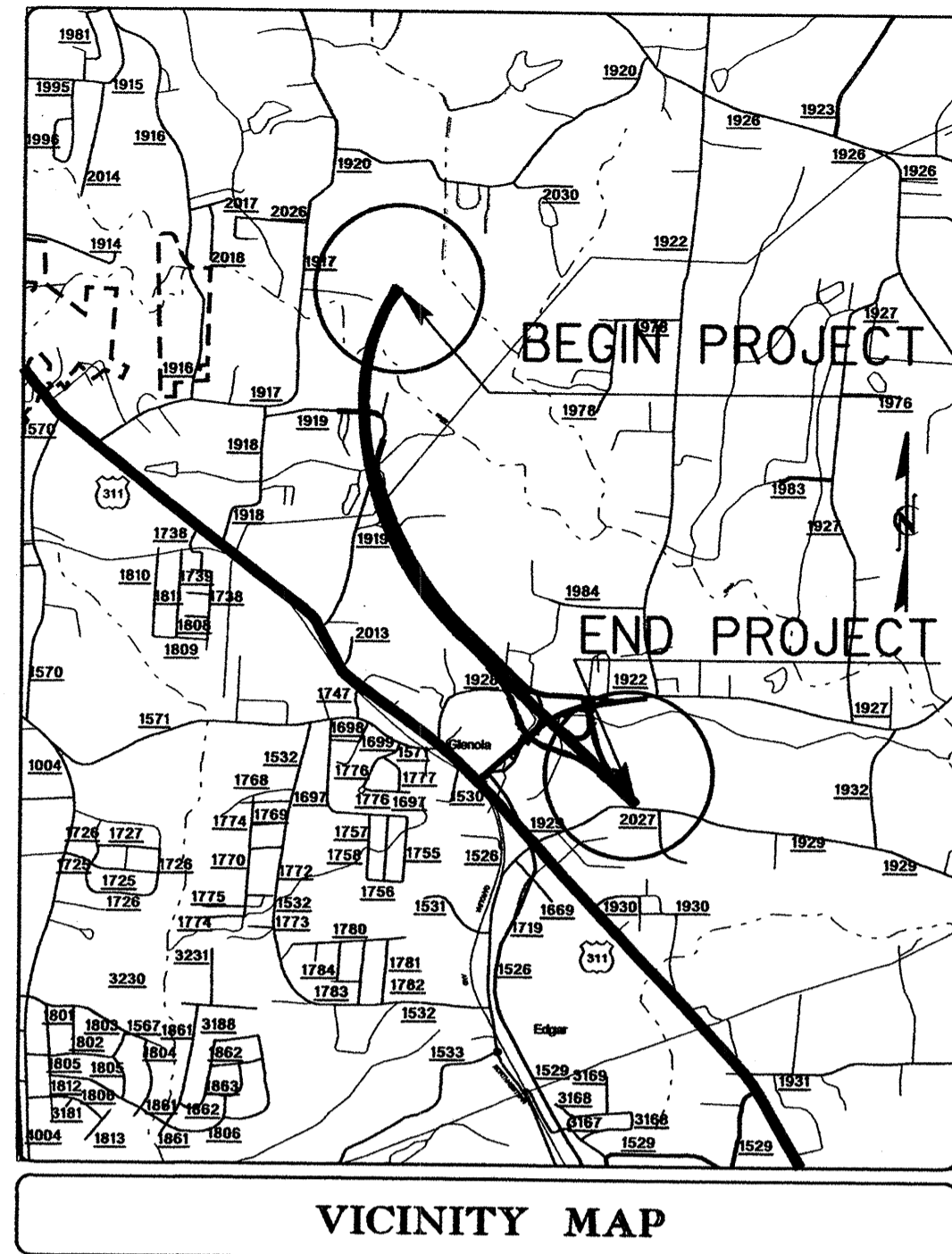


PROJECT: R-2606A



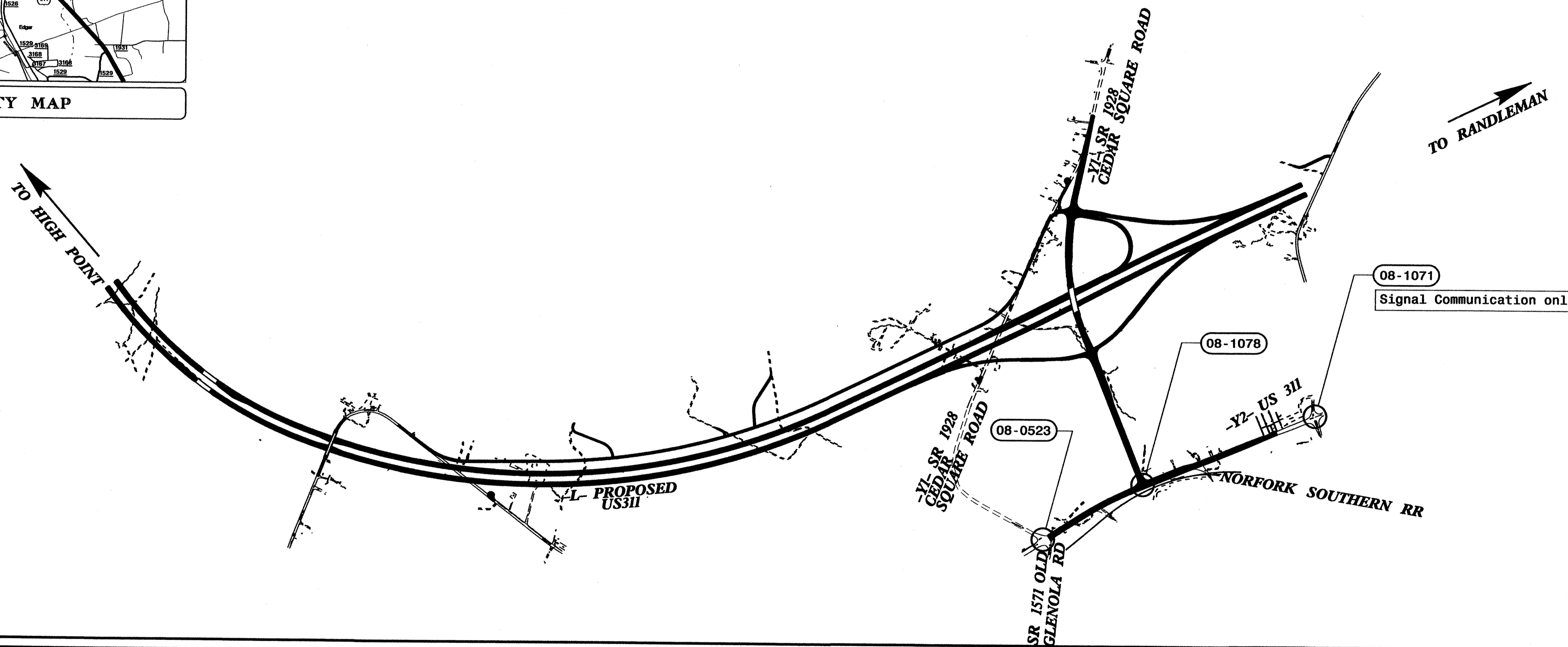
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

LOCATION: US 311 FROM SOUTH OF SR 1920
TO NORTH OF SR 1929
TYPE OF WORK: TRAFFIC SIGNALS

STATE	PROJECT NO.	SHEET NO.
N.C.	R-2606A	Fig.1



INDEX OF PLANS

SHEET NUMBER	SIGNAL INVENTORY NUMBER	LOCATION /DESCRIPTION
SIG. 1	---	Title Sheet
SIG. 2-3	08-0523	US 311 Business at SR 1571 (Glenola Road)/SR 1928 (Cedar Square Road)
SIG. 4-5	08-1078	US 311 Business at SR 1928 (Cedar Square Road)
SIG. 6-11	---	Standard Metal Pole Details
SIG. 12	---	Cabinet Component Layout
SIG. 13-17	---	Communications Cable and Conduit Routing Plans

LEGEND

##-#### SIGNAL INVENTORY NUMBER

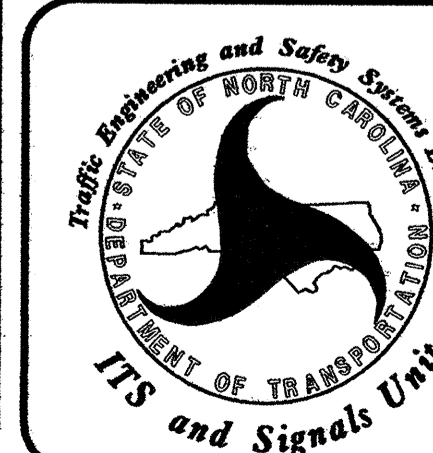
NCDOT CONTACTS:

INTELLIGENT TRANSPORTATION SYSTEMS AND SIGNALS UNIT

TIMOTHY J. WILLIAMS, PE - S & G CONTRACTS & PEF SUPPORT ENGINEER

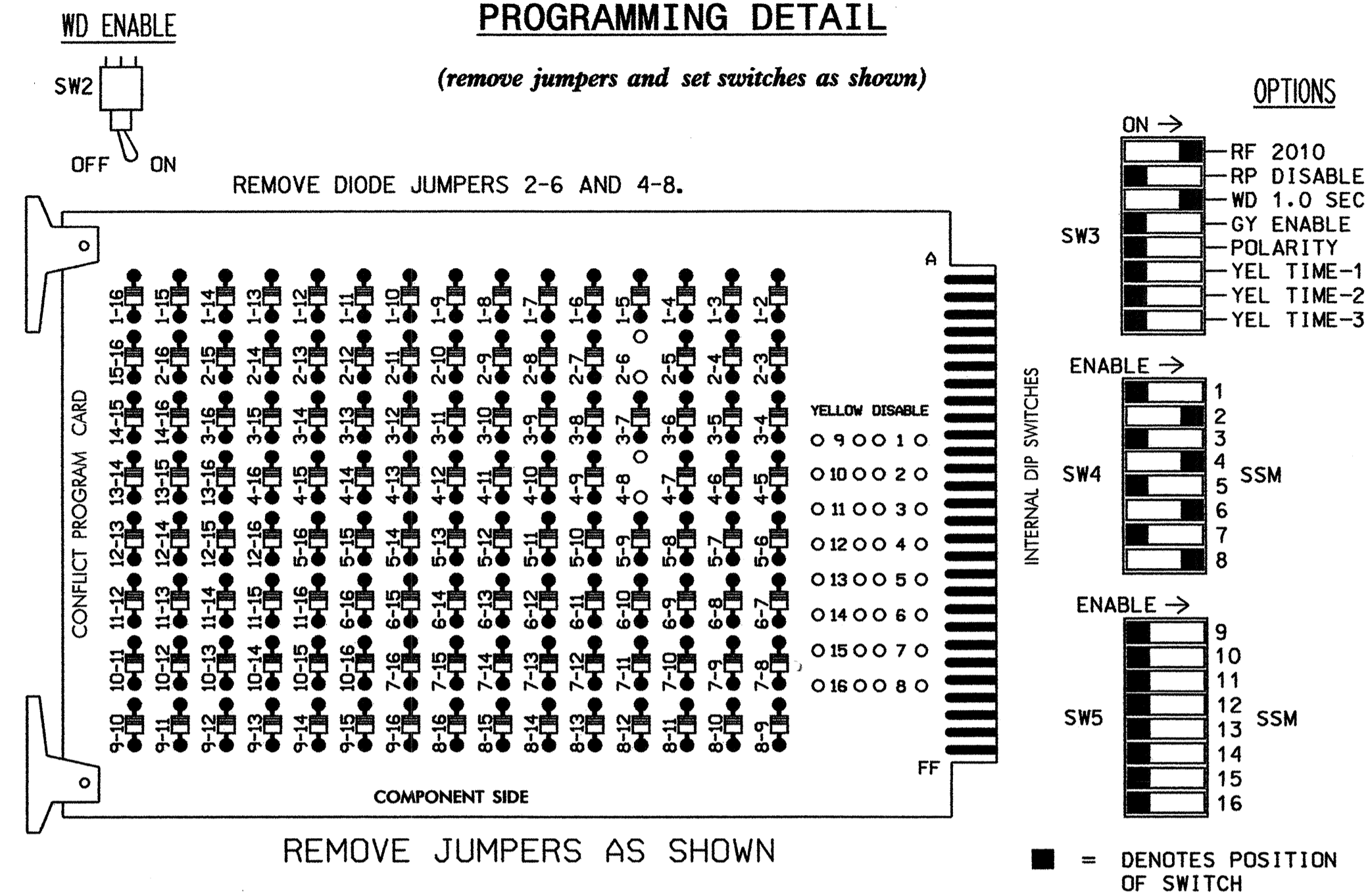
GEORGE C. BROWN, PE - SIGNAL EQUIPMENT DESIGN ENGINEER

G.G. MURR JR., PE - INTELLIGENT TRANSPORTATION SYSTEMS ENGINEER



EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



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.
- To prevent red failures on unused monitor channels, see Red Monitor Board Programming Detail this sheet.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- The cabinet and controller are part of the US 311 Business Closed Loop Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42 43	NU	NU	61,62	NU	NU	81,82 83	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

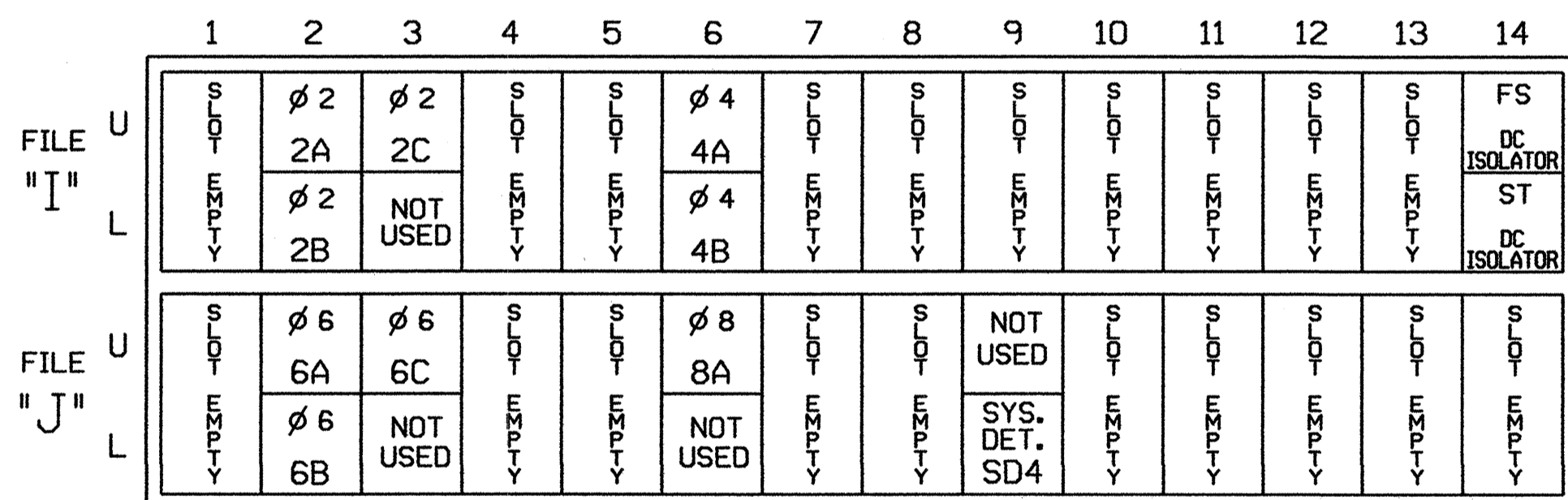
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....EAGLE TYPE 2070L
 CABINET.....McCain/CONTROL TECHNOLOGIES
 (DWG. NO. 9500-332-NCDOT)
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S4,S6,S8
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



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

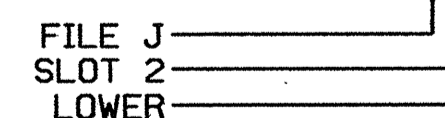
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	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		1.8	
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y	Y		3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y		1.8	
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
6C	TB3-9,10	J3U	64	26	36	6	Y	Y	Y		3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
* SD4	TB7-11,12	J9L	61	23	17	SYS					

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

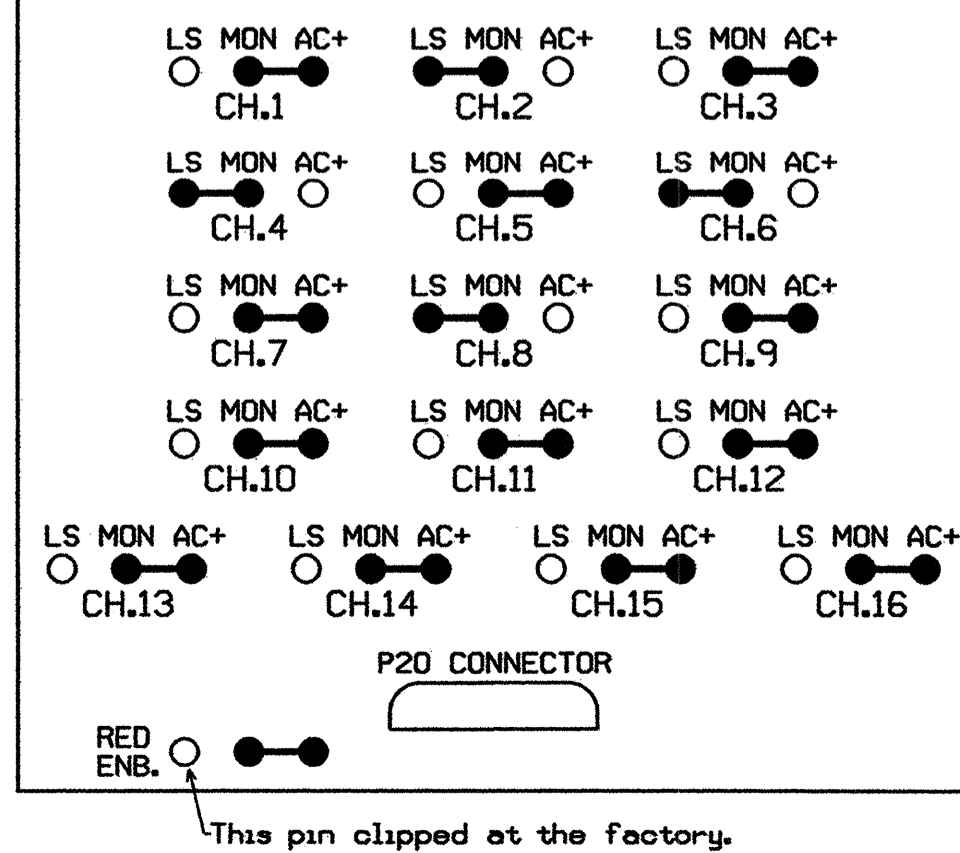
INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 08-0523
 DESIGNED: April 2006
 SEALED: 4-28-06
 REVISED: N/A

RED MONITOR BOARD PROGRAMMING

(position jumpers as shown below)



Signal Upgrade

Electrical and Programming Details For:

Prepared in the Offices of:

 122 N. McDowell St., Raleigh, NC 27603

US 311 at SR 1571 (Glenola Road)/SR 1928 (Cedar Square Road)

Division 08 Randolph County Glenola
 PLAN DATE: 4-26-06 REVIEWED BY: D.T. Joyce
 PREPARED BY: D.H. Spaulding REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 022013
 GEORGE C. BROWN
 Signature: George C. Brown 5/3/06
 DATE: 5/3/06
 SIG. INVENTORY NO. 08-0523

PHASING DIAGRAM

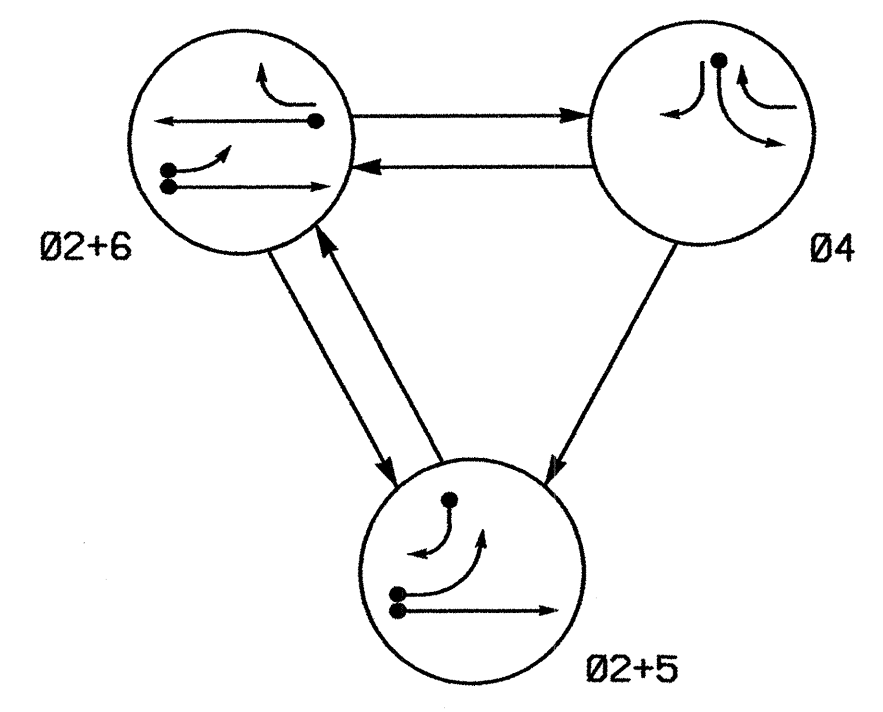


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 2+5	Ø 2+6	Ø 4	F L S H
21	G	R	Y	
22	G	R	Y	
41	R	G	R	
42	R	G	R	
61	R	G	Y	
62	R	G	Y	

2070L LOOP & DETECTOR INSTALLATION

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD	
					PHASE	CALLING EXTENSION	PULL TIME DELAY	STRETCH TIME			DELAY TIME
2A/SD5	6 X 6	300	5	Y	2	Y	Y			Y	Y
4A	6 X 40	0	2-4-2	Y	4	Y	Y		3		Y
5A	6 X 40	0	2-4-2	Y	2	Y	Y		3		Y
5B	6 X 40	0	2-4-2	Y	5	Y	Y		15		Y
6A/SD2	6 X 6	300	6	Y	6	Y	Y				Y
SD3	6 X 6	+140	4	Y							Y
SD6	6 X 6	+140	4	Y							Y

3 Phase Fully Actuated (US 311 Business Closed Loop Signal System)

NOTES

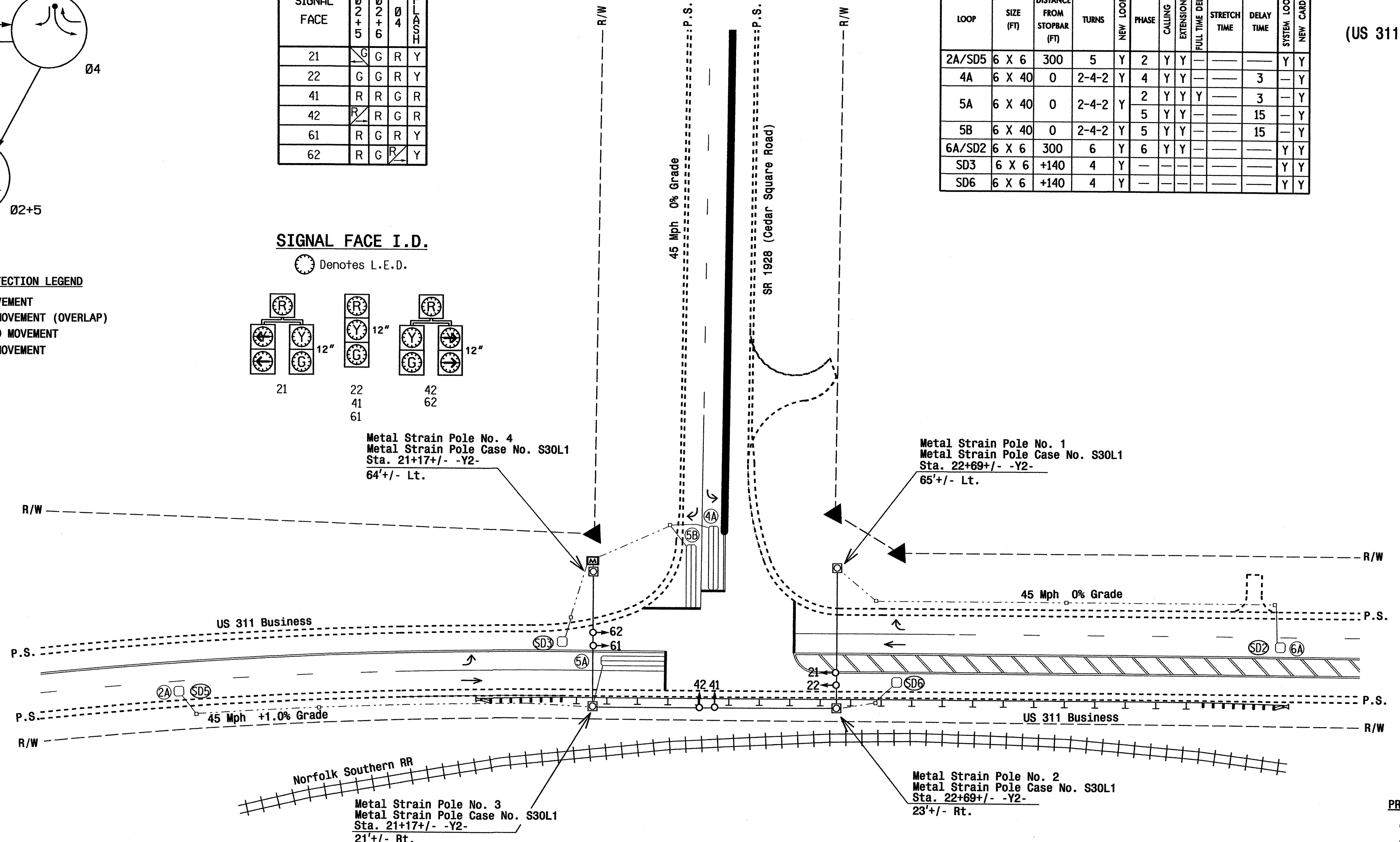
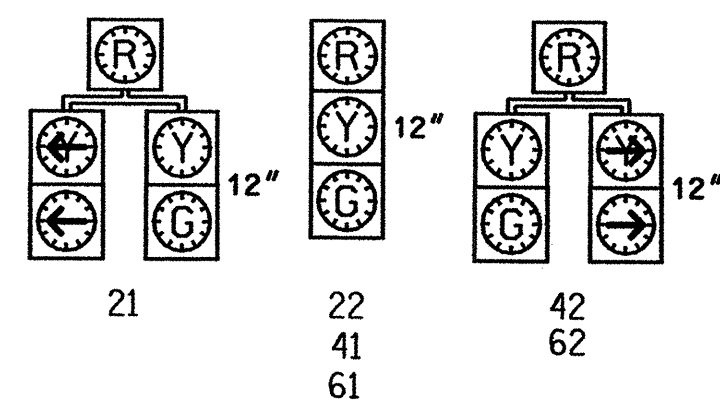
1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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:
Master Asset #10809
Controller Asset #1078.

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

○ Denotes L.E.D.



PLAN QUANTITIES

Pay Item	Feet
Signal Cable	615
Messenger Cable	330
Lead-in Cable	1405

LEGEND

- | PROPOSED | EXISTING |
|--|--|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ○ → Modified Signal Head | N/A |
| — Sign | — Sign |
| □ → Pedestrian Signal Head With Push Button & Sign | □ → Pedestrian Signal Head With Push Button & Sign |
| ○ → Signal Pole with Guy | ○ → Signal Pole with Guy |
| □ → Signal Pole with Sidewalk Guy | □ → Signal Pole with Sidewalk Guy |
| □ → Inductive Loop Detector | □ → Inductive Loop Detector |
| □ → Master Controller & Cabinet | □ → Master Controller & Cabinet |
| □ → Junction Box | □ → Junction Box |
| □ → 2-in Underground Conduit | □ → 2-in Underground Conduit |
| N/A → Right of Way | --- Right of Way |
| → Directional Arrow | → Directional Arrow |
| → Pavement Marking Arrow | → Pavement Marking Arrow |
| ○ → Metal Strain Pole | ○ → Metal Strain Pole |

2070L TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green 1 *	12	7	7	12
Extension 1 *	6.0	2.0	2.0	6.0
Max Green 1 *	60	45	20	60
Yellow Clearance	4.4	3.0	3.0	4.5
Red Clearance	1.0	1.8	1.3	1.1
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	2.5	-	-	2.5
Max Variable Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

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

New Installation

Prepared in the Offices of:

 J.D. Williams
 ENGINEER

US 311 Business at SR 1928 (Cedar Square Road)

Division 08 Randolph County Glenola
 PLAN DATE: April 2006 REVIEWED BY: I. O. Umzurike
 PREPARED BY: B.E. Wynn REVIEWED BY:

SEAL

 J.D. Williams
 ENGINEER

SCALE: 1"=40'

REVISIONS: _____

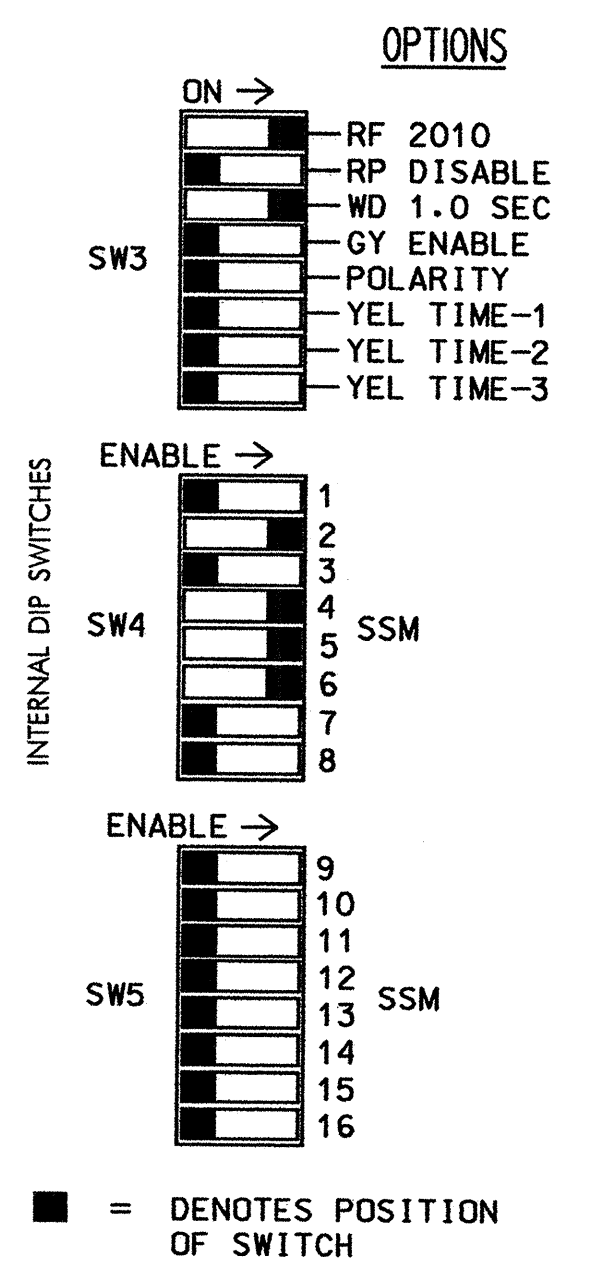
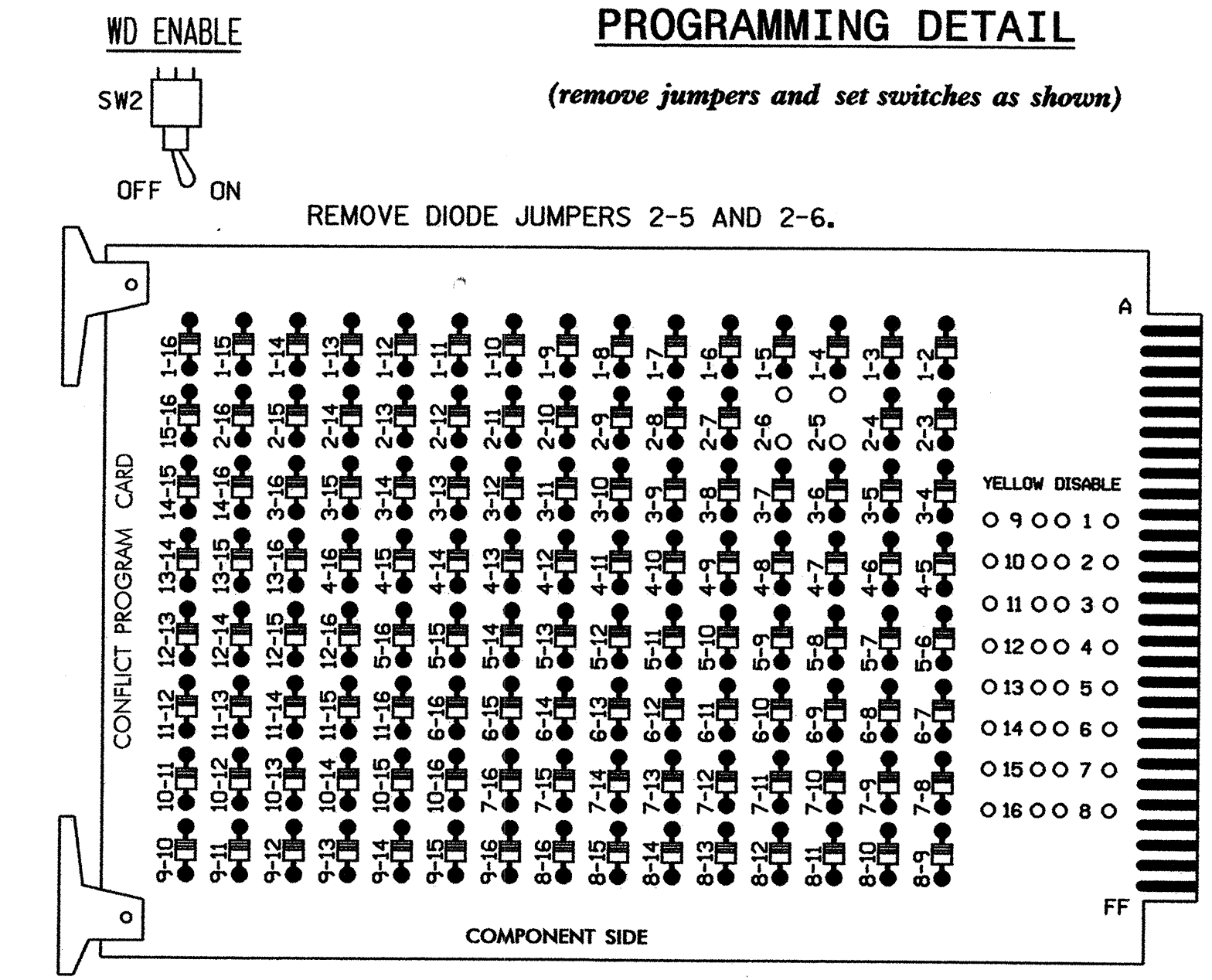
SIGNATURE: _____ DATE: _____

INVENTORY NO. 08-1078

28-Apr-2006 10:56
 55#115 61palspac\krcupstt\p_projects\2606\sigal\sigal.dwg 2005xxxx.dgn
 dwynn

EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Make sure jumpers SEL1-SEL5 are present on the monitor board.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. 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 1,3,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
- The cabinet and controller are part of the US 311 Business Closed Loop System

SIGNAL HEAD HOOK-UP CHART

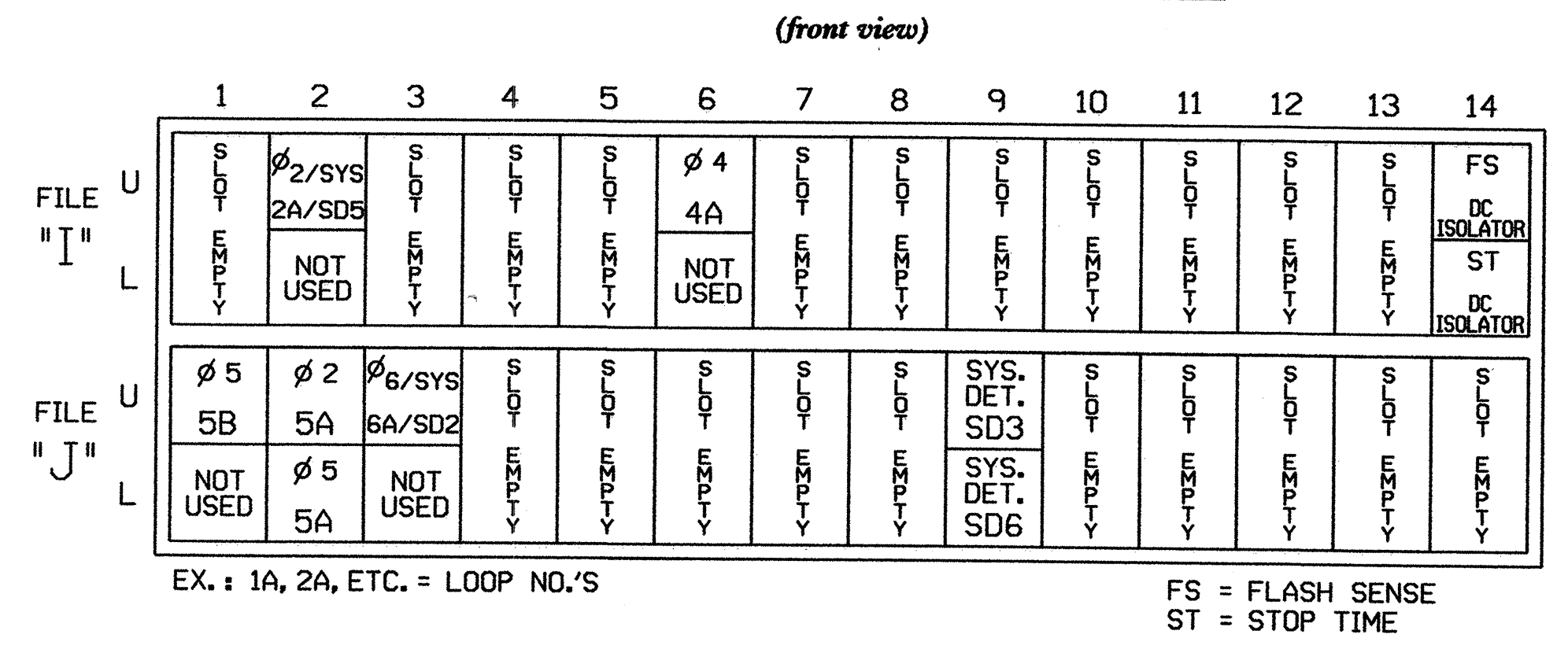
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	62	NU	21,42	61,62	NU	NU	NU
RED		128			101			*	134			
YELLOW		129			102				135			
GREEN		130			103				136			
RED ARROW												
YELLOW ARROW					102			132				
GREEN ARROW					103			133				

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

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
 CABINET.....CONTRACTOR SUPPLIED 332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S4,S5,S6
 PHASES USED.....2,4,5,6
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

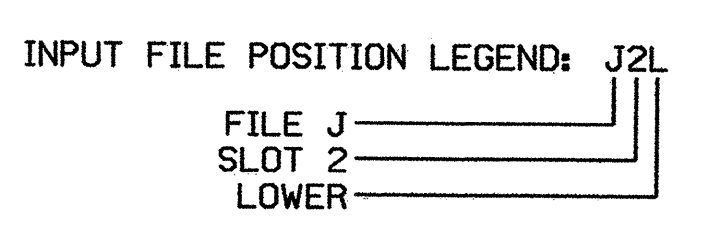
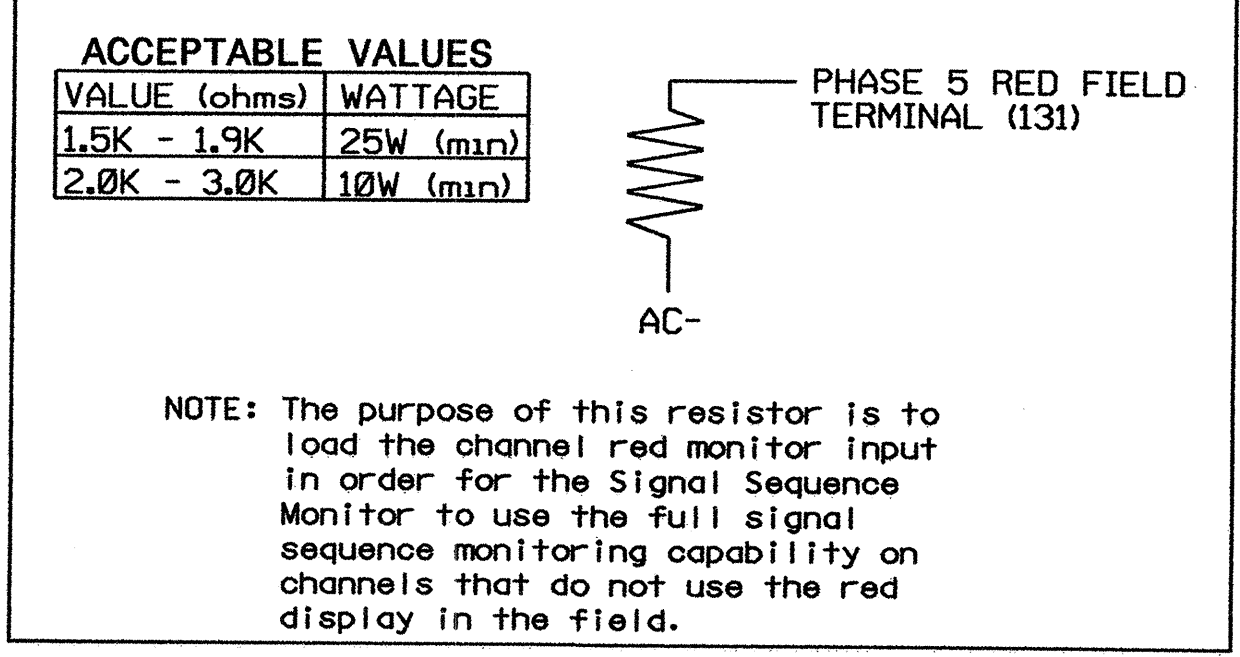


INPUT FILE CONNECTION & PROGRAMMING CHART

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/SD5	TB2-5,6	I2U	39	1	2	2/SYS.	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
5B	TB3-1,2	J1U	55	17	5	5	Y	Y			15
5A	TB3-5,6	J2U	40	2	6	2	Y	Y	Y		3
	TB3-7,8	J2L	44	6	16	5	Y	Y			15
**6A/SD2	TB3-9,10	J3U	64	26	36	6/SYS.	Y	Y			
*SD3	TB7-9,10	J9U	59	21	15	SYS					
*SD6	TB7-11,12	J9L	61	23	17	SYS					

- * SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.
- ** PROGRAM AS SYSTEM DETECTOR IN ADDITION TO LOCAL DETECTOR.

LOAD RESISTOR INSTALLATION DETAIL



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 08-1078
 DESIGNED: April 2006
 SEALED: 4-28-06
 REVISED: N/A

New Installation

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 311 Business at SR 1928 (Cedar Square Road)

Division 08 Randolph County Glenola

PLAN DATE: 4-13-06 REVIEWED BY: D.T. Joyce 07

PREPARED BY: D.H. Spaulding REVIEWED BY:

REVISIONS: INIT. DATE

122 N. McDowell St., Raleigh, NC 27603

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN

Signature: George C. Brown 5/8/06 DATE

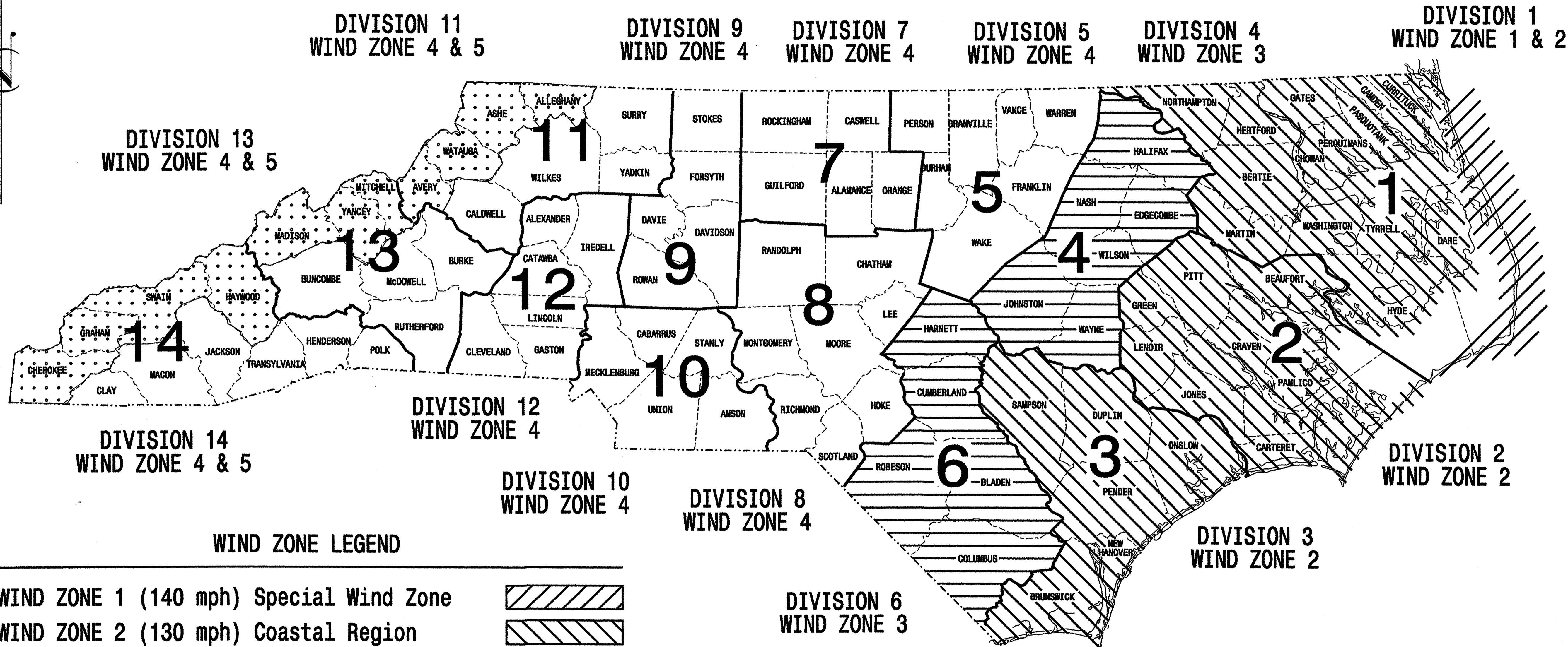
SIG. INVENTORY NO. 08-1078

02-MAY-2006 14:45
 C:\WIN...pr\progress\0107E_sm.e_2006xx.dgn
 02/04/06

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE	PROJECT NO.	SHEET NO.
N.C.	R-2606A	Sig.6
F. A. PROJ. NO.	M 1	
PROJECT ID. NO.		

STANDARD DRAWINGS FOR METAL POLES

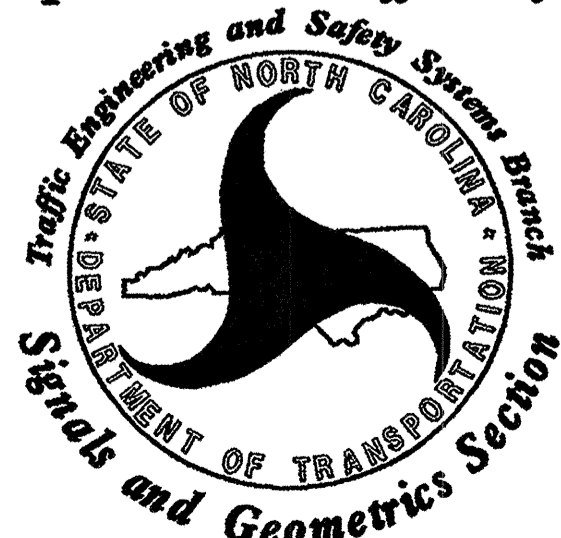


WIND ZONE LEGEND

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		

<http://www.ncdot.org/doh/preconstruct/traffic/tmssu/ws/default.htm>

Prepared in the Offices of:



122 N. McDowell St., Raleigh, NC 27603

Designed in conformance with the 2002 Interim to the 4th Edition 2001

AASHTO

Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals

INDEX OF PLANS

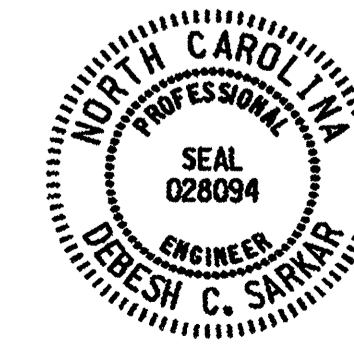
DRAWING NUMBER	DESCRIPTION
M 1	Title Sheet
M 2	Fabrication Details - All Poles
M 3	Fabrication Details - Strain Poles
M 4,5	Fabrication Details - Mast Arm Poles
M 6	Construction Details - Strain Poles
M 7	Construction Details - Foundations
M 8	Standard Strain Poles

NCDOT CONTACTS:

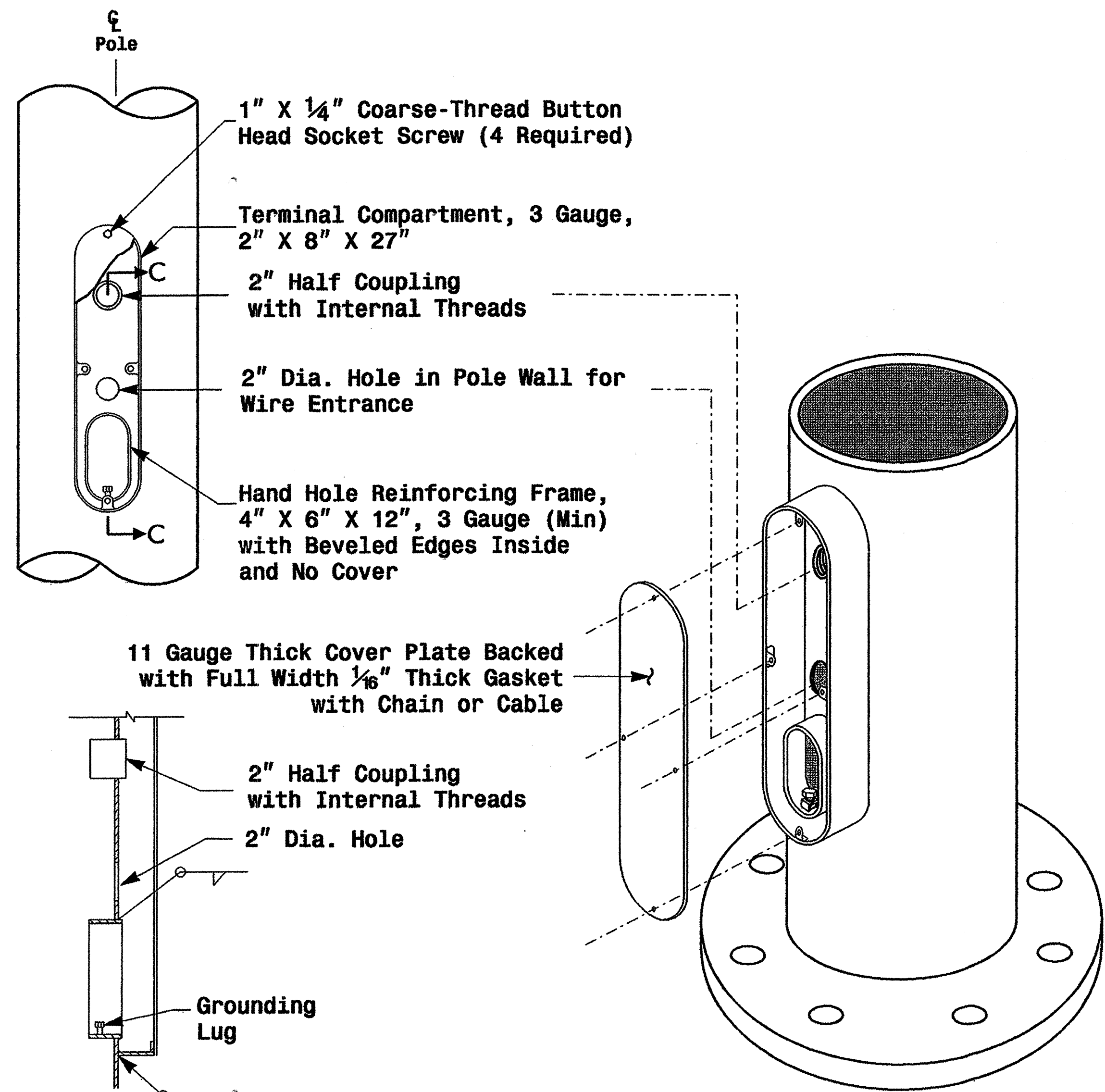
TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH

- G. A. Fuller, P.E. - State ITS and Signals Engineer
- R. E. Mullinax, P.E. - Signals and Geometrics Engineer
- P. L. Alexander, P.E. - Signals and Geometrics Special Projects Engineer
- D. C. Sarkar, P.E. - Signals and Geometrics Structural Engineer
- A. M. Esposito, P.E. - Signals and Geometrics Project Engineer
- C. F. Andrews, Jr. - Signals and Geometrics Project Engineer

SEAL

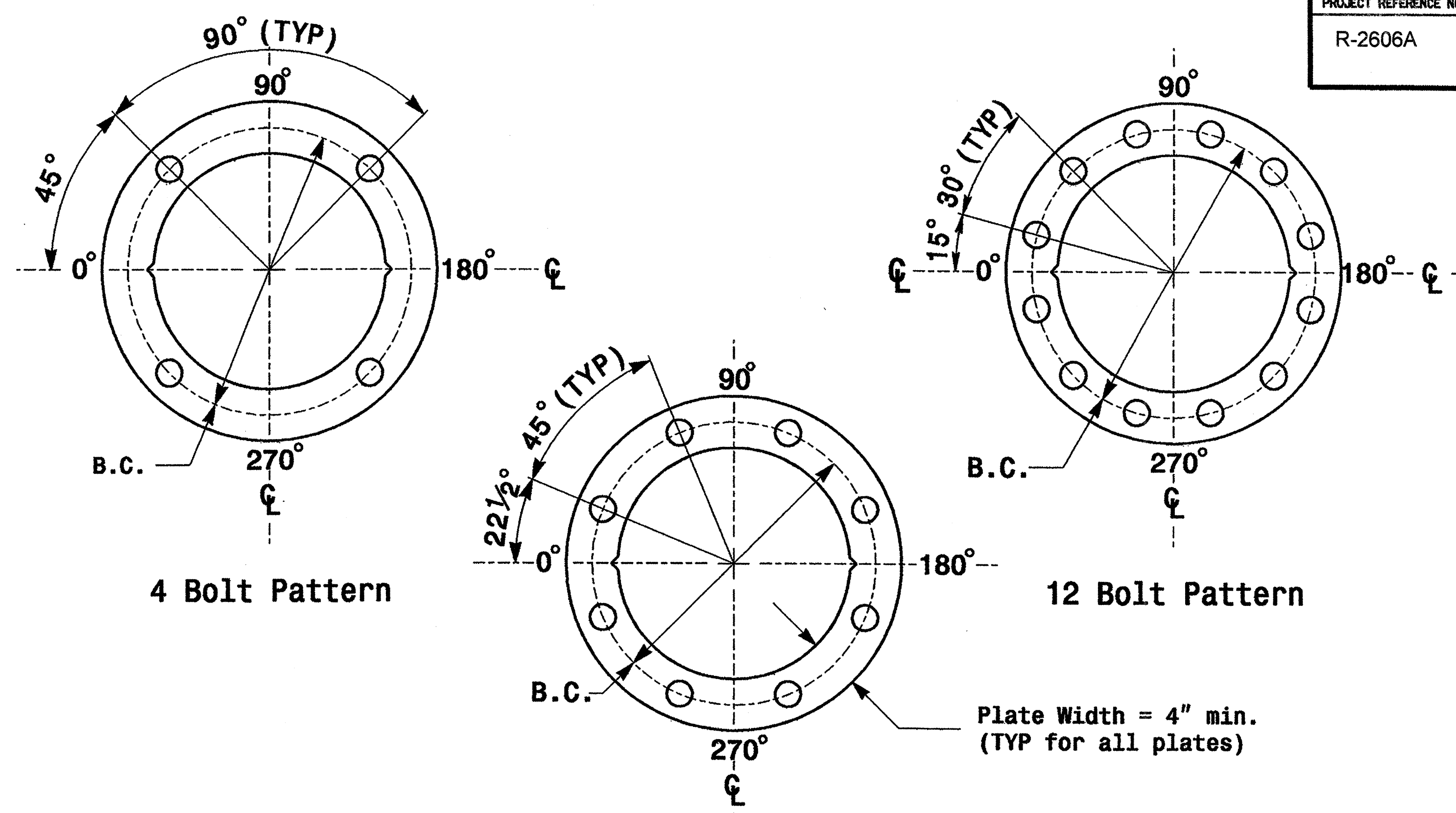


D. Sarkar 9.2.2005
SIGNATURE DATE



Section C-C Note: Unless otherwise specified, locate Terminal Compartment 1 foot above the pole base plate at 180 degrees on the pole's radial index.

Terminal Compartment Detail



Construct Templates and Plates from 1/4" min. thick Steel. Galvanizing is not required.
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 _____

MFG _____ MFG. DATE: MM/YY

SECTION D/T/L/Y _____

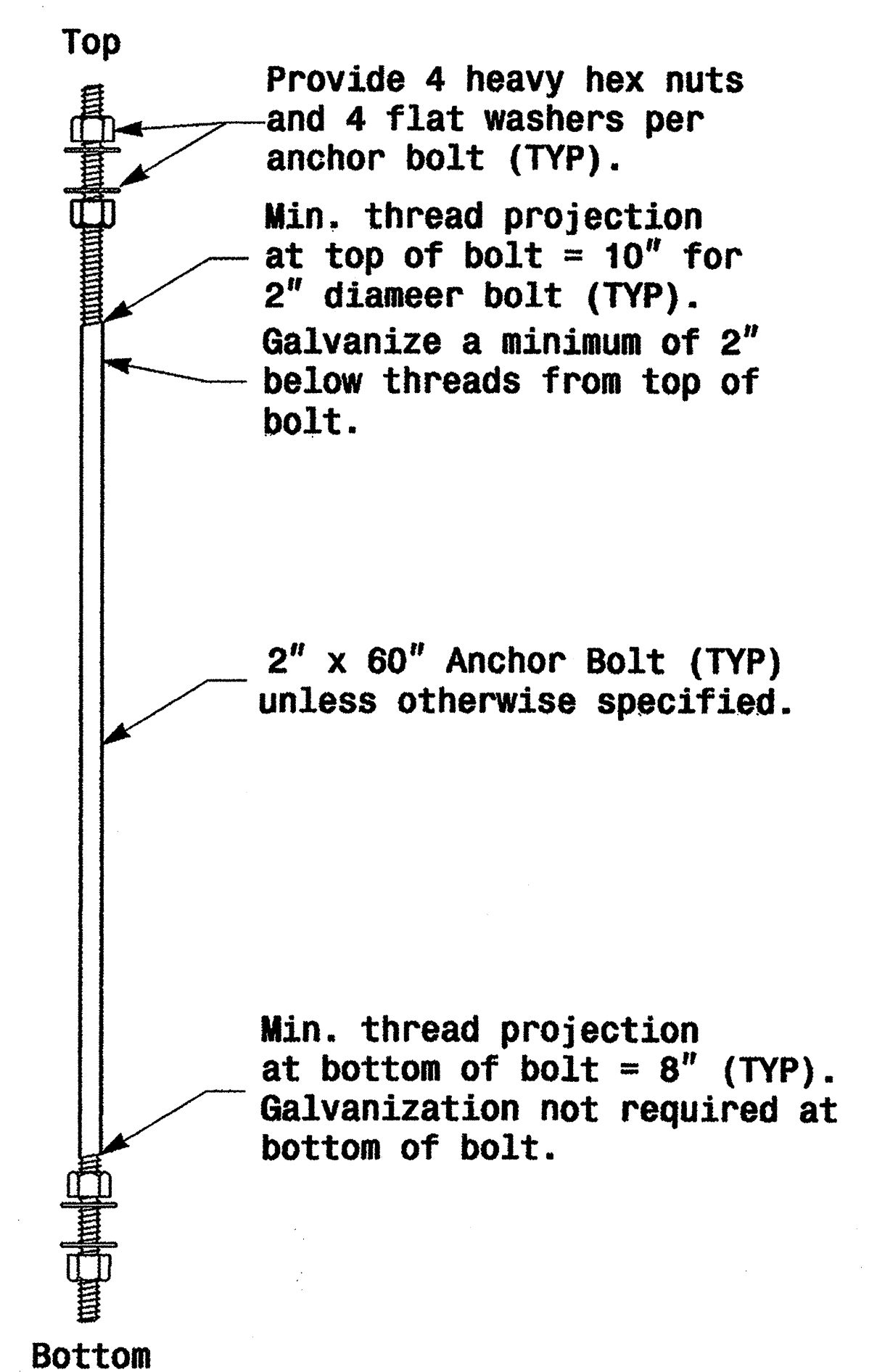
NCDOT STANDARD _____

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

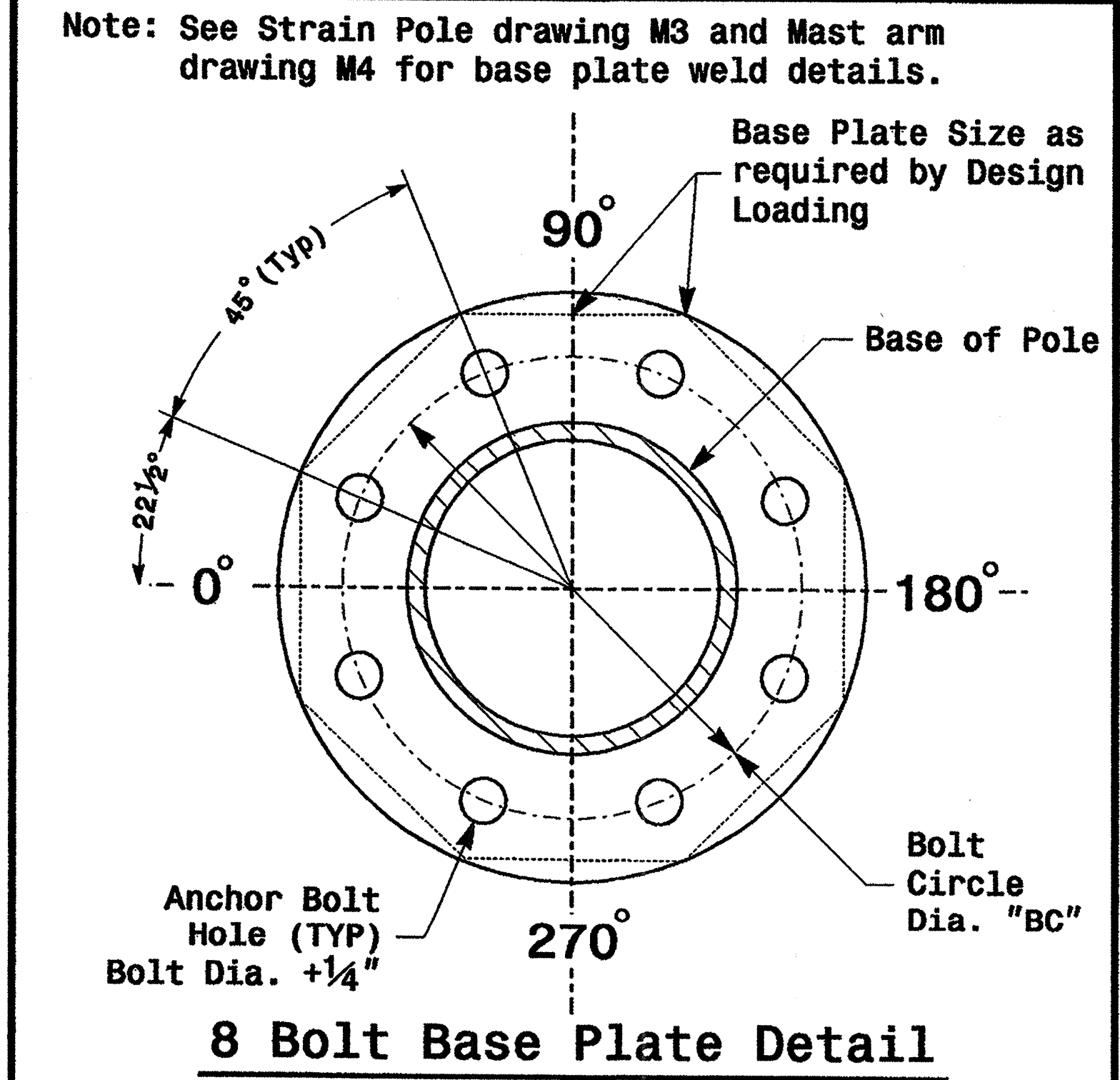
Shaft I.D. Tag
 (Provide on Strain Poles and Mast Arm Poles)

- 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 plan pole I.D.
 - 5) See drawing M4 for mounting positions of I.D. tags.

Identification Tag Details



Anchor Bolt Detail



Prepared in the Office of:

Typical Fabrication Details Common To All Metal Poles

PLAN DATE: May 2005 REVIEWED BY: C.F. Andrews

PREPARED BY: P.L. Alexander REVIEWED BY: A.M. Esposito

REVISIONS _____ INIT. DATE _____

SCALE: 0 NA NONE

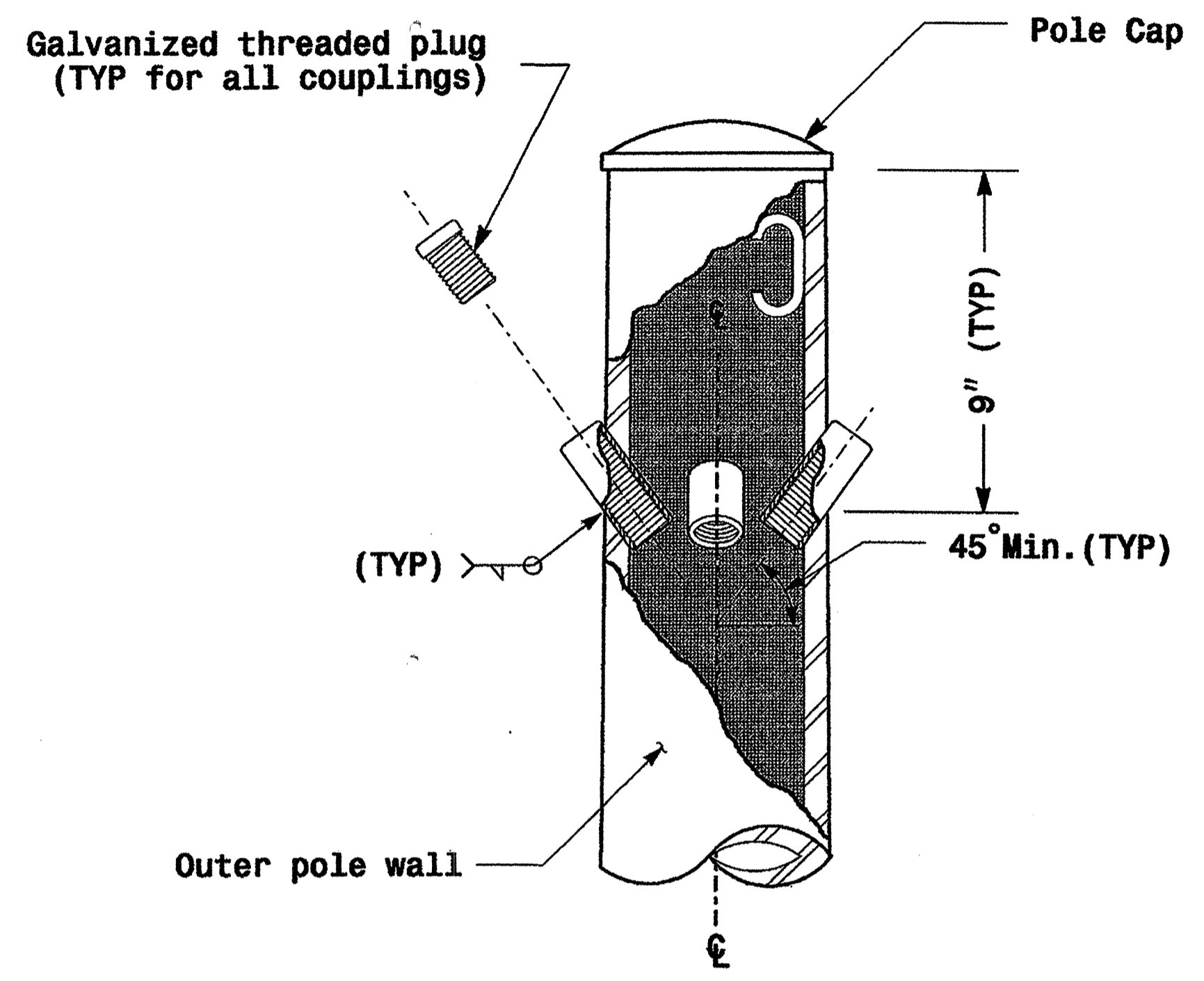
SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028094 DEEESH C. SARKAR

Signature: D. Sarker 9.2.2005 DATE

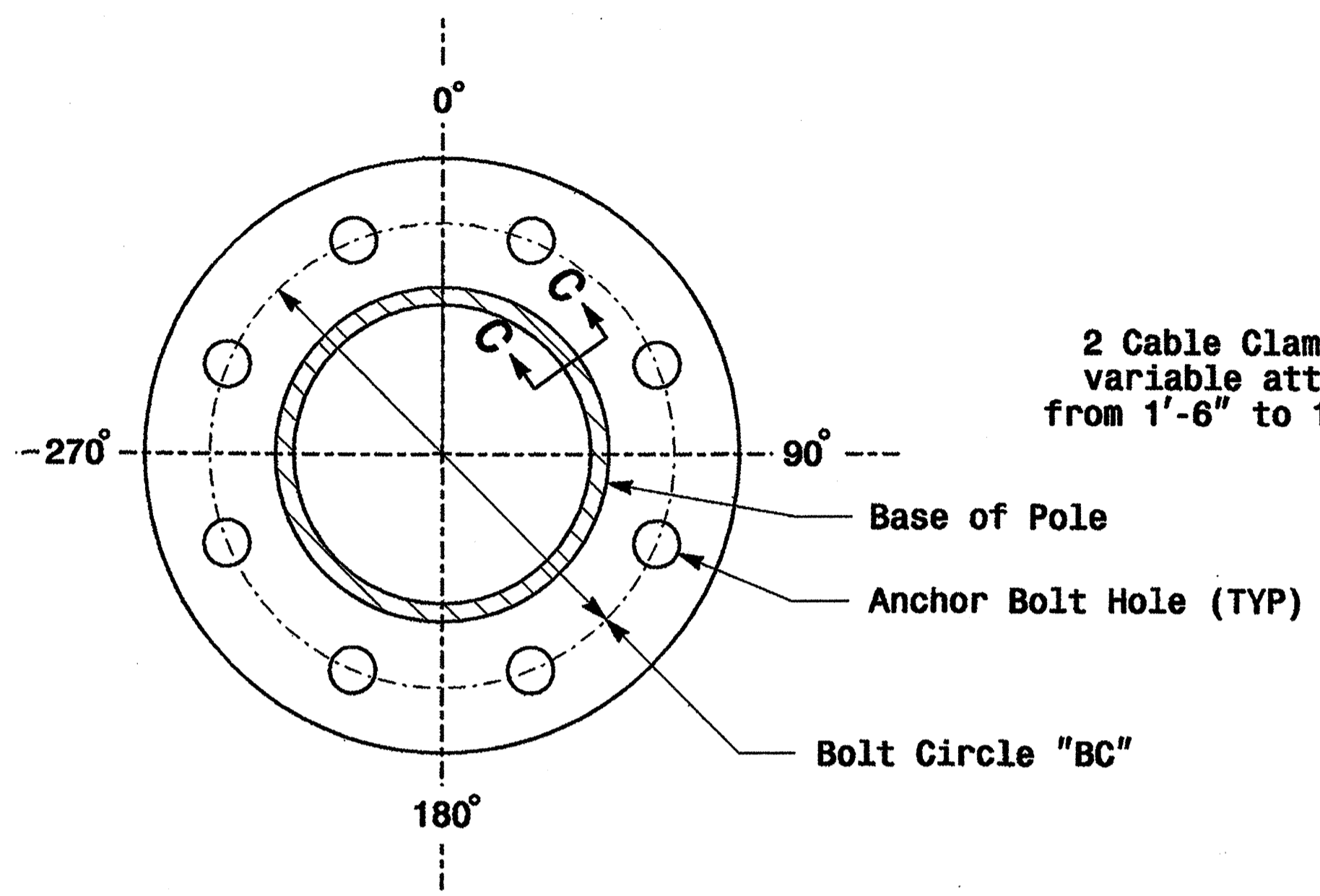
SIG. INVENTORY NO. _____

Fabrication Details - All Poles

01-SEP-2005 18:22 D:\2004 Metro Pole Standard\2004 m2 thru m5.dgn

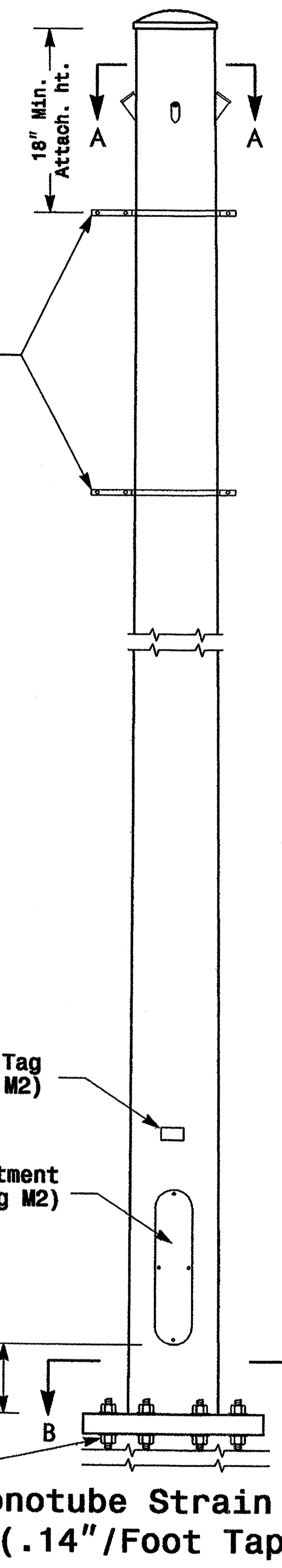


Cable Entrances at Top of Pole

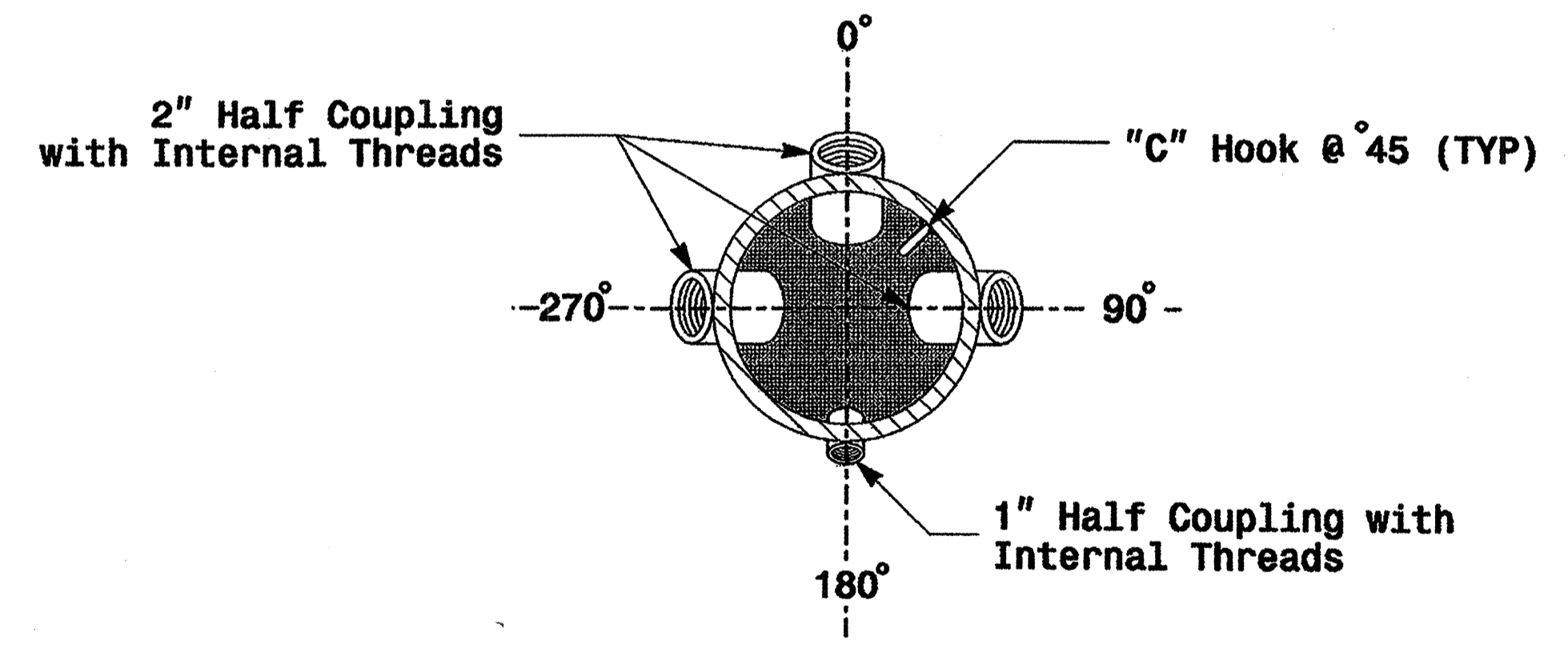


**Section B-B
Pole Base Plate**
(See drawing M2)

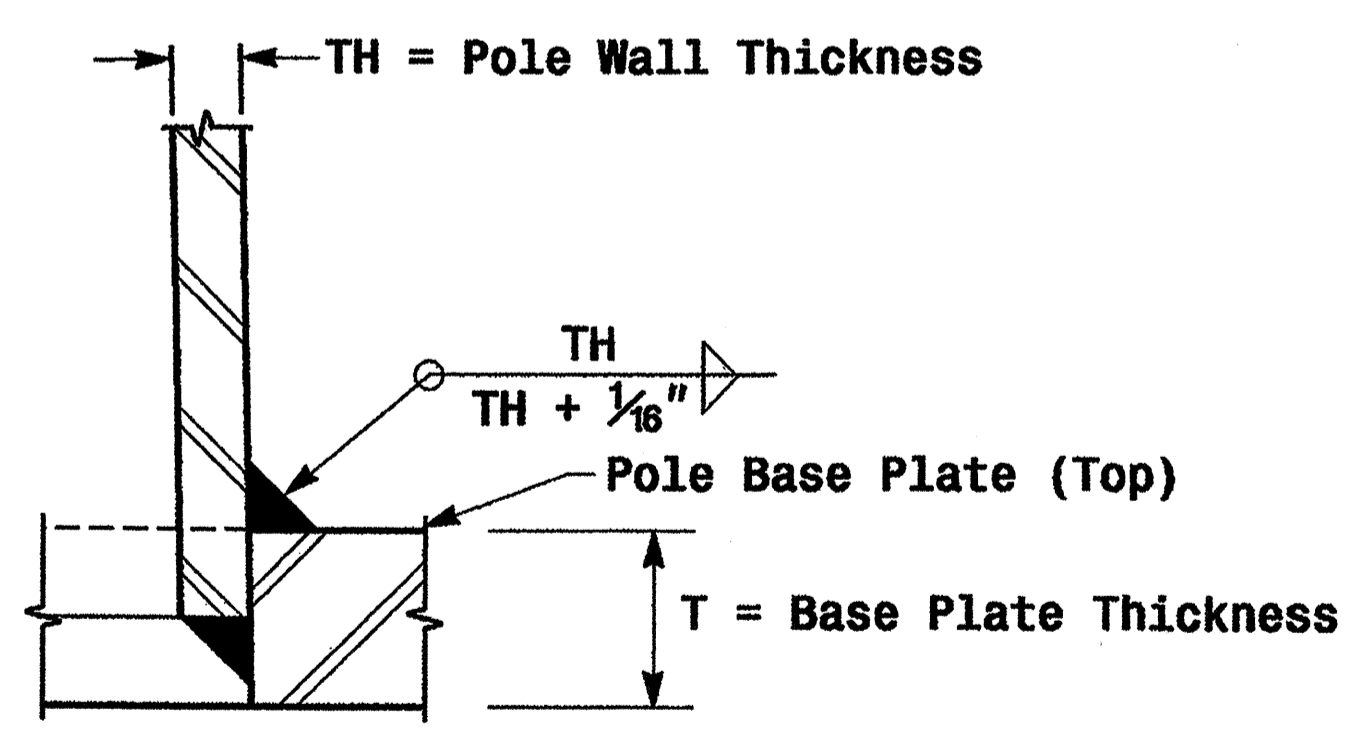
2 Cable Clamps designed for variable attachment heights from 1'-6" to 10' below the top of the pole.



**Monotube Strain Pole
(.14"/Foot Taper)**



Radial Orientation for Factory Installed Accessories at Top of Pole



Socket Connection Weld Detail

Shaft I.D. Tag (See drawing M2)

Terminal Compartment (See drawing M2)

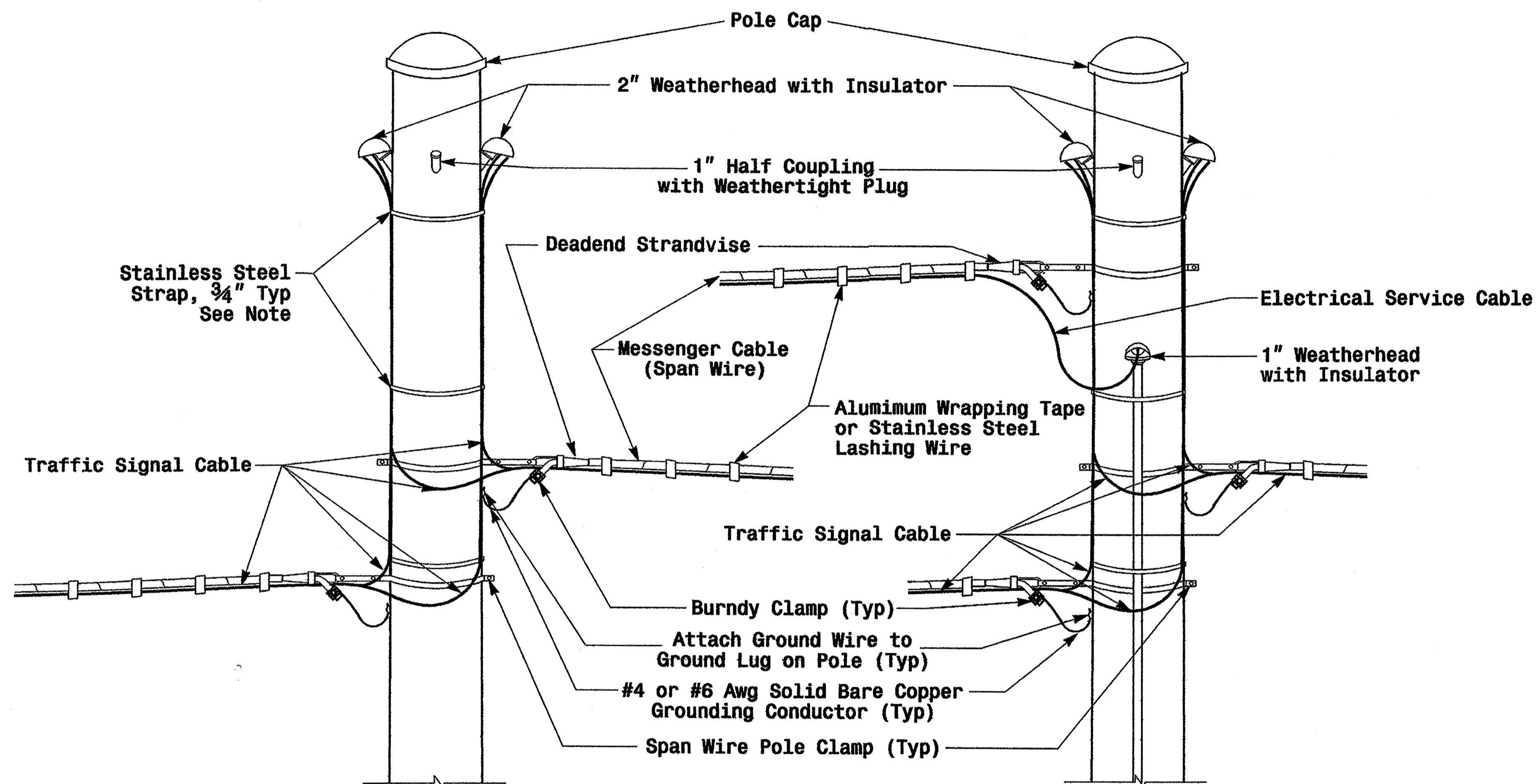
12" (TYP)

Anchor Bolt (See drawing M2)

Fabrication Details - Strain Poles

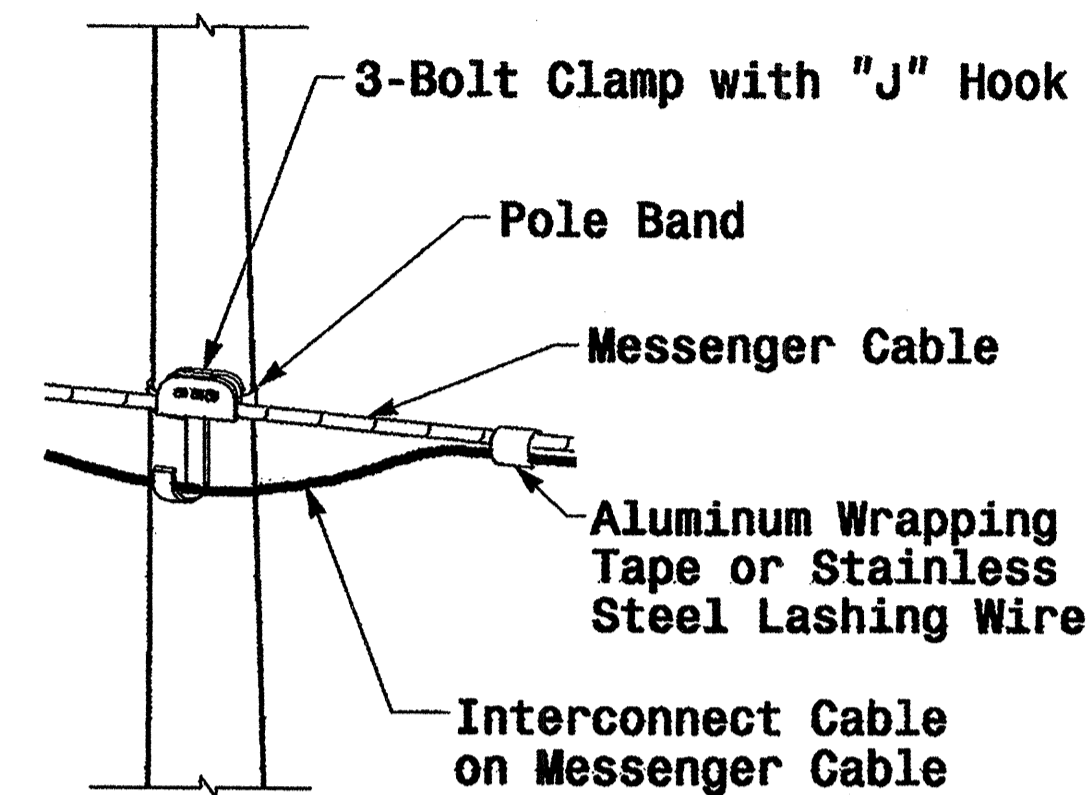
01-SEP-2005 14:07 \\c:\p1\work\p04\house\2004 metal pole standard\ds2004.m3.dgn

	Typical Fabrication Details For Strain Poles		
	PLAN DATE: May 2005 PREPARED BY: P.L. Alexander	REVIEWED BY: C.F. Andrews REVIEWED BY: A.M. Esposito	
REVISIONS: _____ INIT. DATE _____		SIGNATURE: <i>P. L. Alexander</i> DATE: 9.2.2005	
SIG. INVENTORY NO. _____		_____	

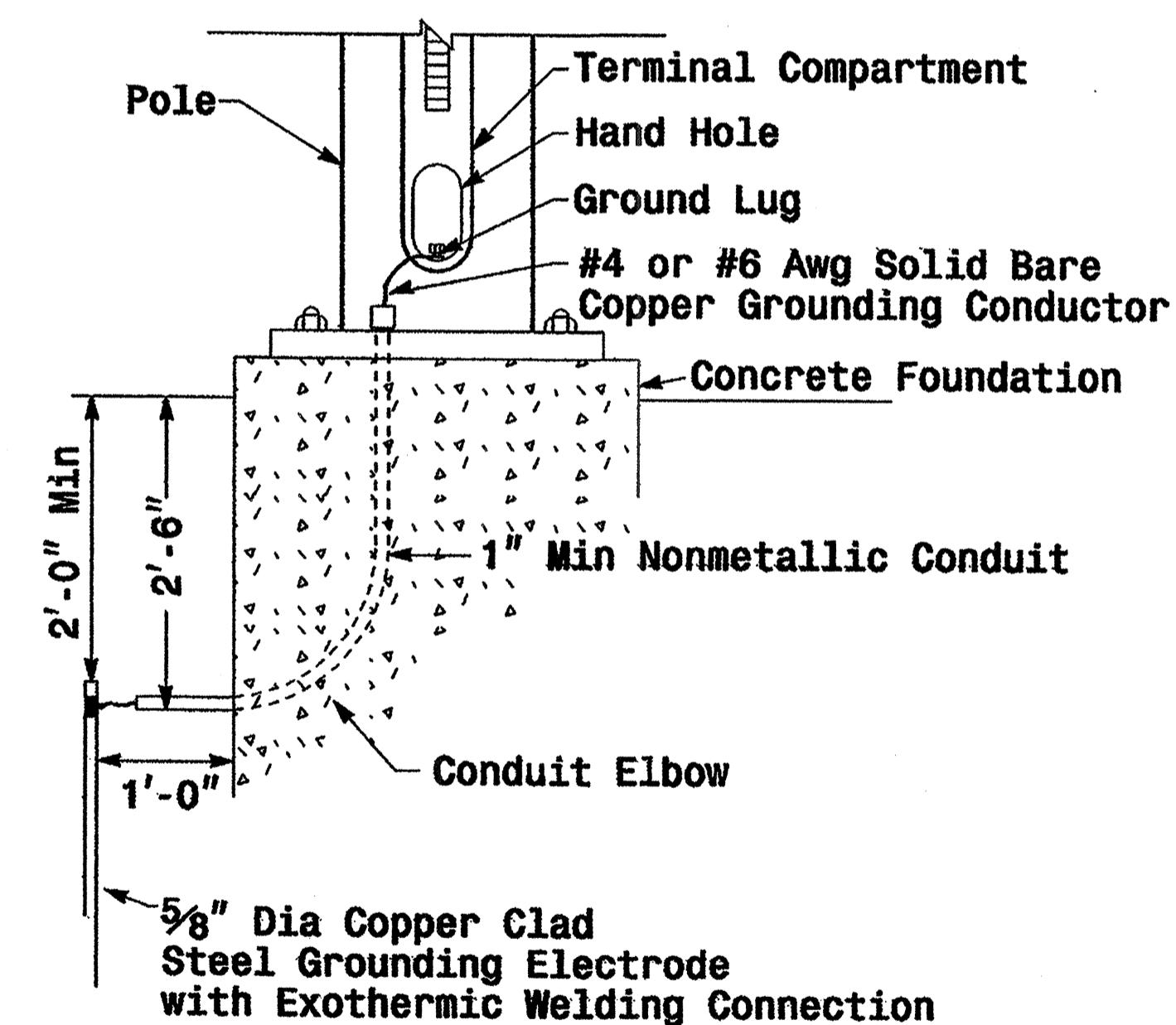


Note: Strap all signal cables to the side of the pole with $\frac{3}{4}$ " stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36"

Strain Pole Attachments



Attachment of Cable to Intermediate Metal Pole



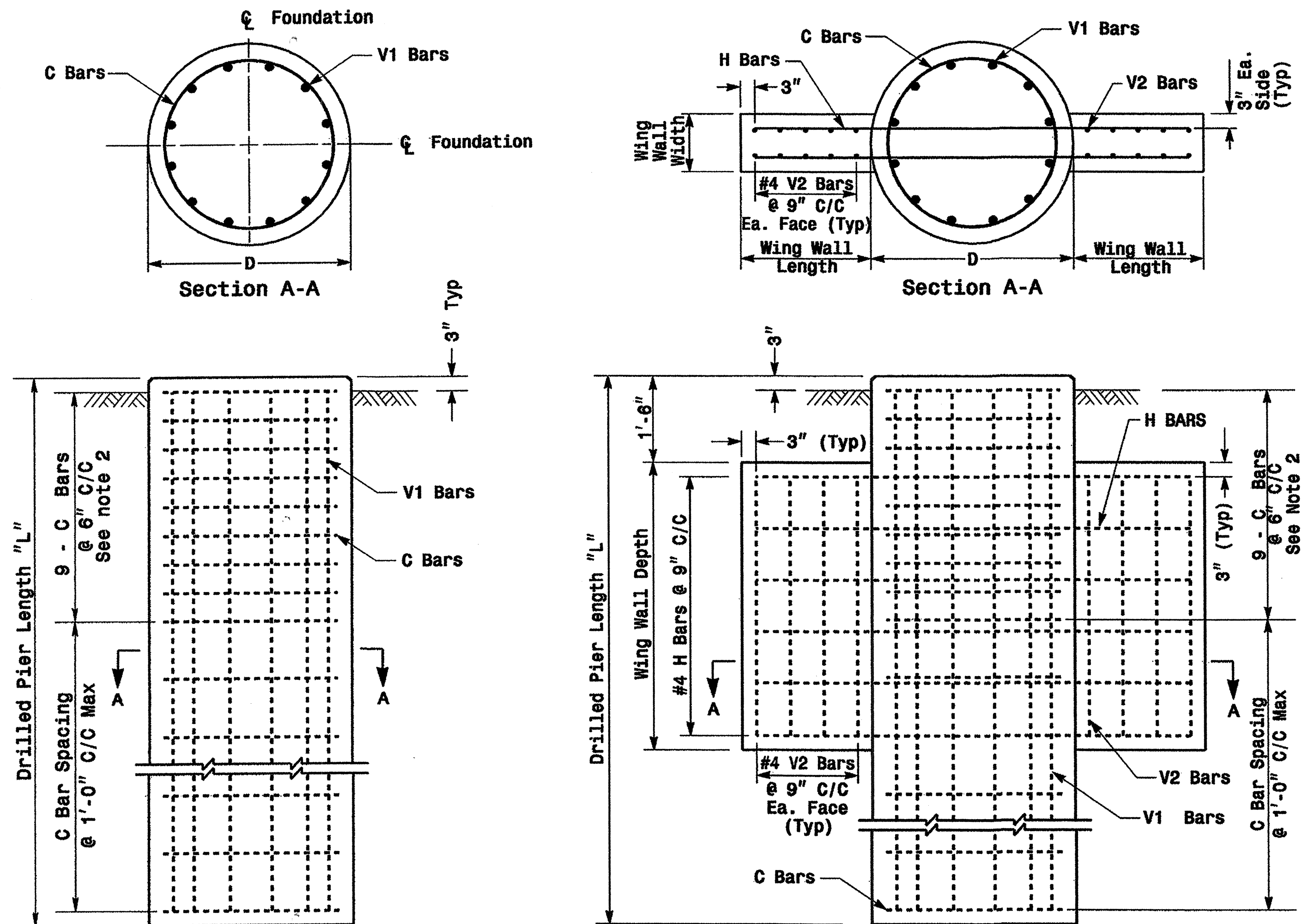
Metal Pole Grounding Detail

Construction Details - Strain Poles

01-SEP-2005 16:13
v:\people\es-un11\work\kgr\cups\2004 metal pole etendor-us#2004 mb.dgn
pci alexander

	Construction Details Strain Poles		
	PLAN DATE: May 2005 PREPARED BY: C.F. ANDREWS	REVIEWED BY: P.L. ALEXANDER REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE		SIGNATURE: <i>Milton I. Dean</i> 9-1-05 DATE SIG. INVENTORY NO.	

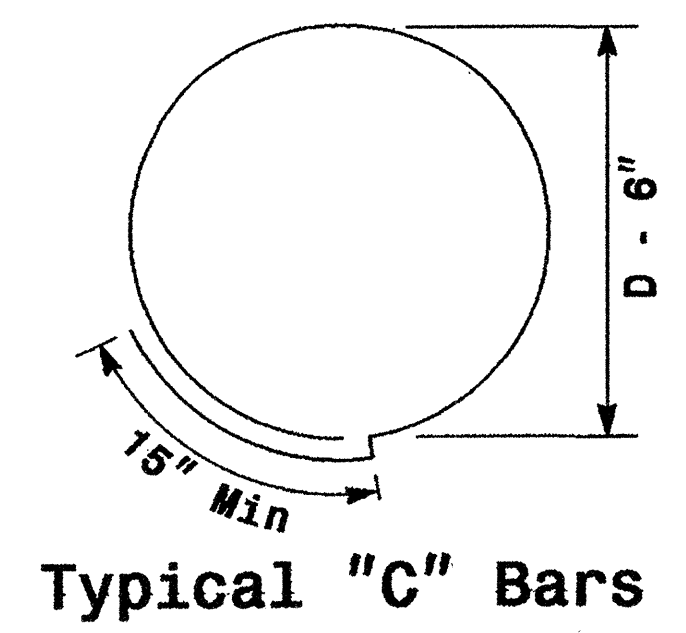
Reinforcing Steel Bars



REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (42" & 48" DIAMETER)

Shaft Dia (in.)	Conc. Volume (cu. yds.)	Bar Name	No.	Size	Type	Length
42"	.356 x L	V1	9	#8	STR.	**
		C	*	#4	CIR.	10'-9"
48"	.465 x L	V1	12	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* See Note No. 1
** See Note No. 3



REINFORCING STEEL TABLE FOR STANDARD 42" and 48" DRILL PIER SHAFT WITH TYPE 1 AND TYPE 2 WING WALLS

Wing Wall Type	Drill Pier Shaft Dia. (in.)	Reinforcing Steel				
		Bar Name	No.	Size	Type	Length
TYPE 1	42"	V1	9	#8	STR.	**
		V2	12	#4	STR.	2'-6"
		H	8	#4	STR.	6'-0"
		C	*	#4	CIR.	10'-9"
TYPE 2	42"	V1	9	#8	STR.	**
		V2	16	#4	STR.	4'-6"
		H	12	#4	STR.	9'-0"
		C	*	#4	CIR.	10'-9"
TYPE 2	48"	V1	12	#8	STR.	**
		V2	16	#4	STR.	4'-6"
		H	12	#4	STR.	9'-6"
		C	*	#4	CIR.	12'-6"

* See Note No. 1
** See Note No. 3

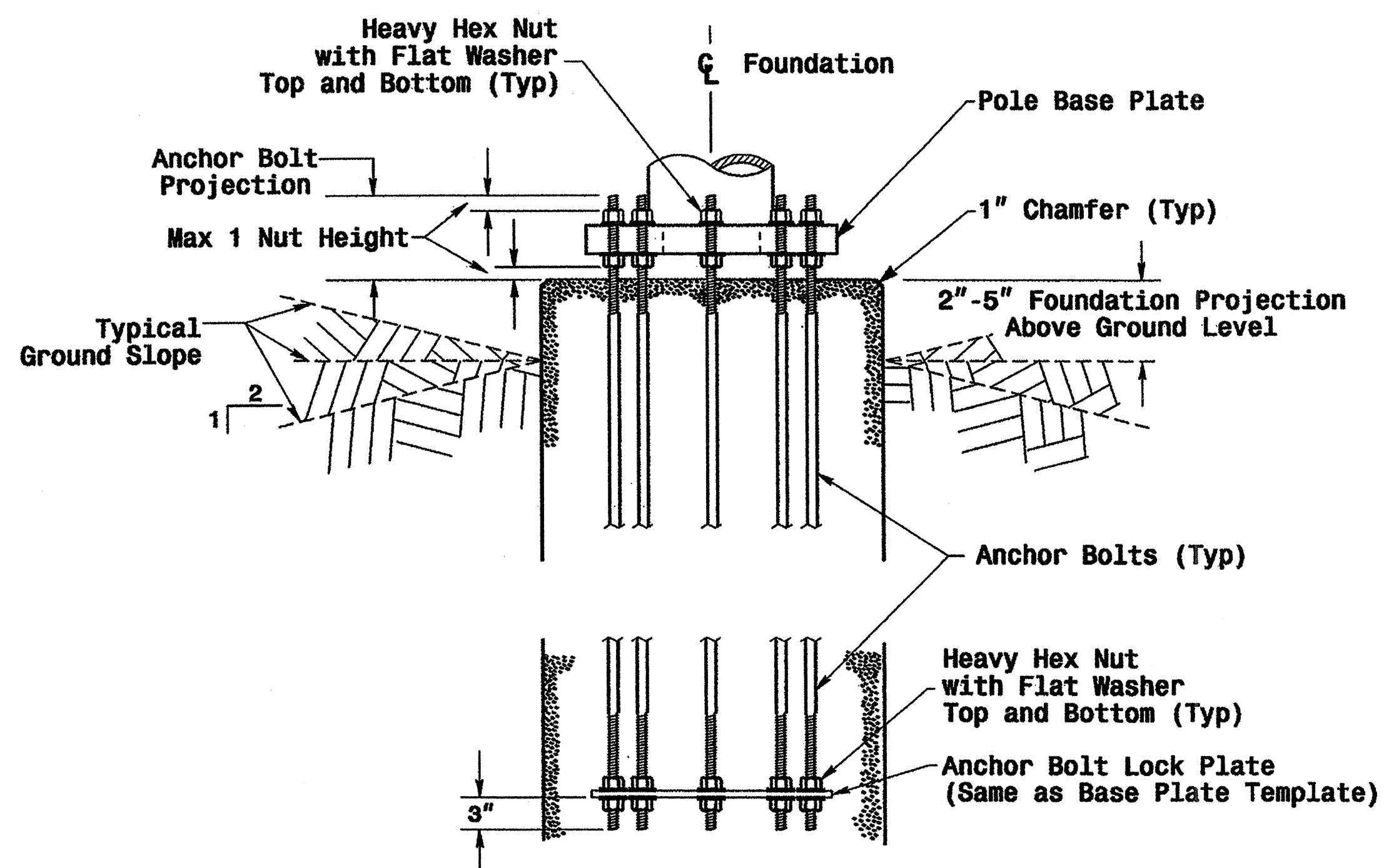
WING WALL DETAILS

Wing Wall Type	Wing Wall Length (Ft.)	Wing Wall Width (Ft.)	Wing Wall Depth (Ft.)	Concrete Volume (Cu. Yds.)
TYPE 1	1'-6"	1'-0"	3'-0"	.4
TYPE 2	3'-0"	1'-0"	5'-0"	1.2

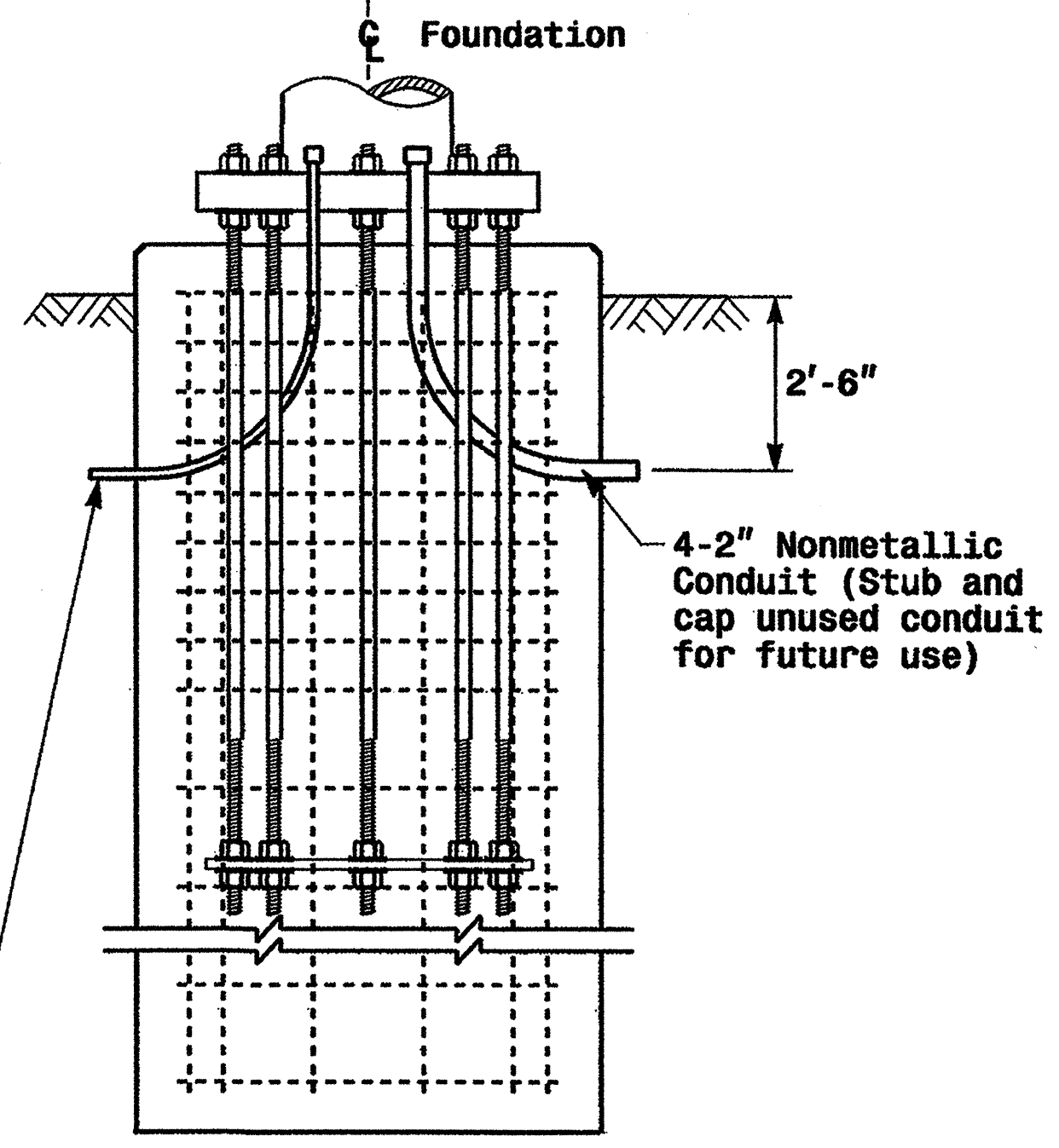
See Note No. 4

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. For standard foundations, see sheet M 8.
- 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 sheet M 8.
- The quantities for steel and concrete shown in the Wing Wall Details Chart reflect the amount of material for 1 pair of wing walls (2 wing walls per drilled pier shaft.)

Construction Details - Foundations

Prepared in the Office of

Construction Details Foundations
 PLAN DATE: May 2005 REVISIONS: _____ INIT. DATE: _____
 PREPARED BY: C.F. ANDREWS REVIEWED BY: P.L. ALEXANDER
 REVISIONS: _____ INIT. DATE: _____
 SCALE: NONE
 SIGNATURE: D. Sarkar 9.2.2005
 DATE: _____
 SIG. INVENTORY NO. _____

		STANDARD STRAIN POLES				STANDARD FOUNDATIONS 42" Diameter Drilled Pier Length (L) - Feet						
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Moment at the Pole Base (ft-kp)	Clay				Sand		
						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
WIND ZONE 1	LIGHT	S26L3	26	25	280	20.5	14.0	11.5	9.5	18.0	16.0	14.0
		S30L3	30	25	310	21.0	14.5	11.5	9.5	18.5	16.5	14.5
		S35L3	35	25	350	22.5	15.0	12.0	10.0	19.5	17.5	15.5
	HEAVY	S30H3	30	29	450	25.5	16.5	13.0	11.0	21.0	18.5	16.5
		S35H3	35	29	540	26.0	17.0	13.5	11.5	22.0	19.5	17.0
		S26L2	26	23	250	19.5	13.5	11.0	9.0	18.0	15.5	14.0
WIND ZONE 2	LIGHT	S30L2	30	23	290	20.0	14.0	11.5	9.5	18.5	16.0	14.0
		S35L2	35	23	315	21.0	14.5	11.5	9.5	19.0	16.5	14.5
		S30H2	30	29	415	24.5	16.0	13.0	10.5	21.0	18.5	16.0
	HEAVY	S35H2	35	29	485	25.5	16.5	13.5	11.0	21.5	19.0	16.5
		S26L2	26	23	250	18.5	13.0	10.5	9.0	17.5	15.0	13.5
		S30L2	30	23	290	19.5	13.5	11.0	9.0	18.0	15.5	14.0
WIND ZONE 3	LIGHT	S35L2	35	23	315	20.0	14.0	11.5	9.5	18.5	16.0	14.5
		S30H2	30	29	415	23.0	15.5	12.5	10.0	20.5	17.5	16.0
		S35H2	35	29	485	24.0	16.0	13.0	10.5	21.0	18.0	16.5
	HEAVY	S26L1	26	22	195	18.0	13.0	10.5	9.0	16.5	14.5	13.0
		S30L1	30	22	225	18.5	13.0	10.5	9.0	17.0	15.0	13.5
		S35L1	35	22	255	19.0	13.5	11.0	9.0	17.5	15.5	14.0
WIND ZONE 4	LIGHT	S30H1	30	25	330	22.0	15.0	12.0	9.5	19.5	17.0	15.0
		S35H1	35	25	385	23.0	15.5	12.5	10.0	20.0	17.5	15.5
		S26L2	26	23	250	19.0	13.5	10.5	9.0	17.5	15.5	13.5
	HEAVY	S30L2	30	23	290	20.0	14.0	11.0	9.5	18.0	16.0	14.0
		S35L2	35	23	315	21.0	14.5	11.5	10.0	19.0	16.5	14.5
		S30H2	30	29	415	23.5	15.5	12.5	10.5	21.0	18.0	16.0
WIND ZONE 5	LIGHT	S35H2	35	29	485	25.0	16.5	13.0	11.0	21.5	18.5	16.5
		S26L2	26	23	250	19.0	13.5	10.5	9.0	17.5	15.5	13.5
		S30L2	30	23	290	20.0	14.0	11.0	9.5	18.0	16.0	14.0
	HEAVY	S35L2	35	23	315	21.0	14.5	11.5	10.0	19.0	16.5	14.5
		S30H2	30	29	415	23.5	15.5	12.5	10.5	21.0	18.0	16.0
		S35H2	35	29	485	25.0	16.5	13.0	11.0	21.5	18.5	16.5

Concrete Volume (cubic yards) = .356 X L

Fabrication Design Notes:

1. Values shown in "Moment at the Pole Base" column represents the minimum acceptable capacity allowable for design using a design CSR of 1.
2. Base plate thickness (T) is 2.0 inches.

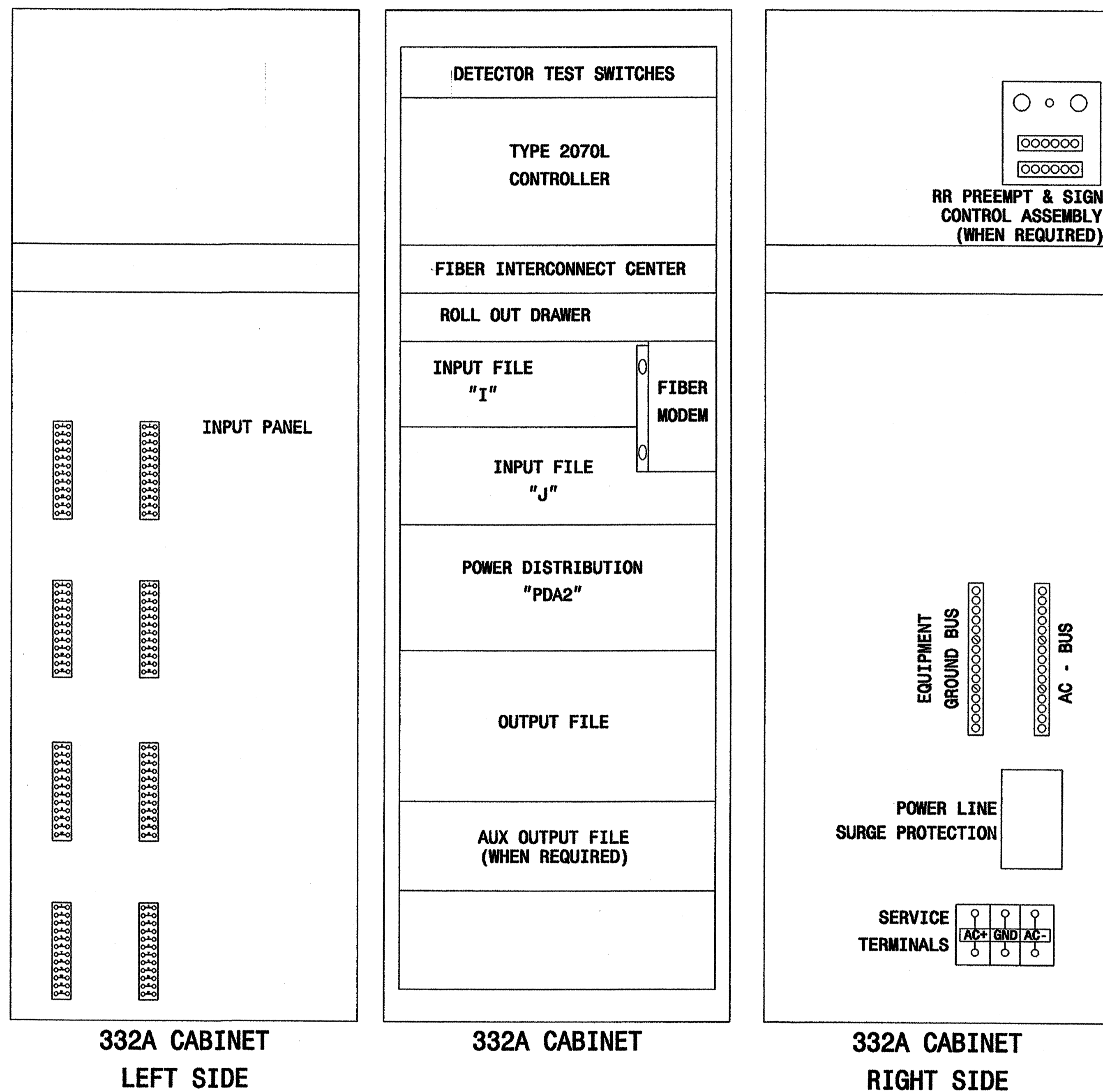
Foundation Selection:

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from sheet M 1.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate pole case load 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.

Standard Strain Poles

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polalexander

	Standard Strain Poles and Standard Foundations		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028094 DEBESH C. SARKAR
	PLAN DATE: May 2005 PREPARED BY: P.L. Alexander SCALE: 0 NA None	REVIEWED BY: C.F. Andrews REVIEWED BY: A.M. Esposito REVISIONS: _____ INIT. DATE: _____	



NOTE
 -PROVIDE A 2 " SPACE BETWEEN THE CONTROLLER AND THE ROLL OUT DRAWER TO ACCOMMODATE A FIBER INTERCONNECT CENTER.

REAR VIEW

Typical Drawing

11/13/02 10:48
 alexander PL
 alexander

	Cabinet Component Layout 170 Cabinet Model 332A with 2070L Controller		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER MILTON L. DEAN 16286
	PLAN DATE: October 2002 PREPARED BY: P L Alexander	REVIEWED BY: REVIEWED BY:	
122 N. McDowell St., Raleigh, NC 27603		SIGNATURE: <i>Milton L. Dean</i> 11/13/02 DATE	

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

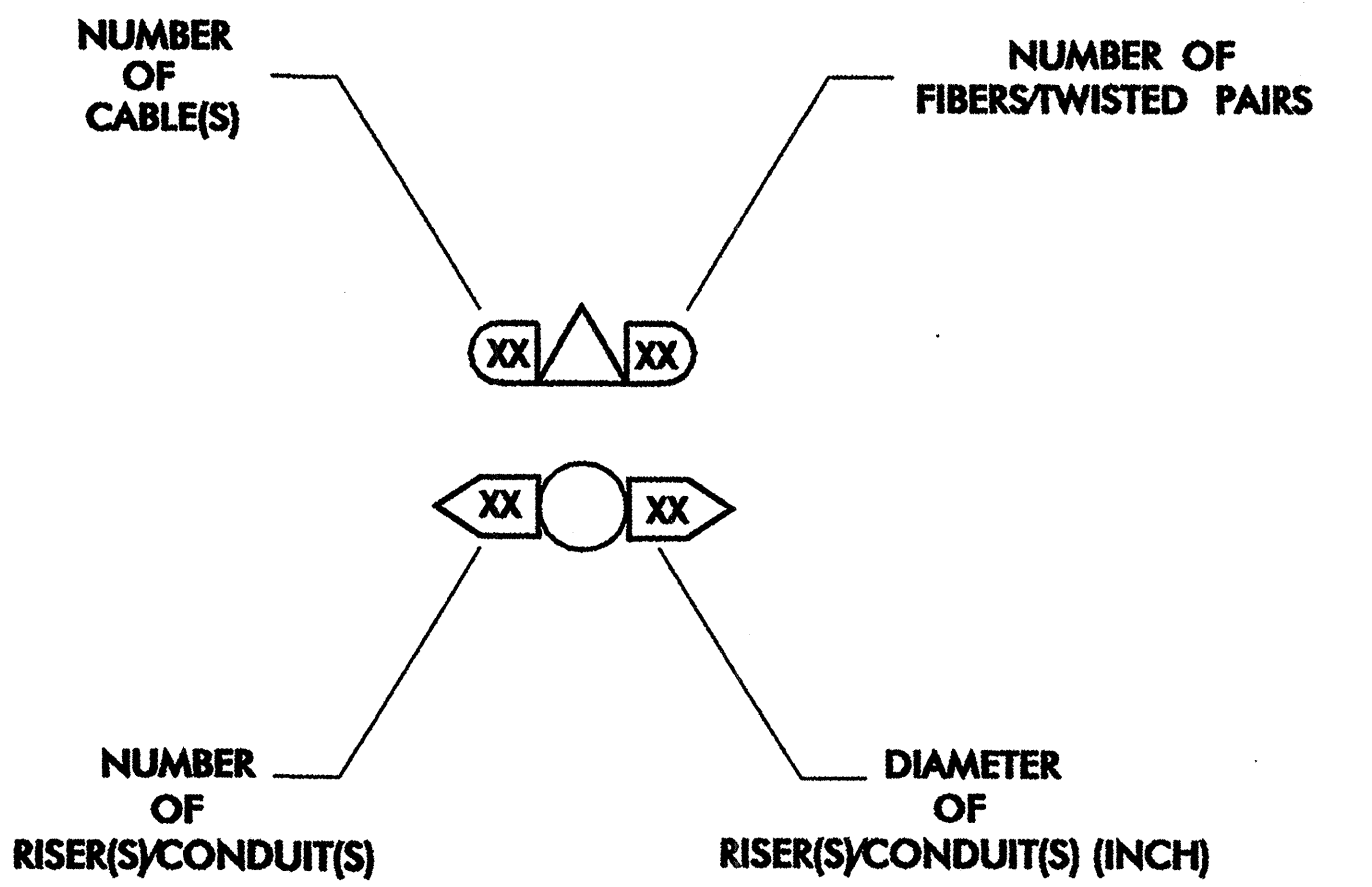
- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL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

LEGEND

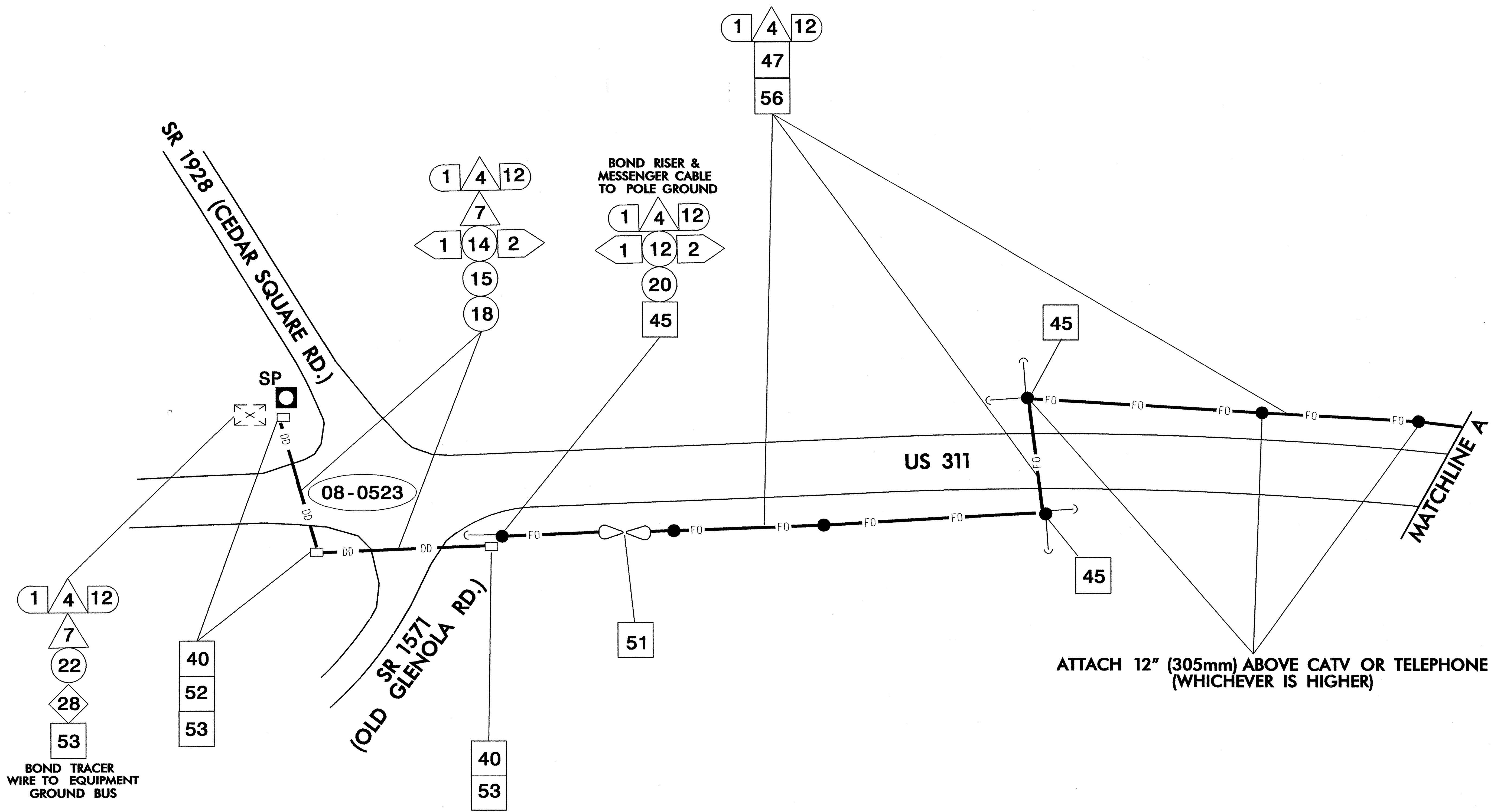
- FO NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST PR NEW TWISTED PAIR COMMUNICATIONS CABLE
- EXI EXISTING COMMUNICATIONS CABLE
- REM EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- DD NEW DIRECTIONAL DRILLED CONDUIT
- B&J NEW BORED AND JACKED CONDUIT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

CONSTRUCTION NOTE SYMBOLOGY KEY

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

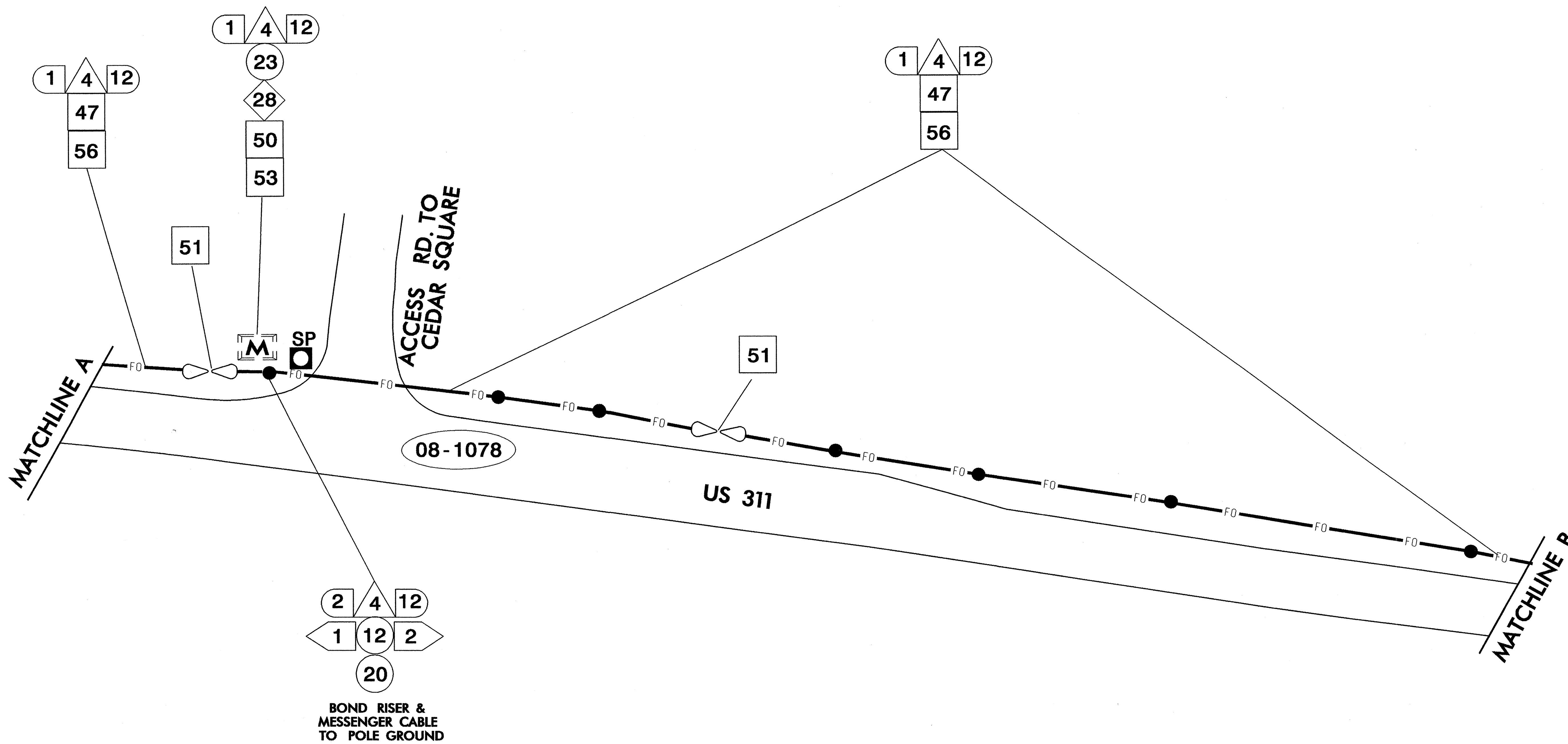


	CONSTRUCTION NOTES		
	PLAN DATE: _____ PREPARED BY: _____ SCALE: _____	REVIEWED BY: _____ REVIEWED BY: G. A. FULLER DATE: _____	
REVISIONS: _____ INIT. DATE: _____			SEAL: _____



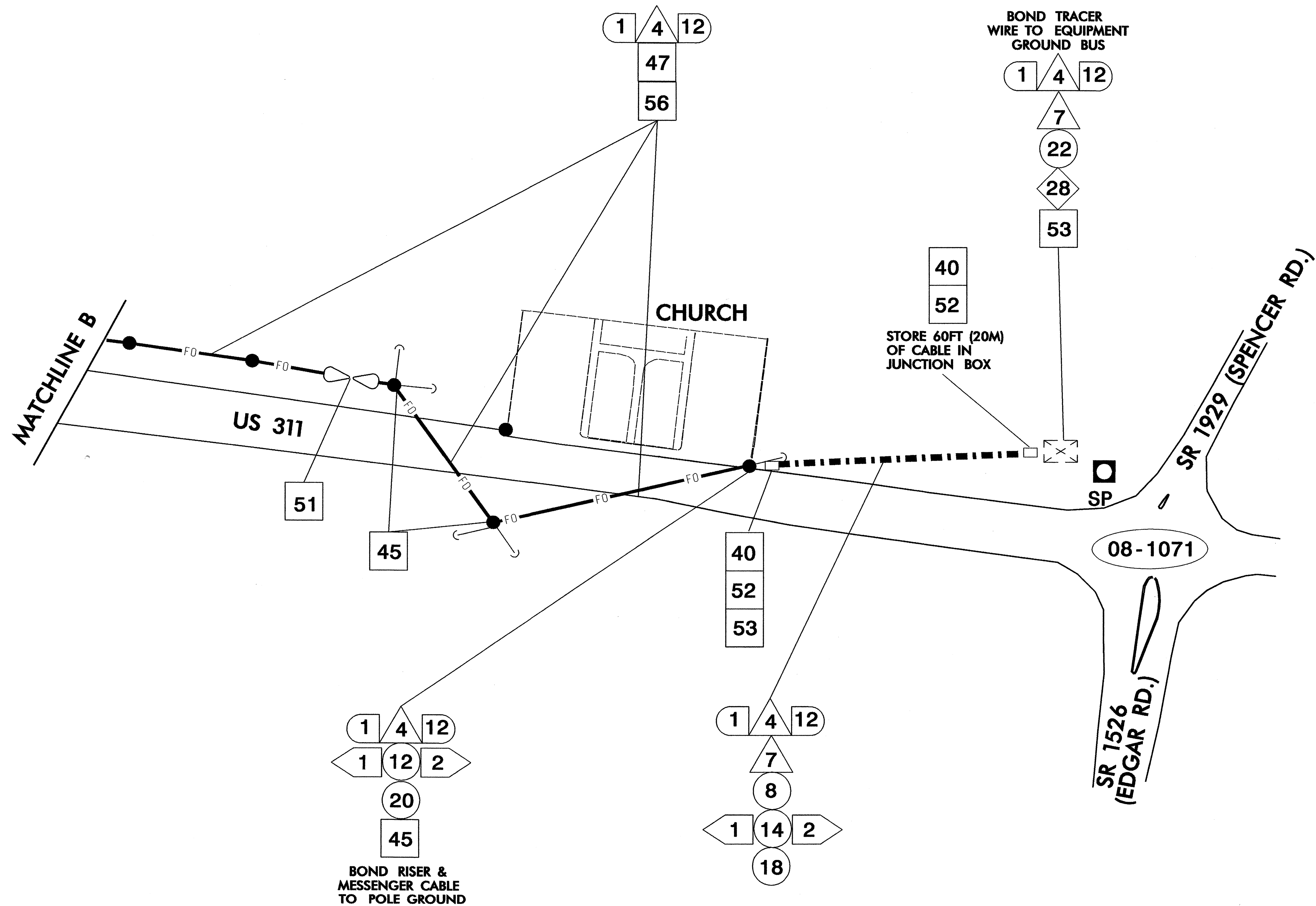
NOTE:
 ATTACH FIBER OPTIC COMMUNICATIONS CABLE 40" (1000mm)
 BELOW POWER'S NEUTRAL CABLE, ON THE FRONT SIDE OF
 POLE UNLESS OTHERWISE NOTED.

	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS		
	DIVISION 8 RANDOLPH CO. ARCHDALE		
PLAN DATE: MAY 2006	REVIEWED BY: INAVERY	PREPARED BY: HTSCHNEIDER	REVIEWED BY:
SCALE: 0	REVISIONS:	INIT.:	DATE:
SIGNATURE: <i>HTSCHNEIDER</i>		DATE: 5-3-06	



NOTE:
 ATTACH 12" (305mm) ABOVE CATV OR TELEPHONE (WHICHEVER IS HIGHER) UNLESS OTHERWISE NOTED.

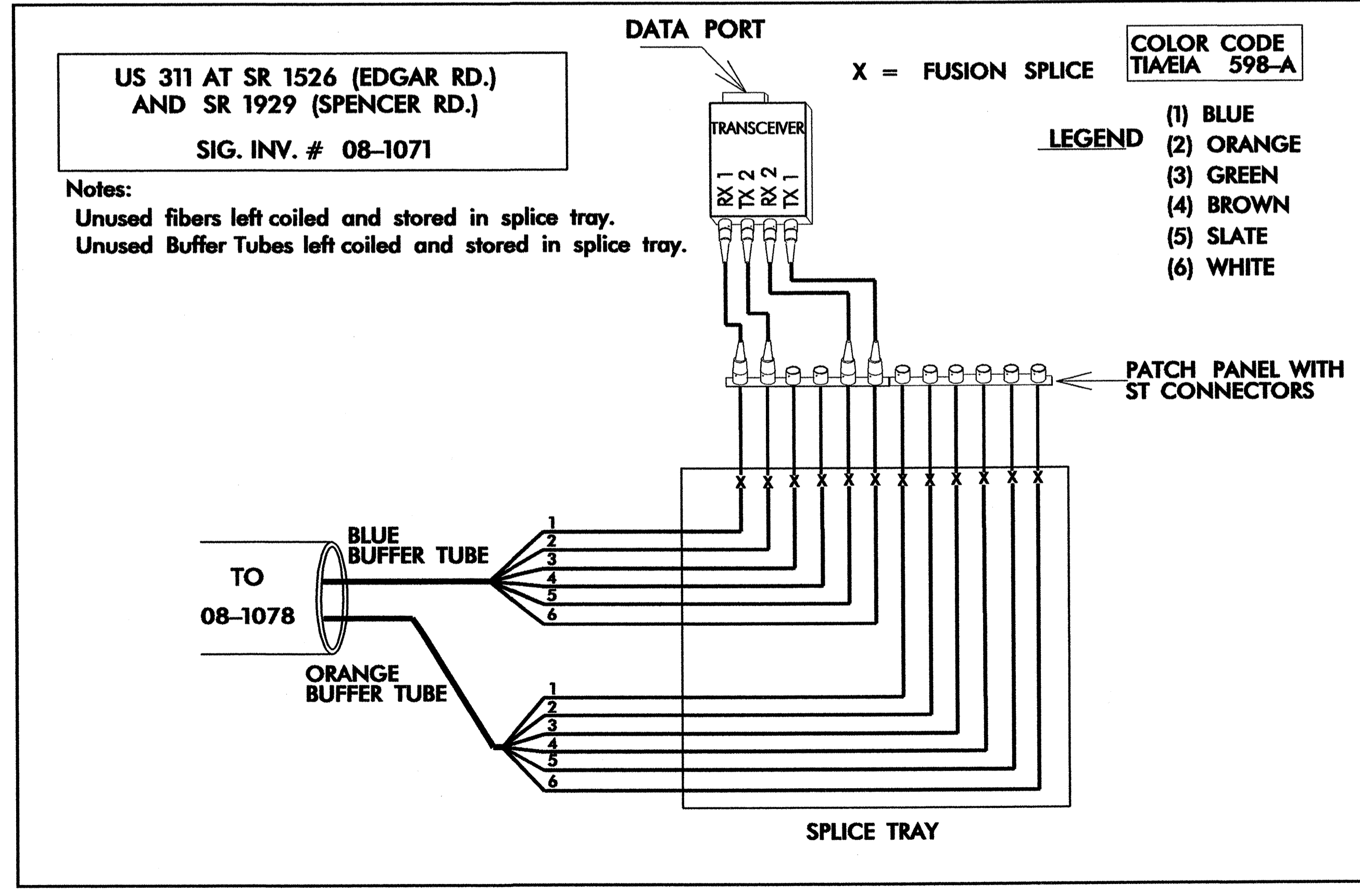
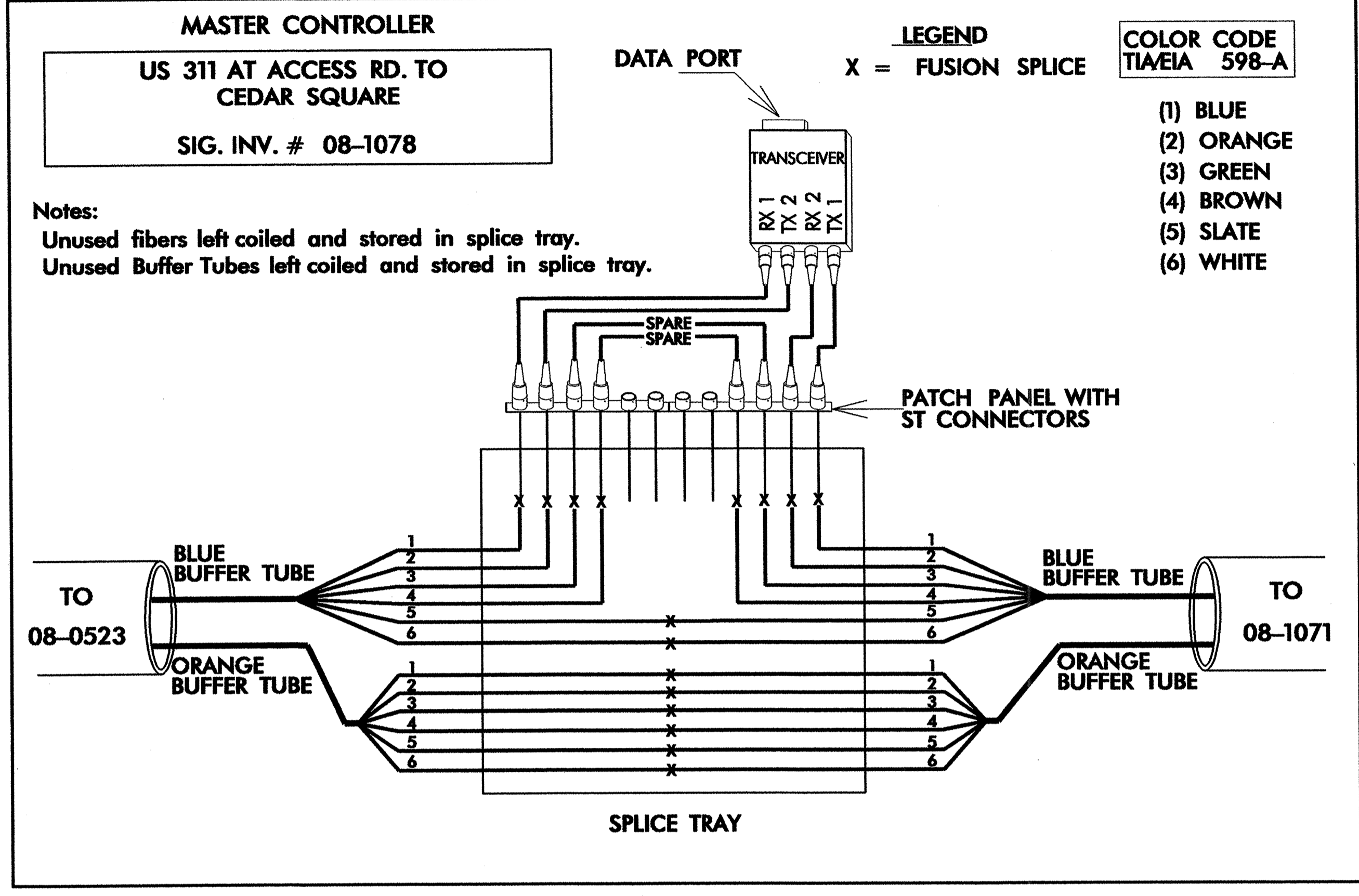
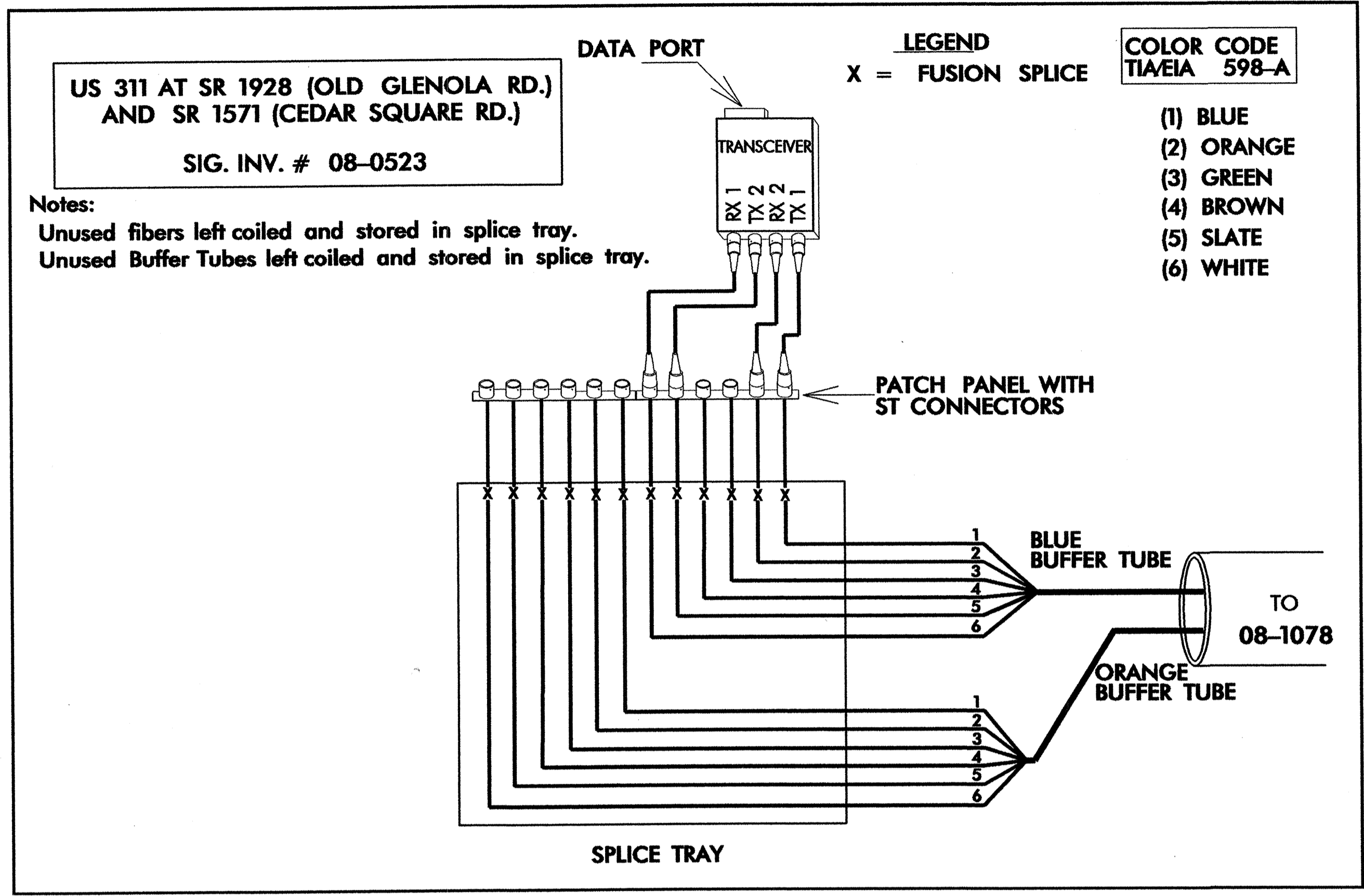
	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS		
	DIVISION 8 RANDOLPH CO. ARCHDALE		
PLAN DATE: MAY 2006	REVIEWED BY: INAVERY	PREPARED BY: HTSCHNEIDER REVIEWED BY:	
REVISIONS	INIT.	DATE	SIGNATURE: <i>[Signature]</i> DATE: 5-3-06
SCALE: 0	CADD FILE: 110903010 8007A10-2806A-n.dgn		



NOTE:
 ATTACH 12" (305mm) ABOVE CATV OR TELEPHONE (WHICHEVER IS HIGHER) UNLESS OTHERWISE NOTED.

	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS	
	DIVISION 8 RANDOLPH CO ARCHDALE PLAN DATE: MAY 2006 REVIEWED BY: INAVERY PREPARED BY: HTSCHNEIDER REVIEWED BY:	REVISIONS INIT. DATE _____ _____ _____
SCALE 0 NONE	SIGNATURE: <i>[Signature]</i> DATE: 5-3-06 <small>CADD File name: \\proj\projects\division7\18-0801A18-2606a-8.dgn</small>	

FIBER OPTIC CABLE



NOTES:
1. FURNISH SELF HEALING-RING TRANSCEIVERS.
2. TRANSCEIVER TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS

	SPLICE PLANS		SEAL
	DIVISION 8 RANDOLPH CO ARCHDALE		GENE C. MURR, JR. ENGINEER 5-3-06
	PLAN DATE: MAY 2006	REVIEWED BY: INAVERY	
PREPARED BY: HTSCHNEIDER	REVIEWED BY:	INIT.	DATE
SCALE: 0 NONE	REVISIONS:		