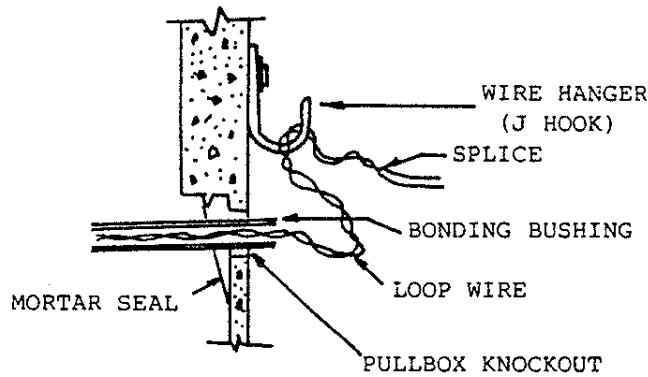


SECTION IX
ELECTRICAL

TABLE OF CONTENTS**ELECTRICAL**

<u>No.</u>	<u>Title</u>
E-1	Typical For Handbox Construction
E-2	Typical For Handbox Frame And Cover
E-3	Alternate Handbox – Precast Concrete
E-4	Steel Strain Poles
E-5	Steel Strain Poles
E-6	Two Ply Strain Pole
E-7	Pedestal Typical
E-8	Arm Splice Connection
E-9	Twin Mast Arms
E-10	Mast Arm Details
E-11	Blind Half Coupling
E-12	Mast Arms
E-13	Mast Arms

Note: Standard Foundation Details For Traffic Signal & Strain Poles And For Street Lighting By Others.

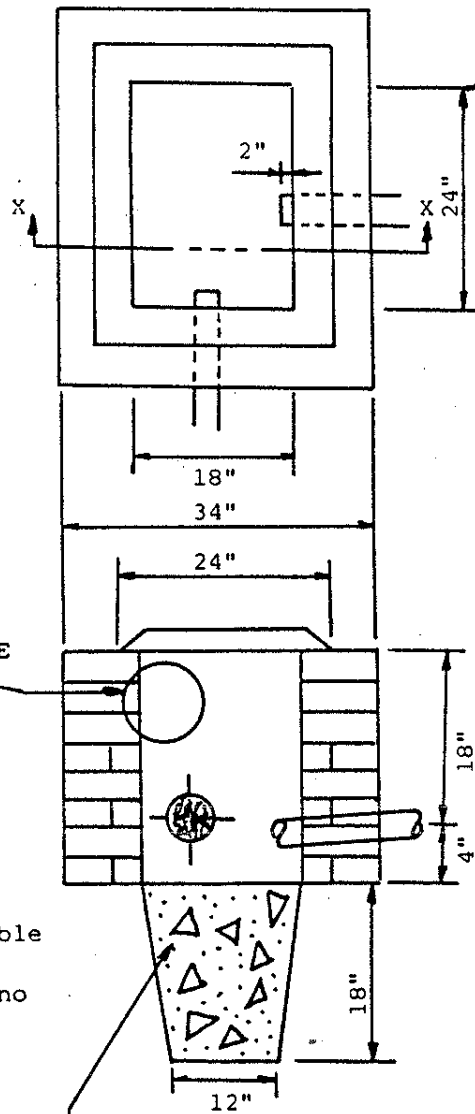


WIRE HANGER DETAIL
(NTS)

NOTES:

- 1) Any spaces between the conduit and the handbox wall shall be patched with concrete or other sealer approved by the Engineer.
- 2) All metal conduit ends shall be bonded with other conduit ends using bonding bushings and #8 AWG copper wire.
- 3) All electrical cables are required to have 2-3' slack in handbox. This wire is to be secured in the handbox so that it does not lay on the bottom of the handbox.
- 4) When all conduit and electrical wire is in place, the end of the conduits shall be sealed with duct sealer or other pliable material as approved by the Engineer.
- 5) Walls shall be brick or concrete block (no cinder block). Only the final course shall be capped (no voids if using concrete block).

SEE WIRE HANGER DETAIL



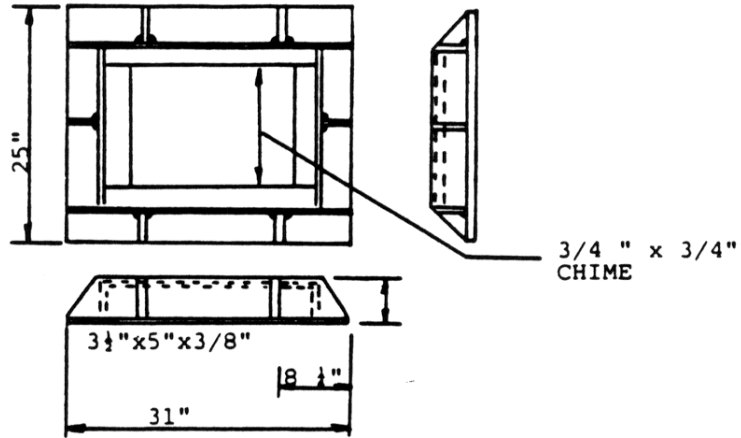
NOT TO SCALE

Min. Min.

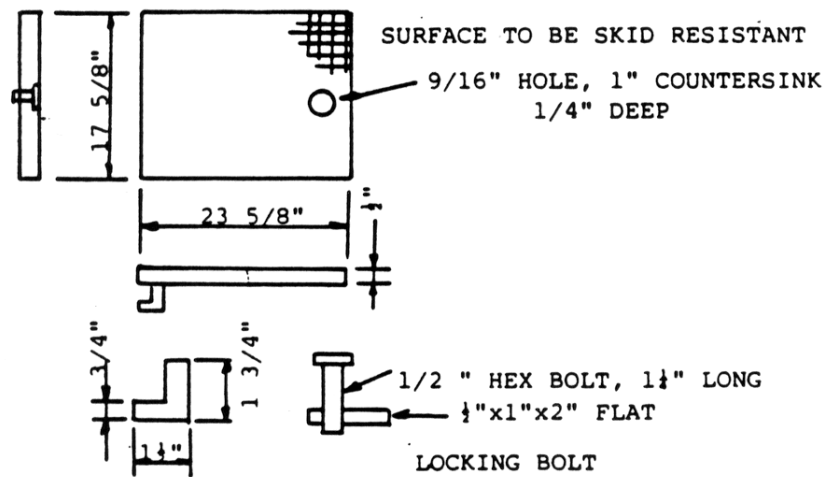
SECTION X-X

COARSE AGGREGATE-Must meet the requirements of AASHTO M 43, size 57, when tested in accordance with AASHTO 27 omitting AASHTO 11.

ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED CHIEF ENGINEER	STANDARD ELECTRIC DETAILS TYPICAL FOR HANDBOX CONSTRUCTION	REVISED	E 1
	DESIGN ENGINEER 9/2/88		_____	
	DATE		_____	
	_____		_____	



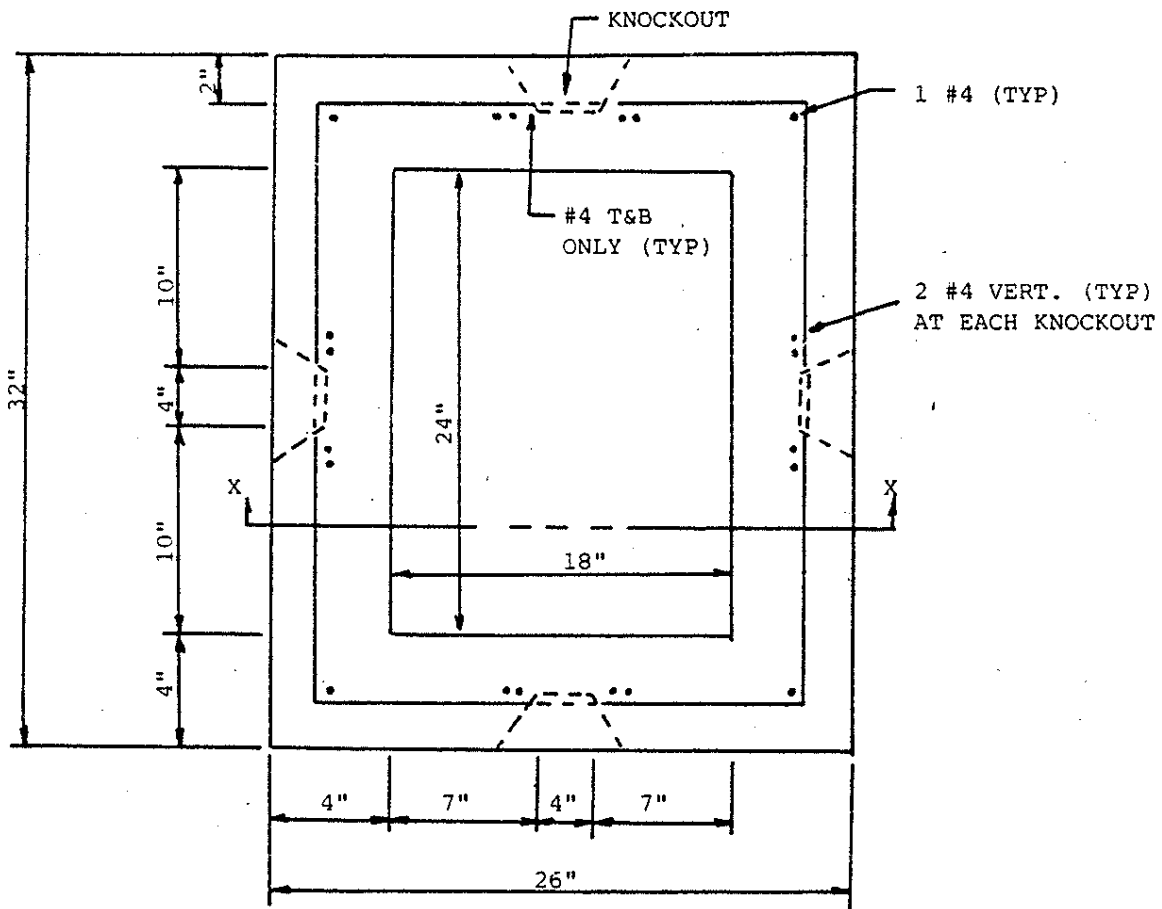
HANDBOX FRAME (NTS)



HANDBOX COVER (NTS)

NOTE: Handbox frame and cover to be galvanized per ASTM A-123

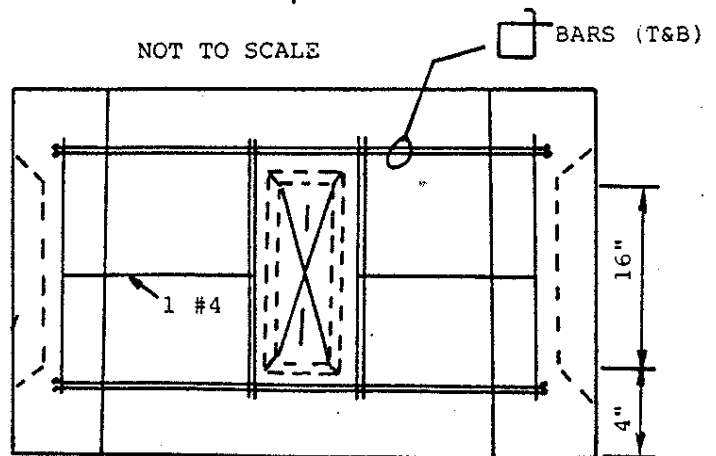
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	DESIGN ENGINEER <i>[Signature]</i>		_____	
	DATE 9/7/88		_____	
	_____		_____	
	_____		_____	



NOTES

- 1) Concrete 5000 PSI
- 2) No rebar knockouts.
- 3) Full concrete dimensions required. Any air pockets must be patched before shipment.
- 4) All rebar is to be placed in the center of walls.
- 5) Minimum concrete cover for rebar - 1 1/2" required.
- 6) All applicable notes from STANDARD HANDBOX CONSTRUCTION shall also be satisfied.

NOT TO SCALE



SECTION X-X

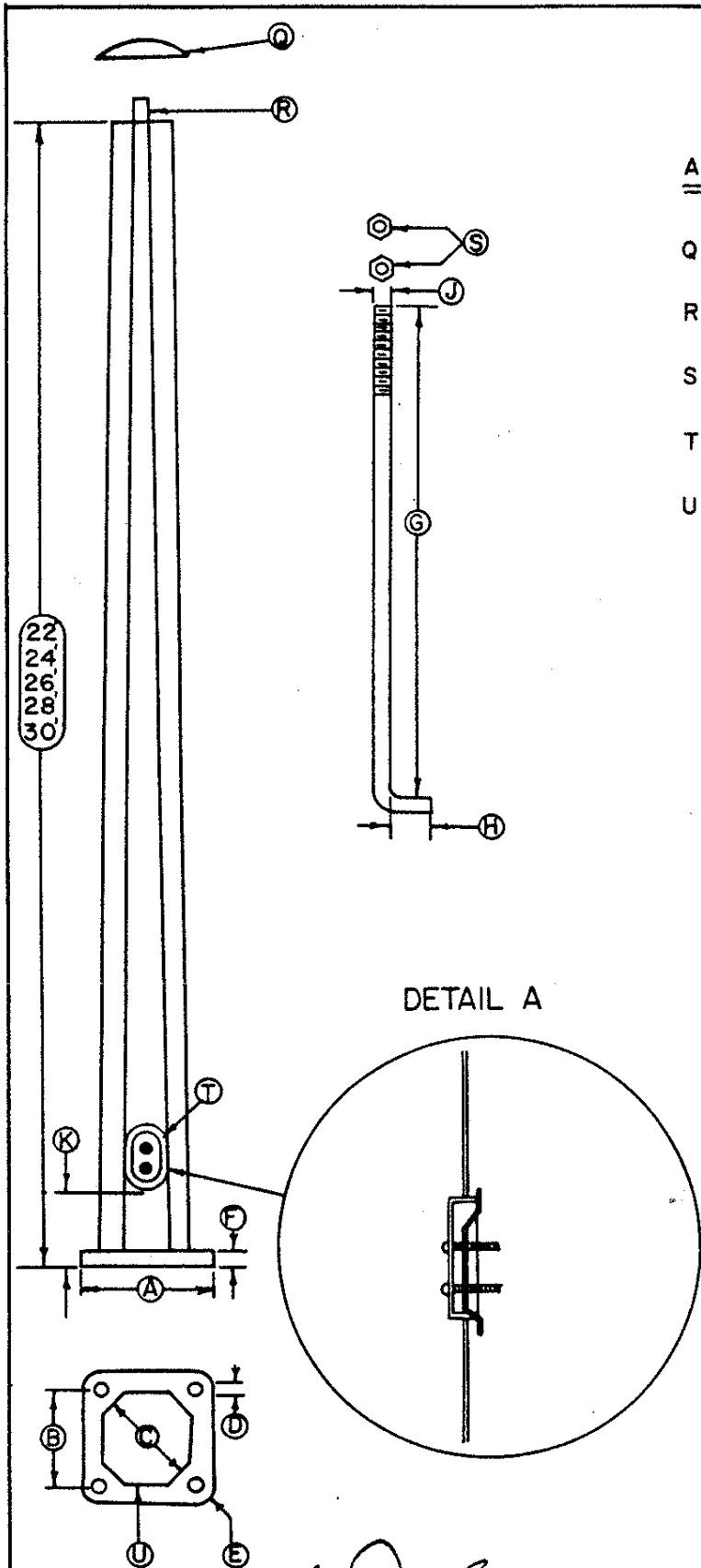
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COUNTY
DEPARTMENT OF
PUBLIC WORKS

APPROVED
[Signature]
CHIEF ENGINEER
DESIGN ENGINEER
9/7/88
DATE

STANDARD ELECTRIC DETAILS
ALTERNATE HANDBOX
PRECAST CONCRETE

REVISED

E
3



ALL SHAFTS SHALL ALSO INCLUDE:

- Q POLE CAP OR COVER
- R WELDED STEEL POLE STRAP
- S 8 HEXAGON NUTS PER POLE
- T 4 1/2" X 6" HAND HOLE & COVER
- U SHAFT THICKNESS 3 GAUGE OR 0 GAUGE

SCHEDULE OF DIMENSIONS

	22'	24'	26'	28'	30'
A	12 3/4"	14 1/8"	14 7/8"	17"	17"
B	8 7/8"	10 1/2"	10 1/2"	11 15/16"	11 15/16"
C	9"	10"	11"	12"	12"
D	1 7/8"	2 3/16"	2 3/16"	2 1/2"	2 1/2"
E	2"	2 1/4"	2 1/4"	2 7/8"	2 7/8"
F	1 1/2"	1 3/4"	1 3/4"	2"	2"
G	48"	52"	55"	55"	60"
H	4"	4"	4"	4"	4"
J	1 1/2"	1 3/4"	1 3/4"	2"	2"
K	6"	6"	6"	6"	6"

ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS

APPROVED *[Signature]* CHIEF ENGINEER

[Signature] DESIGN ENGINEER

DATE 9/7/89

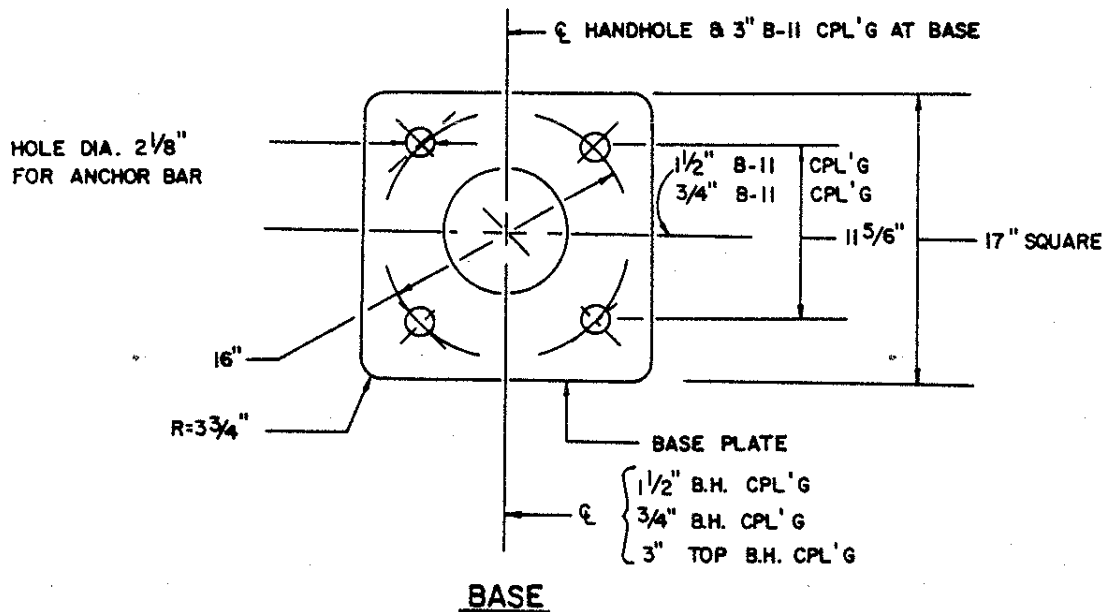
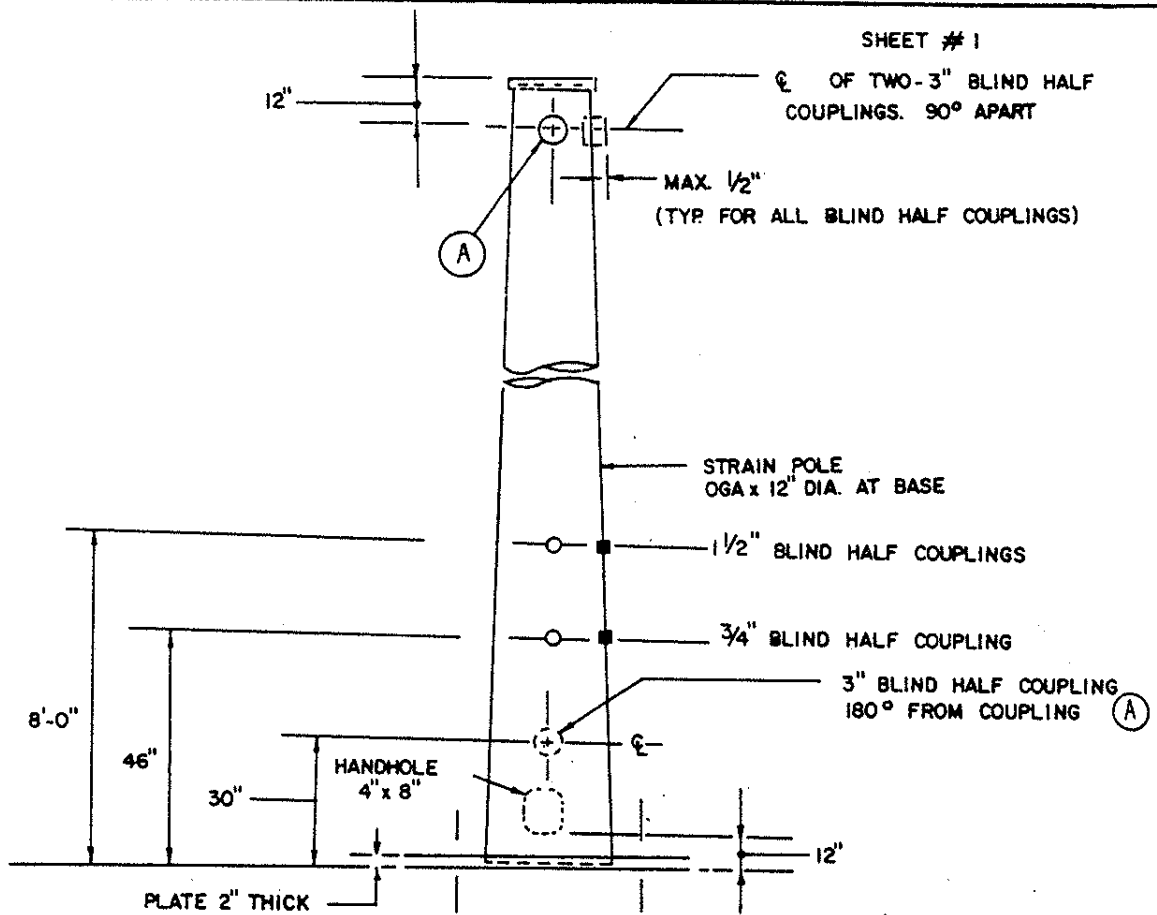
STANDARD ELECTRIC DETAILS

STEEL STRAIN POLES

REVISED

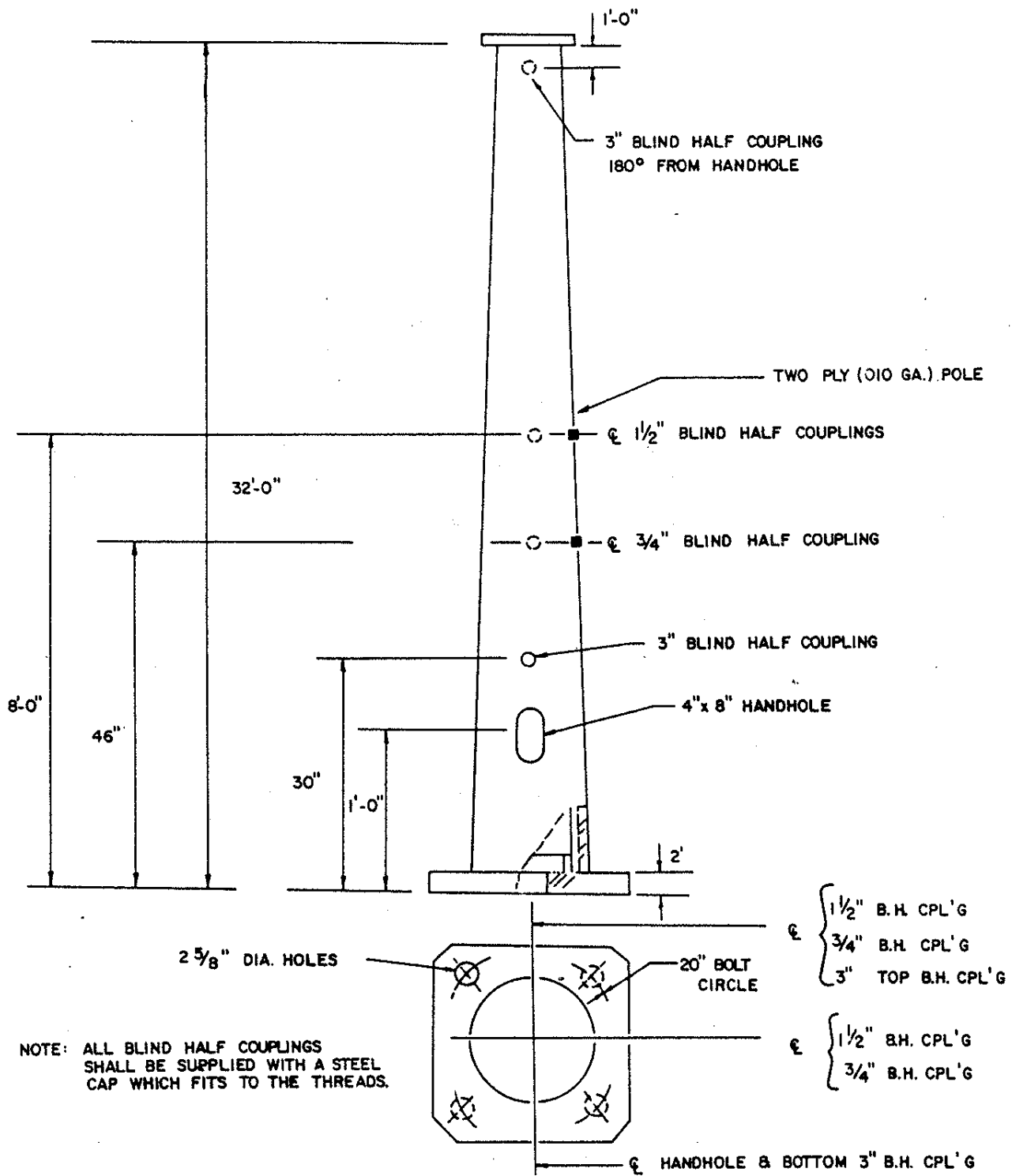
E 4

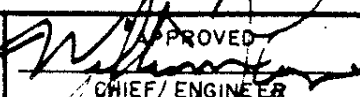
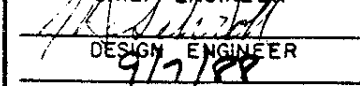
SHEET # 1

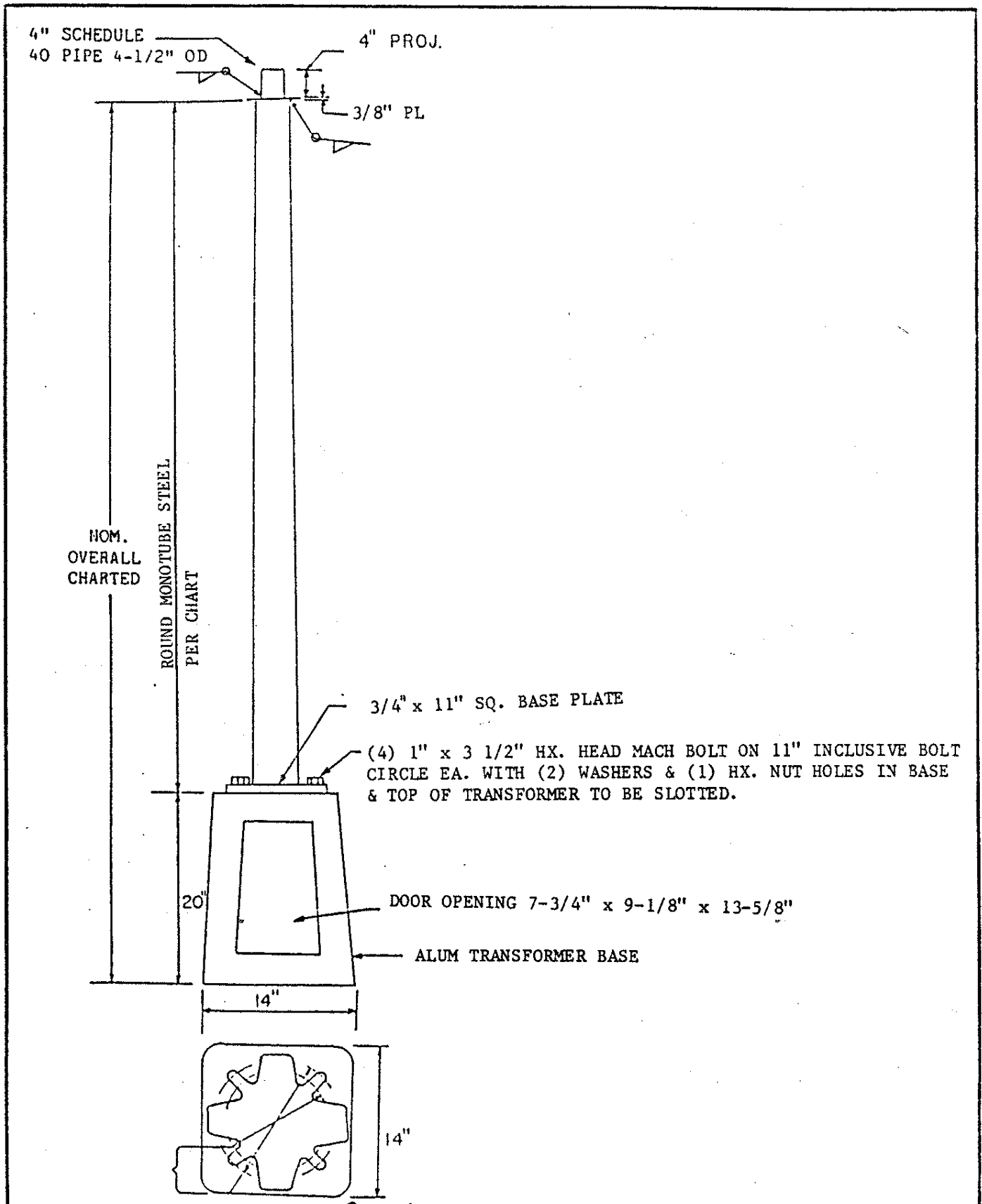


NOTE: ALL BLIND HALF COUPLINGS SHALL BE SUPPLIED WITH A STEEL CAP WHICH FITS TO THE THREADS

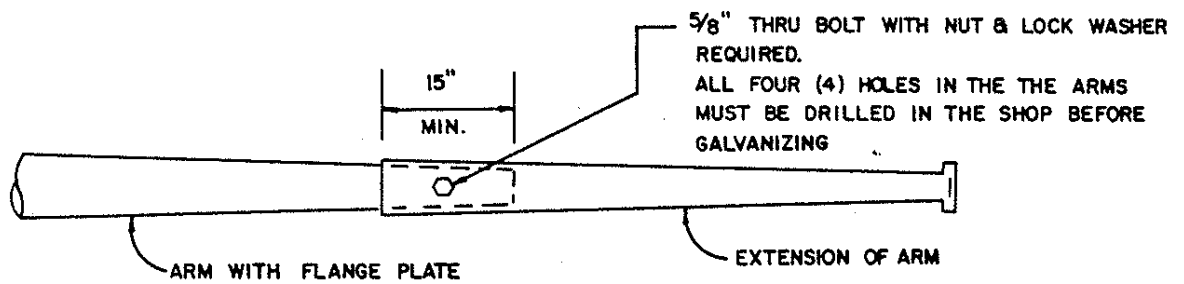
ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED <i>[Signature]</i> CHIEF ENGINEER	STANDARD ELECTRIC DETAILS STEEL STRAIN POLES	REVISED	E 5
	DESIGN ENGINEER 9/17/88		_____	
	DATE		_____	
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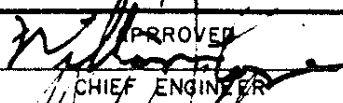


ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED  CHIEF ENGINEER	STANDARD ELECTRIC DETAILS TWO PLY STRAIN POLES	REVISED	E 6
	DESIGN ENGINEER  9/17/88 DATE			



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	DESIGN ENGINEER 9/7/88		_____	
	DATE		_____	
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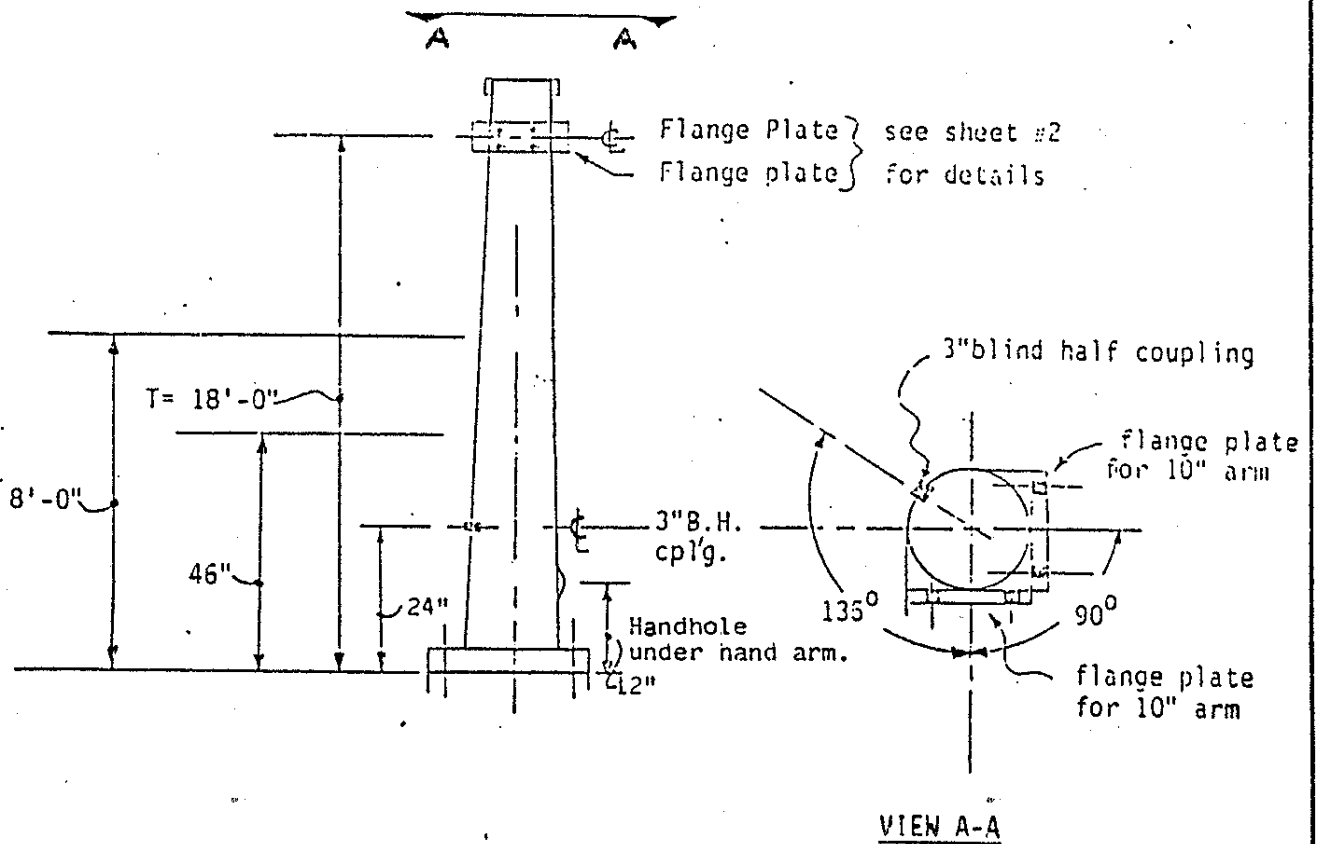


ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED  CHIEF ENGINEER	STANDARD ELECTRIC DETAILS ARM SPLICE CONNECTION	REVISED	E 8
	DESIGN ENGINEER 9/17/88 DATE		_____	
	_____		_____	
	_____		_____	
	_____		_____	

TWIN MAST ARMS
 (For Max. Hor. Load 700 lbs. and Vert. Load 150 lbs. at end)

TABLE 1

POLE SIZE	ARM SIZES	ANCHOR BOLTS	BASE PLATE	BOLT CIRCLE
3GA-13"x10.06"x21 ft.	(1) 3GA-10"x3.00"x50 ft. (2) 3GA-10"x4.40"x40 ft.	1 3/4" x 90"	18 1/2"x18 1/2"x2"	18"



POLE

- NOTES:
- Arm lengths more than 40 ft. may be spliced.
 - All anchor bolt holes in the base plate to be 3/8" larger than anchor bolt diameter.
 - 'T' dimension must be 18'-0" from base for both arms.
 - See sheet #3 for blind half coupling details.

ANNE ARUNDEL COUNTY
 DEPARTMENT OF PUBLIC WORKS

APPROVED
 CHIEF ENGINEER
 DESIGN ENGINEER
 DATE 9/17/88

STANDARD ELECTRIC DETAILS
 TWIN MAST ARMS

REVISED	E 9

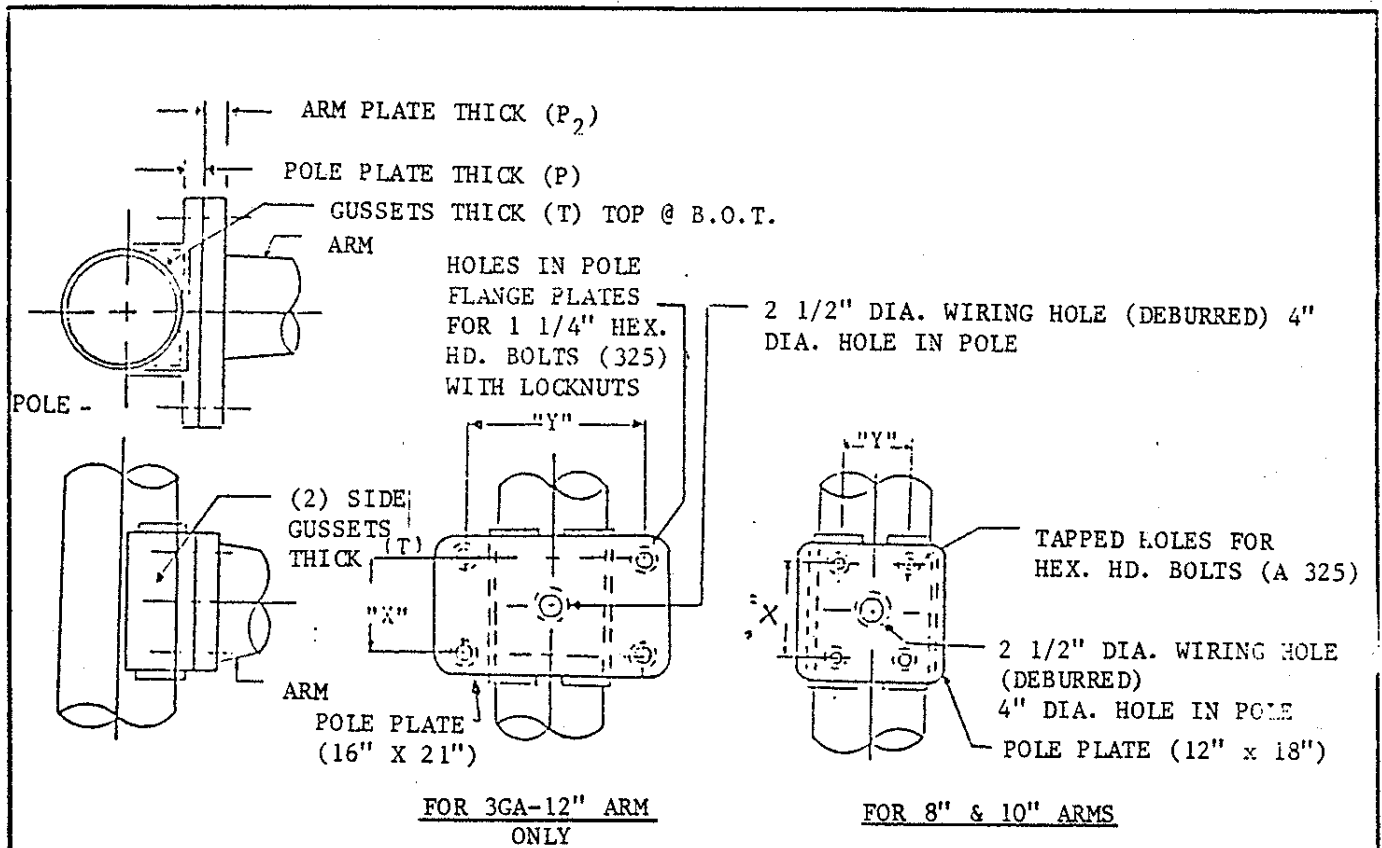


TABLE 2

ARM SIZE	X	Y	T	P	P2	* FLANGE BOLTS			
						DIA.	THREAD LENGTH	TOTAL LENGTH	NUTS & WASHERS
7GA-8" DIA.	14"	6 1/2"	1/4"	1 1/2"	2 1/2"	1 1/2"	3 1/2"	4"	FLAT WASHER
7GA-9" DIA.	14"	6 1/2"	1/2"	1 1/2"	2 1/2"	1 1/2"	3 1/2"	4"	FLAT WASHER
3GA-10" DIA.	14"	6 1/2"	1/2"	1 1/2"	3"	1 1/2"	3 1/2"	4 3/4"	FLAT WASHER
3GA-12" DIA.	13"	18"	3/8"	2"	2 1/2"	1 1/2"	3 1/2"	6 1/2"	FLAT WASHER & LOCK NUT

* ASTM A 325-BOLTS, NUTS AND WASHERS

NOTE: All mast arms shall have 3 degree rise in arms only.
Flange plates must be vertical.

ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED	STANDARD ELECTRIC DETAILS MAST ARMS	REVISED
	CHIEF ENGINEER		
	DESIGN ENGINEER		
	DATE		
			E 10

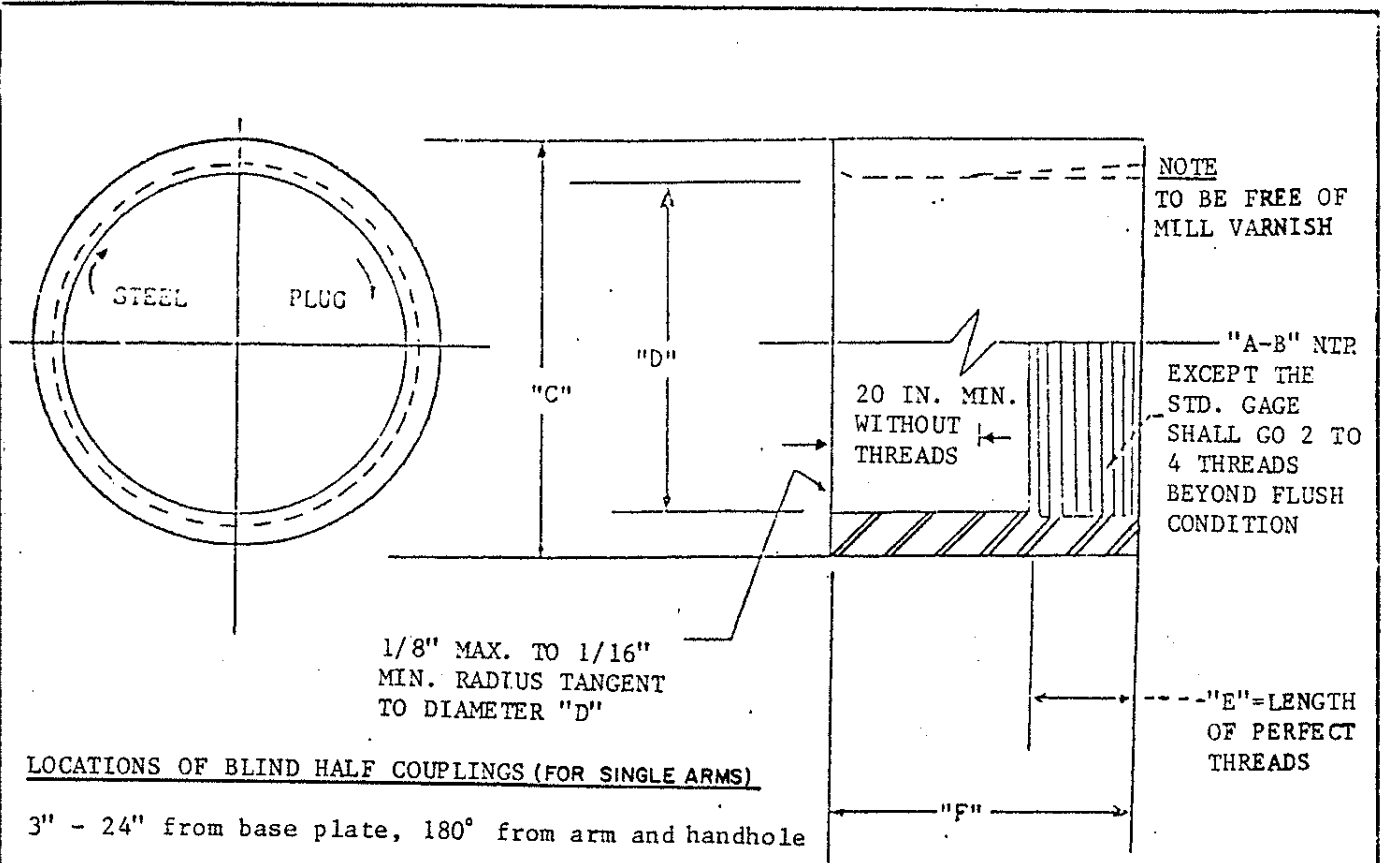


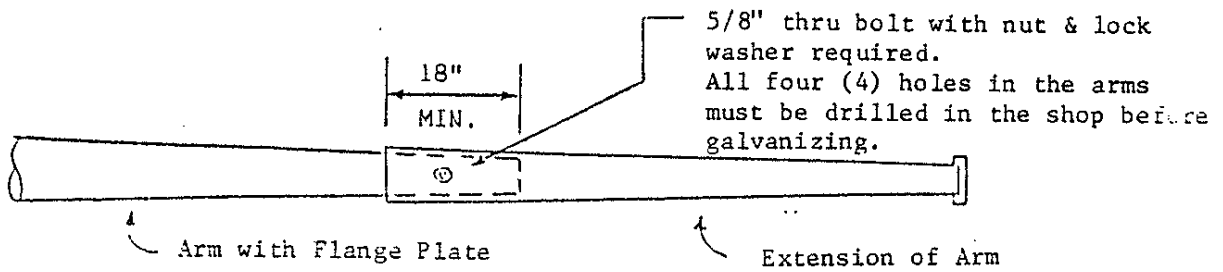
TABLE 3

"A-B"	"C"	"D"	"E"	"F"
3"-8	.4"	3.25"	1.575"	2 1/4"
3/4"-14	1 5/16"	0.891"	0.759"	1 3/8"
1 1/4" - 11 1/2	1 29/32"	1.469"	0.967"	1 1/2"

NOTES: (1) Blind half couplings shall be located as noted on E/13 for Twin Arms.

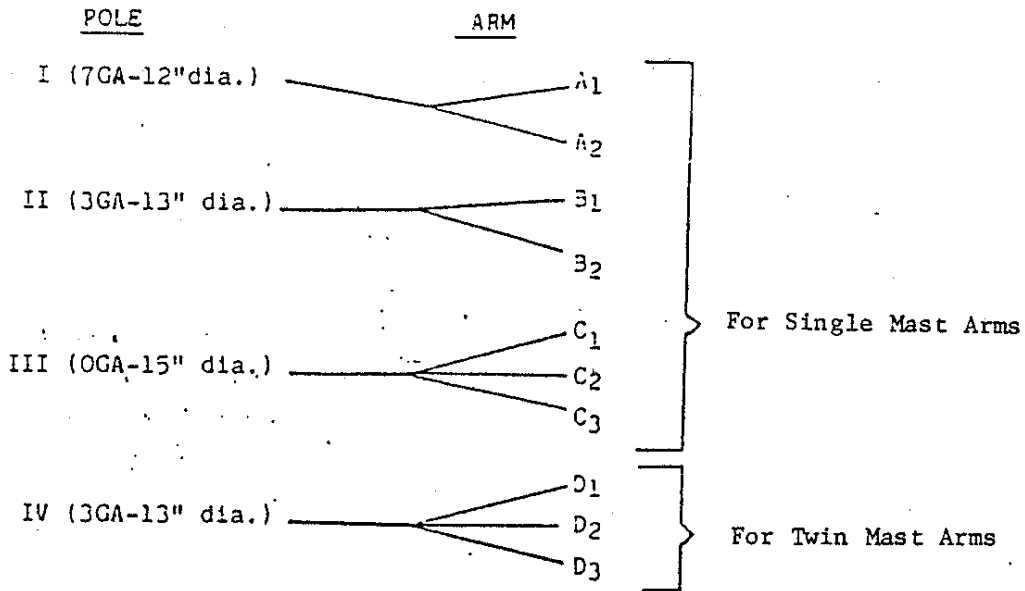
(2) Blind half couplings shall be supplied with steel cap which fits to the threads.

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	DESIGN ENGINEER 3/7/88		_____	
	DATE		_____	
	_____		_____	



ARM SPLICE CONNECTION

NOTE: Each pole and arm piece is to be identified with a steel plate welded with the following information permanently engraved.



A₁ - D₃ - pieces of arms from left to right
I - IV - types of poles

PLATE

3"

MFG _____	/year _____
Pole # _____	
Arm ** _____	
Anchor Bolts <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	

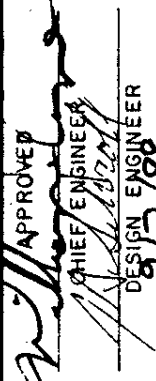
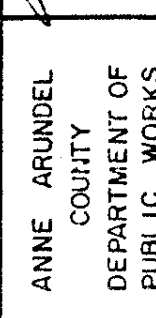
* I-IV
** A₁-D₃ / Total Arm Length
✓ diameter of rod
✓ Bolt Circle
3"

ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED CHIEF ENGINEER	STANDARD ELECTRIC DETAILS MAST ARMS	REVISED		
	 DESIGN ENGINEER DATE 9/7/89		E	12	

MAST ARMS
(Sizes & Quantities)
Table #1

QUANTITY GALVANIZED COATED	ARM LENGTHS IN FEET	POLE SIZE	ARM SIZE	ANCHOR BOLTS	BASE PLATE SIZE	BOLT CIRCLE
	22	7GA-12"x9.06"x21 ft.	7GA-8"x4.92"x22 ft.	1 1/2"x60"	17"x17"x1 1/2"	16"
	26		7GA-8"x4.36"x26 ft.			
	28		7GA-8"x4.08"x28 ft.			
	30		7GA-8"x3.8"x30 ft.			
	32		7GA-8"x3.52"x32 ft.			
	34		7GA-9"x4.24"x34 ft.			
	36		7GA-9"x3.96"x36 ft.			
	38	7GA-12"x9.06"x21 ft.	7GA-9"x3.68"x38 ft.	1 1/2"x60"	17"x17"x1 1/2"	16"
	40	3GA-13"x10.06"x21 ft.	3GA-10"x4.40"x40 ft.	1 3/4"x90"	18 1/2"x18 1/2"x2"	18"
	42		3GA-10"x4.12"x42 ft.			
	44		3GA-10"x3.84"x44 ft.			
	46		3GA-10"x3.56"x46 ft.			
	48		3GA-10"x3.28"x48 ft.			
	50	3GA-13"x10.06"x21 ft.	3GA-10"x3.00"x50 ft.	1 3/4"x90"	18 1/2"x18 1/2"x2"	18"
	52	OGA-15"x12.06"x21 ft.	3GA-12"x4.72"x52 ft.	2"x90"	23"x23"x2"	22"
	54		3GA-12"x4.44"x54 ft.			
	56		3GA-12"x4.16"x56 ft.			
	58		3GA-12"x3.88"x58 ft.			
	60	OGA-15"x12.06"x21 ft.	3GA-12"x3.60"x60 ft.	2"x90"	23"x23"x2"	22"

NOTES:
 - Arm lengths more than 40 ft. may be spliced.
 - All bolt holes in base plates to be 3/8" larger than anchor bolt diameter.
 - All "t" dimensions to be 1/8"-0" (height of arm from pole base)

ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS	APPROVED  CHIEF ENGINEER  DESIGN ENGINEER 8/17/88 DATE	STANDARD ELECTRIC DETAILS MAST ARMS	REVISED
			E 13