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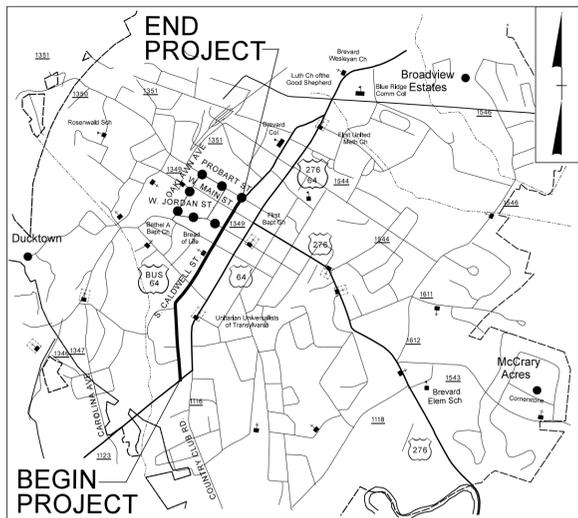
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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# TRANSYLVANIA COUNTY

**LOCATION: ROADWAY IMPROVEMENTS ON CALDWELL STREET FROM ROSMAN HIGHWAY (US 64) TO PROBART STREET**

**TYPE OF WORK: TRAFFIC SIGNALS**



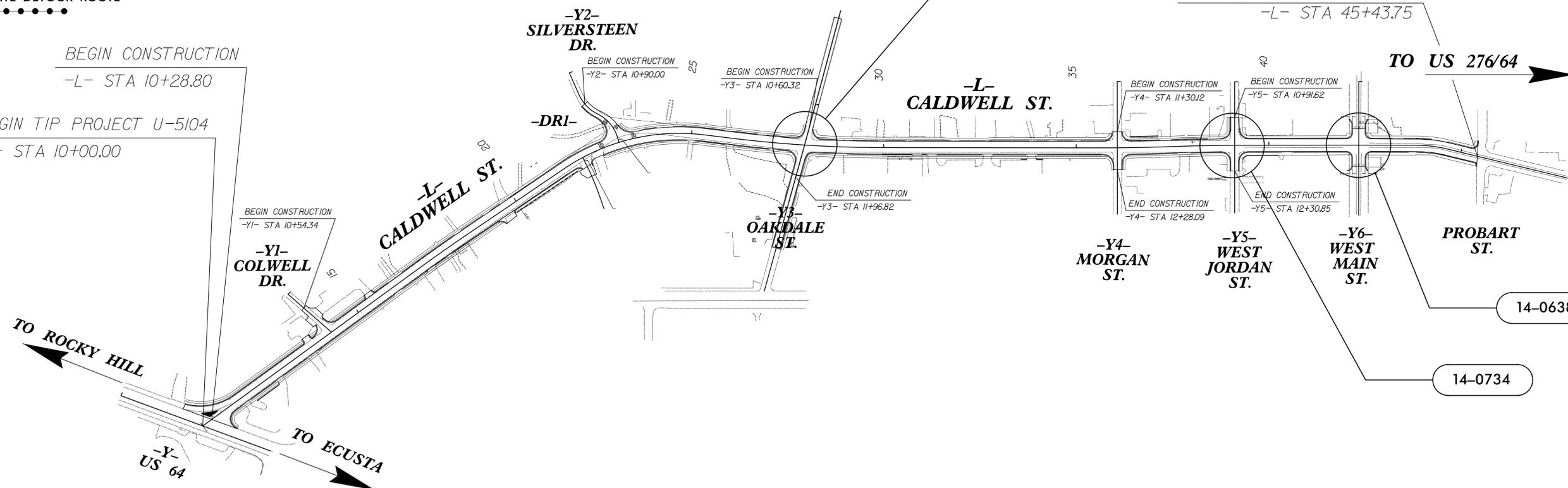
VICINITY MAP

OFF-SITE DETOUR ROUTE



BEGIN CONSTRUCTION  
-L- STA 10+28.80

BEGIN TIP PROJECT U-5104  
-L- STA 10+00.00



**TIP PROJECT: U-5104**

**PLANS PREPARED BY:**



1025 Wade Avenue  
Raleigh, NC 27605  
Tel: 919-789-9977  
Fax: 919-789-9591  
License #: C-2197

JOSEPH B. KOPASKIE, P.E. - PROJECT ENGINEER  
MATTHEW B. COPPLE, PE - DESIGN ENGINEER  
CLIFF LAWSON, E.I. - DESIGN ENGINEER

**INDEX OF PLANS**

SHEET NUMBER	SIGNAL INV. NUMBER	LOCATION / DESCRIPTION
Sig. 1.0	-	TITLE SHEET
Sig. 2.0 - 5.0	14-0909	US 64 BUS.(CALDWELL STREET) AT OAKDALE STREET
Sig. 6.0 - 9.0	14-0734	US 64 BUS.(CALDWELL STREET) AT JORDAN STREET
Sig. 10.0 - 11.0	14-0638	US 64 BUS.(CALDWELL STREET) AT SR 1349 MAIN STREET
MI - M9	-	NCDOT METAL POLE STANDARDS DRAWINGS
PI - P3	-	NCDOT STANDARD PUSHBUTTON DETAILS
SCP-I - SCP11	-	SIGNAL COMMUNICATIONS PLANS

**LEGEND**

##-###  
SIGNAL INVENTORY NUMBER

**PLANS PREPARED FOR:**

TRANSPORTATION MOBILITY AND SAFETY DIVISION  
TIMOTHY J. WILLIAMS, P.E. - WESTERN REGION SIGNALS ENGINEER  
ZACHARY M. LITTLE, P.E. - SIGNAL PROJECT ENGINEER  
GEORGE C. BROWN, P.E. - SIGNAL EQUIPMENT DESIGN ENGINEER

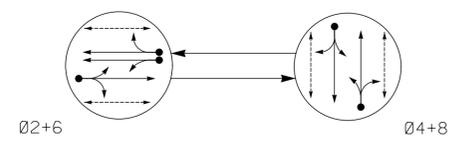


ALL DIMENSIONS IN THESE PLANS ARE IN FEET UNLESS OTHERWISE NOTED



DocuSigned by: Joseph Kopaskie 8/7/2015

**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	05+0
21, 22	G R Y		
41, 42	R G R		
61, 62	G R Y		
81, 82	R G R		
P21, P22	W DW DRK		
P41, P42	DW W DRK		
P61, P62	W DW DRK		
P81, P82	DW W DRK		

**OASIS 2070L LOOP & DETECTOR INSTALLATION CHART**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
2A	6X6	70	4	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	+5	2-4-2	Y	4	Y	Y	-	-	10	-	Y
6A	6X6	70	4	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	70	4	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	+5	2-4-2	Y	8	Y	Y	-	-	10	-	Y
S17	6X6	+120	4	Y	-	-	-	-	-	-	-	Y
S18	6X6	+120	4	Y	-	-	-	-	-	-	-	Y

2 Phase Fully Actuated (Brevard Signal System)

**NOTES**

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Closed loop system data: Controller asset # 0909

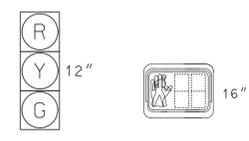
**OASIS 2070 TIMING CHART**

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	45	20	45	20
Yellow Clearance	4.2	3.1	3.3	3.1
Red Clearance	1.2	1.8	2.0	1.8
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	4	4	4	4
Don't Walk 1	4	7	5	7
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

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

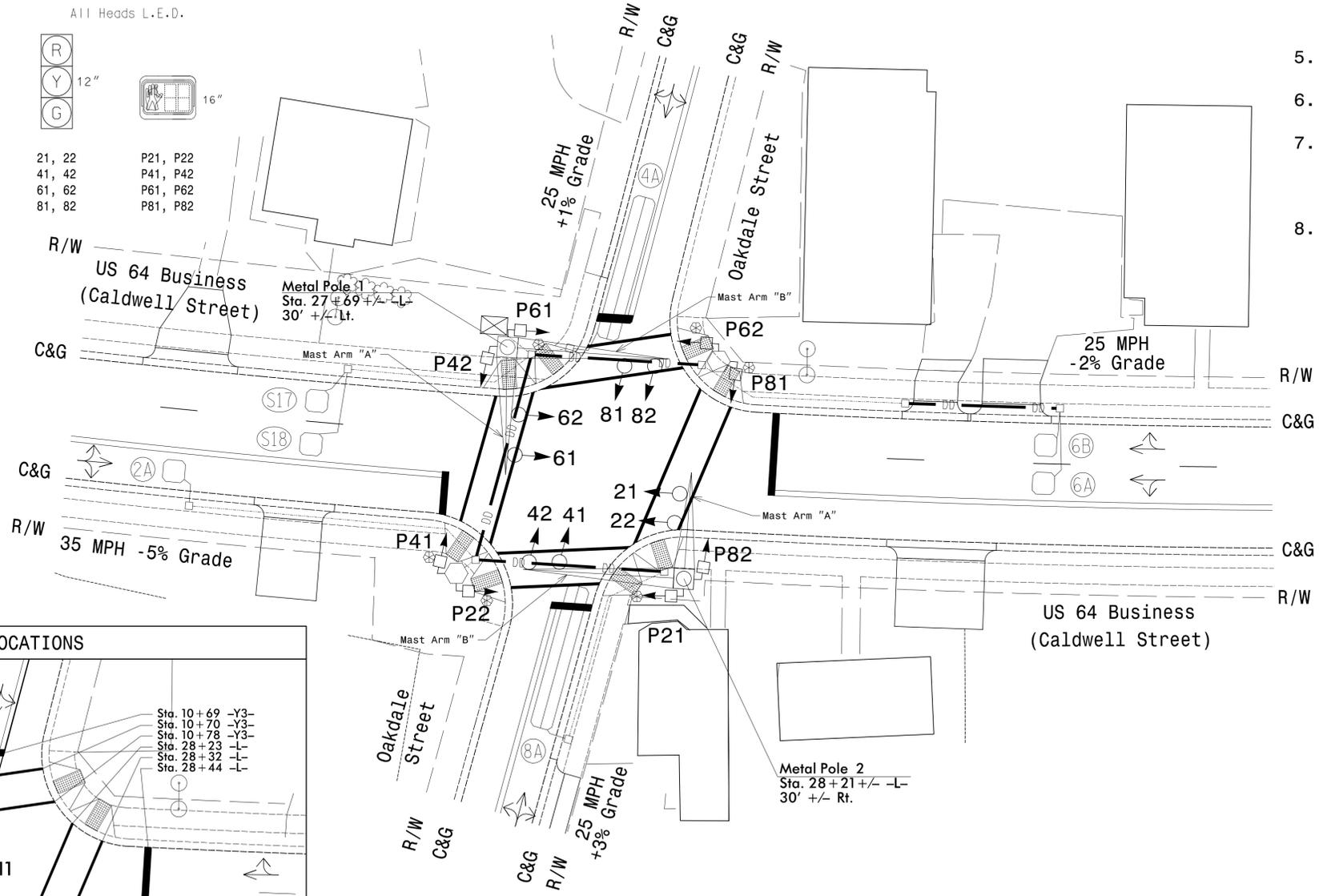
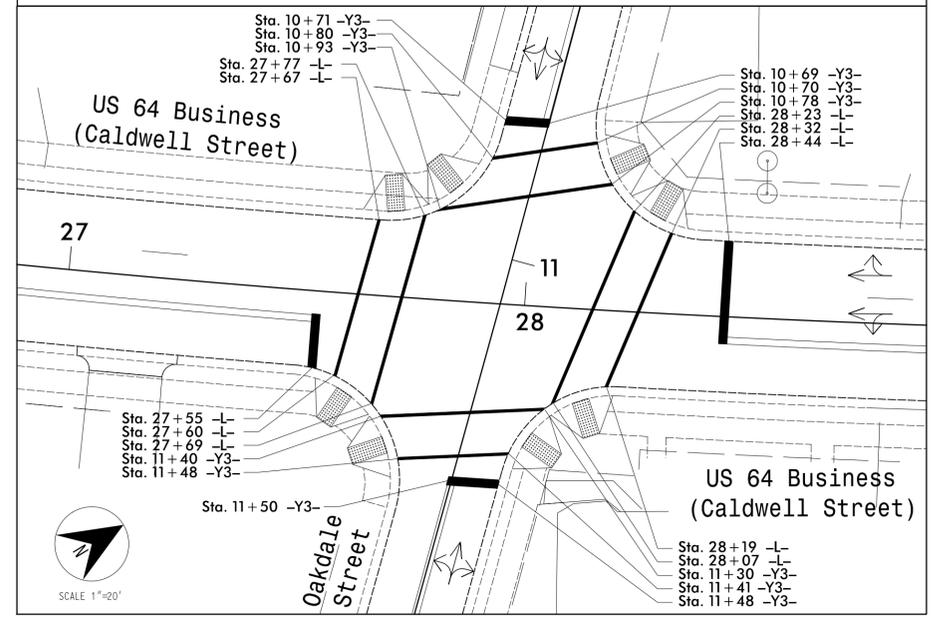
**SIGNAL FACE I.D.**

All Heads L.E.D.



21, 22 P21, P22  
41, 42 P41, P42  
61, 62 P61, P62  
81, 82 P81, P82

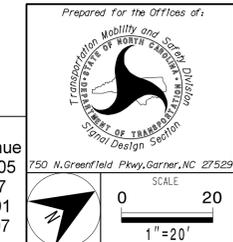
**INSET - STOP BAR LOCATIONS**



**LEGEND**

PROPOSED	EXISTING
○ Traffic Signal Head	● N/A
◐ Modified Signal Head	◐ N/A
◑ Pedestrian Signal Head With Push Button & Sign	◑ N/A
○ Signal Pole with Guy	○ N/A
○ Signal Pole with Sidewalk Guy	○ N/A
□ Inductive Loop Detector	□ N/A
□ Controller & Cabinet	□ N/A
□ Junction Box	□ N/A
— 2-in Underground Conduit	— N/A
— Right of Way	— N/A
→ Directional Arrow	→ N/A
— Directional Drill	— N/A
○ Metal Pole with Mastarm	○ N/A
○ Type I Signal Pedestal	○ N/A
○ Type II Signal Pedestal	○ N/A

**SIGNAL UPGRADE**



**US 64 Bus. (Caldwell Street) at Oakdale Street**

Division 14 Transylvania County Brevard

PLAN DATE: May 2015 REVIEWED BY: J Hohanadel

PREPARED BY: M Copple REVIEWED BY: J Kopaskie

REVISIONS INIT. DATE

SEAL

JOSEPH B. KOPASKIE  
Professional Engineer  
No. 029669

7/31/2015

SIG. INVENTORY NO. 14-0909

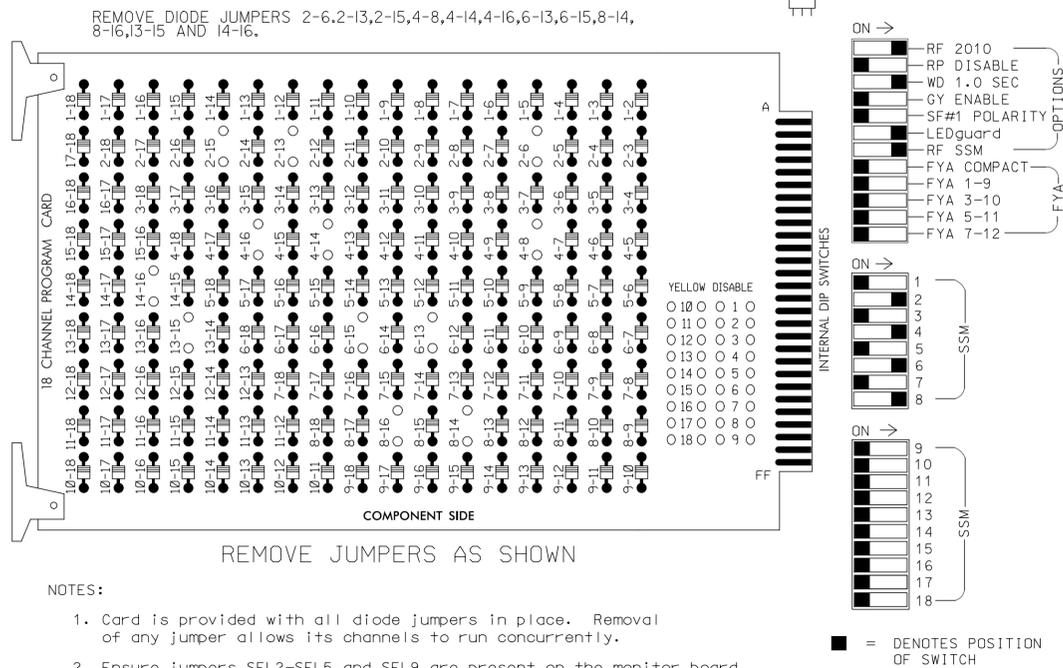
**SEPI**  
ENGINEERING & CONSTRUCTION

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Fax: 919-789-9591  
License #: C-2197

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

(remove jumpers and set switches as shown)



### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the City of Brevard Signal System.

### SIGNAL HEAD HOOK-UP CHART

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

NU = Not Used

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S3,S5,S6,S8,S9,S11,S12  
 PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED  
 OVERLAPS.....NONE

### INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 2	∅ 2A	∅ 3	∅ 4	∅ 4A	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	∅ 8A	∅ 9	∅ 10	∅ 11
L	NOT USED													
U	∅ 6	∅ 6A	∅ 7	∅ 8	∅ 8A	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	∅ 17
L	∅ 6	∅ 6	∅ 7	∅ 8	∅ 8A	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	∅ 17

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

FS = FLASH SENSE  
 ST = STOP TIME

### INPUT FILE POSITION LEGEND: J2L



### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
* S17	TB6-9,10	I9U	60	22	11	SYS					
* S18	TB6-11,12	I9L	62	24	13	SYS					
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29		PED 2					
P41,P42	TB8-5,6	I12L	69	31		PED 4					
P61,P62	TB8-7,9	I13U	68	30		PED 6					
P81,P82	TB8-8,9	I13L	70	32		PED 8					

NOTE:  
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

\* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

### COUNTDOWN PEDESTRIAN SIGNAL OPERATION

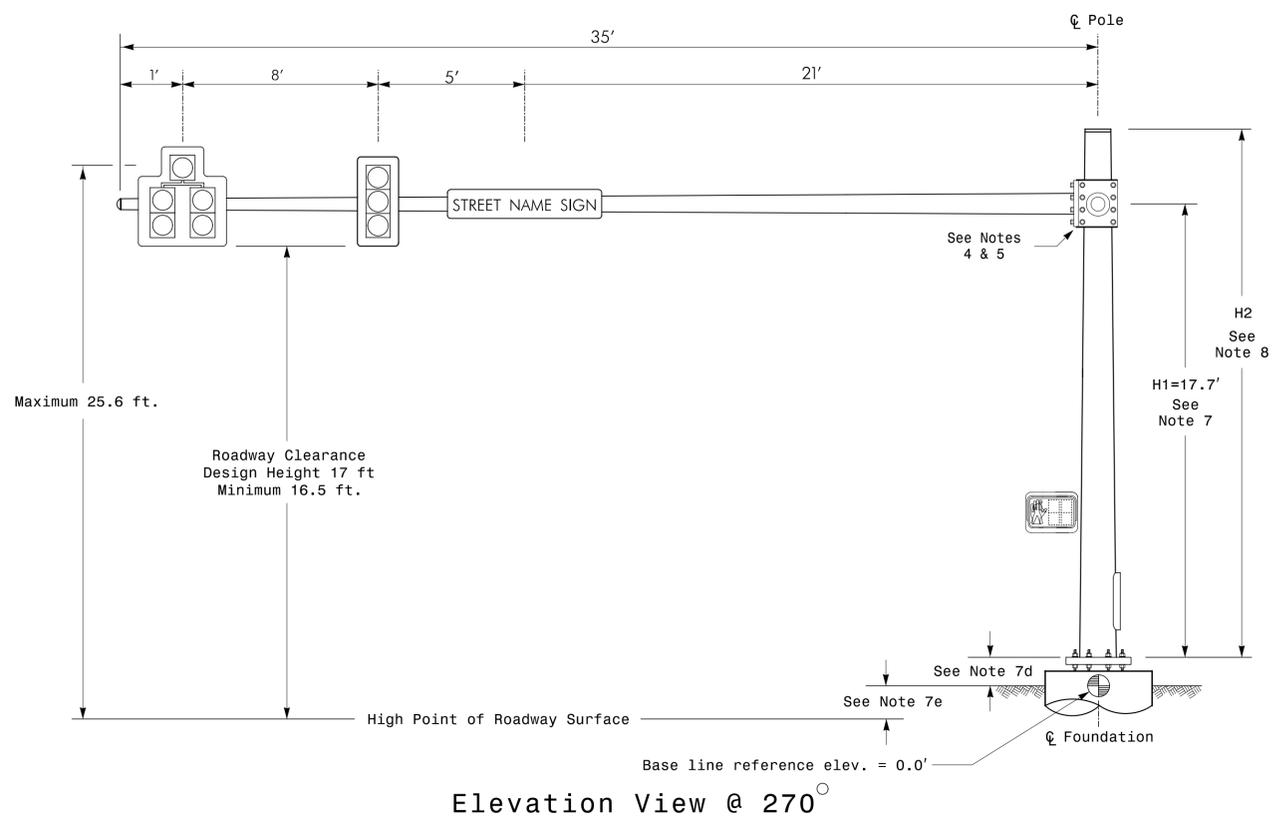
Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-0909  
 DESIGNED: May 2015  
 SEALED: 7/31/2015  
 REVISED:

### Signal Upgrade

<p>SEPI ENGINEERING &amp; CONSTRUCTION</p> <p>1025 Wade Avenue                  Raleigh, NC 27605                  Tel: 919-789-9977                  Fax: 919-789-9591                  License #: C-2197</p>	ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	US 64 Bus. (Caldwell Street) at Oakdale Street Division 14 Transylvania County Brevard PLAN DATE: May 2015 REVIEWED BY: J Hochanadel PREPARED BY: J Kopaskie REVIEWED BY: REVISIONS INIT. DATE DocuSigned by: Joseph Kopaskie 7/31/2015 SEAL 029669 INVENTORY NO. 14-0909
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Design Loading for METAL POLE NO. 1, MAST ARM A



**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)

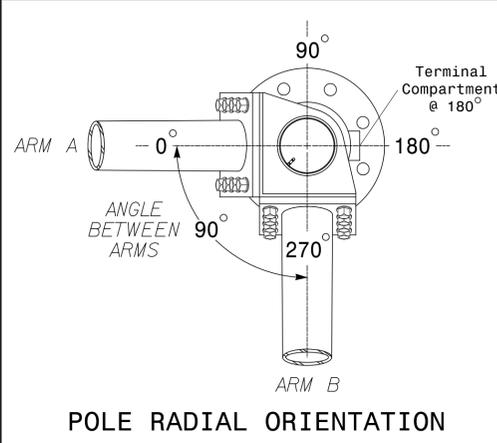
Elevation Differences for:	Arm "A"	Arm "B"
Baseline reference point at $\phi$ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-0.85 ft.	-1.74 ft.
Elevation difference at Edge of travelway or face of curb	-1.18 ft.	-1.92 ft.

MAST ARM LOADING SCHEDULE

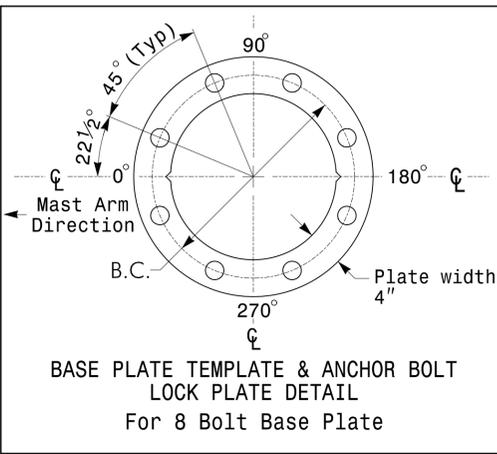
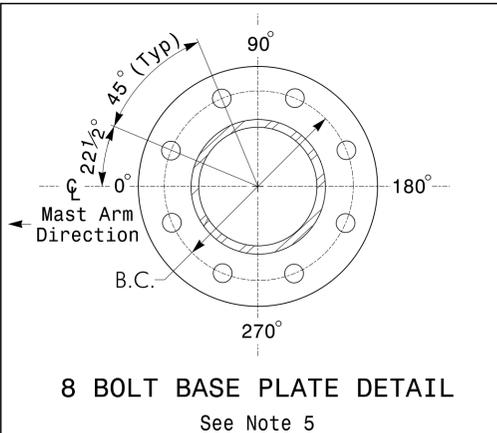
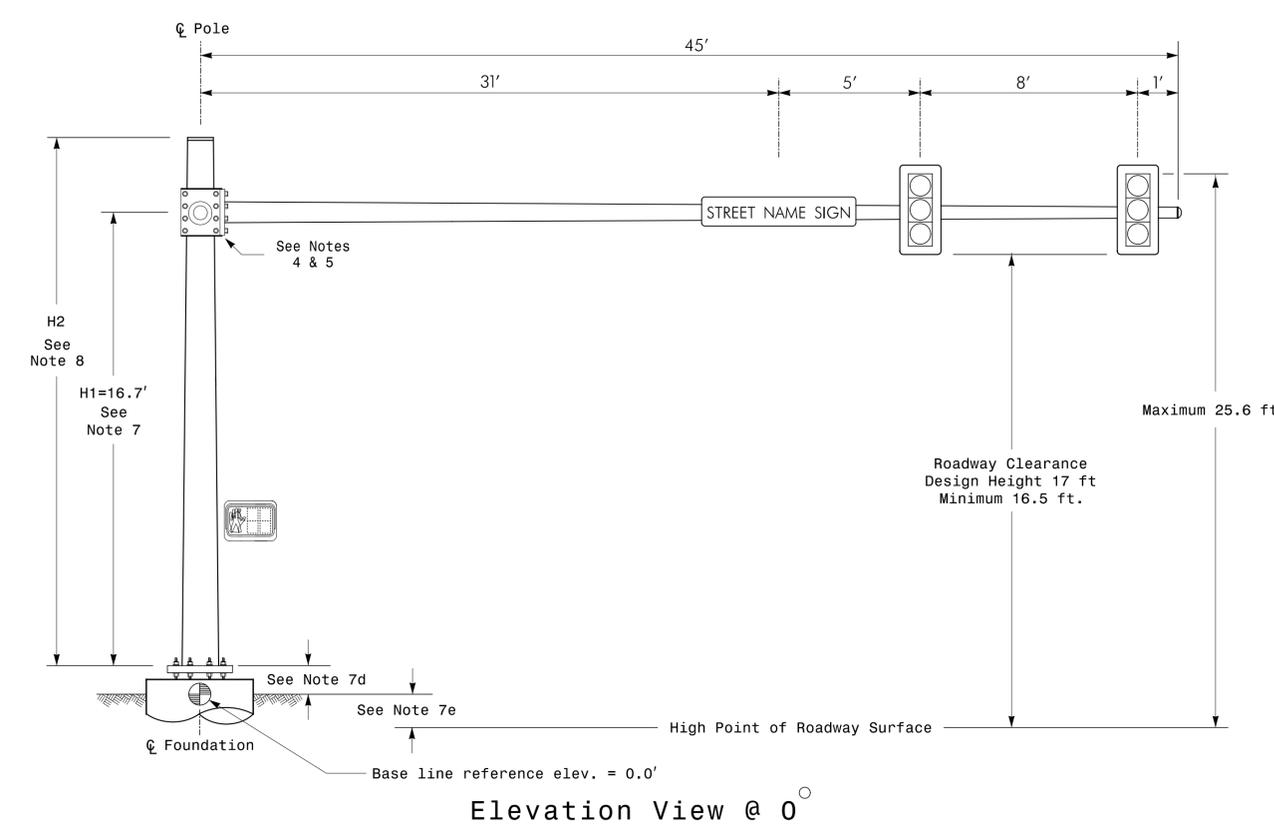
LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE RIGID MOUNTED	16.3 S.F.	42.0" W X 56.0" L	103 LBS
	SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE RIGID MOUNTED	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS
	STREET NAME SIGN RIGID MOUNTED	12.0 S.F.	18.0" W X 96.0" L	27 LBS

NOTES

- Design Reference Material**
- Design the traffic signal structure and foundation in accordance with:
    - The 5th Edition 2009 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 these 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 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.
  - 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 attached to the mast arm are rigid mounted and vertically centered on the arm.
    - The roadway clearance height for design is as shown in the elevation views.
    - The top of the pole base plate is .75 feet above the ground elevation.
    - Refer to the Elevation Data chart for elevation differences between the proposed foundation ground level and the high point on the roadway.
    - Provide horizontal distance from proposed centerline of foundation to edge of travelway. Refer to the Elevation Data chart above for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary when arched arms are specified to ensure that the roadway clearance is maintained at the edge of the travelway and to assist in the camber design of the mast 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 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.
  - The contractor is responsible for providing a protective black coating on all Metal Poles (please see project special provisions).



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



NCDOT Wind Zone 4 (90 mph)

**SEPI**  
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Prepared For the Offices of:  
**TRANSPORTATION MOBILITY AND SAFETY DIVISION**  
DEPARTMENT OF TRANSPORTATION  
SIGNAL DESIGN SECTION

**LOADING DIAGRAM AND TYPICAL DETAIL FOR METAL POLE WITH DOUBLE MAST ARM**

Division 14 Transylvania County Brevard  
PLAN DATE: May 2015 REVIEWED BY: J Hochanadel  
PREPARED BY: C Lawson REVIEWED BY: J Kopaskie

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 N/A N/A

REVISIONS: INIT. DATE

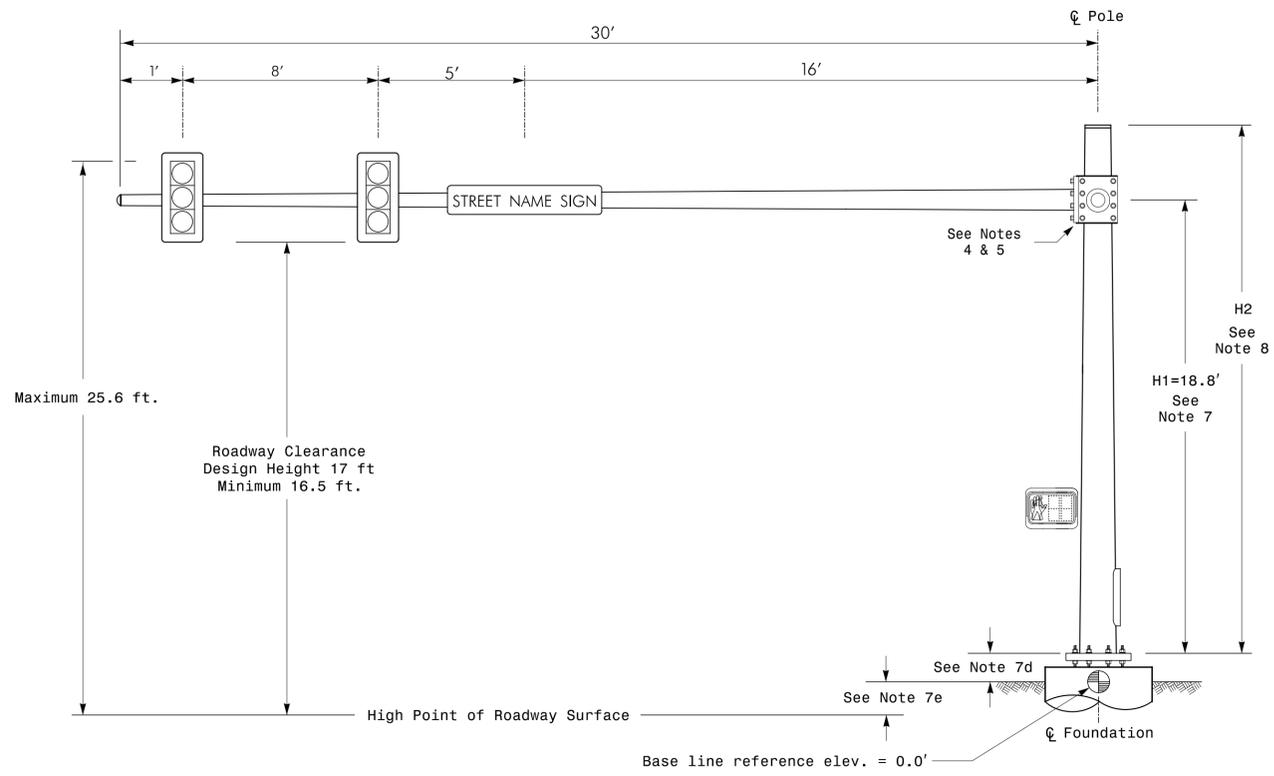
SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER  
J. KOPASKIE  
029669

DocuSigned by:  
**Joseph Kopaskie**  
or 516204486  
7/31/2015  
DATE

SIG. INVENTORY NO. 14-0909

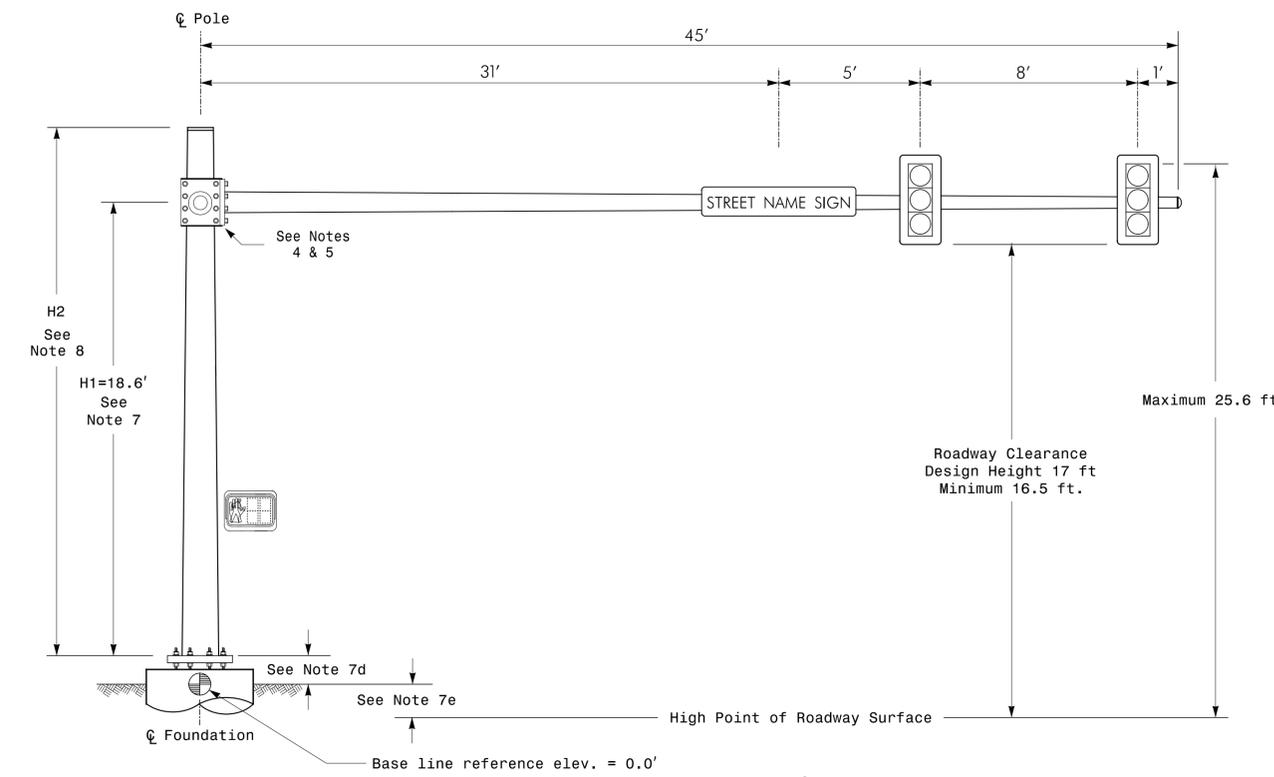
7/31/2015 C:\Roadway\4006-003-00 (Caldwell) S1 - Improvements\Traffic\Signal Design\Mast Arms\4.0-140909.sig.dgn J.Kopaskie

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



Elevation View @ 270°

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

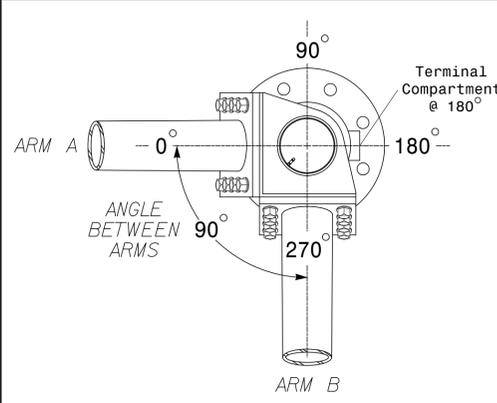


Elevation View @ 0°

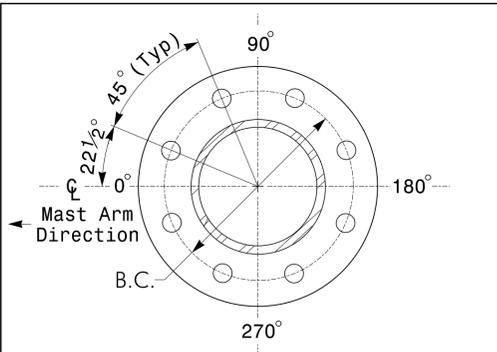
**SPECIAL NOTE**  
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available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

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm "A"	Arm "B"
Baseline reference point at $\phi$ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+0.40 ft.	+0.19 ft.
Elevation difference at Edge of travelway or face of curb	+0.73 ft.	+0.19 ft.

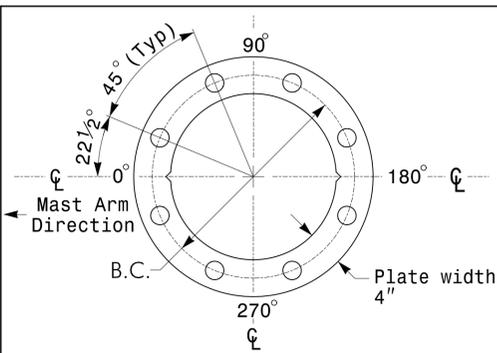


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 5



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

MAST ARM LOADING SCHEDULE				
LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE RIGID MOUNTED	16.3 S.F.	42.0" W X 56.0" L	103 LBS
	SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE RIGID MOUNTED	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	12.0 S.F.	18.0" W X 96.0" L	27 LBS

NOTES

Design Reference Material

- Design the traffic signal structure and foundation in accordance with:
  - The 5th Edition 2009 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 these 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.
- 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 attached to the mast arm are rigid mounted and vertically centered on the arm.
  - The roadway clearance height for design is as shown in the elevation views.
  - The top of the pole base plate is .75 feet above the ground elevation.
  - Refer to the Elevation Data chart for elevation differences between the proposed foundation ground level and the high point on the roadway.
  - Provide horizontal distance from proposed centerline of foundation to edge of travelway. Refer to the Elevation Data chart above for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary when arched arms are specified to ensure that the roadway clearance is maintained at the edge of the travelway and to assist in the camber design of the mast 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 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.
- The contractor is responsible for providing a protective black coating on all Metal Poles (please see project special provisions).

NCDOT Wind Zone 4 (90 mph)

**SEPI**  
ENGINEERING & CONSTRUCTION  
1025 Wade Avenue  
Raleigh, NC 27605  
Tel: 919-789-9977  
Fax: 919-789-9591  
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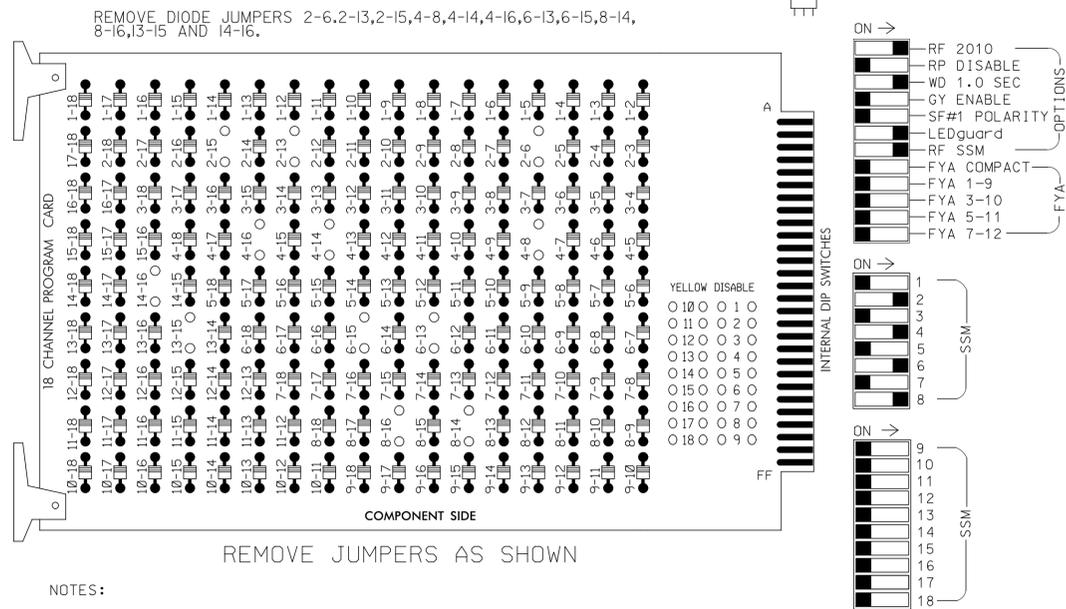
	<p>LOADING DIAGRAM AND TYPICAL DETAIL FOR METAL POLE WITH DOUBLE MAST ARM</p>		SEAL
	<p>Division 14 Transylvania County Brevard</p> <p>PLAN DATE: May 2015 REVIEWED BY: J Hochanadel</p> <p>PREPARED BY: C Lawson REVIEWED BY: J Kopaskie</p>	<p>750 N. Greenfield Pkwy, Garner, NC 27529</p> <p>SCALE: 0 N/A</p>	
<p>REVISIONS</p>		<p>INIT. DATE</p>	<p>SIG. INVENTORY NO. 14-0909</p>

7/31/2015  
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 J.Kopaskie



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

(remove jumpers and set switches as shown)



**NOTES:**

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. 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. part 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

### 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 phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all phases.
4. Program phases 2 and 6 for Start Up In Green.
5. Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
6. Program phases 2 and 6 for Yellow Flash.
7. The cabinet and controller are part of the City of Brevard Signal System.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S3,S5,S6,S8,S9,S11,S12  
 PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED  
 OVERLAPS.....NONE

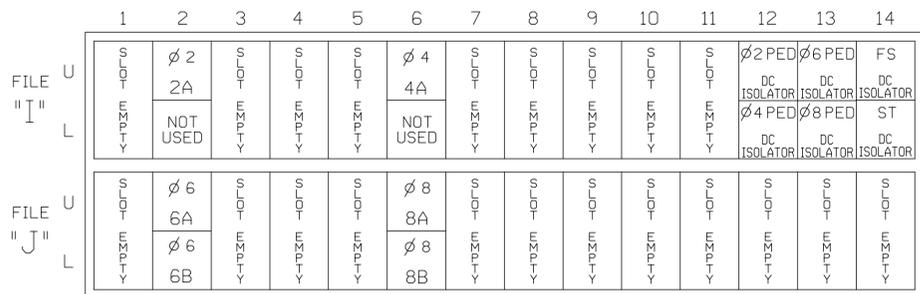
### SIGNAL HEAD HOOK-UP CHART

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

NU = Not Used

### INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE  
 ST = STOP TIME

### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	J2U	39	1	2	2	Y	Y			
4A	TB4-9,10	J2U	41	3	4	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29		PED 2		2 PED			
P41,P42	TB8-5,6	I12L	69	31		PED 4		4 PED			
P61,P62	TB8-7,9	I13U	68	30		PED 6		6 PED			
P81,P82	TB8-8,9	I13L	70	32		PED 8		8 PED			

**NOTE:**

INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L



### 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: 14-0734  
 DESIGNED: May 2015  
 SEALED: 7/31/2015  
 REVISED:

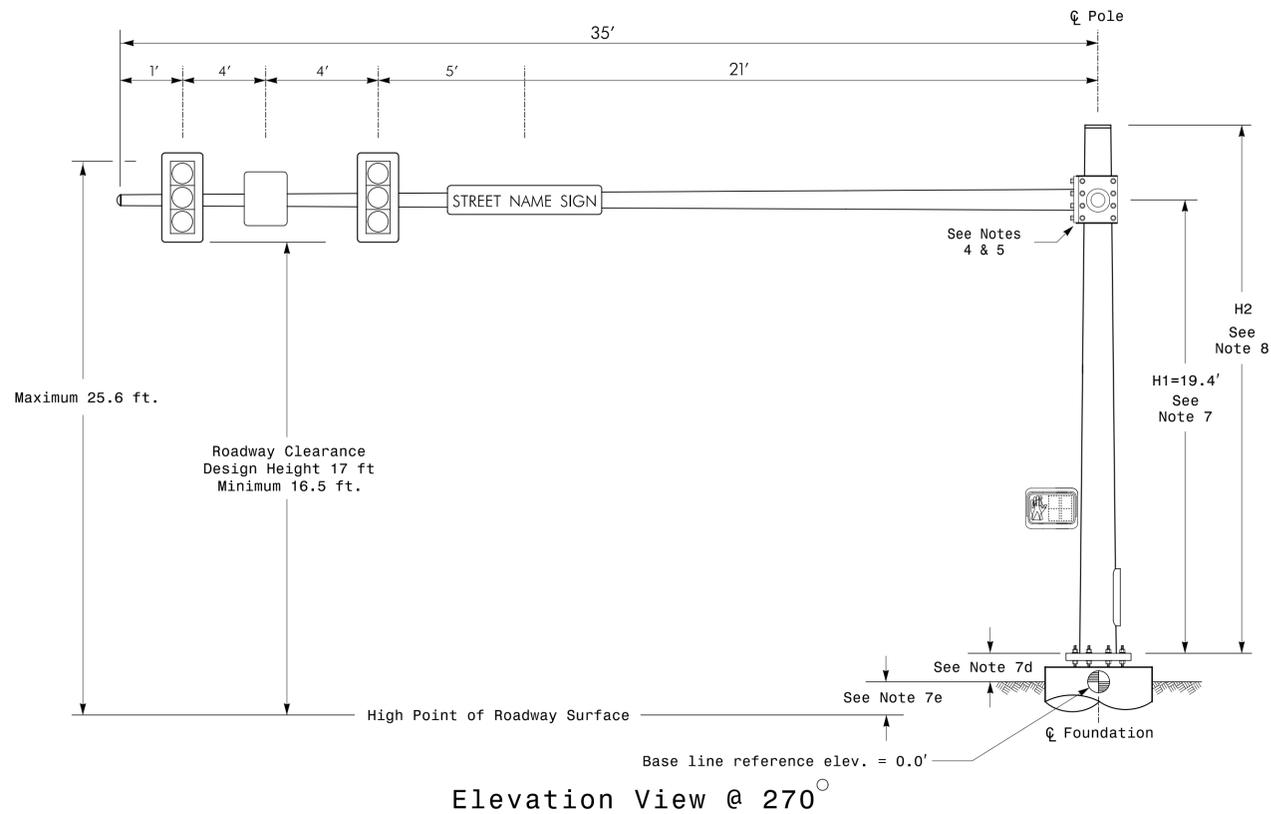
### Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	<b>US 64 Bus. (Caldwell Street) at Jordan Street</b>		SEAL 
	Division 14 Transylvania County Brevard	Division 14 Transylvania County Brevard	
PLAN DATE: May 2015 PREPARED BY: J Kopaskie	REVIEWED BY: J Hochanadel REVIEWED BY:		SEAL 029669 PROFESSIONAL ENGINEER JOSEPH B. KOPASKIE
REVISIONS INIT. DATE	REVISIONS INIT. DATE		DocuSigned by: Joseph Kopaskie 7/31/2015 acp666@tdt.com
SIGNED:			SIG. INVENTORY NO. 14-0734



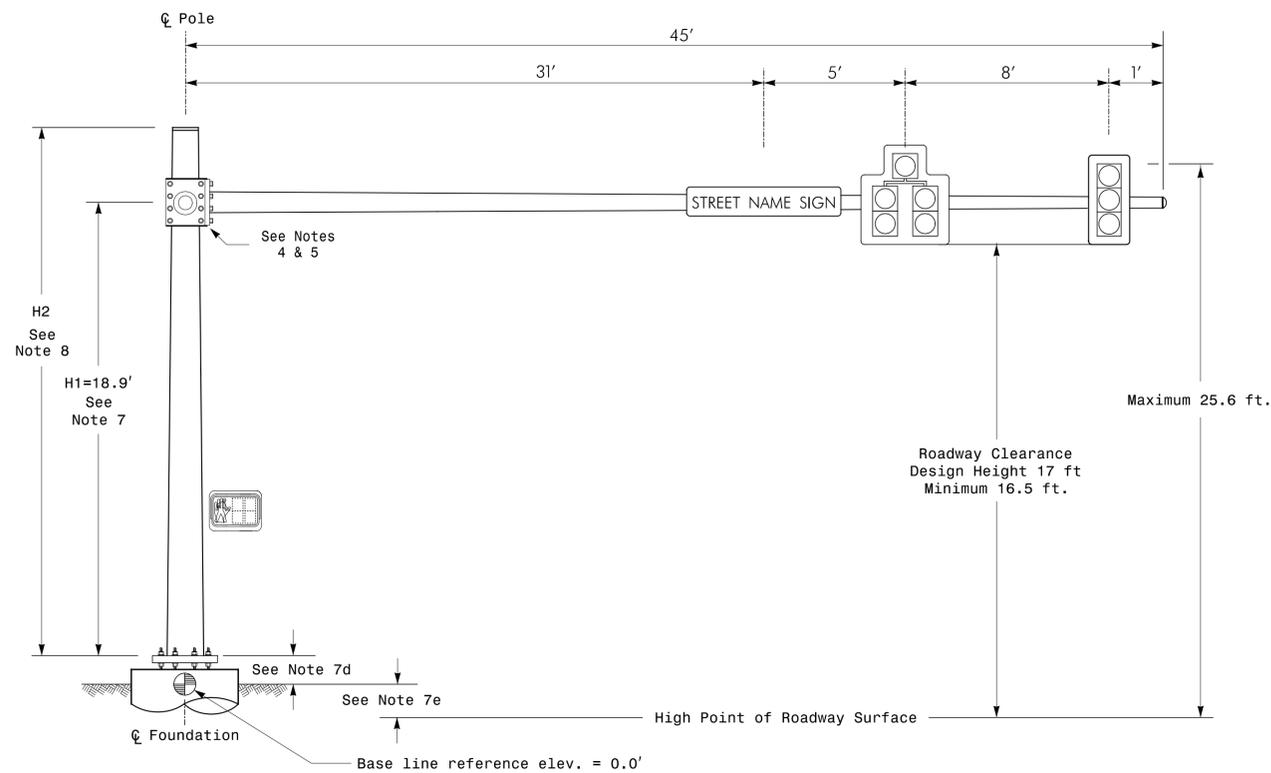
1025 Wade Avenue  
 Raleigh, NC 27605  
 Tel: 919-789-9977  
 Fax: 919-789-9591  
 License #: C-2197

Design Loading for METAL POLE NO. 3, MAST ARM A



Elevation View @ 270°

Design Loading for METAL POLE NO. 3, MAST ARM B

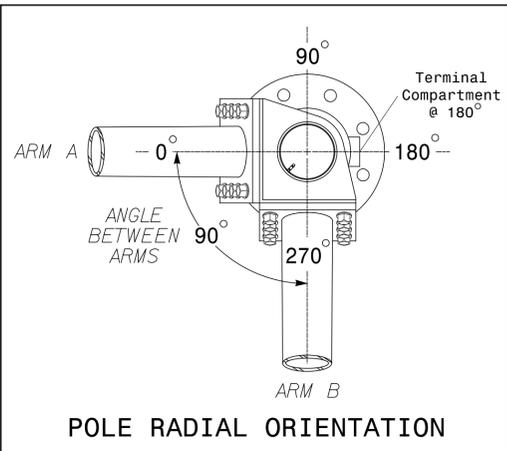


Elevation View @ 0°

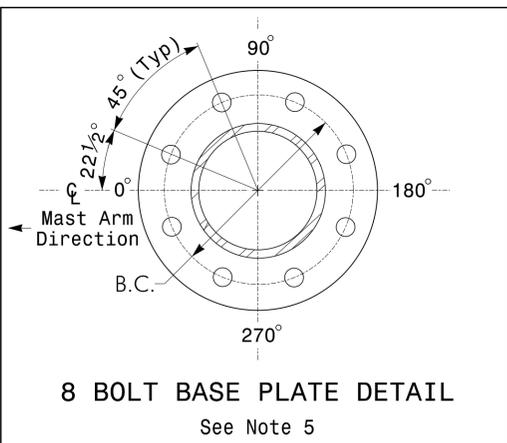
**SPECIAL NOTE**  
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available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

**Elevation Data for Mast Arm Attachment (H1)**

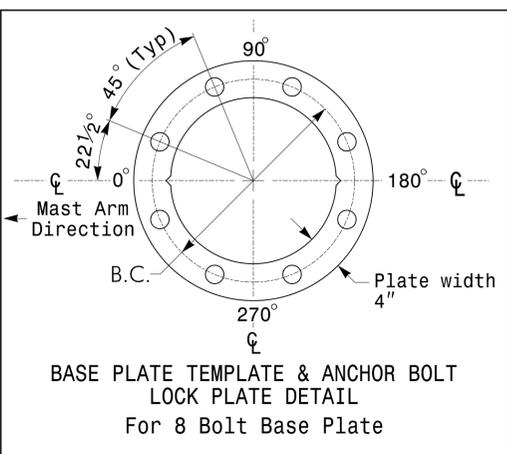
Elevation Differences for:	Arm "A"	Arm "B"
Baseline reference point at $\phi$ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+1.01 ft.	+0.28 ft.
Elevation difference at Edge of travelway or face of curb	+0.42 ft.	+0.08 ft.



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL  
See Note 5



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

**MAST ARM LOADING SCHEDULE**

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE RIGID MOUNTED	16.3 S.F.	42.0" W X 56.0" L	103 LBS
	SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE RIGID MOUNTED	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	12.0 S.F.	18.0" W X 96.0" L	27 LBS

**NOTES**

**Design Reference Material**

- Design the traffic signal structure and foundation in accordance with:
  - The 5th Edition 2009 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 these 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.
- 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 attached to the mast arm are rigid mounted and vertically centered on the arm.
  - The roadway clearance height for design is as shown in the elevation views.
  - The top of the pole base plate is .75 feet above the ground elevation.
  - Refer to the Elevation Data chart for elevation differences between the proposed foundation ground level and the high point on the roadway.
  - Provide horizontal distance from proposed centerline of foundation to edge of travelway. Refer to the Elevation Data chart above for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary when arched arms are specified to ensure that the roadway clearance is maintained at the edge of the travelway and to assist in the camber design of the mast 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 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.
- The contractor is responsible for providing a protective black coating on all Metal Poles (please see project special provisions).

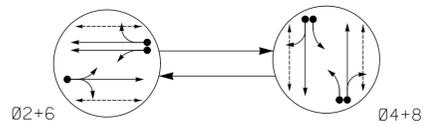
NCDOT Wind Zone 4 (90 mph)

 Prepared For the Office of: Transportation Mobility and Safety NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Design Section 750 N. Greenfield Pkwy, Garner, NC 27529 SCALE: 0 N/A N/A	LOADING DIAGRAM AND TYPICAL DETAIL FOR METAL POLE WITH DOUBLE MAST ARM Division 14 Transylvania County Brevard PLAN DATE: May 2015 REVIEWED BY: J Hochanadel PREPARED BY: C Lawson REVIEWED BY: J Kopaskie	SEAL  Documented by: Joseph Kopaskie DATE: 7/31/2015 SIG. INVENTORY NO. 14-0734
	NCDOT Wind Zone 4 (90 mph)	

7/31/2015  
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 JKopaskie



**PHASING DIAGRAM**



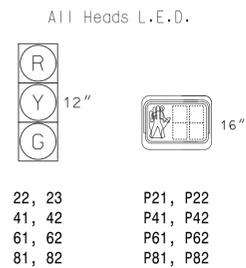
**PHASING DIAGRAM DETECTION LEGEND**

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

**TABLE OF OPERATION**

SIGNAL FACE	PHASE		
	0 2 + 6	0 4 + 8	FUTURE
22, 23	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

**SIGNAL FACE I.D.**



**OASIS 2070L LOOP & DETECTOR INSTALLATION CHART**

INDUCTIVE LOOPS				DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	70	4	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	-
6A	6X6	70	4	Y	6	Y	Y	-	-	-	-	-
6B	6X6	70	4	Y	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	10	-	-

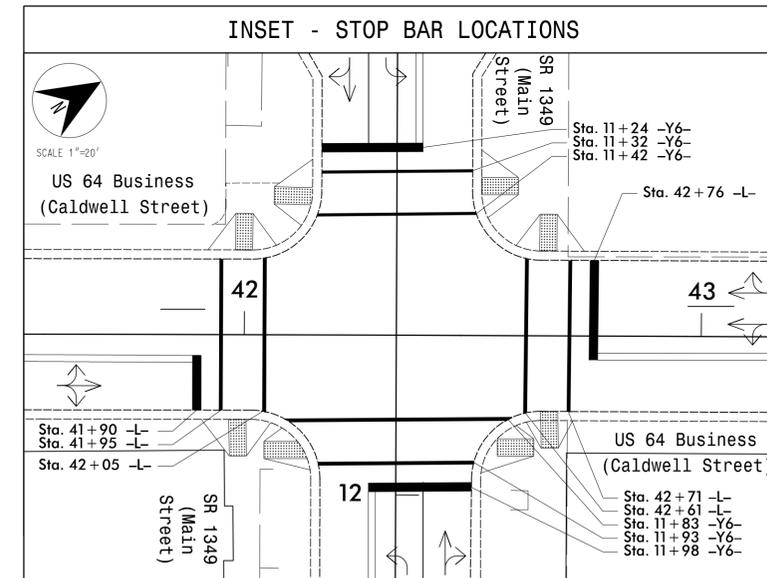
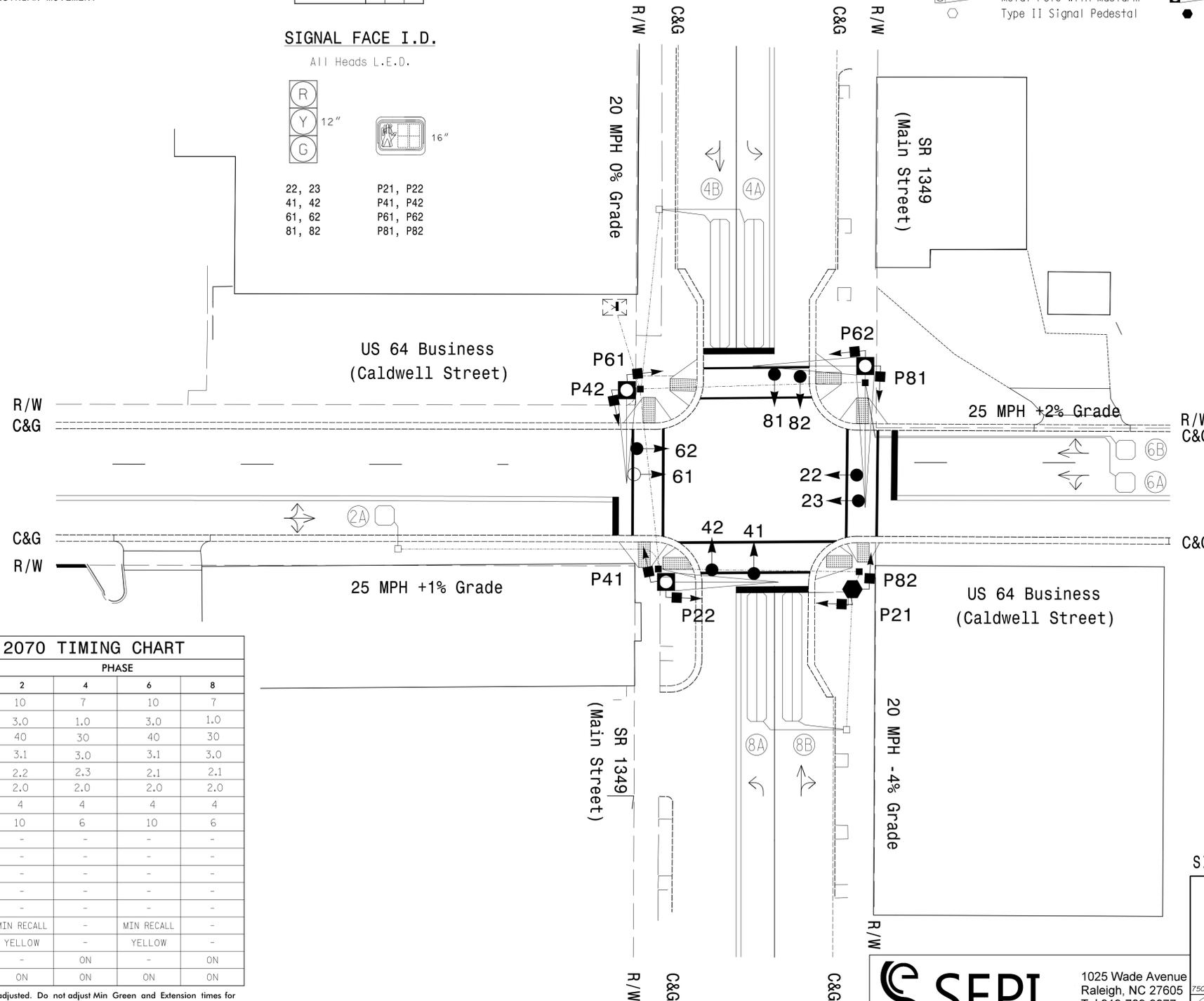
**LEGEND**

- PROPOSED**
  - Traffic Signal Head
  - Modified Signal Head
  - Sign
  - Pedestrian Signal Head With Push Button & Sign
  - Signal Pole with Guy
  - Signal Pole with Sidewalk Guy
  - Inductive Loop Detector
  - Controller & Cabinet
  - Junction Box
  - 2-in Underground Conduit
  - Right of Way
  - Directional Arrow
  - Directional Drill
  - Metal Pole with Mastarm
  - Type II Signal Pedestal
- EXISTING**
  - N/A
  - N/A

**2 Phase Fully Actuated (Brevard Signal System)**

**NOTES**

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
5. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset # 0638.
8. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for location details.
9. Contractor shall disconnect and remove existing signal heads #11 and #21.



**OASIS 2070 TIMING CHART**

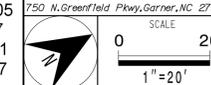
FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	1.0	3.0	1.0
Max Green 1 *	40	30	40	30
Yellow Clearance	3.1	3.0	3.1	3.0
Red Clearance	2.2	2.3	2.1	2.1
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	4	4	4	4
Don't Walk 1	10	6	10	6
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

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

**SIGNAL UPGRADE**

Prepared For the Office of:  
**US 64 Bus. (Caldwell Street) at SR 1349 (Main Street)**  
 Division 14 Transylvania County Brevard  
 PLAN DATE: May 2015 REVIEWED BY: J Hochanadel  
 PREPARED BY: M Copple REVIEWED BY: J Kopaskie  
 REVISIONS: \_\_\_\_\_ INIT. DATE  
 SEAL  
  
 Digitized by: Joseph Kopaskie 7/31/2015  
 DATE: \_\_\_\_\_  
 SIG. INVENTORY NO. 14-0638

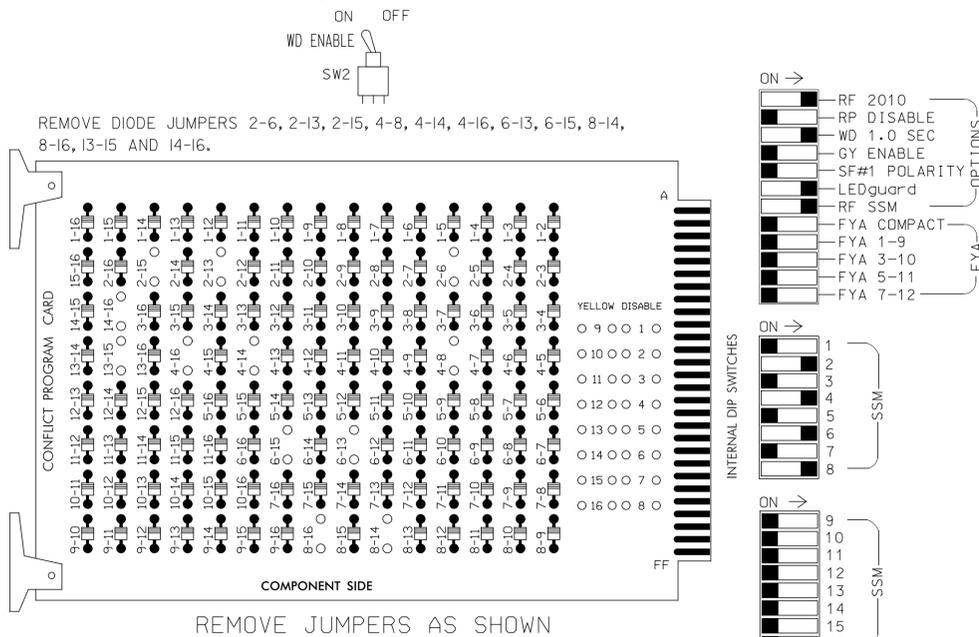
**SEPI**  
 ENGINEERING & CONSTRUCTION  
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 Raleigh, NC 27605  
 Tel: 919-789-9977  
 Fax: 919-789-9591  
 License #: C-2197



7/31/2015  
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 J.Kopaskie

### EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

■ = DENOTES POSITION OF SWITCH

### NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5, 7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the City of Brevard Signal System.

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P,S8,S8P  
 PHASES USED.....2,2PED,4,4PED,6,6PED,8,8PED  
 OVERLAPS.....NONE

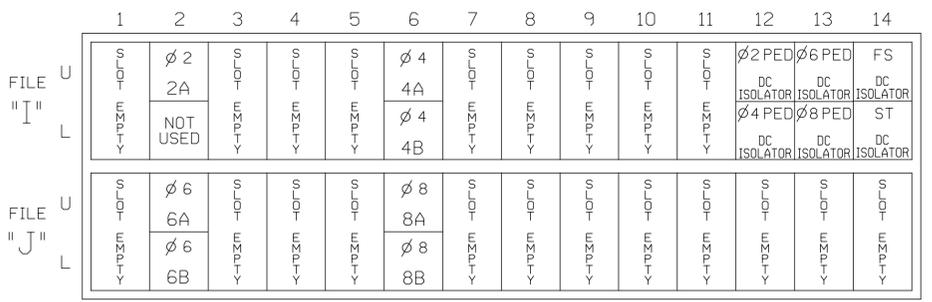
### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	22,23	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	P81, P82
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
Hand			113		104			119				110
Walking			115		106			121				112

NU = Not Used

### INPUT FILE POSITION LAYOUT

(front view)



### INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29			PED 2	2 PED			
P41,P42	TB8-5,6	I12L	69	31			PED 4	4 PED			
P61,P62	TB8-7,9	I13U	68	30			PED 6	6 PED			
P81,P82	TB8-8,9	I13L	70	32			PED 8	8 PED			

NOTE:  
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

Remove jumper from I1-W to J4-W, on rear of input file.

### 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.

### NOTES TO REMOVE EXISTING FYA HEADS (11 and 21) AND PROGRAMMING

- Configure conflict monitor programming card as shown in the conflict monitor detail.
- Remove Ped Yellow Conflict Monitor Wiring.
- Clear out Logical I/O Processor Programming for Special FYA-PPLT Signal Sequence.
- Clear out Overlap Programming for Overlaps A and C.
- Clear out FYA Signal Output Remapping Assignment for Signal Head 11.
- Clear out FYA Signal Output Remapping Assignment for Signal Head 21.
- In lieu of Steps 3 thru 6, remove Special FYA PPLT Signal Sequence, Overlap Programming, FYA Signal Output Remapping Assignments by defaulting existing controller.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 14-0638  
 DESIGNED: May 2015  
 SEALED: 7/31/2015  
 REVISED:

### Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	<b>US 64 Bus. (Caldwell Street) at SR 1349 Main Street</b>		SEAL SEAL 029669 JOSEPH B. KOPASKIE PROFESSIONAL ENGINEER
	Division 14 Transylvania County Brevard PLAN DATE: May 2015 PREPARED BY: J Kopaskie	REVIEWED BY: J Hochanadel REVIEWED BY:	

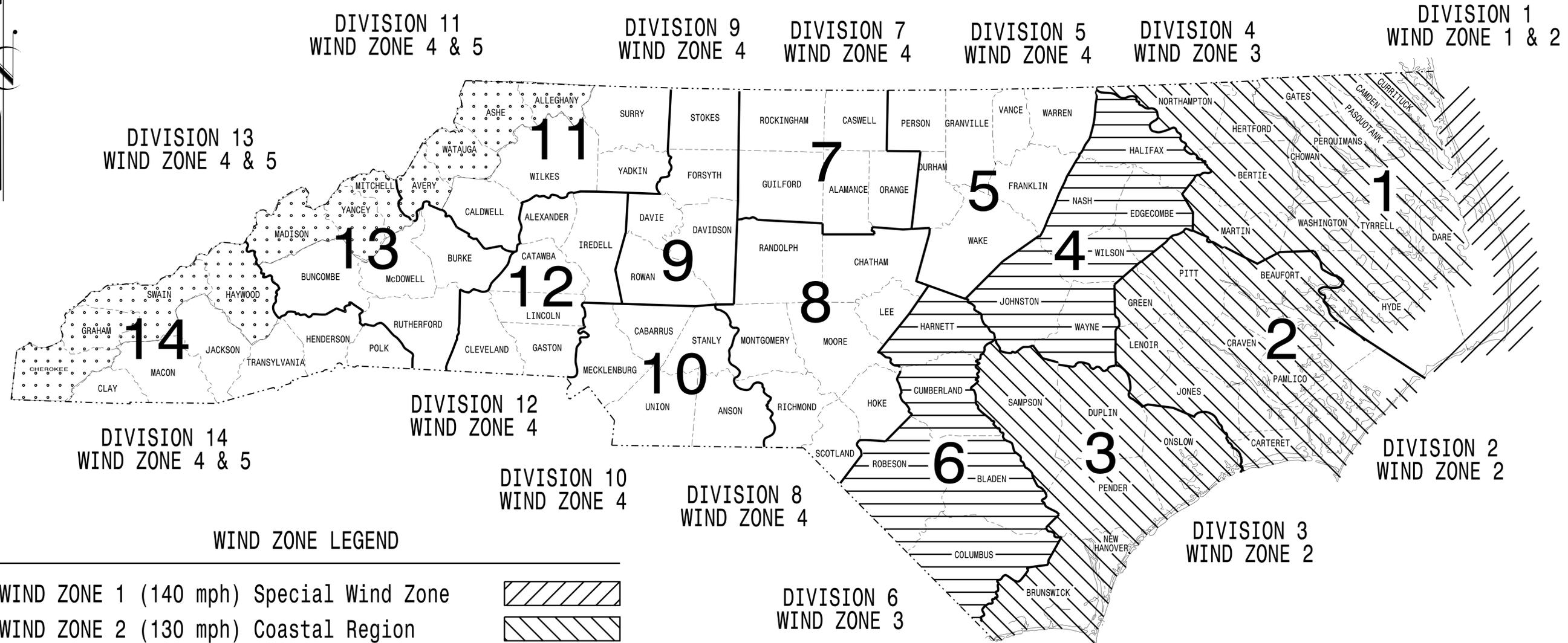
**SEPI**  
 ENGINEERING & CONSTRUCTION  
 1025 Wade Avenue  
 Raleigh, NC 27605  
 Tel: 919-789-9977  
 Fax: 919-789-9591  
 License #: C-2197

# NCDOT METAL POLE STANDARDS

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT NO. U-5104	SHEET NO. Sig. M1
-----------------------	----------------------

### STANDARD DRAWINGS FOR METAL POLES



#### WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone		
WIND ZONE 2 (130 mph) Coastal Region		
WIND ZONE 3 (110 mph) Eastern Region		
WIND ZONE 4 (90 mph) Central & Mtn. Region		
WIND ZONE 5 (120 mph) Special Wind Zone		

<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Designed in conformance  
 with the latest  
 2012 Interim to the  
 5th Edition 2009  
**AASHTO**  
 Standard Specifications for  
 Structural Supports for  
 Highway Signs, Luminaires,  
 and Traffic Signals

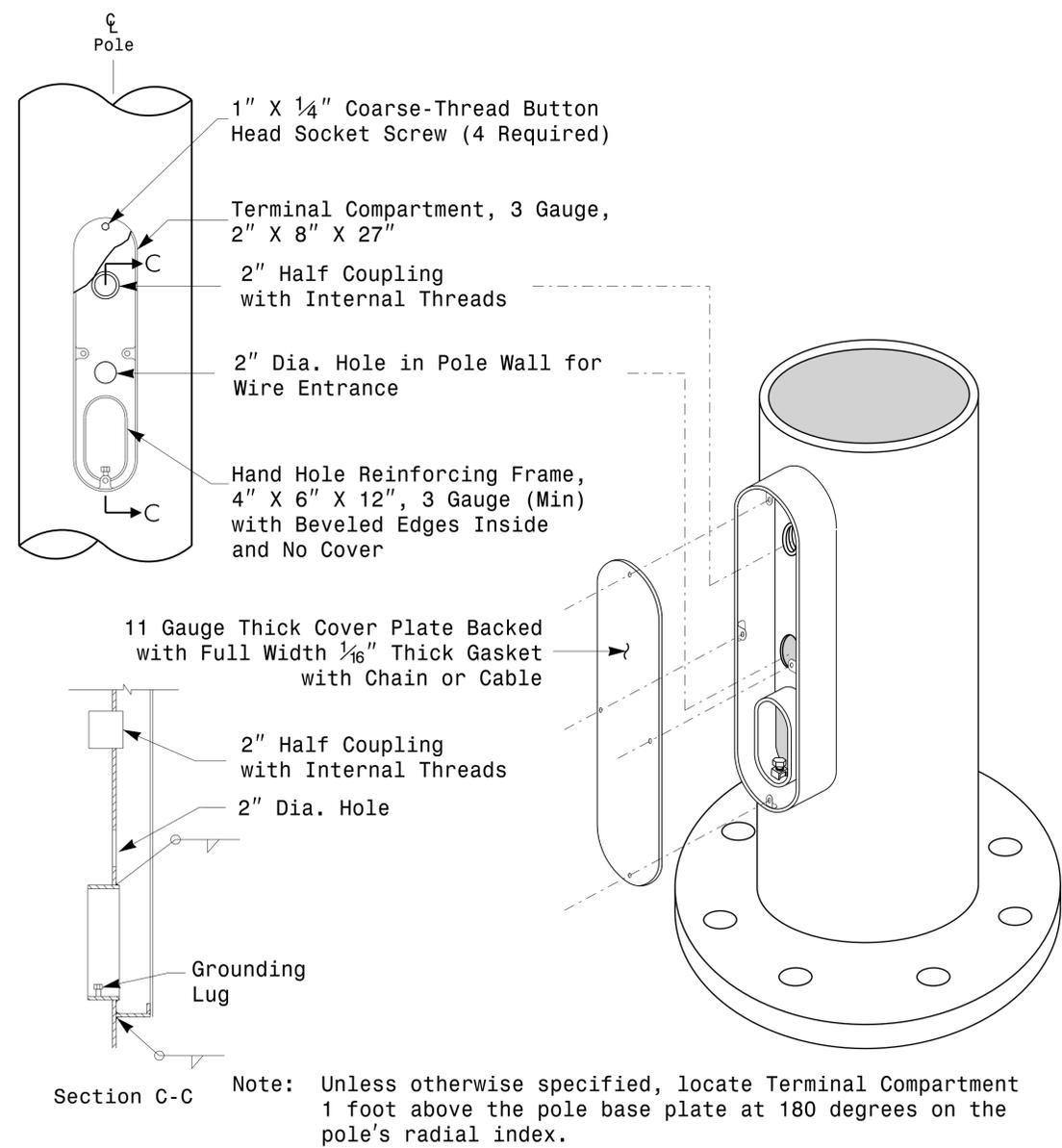
DRAWING NUMBER	DESCRIPTION
M 1	Title Sheet
M 2	Fabrication Details - All Poles
M 3	Fabrication Details - Strain Poles
M 4,5	Fabrication Details - Mast Arm Poles
M 6	Construction Details - Strain Poles
M 7	Construction Details - Foundations
M 8,9	Standard Strain Pole Foundations

**NCDOT CONTACTS:**  
**MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT**

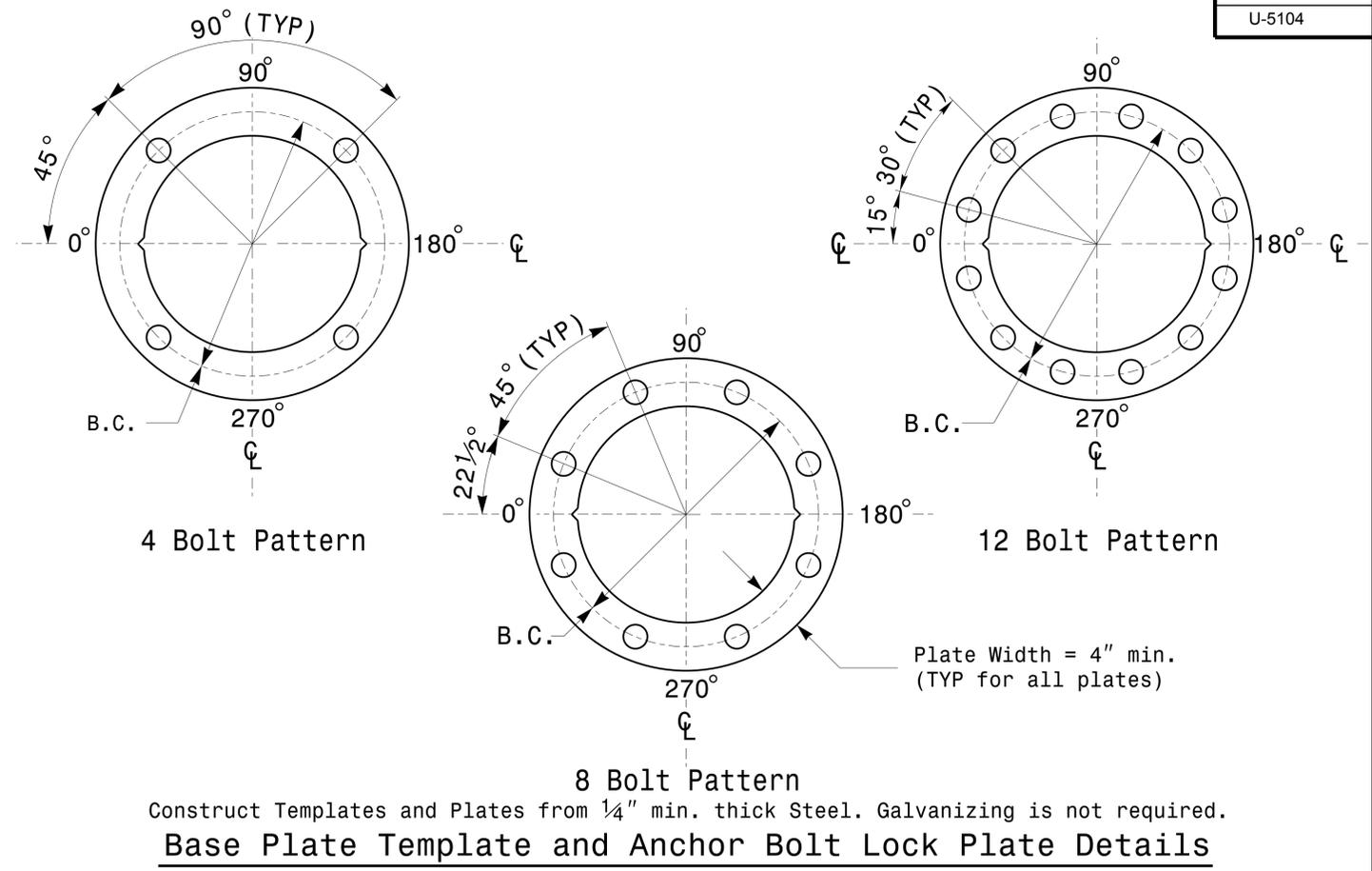
**G. A. FULLER, P.E. - STATE ITS AND SIGNALS ENGINEER**  
**G. G. MURR, JR., P.E. - STATE SIGNALS ENGINEER**  
**D.C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER**  
**C.F. ANDREWS - ITS AND SIGNALS JOURNEY STRUCTURAL ENGINEER**

SEAL

Drawn by: *Debesh C. Sarkar*  
 44EBE32E147E4C4...  
 DATE: 8/26/2014



**Terminal Compartment Detail**



**Base Plate Template and Anchor Bolt Lock Plate Details**

MFG _____	MFG. DATE: MM/YY
SHAFT D/T/L/Y _____	
ARM-A D/T/L/Y _____	
ARM-B D/T/L/Y _____	
A.B. DIA./B.C./L/Y _____	
NCDOT STANDARD _____	

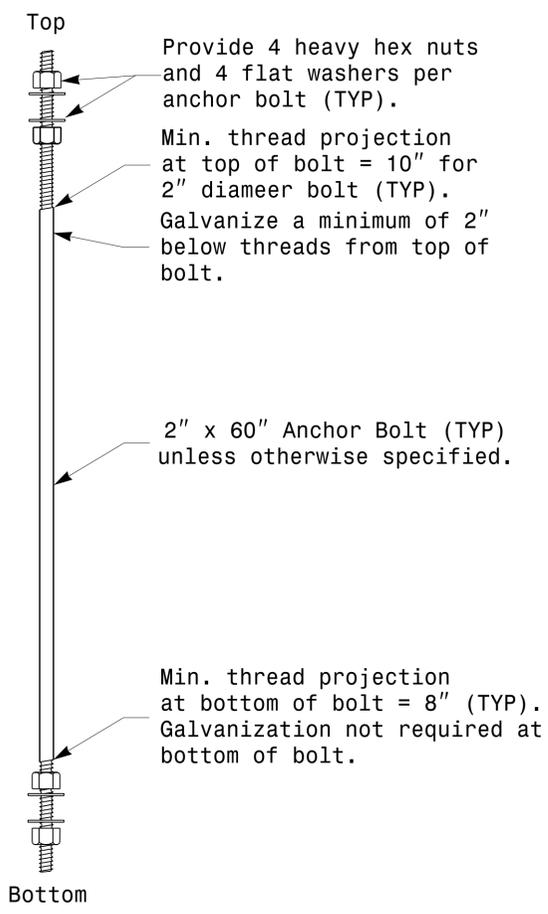
**Shaft I.D. Tag**  
(Provide on Strain Poles and Mast Arm Poles)

MFG _____	MFG. DATE: MM/YY
SECTION D/T/L/Y _____	
NCDOT STANDARD _____	

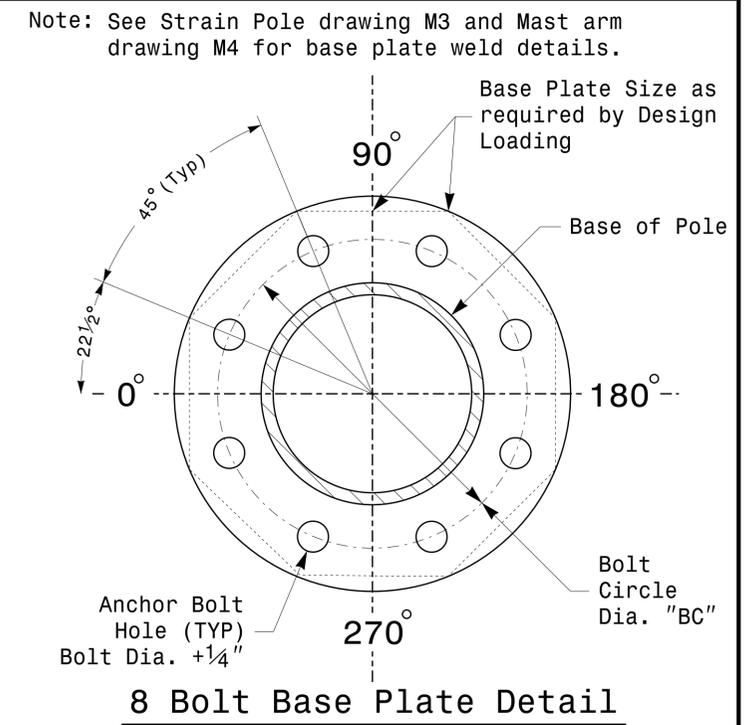
**Arm I.D. Tag**  
(Provide on each section of a multi-section mast arm)

- Notes:**
- 1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
  - 2) A.B. = Anchor Bolt
  - 3) B.C. = Bolt Circle of Anchor Bolts
  - 4) If Custom Design, use "NCDOT STANDARD" line for pole I.D. number and Signal Inv. Number.
  - 5) See drawing M4 for mounting positions of I.D. tags.

**Identification Tag Details**



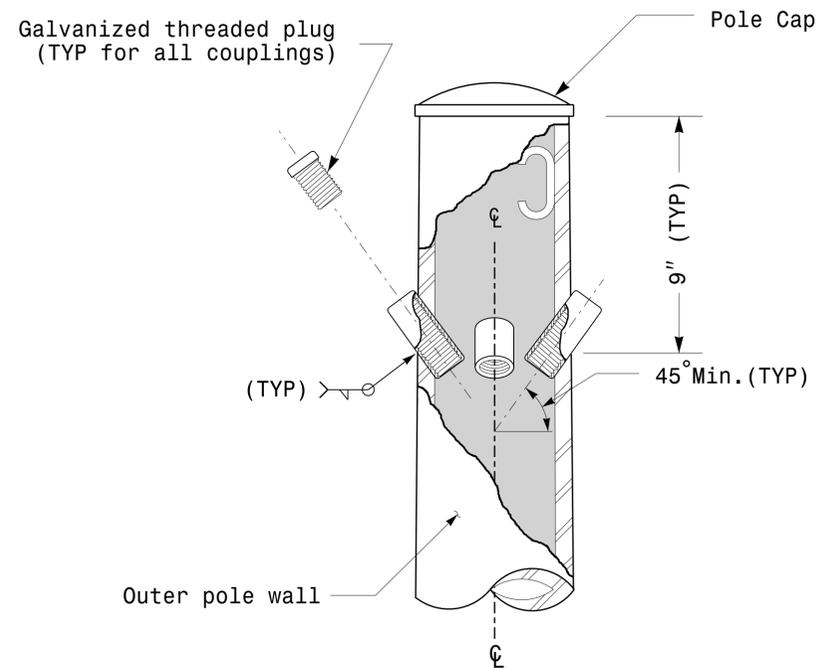
**Anchor Bolt Detail**



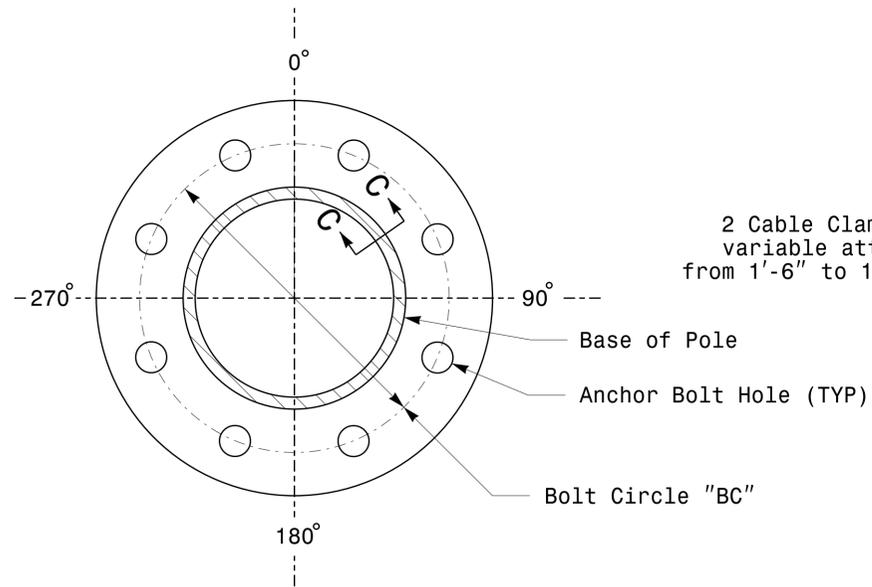
	<b>Typical Fabrication Details Common To All Metal Poles</b>		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	DESIGNED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR	
SCALE: NONE	REVISIONS: _____	INIT. DATE: _____	DocuSign by: Dinesh C. Sarkar 8/26/2014 DATE: _____ SIG. INVENTORY NO. _____

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 Top | Lowy

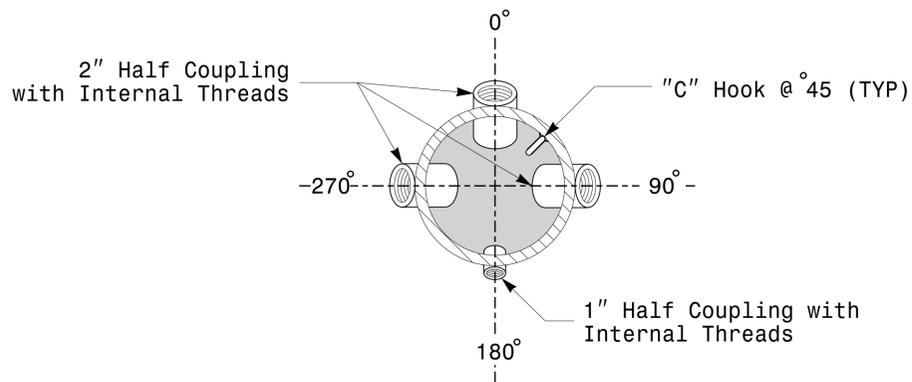
**Fabrication Details – All Poles**



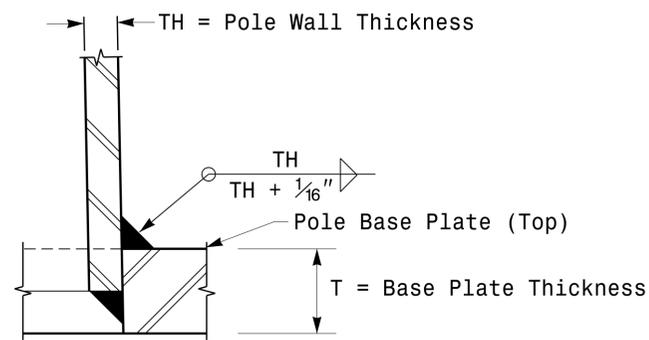
Cable Entrances at Top of Pole



Section B-B  
Pole Base Plate  
(See drawing M2)

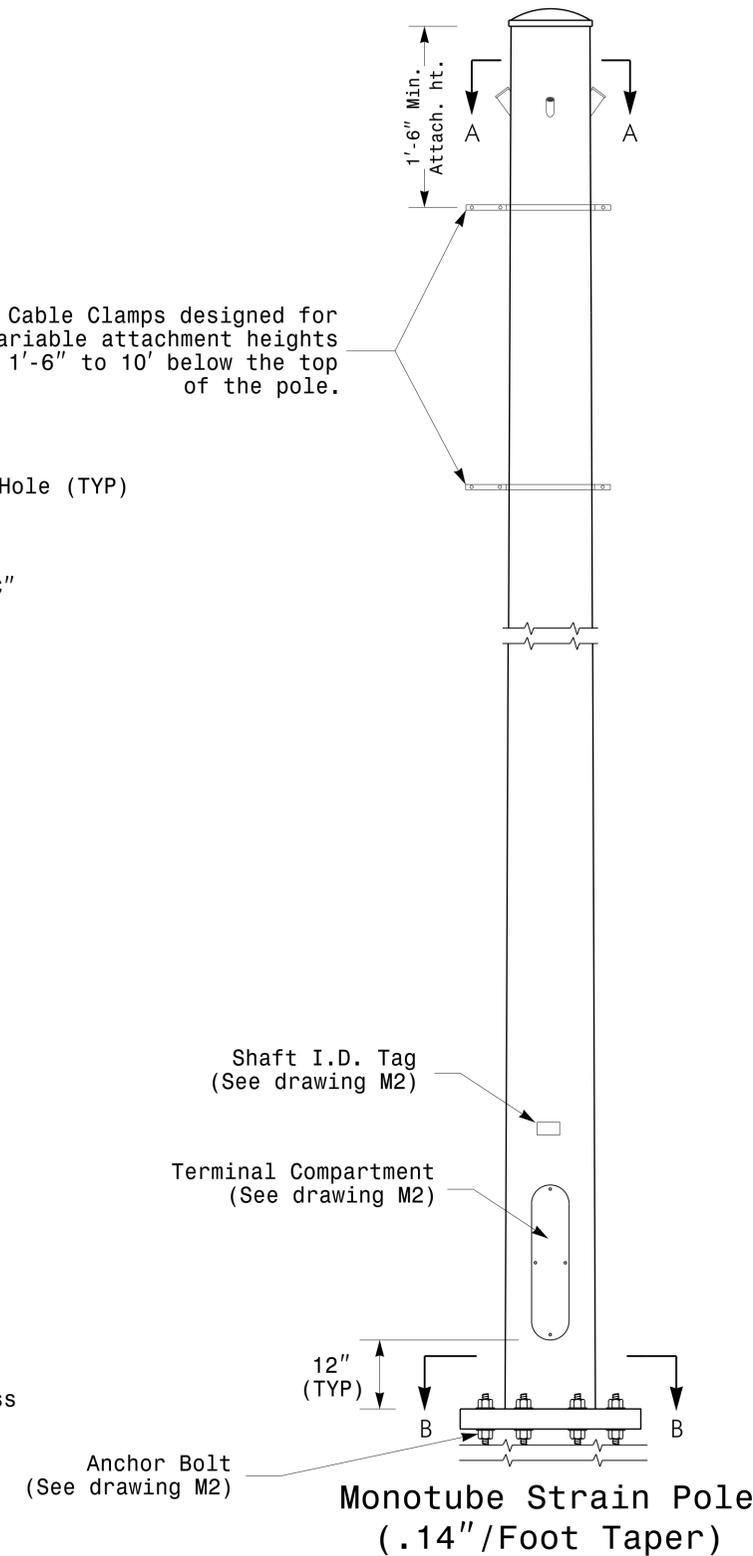


Radial Orientation for Factory Installed  
Accessories at Top of Pole



Socket Connection Weld Detail

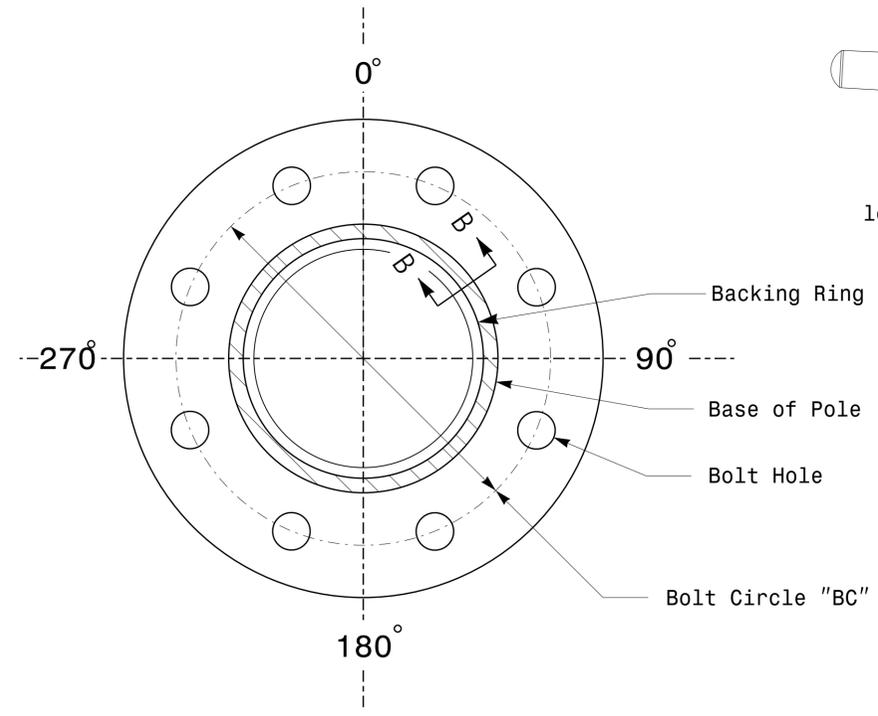
2 Cable Clamps designed for variable attachment heights from 1'-6" to 10' below the top of the pole.



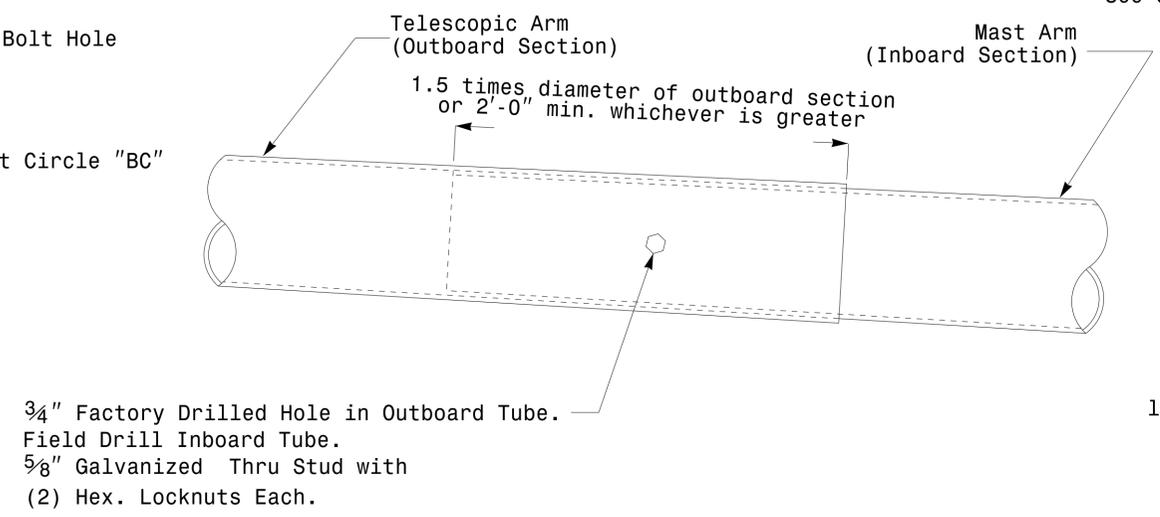
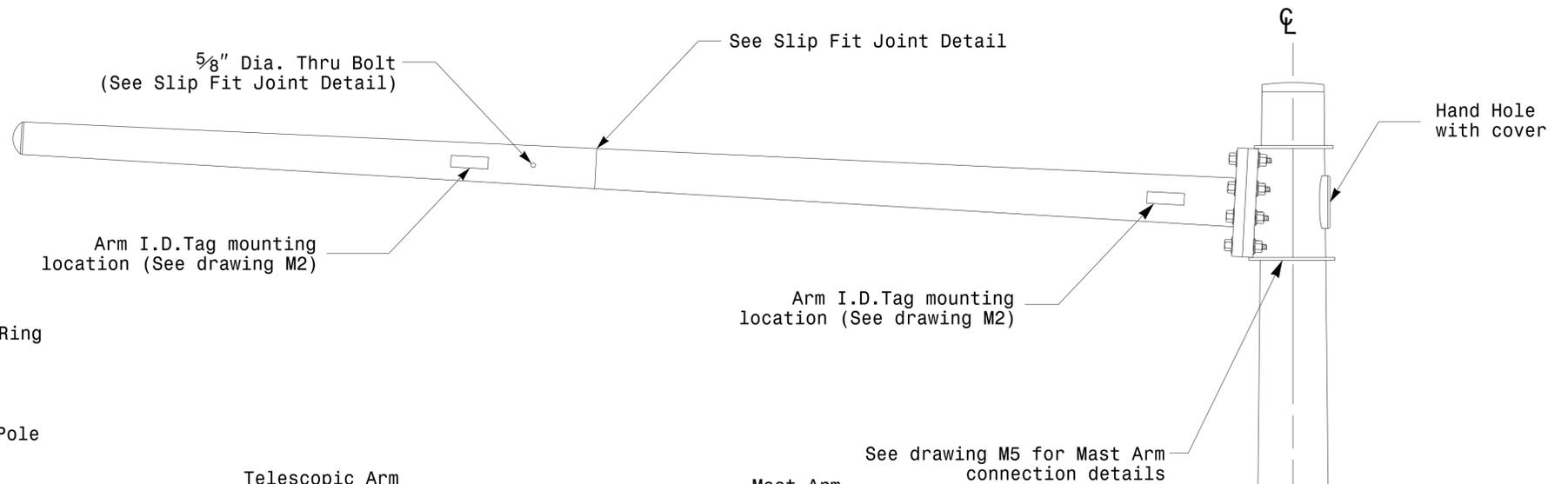
	Typical Fabrication Details For Strain Poles		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	DESIGNED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	REVISIONS: _____ INIT.: _____ DATE: _____	SIG. INVENTORY NO.	

08-2014-08-51  
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 7/20/14 10:52

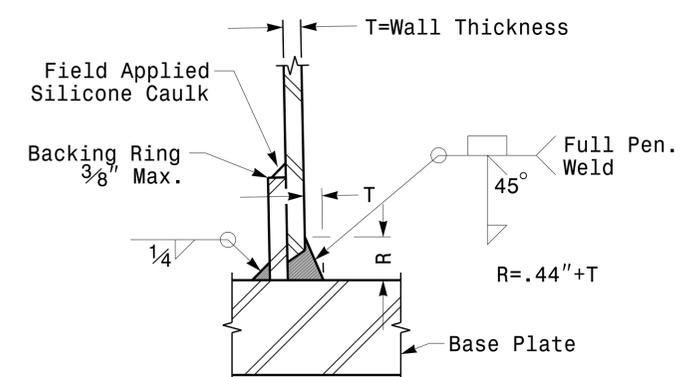
**Fabrication Details – Strain Poles**



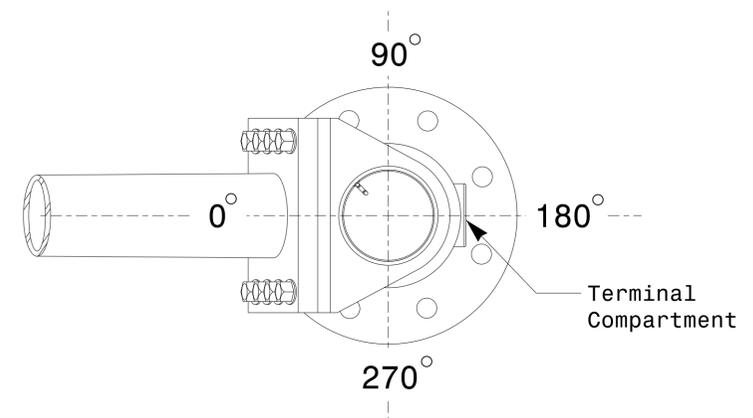
Section A-A  
(See drawing M 2)  
**Pole Base Plate**



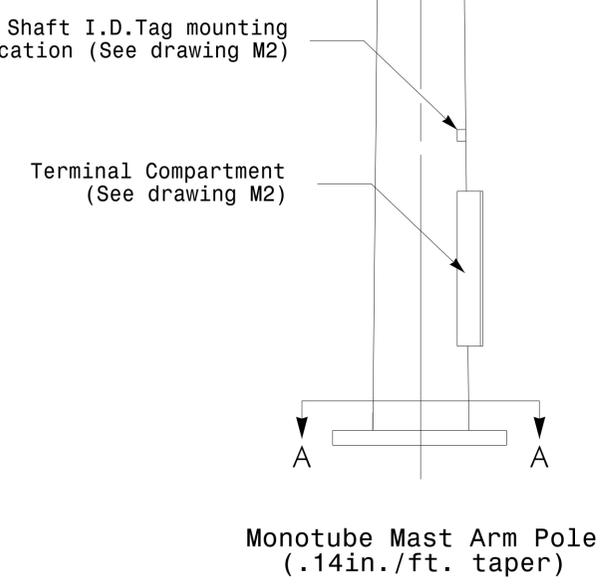
**Slip Fit Joint Detail for Mast Arm**



Section B-B  
(Pole Attachment to Base Plate)  
**Full-Penetration Groove Weld Detail**



**Mast Arm Radial Orientation**

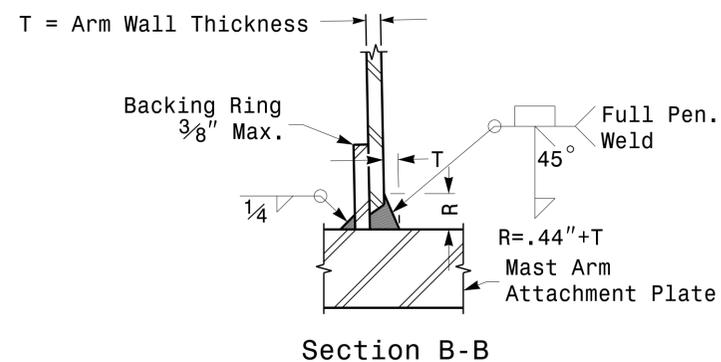
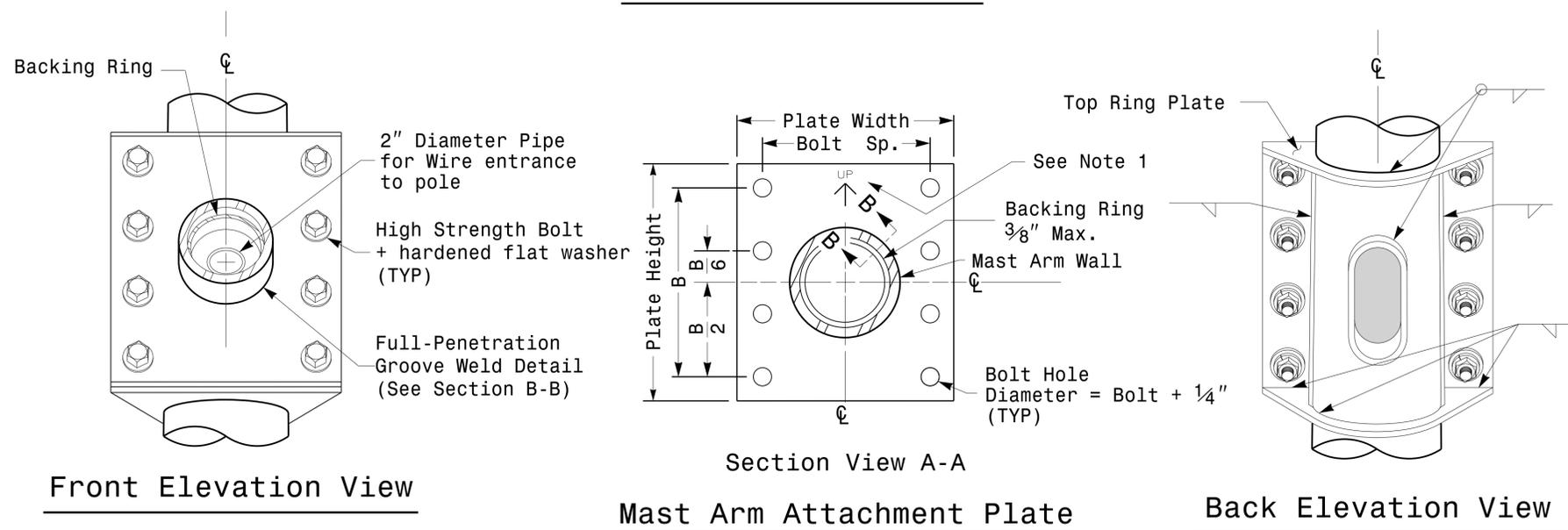
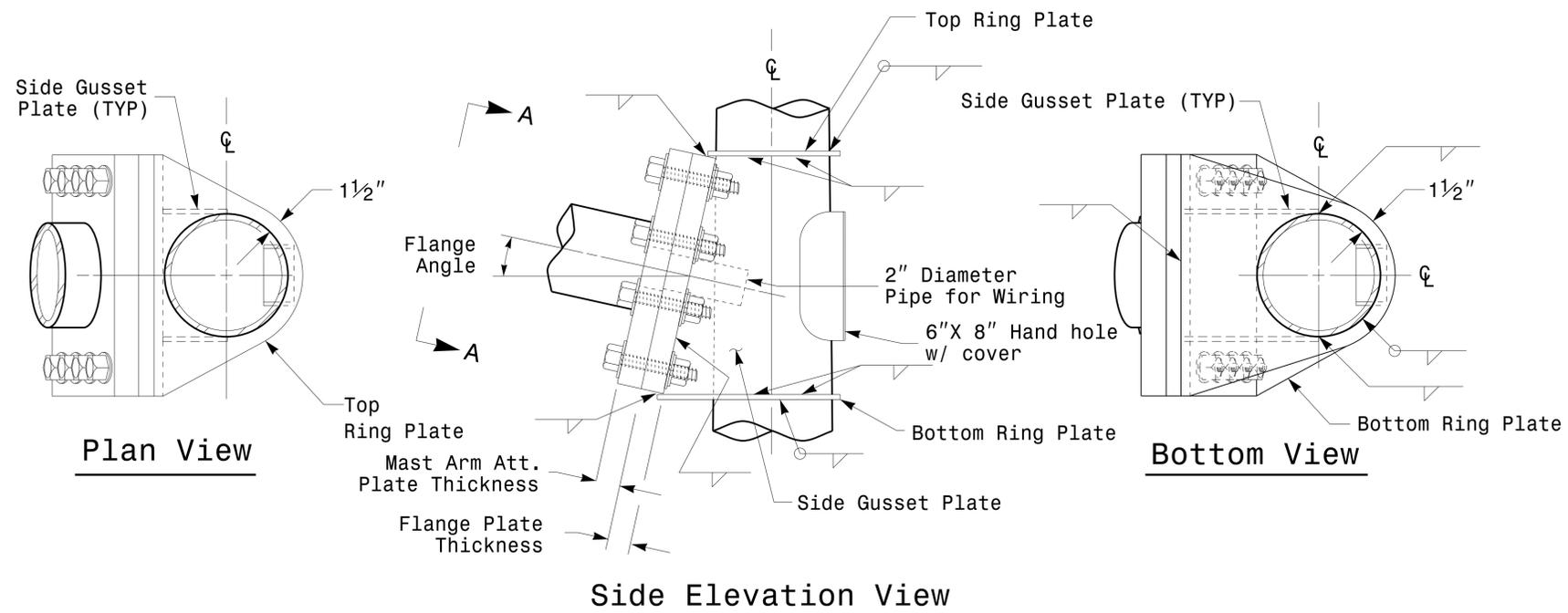


**Fabrication Details – Mast Arm Poles**

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	Typical Fabrication Details for Mast Arm Poles		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	DESIGNED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	REVISIONS:	INIT. DATE:	SIG. INVENTORY NO.:

# Welded Ring Stiffened Mast Arm Connection



**Full-Penetration Groove Weld Detail**

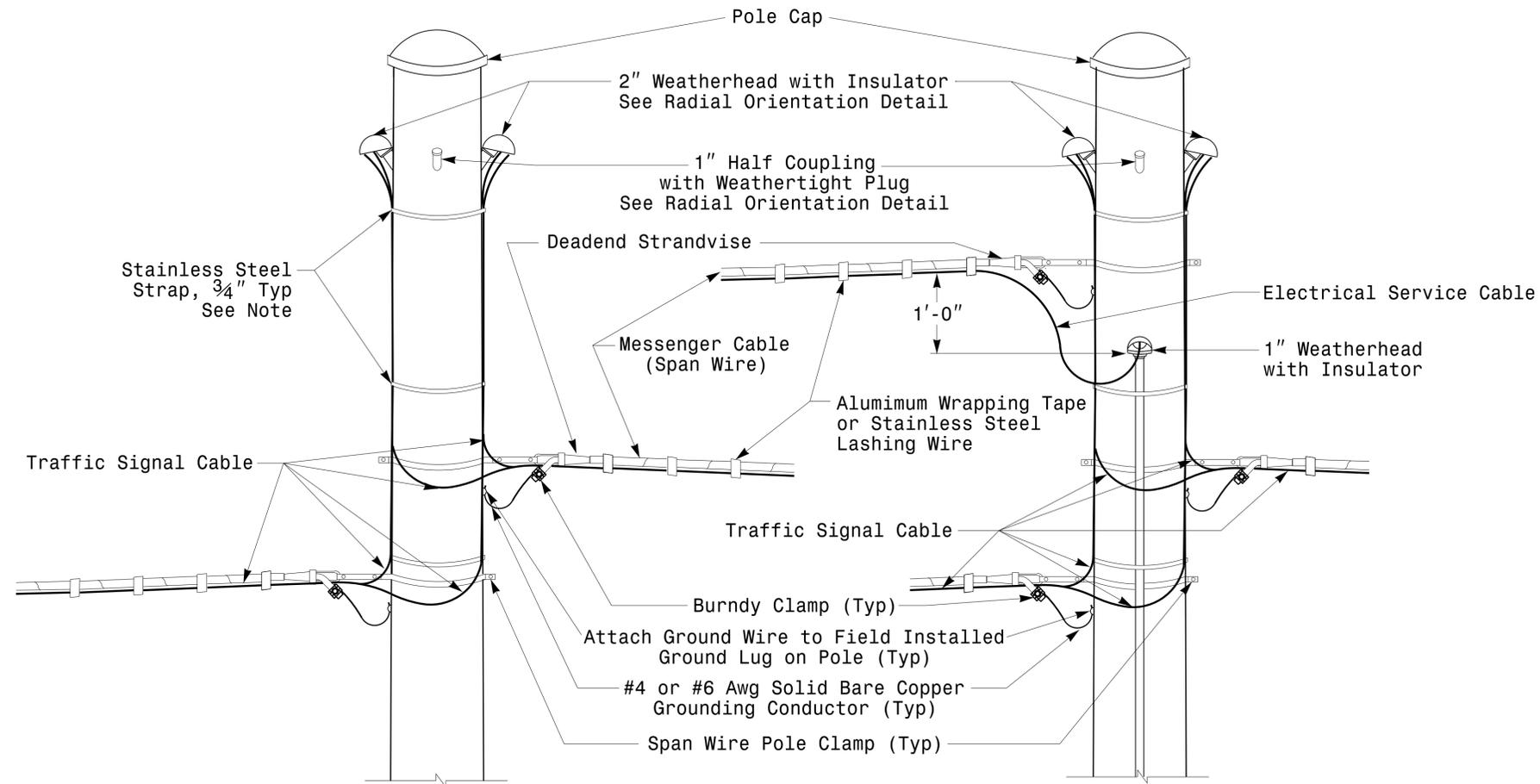
**Notes:**

1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Designer is responsible for providing appropriate drainage points.

	<p>Fabrication Details For Mast Arm Connection To Pole</p>		
	<p>PLAN DATE: AUGUST 2013</p>	<p>DESIGNED BY: C.F. ANDREWS</p>	
<p>SCALE: 0 NA NONE</p>	<p>PREPARED BY: N. BITTING</p>	<p>REVIEWED BY: D.C. SARKAR</p>	<p>INIT. DATE</p>
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>	<p>DocuSign by: D. C. Sarkar 8/26/2014</p>

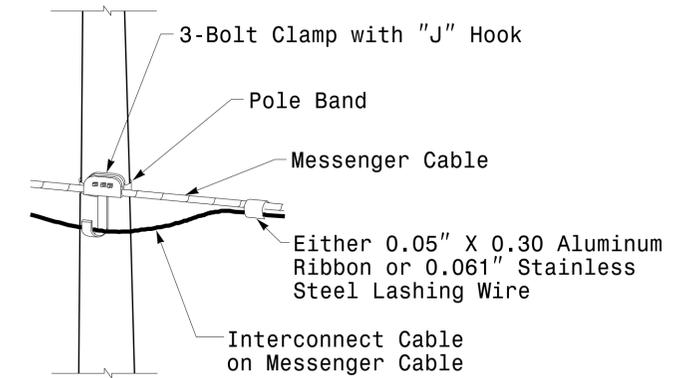
06-10-2014 08:47  
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 Topiloway

**Fabrication Details – Mast Arm Poles**

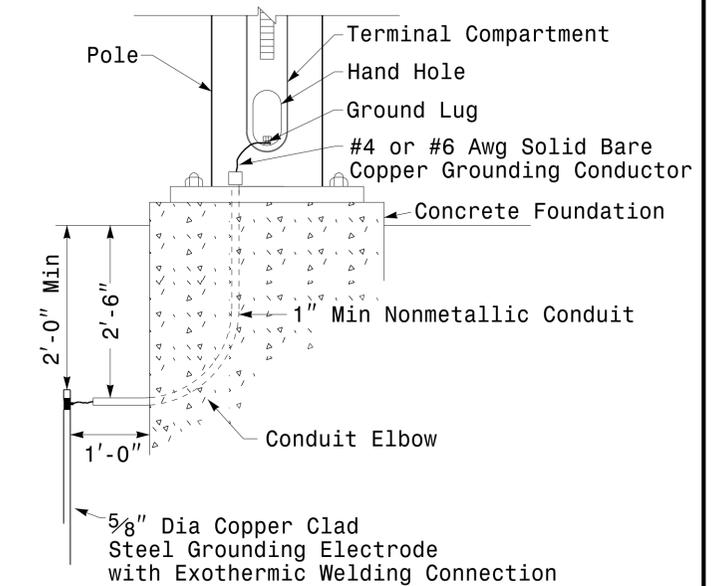


**Strain Pole Attachments**

Note: Strap all signal cables to the side of the pole with 3/4" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36"



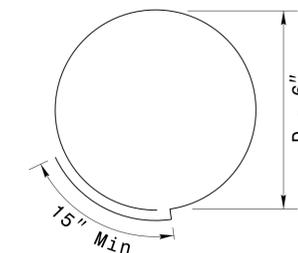
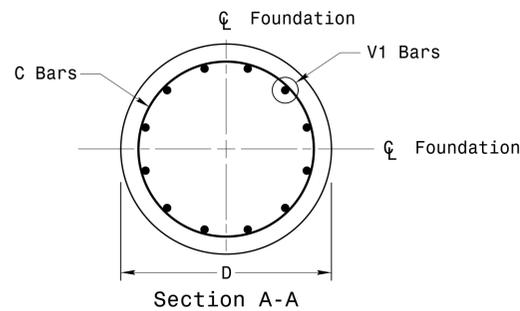
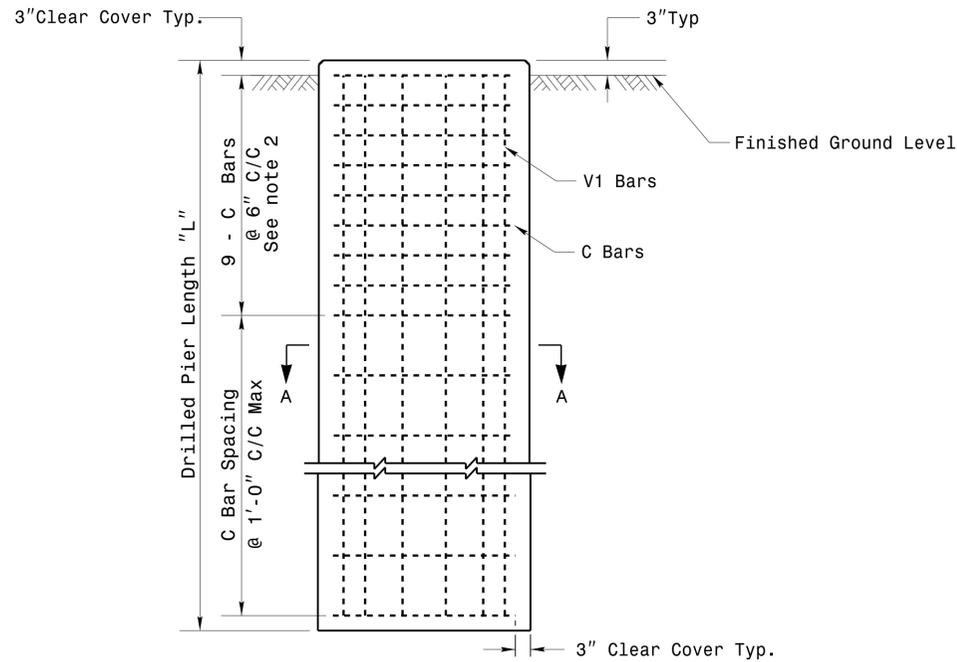
**Attachment of Cable to Intermediate Metal Pole**



**Metal Pole Grounding Detail**

	<b>Construction Details Strain Poles</b>		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	REVIEWED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	REVISIONS:	INIT. DATE:	SIG. INVENTORY NO.:

### Reinforcing Steel Bars



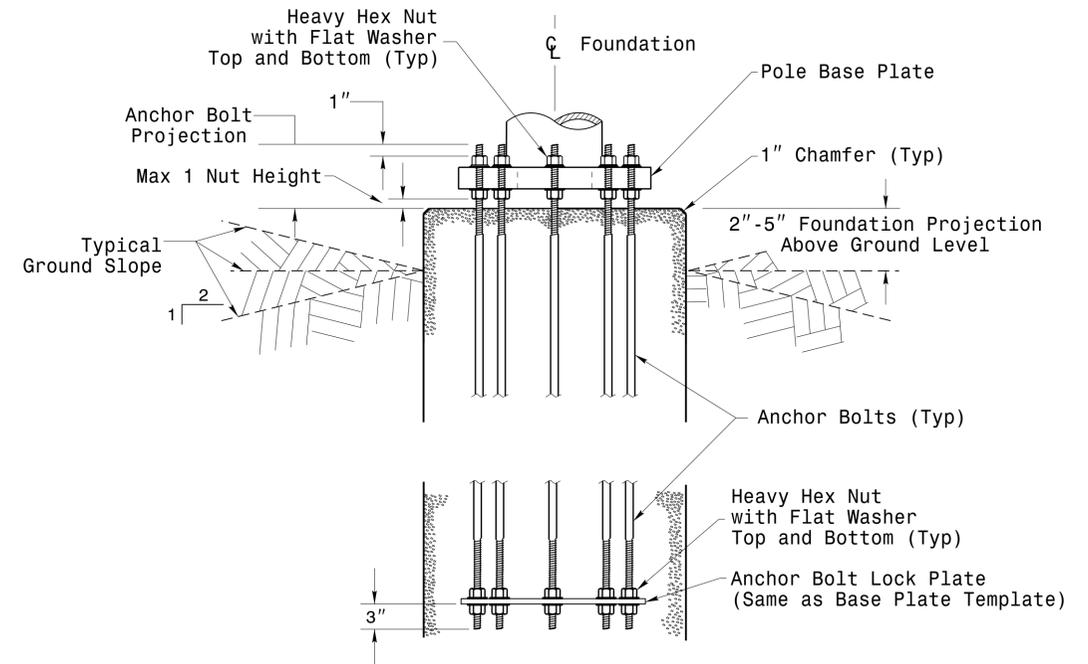
Typical "C" Bars

REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'-0" DIAMETER)						
Shaft Dia (in.)	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
48"	.465 x L	V1	***	#8	STR.	**
		C	*	#4	CIR.	12'-6"

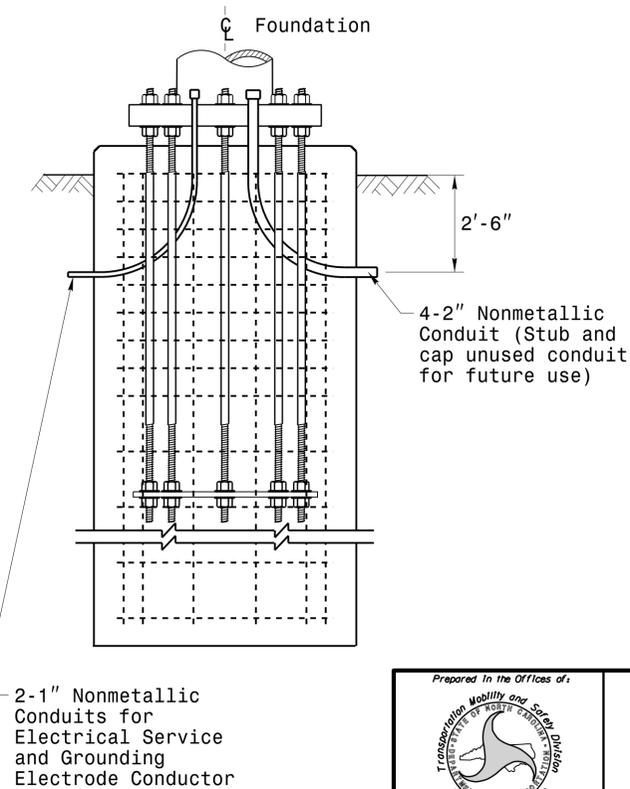
\* See Note No. 1  
 \*\* See Note No. 3  
 \*\*\* See Note No. 4

### Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)



### Typical Foundation Conduit Details



### Notes

- The number of C-bars is based on foundation depth and/or as required. For standard foundations, see sheets M 8 and M 9 for details.
- Circular tie reinforcing rings may be vertically adjusted by +/- 3" at a depth between 2'-0" and 3'-0" to facilitate the installation of electrical conduit entering in the cage.
- The length of V1-bars is based on foundation depth. For standard foundations, see sheets M 8 and M 9 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/- 3" to facilitate the installation of electrical conduit entering into the cage.
- Provide vertical reinforcement as required per design. See sheets M 8 and M9 for details.

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 J.pallawcy

**Construction Details – Foundations**

	<b>Construction Details Foundations</b>		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	REVISIONS:	INIT. DATE:	SIG. INVENTORY NO.:

# SATURATED SOIL CONDITION

		STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) - Feet							Reinforcement			
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
					Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity	Bar Size (#)	Spacing (in.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	19	13	9	8	17	14.5	12.5	8	13	4	12
		S30L3	30	25	2	11	300	20	13.5	9	8	17.5	15	13	8	14	4	12
		S35L3	35	25	3	11	320	20	13.5	9.5	8	17.5	15	13	8	15	4	12
	HEAVY	S30H3	30	29	3	16	450	24.5	17	13	11	21	17.5	15	8	18	4	12
		S35H3	35	29	4	16	515	26	17.5	12	8.5	22	18.5	16	8	20	4	12
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	16	11	8	8	15	12.5	11	8	12	4	12
		S30L1	30	22	2	8	205	16.5	11.5	8	8	15	13	11.5	8	12	4	12
		S35L1	35	22	3	8	230	17	12	8	8	15.5	13.5	11.5	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	20.5	14	9.5	8	18	15	13.5	8	15	4	12
		S35H1	35	25	4	12	350	21	14.5	10	8	18.5	15.5	13.5	8	16	4	12
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12

**Fabrication Design Notes:**

1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Min. base plate thickness (T) is 2.0 inches.

**Foundation Selection:**

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from M 1 drawing.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate standard pole case number from the plans or from the Engineer.
5. Select the appropriate column in the chart based on soil type and "N" value. Select the appropriate row based on the pole load case.  
The foundation depth is the value where the column and the row intersect.
6. Reference Drilled Shafts: Construction Procedures and Design Methods, FHWA -IF-99-025

- S30H1 - Hard Clay-Stirrup Spacing: 6 in. c/c
- S30H2 - Hard Clay-Stirrup Spacing: 6 in. c/c
- S30H3 - Hard Clay-Stirrup Spacing: 6 in. c/c
- Dense Sand-Stirrup Spacing: 6 in. c/c
- S35H1 - Hard Clay - Stirrup Spacing: 6 in. c/c
- S35H2 - Very Stiff Clay-Stirrup Spacing: 6 in. c/c
- Hard Clay- Stirrup Spacing: 6 in. c/c
- Dense Sand- Stirrup Spacing: 6 in. c/c
- S35H3 - Very Stiff Clay-Stirrup Spacing: 6 in. c/c
- Dense Sand-Stirrup Spacing: 6 in. c/c

48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Foundation Depth

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	<p><b>Standard Strain Pole Foundation for Saturated Soil Condition</b></p> <p>PLAN DATE: SEPTEMBER 2013    DESIGNED BY: C.B. COGDILL                  PREPARED BY: N. BITTING    REVIEWED BY: D. SARKAR</p>	
SCALE: 0 NA None	REVISIONS:    INIT.    DATE	DocuSigned by: Debesh C. Sarkar 3/26/2014 44EBE32E147E4C4...    DATE

Standard Strain Pole Foundation - Saturated Soil Condition

# DRY SOIL CONDITION

		STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) - Feet						Reinforcement				
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
					Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity	Bar Size (#)	Spacing (in.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	18	12.5	9	8	14.5	11	10	8	13	4	12
		S30L3	30	25	2	11	300	18.5	13	9	8	15	11.5	10	8	14	4	12
		S35L3	35	25	3	11	320	19	13.5	9.5	8	15	11.5	10.5	8	15	4	12
	HEAVY	S30H3	30	29	3	16	450	23	16	11	8	17.5	13.5	11.5	8	18	4	12
		S35H3	35	29	4	16	515	24.5	16.5	12	8.5	18.5	14	12	8	20	4	12
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	17	12	8.5	8	14	11	9.5	8	13	4	12
		S30L2	30	23	2	10	270	18	12.5	8.5	8	14.5	11	10	8	13	4	12
		S35L2	35	23	3	10	300	18.5	13	9	8	14.5	11.5	10	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	22	15	10.5	8	17	13	11.5	8	17	4	12
		S35H2	35	29	4	15	475	23.5	16	11.5	8	18	13.5	12	8	19	4	12
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	17	12	8.5	8	14	11	9.5	8	13	4	12
		S30L2	30	23	2	10	270	18	12.5	8.5	8	14.5	11	10	8	13	4	12
		S35L2	35	23	3	10	300	18.5	13	9	8	14.5	11.5	10	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	22	15	10.5	8	17	13	11.5	8	17	4	12
		S35H2	35	29	4	15	475	23.5	16	11.5	8	18	13.5	12	8	19	4	12
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	15.5	10.5	8	8	13	10	9	8	12	4	12
		S30L1	30	22	2	8	205	15.5	11	8	8	13	10	9	8	12	4	12
		S35L1	35	22	3	8	230	16.5	11.5	8	8	13.5	10.5	9	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	19.5	13.5	9.5	8	15	12	10.5	8	15	4	12
		S35H1	35	25	4	12	350	20	14	10	8	15.5	12	10.5	8	15	4	12
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	17	12	8.5	8	14	11	9.5	8	13	4	12
		S30L2	30	23	2	10	270	18	12.5	8.5	8	14.5	11	10	8	13	4	12
		S35L2	35	23	3	10	300	18.5	13	9	8	14.5	11.5	10	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	22	15	10.5	8	17	13	11.5	8	17	4	12
		S35H2	35	29	4	15	475	23.5	16	11.5	8	18	13.5	12	8	19	4	12

### Fabrication Design Notes:

- Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
- Min. base plate thickness (T) is 2.0 inches.

### Foundation Selection:

- Perform a standard penetration test at each proposed foundation site to determine "N" value.
- Select the appropriate wind zone from M 1 drawing.
- Select the soil type (Clay or Sand) that best describes the soil characteristics.
- Get the appropriate standard pole case number from the plans or from the Engineer.
- Select the appropriate column in the chart based on soil type and "N" value. Select the appropriate row based on the pole load case.  
The foundation depth is the value where the column and the row intersect.
- Reference Drilled Shafts: Construction Procedures and Design Methods, FHWA -IF-99-025

- S30H1 - Hard Clay-Stirrup Spacing: 6 in. c/c  
- Dense Sand-Stirrup Spacing: 6 in. c/c
- S30H2 - Very Stiff Clay: Stirrup Spacing: 6 in. c/c  
- Hard Clay: Stirrup Spacing: 6 in. c/c  
- Medium Clay: Stirrup Spacing: 6 in. c/c  
- Dense Sand: Stirrup Spacing: 6 in. c/c
- S30H3 - Very Stiff Clay: Stirrup Spacing: 6 in. c/c  
- Hard Clay: Stirrup Spacing: 6 in. c/c  
- Medium Clay: Stirrup Spacing: 6 in. c/c  
- Dense Sand: Stirrup Spacing: 6 in. c/c
- S35H1 - Hard Clay: tirrup Spacing: 6 in. c/c  
- Dense Sand: Stirrup Spacing: 6 in. c/c
- S35H2 - Very Stiff Clay: Stirrup Spacing: 6 in. c/c  
- Hard Clay: Stirrup Spacing: 6 in. c/c  
- Medium Clay: Stirrup Spacing: 6 in. c/c  
- Dense Sand: Stirrup Spacing: 6 in. c/c
- S35H3 - Very Stiff Clay: Stirrup Spacing: 6 in. c/c  
- Hard Clay: Stirrup Spacing: 6 in. c/c  
- Medium Clay: Stirrup Spacing: 6 in. c/c  
- Dense Sand: Stirrup Spacing: 6 in. c/c

48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Foundation Depth

	<b>Standard Strain Pole Foundation for Dry Soil Condition</b>		
	PLAN DATE: SEPTEMBER 2013    DESIGNED BY: C.B. COGDILL PREPARED BY: N. BITTING    REVIEWED BY: D. SARKAR	REVISIONS    INIT.    DATE	
SCALE: 0 NA None		DocuSigned by: Deborah C. Sarkar 2/26/2014 44EBE32E147E4C4...	

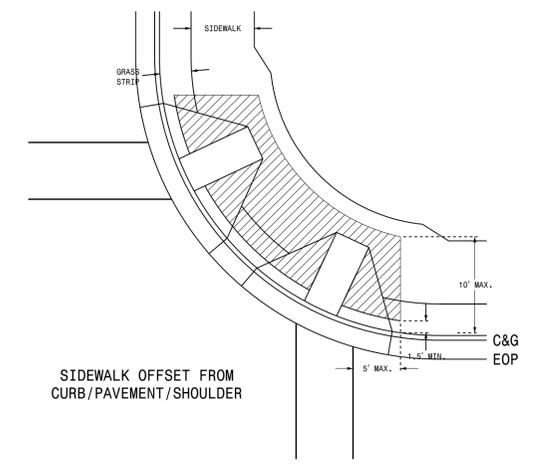
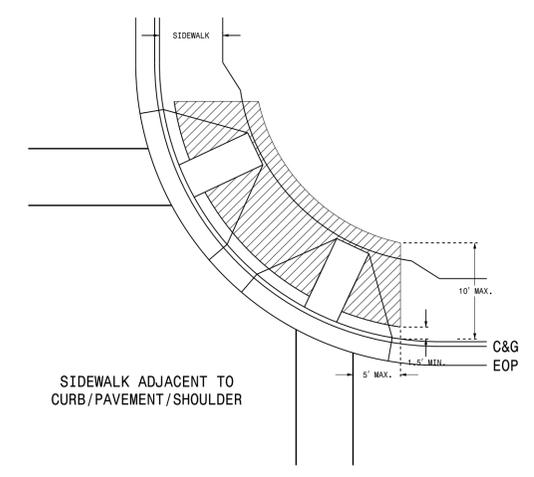
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DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

06-14

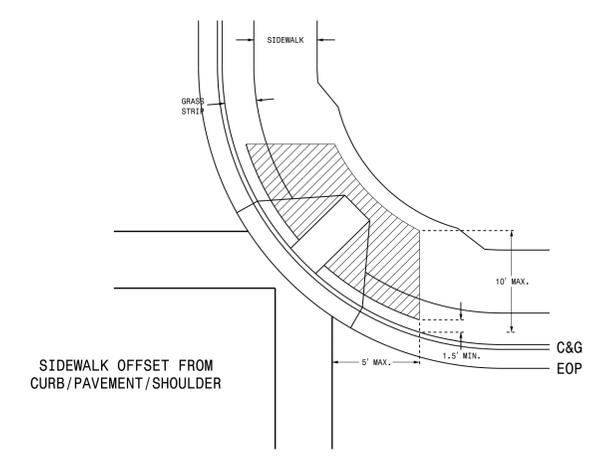
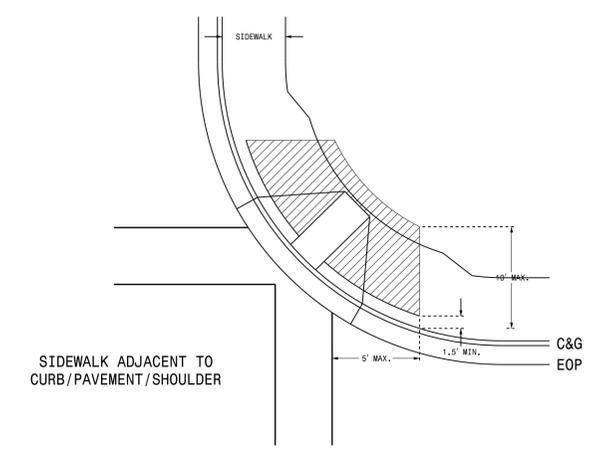
ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
PLACEMENT DETAIL

SHEET 1 OF 3  
**1705D01**

**PUSHBUTTON PLACEMENT**  
SEPARATE CURB RAMPS



**PUSHBUTTON PLACEMENT**  
SHARED CURB RAMP



- 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

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ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
PLACEMENT DETAIL

SHEET 1 OF 3  
**1705D01**

See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway  
Garner, NC 27529

SEAL

DocuSigned by:  
*Robert J. Ziemba*  
18084828744604

SIGNATURE DATE

6/17/2014

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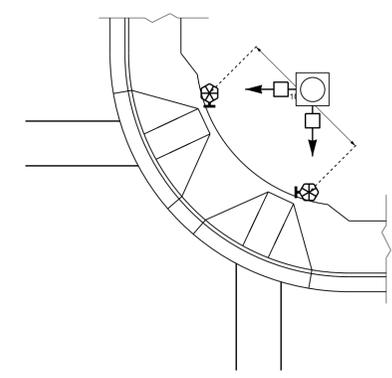
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DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

06-14

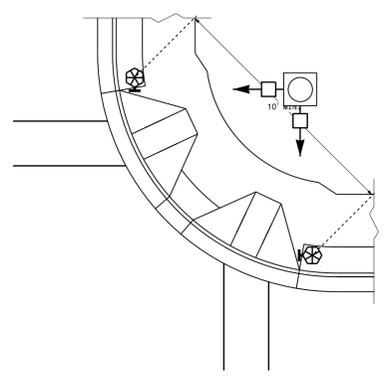
ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
PLACEMENT DETAIL

SHEET 2 OF 3  
**1705D01**

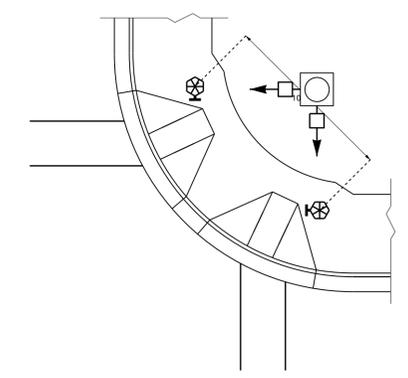
TYPICAL PUSHBUTTON LOCATIONS (CASE I)  
SEPARATE CURB RAMPS W/ TYPE I PEDESTALS



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



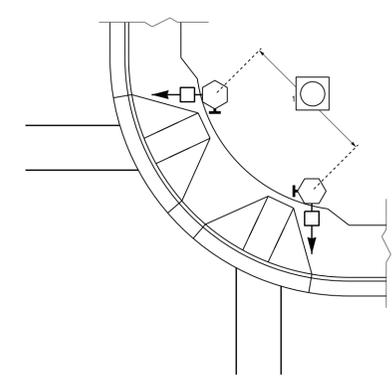
PUSHBUTTON PLACEMENT  
IN WIDE SIDEWALK

**PROPOSED**

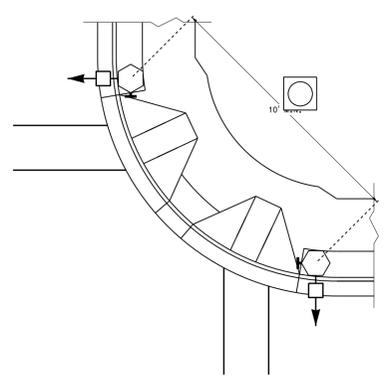
- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

**LEGEND**

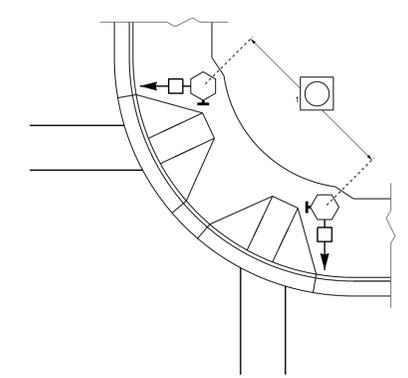
TYPICAL PUSHBUTTON LOCATIONS (CASE II)  
SEPARATE CURB RAMPS W/ TYPE II PEDESTALS



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

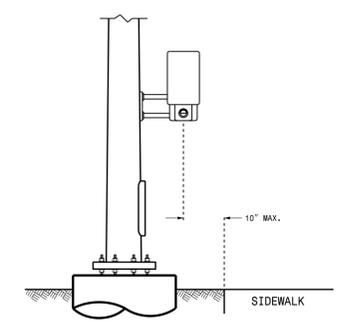


GRASS STRIP PLACEMENT IF BACK  
OF SIDEWALK EXCEEDS 10' FROM  
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT  
IN WIDE SIDEWALK

OPTIONAL PUSHBUTTON EXTENSION  
FACE OF PUSHBUTTON PARALLEL TO  
APPLICABLE CROSSWALK



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ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
PLACEMENT DETAIL

SHEET 2 OF 3  
**1705D01**

See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway  
Garner, NC 27529

SEAL

DocuSigned by:  
*Robert J. Ziemba*  
188B486274464

SIGNATURE

6/17/2014  
DATE

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 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

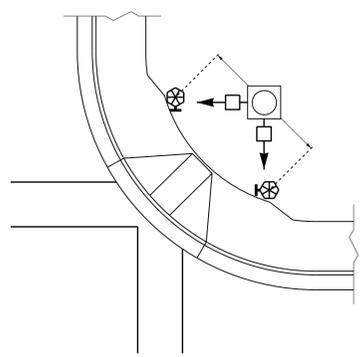
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ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
 PLACEMENT DETAIL

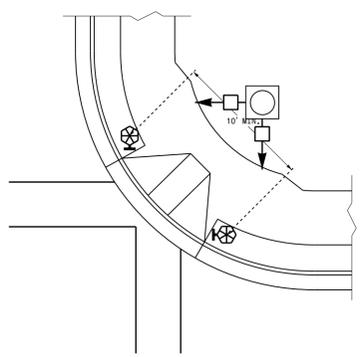
SHEET 3 OF 3  
**1705D01**

**TYPICAL PUSHBUTTON LOCATIONS (CASE III)**

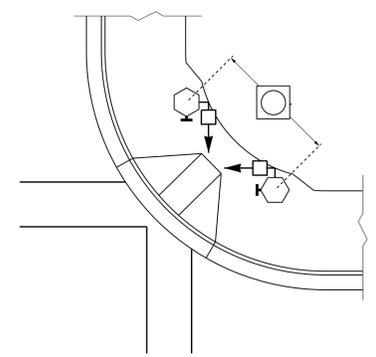
SHARED CURB RAMPS



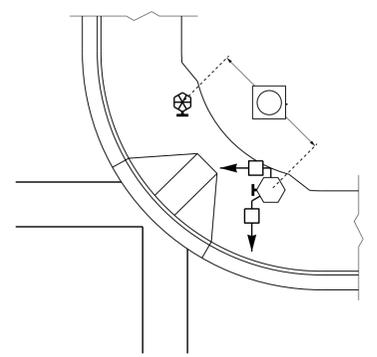
BACK OF SIDEWALK IS WITHIN 10' OF CURB OR PAVEMENT/SHOULDER



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

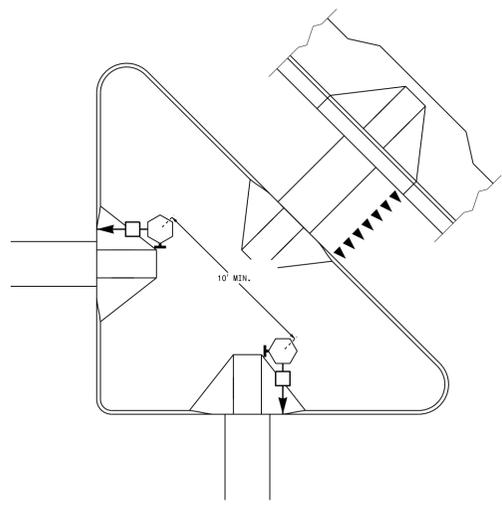


PUSHBUTTON PLACEMENT IN WIDE SIDEWALK (CORRESPONDING PUSHBUTTONS AND SIGNAL HEADS ON DIFFERENT PEDESTALS)

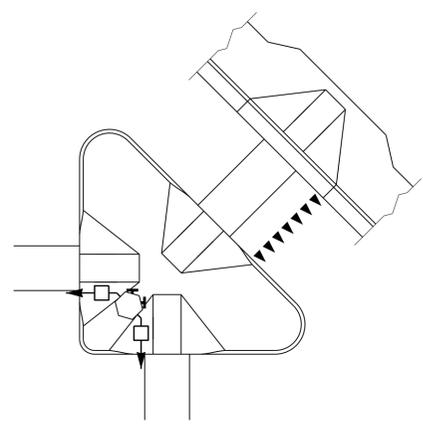


PUSHBUTTON PLACEMENT WITH SHARED TYPE II SIGNAL PEDESTAL AND TYPE I PUSHBUTTON POST

**TRAFFIC ISLAND PUSHBUTTON LOCATIONS**



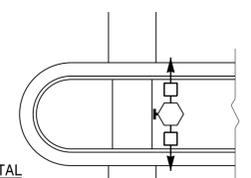
PUSHBUTTON PLACEMENT IN LARGE "PORK CHOP ISLAND" WITH SEPARATE PEDESTALS



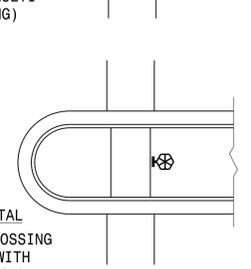
PUSHBUTTON PLACEMENT IN SMALL "PORK CHOP ISLAND" WITH SHARED PEDESTAL

**PUSHBUTTON PLACEMENT IN MEDIAN**

TYPE II PEDESTAL (FOR STAGED OR MULTI-PHASE CROSSING)



TYPE I PEDESTAL (FOR COMPLETE CROSSING CURB TO CURB WITH OPTIONAL REFUGE)



<b>PROPOSED</b>	<b>LEGEND</b>
	Signal Pole
	Type I Pushbutton Post
	Type II Signal Pedestal
	Pushbutton & Sign
	Pedestrian Signal Head
	Curb Ramp
	Pushbutton Location Area

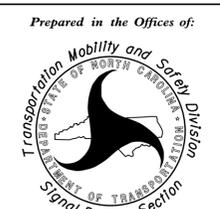
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 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

06-14

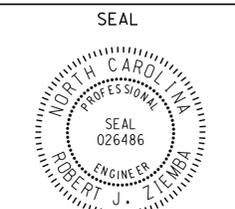
ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
 PLACEMENT DETAIL

SHEET 3 OF 3  
**1705D01**

See Plate for Title



Prepared in the Offices of:  
 750 N. Greenfield Parkway  
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 18084982744494  
 SIGNATURE DATE

6/17/2014

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

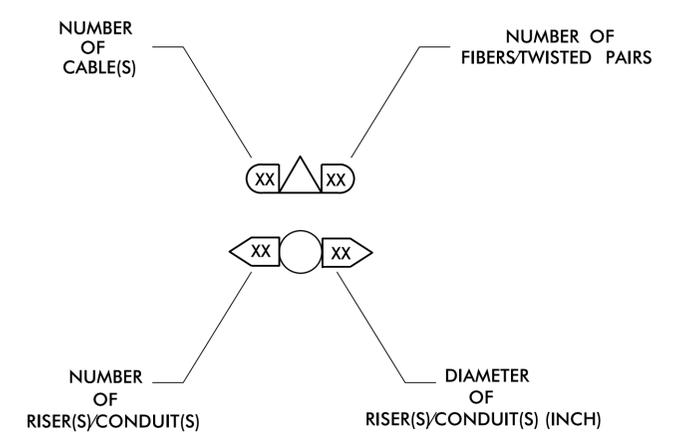
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL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

**LEGEND**

	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 SYMBOLOGY 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)

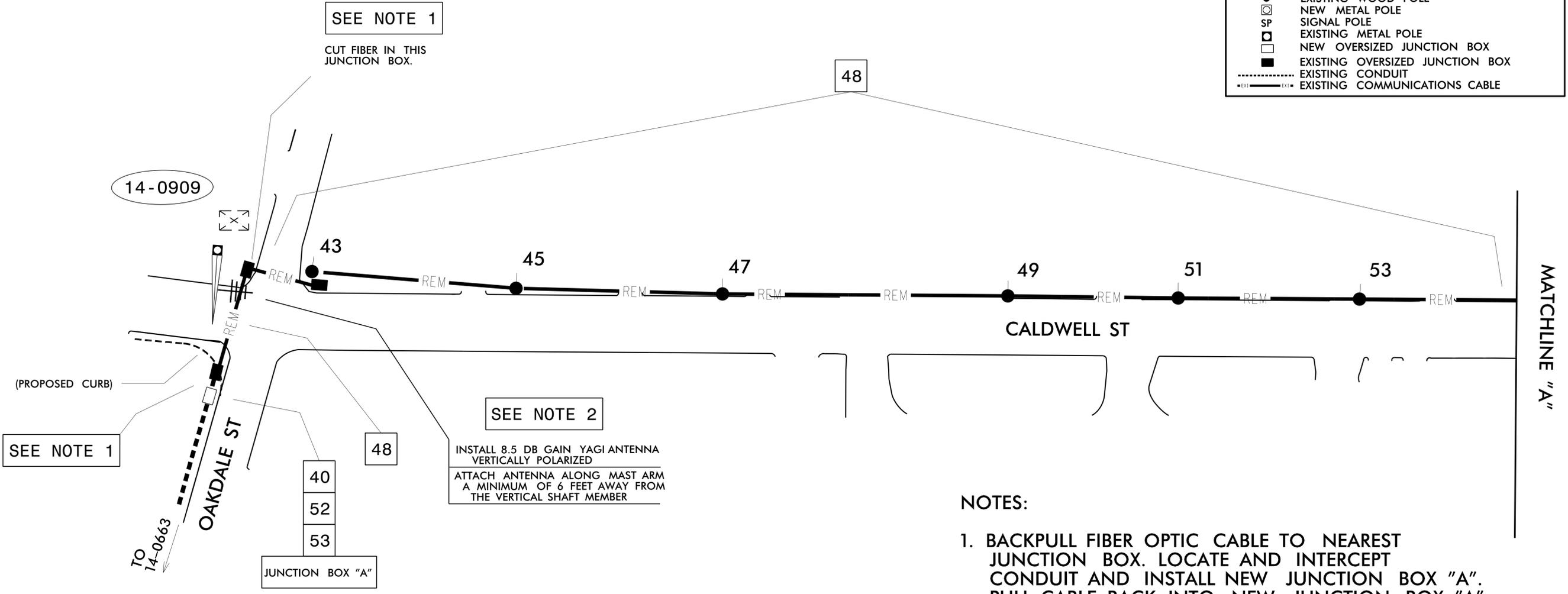


	<b>CONSTRUCTION NOTES</b>		SEAL
	DIVISION 14 TRANSYLVANIA CO. <small>DocuSigned by: BREVARD</small> PLAN DATE: JANUARY 2015 <small>REVIEWED BY: Neal Avery</small> PREPARED BY: B. A. STOUCHKO <small>REVIEWED BY: 09F504CBED3443</small>		
<small>750 N. Greenfield Pkwy., Garner, NC 27529</small>		REVISIONS      INIT.      DATE	<small>DocuSigned by: Gregory A. Fuller 1/26/2015</small> <small>7332C45A5E8145F</small> DATE
<small>CADD Filename:</small>			

FOR ALL JUNCTION BOXES WHERE THE FIBER OPTIC CABLE WILL BE REMOVED, REMOVE THE JUNCTION BOX AND BACKFILL WITH SUITABLE MATERIAL.

**LEGEND**

- YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
- YAGI ANTENNA (SINGLE)
- OMNI ANTENNA
- EXISTING CONTROLLER AND CABINET
- EXISTING MASTER CONTROLLER AND CABINET
- SIGNAL INVENTORY NUMBER
- NEW METAL POLE W/MAST ARM
- EXISTING WOOD POLE
- NEW METAL POLE
- SIGNAL POLE
- EXISTING METAL POLE
- NEW OVERSIZED JUNCTION BOX
- EXISTING OVERSIZED JUNCTION BOX
- EXISTING CONDUIT
- EXISTING COMMUNICATIONS CABLE



**NOTES:**

1. BACKPULL FIBER OPTIC CABLE TO NEAREST JUNCTION BOX. LOCATE AND INTERCEPT CONDUIT AND INSTALL NEW JUNCTION BOX "A". PULL CABLE BACK INTO NEW JUNCTION BOX "A" AND STORE. CAP AND SEAL END OF FIBER WITH HEAT SHRINK TUBING WHILE STORED.
2. MOVE ANTENNA TO NEW MAST ARM WHEN NEW SIGNAL CABINET IS OPERATIONAL.

**NOTES FOR WIRELESS COMMUNICATIONS:**

1. INSTALL COAXIAL CABLE:
  - A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
  - B. ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
  - C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
  - D. BETWEEN THE POINT OF EXITING THE RISER, METAL POLE OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
2. IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISER IS AVAILABLE, INSTALL THE COAXIAL CABLE IN THE SPARE RISER.
3. INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN.  
(NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
4. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
5. INSTALL WIRELESS SERIAL RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET.  
(NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
6. REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS."

TMP - I

Prepared in the Offices of:

**WIRELESS COMMUNICATIONS PLAN**

DIVISION 14 TRANSYLVANIA CO. DocuSigned by: BREVARD

PLAN DATE: JANUARY 2015 REVIEWED BY: Neal Avery

PREPARED BY: B. A. STOUCHKO REVIEWED BY: 09F5D94CBED3445

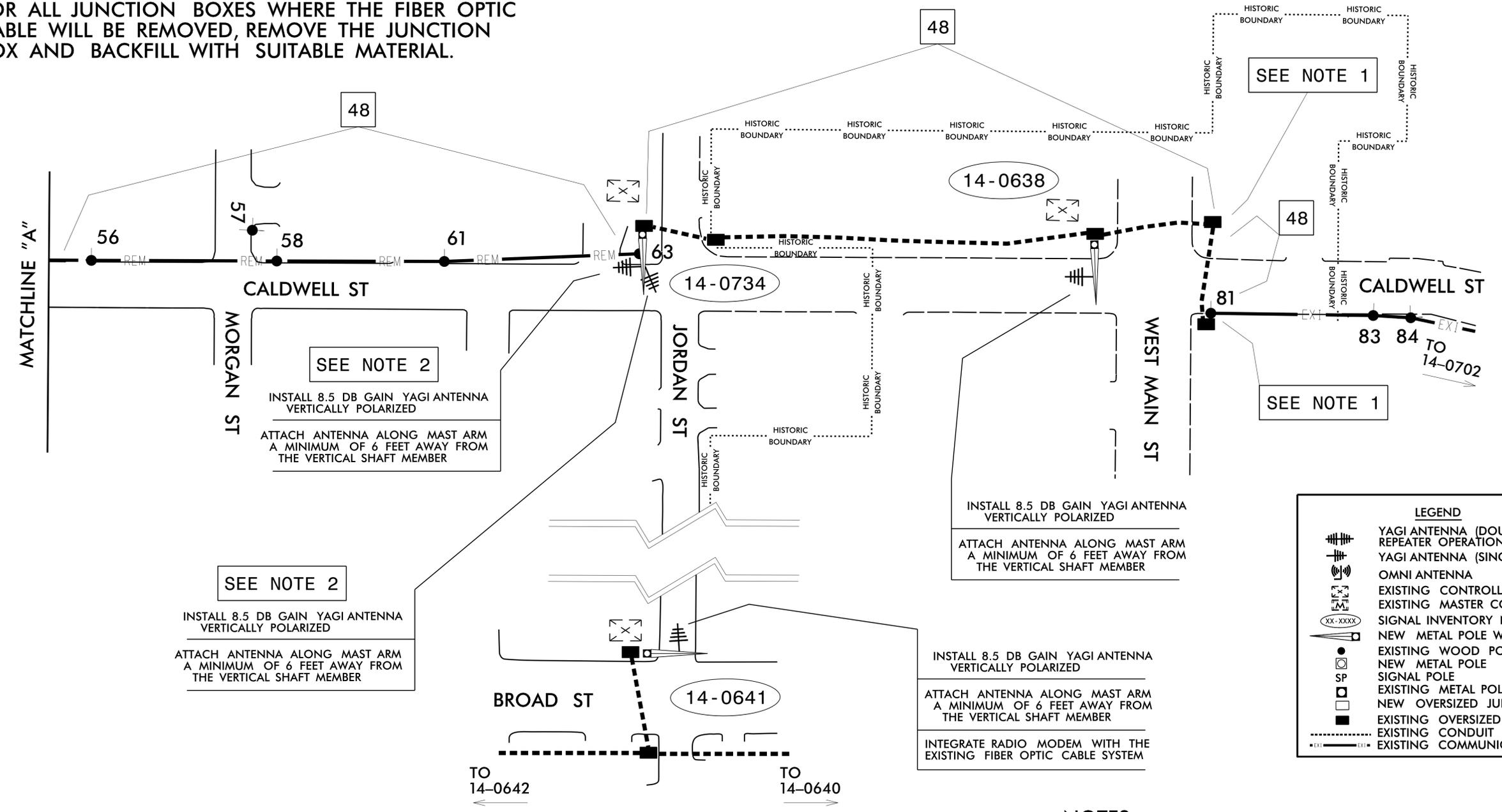
REVISIONS INIT. DATE

SCALE 0 30

DocuSigned by: Gregory A. Fuller 1/26/2015

CADD Filename:

FOR ALL JUNCTION BOXES WHERE THE FIBER OPTIC CABLE WILL BE REMOVED, REMOVE THE JUNCTION BOX AND BACKFILL WITH SUITABLE MATERIAL.



SEE NOTE 2  
 INSTALL 8.5 DB GAIN YAGI ANTENNA VERTICALLY POLARIZED  
 ATTACH ANTENNA ALONG MAST ARM A MINIMUM OF 6 FEET AWAY FROM THE VERTICAL SHAFT MEMBER

SEE NOTE 2  
 INSTALL 8.5 DB GAIN YAGI ANTENNA VERTICALLY POLARIZED  
 ATTACH ANTENNA ALONG MAST ARM A MINIMUM OF 6 FEET AWAY FROM THE VERTICAL SHAFT MEMBER

INSTALL 8.5 DB GAIN YAGI ANTENNA VERTICALLY POLARIZED  
 ATTACH ANTENNA ALONG MAST ARM A MINIMUM OF 6 FEET AWAY FROM THE VERTICAL SHAFT MEMBER

INSTALL 8.5 DB GAIN YAGI ANTENNA VERTICALLY POLARIZED  
 ATTACH ANTENNA ALONG MAST ARM A MINIMUM OF 6 FEET AWAY FROM THE VERTICAL SHAFT MEMBER  
 INTEGRATE RADIO MODEM WITH THE EXISTING FIBER OPTIC CABLE SYSTEM

**LEGEND**

	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
	YAGI ANTENNA (SINGLE)
	OMNI ANTENNA
	EXISTING CONTROLLER AND CABINET
	EXISTING MASTER CONTROLLER AND CABINET
	SIGNAL INVENTORY NUMBER
	NEW METAL POLE W/MAST ARM
	EXISTING WOOD POLE
	NEW METAL POLE
	SIGNAL POLE
	EXISTING METAL POLE
	NEW OVERSIZED JUNCTION BOX
	EXISTING OVERSIZED JUNCTION BOX
	EXISTING CONDUIT
	EXISTING COMMUNICATIONS CABLE

- NOTES FOR WIRELESS COMMUNICATIONS:
- INSTALL COAXIAL CABLE:
    - ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
    - ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
    - ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
    - BETWEEN THE POINT OF EXITING THE RISER, METAL POLE OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
  - IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISER IS AVAILABLE, INSTALL THE COAXIAL CABLE IN THE SPARE RISER.
  - INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN.  
(NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
  - MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
  - INSTALL WIRELESS SERIAL RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET.  
(NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
  - REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS."

NOTES:

- CUT FIBER IN JUNCTION BOX. BACKPULL TO POLE "81" AND COIL AND STORE. CAP AND SEAL END OF FIBER WITH HEAT SHRINK TUBING WHILE STORED.
- MOVE ANTENNA TO NEW MAST ARM WHEN NEW SIGNAL CABINET IS OPERATIONAL.

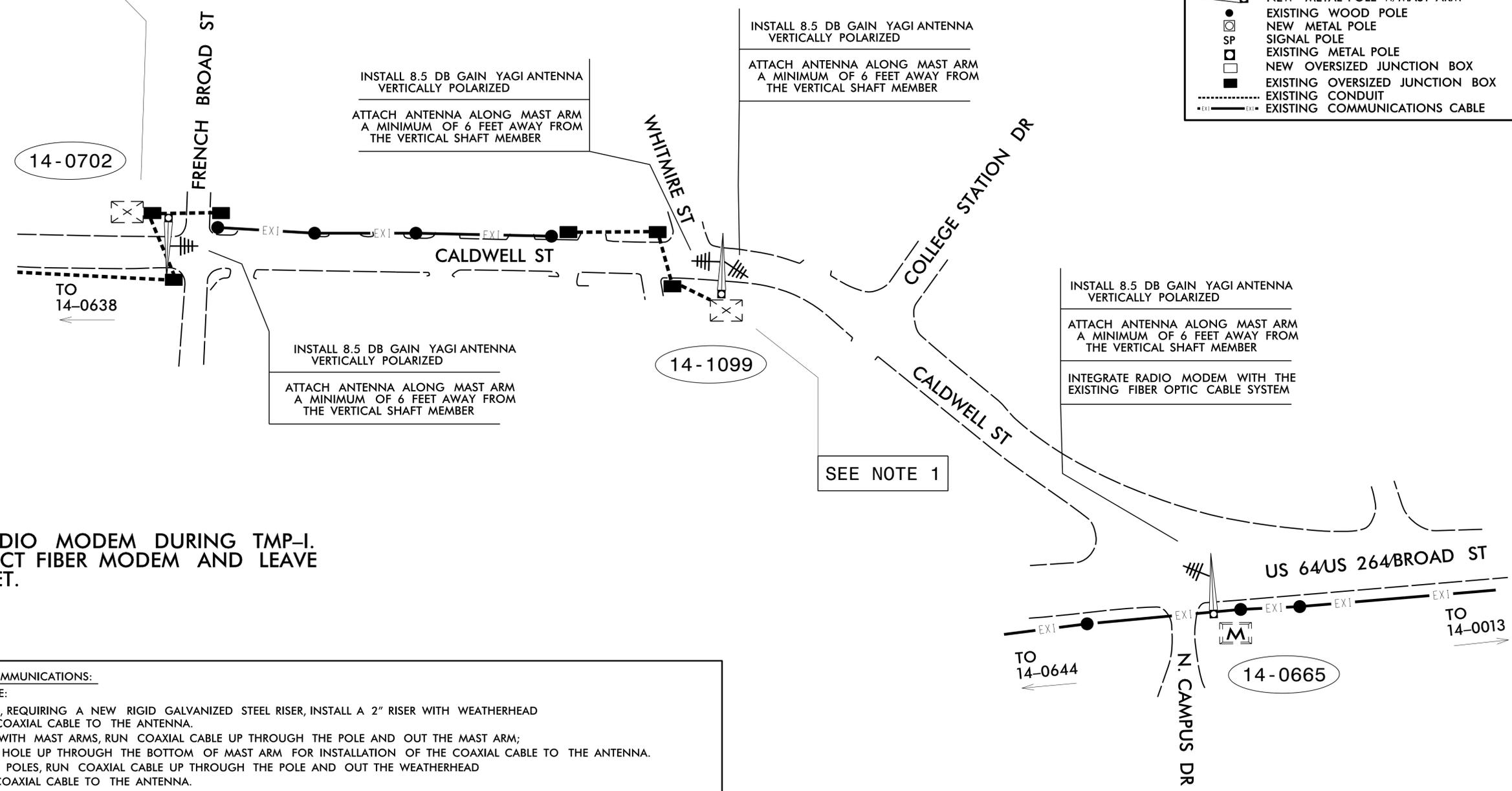
TMP - I

	<b>WIRELESS COMMUNICATIONS PLAN</b>	
	DIVISION 14 TRANSYLVANIA CO. PLAN DATE: JANUARY 2015 PREPARED BY: B.A. STOUCHKO	REVIEWED BY: Neal Avery REVIEWED BY: 09F5094CBED3443
750 N. Greenfield Pkwy., Garner, NC 27529 SCALE 0 40	REVISIONS INIT. DATE	CADD Filename:

**LEGEND**

- YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
- YAGI ANTENNA (SINGLE)
- OMNI ANTENNA
- EXISTING CONTROLLER AND CABINET
- EXISTING MASTER CONTROLLER AND CABINET
- SIGNAL INVENTORY NUMBER
- NEW METAL POLE W/MAST ARM
- EXISTING WOOD POLE
- NEW METAL POLE
- SIGNAL POLE
- EXISTING METAL POLE
- NEW OVERSIZED JUNCTION BOX
- EXISTING OVERSIZED JUNCTION BOX
- EXISTING CONDUIT
- EXISTING COMMUNICATIONS CABLE

SEE NOTE 1



**NOTE:**

1. INSTALL RADIO MODEM DURING TMP-I. DISCONNECT FIBER MODEM AND LEAVE IN CABINET.

**NOTES FOR WIRELESS COMMUNICATIONS:**

1. INSTALL COAXIAL CABLE:
  - A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
  - B. ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
  - C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
  - D. BETWEEN THE POINT OF EXITING THE RISER, METAL POLE OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
2. IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISER IS AVAILABLE, INSTALL THE COAXIAL CABLE IN THE SPARE RISER.
3. INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN.  
(NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
4. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
5. INSTALL WIRELESS SERIAL RADIO MODEM WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET.  
(NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
6. REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS."

**TMP - I**

Prepared in the Offices of:

**WIRELESS COMMUNICATIONS PLAN**

DIVISION 14 TRANSYLVANIA CO. DocuSigned by: BREVARD

PLAN DATE: JANUARY 2015 REVIEWED BY: Neil Avery

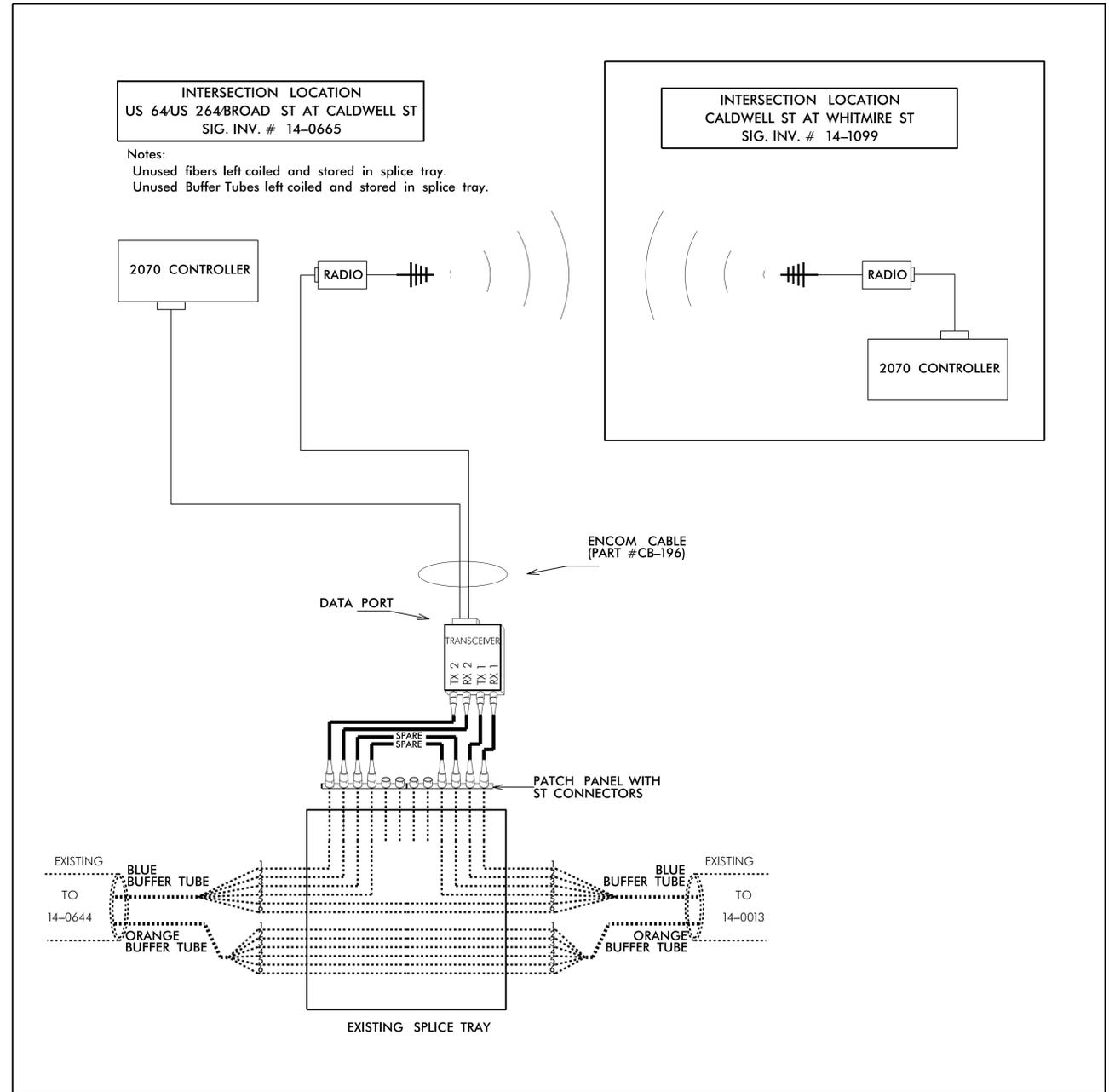
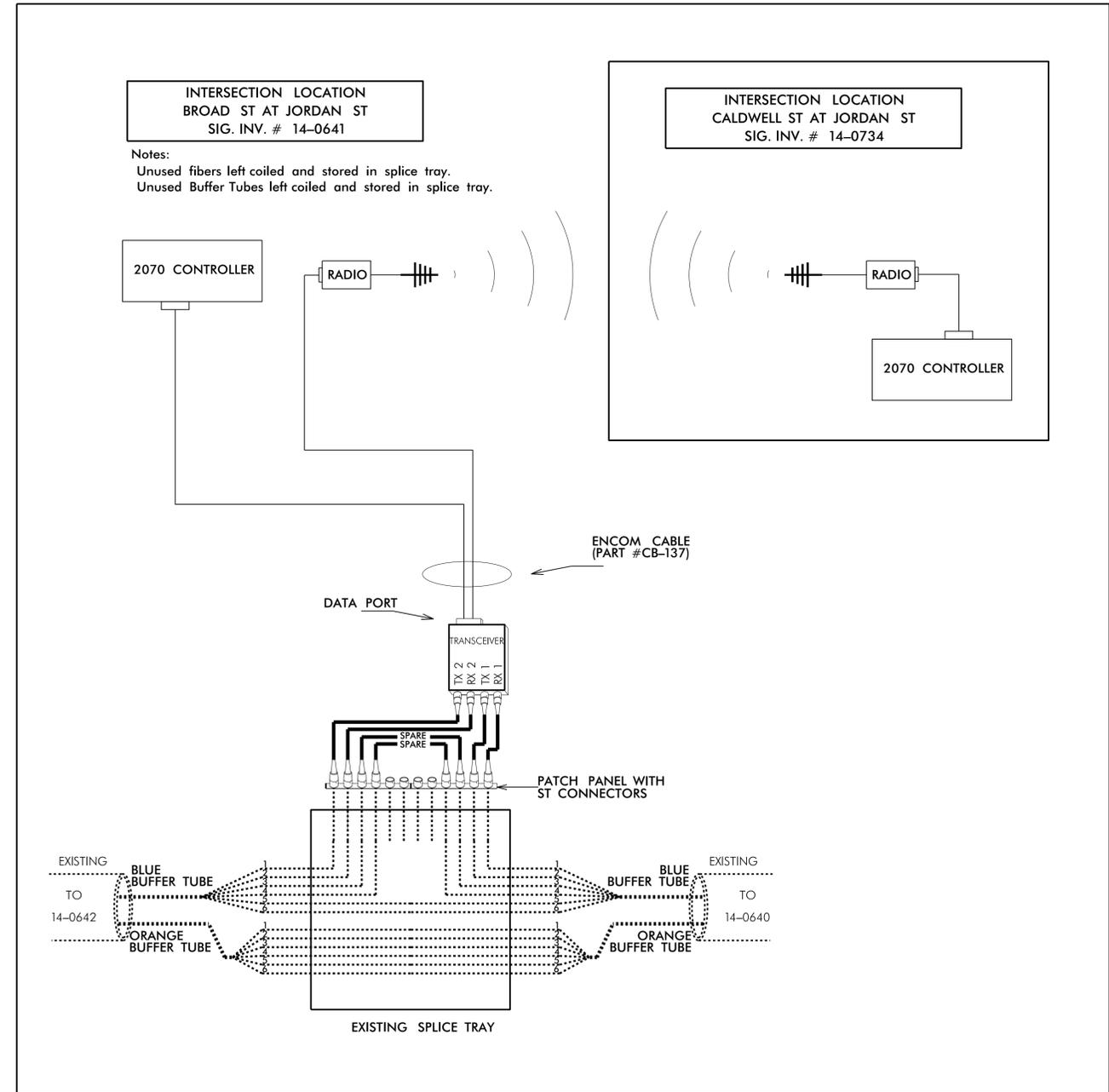
PREPARED BY: B. A. STOUCHKO REVIEWED BY: 09F5094CBED3443

REVISIONS INIT. DATE

DocuSigned by: Gregory A. Fuller 1/26/2015

SCALE 0 60

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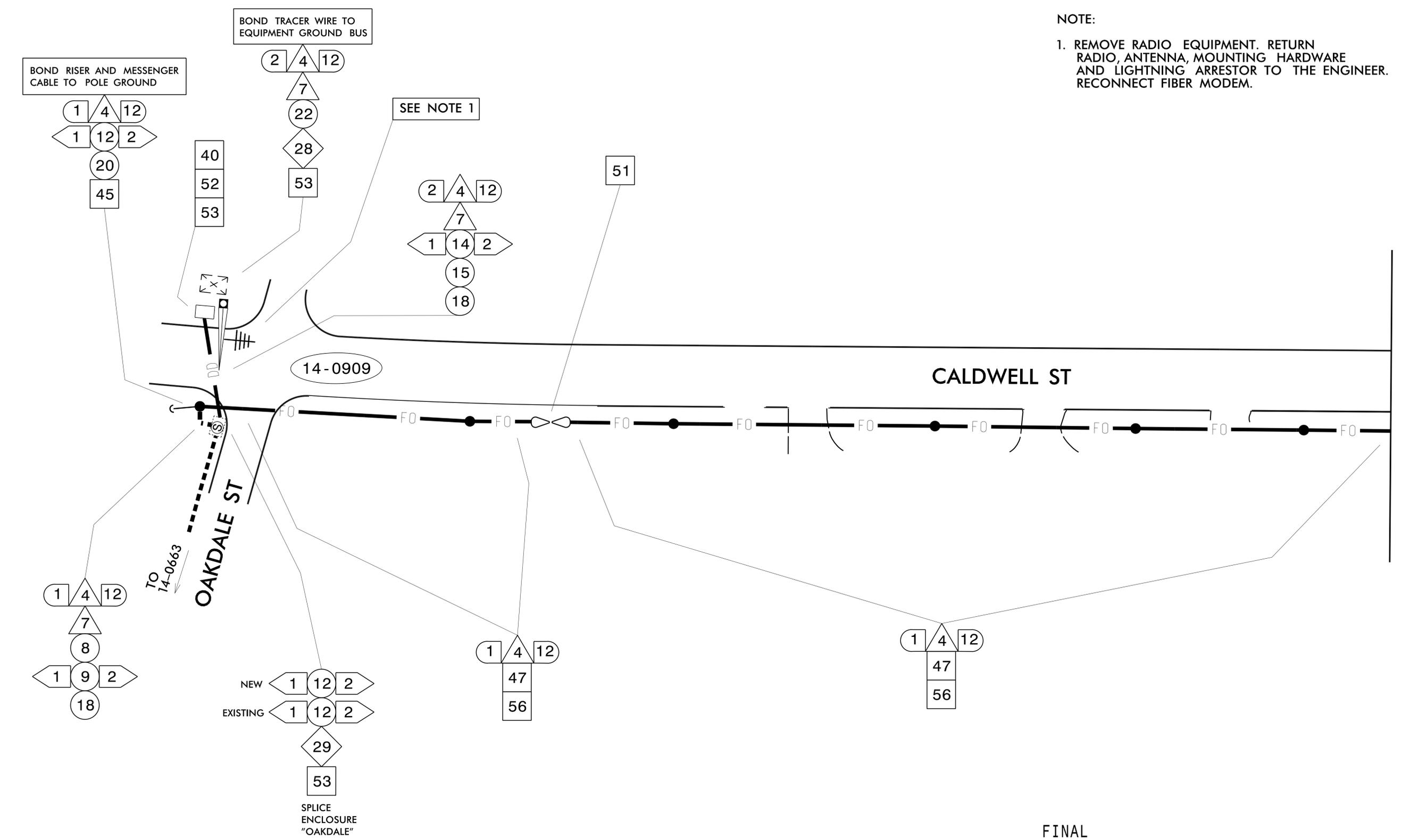


**NOTES:**  
 TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.

- LEGEND**  
 X = FUSION SPLICE  
 C = CAP IN TRAY
- COLOR CODE**  
 TIA/EIA 598-A  
 (1) BLUE  
 (2) ORANGE  
 (3) GREEN  
 (4) BROWN  
 (5) SLATE  
 (6) WHITE

**TMP - I**

	<b>SPLICE DETAIL</b>		
	DIVISION 14 TRANSYLVANIA CO. <small>DocuSigned by: BREVARD</small> PLAN DATE: JANUARY 2015 <small>REVIEWED BY: Neil Avery</small> PREPARED BY: B. A. STOUCHKO <small>REVIEWED BY: 09F5094CBED3443</small>		



**NOTE:**  
 1. REMOVE RADIO EQUIPMENT. RETURN RADIO, ANTENNA, MOUNTING HARDWARE AND LIGHTNING ARRESTOR TO THE ENGINEER. RECONNECT FIBER MODEM.

ALL NCDOT ATTACHMENTS ARE 40" BELOW POWER, FRONT SIDE OF POLE UNLESS OTHERWISE NOTED.

**FINAL**

Prepared in the Offices of:



**COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS**

DIVISION 14 TRANSYLVANIA CO. DocuSigned by: BREVARD

PLAN DATE: JANUARY 2015 REVIEWED BY: Neil Avery

PREPARED BY: B. A. STOUCHKO REVIEWED BY: 09F5094CBED3443

750 N. Greenfield Pkwy., Garner, NC 27529

SCALE 0 30

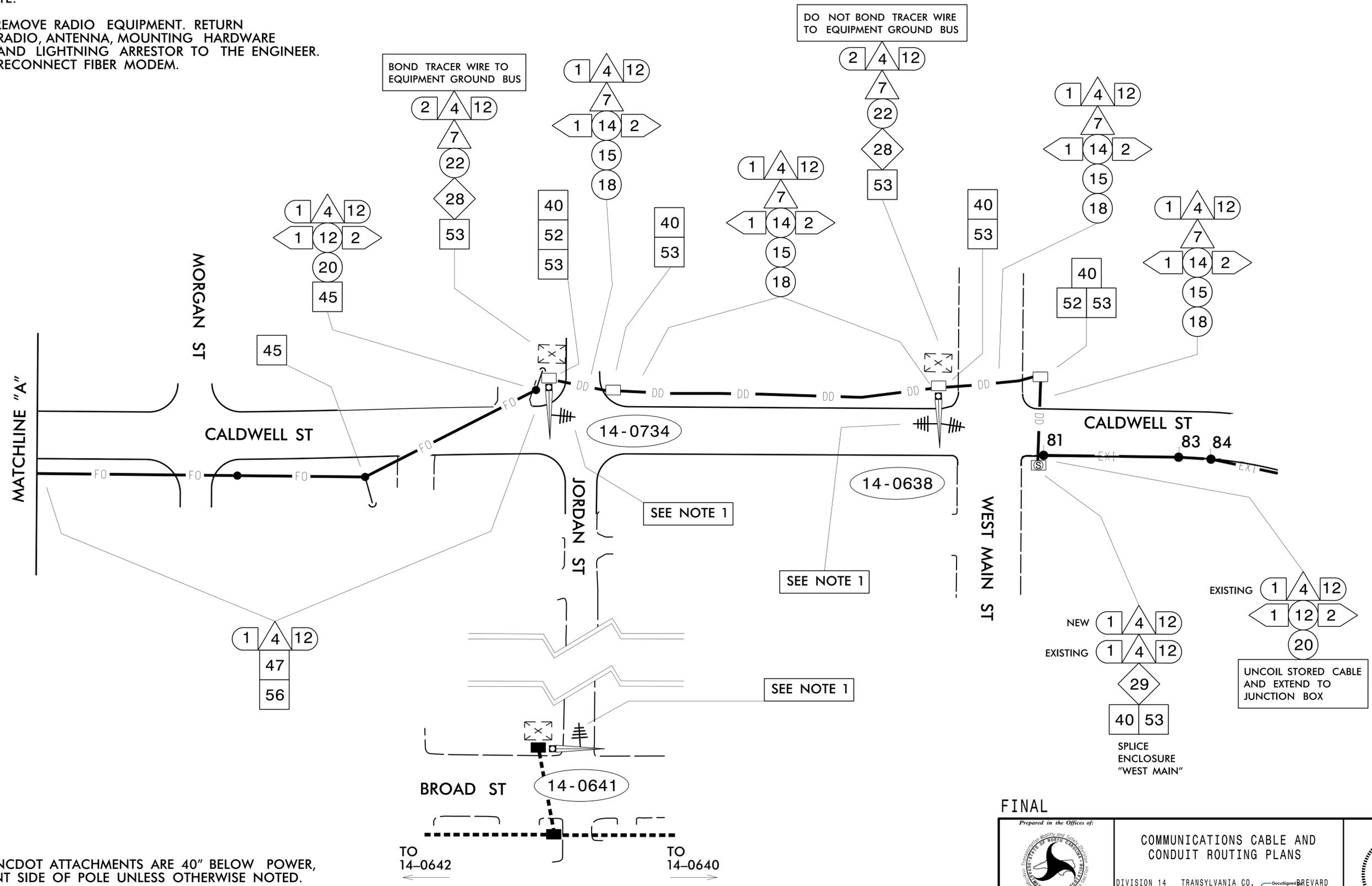
REVISIONS	INIT.	DATE

DocuSigned by: Gregory A. Fuller 1/26/2015

CADD Filename: 7332C45A5E8145F

NOTE:

1. REMOVE RADIO EQUIPMENT. RETURN RADIO, ANTENNA, MOUNTING HARDWARE AND LIGHTNING ARRESTOR TO THE ENGINEER. RECONNECT FIBER MODEM.



ALL NCDOT ATTACHMENTS ARE 40" BELOW POWER, FRONT SIDE OF POLE UNLESS OTHERWISE NOTED.

TO 14-0642 ← → TO 14-0640

FINAL

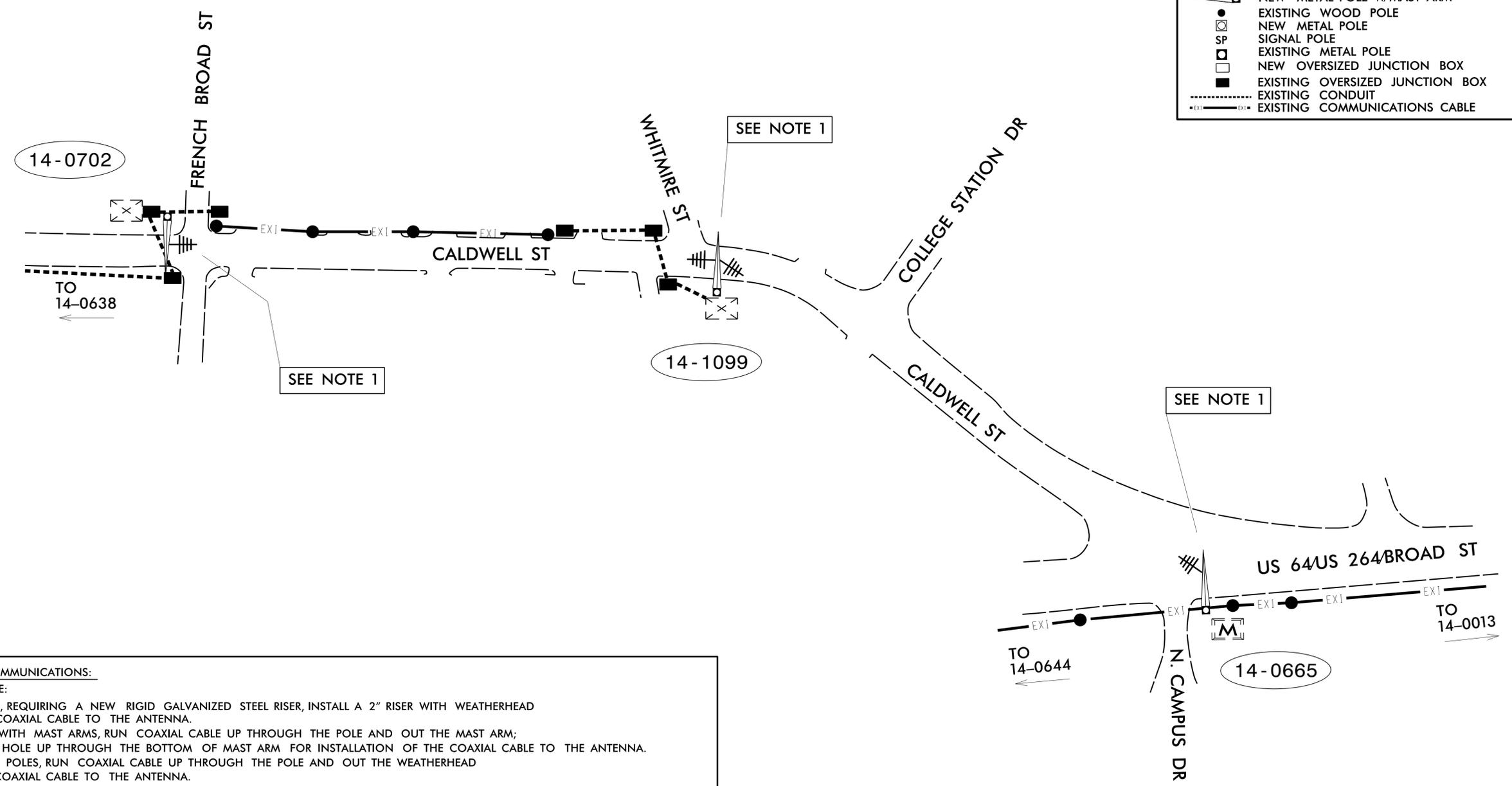
 750 N. Greenfield Pkwy., Garner, NC 27529	<b>COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS</b>		 SEAL 023919 ENGINEER GREGORY A. FULLER
	DIVISION 14 TRANSYLVANIA CO. DocuSigned by: BREVARD PLAN DATE: JANUARY 2015 REVIEWED BY: Neil Avery PREPARED BY: B. A. STOUCHKO REVIEWED BY: 09F504C8ED3443		
SCALE 0 40	DocuSigned by: Gregory A. Fuller 1/26/2015 DATE		CADD Filename:

NOTE:

1. REMOVE RADIO EQUIPMENT. RETURN RADIO, ANTENNA, MOUNTING HARDWARE AND LIGHTNING ARRESTOR TO THE ENGINEER. RECONNECT FIBER MODEM.

**LEGEND**

- YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
- YAGI ANTENNA (SINGLE)
- OMNI ANTENNA
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- NEW METAL POLE W/MAST ARM
- EXISTING WOOD POLE
- NEW METAL POLE
- SIGNAL POLE
- EXISTING METAL POLE
- NEW OVERSIZED JUNCTION BOX
- EXISTING OVERSIZED JUNCTION BOX
- EXISTING CONDUIT
- EXISTING COMMUNICATIONS CABLE

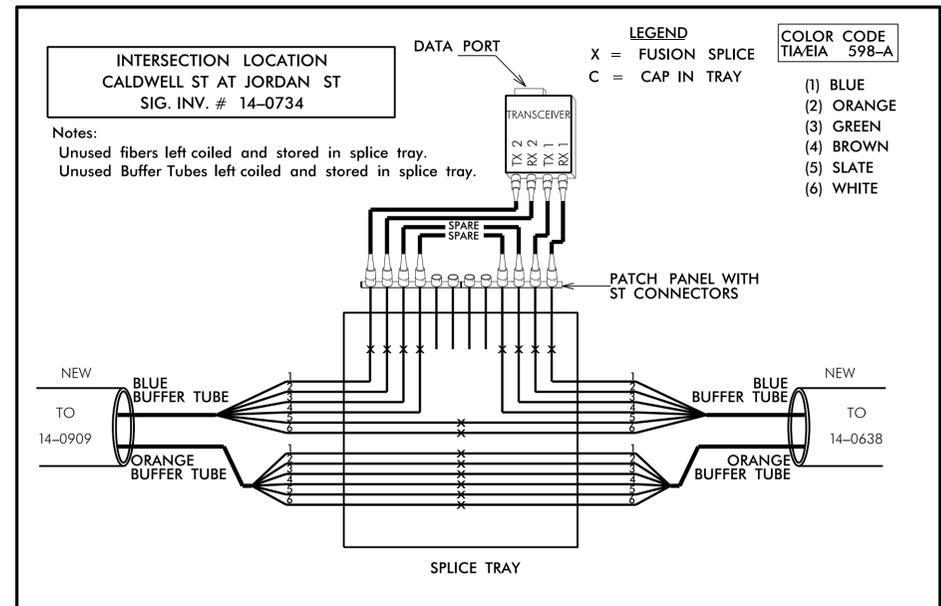
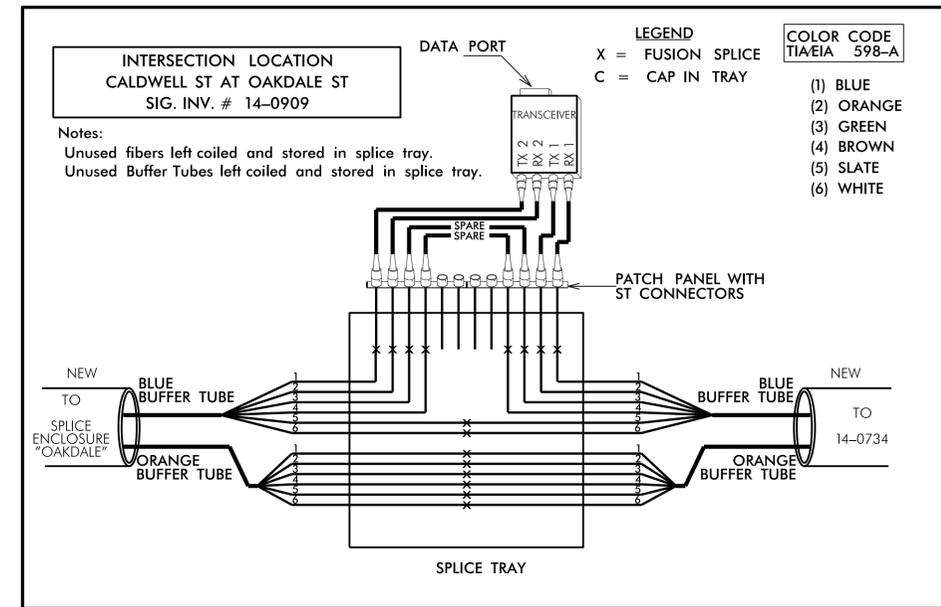
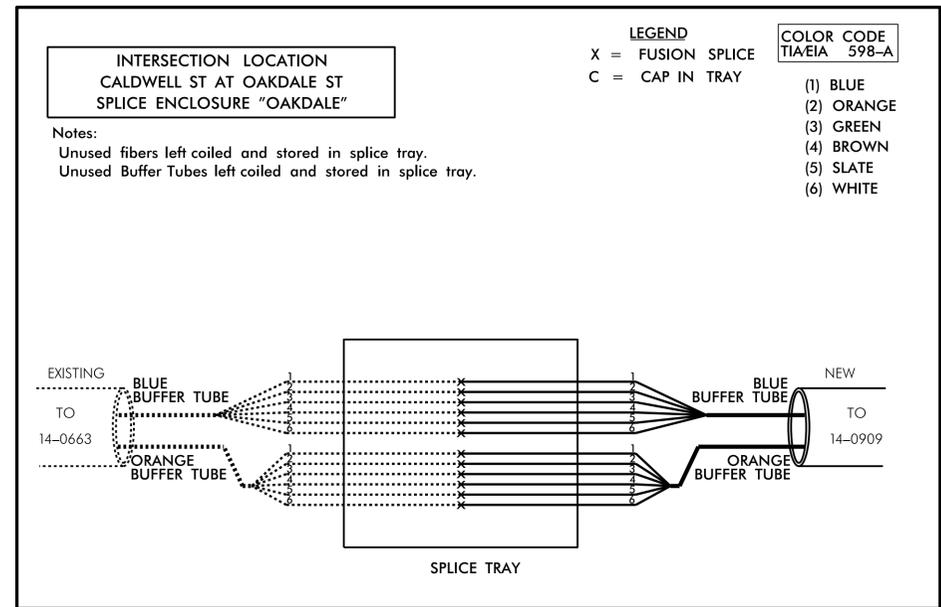


**NOTES FOR WIRELESS COMMUNICATIONS:**

1. INSTALL COAXIAL CABLE:
  - A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
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(NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT-OWNED POLE.)
6. REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS."

FINAL

	<b>WIRELESS COMMUNICATIONS PLAN</b>	
	DIVISION 14 TRANSYLVANIA CO. <span style="float: right;">DocuSigned by: BREVARD</span> PLAN DATE: JANUARY 2015 <span style="float: right;">REVIEWED BY: Neil Avery</span> PREPARED BY: B. A. STOUCHKO <span style="float: right;">REVIEWED BY: 09F5094CBED3443</span>	
SCALE 0 60 	REVISIONS INIT. DATE	DocuSigned by: Gregory A. Fuller 1/26/2015 DATE CADD Filename:



**CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE PLANS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING.**

**ALL WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.**

**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

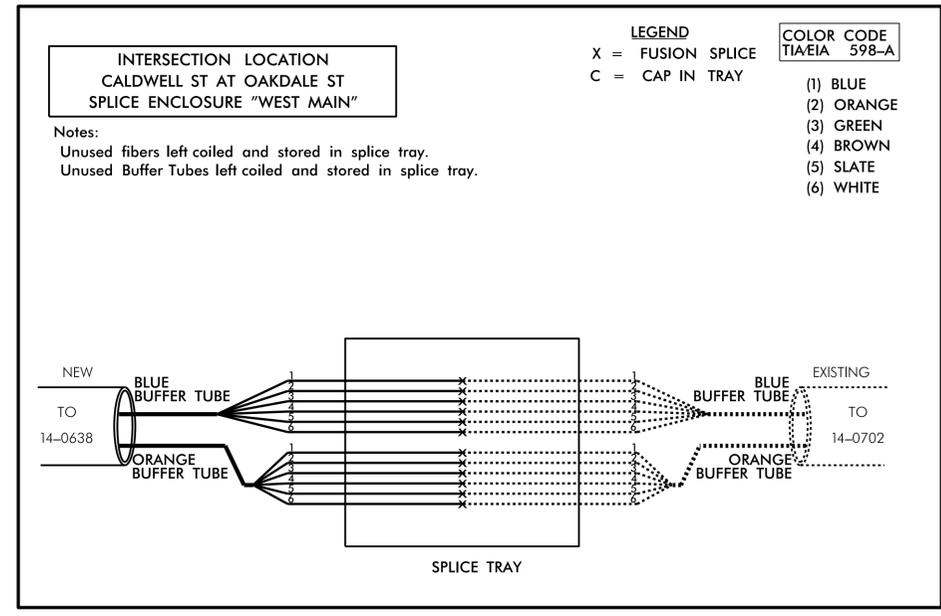
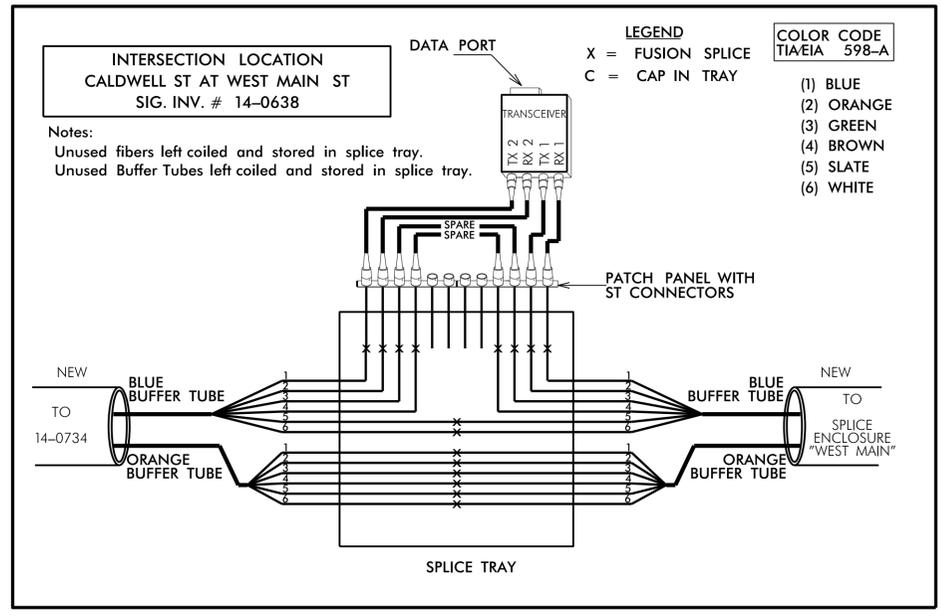
**PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS.**

**NOTES:**

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

<p>750 N. Greenfield Pkwy., Garner, NC 27529</p>	<b>SPLICE DETAIL</b>		
	DIVISION 14 TRANSYLVANIA CO. <small>DocuSigned by: BREVARD</small> PLAN DATE: JANUARY 2015 <small>REVIEWED BY: Neil Avery</small> PREPARED BY: B.A. STOUCHKO <small>REVIEWED BY: 09F5D94CBED3443</small>		
	REVISIONS	INIT.	DATE

DocuSigned by: Gregory A. Fuller 1/26/2015  
7332C45A5E8145F DATE  
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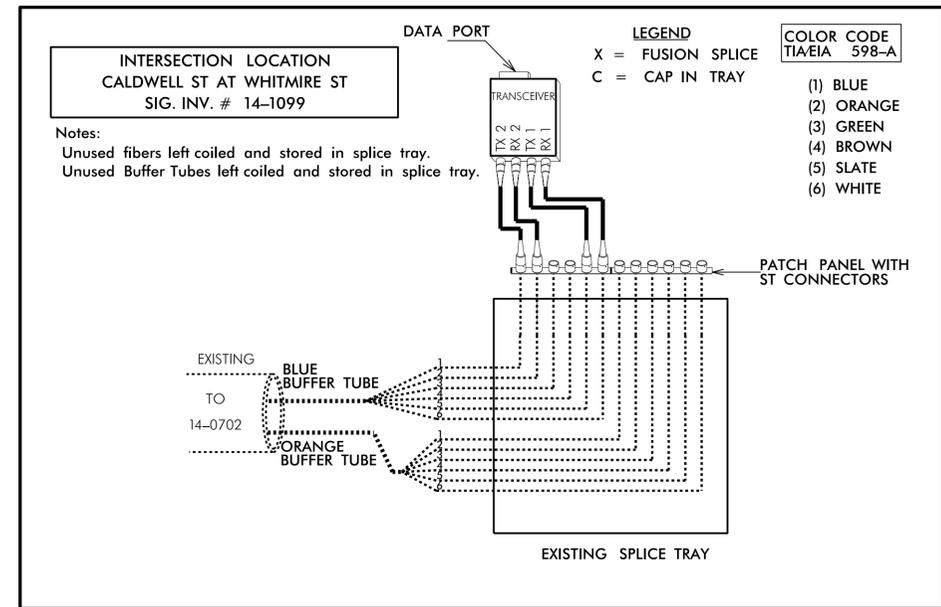
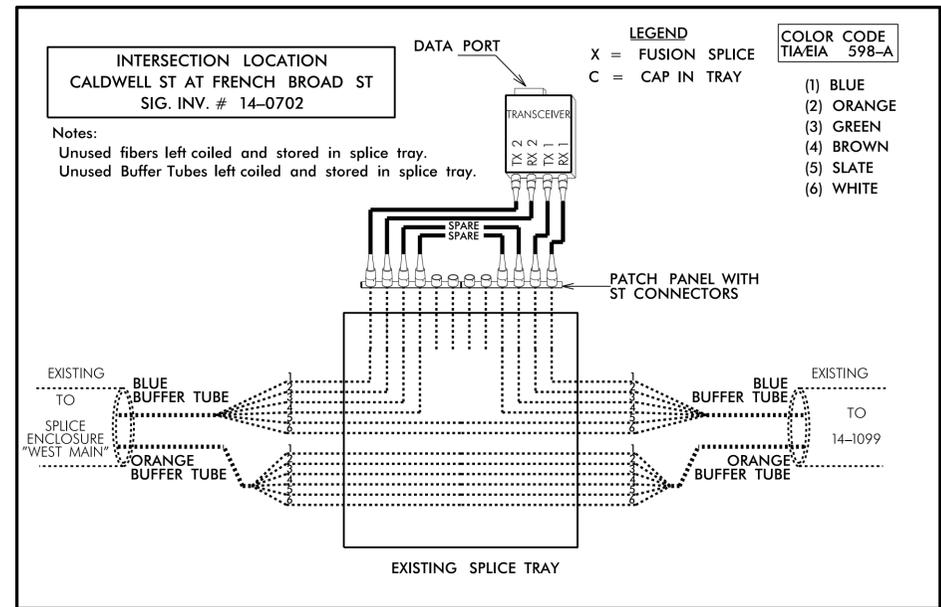
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SHOWN FOR INFORMATIONAL PURPOSES ONLY.  
NO WORK REQUIRED.

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