLAN DATE: June 2016	REVIEWED BY: DTJ	
	PREPARED BY: James Peterson	REVIEWED BY:	
	REVISIONS	INIT.	DATE
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-0744 DESIGNED: May 2016 SEALED: 7-07-16 REVISED: N/A		DocuSigned by: Keith M. Mims 7/18/2016 DATE SIG. INVENTORY NO. 05-0744	

- 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
- 59

INSTALL NEW FIELD ETHERNET SWITCH

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

S

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)

X

EXISTING CONTROLLER AND CABINET

S

EXISTING SPlice CABINET

S

NEW SPlice CABINET

SP

SIGNAL POLE

XX-XXXX

SIGNAL INVENTORY NUMBER

CONSTRUCTION NOTE SYMBOLOGY KEY

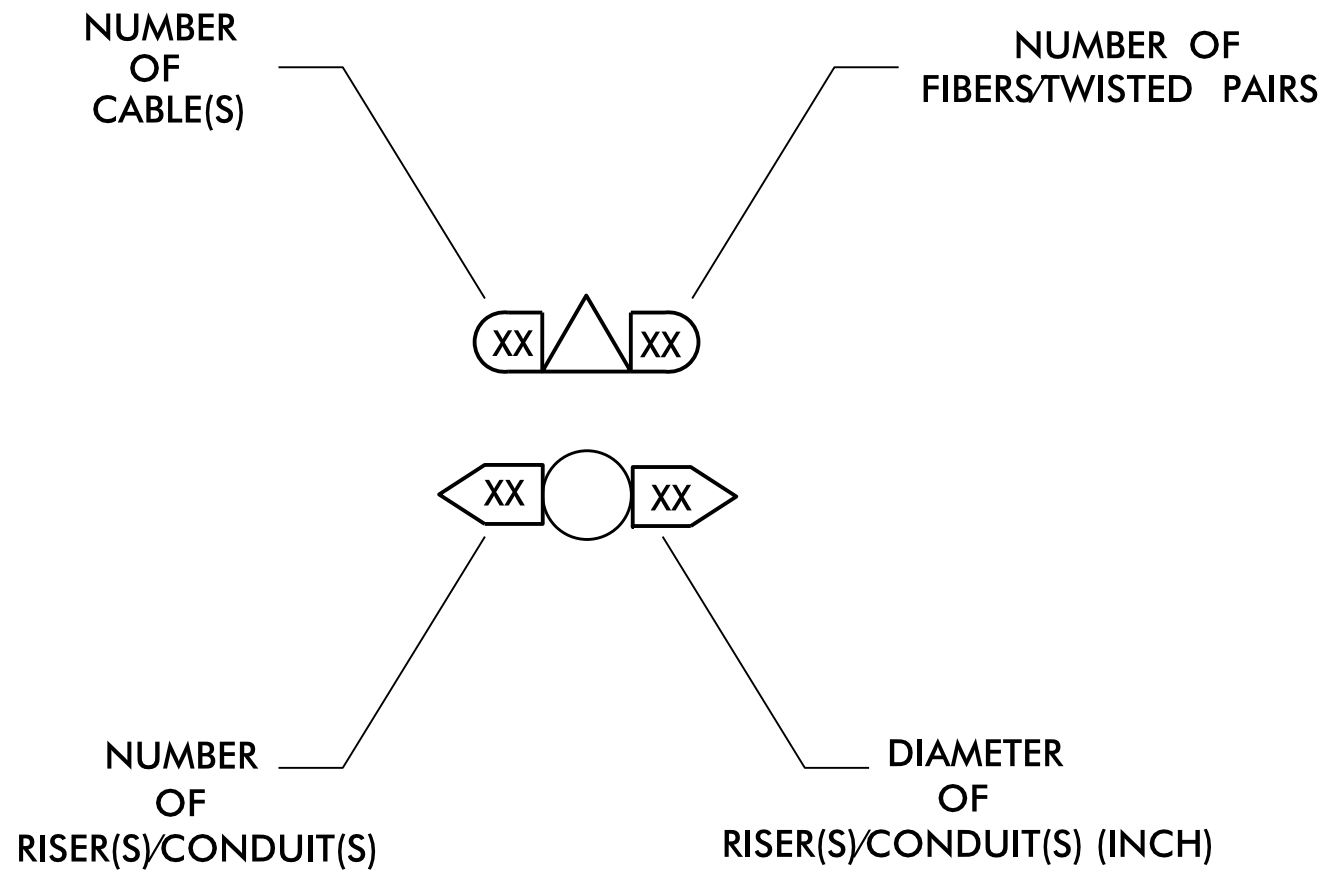
- XX

INDICATES NUMBER OF CABLES, LOOPS, ETC.
- XX

INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
- XX

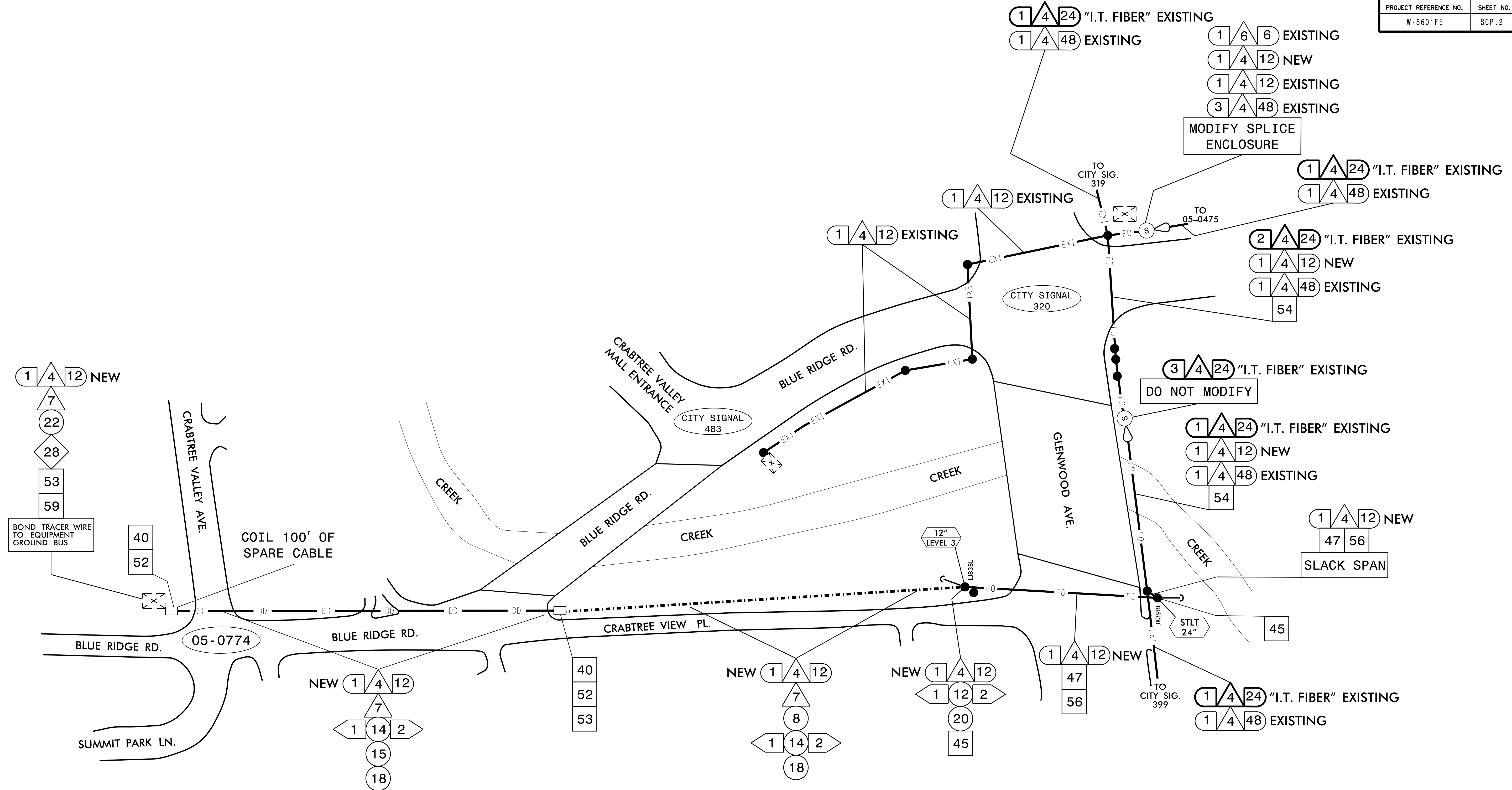
INDICATES NUMBER OF RISER(S)/CONDUIT(S)
- XX

INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)



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UNLESS ALL SIGNATURES COMPLETED

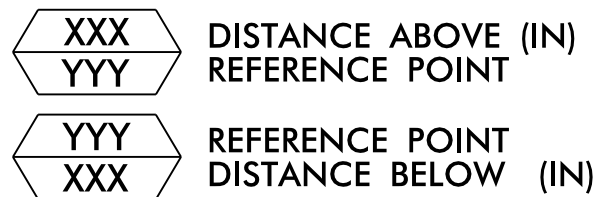
<div><div>Prepared in the Offices of:</div><div><div><div>WAKE COUNTY</div><div>Department of Transportation and Safety</div><div>750 N. Greenfield Pkwy., Garner, NC 27529</div></div></div></div>	CONSTRUCTION NOTES		<div><div>SEAL</div><div><div>NORTH CAROLINA</div><div>PROFESSIONAL ENGINEER</div><div>SEAL 023919</div><div>GREGORY A. FULLER</div></div></div> <div><div>DocuSigned by:</div><div>Gregory A. Fuller</div><div>7032C9AAE874FF</div></div> <div><div>8/11/2016</div><div>DATE</div></div> <div>CADD Filename:</div>	
	DIVISION 05	WAKE COUNTY		DocuSigned by: RALEIGH
	PLAN DATE: AUGUST 2016	REVIEWED BY: <i>Neil Lundy</i>		DocuSigned by: 09F5DB4CBED3443...
	PREPARED BY: A. J. SKUCE	REVISIONS		INIT. DATE



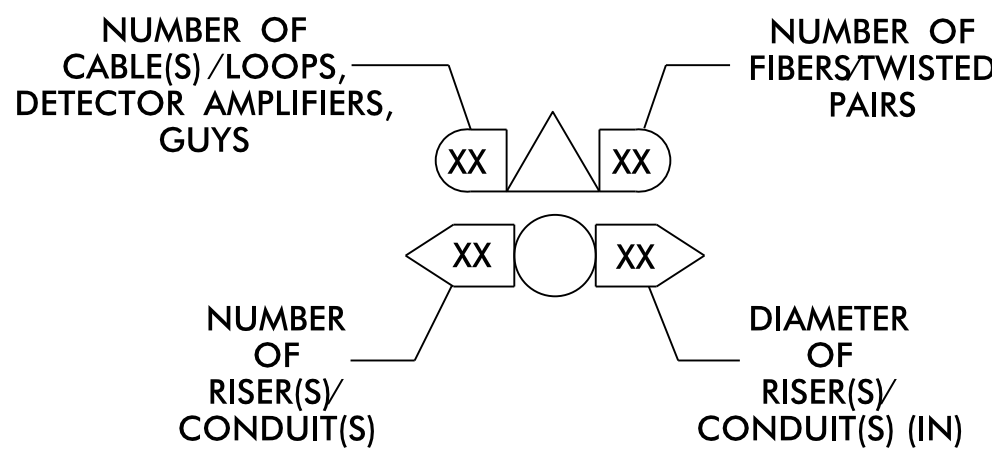
NOTES:

- 1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF RALEIGH TRANSPORTATION ENGINEER, JED NIFFENEGGER, AT (919) 996-4039 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES AND FIELD ETHERNET TRANSCEIVERS WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE TRANSPORTATION ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL
- 2) CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

ATTACHMENT POINT:



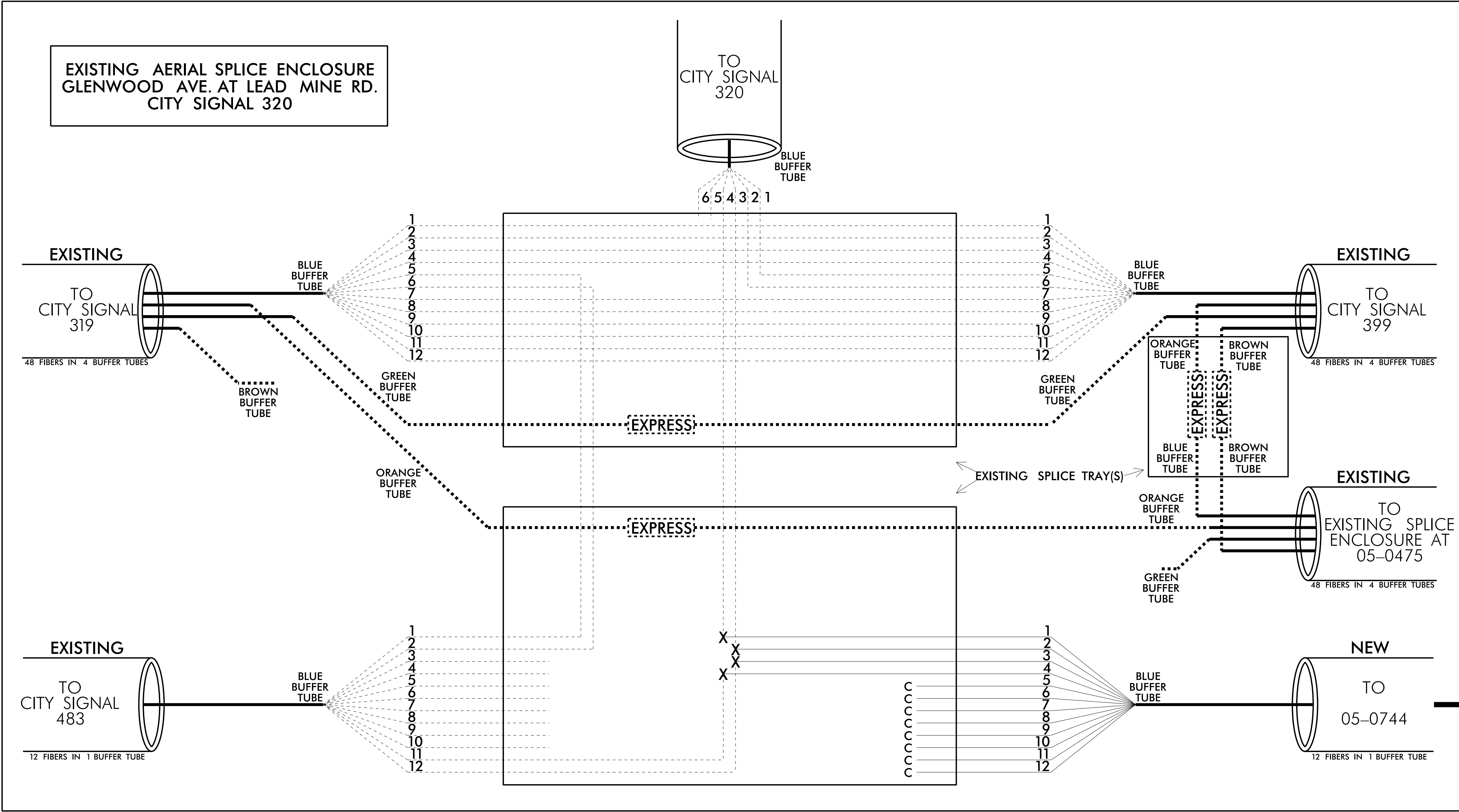
CONSTRUCTION NOTE SYMBOLGY KEY



**BOLD CONSTRUCTION NOTES SHOW I.T. FIBER
DO NOT CUT I.T. FIBER OR MODIFY I.T. SPLICE ENCLOSURE**

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS		
	DIVISION 05 WAKE COUNTY		
	PLAN DATE: AUGUST 2016	REVIEWED BY: <i>Neil Lundy</i>	
	PREPARED BY: A. J. SKUCE	DATE: 8/11/2016	



NEW FIBER

FUSION SPLICING

X = FUSION SPLICE

COLOR	CODE
TIA/EIA	598-A

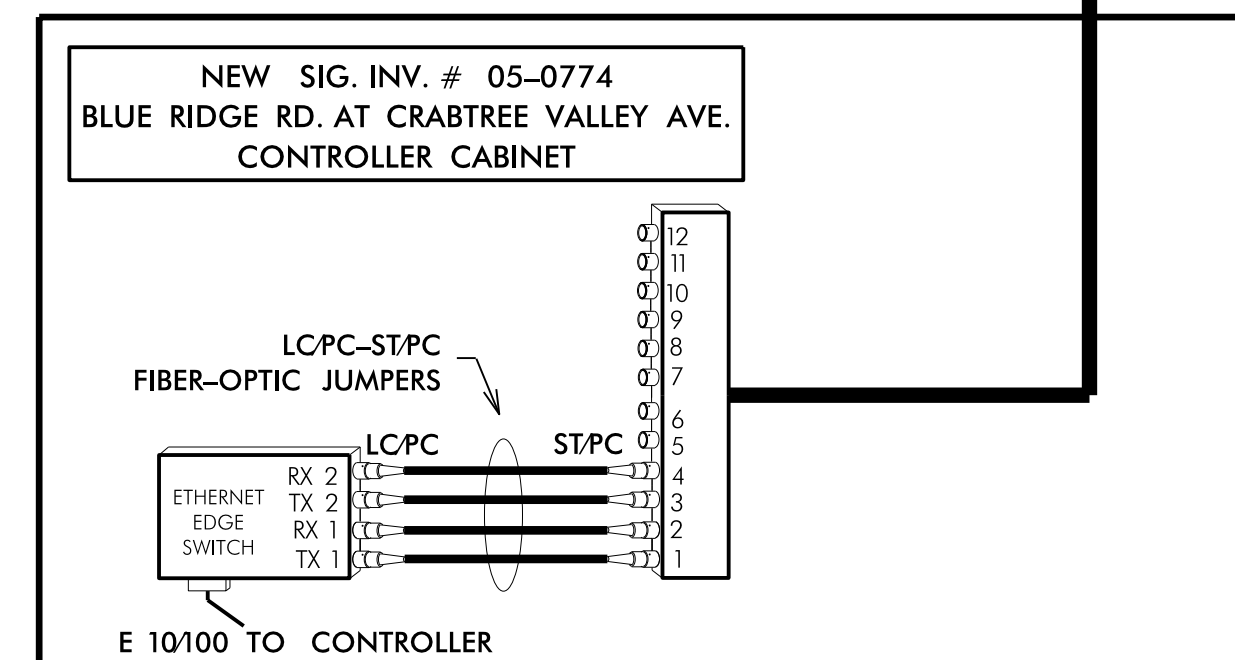
- (1) BLUE (7) RED
(2) ORANGE (8) BLACK
(3) GREEN (9) YELLOW
(4) BROWN (10) VIOLET
(5) SLATE (11) ROSE
(6) WHITE (12) AQUA

NOTES:



- 1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF RALEIGH TRANSPORTATION ENGINEER, JED NIFFENEGGER, AT (919) 996-4039 TO ARRANGE FOR THE CITY TO PROGRAM THE NEW FIELD ETHERNET SWITCHES AND FIELD ETHERNET TRANSCEIVERS WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE TRANSPORTATION ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL
- 2) CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.
- 3) TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
- 4) INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"
 - 1) SPLICE LOCATION
 - 2) DATE
 - 3) COMPANY NAME
 - 4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

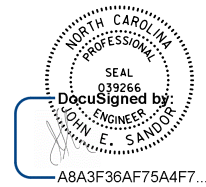
PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.

DO NOT CUT I.T. FIBER OR MODIFY I.T. SPLICE ENCLOSURE



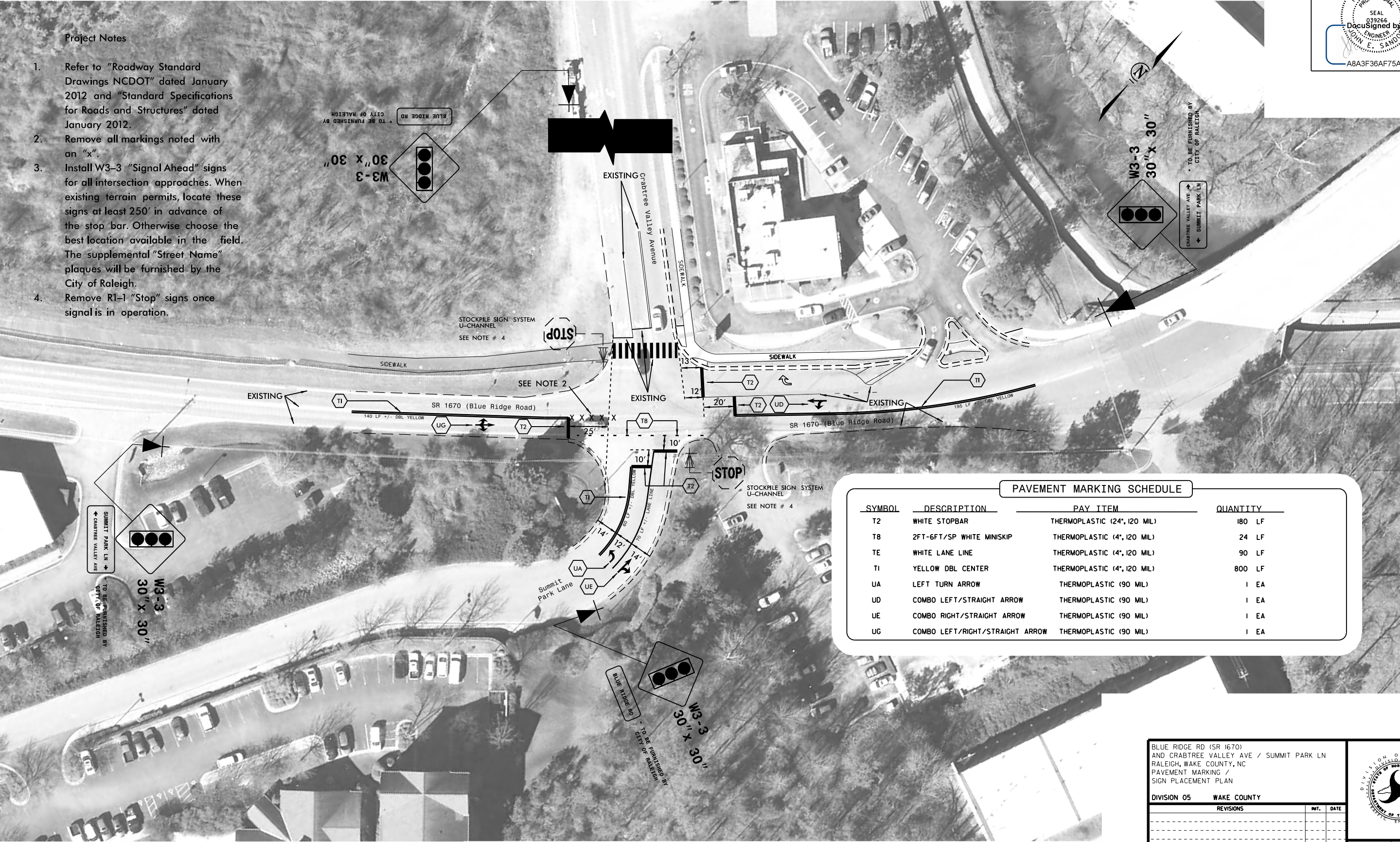
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

<p>Prepared in the Offices of:</p>  <p>North Carolina Department of Transportation</p>	<h2 style="margin: 0;">SPLICE DETAILS</h2>	<p>SEAL</p> 
<p>DIVISION 05 WAKE COUNTY</p>		
<p>PLAN DATE: AUGUST 2016</p>	<p>REVIEWED BY: <u>Mel Twery</u> 09F0504CBCE3443</p>	
<p>PREPARED BY: A. J. SKUCE</p>		
<p>250 N. Greenfield Pkwy., Garner, NC 27529</p>	<p>DocuSigned by: RALEIGH</p>	
<p>REVISIONS</p>	<p>INIT.</p>	<p>DATE</p>
<p>.....</p>	<p>.....</p>	<p>.....</p>
<p>.....</p>	<p>.....</p>	<p>.....</p>
<p>DocuSigned by: Gregory A. Fuller 8/11/2016</p>		
<p>7032C2ADAE872AFF DATE</p>		
<p>CADD File name:</p>		



Project Notes

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Remove all markings noted with an "x".
3. Install W3-3 "Signal Ahead" signs for all intersection approaches. When existing terrain permits, locate these signs at least 250' in advance of the stop bar. Otherwise choose the best location available in the field. The supplemental "Street Name" plaques will be furnished by the City of Raleigh.
4. Remove R1-1 "Stop" signs once signal is in operation.



PAVEMENT MARKING SCHEDULE			
SYMBOL	DESCRIPTION	PAY ITEM	QUANTITY
T2	WHITE STOPBAR	THERMOPLASTIC (24", 120 MIL)	180 LF
T8	2FT-6FT/SP WHITE MINISKIP	THERMOPLASTIC (4", 120 MIL)	24 LF
TE	WHITE LANE LINE	THERMOPLASTIC (4", 120 MIL)	90 LF
TI	YELLOW DBL CENTER	THERMOPLASTIC (4", 120 MIL)	800 LF
UA	LEFT TURN ARROW	THERMOPLASTIC (90 MIL)	1 EA
UD	COMBO LEFT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA
UE	COMBO RIGHT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA
UG	COMBO LEFT/RIGHT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA

BLUE RIDGE RD (SR 1670)
AND CRABTREE VALLEY AVE / SUMMIT PARK LN
RALEIGH, WAKE COUNTY, NC
PAVEMENT MARKING /
SIGN PLACEMENT PLAN

DIVISION 05 WAKE COUNTY

REVISIONS	REV.	DATE

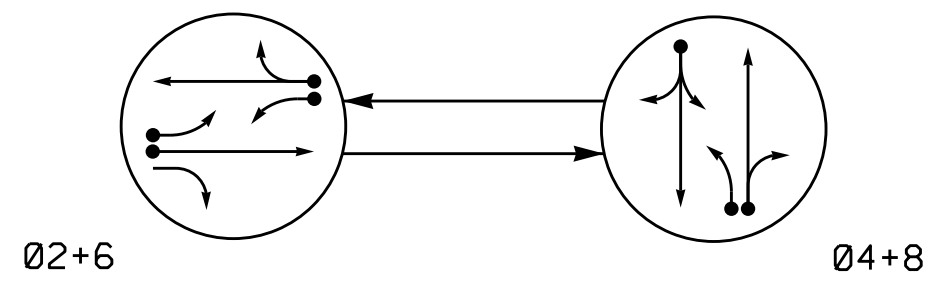
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
DIVISION FIVE TRAFFIC ENGINEERING

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
TRANSPORTATION ENGINEER

SCALE: 60' = 1" DATE: 16 DEC 2016

PREPARED BY: S.J.L.
REVIEWED BY: J.E.S.
REVIEWED BY:

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

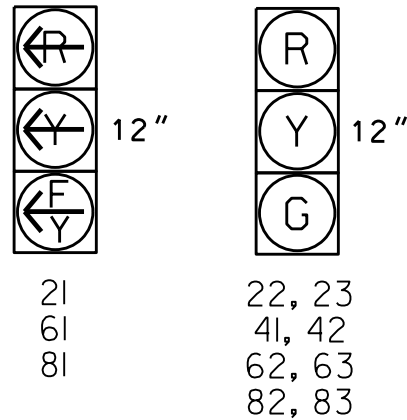
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2+6	Ø4+8	FLIGHT
2I	Y	R	Y
22, 23	G	R	Y
4I, 42	R	G	R
6I	Y	R	Y
62, 63	G	R	Y
8I	R	Y	R
82, 83	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



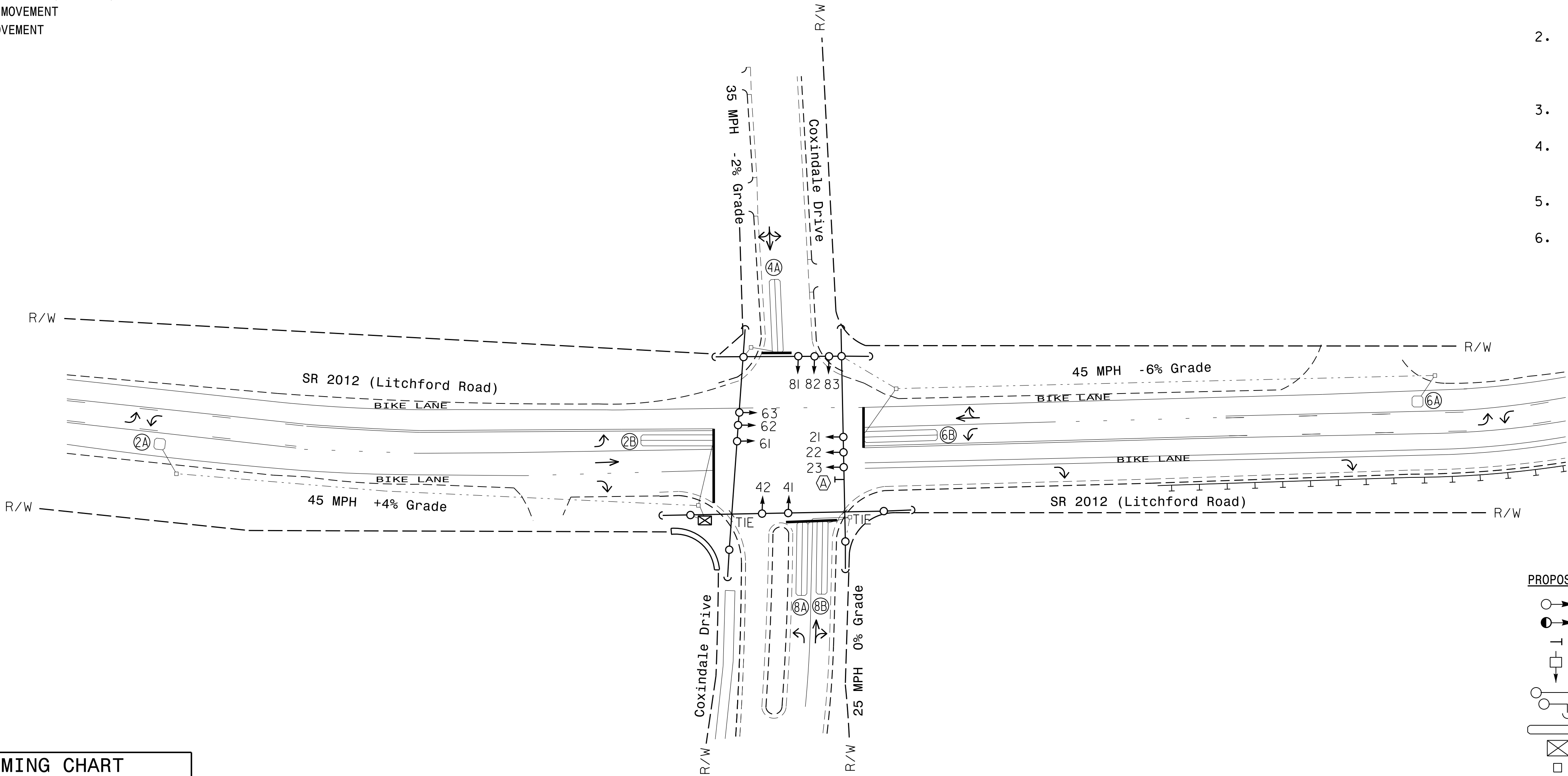
SE-PAC 2070 LOOP & DETECTOR UNIT INSTALLATION CHART

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

2 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.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing unless otherwise shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



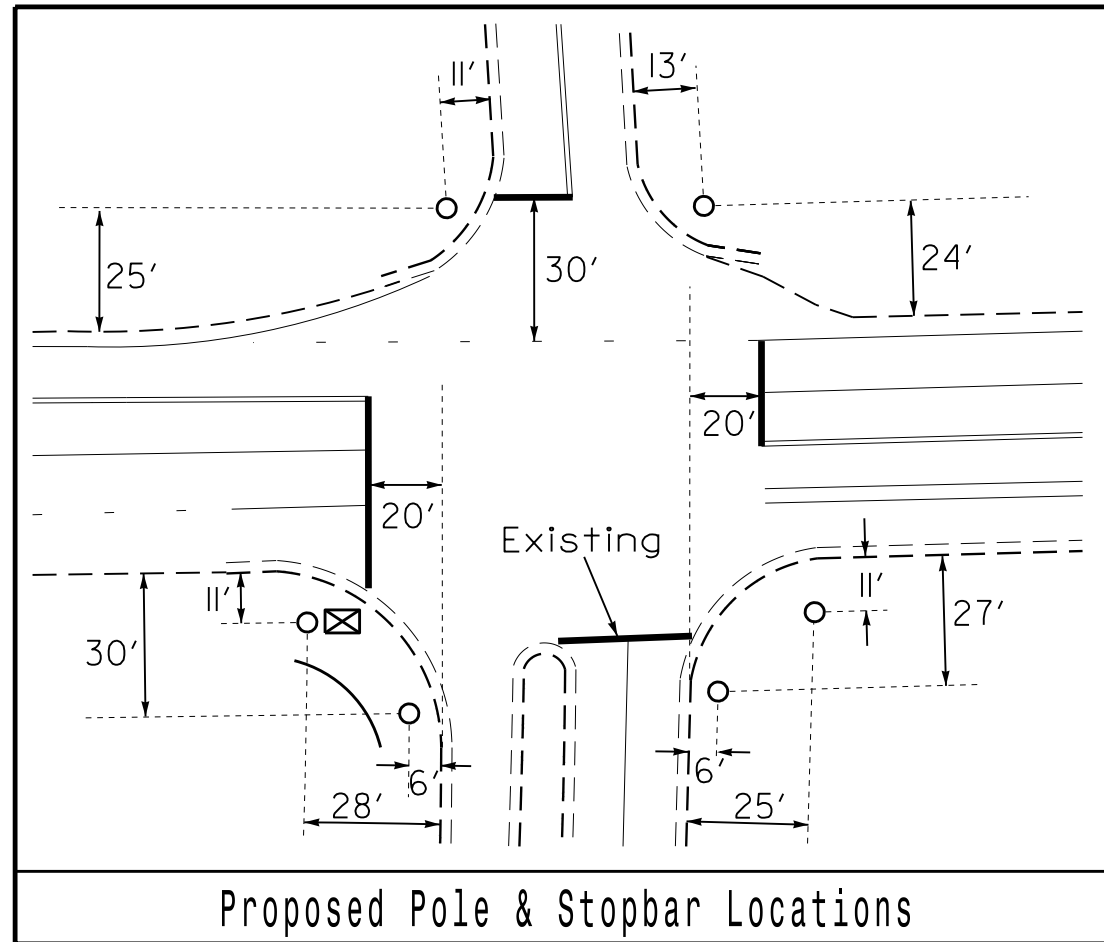
LEGEND

- | PROPOSED | EXISTING |
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SE-PAC 2070 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green *	12	7	12	7
Passage Gap *	6.0	2.0	6.0	2.0
Maximum Green *	90	30	90	30
Yellow Change	5.1	4.0	5.1	4.0
Red Clear	1.0	1.9	1.0	1.9
Walk *	-	-	-	-
Pedestrian Clear	-	-	-	-
Added Initial *	2.5	-	2.5	-
Maximum Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	LOCK	NON-LOCK	LOCK	NON-LOCK
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.



New Installation

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 2012 (Litchford Road)
at
Coxindale Drive

Division 5 Wake County Raleigh

PLAN DATE: July 2016 REVIEWED BY:

PREPARED BY: C.E. Carter REVIEWED BY:

REVISIONS INIT. DATE

SCALE 0 40
1"=40'

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SEAL

North Carolina
Professional Engineer
SEAL
026486
ROBERT J. ZIEMBA

7/27/2016

SIG. INVENTORY NO. 05-0953

(remove jumpers and set switches as shown)

(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. 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 270 controller. Ensure conflict monitor communicates with 270.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	
FILE "I"	U	SLOT EMPTY	Ø 2	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS	
	L		2A				4A								DC ISOLATOR	
			Ø 2					NOT USED								ST
			2B													DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	
	L		6A				8A									
			Ø 6					Ø 8								
			6B					8B								

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

FS = FLASH SENSE
ST = STOP TIME

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 City Signal System.

EQUIPMENT INFORMATION

```
CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....SE-PAC2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S2,S5,S8,S11,AUX S1,AUX S2,AUX S4
PHASES USED.....2,4,6,8
OVERLAP "A".....*
OVERLAP "B".....*
OVERLAP "C".....*
OVERLAP "D".....NOT USED
```

* See sheet 2 for Overlap and Protected & Permissive Phases programming.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
2A	TB2-5,6	I2U	39	3	2		
2B	TB2-7,8	I2L	43	4	2		
4A	TB4-9,10	I6U	41	11	4	5	
6A	TB3-5,6	J2U	40	21	6		
6B	TB3-7,8	J2L	44	22	6		
8A	TB5-9,10	J6U	42	31	8		
8B	TB5-11,12	J6L	46	32	8	10	

INPUT FILE POSITION LEGEND: J2L

FILE J _____
SLOT 2 _____
LOWER _____

SIGNAL HEAD HOOK-UP CHART

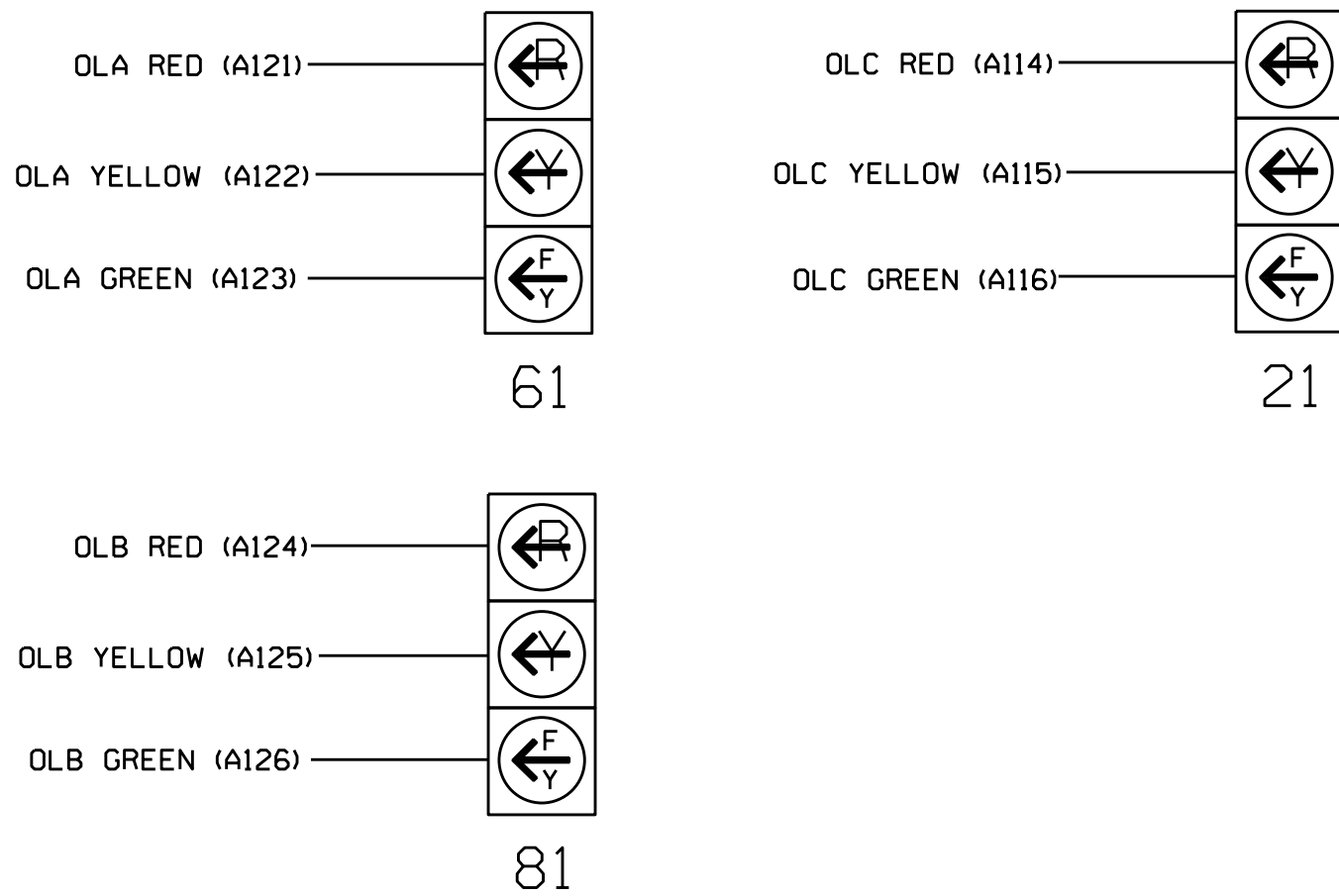
[illegible]

NU = Not Used

★ See pictorial of head wiring in detail below.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-0953
DESIGNED: July 2016
SEALED: 7/27/2016
REVISED:

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p><i>Prepared in the Offices of:</i></p> <div style="text-align: center;">  </div> <p>750 Greenfield Parkway, Garner, NC 27529</p>	<p>SR 2012 (Litchford Road) at Coxindale Drive</p>	<p>SEAL</p> <div style="text-align: center;">  </div>
<p>Division 5 Wake County Raleigh</p>		
<p>PLAN DATE: July 2016 REVIEWED BY: BAS</p>		
<p>PREPARED BY: C. Strickland REVIEWED BY:</p>		
<p>REVISIONS</p>		<p>INIT. DATE</p>

Zachary M. Little 7/29/2016
INCH1ED082531F DATE

SIG. INVENTORY NO. 05-0953

FLASHING YELLOW ARROW
PROTECTED/PERMISSIVE SEQUENCE

for
OVERLAPS "A" "B" & "C"

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

SE-PAC UNIT DATA	PRESS # DESIRED
1-STARTUP & MISC	6-ALT SEQUENCES
2-REMOTE FLASH	7-PORT 1 DATA
3-OVERLAP STANDARD	8-I/O MISC
4-OVERLAP SPECIAL	9-SIG DRV OUT
5-RING STRUCTURE	
F-PRIOR MENU	

DO NOT enter any OVL PHASES! →

SE-PAC OVERLAP - A	(0-NO/1-YES)
OVL PHASES: 000000000 0000000	
PHS/CHN: 123456789 0123456789 01234	
OVL CHN(S): 000000000 0001000000 00000	
A-UP B-DN D-DspChn E-EDIT F-PRIOR MENU	

PRESS "B" ONCE

DO NOT enter any OVL PHASES! →

SE-PAC OVERLAP - B	(0-NO/1-YES)
OVL PHASES: 000000000 0000000	
PHS/CHN: 123456789 0123456789 01234	
OVL CHN(S): 000000000 0000100000 00000	
A-UP B-DN D-DspChn E-EDIT F-PRIOR MENU	

PRESS "B" ONCE

DO NOT enter any OVL PHASES! →

SE-PAC OVERLAP - C	(0-NO/1-YES)
OVL PHASES: 000000000 0000000	
PHS/CHN: 123456789 0123456789 01234	
OVL CHN(S): 000000000 0000010000 00000	
A-UP B-DN D-DspChn E-EDIT F-PRIOR MENU	

OVERLAP PROGRAMMING COMPLETE
PRESS 'F' TO RETURN TO UNIT DATA

INIT & N.A. RESP 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	

Note Phases 1, 3, 5, and 7 NOT used! →

PHASE.....1...2...3...4...5...6...7...8							
INITIAL 0 4 0 1 0 4 0 1							
NA RESP 0 1 0 2 0 1 0 2							
CODES.....0....1....2....3....4....5							
INITIAL NONE INACT RED YEL GRN DRK							
NA RESP NONE NA1 NA2 BOTH --- ---							
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU							

INIT & N.A. RESP programming complete.

PROTECTED & PERMISSIVE PHASES
for
FLASHING YELLOW ARROW

(program controller as shown below)

FROM MAIN MENU PRESS 4 (UNIT DATA)

SE-PAC UNIT DATA	PRESS # DESIRED
1-STARTUP & MISC	6-ALT SEQUENCES
2-REMOTE FLASH	7-PORT 1 DATA
3-OVERLAP STANDARD	8-I/O MISC
4-OVERLAP SPECIAL	9-SIG DRV OUT
5-RING STRUCTURE	
F-PRIOR MENU	

SE-PAC OVLP.A...B...C...D...E...F...G...H.							
TR GRN 0 0 0 0 0 0 0 0							
YEL/10 40 40 40 40 40 40 40							
RED/10 20 20 20 20 20 20 20							
-G/Y 1 3 5 0 0 0 0 0							
+GRN 2 4 6 0 0 0 0 0							
(-) #-PH G/Y KILLS OVLP= (+) #-PH G STRT							
A-UP B-DN C-LT D-RT E-ENTER F-PRIOR MENU							

← PROTECTED PHASES
← PERMISSIVE PHASES

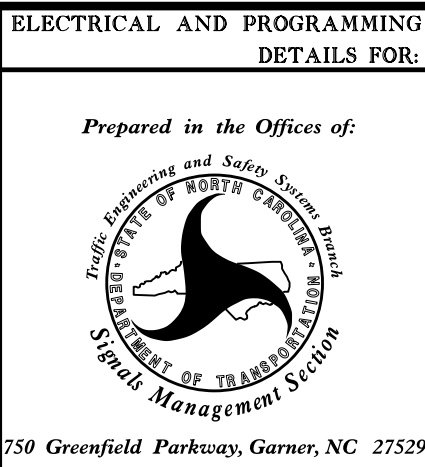
THE FLASHING YELLOW ARROW FOR SIGNAL
HEADS 21, 61 & 81 TURNS ON EXCLUSIVELY
DURING PERMITTED GREEN PHASES 2, 4 & 6.

PPLT DEFINITION PROGRAMMING COMPLETE
PRESS 'F' TO RETURN TO UNIT DATA

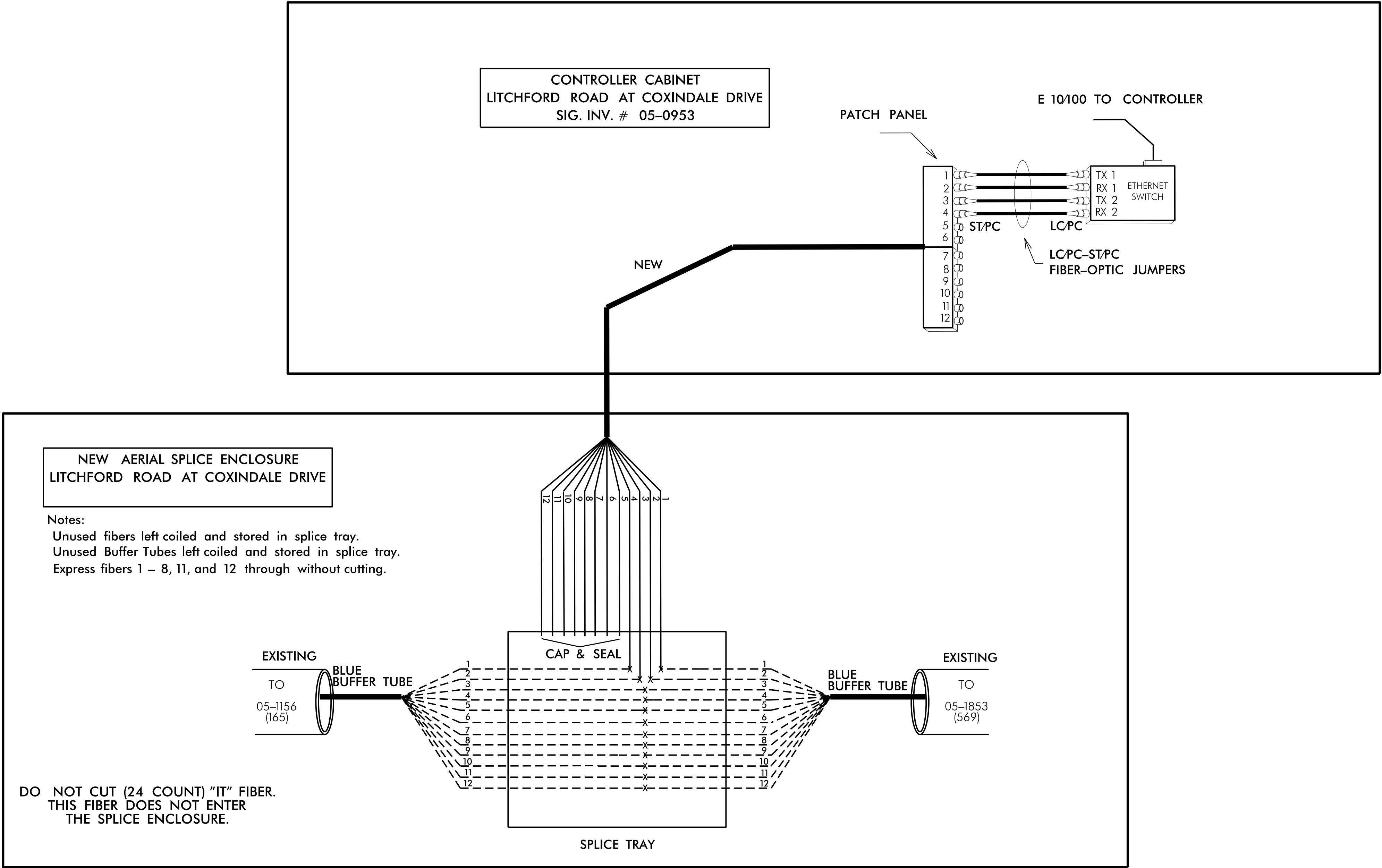
Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-0953
DESIGNED: July 2016
SEALED: 7/27/2016
REVISED:



SR 2012 (Litchford Road) at Coxindale Drive	
Division 5	Wake County
PLAN DATE: July 2016	REVIEWED BY: BAS
PREPARED BY: C. Strickland	REVIEWED BY:
REVISIONS	INIT. DATE
DocuSigned by: Cary M. Little 7/29/2016	
0021EF04F5341F DATE	
SIG. INVENTORY NO. 05-0953	



LEGEND		COLOR CODE	
X =	FUSION SPLICE	TI/AE/IA	598-A
(1)	BLUE	(7)	RED
(2)	ORANGE	(8)	BLACK
(3)	GREEN	(9)	YELLOW
(4)	BROWN	(10)	VIOLET
(5)	SLATE	(11)	ROSE
(6)	WHITE	(12)	AQUA

- 1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE CITY OF RALEIGH, TRANSPORTATION ENGINEER, JED NIFFENEGGER, AT (919) 996-4039 TO ARRANGE FOR THE CITY OF RALEIGH TO PROGRAM THE NEW FIELD ETHERNET SWITCH WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE CITY TRANSPORTATION ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL
- 2) ETHERNET TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
- 3) INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

- 1) SPLICE LOCATION
- 2) DATE
- 3) COMPANY NAME
- 4) NAME OF INDIVIDUAL PERFORMING THE SPLICING

PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.



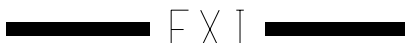

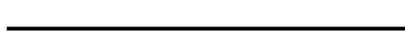












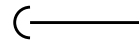
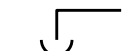
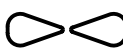




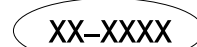
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<p>Prepared in the Offices of:</p> <p>TRANSPORTATION MOBILITY AND SAFETY DIVISION</p> <p>STATE OF NORTH CAROLINA</p> <p>DEPARTMENT OF TRANSPORTATION</p> <p>750 N. Greenfield Place, Garner, NC 27529</p>	SPLICE DETAILS		<p>SEAL</p> <p>PROFESSIONAL ENGINEER</p> <p>SEAL 023919</p> <p>GREGORY A. FULLER</p> <p>DocuSigned by:</p> <p>Gregory A. Fuller 7/5/2016</p> <p>DATE</p> <p>CADD Filename:</p>
	DIVISION 05 WAKE CO. RALEIGH		
	PLAN DATE: JUNE 2016	REVIEWED BY:	
	PREPARED BY: I. N. AVERY	REVIEWED BY:	
REVISIONS		INIT.	DATE

- | | |
|----|--|
| 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 TELEMTRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET |
| 27 | INSTALL NEW TELEMTRY 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 |
| 59 | INSTALL ETHERNET SWITCH |

LEGEND



- | | |
|---|---|
|  | NEW FIBER OPTIC COMMUNICATIONS CABLE |
|  | NEW TWISTED PAIR COMMUNICATIONS CABLE |
|  | EXISTING COMMUNICATIONS CABLE |
|  | EXISTING COMMUNICATIONS CABLE TO BE REMOVED |
|  | NEW AERIAL GUY ASSEMBLY |
|  | NEW CONDUIT |
|  | EXISTING CONDUIT |
|  | NEW DIRECTIONAL DRILLED CONDUIT |
|  | 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 |
|  | SIGNAL INVENTORY NUMBER |

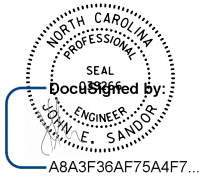
CONSTRUCTION NOTE SYMBOLLOGY KEY

- Diagram illustrating the interpretation of cable symbols:

 - Symbol 1:** Two circles with an insulator triangle between them.
 - Left circle: INDICATES NUMBER OF CABLES, LOOPS, ETC.
 - Right circle: INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
 - Symbol 2:** Two triangles with a circle between them.
 - Left triangle: INDICATES NUMBER OF RISER(S)/CONDUIT(S)
 - Right triangle: INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

<p>Prepared in the Offices of:</p> <div style="text-align: center;">  <p>North Carolina Department of Transportation</p> </div> <p>750 N. Greenfield Pkwy., Garner, NC. 27529</p>	<h2 style="margin: 0;">CONSTRUCTION NOTES</h2> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">DIVISION 5</td> <td style="width: 33%;">WAKE CO.</td> <td style="width: 33%;">CITY OF RALEIGH</td> </tr> <tr> <td>PLAN DATE: JUNE 2016</td> <td colspan="2">REVIEWED BY:</td> </tr> <tr> <td>PREPARED BY: I. N. AVERY</td> <td colspan="2"></td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">REVISIONS</th> <th style="width: 20%;">INIT.</th> <th style="width: 20%;">DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	DIVISION 5	WAKE CO.	CITY OF RALEIGH	PLAN DATE: JUNE 2016	REVIEWED BY:		PREPARED BY: I. N. AVERY			REVISIONS	INIT.	DATE																															<p>SEAL</p> <div style="text-align: center;">  </div> <p>DocuSigned by: Gregory A. Fuller 7/5/2016</p> <p style="text-align: center;">DATE</p> <p>CADD Filename:</p>
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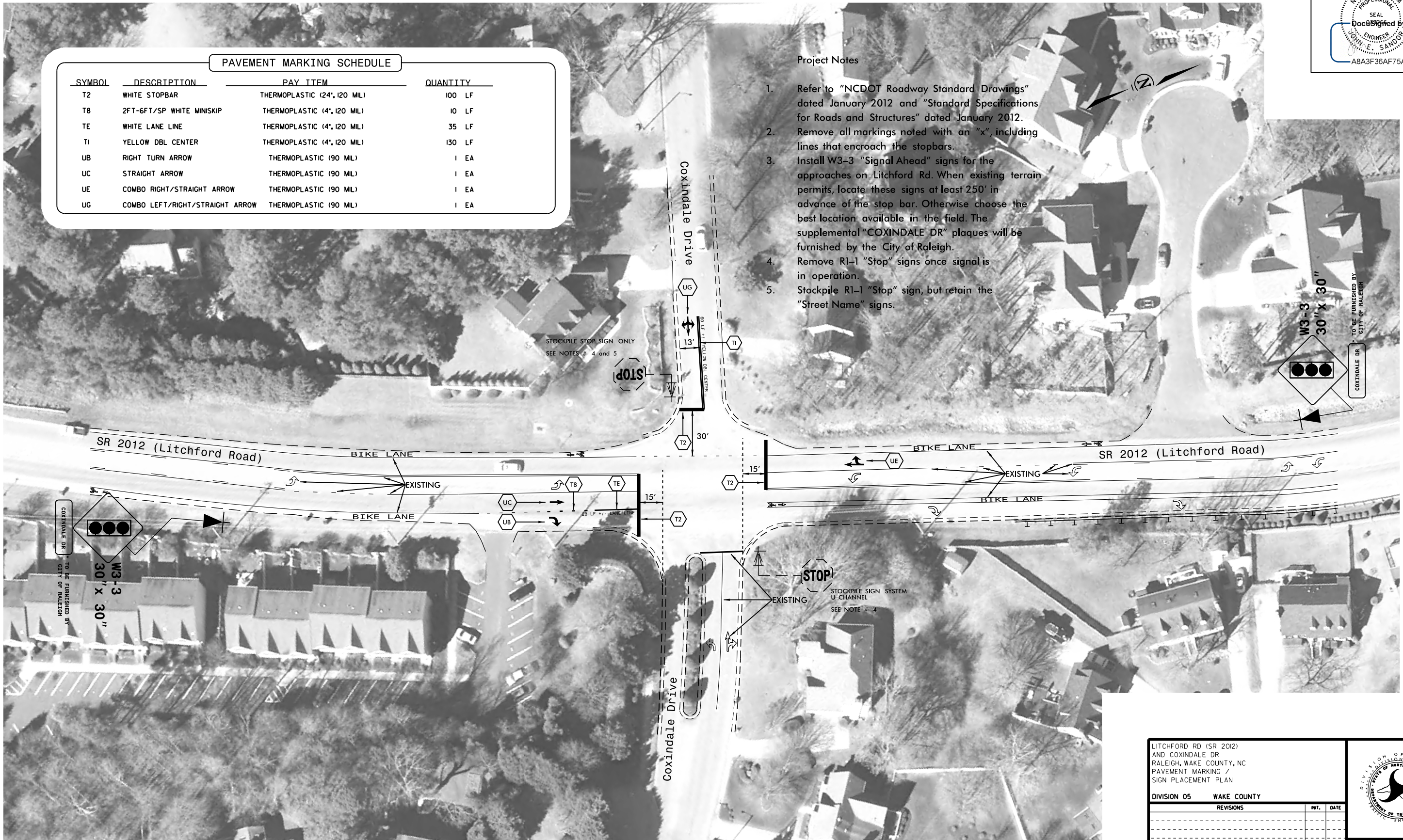


Project Notes

1. Refer to "NCDOT Roadway Standard Drawings" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Remove all markings noted with an "x", including lines that encroach the stopbars.
3. Install W3-3 "Signal Ahead" signs for the approaches on Litchford Rd. When existing terrain permits, locate these signs at least 250' in advance of the stop bar. Otherwise choose the best location available in the field. The supplemental "COXINDALE DR" plaques will be furnished by the City of Raleigh.
4. Remove R1-1 "Stop" signs once signal is in operation.
5. Stockpile R1-1 "Stop" sign, but retain the "Street Name" signs.

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM	QUANTITY
T2	WHITE STOPBAR	THERMOPLASTIC (24", 120 MIL)	100 LF
T8	2FT-6FT/SP WHITE MINISKIP	THERMOPLASTIC (4", 120 MIL)	10 LF
TE	WHITE LANE LINE	THERMOPLASTIC (4", 120 MIL)	35 LF
T1	YELLOW DBL CENTER	THERMOPLASTIC (4", 120 MIL)	130 LF
UB	RIGHT TURN ARROW	THERMOPLASTIC (90 MIL)	1 EA
UC	STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA
UE	COMBO RIGHT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA
UG	COMBO LEFT/RIGHT/STRAIGHT ARROW	THERMOPLASTIC (90 MIL)	1 EA



LITCHFORD RD (SR 2012)
AND COXINDALE DR
RALEIGH, WAKE COUNTY, NC
PAVEMENT MARKING /
SIGN PLACEMENT PLAN

DIVISION 05 WAKE COUNTY

REVISIONS	REV.	DATE

N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
DIVISION FIVE TRAFFIC ENGINEERING



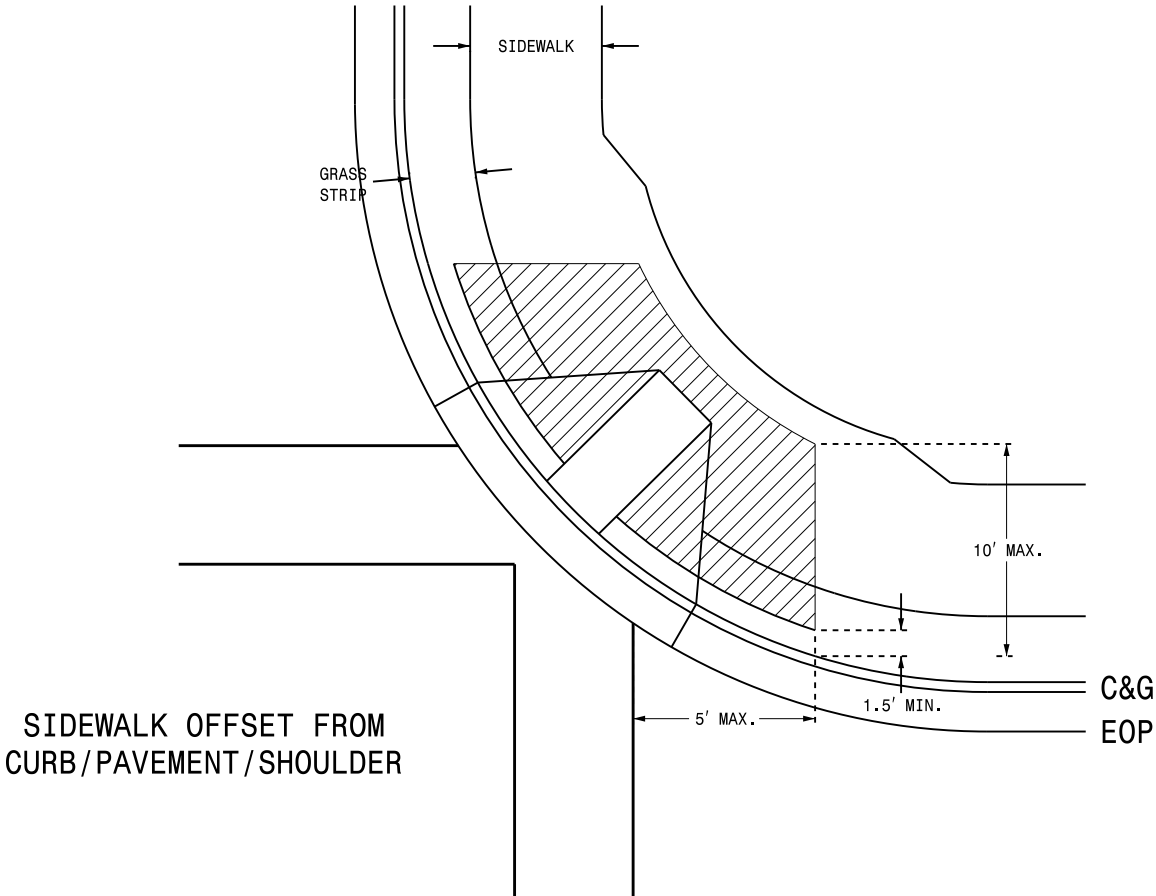
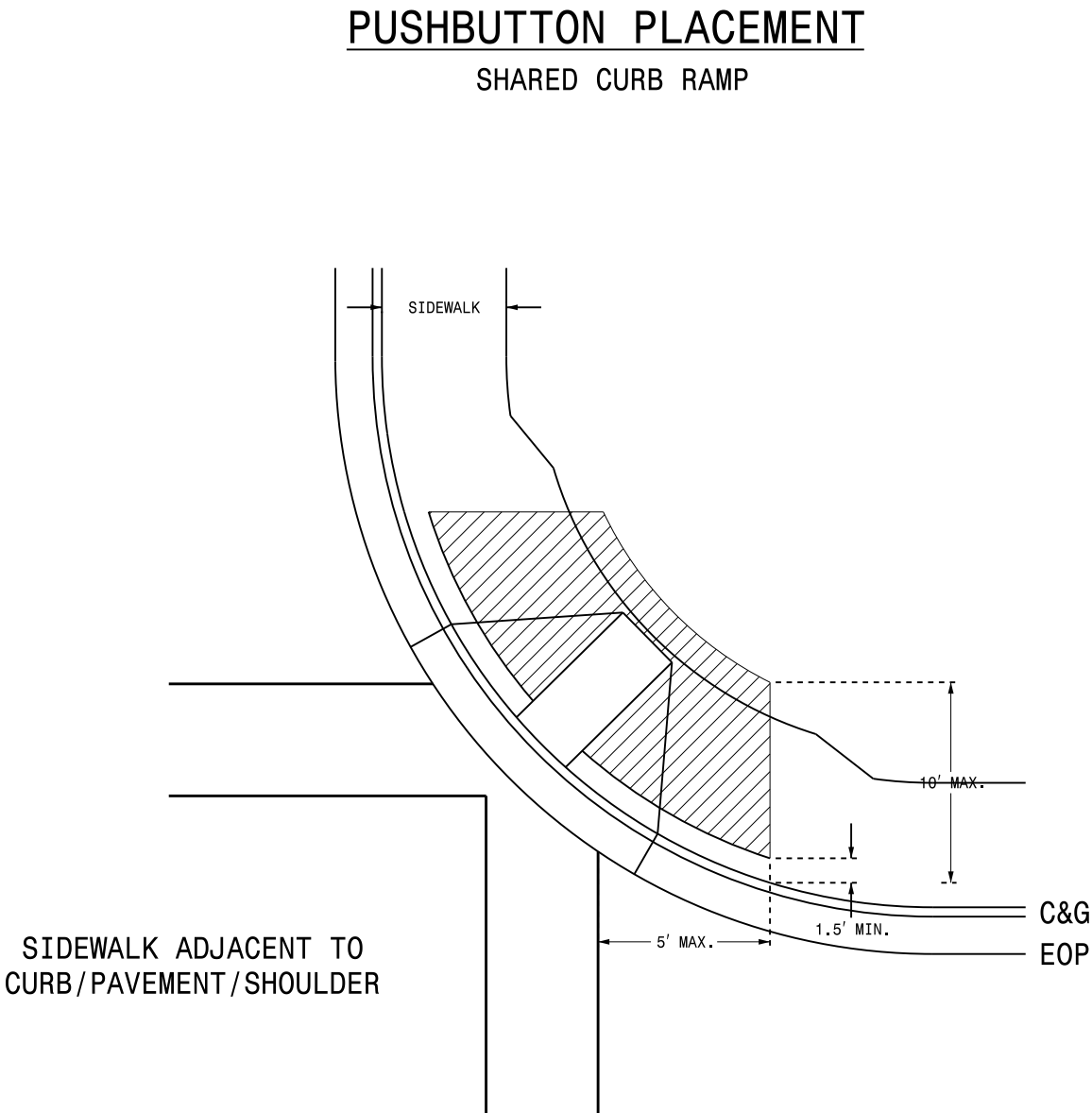
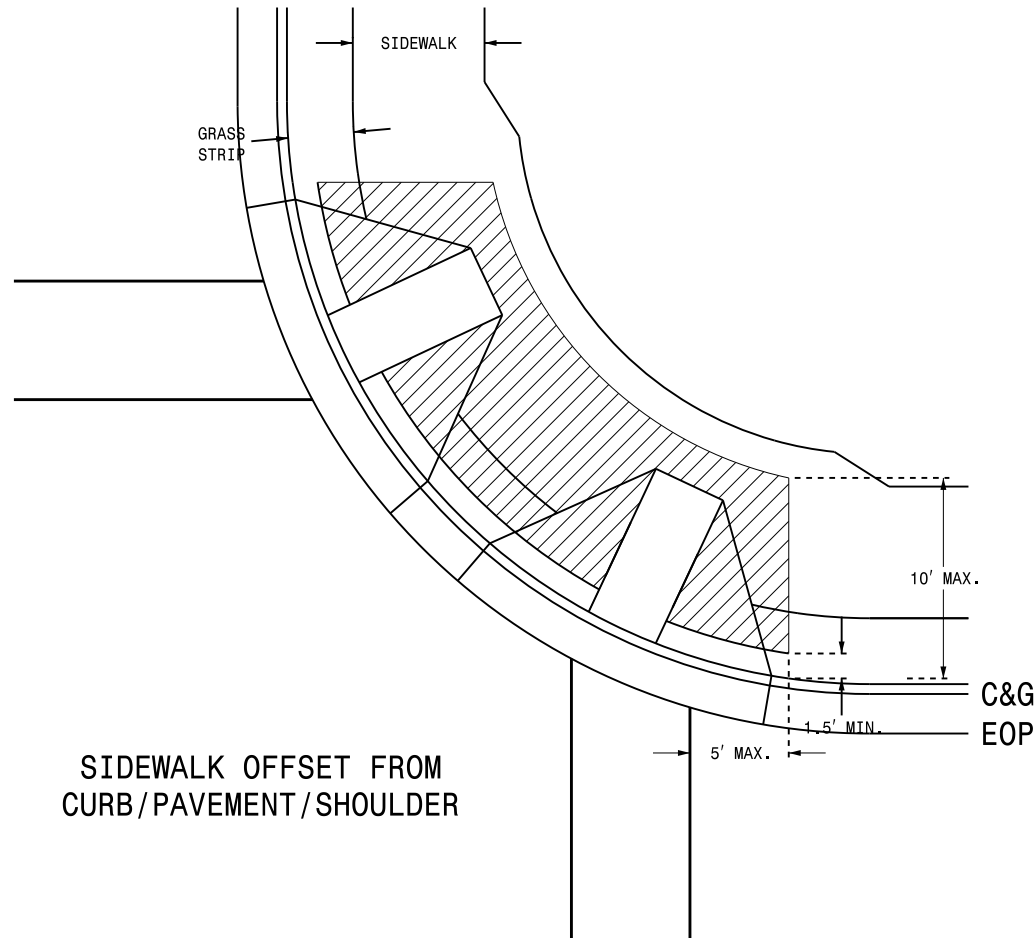
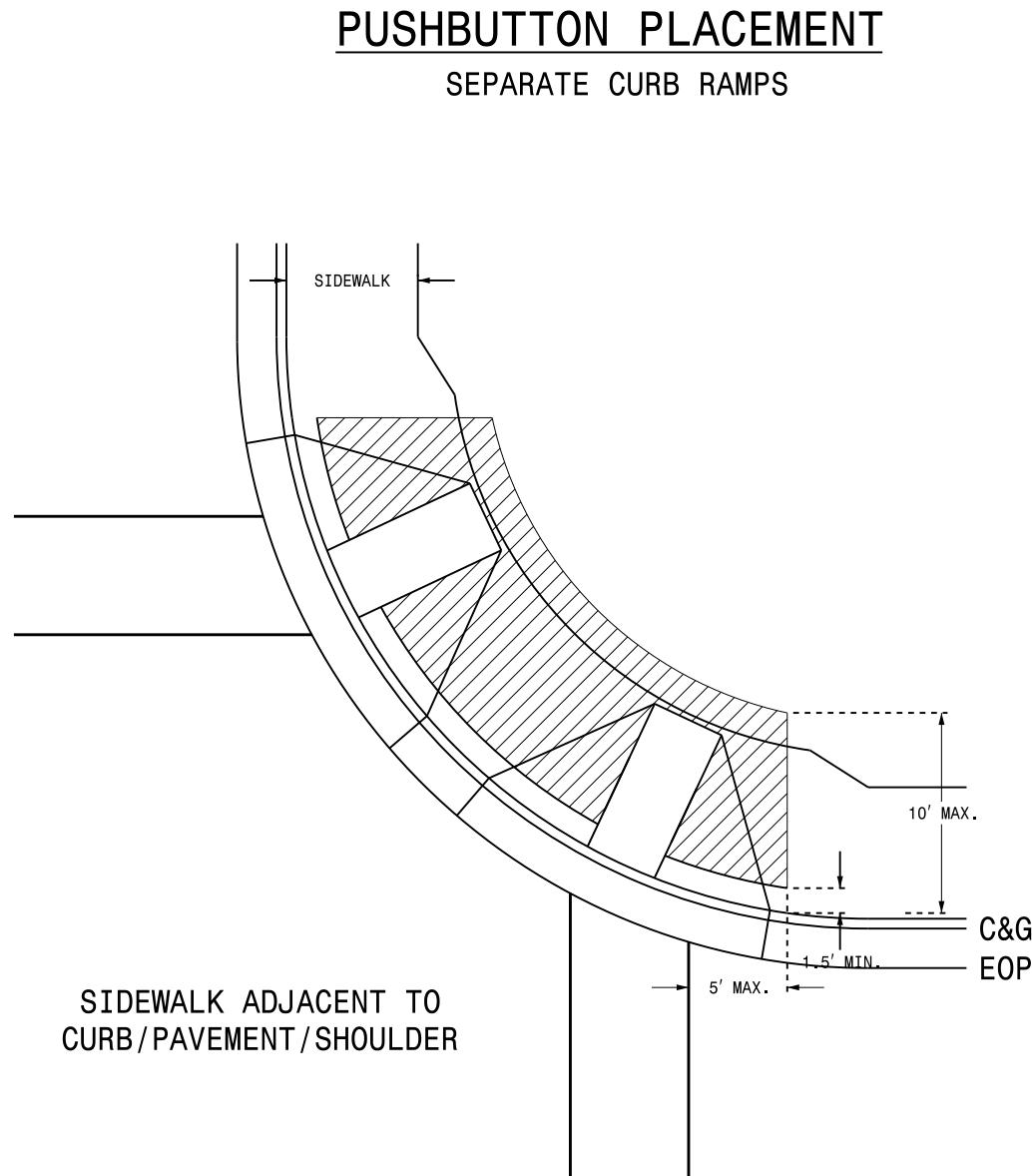
SCALE: 60' = 1" DATE: 16 DEC 2016

PREPARED BY: S.J.L.
REVIEWED BY: J.E.S.
REVIEWED BY:

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

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 1 OF 3
1705D01



- NOTES**
1. Pushbutton pedestals should not be located further than 10 feet from the edge of curb, shoulder, or pavement.
 2. The face of the pushbutton should be parallel to the applicable crosswalk.
 3. Separate pushbuttons used on the same corner should be separated by a distance of at least 10 feet.
 4. Pushbuttons shall be installed adjacent to a level surface with a maximum reach distance of 10 inches.
 5. Maintain 4 feet of clearance around pedestal if located in sidewalk.
 6. Refer to section 1705 of the 2012 NCDOT Roadway Standard Drawings for Pushbutton Assembly details.
 7. Refer to section 1743 of the 2012 NCDOT Roadway Standard Drawings for Pedestal details.
 8. Contact Division Traffic Engineer for pushbutton location approval prior to installation.
 9. Curb ramps are for symbolic use only and may not reflect actual design or field conditions.

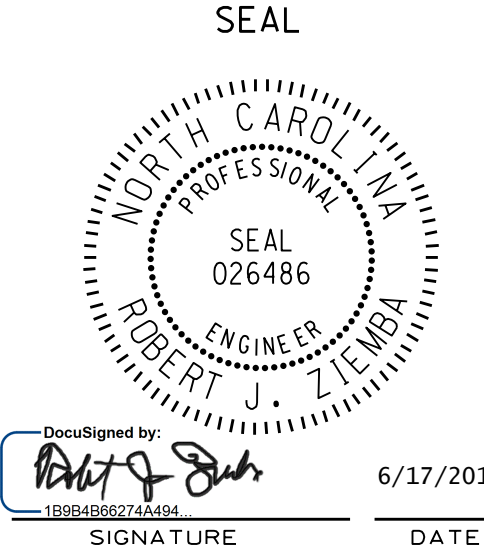
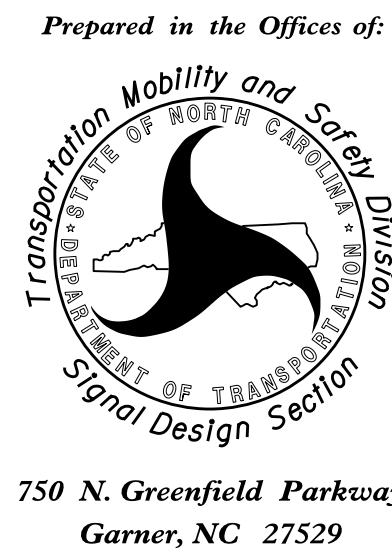
- PROPOSED**
- LEGEND**
- Signal Pole
 - Type I Pushbutton Post
 - Type II Signal Pedestal
 - Pushbutton & Sign
 - Pedestrian Signal Head
 - Curb Ramp
 - Pushbutton Location Area

STATE OF NORTH CAROLINA
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See Plate for Title



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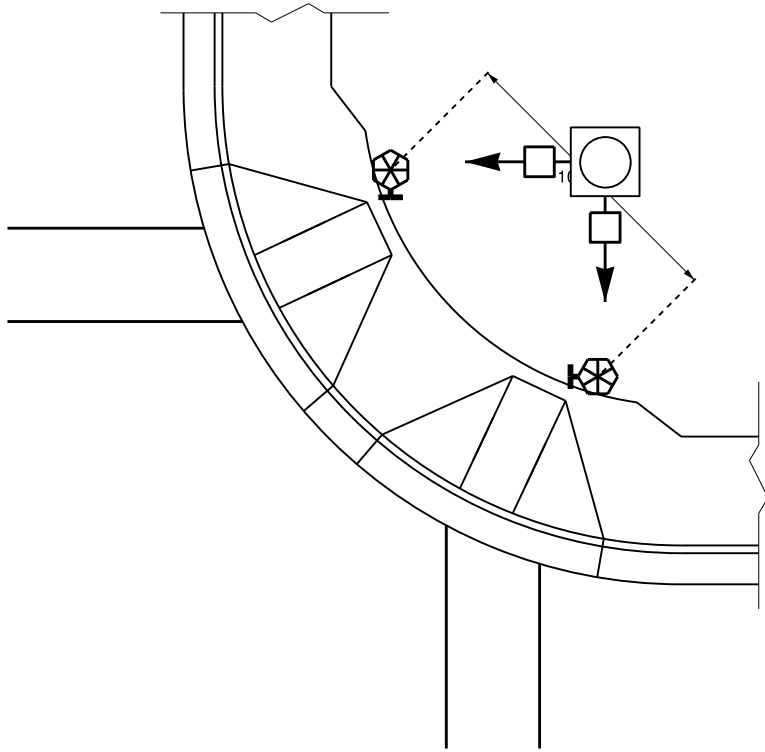
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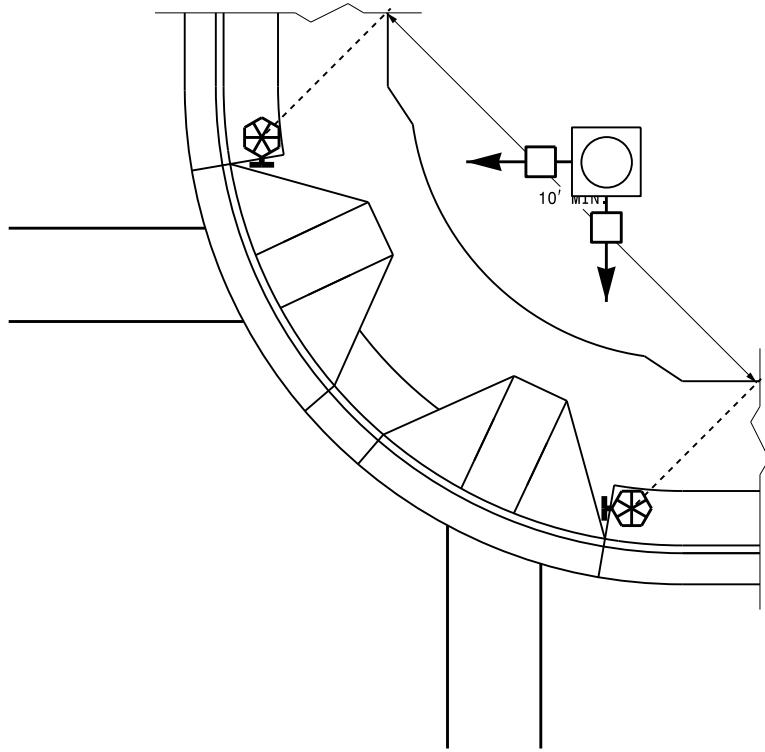
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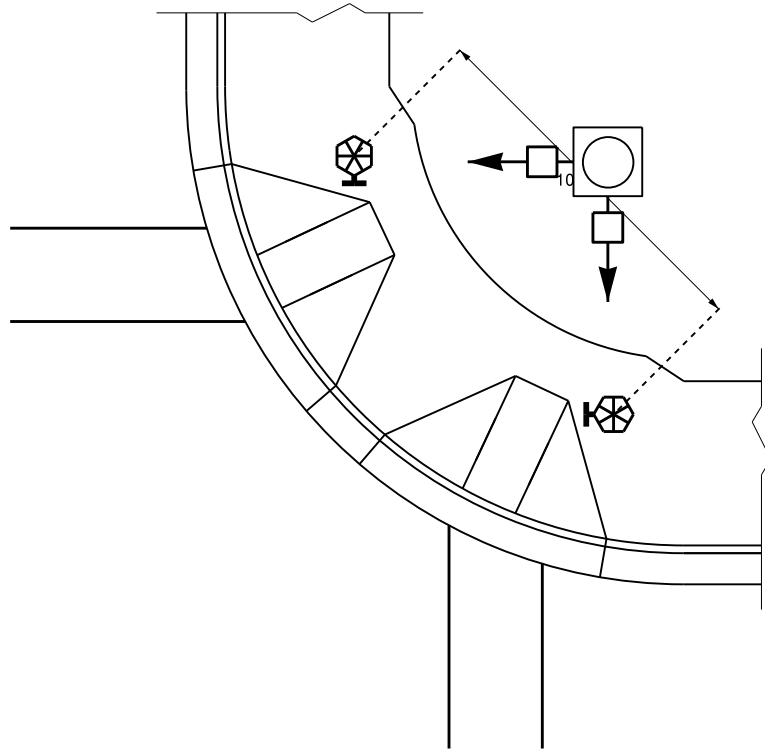
TYPICAL PUSHBUTTON LOCATIONS (CASE I)
SEPARATE CURB RAMPs W/ TYPE I PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER

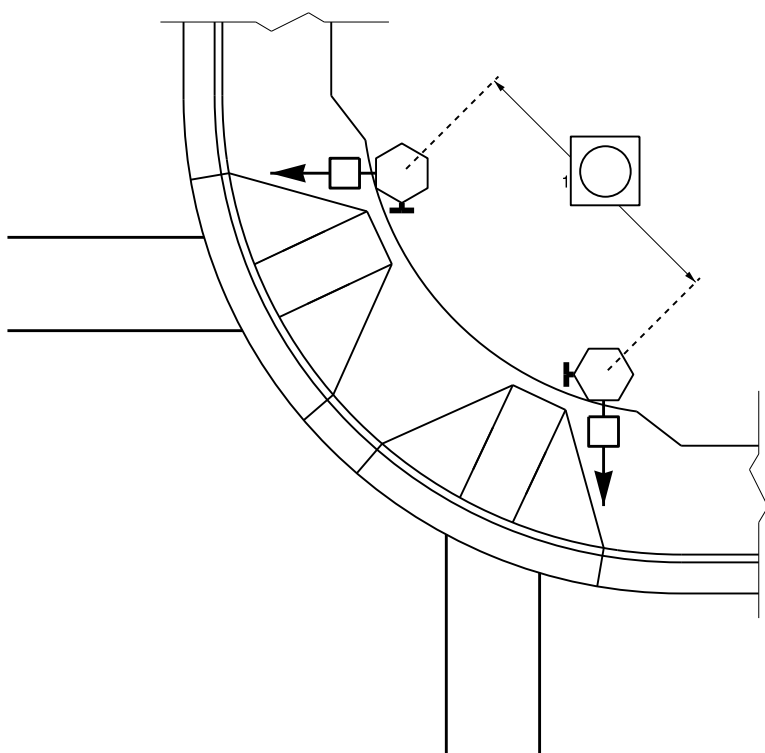


GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER

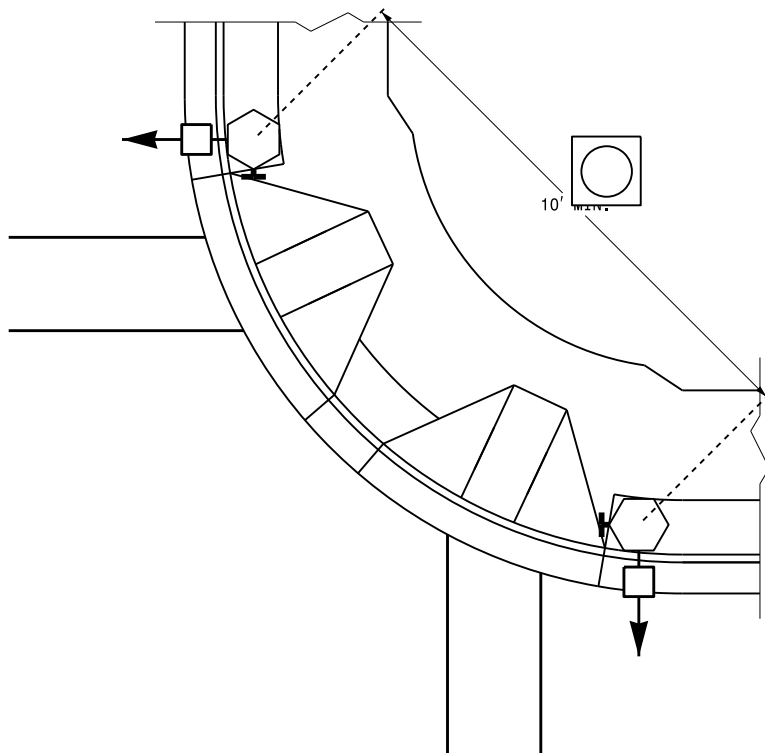


PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

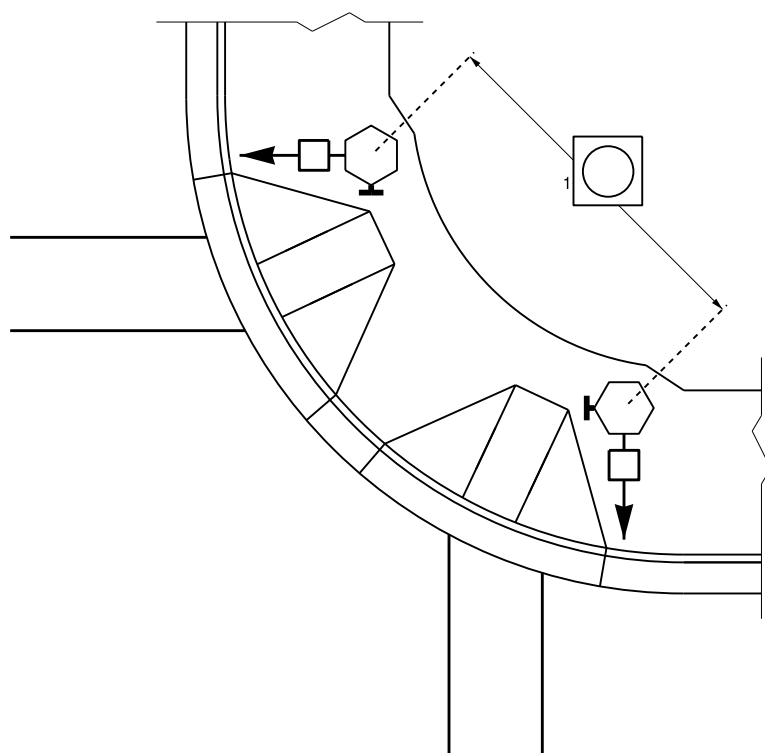
TYPICAL PUSHBUTTON LOCATIONS (CASE II)
SEPARATE CURB RAMPs W/ TYPE II PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
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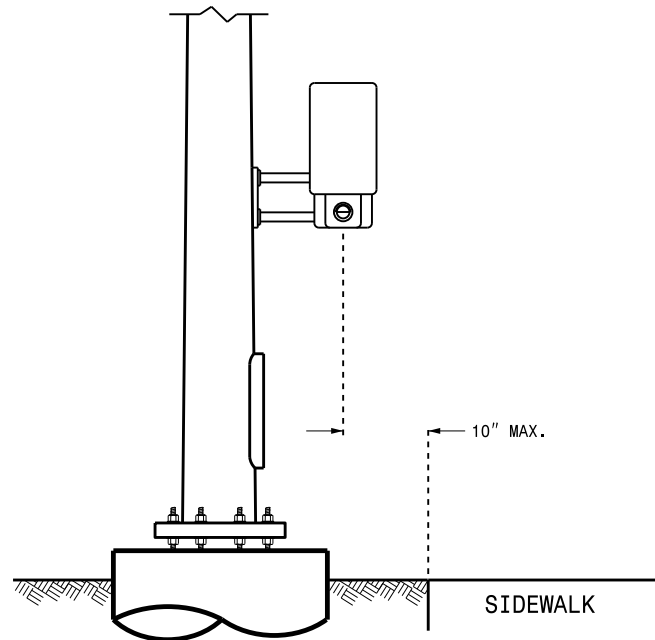
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PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

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 - Type I Pushbutton Post
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OPTIONAL PUSHBUTTON EXTENSION
FACE OF PUSHBUTTON PARALLEL TO
APPLICABLE CROSSWALK



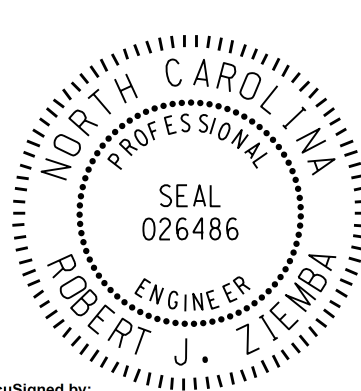
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Garner, NC 27529

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SIGNATURE

DATE

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RALEIGH, N.C.

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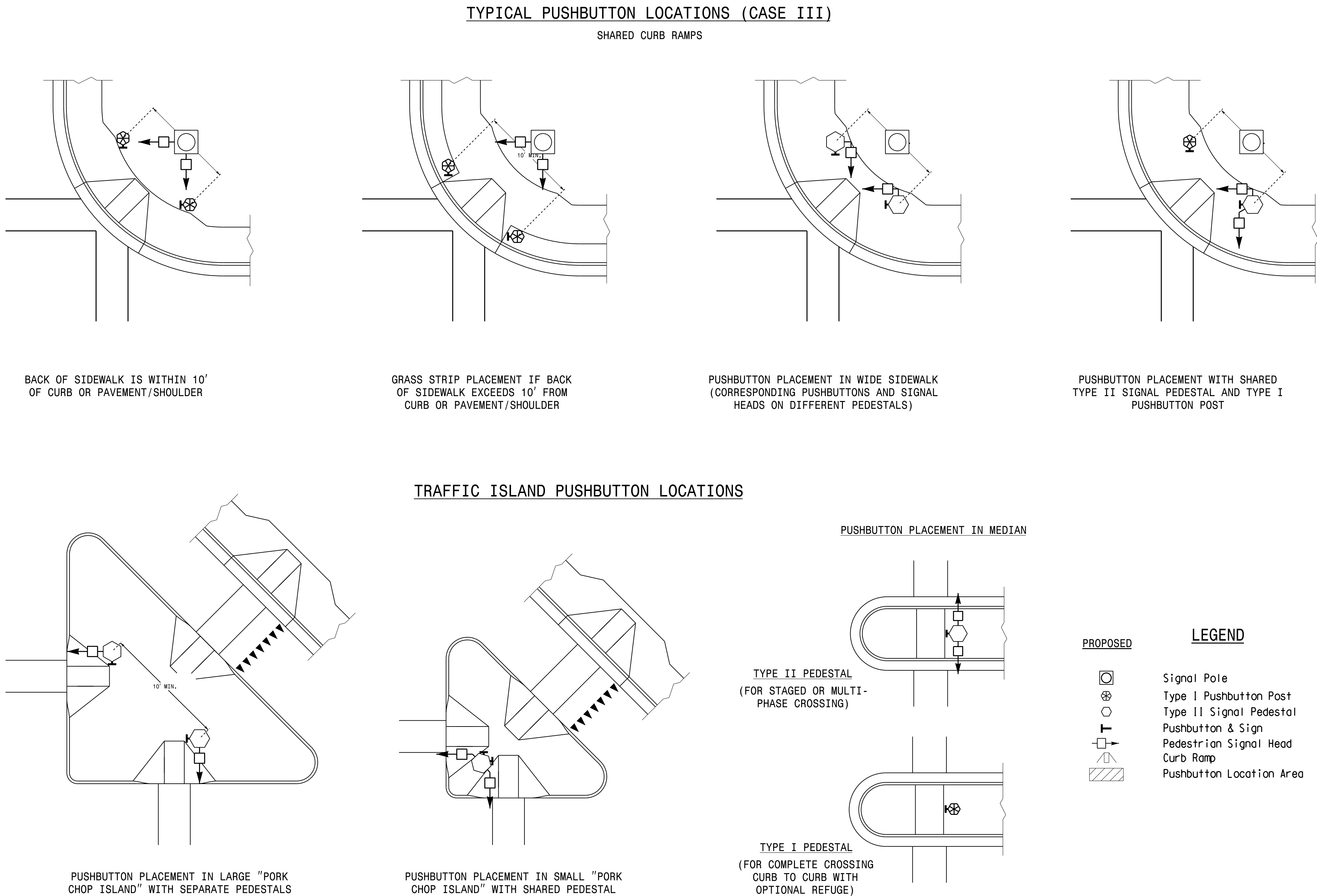
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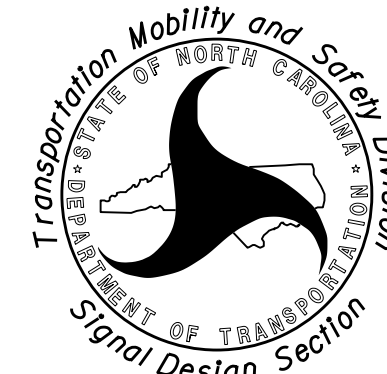
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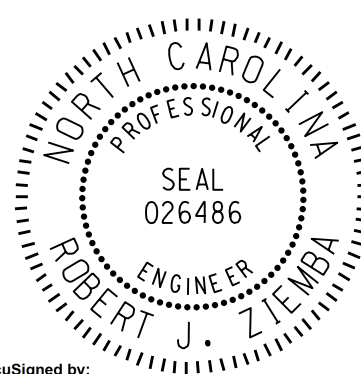
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750 N. Greenfield Parkway
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DocuSigned by
Robert J. Ziemba

6/17/2014

SIGNATURE

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