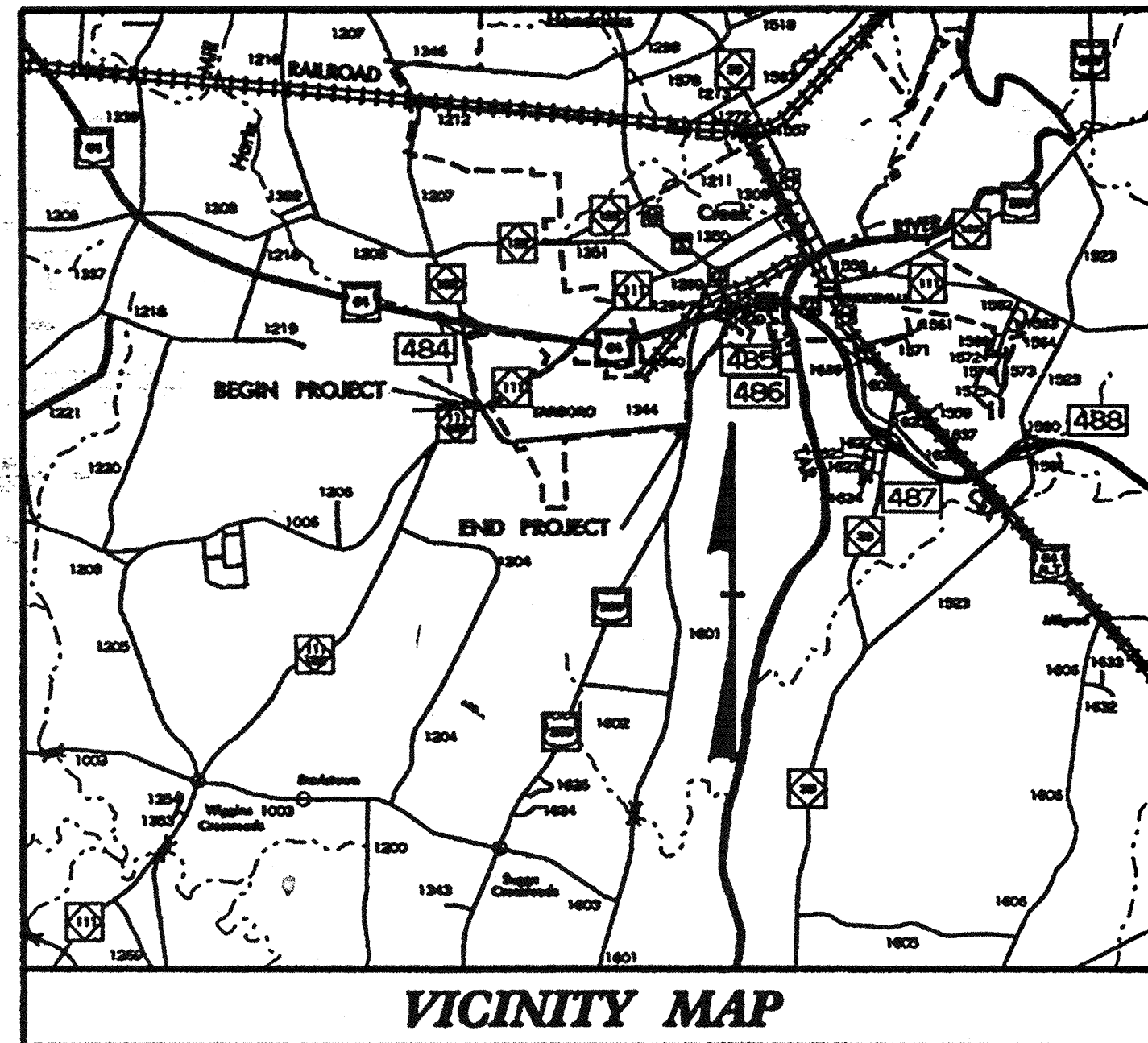


STATE	PROJECT NO.	SHEET NO.
N.C.	R-4434	Sig.1

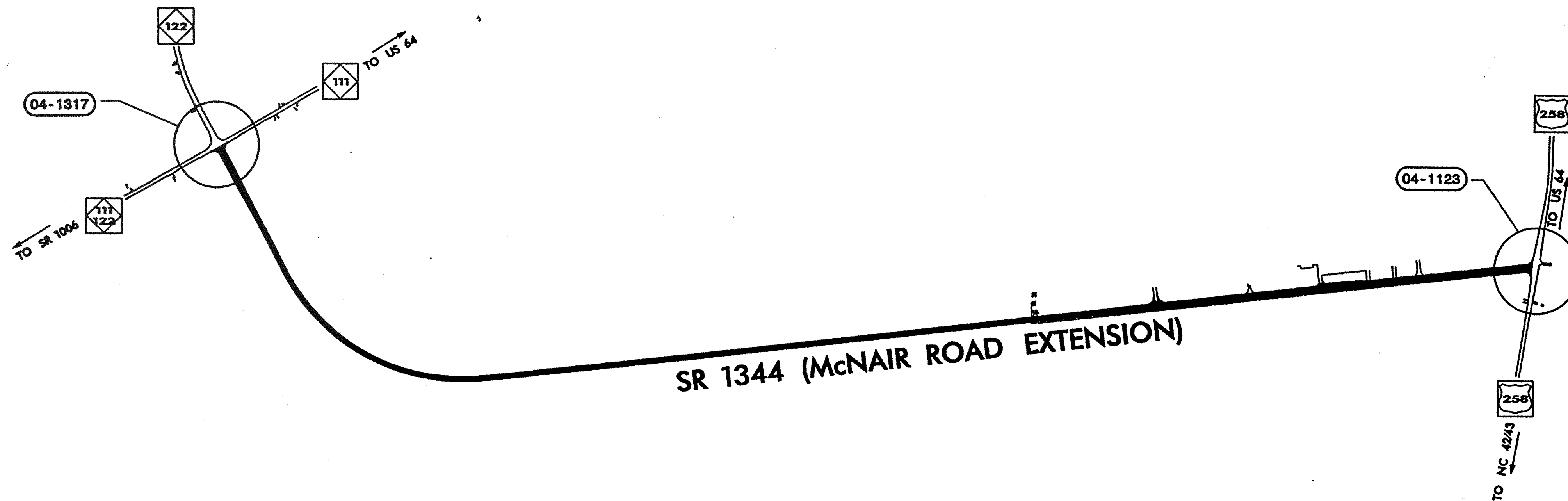
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

EDGEcombe COUNTY

LOCATION: McNAIR ROAD EXTENSION FROM NC 111/22 TO US 258.
TYPE OF WORK: TRAFFIC SIGNALS



VICINITY MAP



SR 1344 (McNAIR ROAD EXTENSION)

PROJECT: R-4434

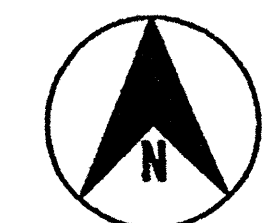
INDEX OF PLANS

SHEET NUMBER	SIGNAL INVENTORY NUMBER	LOCATION /DESCRIPTION
SIG. 1	---	Title Sheet
SIG. 2-3	04-1317	NC 111/22 at SR 1344 (McNair Road Extension)
SIG. 4-5	04-1123	US 258 at SR 1344 (McNair Road Extension)
SIG. 6-II	---	Standard Metal Pole Details

LEGEND

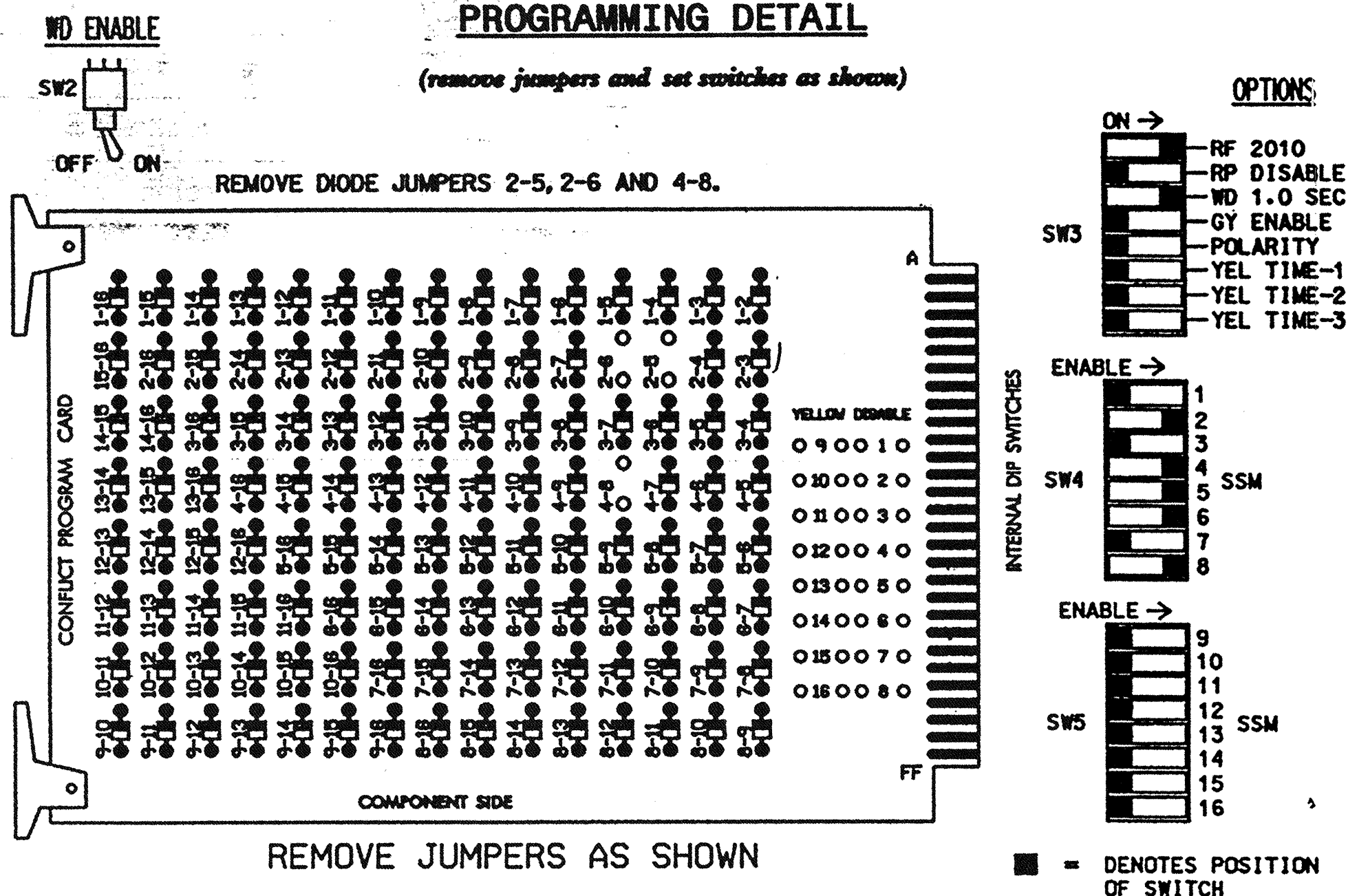
(##-####) SIGNAL INVENTORY NUMBER
TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH

DOUMIT Y. ISHAK - SIGNALS AND GEOMETRICS CONTRACTS ENGINEER
TIMOTHY J. WILLIAMS, PE - CONTRACTS AND PEF SUPPORT ENGINEER
JOHN T. ROWE, PE - SIGNAL EQUIPMENT DESIGN 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.
- 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, 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 4 and 8, on the controller unit, for Dual Entry.
- Program phases 2,4,6 and 8, on the controller unit, for Gap Reduction.
- Program phases 2 and 6, on the controller unit, for Variable Initial.

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	NU	21	61,62	NU	NU	81,82	NU
GREEN		130			103			136				109
YELLOW		129			102			135				108
RED		128			101		*	134				107
RED ARROW												
YELLOW ARROW								132				
GREEN ARROW								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,S8 PHASES USED.....2,4,5,6,8 OVERLAPS.....NONE

DYNAMIC BACK-UP CONTROL PROGRAMMING

(program controller as shown below)

- From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Dynamic/Backup Control Function 1.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

DYNAMIC/BACKUP CONTROL FUNCTION #01
OVERLAPS: ABCDEFGHIJKLMNOP
IF OVERLAPS ARE ACTIVE :
OR PHASES ARE ON: 12345678910111213141516
IF PHASES ARE ON: X
OMIT PHASES : X
CALL PHASES : X

BACKUP PROTECTION PROGRAMMING COMPLETE

INPUT FILE POSITION LAYOUT

(front view)

FILE	U	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I	U	FS	2A	FS	FS	FS	4A	4C	FS	FS	FS	FS	FS	FS	FS
		DC ISOLATOR	NOT USED	FS	FS	FS	4B	4D	FS	FS	FS	FS	FS	FS	FS
J	U	FS	5A	6A	FS	FS	8A	8C	FS	FS	FS	FS	FS	FS	FS
		FS	5A	6B	FS	FS	8B	NOT USED	FS	FS	FS	FS	FS	FS	FS

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

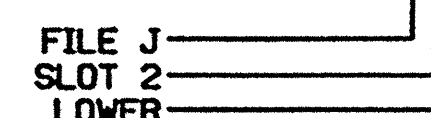
FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

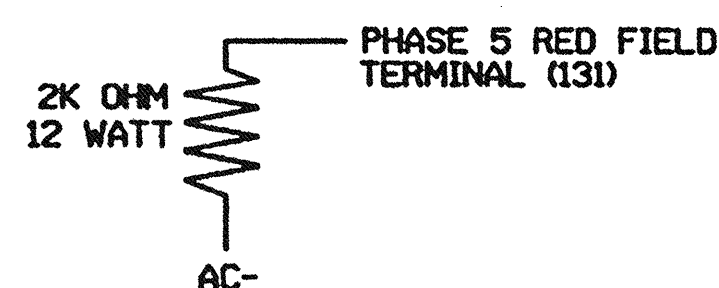
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			3
4C	TB8-1,2	I7U	65	27	34	4	Y	Y	Y	2	5
4D	TB8-3,4	I7L	78	48	44	4	Y	Y			15
5A	TB3-5,6	J2U	48	2	6	2	Y	Y	Y		3
	TB3-7,8	J2L	44	6	16	5	Y	Y			15
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y	Y		3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			3
8C	TB7-1,2	J7U	66	28	38	8	Y	Y	Y	2	5

*Add jumpers from TB3-5 to TB3-7, and from TB3-6 to TB3-8.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL



NOTE: THE PURPOSE OF THIS RESISTOR IS TO LOAD THE CHANNEL RED MONITOR INPUT IN ORDER FOR THE SIGNAL SEQUENCE MONITOR TO USE THE FULL SIGNAL SEQUENCE MONITORING CAPABILITY ON CHANNELS THAT DO NOT USE THE RED DISPLAY IN THE FIELD.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1317
DESIGNED: March 2006
SEALED: 04/04/06
REVISED: NA

This Electrical Detail supersedes the detail sealed on 11-09-04.

NEW INSTALLATION

Electrical and Programming Details For:

Prepared in the Office of:

222 N. McDowell St., Raleigh, NC 27605

NC 111/NC 122 AT SR 1344 (McNair Road Extension)

Division 04 Edgecombe County Tarboro

PLAN DATE: April 2006 REVIEWED BY: JWS

PREPARED BY: James Paterson REVIEWED BY:

REVISIONS: INIT. DATE

John T. Rowe 4-10-06

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 008453 JOHN T. ROWE, P.E.

REGISTRATION NO. 4434

SIG. INVENTORY NO. 04-1317

PHASING DIAGRAM

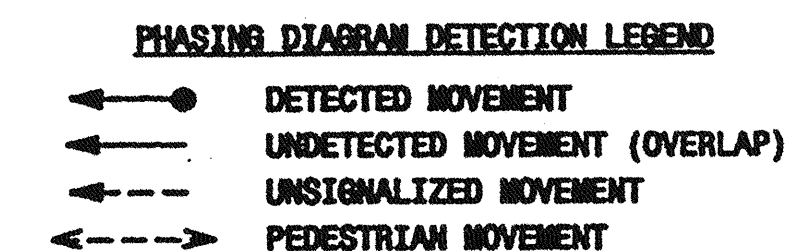
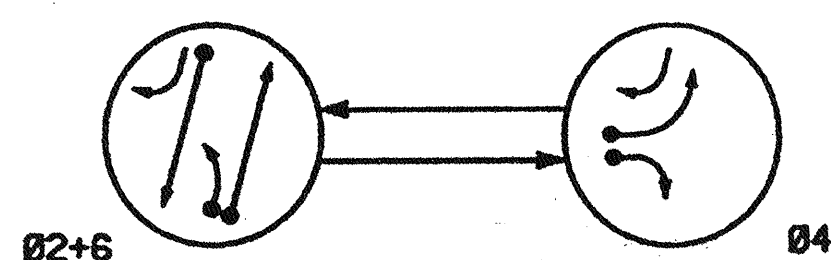
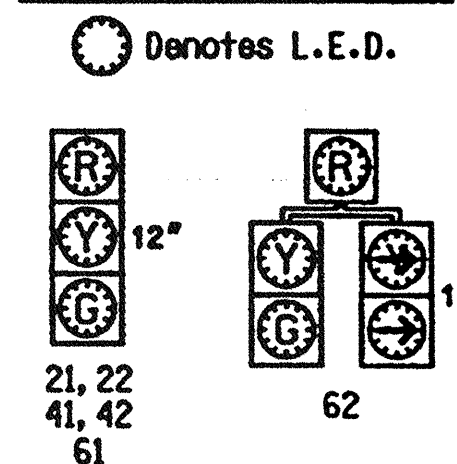


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	G+NR	4	Y
2L, 22	G	R	Y
4L, 42	R	G	R
61	G	R	Y
62	G	Y	

SIGNAL FACE I.D.



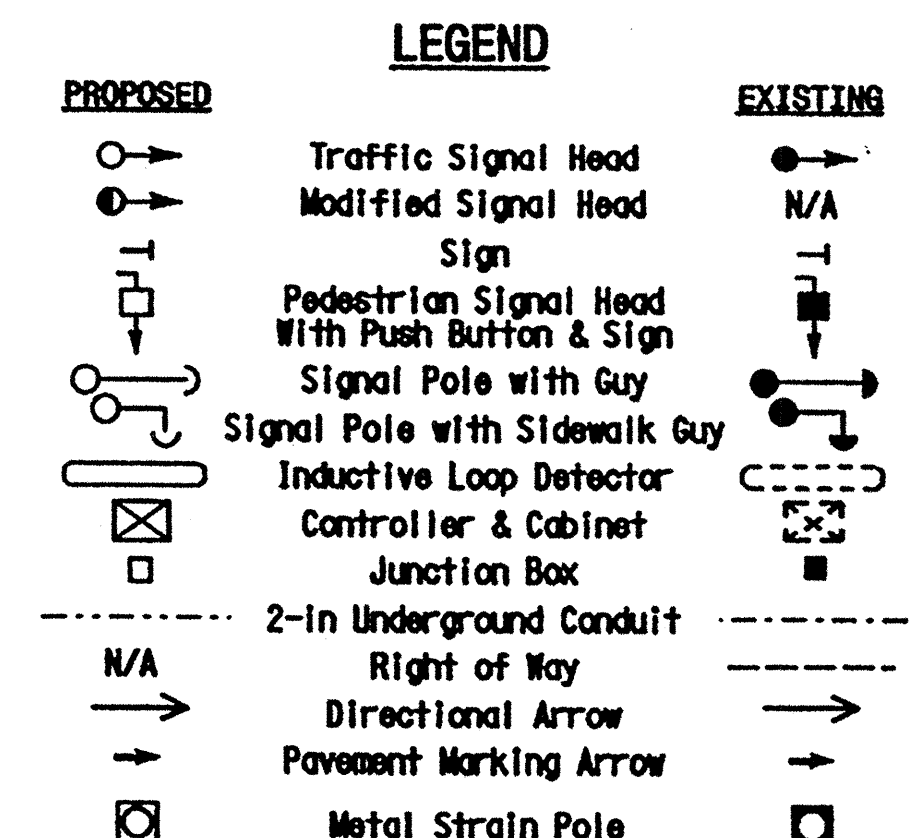
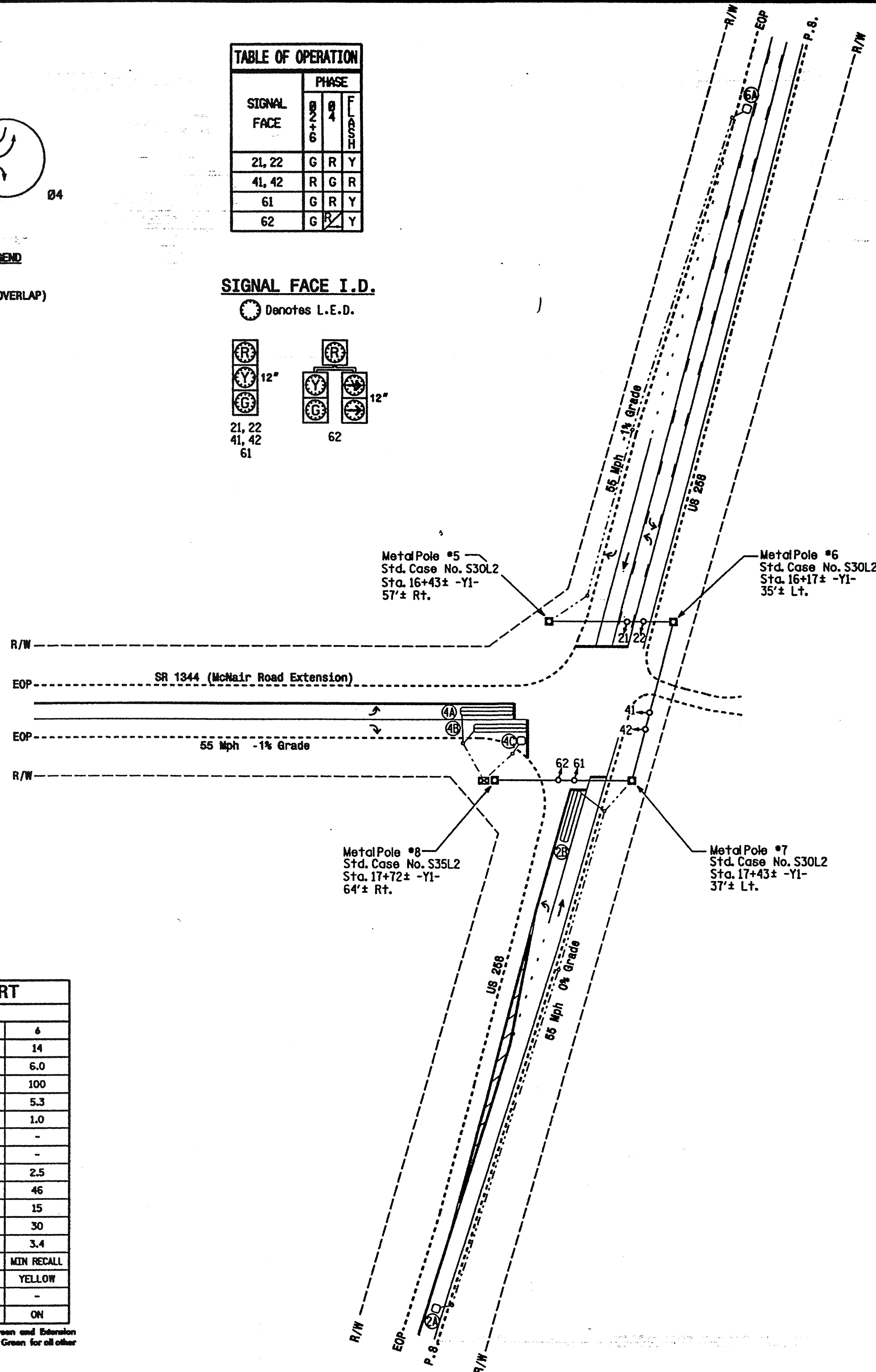
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS				DETECTOR PROGRAMMING								
LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	PHASE	CALLING	EXTENSION	PULL TIME DELAY	STRETCH LOOP	STRETCH TIME	DELAY TIME	NEW CARD
2A	6X6	6	420	Y	2	Y	Y					Y
2B	6X40	2-4-2	0	Y	2	Y	Y				3	Y
4A	6X40	2-4-2	0	Y	4	Y	Y				3	Y
4B	6X40	2-4-2	0	Y	4	Y	Y				15	Y
4C	6X6	4	0	Y	4	Y	Y				20	Y
6A	6X6	6	420	Y	6	Y	Y					Y

2 Phase Fully Actuated (Isolated)

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. Set all detector units to presence mode.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.



2070L TIMING CHART

FEATURE	PHASE		
	2	4	6
Min Green 1*	14	7	14
Extension 1*	6.0	2.0	6.0
Max Green 1*	100	30	100
Yellow Clearance	5.2	3.0	5.3
Red Clearance	1.0	2.9	1.0
Walk 1*	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation*	2.5	-	2.5
Max Variable Initial*	46	-	46
Time Before Reduction*	15	-	15
Time To Reduce*	30	-	30
Minimum Gap	3.4	-	3.4
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	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.

This plan shall supersede the plan sealed on 11/4/04.

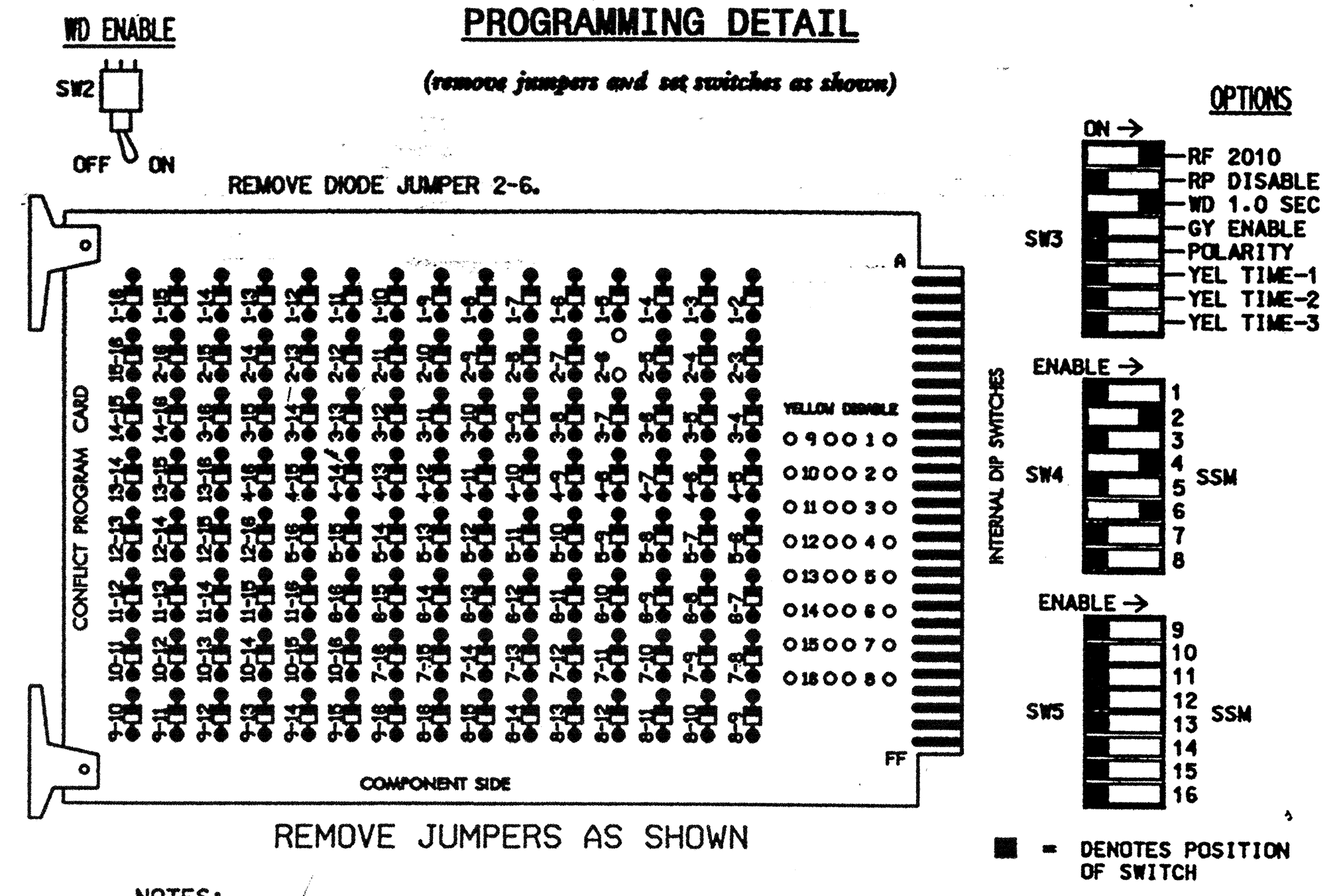
New Installation

Prepared for the Office of
US 258
 at
SR 1344 (McNair Road Extension)
 Division 4 Edgecombe County Tarboro
 PLAN DATE: March 2006 REVIEWED BY: Z.M. Little
 PREPARED BY: B.E. Wynn REVIEWED BY:
 REVISIONS: _____ INT. DATE: _____
 SCALE: 1"=50'
 4/3/06
 SEAL

 SIG. INVENTORY NO. 04-1123

03-APR-2006 14:28 s:\114\signal\work\cases\19_proj\case-43\res\gn\101123_sig_den_20041104.dgn

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 1,3,5,7,8,9,10,11,12,13,14,15 & 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.

SIGNAL HEAD HOOK-UP CHART

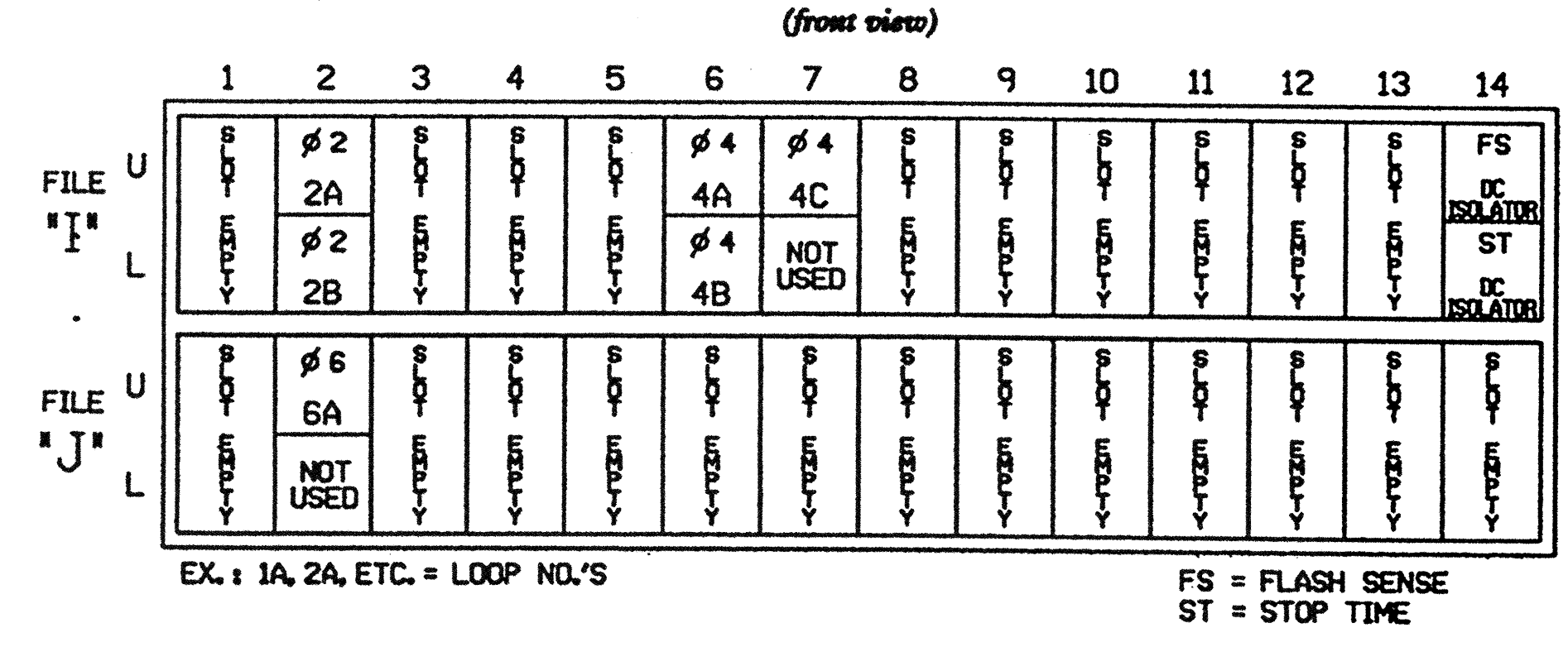
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	2L,22	NU	NU	4L,42	62	NU	NU	6L,62	NU	NU	NU
GREEN		130			103				136			
YELLOW		129			102				135			
RED		128			101				134			
RED ARROW												
YELLOW ARROW					102							
GREEN ARROW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

NU = Not Used

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,S6
 PHASES USED.....2,4,6
 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	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y	Y		3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			28
6A	TB3-5,6	J2U	48	2	6	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1123
 DESIGNED: March 2006
 SEALED: 04-03-06
 REVISED: NA

This Electrical Detail supersedes the detail sealed on 11-09-04.

NEW INSTALLATION

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 258 at SR 1344 (McNair Road Extension)

DIVISION 04 EDGECORRE COUNTY TARBORO

PLAN DATE: April 2006 REVIEWED BY: JPK

PREPARED BY: JAMES PETERSON REVIEWED BY:

REVISIONS: INIT. DATE

222 N. McDowell St., Raleigh, NC 27603

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 008453 JOHN T. ROWE, JR.

Signature: John Peterson 4-11-06

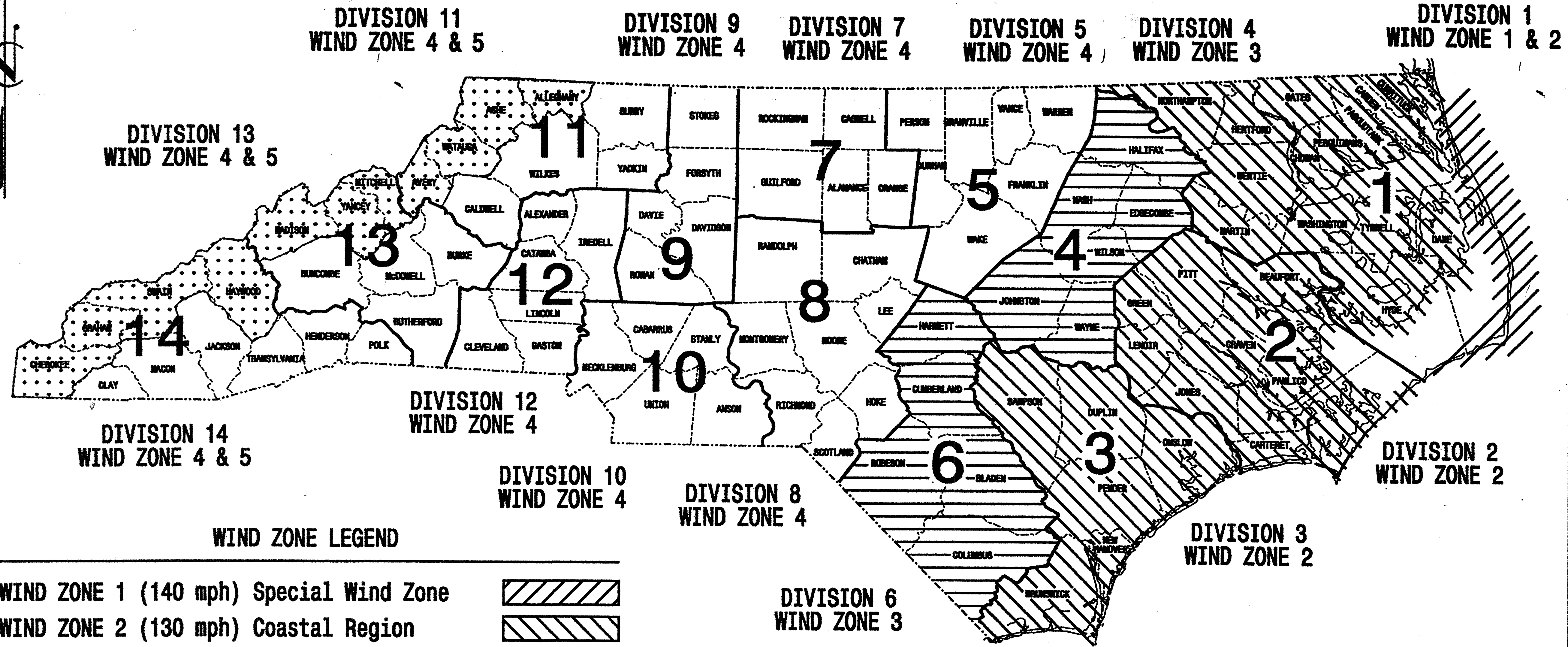
SIG. INVENTORY NO. 04-1123

12-APR-2006 07:19
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 jpk@ncs.com

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE	PROJECT NO.	SHEET NO.
N.C.	R-4434	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/tssu/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

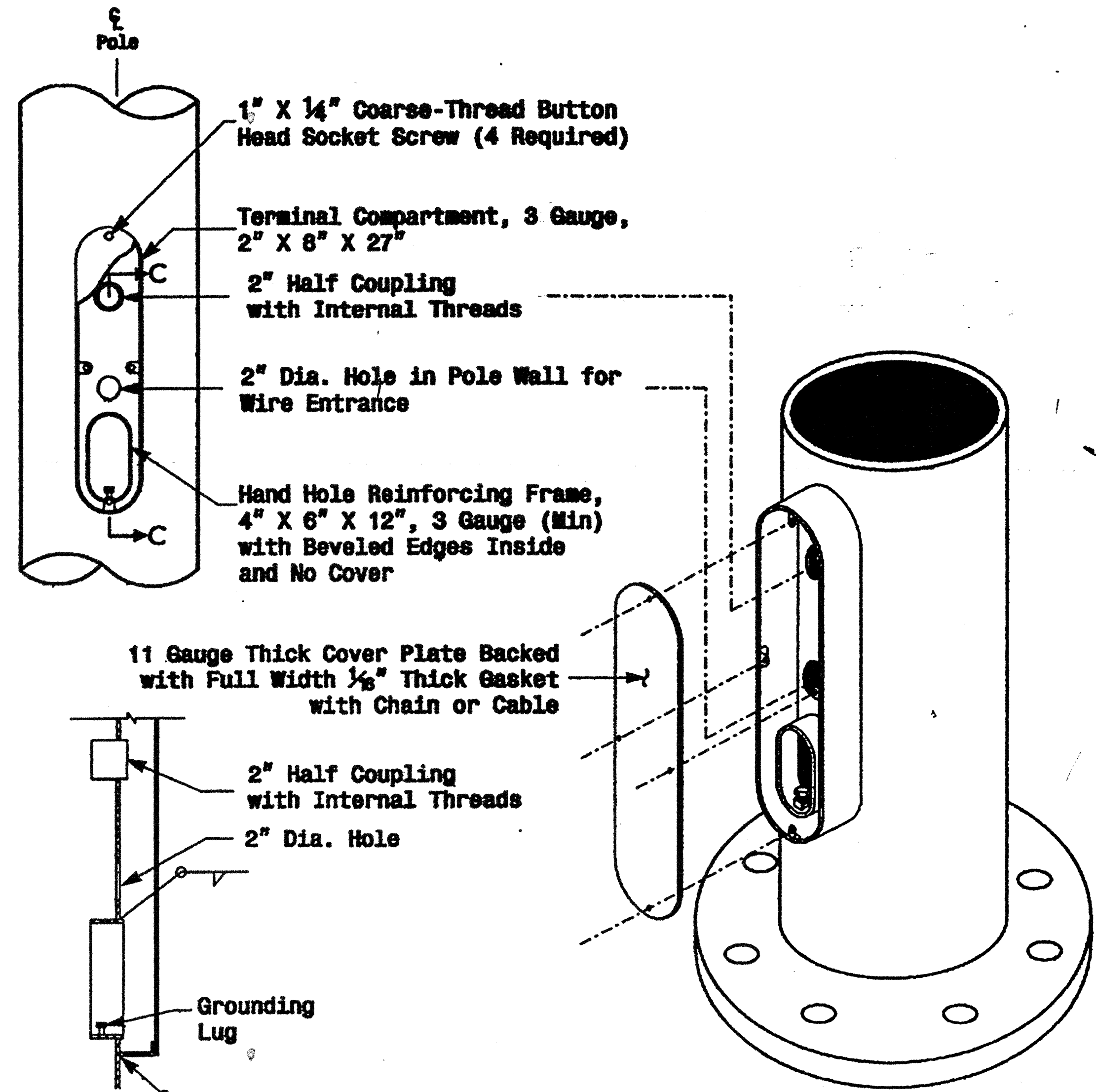
DRAWING NUMBER	DESCRIPTION
M 1	Title Sheet
M 2	Fabrication Details - All Poles
M 3	Fabrication Details - Strain Poles
M 4,5	Fabrication Details - Mast Arm Poles
M 6	Construction Details - Strain Poles
M 7	Construction Details - Foundations
M 8	Standard Strain Poles

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. Serhar, 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

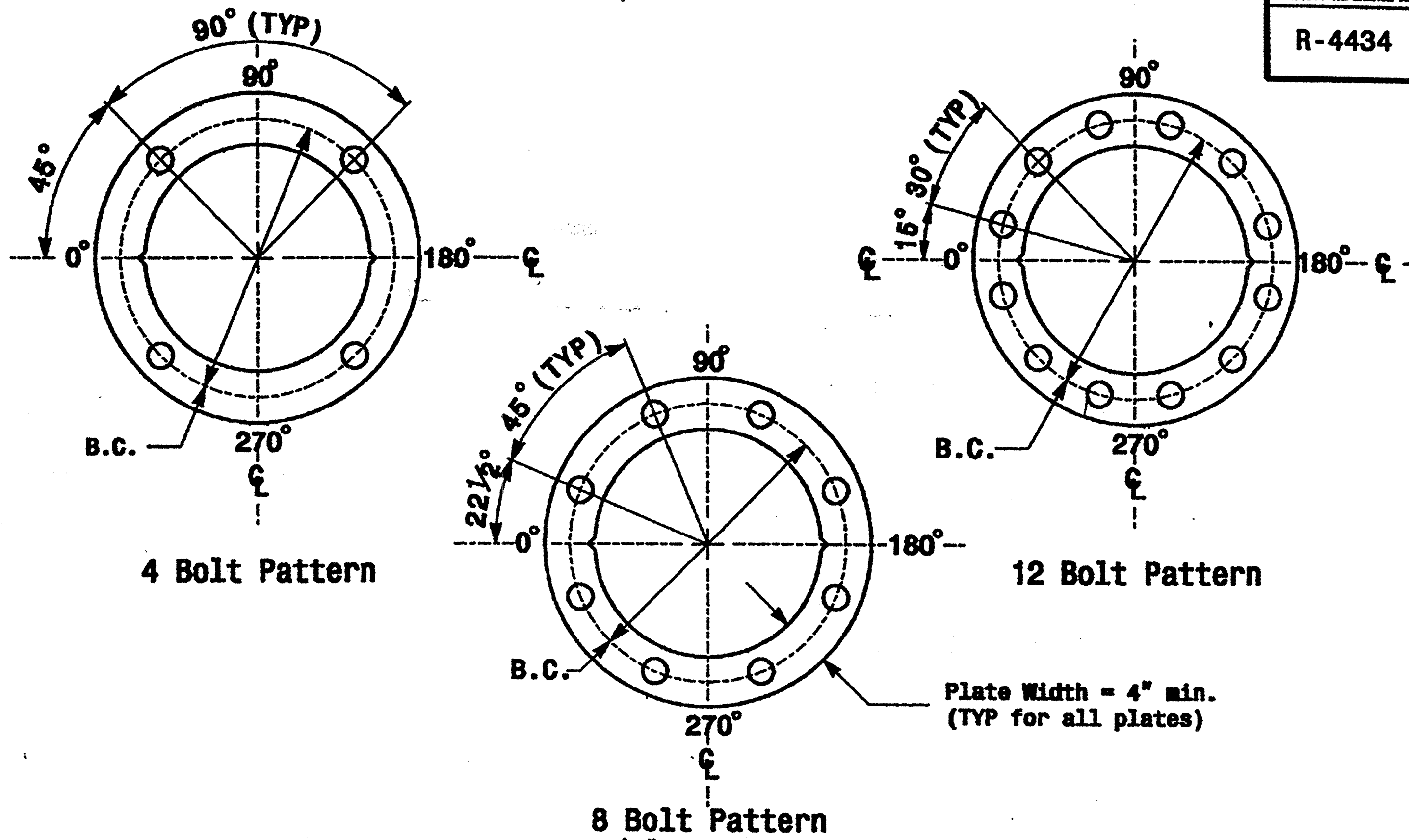
SEAL

D. Sackkar
SIGNATURE 02.2005
DATE

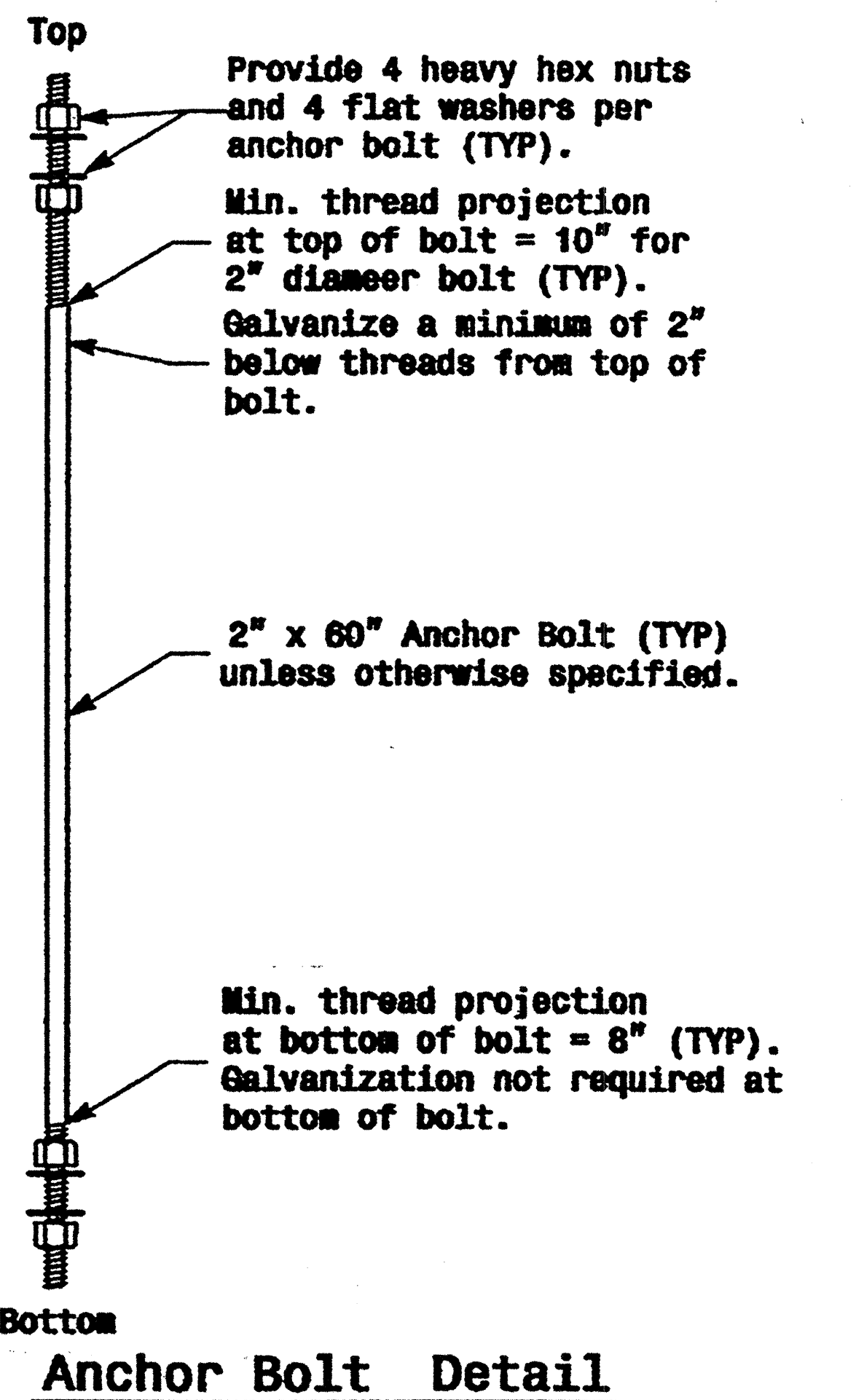


Section C-C Note: Unless otherwise specified, locate Terminal Compartment 1 foot above the pole base plate at 180 degrees on the pole's radial index.

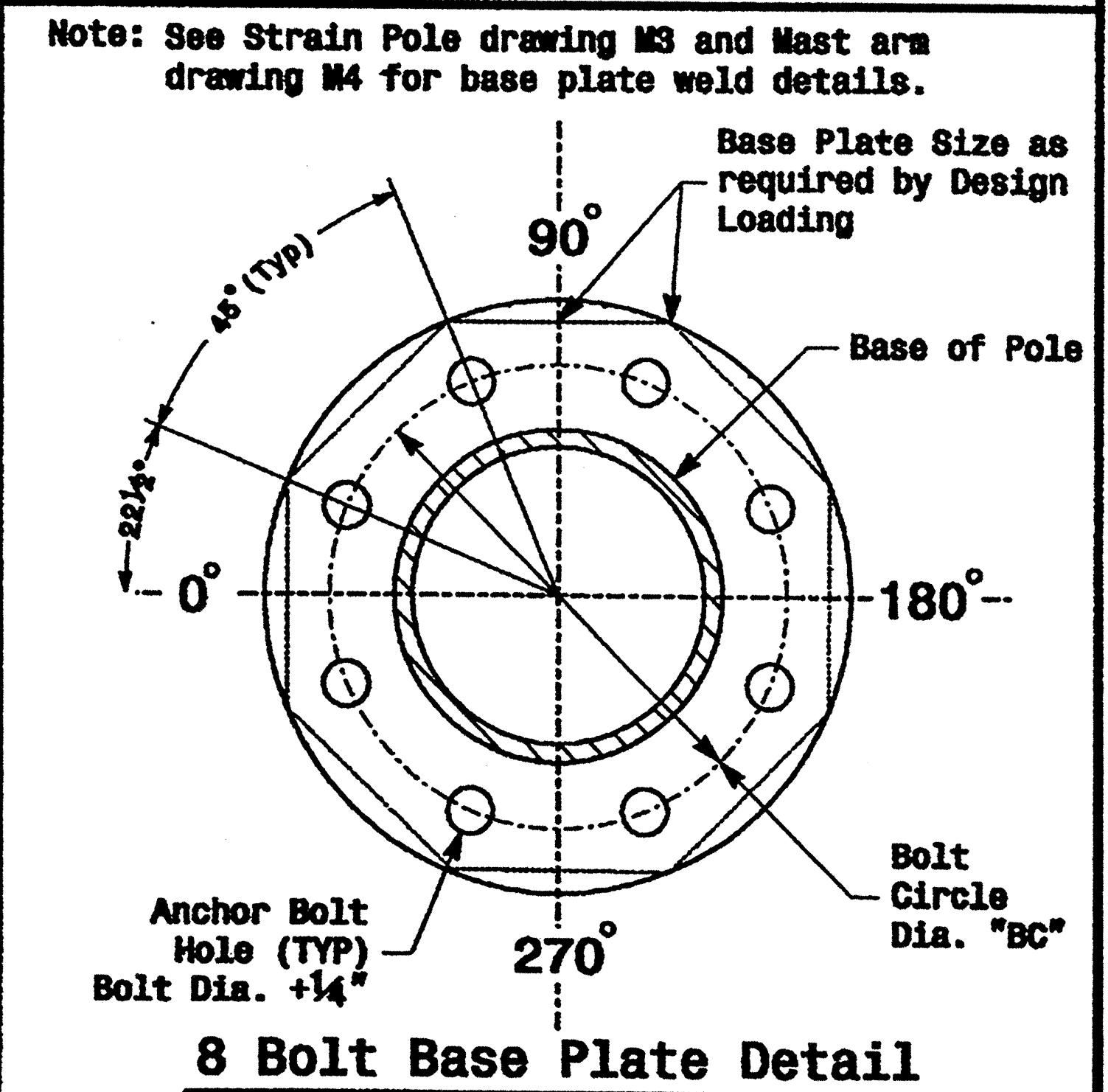
Terminal Compartment Detail



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



Anchor Bolt Detail



8 Bolt Base Plate Detail

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

Prepared in the Office of

Typical Fabrication Details Common To All Metal Poles

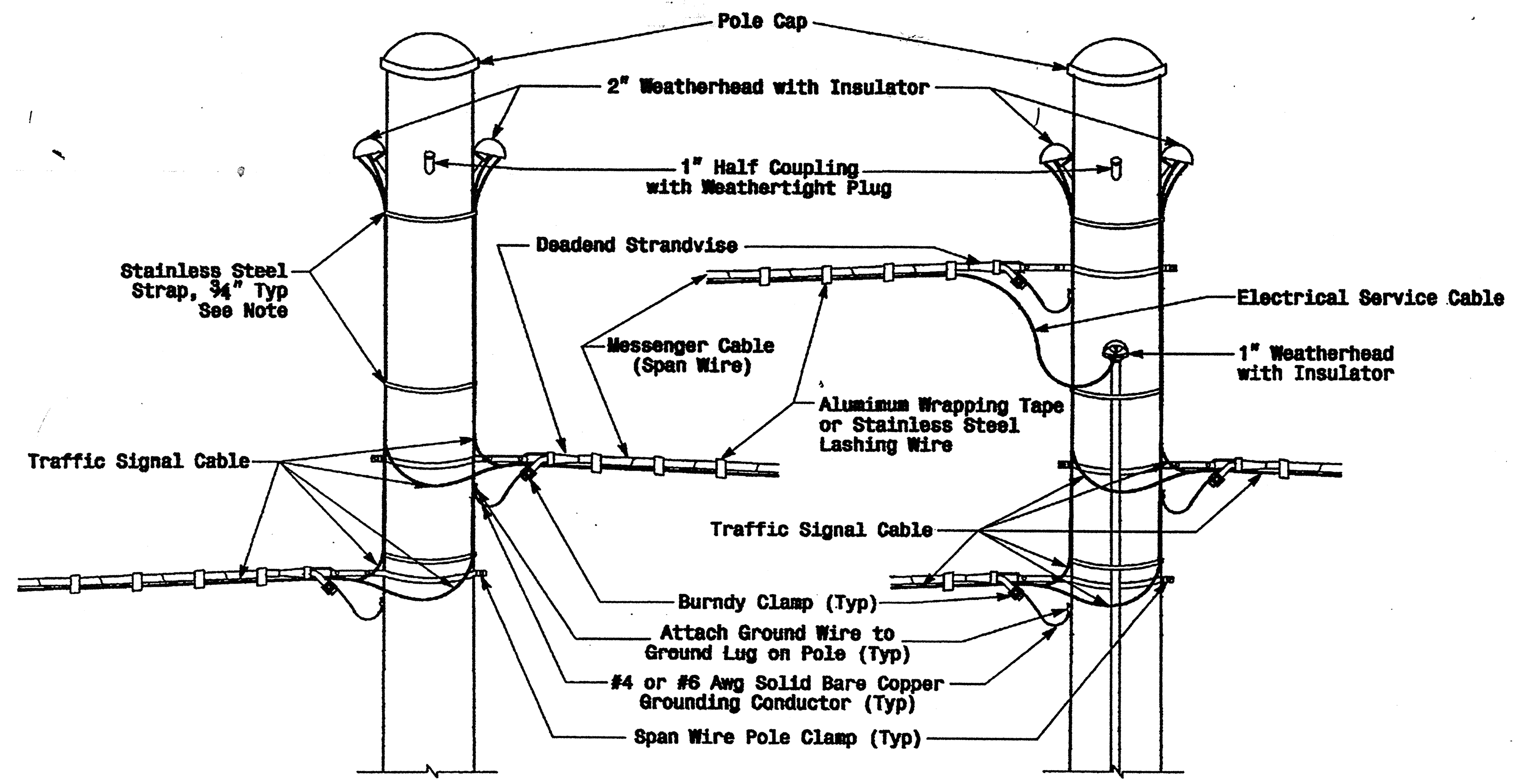
FLM DATE: May 2005 REVISION BY: G.F. Andrews
 PREPARED BY: P.L. Alexander REVISION BY: A.H. Esposito

SCALE: 0 MA NONE

SEAL NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

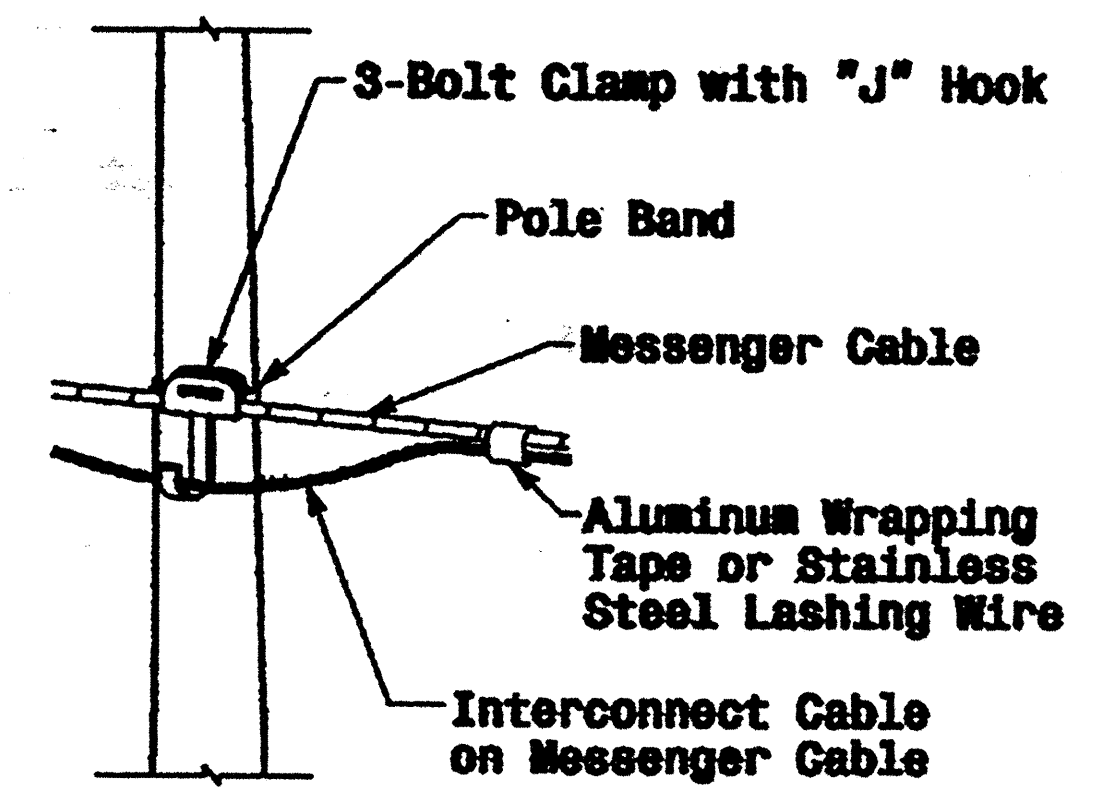
DATE: _____

Fabrication Details - All Poles

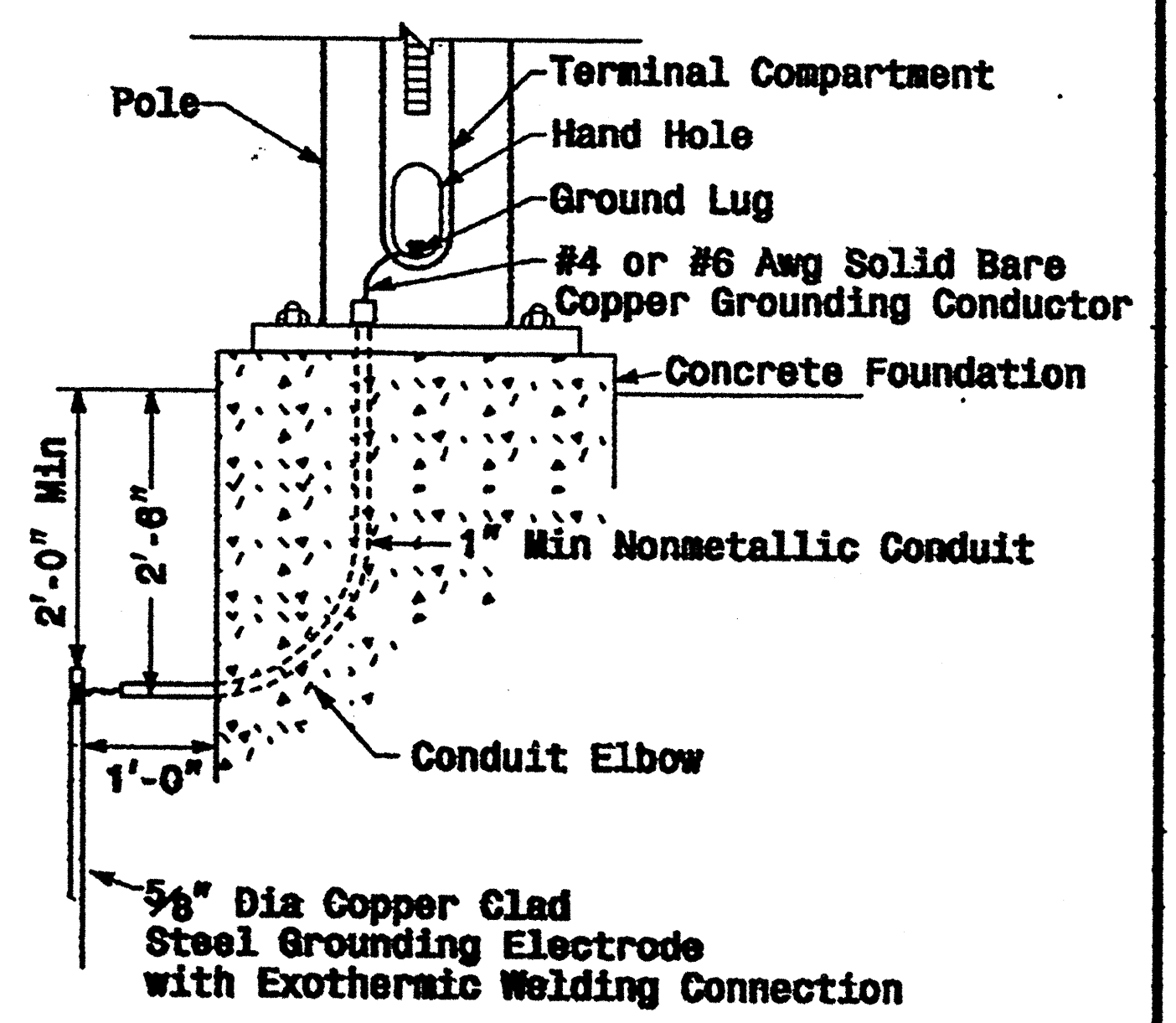


Note: Strap all signal cables to the side of the pole with 3/4" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36"

Strain Pole Attachments



Attachment of Cable to Intermediate Metal Pole



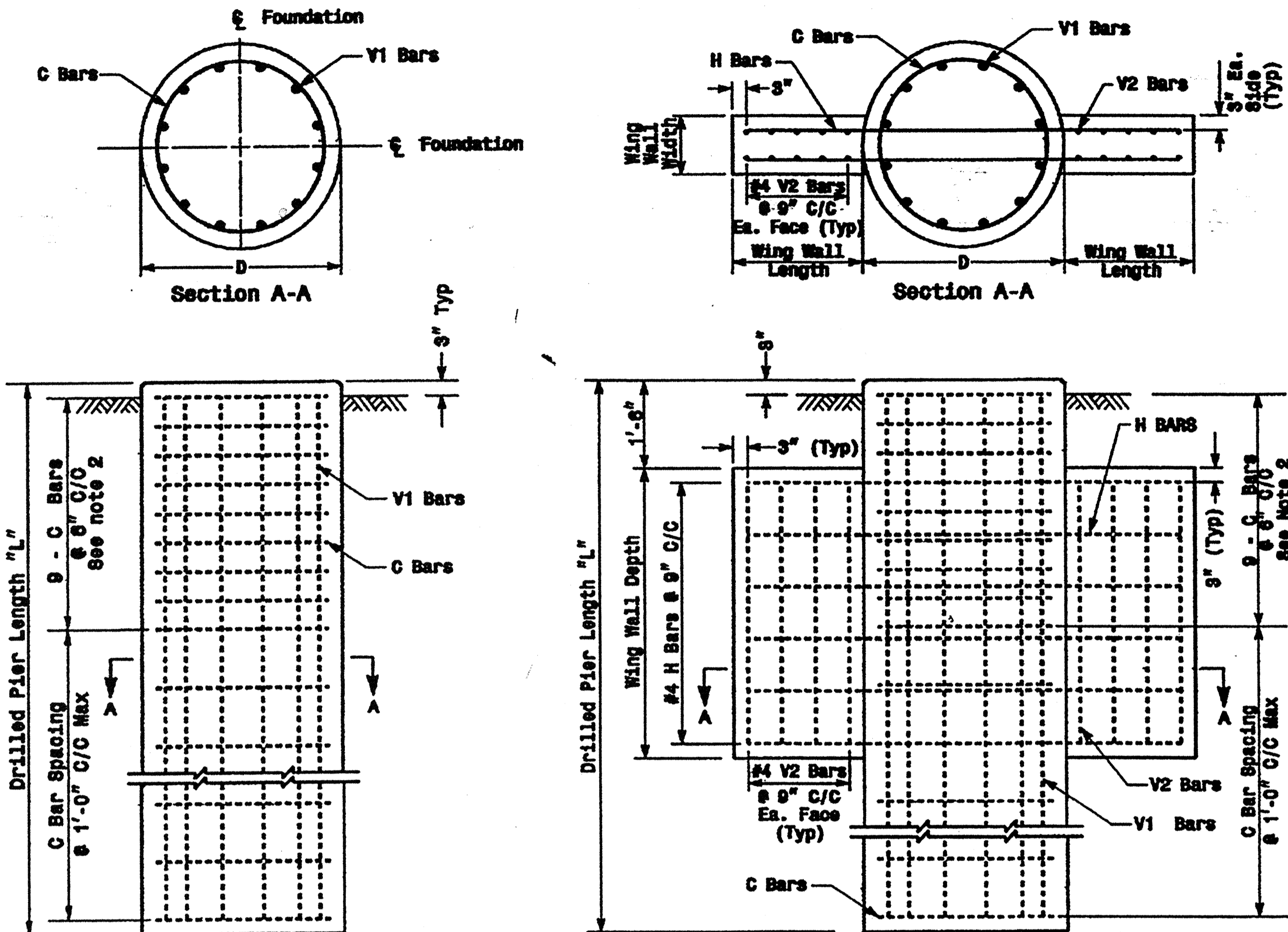
Metal Pole Grounding Detail

Construction Details - Strain Poles

01-SEP-2005 16:33 \\p001\p001\unif\eng\sup\001 metal pole strain\strain001.mxd

	Construction Details Strain Poles		
	PLAN DATE: May 2005	REVIEWED BY: P.L. ALEXANDER	
SCALE: NA	PREPARED BY: C.F. ANDREWS	REVIEWED BY: D.C. BARKER	DATE: 9-1-05
NONE	REVISIONS	INT.	DATE
SEAL			DATE
0			DATE
NONE			DATE

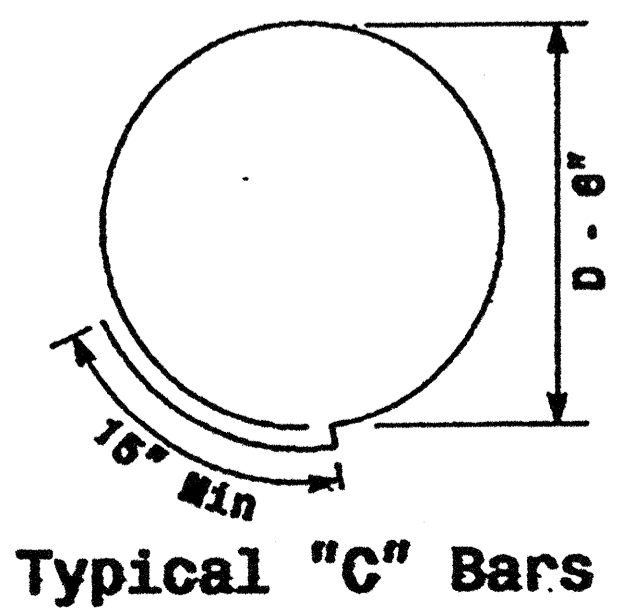
Reinforcing Steel Bars



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



Typical "C" Bars

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.	9'-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

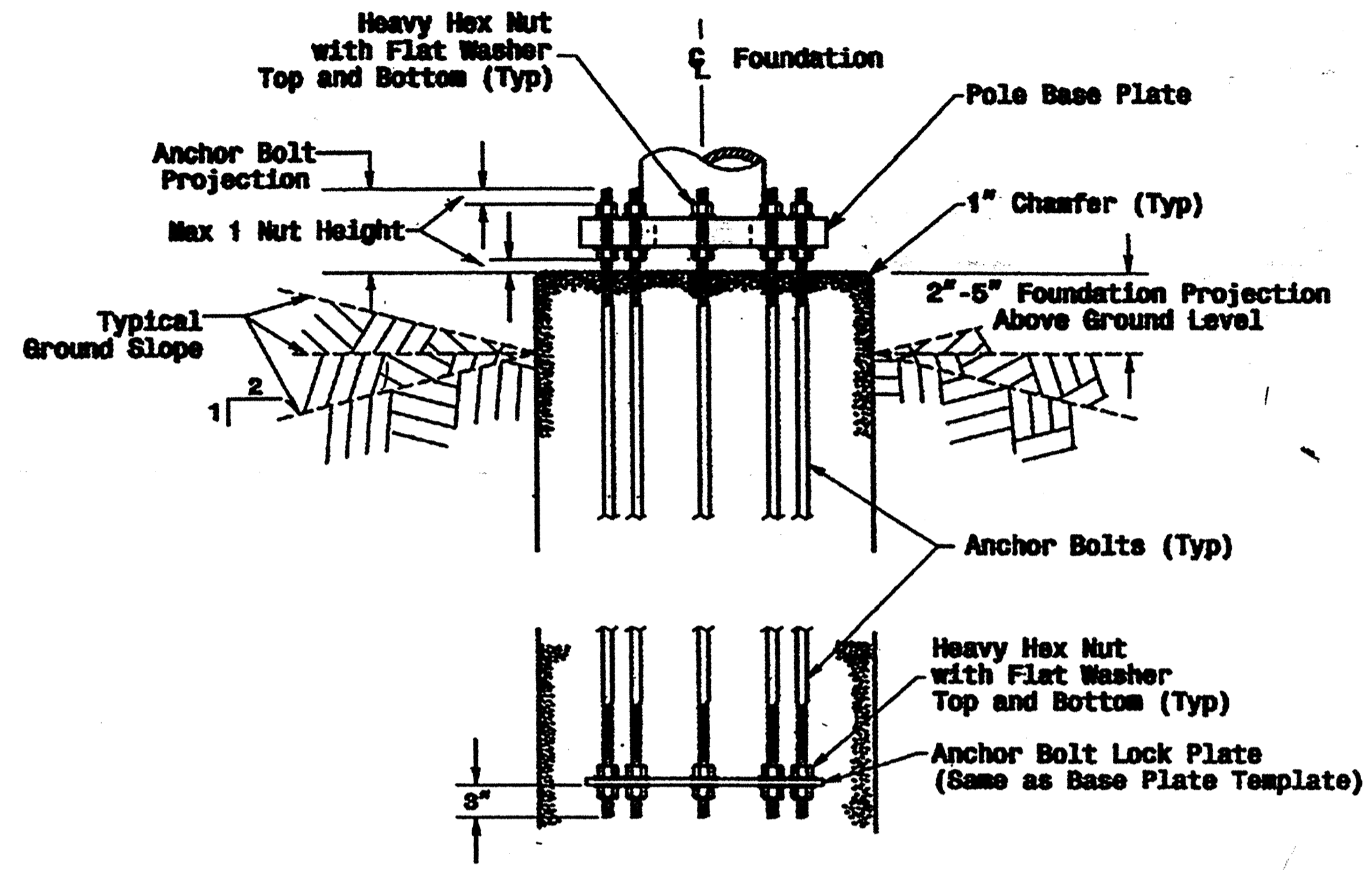
WING WALL DETAILS

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

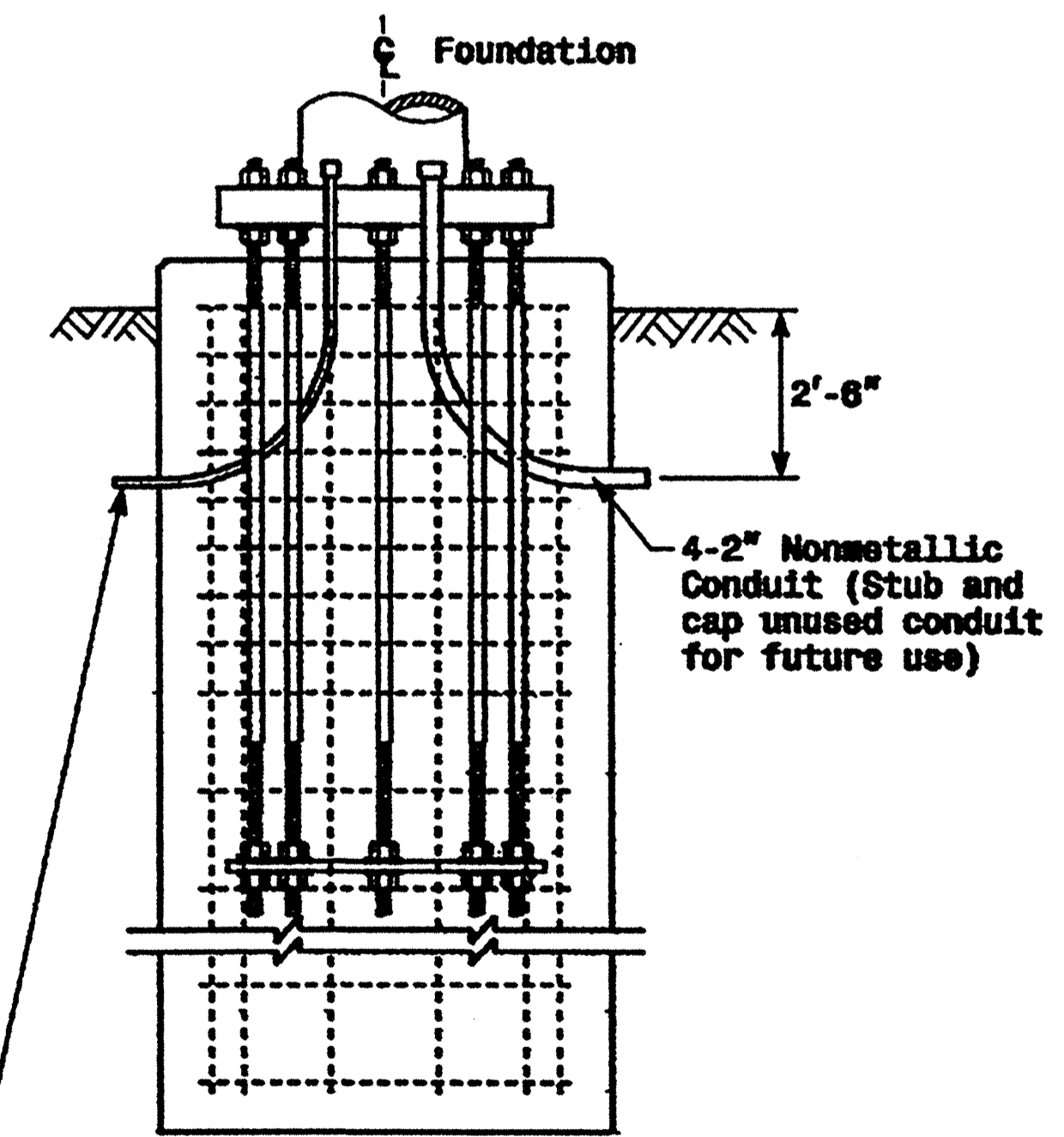
See Note No. 4

Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)



Typical Foundation Conduit Details



2-1" Nonmetallic Conduits for Electrical Service and Grounding Electrode Conductor

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

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Construction Details Foundations

DATE: May 2005	REVIEWED BY: P.L. ALEXANDER
PREPARED BY: G.F. ANDREWS	REVIEWED BY: A.H. ESPOSITO
REVISIONS	DATE

