

UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration

May 9, 1983

REA Bulletin 50-3 (D-804)

SUBJECT: Specifications and Drawings for 12.5/7.2 kV Line Construction

- I. Purpose: To announce the issuance of REA Standard D-804, Specifications and Drawings for 12.5/7.2 kV Line Construction.
- II. General: REA has revised REA Form 804, Specifications and Drawings for 7.2/12.5 kV Line Construction (August 1962), and it has been renamed REA Standard D-804, Specifications and Drawings for 12.5/7.2 kV Line Construction.

Changes include the addition of post insulator drawings and the correction of minor errors. Some drawings were revised for conformance with the latest edition of the National Electrical Safety Code.


Jack Van Mark
Acting Administrator

Index:

SPECIFICATIONS AND STANDARDS

Construction Specifications and Drawings - Bul. 50-3 (Standard D-804)
Drawings - Bul. 50-3 (Standard D-804)

SPECIFICATIONS FOR CONSTRUCTION

1. General

All construction work shall be done in accordance with the staking sheets, plans and specifications, and the construction drawings.

The 1981 or latest edition of the National Electrical Safety Code (NESC), ANSI C2, shall be followed except where local regulations are more stringent, in which case local regulations shall govern.

2. Distribution of Poles

In distributing the poles, large, choice, dense poles shall be used at transformer, dead-end, angle, and corner locations.

3. Pole Setting

The minimum depth for setting poles shall be as follows:

| <u>Length of Pole(Feet)</u> | <u>Setting in Soil(Feet)</u> | <u>Setting in All Solid Rock(Feet)</u> |
|-----------------------------|------------------------------|--|
| 20 | 4.0 | 3.0 |
| 25 | 5.0 | 3.5 |
| 30 | 5.5 | 3.5 |
| 35 | 6.0 | 4.0 |
| 40 | 6.0 | 4.0 |
| 45 | 6.5 | 4.5 |
| 50 | 7.0 | 4.5 |
| 55 | 7.5 | 5.0 |
| 60 | 8.0 | 5.0 |

"Setting in Soil" depths shall apply:

- a. Where poles are to be set in soil.
- b. Where there is a layer of soil of more than two (2) feet in depth over solid rock.
- c. Where the hole in solid rock is not substantially vertical or the diameter of the hole at the surface of the rock exceeds approximately twice the diameter of the pole at the same level.

"Setting in All Solid Rock" depths shall apply where poles are to be set in solid rock and where the hole is substantially vertical, approximately uniform in diameter and large enough to permit the use of tamping bars the full depth of the hole.

Where there is a layer of soil two (2) feet or less in depth over solid rock, the depth of the hole shall be the depth of the soil in addition to the depth specified under "Setting in All Solid Rock" provided, however, that such depth shall not exceed the depth specified under "Setting in Soil."

On sloping ground, the depth of the hole shall be measured from the low side of the hole.

Poles shall be set so that alternate crossarm gains face in opposite directions, except at terminals and dead ends where the gains of the last two (2) poles shall be on the side facing the terminal or dead end. On unusually long spans, the poles shall be set so that the crossarm is located on the side of the pole away from the long span. Where pole top insulator brackets or pole top pins are used, they shall be located on the opposite side of the pole from the gain.

Poles shall be set in alignment and plumb, except at corners, terminals, angles, junctions, or other points of strain, where they shall be set and raked against the strain so that the conductors are in line.

Poles shall be raked against the conductor strain not less than 1-inch for each 10 feet of pole length nor more than 2 inches for each 10 feet of pole length after conductors are installed at the required tension.

Pole backfill shall be thoroughly tamped in full depth. Excess dirt shall be banked around the pole.

Poles which have been in storage for more than 1 year from the date of treatment shall be ground line treated when installed.

4. Grading of Line

When using high poles to clear obstacles such as buildings, foreign wire crossings, railroads, etc., there shall be no upstrain on pin-type or post-type insulators in grading the line each way to lower poles.

5. Guys and Anchors

Guys shall be placed before the conductors are strung and shall be attached to the pole as shown in the construction drawings.

All anchors and rods shall be in line with the strain and shall be installed so that approximately 6 inches of the rod remain out of the ground. In cultivated fields or other locations, as deemed necessary, the projection of the anchor rod above earth may be increased to a maximum of 12 inches to prevent burial of the rod eye. The backfill of all anchor holes must be thoroughly tamped the full depth.

After a cone anchor has been set in place, the hole shall be backfilled with coarse crushed rock for 2 feet above the anchor tamping during the filling. The remainder of the hole shall be backfilled and tamped with dirt.

6. Locknuts

A locknut shall be installed with each nut, eyenut or other fastener on all bolts or threaded hardware such as insulator pins and studs, upset bolts, double arming bolts, etc. ;

7. Conductors

Conductors must be handled with care. Conductors shall neither be trampled on nor run over by vehicles. Each reel shall be examined and the wire shall be inspected for cuts, kinks, or other injuries. Injured portions shall be cut out and the conductor spliced. The conductors shall be pulled over suitable rollers or stringing blocks properly mounted on the pole or crossarm if necessary to prevent binding while stringing.

The neutral conductor should be maintained on one side of the pole (preferably the road side) for tangent construction and for angles not exceeding 20°.

With pin-type or post-type insulators, the conductors shall be tied in the top groove of the insulator on tangent poles and on the side of the insulator away from the strain at angles. Pin-type and post-type insulators shall be tight on the pins and brackets, respectively, and the top groove must be in line with the conductor after tying.

For line angles of 0° to 5° in locations known to be subject to considerable conductor vibration, insulated brackets (material item da) may be substituted for the single and double upset bolts used for supporting the neutral and secondary conductors.

All conductors shall be cleaned thoroughly by wirebrushing before splicing or installing connectors or clamps. A suitable inhibitor shall be used before splicing or applying connectors over aluminum conductor.

8. Splices and Dead Ends

Conductors shall be spliced and dead-ended as shown on the construction drawings. There shall be not more than one splice per conductor in any span and splices shall be located at least 10 feet from the conductor support. No splices shall be located in Grade B crossing spans and preferably not in the adjacent spans. Splices shall be installed in accordance with the manufacturer's recommendations.

9. Taps and Jumpers

Jumpers and other leads connected to line conductors shall have sufficient slack to allow free movement of the conductors. Where slack is not shown on the construction drawings, it will be provided by at least two (2) bends in a vertical plane, or one (1) in a horizontal plane, or the equivalent. In areas where aeolian vibration occurs, special measures to minimize the effects of jumper breaks shall be used as specified.

All leads on equipment such as transformers, reclosers, etc., shall be a minimum of #6 copper conductivity. Where aluminum jumpers are used, a connection to an unplated bronze terminal shall be made by splicing a short stub of copper to the aluminum jumper using a compression connector suitable for the bimetallic connection.

10. Hot-Line Clamps and Connectors

Connectors and hot-line clamps suitable for the purpose shall be installed as shown on the guide drawings. On all hot-line clamp installations, the clamp and jumper shall be installed so that they are permanently bonded to the load side of the line, allowing the jumper to be de-energized when the clamp is disconnected.

11. Surge Arrester Gap Settings

The external gap electrodes of surge arresters, combination arrester cutout units, and transformer mounted arresters shall be adjusted to the manufacturer's recommended spacing. Care shall be taken that the adjusted gap is not disturbed when the equipment is installed.

12. Conductor Ties

Hand-formed ties shall be in accordance with construction drawings. Factory-formed ties shall be installed in accordance with the manufacturer's recommendations.

13. Sagging of Conductors

Conductors shall be sagged in accordance with the conductor manufacturer's recommendations. All conductors shall be sagged evenly. The air temperature at the time and place of sagging shall be determined by a certified thermometer.

The sag of all conductors after stringing shall be in accordance with the engineer's instructions.

14. Secondaries and Service Drops

Secondary conductors may be bare or covered wires or multi-conductor service cable. The conductors shall be sagged in accordance with the manufacturer's recommendations.

Conductors for secondary underbuild on primary lines will normally be bare, except in those instances where prevailing conditions may limit primary span lengths to the extent that covered wires or service cables may be used. Service drops shall be covered wire or service cable.

Secondaries and service drops shall be so installed as not to obstruct climbing space. There shall not be more than one splice per conductor in any span, and splices shall be located at least 10 feet from the conductor support. Where the same covered conductors or service cables are to be used for the secondary and service drop, they may be installed in one continuous run.

15. Grounds

Ground rods shall be driven full length in undisturbed earth in accordance with the construction drawings. The top shall be at least 12 inches below the surface of the earth. The ground wire shall be attached to the rod with a clamp and shall be secured to the pole with staples. The staples on the ground wire shall be spaced 2 feet apart, except for a distance of 8 feet above the ground and 8 feet down from the top of the pole where they shall be 6 inches apart.

All equipment shall have at least two (2) connections from the frame, case or tank to the multi-grounded neutral conductor.

The equipment ground, neutral wires, and surge-protection equipment shall be interconnected and attached to a common ground wire.

16. Clearing Right-of-Way

The right-of-way shall be prepared by removing trees, clearing underbrush, and trimming trees so that the right-of-way is cleared close to the ground and is the width specified, except that low growing shrubs which will not interfere with the operation or maintenance of the line shall be left undisturbed if so directed by the owner. Slash may be chipped and blown on the right-of-way. The landowner's written permission shall be received prior to cutting trees outside the right-of-way. Trees fronting each side of the right-of-way shall be trimmed symmetrically unless otherwise specified. Dead trees beyond the right-of-way which would strike the line in falling shall be removed. Leaning trees beyond the right-of-way, which would strike the line in falling and which would require topping if not removed, shall either be removed or topped, except that shade, fruit, or ornamental trees shall be trimmed and not removed, unless otherwise authorized.

17. Structures Exceeding 200 Feet in Height and Structures in the Vicinity of Airports

The Federal Aviation Administration (FAA) requires (14 CFR 77) that in cases where structures or conductors will exceed a height of 200 feet, or are within 20,000 feet of an airport, the nearest regional or area office of the FAA be contacted and FAA Form 7460-1 be filed if necessary.

INDEX OF CONSTRUCTION DRAWINGS

Single-Phase:

| | |
|-------------------|---|
| A1, A1A | Single Primary Support |
| A1-1, A1-1A | Double Primary Support |
| A2 | Double Primary Support |
| A3 | Primary 1-Phase 20° to 60° Angle |
| A4 | Primary 1-Phase 60° to 90° |
| A5 | Deadend (Single) |
| A5-1, A5-2, A5-2A | Primary, Single Phase Tap |
| A5-3, A5-4 | Primary, Single Phase Tap |
| A6 | Vertical Deadend (Double) |
| A7, A7-1 | Crossarm Construction Deadend (Single) |
| A8 | Crossarm Construction Deadend (Double) |
| A9 | Crossarm Construction Double Line Arm |
| A9-1 | Crossarm Construction Single Line Arm |
| A22 | Crossarm Construction Single Phase Junction |

Two-Phase:

| | |
|-------------|--|
| B1, B1A | Crossarm Construction Single Primary Support |
| B1-1, B1-1A | Crossarm Construction Double Primary Support |
| B2 | Crossarm Construction Double Primary Support |
| B3, B3A | Vertical Construction |
| B4-1, B4-1A | Vertical Construction |
| B5-1, B5-1A | Vertical Construction Deadend (Single) |
| B7, B7-1 | Crossarm Construction Deadend (Single) |
| B8 | Crossarm Construction Deadend (Double) |
| B9 | Crossarm Construction Double Line Arm |
| B9-1 | Crossarm Construction Single Line Arm |
| B9-2 | Crossarm Construction Double Line Arm |
| B9-3 | Crossarm Construction Single Line Arm |
| B22 | Crossarm Construction Single Phase Junction |

Three-Phase:

| | |
|-------------|--|
| C1, C1A | Crossarm Construction Single Primary Support |
| C1-1, C1-1A | Crossarm Construction Double Primary Support |
| C1-2 | Crossarm Construction (Large Conductors) |
| C1-3 | Crossarm Construction Double Primary Support (Large Conductors) |
| C1-4 | Crossarm Construction (Large Conductors) |
| C2 | Crossarm Construction Double Primary Support |
| C2-1 | Crossarm Construction Double Primary Support |
| C2-2 | Crossarm Construction Double Primary Support (Large Conductors) |
| C3 | Vertical Construction |
| C3-1 | Vertical Construction (Large Conductors) |
| C4-1 | Vertical Construction |
| C5-1 | Vertical Construction Deadend (Single) |

Three-Phase (Cont'd):

| | |
|----------|--|
| C7, C7-1 | Crossarm Construction Deadend (Single) |
| C7A | Crossarm Construction Deadend (Single) |
| C7-2 | Crossarm Construction Deadend (Single) |
| C8 | Crossarm Construction Deadend (Double) |
| C8-1 | Crossarm Construction Deadend (Double) |
| C8-2 | Crossarm Construction Deadend (Double) |
| | (Large Conductors) |
| C8-3 | Crossarm Construction Deadend (Double) Large Conductors with Unbalanced Loads |
| C9 | Crossarm Construction Double Line Arm |
| C9-1 | Crossarm Construction Single Line Arm |
| C9-2 | Crossarm Construction Double Line Arm |
| C9-3 | Crossarm Construction Single Line Arm |
| | (Large Conductors) |
| C22 | Crossarm Construction Single-Phase Junction |
| C24 | Crossarm Construction Two-Phase Junction |

Three-Phase, Double Circuit:

| | |
|----------|--|
| DC-C1 | Crossarm Construction Double Circuit Single Primary Support 2 Crossarm Type |
| DC-C1A | Crossarm Construction Double Circuit Single Primary Support 3 Crossarm Type |
| DC-C1-1A | Crossarm Construction Double Circuit Double Primary Support 3 Crossarm Type |
| DC-C2 | Crossarm Construction Double Circuit Double Primary Support 2 Crossarm Type |
| DC-C2-1 | Double Circuit Crossarm Construction 2 Crossarm Type |
| DC-C3 | Double Circuit, Vertical Construction |
| DC-C4-1 | Double Circuit, Vertical Construction |
| DC-C8 | Crossarm Construction Double Circuit Deadend (Double) |
| DC-C25 | Crossarm Construction Double Circuit 3-Phase Tap |

Single-Phase (Post Insulator):

| | |
|---------------|---|
| A1P, A1AP | Single Primary Support |
| A1-1P, A1-1AP | 0° to 5° Angle, Double Primary Support |
| A2P | Double Primary Support |
| A9P | Crossarm Construction Double Support |
| A9-1P | Crossarm Construction Single Line Arm |
| A22P | Crossarm Construction Single-Phase Junction |

Two-Phase (Post Insulator):

| | |
|---------------|--|
| B1P, B1AP | Crossarm Construction Single Primary Support |
| B1-1P, B1-1AP | Crossarm Construction Double Primary Support |
| B2P | Crossarm Construction Double Primary Support |
| B9P | Crossarm Construction Double Line Arm |
| B9-1P | Crossarm Construction Single Line Arm |
| B9-2P | Crossarm Construction Double Line Arm |
| B9-3P | Crossarm Construction Single Line Arm |
| B22P | Crossarm Construction Single-Phase Junction at 0° to 5° Angle |

Three-Phase (Post Insulator):

| | |
|---------------|--|
| C1P, C1AP | Crossarm Construction Single Primary Support |
| C1PL | Crossarm Construction Single Primary Support |
| C1-1P, C1-1AP | Crossarm Construction Double Primary Support |
| C1-3P | Crossarm Construction Double Primary Support (Large Conductors) |
| C1-4PL | Crossarm Construction Double Pole Top Support |
| C2-2PL | Crossarm Construction Double Primary Support |
| C9-1P | Crossarm Construction Single Line Arm |
| C9-2PL | Crossarm Construction Double Line Arm |
| C9-3PL | Crossarm Construction Single Line Arm |

Three-Phase, Double Circuit (Post Insulator):

| | |
|-----------|--|
| DC-C1PL | Crossarm Construction Double Circuit Single Primary Support |
| DC-C1-3PL | Crossarm Construction Double Circuit Double Primary Support |

Guy Assemblies:

| | |
|-------------------|--|
| E1-1, E1-2, E1-3 | Single Down Guy, Through Bolt Type |
| E2-1, E2-2, E2-3 | Single Overhead Guy, Through Bolt Type |
| E3-2, E3-3, E3-10 | Single Down Guy, Wrapped Type |
| E4-2, E4-3 | Single Overhead Guy, Wrapped Type |
| E5-1, E5-2 | Crossarm Construction Deadend Guy |
| E6-2, E6-3 | Double Down Guy |
| E7-2, E7-3 | Three Down Guys (Large Conductors) |
| E8-2, E8-3 | Four Down Guys (Large Conductors) |
| E11, E12 | Single Loop Guy, Wrapped Type |

Anchor Assemblies:

| | |
|------------------|-------------------------|
| F1-1 to F1-4 | Line Anchor Assemblies |
| F2-1 to F2-4 | Log Anchor Assembly |
| F4-1 | Service Anchor Assembly |
| F5-1, F5-2, F5-3 | Rock Anchor Assemblies |
| F6-1, F6-2, F6-3 | Swamp Anchor Assembly |

Transformer Assemblies:

| | |
|-------------------|--|
| G9-, G65-, G105- | Single Phase Transformer at 1-Phase Tangent |
| G10-, G66-, G106- | Single Phase Transformer at Deadend |
| G39-, G67-, G136- | Single Phase Transformer on Three-Phase Circuit |
| G210- | Two Transformers, Cluster Mounted Open Wye- Open Delta for 120/240 Volt Power Loads |
| G310- | Three Transformers Cluster Mounted Ungrounded Wye-Center Tap Grounded Delta for 120/240 Volt Power Loads |
| G311- | Three Transformers Cluster Mounted Ungrounded Wye-Corner Grounded Delta for 240 to 480 V Power Loads |
| G312- | Three Transformers Cluster Mounted 4-Wire Grounded Wye-Grounded Wye for 208/120 Volt Power Loads |

Secondary Assemblies:

| | |
|-----------|----------------------|
| J5 to J12 | Secondary Assemblies |
|-----------|----------------------|

Service Assemblies:

| | |
|------------------|---|
| K10, K11, K14 | Service Assemblies |
| K10C | Service Assemblies, Cable |
| K10L, K11L, K14L | Service Assemblies (Large Conductors) |
| K11C, K14C, K15C | Service Assemblies, Cable |
| K16C, K17L, K17 | Service Assemblies (For Ranch Type House) |

Miscellaneous Assemblies:

| | |
|-----------------|---|
| M2-1, M2-11 | Grounding Assembly Ground Rod Type |
| M2-2, M2-12 | Pole Protection Assembly-Plate Type |
| M2-2A, M2-12A | Pole Protection Assembly Wrap-Around Type |
| M2-2A2, M2-12A2 | Pole Protection Assembly Plate Type |
| M2-3, M2-13 | Ground Assembly Trench Type |
| M2-7, M2-17 | Galvanic Anode Assembly |
| M2-9 | Pole Top Protection Assembly |
| M2-15 | Grounding Assembly Ground Rod Type for Sectionalizing Air Break Switch |
| M2-15A | Grounding Assembly Platform Type for Sectionalizing Air Break Switch |
| M3-1A, M3-4 | One Sectionalizing Fuse Cutout |
| M3-2A, M3-3A | 2 or 3 Sectionalizing Disconnect Switches |
| M3-3B | Line Tension Switches |
| M3-10, M3-41 | One Sectionalizer or Oil Circuit Recloser |
| M3-11, M3-12 | 2 or 3-Phase, Three Sectionalizing Oil Circuit Reclosers |
| M3-11A, M3-12A | 2 or 3 Sectionalizing Oil Circuit Reclosers |
| M3-15 | Sectionalizing Air Break Switch |
| M3-23 | One Sectionalizing Oil Circuit Recloser with By-Pass Switch |
| M3-23A | One Sectionalizing Oil Circuit Recloser with By-Pass Cutout |
| M3-24, M3-25 | 2 or 3 Sectionalizing Oil Circuit Reclosers with By-Pass Switch |
| M3-24A, M3-25A | 2 or 3 Sectionalizing Oil Circuit Reclosers with By-Pass Switches |

Miscellaneous Assemblies (Cont'd):

| | |
|----------------|---|
| M3-30 | Three-Phase Oil Circuit Recloser with By-Pass Switches |
| M5-1 to 8 | Miscellaneous Primary Assemblies |
| M5-9 to 16 | Miscellaneous Primary Assemblies |
| M5-17 to 23 | Miscellaneous Primary Assemblies |
| M5-24 to M5-26 | Miscellaneous Assemblies |

Voltage Regulators:

| | |
|-------|---|
| M7-11 | One Voltage Regulator Pole Mounted |
| M7-13 | Three Voltage Regulators Platform Mounted |

Metering Assembly Guide Drawings:

| | |
|-------|--|
| M8 | Secondary Metering Guide Single-Phase 120/240 Volts |
| M8-6 | Secondary Metering Guide Three-Phase 120/240 Volts 4-Wire Delta |
| M8-9 | Guide to Yard Pole Meter Installation (Showing Pump Service Carried Underground) |
| M8-10 | Guide to Yard Pole Meter Installation (Showing All Building Services Carried Underground) |
| M8-11 | Secondary Metering Guide Three-Phase, 120/208 Volts 4-Wire Grounded Wye |
| M8-12 | Secondary Metering Guide Three-Phase 240 Volts 3-Wire Corner Grounded Delta |
| M8-15 | Primary Metering Guide Three-Phase 4-Wire Wye |

Capacitor Assemblies:

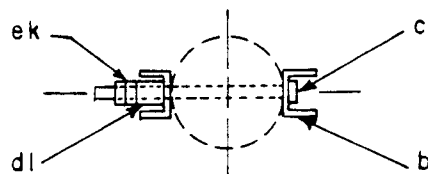
| | |
|--------------|---------------------------------------|
| M9-11 | Single-Phase Capacitor Assembly |
| M9-12, M9-13 | Two or Three-Phase Capacitor Assembly |

Guide Drawings:

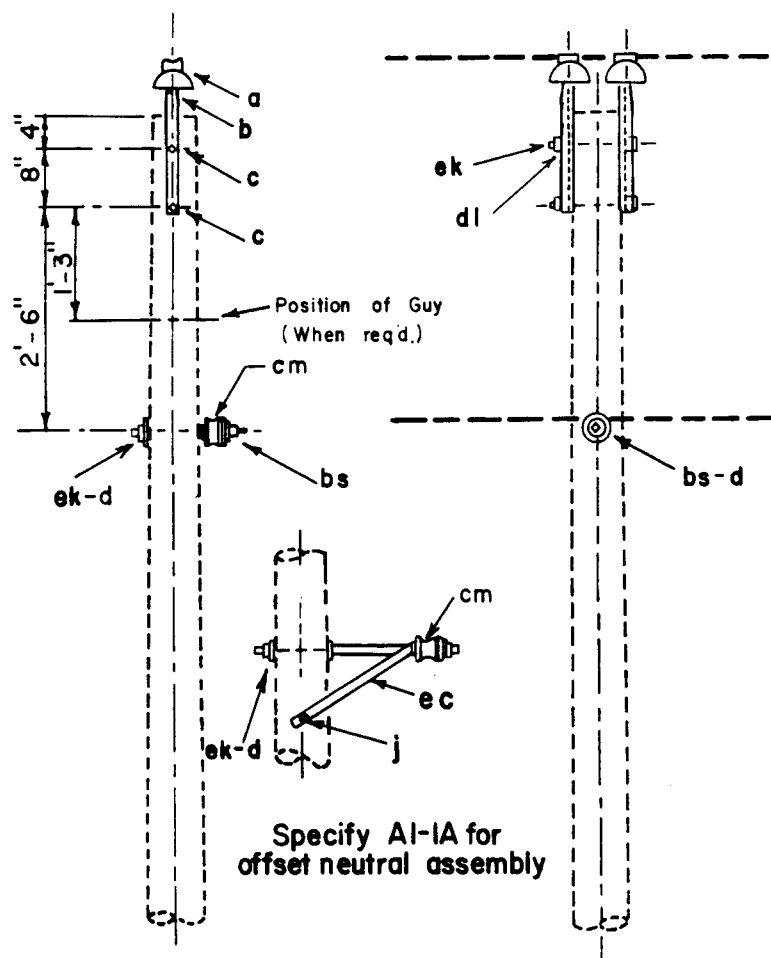
| | |
|--------|--|
| M19 | Crossarm Drilling Guide |
| M20 | Pole Framing Guide |
| M21 | Angle Construction Guide Crossarm to Vertical Const. - 30° to 60° Angle |
| M22-1 | Tree Trimming Guide |
| M22-2 | Tree Trimming Guide |
| M24 | Cable Service Assembly Guide |
| M24-1 | Open Wire Secondary or Service Assembly Guide |
| M24-10 | Assembly Guide of Service Mast for Ranch Type House |
| M26-5 | Security Light Installation Guide (Unmetered) |
| M27 | Transformer Connection Guide Open Wire Services |
| M27-1 | Transformer Connection Guide Triplex Cable Services |
| M27-1A | Detail of Alternative Transformer Connection (Primary Tangent, Service Takeoff at Transformer) |

Guide Drawings (Cont'd):

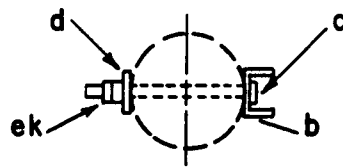
| | |
|--------------|---|
| M27-2 | Transformer Connection Guide Secondary Underbuild |
| M28 | Transformer Connection and Service Take-Off Guide from Secondary |
| M29-1 | Tap Assembly Guide |
| M29-2 | Tap Assembly Guide |
| M30-1 | Guide for Installation of Ground Wire Above Neutral of Guyed Poles |
| M30-2 | Guide for Installation of Ground Wire Above Neutral on Poles with Butt Wrapped or Driven Grounds |
| M40-11 | Armor Rods A.C.S.R. Conductor |
| M41-1 | Angle Assembly Guide, Vertical Construction 20° to 60° Angle, Copper Type Conductors with Formed Type Armor Rods |
| M41-10 | Angle Assemble Guide, Vertical Construction 20° to 60° Angle, A.C.S.R. Conductors with Straight or Formed Type Armor Rods |
| M42-3 | Deadend Assembly Guide - Deadend Clamp Meth. Copperweld Copper & Copper Conductors |
| M42-11 | Deadend Assembly Guide Deadend Clamp Method A.C.S.R. Conductors |
| M42-13 | Deadend Assembly Guide (Large Conductors) |
| M42-21 | Deadend Assembly Guide-Compression Method Copper Type Conductors |
| M43-4 | Tap Assembly Guide Copperweld-Copper and Copper Conductors |
| M43-10 | Tap Assembly Guide A.C.S.R. Conductors |
| M52-3, M52-4 | Neutral Identification and Pole Numbering Guide |
| R1 | Clearing Right-of-Way Guide |



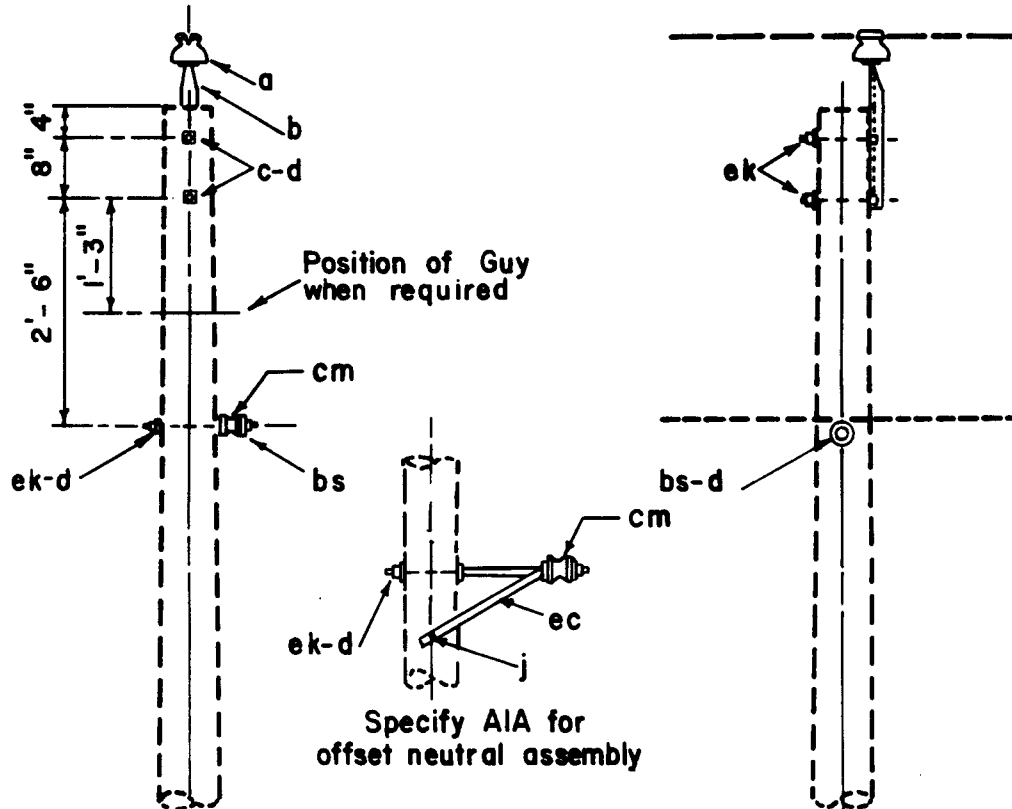
POLE TOP PIN ASSEMBLY



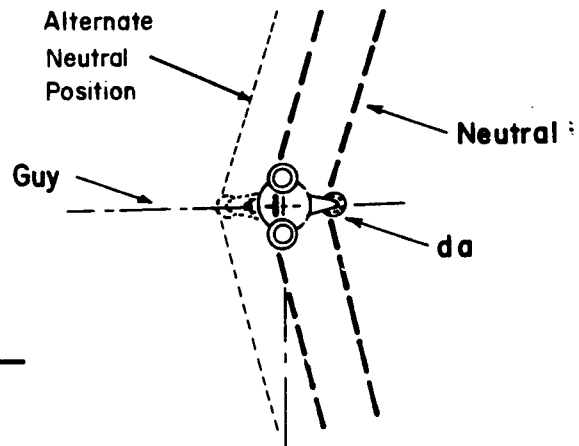
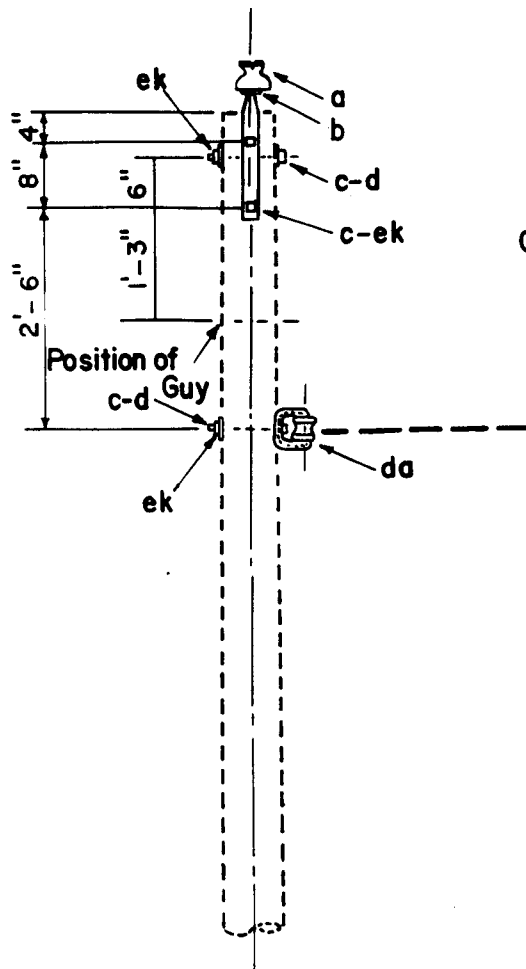
| ITEM | NO. | MATERIAL | | ITEM | NO. | MATERIAL | |
|--|-----|--|---|-------------|-----|--|--|
| a | 2 | Insulator, pin type | | bs | 1 | Bolt, single upset, (AI-I only) | |
| b | 2 | Pin, pole top, 20" | | dl | 2 | Pipe spacer, 3/4" dia. x 1 1/2" | |
| c | 2 | Bolt, machine, 5/8" x req'd. length | | j | 2 | Screw, lag, 1/2" x 4", (AI-IA only) | |
| d | 1 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | | ec | 1 | Bracket, offset, neutral, (AI-IA only) | |
| ek | | Locknuts, as required | 12.5/7.2 kV PRIMARY, I-PHASE, DOUBLE PRIMARY SUPPORT | | | | |
| cm | 1 | Spool insulator | | | | | |
| DESIGN LIMITS | | | | | | | |
| Max. transverse load: 500 lbs. per conductor | | | | | | | |
| Max. line angle within load limits: 5° | | | | | | | |
| | | | Apr., 1983 | AI-I, AI-IA | | | |



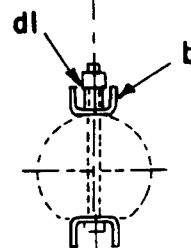
POLE TOP PIN ASSEMBLY



| ITEM | NO. | MATERIAL | | ITEM | NO. | MATERIAL | |
|--|-----|-----------------------------------|---|------|-----|--------------------------------------|--|
| a | 1 | Insulator, pin type | | d | 3 | Washer, square, 2 1/4" | |
| b | 1 | Pin, pole top, 20" | | bs | 1 | Bolt, single upset, (AI only) | |
| c | 2 | Bolt, machine, 5/8"x req'd length | | ec | 1 | Bracket, offset, neutral, (AIA only) | |
| j | 2 | Screw, lag, 1/2"x 4" (AIA only) | <div>12.5/7.2 kV PRIMARY, I-PHASE, SINGLE PRIMARY SUPPORT</div> | | | | |
| ek | | Locknuts, as required | | | | | |
| cm | 1 | Spool insulator | | | | | |
| DESIGN LIMITS | | | | | | | |
| Max. transverse load: 500 lbs. per conductor | | | | | | | |
| Max. line angle within load limits: 5° | | | Apr., 1983 | | | AI, AIA | |



PLAN



POLE TOP PIN ASSEMBLY

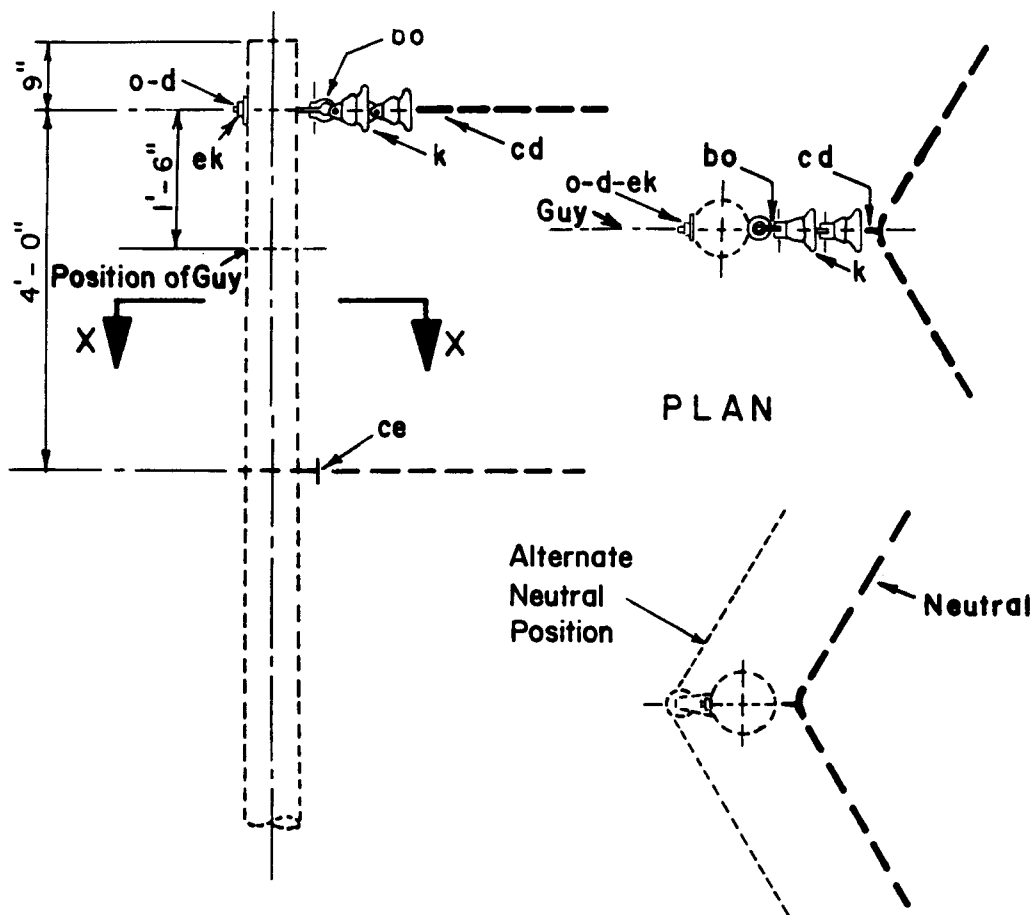
| ITEM | NO. REQD | MATERIAL | ITEM | NO. REQD | MATERIAL |
|------|----------|--|------|----------|---------------------------------|
| a | 2 | Insulator, pin type | da | 1 | Bracket, insulated |
| b | 2 | Pin, pole top, 20" | dl | 2 | Pipe spacer, 3/4" dia. x 1 1/2" |
| c | 4 | Bolt, machine, 5/8" x req'd length | ek | | Locknuts, as required |
| d | 3 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | | | |

DESIGN LIMITS
Max. transverse load: 1000 lbs. per conductor
Max. line angle within load limits: 20°

12.5 / 7.2 kV 1-PHASE
DOUBLE PRIMARY SUPPORTS

Apr., 1983

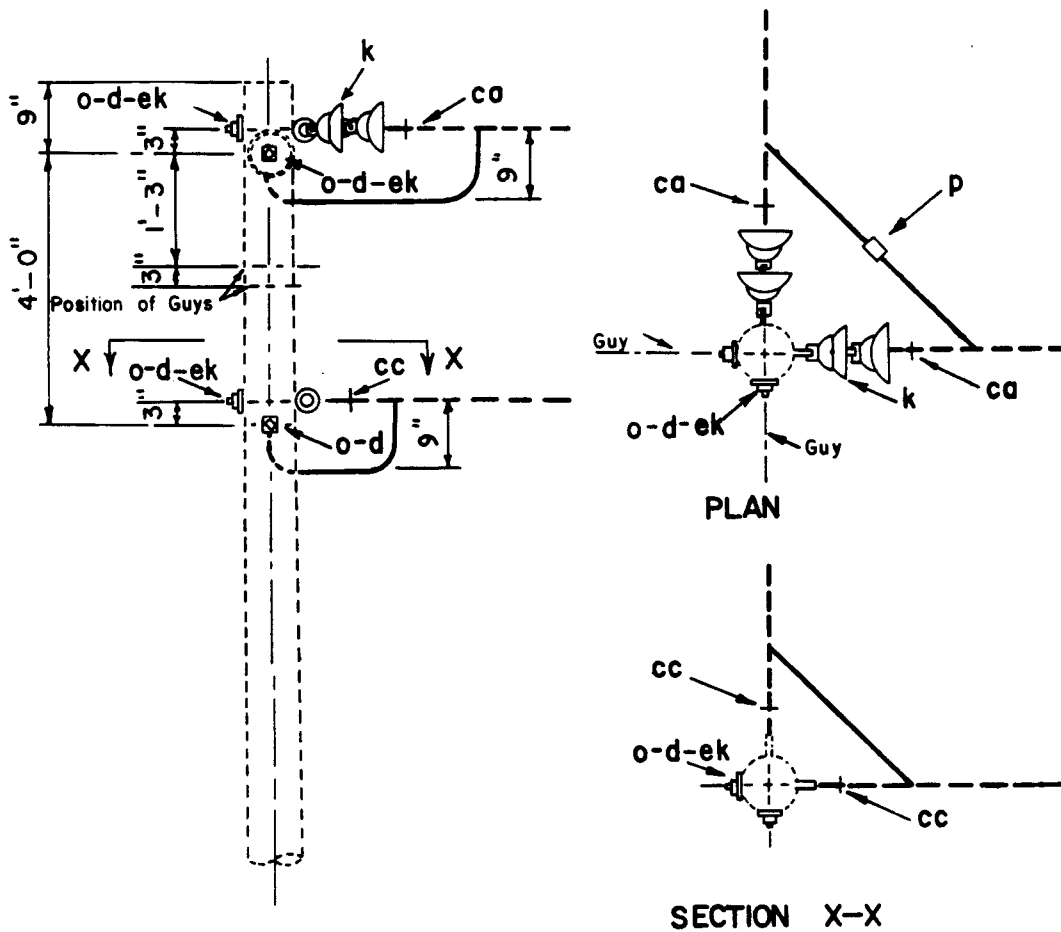
A2



SECTION X-X

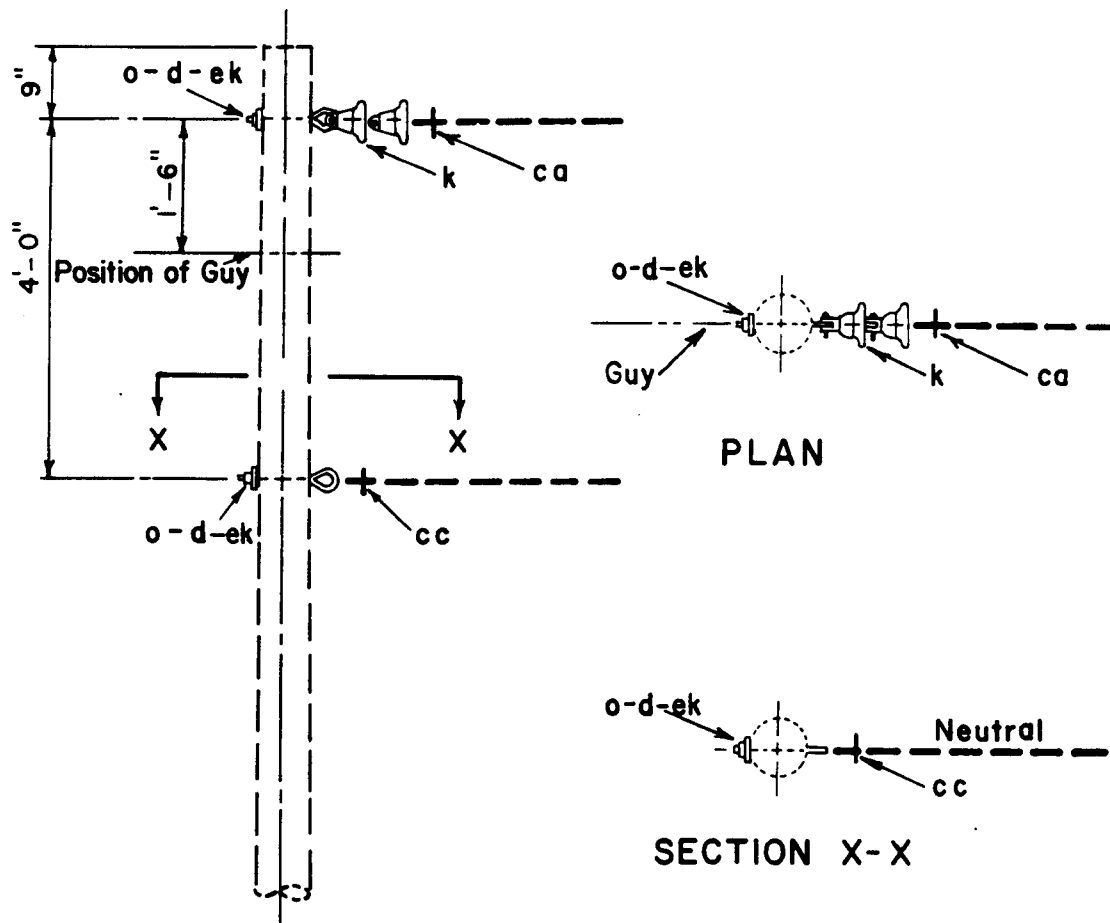
Note: Items cd and ce are shown on assembly drawings M41-1 and M41-10

| ITEM | NO. REQ'D | MATERIAL | ITEM | NO. REQ'D | MATERIAL |
|--|--------------|--|-----------------------------|--------------|-------------------------|
| | | | bo | 1 | Shackle, anchor |
| d | 1 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | cd | 1 | Angle assembly, primary |
| k | 2 | Insulator, suspension | ce | 1 | Angle assembly, neutral |
| o | 1 | Bolt, eye, 5/8" x req'd length | ek | | Locknut, as required |
| DESIGN LIMITS Max. transverse load: 4000 lbs. per conductor Angle: 20° - 60° | | | 12.5/7.2 kV PRIMARY I-PHASE | | |
| | | | | | |
| | | | | | |
| Apr., 1983 | | | A3 | | |



NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

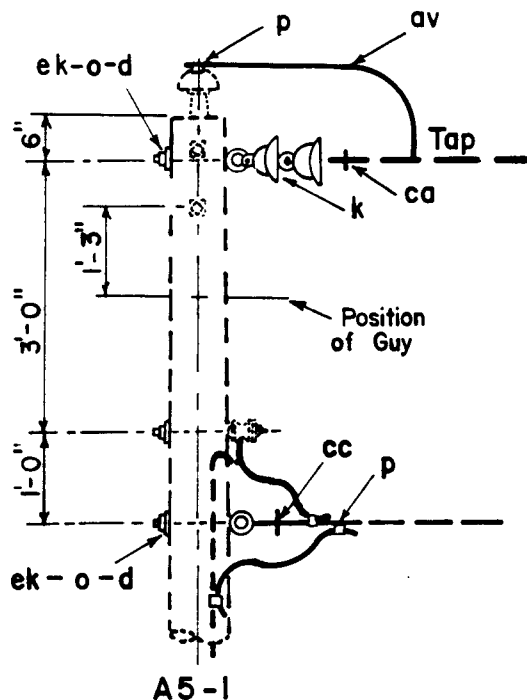
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|---|--|-----|---------------------------|
| d | 4 | Washer, 2 1/4"x2 1/4"x 3/16," 13/16" hole | ca | 2 | Deadend assembly, primary |
| k | 4 | Insulator, suspension | cc | 2 | Deadend assembly, neutral |
| o | 4 | Bolt, eye, 5/8"x req'd. length | ek | | Locknuts, as required |
| p | | Connectors, as required | 12.5/7.2 kV PRIMARY, 1-PHASE 60° TO 90° ANGLE | | |
| | | | | | |
| | | Apr., 1983 | | A 4 | |



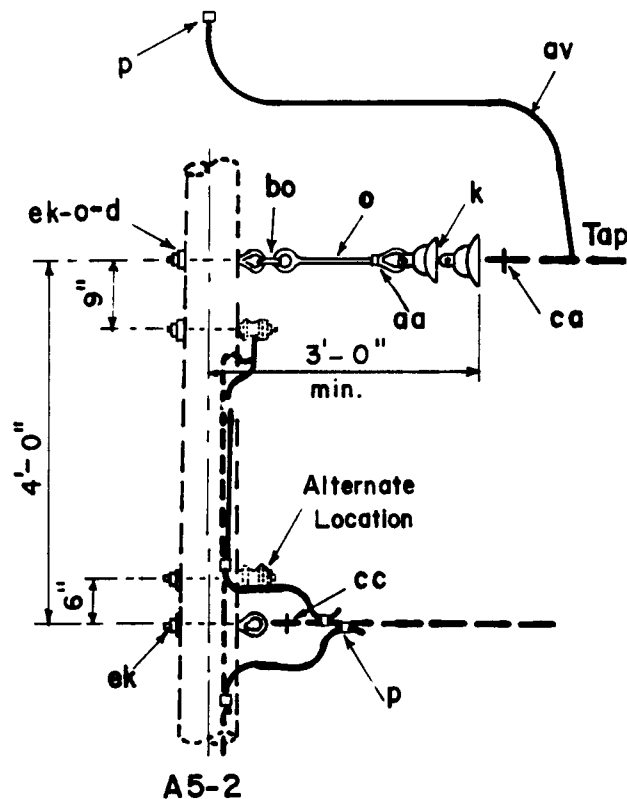
Note: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------------|-----|---------------------------------|---|-----|---------------------------|
| d | 2 | Washer, square, 2 1/4" | cc | 1 | Deadend assembly, neutral |
| k | 2 | Insulator, suspension | ek | | Locknuts, as required |
| o | 2 | Bolt, eye, 5/8" x req'd. length | | | |
| ca | 1 | Deadend assembly, primary | | | |
| | | | 12.5/7.2 kV PRIMARY, 1- PHASE DEADEND (SINGLE) | | |
| | | | | | |
| | | | | | |
| Apr., 1983 | | | A5 | | |

Note: See guide drawings M29-1 and M29-2.



Notes: A5-1 assembly may be used with drawings such as: A1, A1-1, A2. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.



Notes: A5-2 assembly may be used with drawings such as: B1, B1-1, B2, B7, C1, C1-2, C1-3, C1-4, C2-1, C2-2. (See tap assembly Guide M29-1 and M29-2)

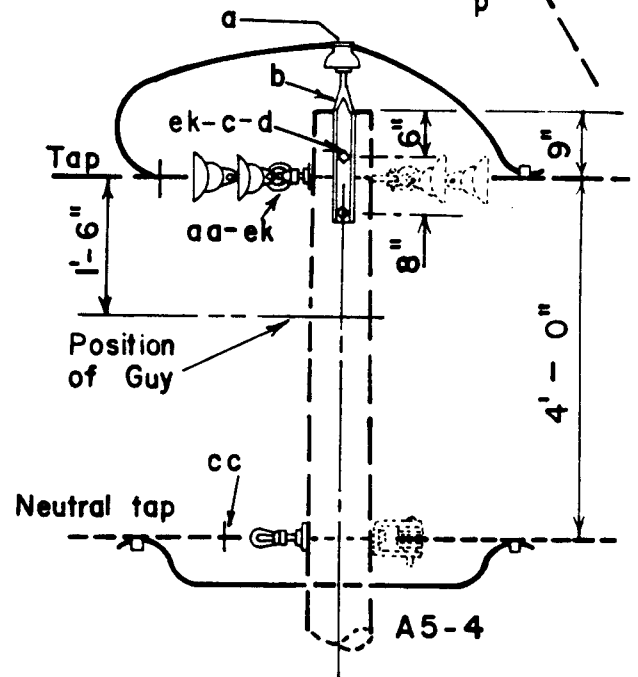
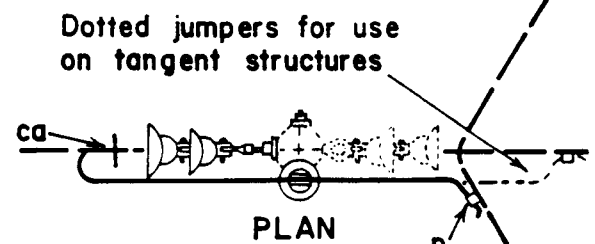
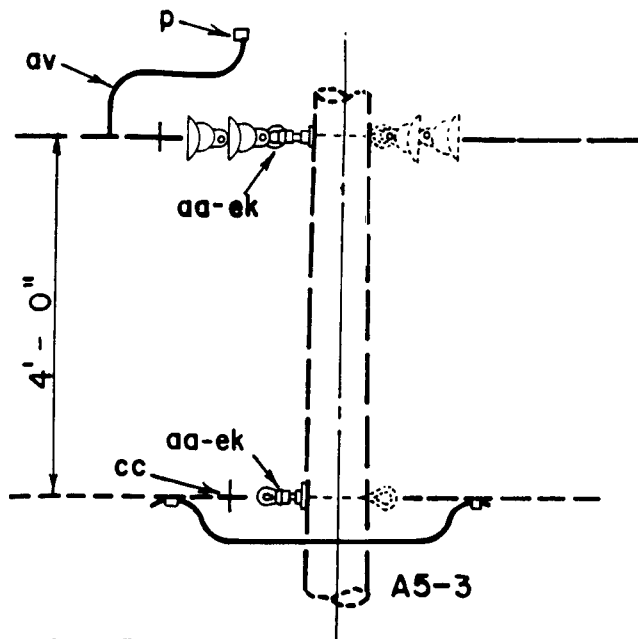
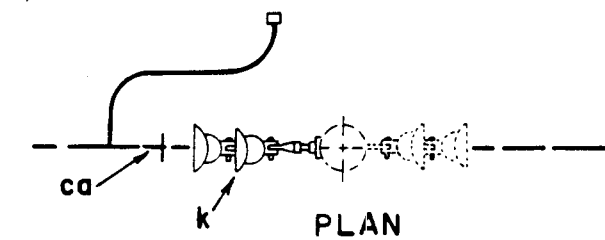
Specify A5-2A for tap to existing eyebolt.

| | | ASSEMBLY UNIT | | |
|------|--|---------------|------------|------------|
| | | A5-1 | A5-2 | A5-2A |
| ITEM | MATERIAL | NO. REQ'D. | NO. REQ'D. | NO. REQ'D. |
| d | Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole | 2 | 2 | |
| k | Insulator, suspension | 2 | 2 | 2 |
| o | Bolt, eye, 5/8"x req'd length | 2 | 3 | 1 |
| p | Connectors, as required | | | |
| aa | Nut, eye, 5/8" | | 1 | 3 |
| av | Jumpers and leads, as required | | | |
| ca | Deadend assembly, primary | 1 | 1 | 1 |
| cc | Deadend assembly, neutral | 1 | 1 | 1 |
| bo | Shackle, anchor | | 1 | 1 |
| ek | Locknuts, as required | | | |

12.5/7.2 kV PRIMARY, SINGLE PHASE TAP

Apr., 1983

A5-1, A5-2, A5-2A



NOTES:

1. A5-3 assembly may be used with drawings such as: A4, B4-1 and C4-1.
2. A5-4 assembly may be used with A3, A5, B3, B5-1, C3, and C5-1 structures.

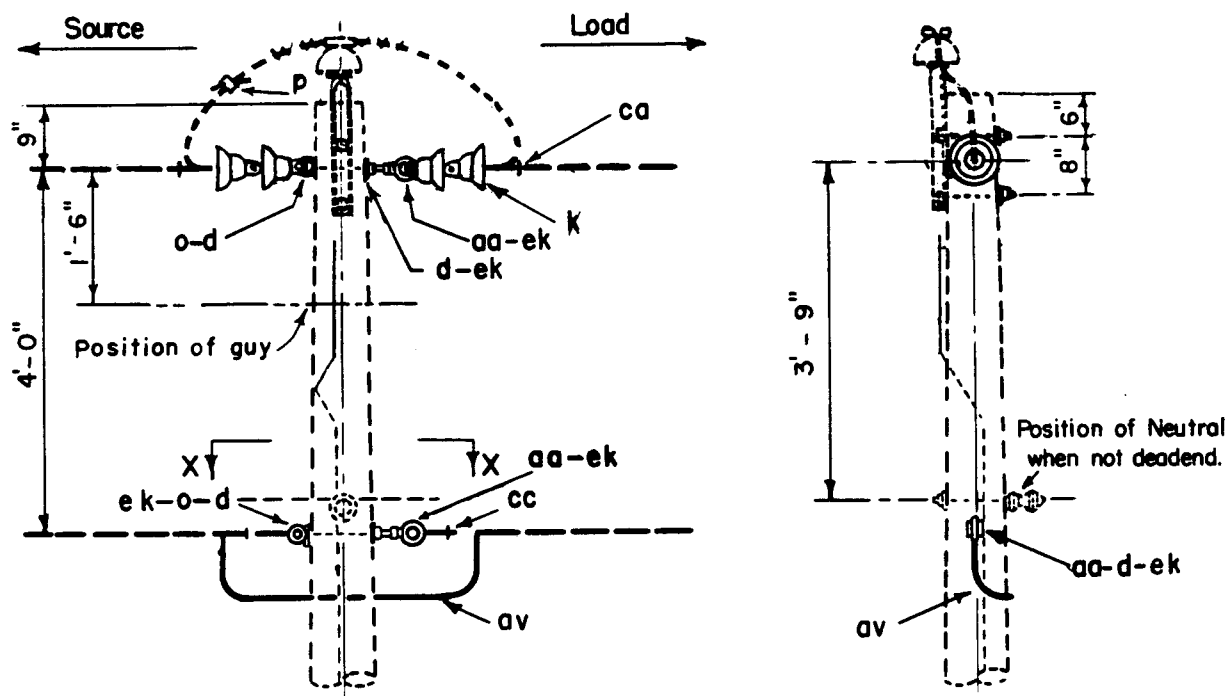
3. See guide drawings M29-1 and M29-2.
4. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

| | | ASSEMBLY UNIT | | |
|----|---------------------------------------|---------------|-------------|--|
| | | A5-3 | A5-4 | |
| | | NO | NO | |
| a | Insulator, pin type | | 1 | |
| b | Pin, pole top, 20" | | 1 | |
| c | Bolt, machine, 5/8" x required length | | 2 | |
| d | Washer, square, 2 1/4" | | 2 | |
| k | Insulator, suspension | 2 | 2 | |
| p | Connectors | as req'd. | as req'd. | |
| aa | Nut, eye, 5/8" | 2 | 2 | |
| av | Jumpers | as req'd. | as req'd. | |
| ca | Deadend assembly, primary | 1 | 1 | |
| cc | Deadend assembly, neutral | 1 | 1 | |
| ek | Locknuts | as required | as required | |

12.5/7.2 kV PRIMARY, SINGLE PHASE TAP

Apr., 1983

A5-3, A5-4

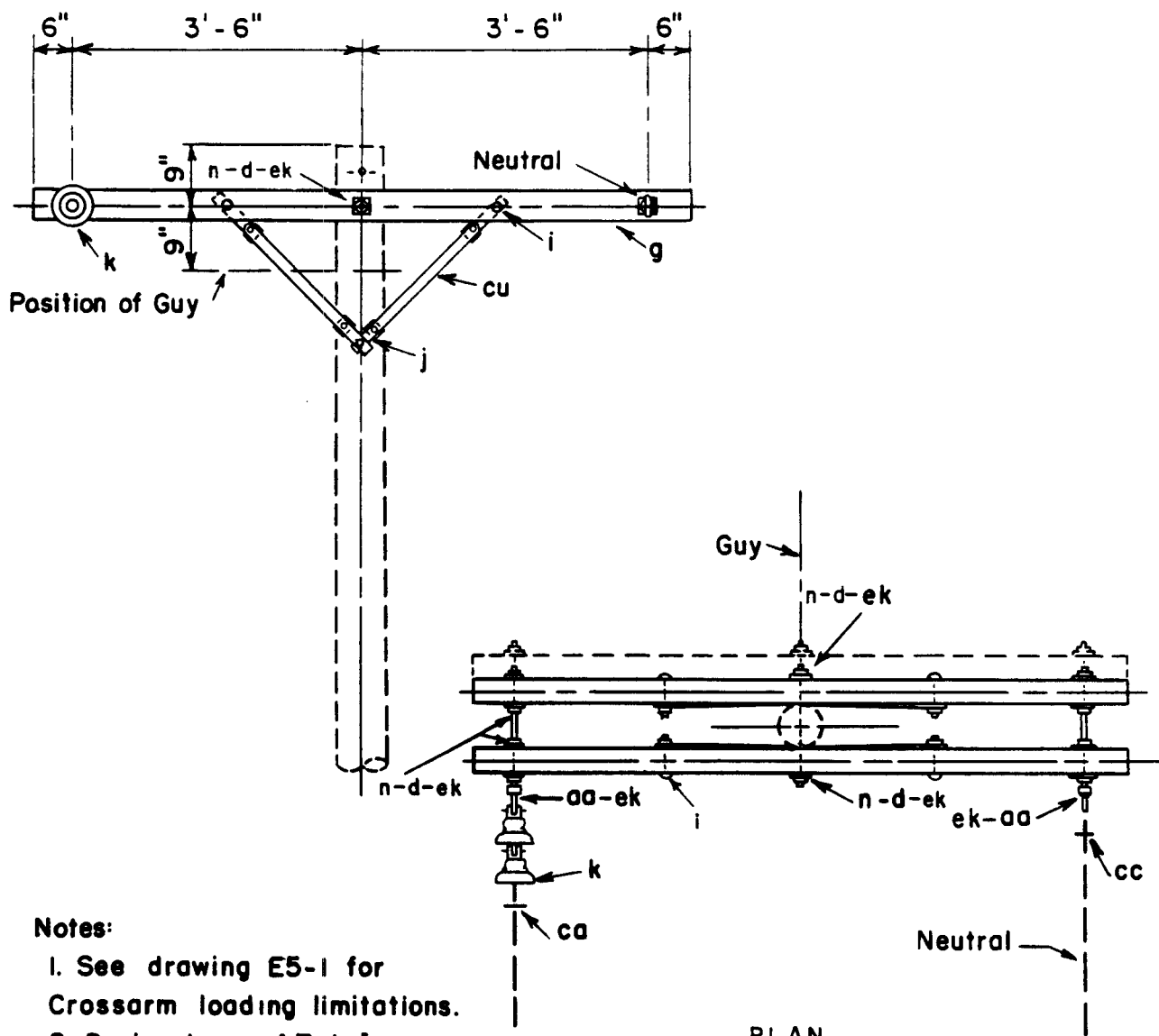


NOTE:

A6 may be used with drawings such as M3-1A, M3-10, M3-41, M3-23, M5-1, M5-4, M5-2 (as shown).

Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------------|-----|--|--|-----|---------------------------|
| | | | aa | 2 | Nut, eye, 5/8" |
| d | 4 | Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole | av | | Jumpers, as required |
| k | 4 | Insulator, suspension | ca | 2 | Deadend assembly, primary |
| | | | cc | 2 | Deadend assembly, neutral |
| o | 2 | Bolt, eye, 5/8"x req'd. length | | | |
| p | | Connectors, as req'd. | ek | | Locknuts, as required |
| | | | 12.5/7.2 kV PRIMARY, 1-PHASE, VERTICAL DEADEND (DOUBLE) | | |
| | | | | | |
| | | | | | |
| Apr., 1983 | | | A6 | | |



Notes:

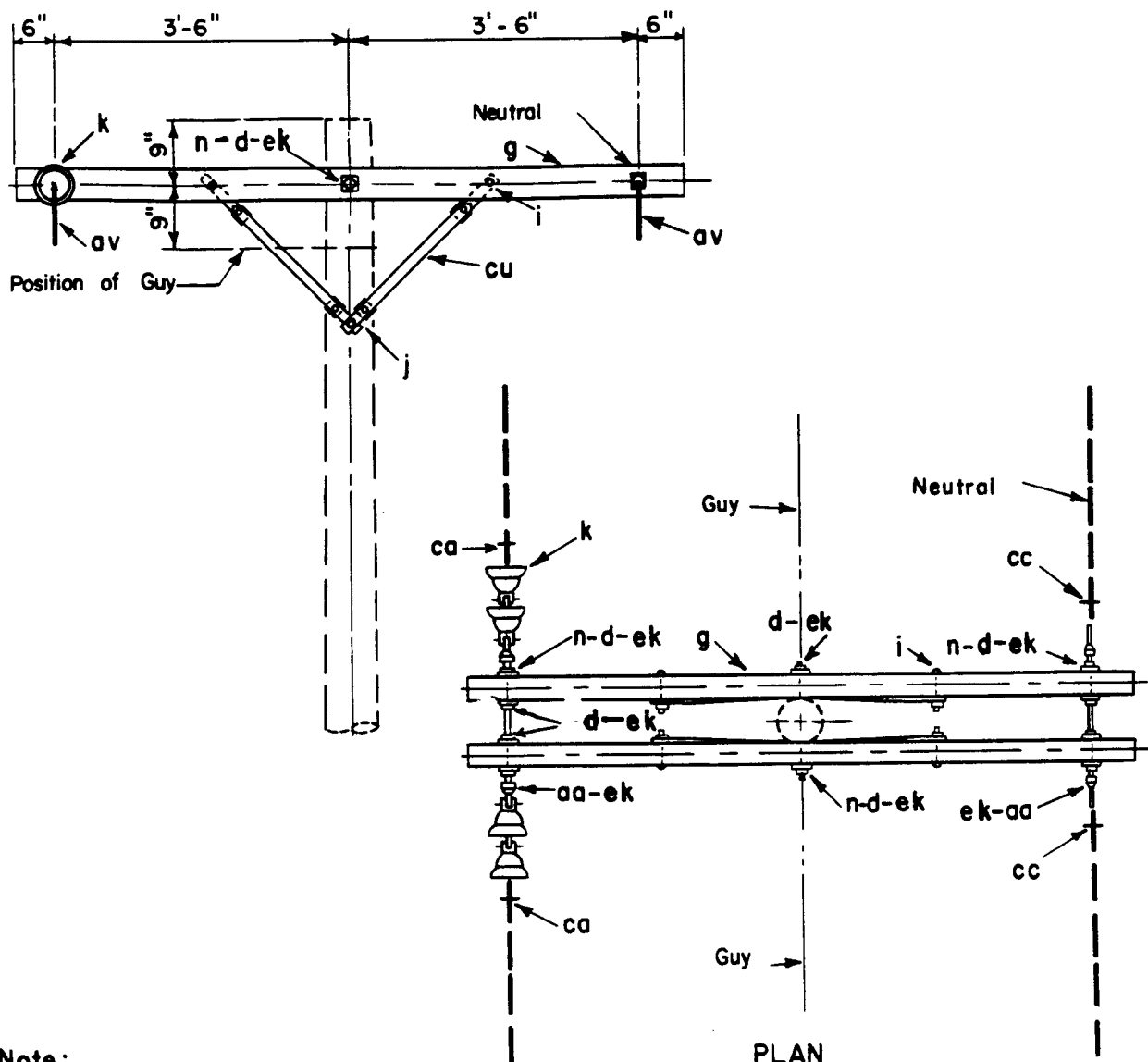
1. See drawing E5-1 for Crossarm loading limitations.
2. Designate as A7-1 for assembly with three crossarms.
3. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|---|
| d 10 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | n 3 | Bolt, double arming, 5/8" x req'd l'gth |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 8' - 0" | aa 2 | Nut, eye, 5/8" |
| cu 4 | Brace, wood, 28" | ca 1 | Deadend assembly, primary |
| i 4 | Bolt, carriage, 3/8" x 4 1/2" | cc 1 | Deadend assembly, neutral |
| j 2 | Screw, lag, 1/2" x 4" | ek | Locknuts, as required |
| k 2 | Insulator, suspension | | |

12.5/7.2 kV, 1-PHASE, CROSSARM CONSTRUCTION
DEADEND (SINGLE)

Apr., 1983

A7, A7-1



Note:

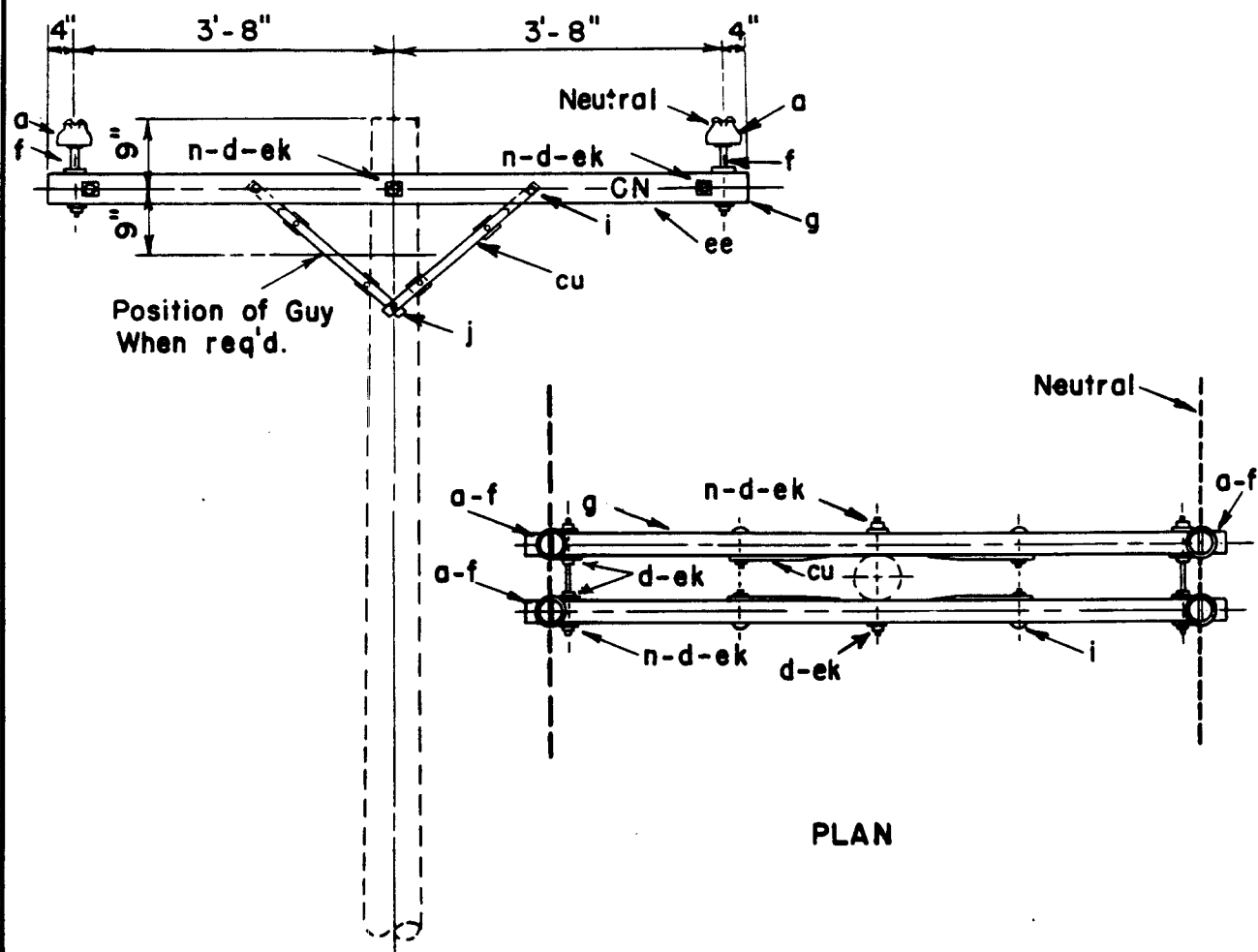
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|---------------------------|
| d 10 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | p | Connectors, as req'd. |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | aa 4 | Nut, eye, 5/8" |
| cu 4 | Brace, wood, 28" | av | Jumpers |
| i 4 | Bolt, carriage, 3/8" x 4 1/2" | ca 2 | Deadend assembly, primary |
| j 2 | Screw, lag, 1/2" x 4" | cc 2 | Deadend assembly, neutral |
| k 4 | Insulator, suspension | ek | Locknuts, as required |
| n 3 | Bolt, double arming, 5/8" x req'd. length | | |

12.5/7.2 kV, 1-PHASE
CROSSARM CONSTRUCTION - DEADEND (DOUBLE)

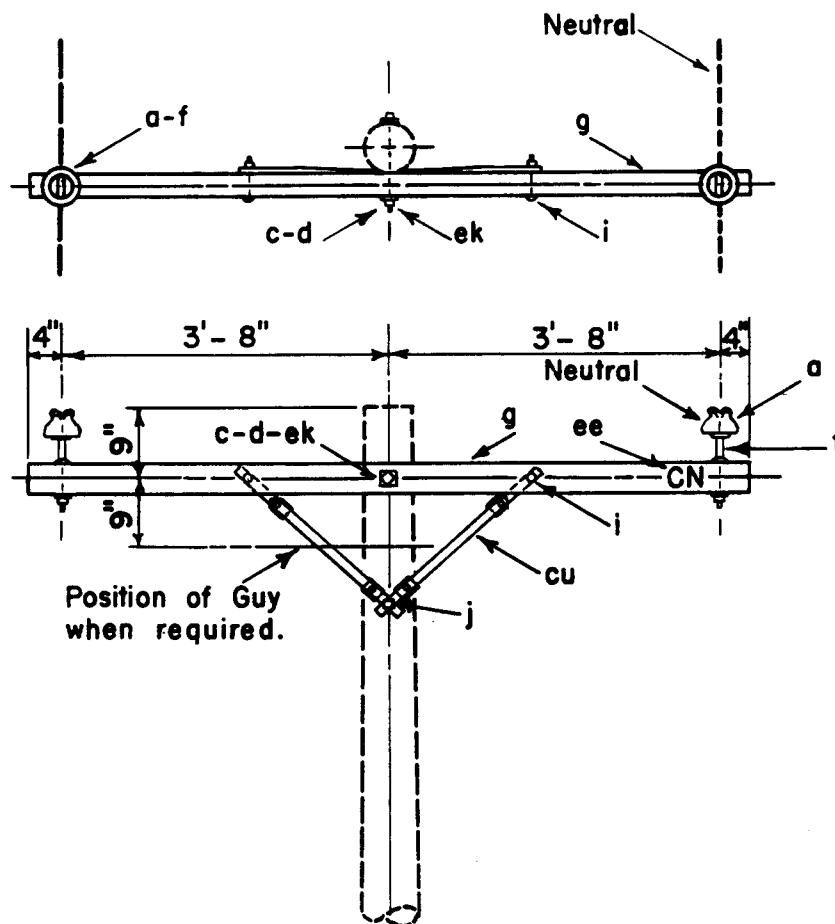
Apr., 1983

A8



PLAN

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|--|-----|--|--|-----|--|
| | | | i | 4 | Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " |
| a | 4 | Insulator, pin type | j | 2 | Screw, lag, $\frac{1}{2}$ " x 4" |
| d | 10 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | n | 3 | Bolt, double arming, $\frac{5}{8}$ " x req'd l'gth |
| f | 4 | Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ " | ek | | Locknuts, as required |
| g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x 8'-0" | ee | 4 | Letters 2 "C", 2 "N", with 1" nails |
| cu | 4 | Brace, wood, 28" | | | |
| DESIGN LIMITS Max. transverse load: 1000 lbs. per conductor Max. line angle within load limits: 20° | | | 12.5/7.2 kV I-PHASE CROSSARM CONST. - DOUBLE LINE ARM | | |
| | | | Apr., 1983 | | |
| | | | A9 | | |



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|---------------------------------------|----------|--------------------------------------|
| a | 2 Insulator, pin type | cu | 2 Brace, wood, 28" |
| c | 1 Bolt, machine, 5/8"x req'd. length | i | 2 Bolt, carriage, 3/8"x 4 1/2" |
| d | 2 Washer, square, 2 1/4" | j | 1 Screw, lag, 1/2"x 4" |
| f | 2 Pin, crossarm, steel, 5/8"x 10 3/4" | ee | 4 Letters, 2 "C", "N", with 1" nails |
| g | 1 Crossarm, 3 5/8"x 4 5/8"x 8'-0" | ek | Locknuts, as required |

DESIGN LIMITS

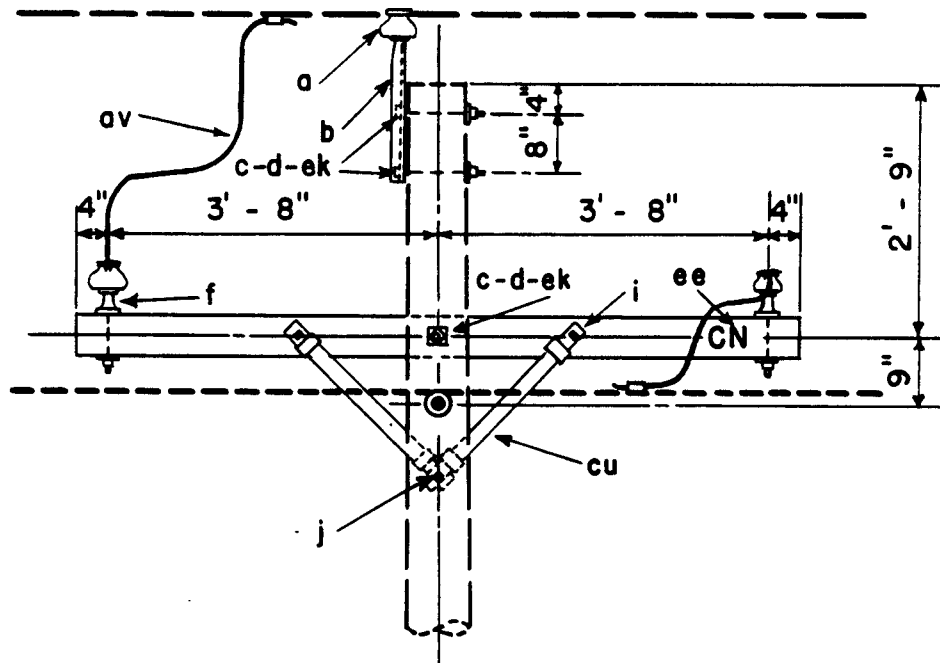
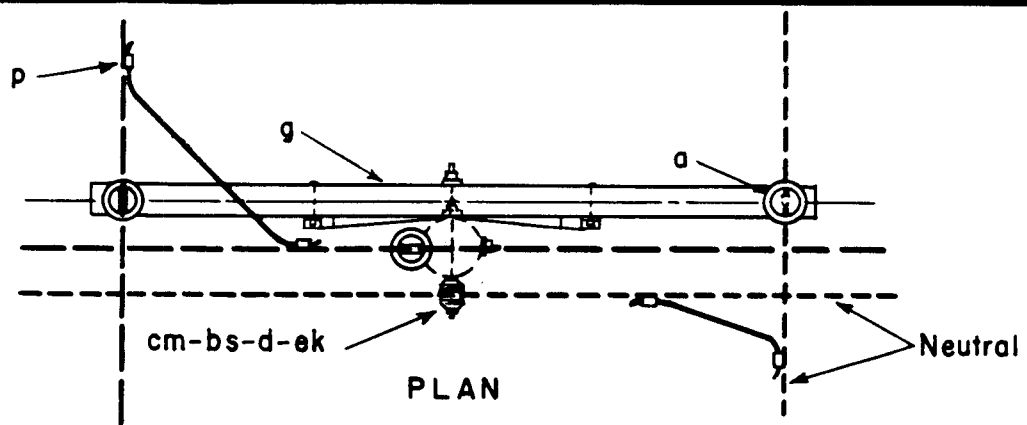
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

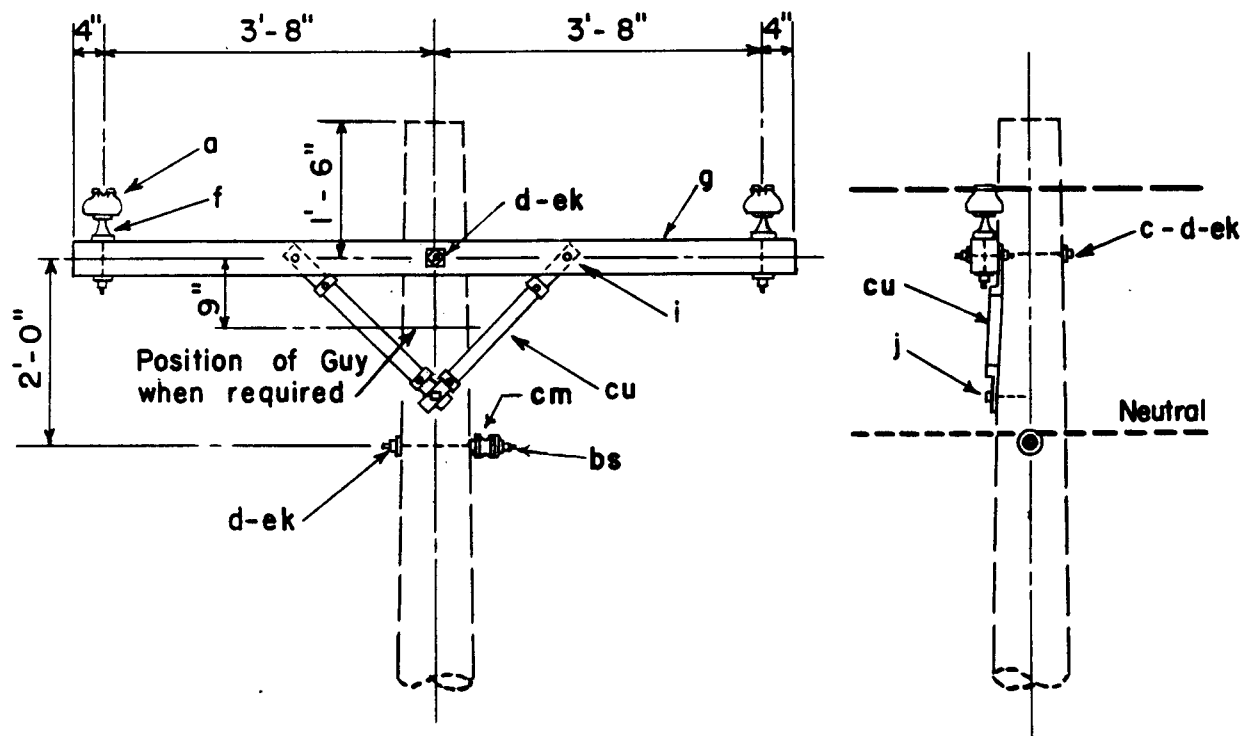
12.5/7.2 kV - 1 PHASE
CROSSARM CONSTRUCTION - SINGLE LINE ARM

Apr., 1983

A9-!



| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|--|-----|--------------------------------------|---|-----|--------------------------------------|
| a | 3 | Insulator, pin type | av | | Jumpers, as required |
| b | 1 | Pin, pole top, 20" | bs | 1 | Bolt, single upset, |
| c | 3 | Bolt, machine, 5/8" x req'd. length | ee | 4 | Letters, 2 "C", 2 "N", with 1" nails |
| d | 5 | Washer, square, 2 1/4" | ek | | Locknuts, as required |
| f | 2 | Pin, crossarm, steel, 5/8" x 10 3/4" | cu | 2 | Brace, wood, 28" |
| g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | cm | 1 | Spool insulator |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" | p | | Connectors, as required |
| j | 1 | Screw, lag, 1/2" x 4" | | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | | 12.5/7.2 kV I-PHASE CROSSARM CONSTRUCTION SINGLE PHASE JUNCTION | | |
| | | | Apr., 1983 <div style="float: right; font-size: 2em; font-weight: bold;">A22</div> | | |



Specify BIA for
offset neutral assembly

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|---|----------|--------------------------------------|
| a | 2 Insulator, pin type | bs | 1 Bolt, single upset, (BI only) |
| c | 1 Bolt, machine, 5/8" x required length | cu | 2 Brace, wood, 28" |
| d | 3 Washer, square, 2 1/4" | ec | 1 Bracket, offset neutral (BIA only) |
| f | 2 Pin, crossarm, steel, 5/8" x 10 3/4" | ek | Locknuts, as required |
| g | 1 Crossarm, 3 5/8" x 4 5/8" x 8'-0" | cm | 1 Spool insulator |
| i | 2 Bolt, carriage, 3/8" x 4 1/2" | | |
| j | 1 Screw, lag, 1/2" x 4" (BI only) | | |
| j | 3 Screw, lag, 1/2" x 4" (BIA only) | | |

DESIGN LIMITS

Max. transverse load: 500 lbs. per
conductor

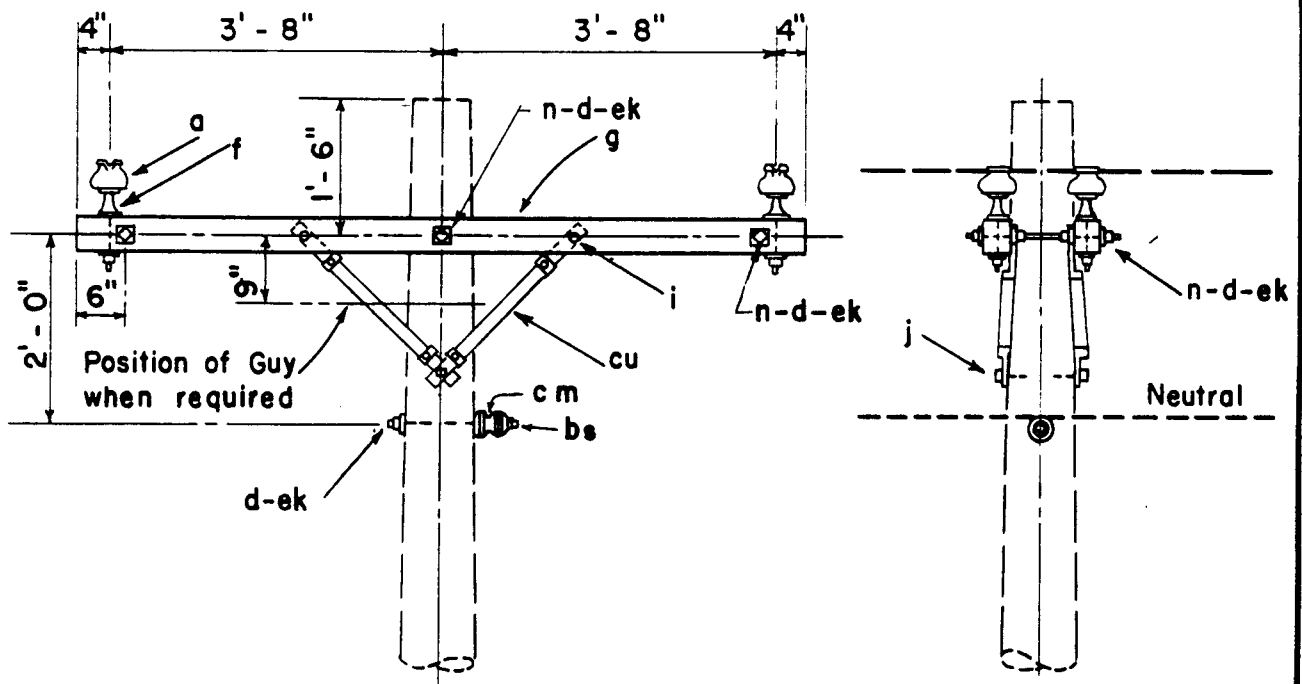
Max. line angle within load limits: 5°

12.5/ 7.2 kV

TWO PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT

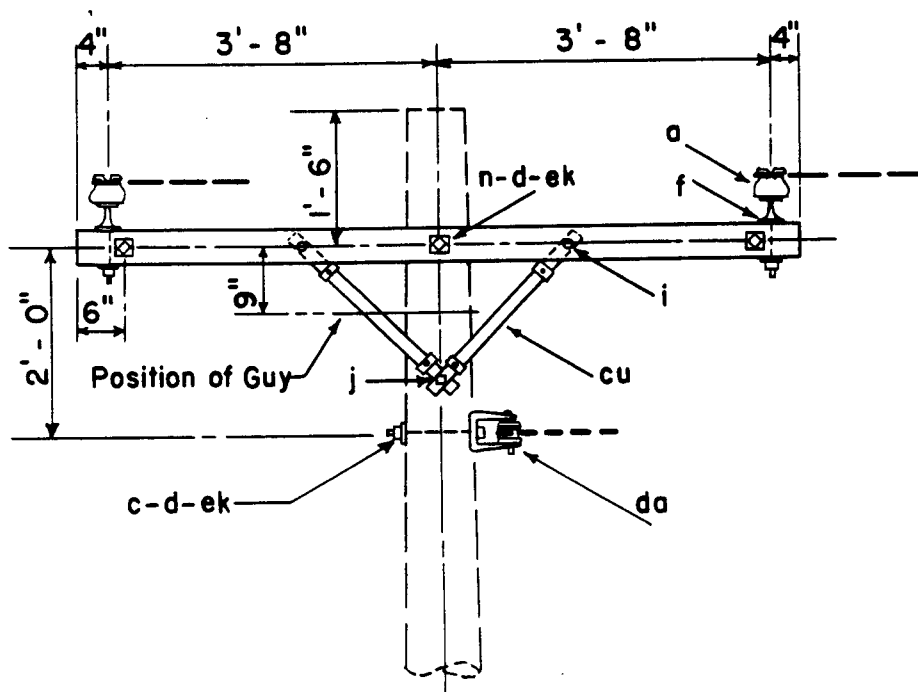
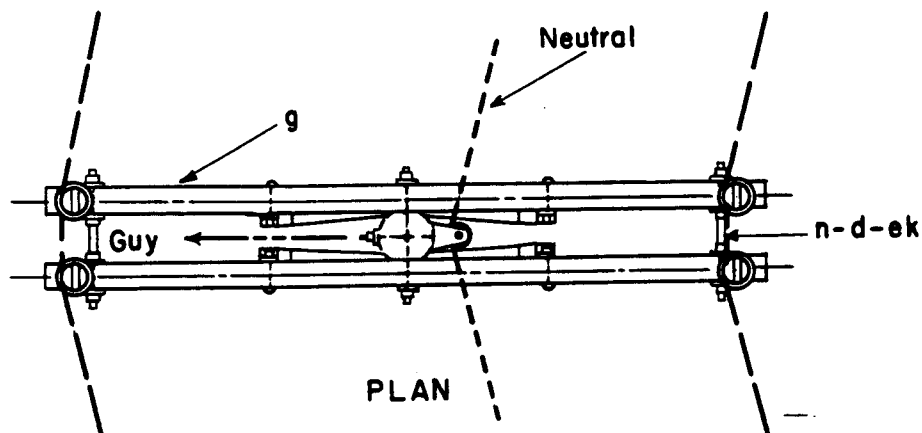
Apr., 1983

BI, BIA



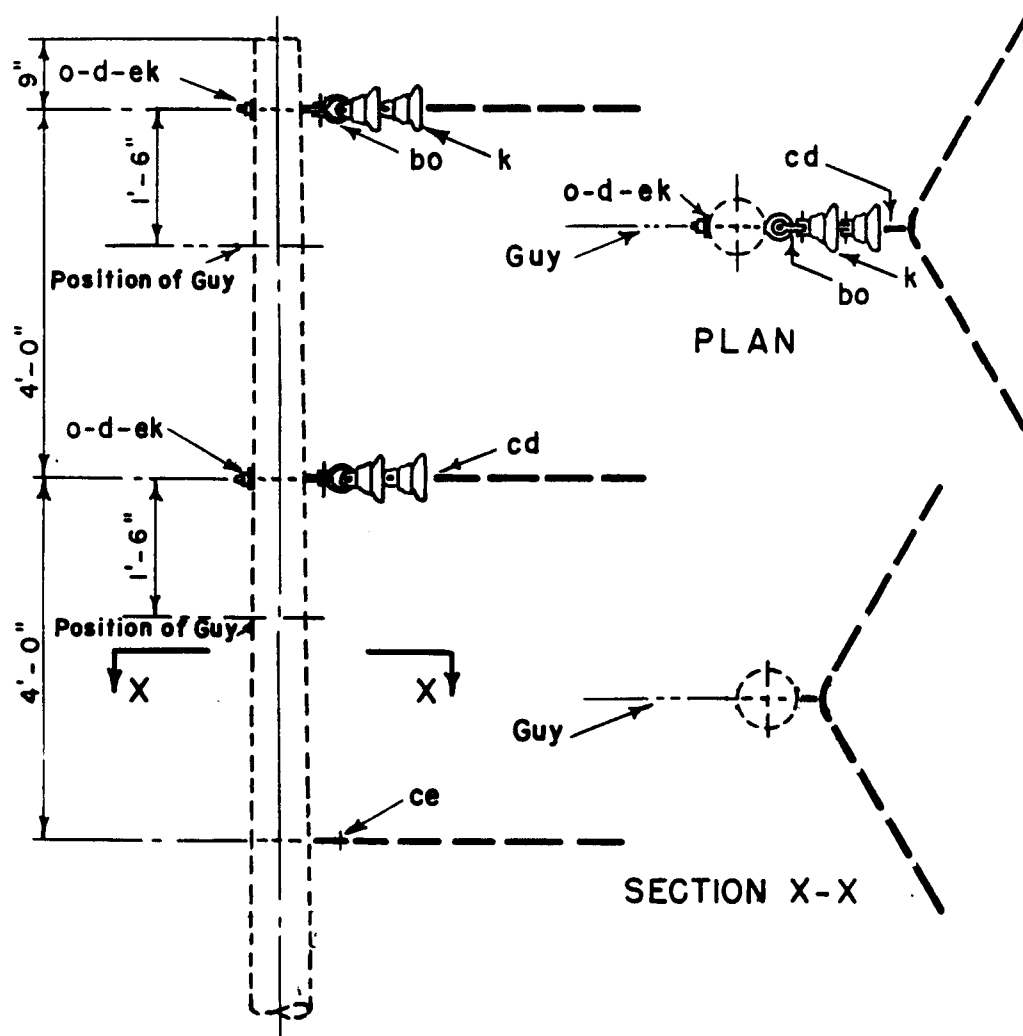
Specify BI-1A for
offset neutral assembly

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---|---|--|
| a | 4 Insulator, pin type | bs | 1 Bolt, single upset (BI-1 only) |
| d | 11 Washer, square, 2 1/4" | cu | 4 Brace, wood, 28" |
| f | 4 Pin, crossarm, steel, 5/8" x 10 3/4" | ec | 1 Bracket, offset neutral (BI-1A only) |
| g | 2 Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ek | Locknuts, as required |
| i | 4 Bolt, carriage, 3/8" x 4 1/2" | cm | 1 Spool insulator |
| j | 2 Screw, lag, 1/2" x 4" (BI-1 only) | | |
| j | 4 Screw, lag, 1/2" x 4" (BI-1A only) | | |
| n | 3 Bolt, double arming, 5/8" x req'd. length | | |
| DESIGN LIMITS Max. transverse load: 1000 lbs. per conductor Max line angle within load limits: 5° | | 12.5/7.2 kv TWO PHASE, CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT | |
| | | Apr., 1983 | BI-1, BI-1A |
| | | | |



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|---------------------------------------|----------|--|
| a 4 | Insulator, pin type | j 2 | Screw, lag, 1/2" x 4" |
| c 1 | Bolt, machine, 5/8" x required length | n 3 | Bolt, double arming, 5/8" x req'd length |
| d 11 | Washer, square, 2 1/4" | cu 4 | Brace, wood, 28" |
| f 4 | Pin, crossarm, steel, 5/8" x 10 3/4" | da 1 | Bracket, insulated |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ek | Locknuts, as required |
| i 4 | Bolt, carriage, 3/8" x 4 1/2" | | |

| | | | |
|--|--|--|--|
| DESIGN LIMITS Max. transverse load: 1000 lbs. per conductor Max. line angle within load limits: 20° | | 12.5/7.2 kv, TWO PHASE CROSSARM CONSTRUCTION, DOUBLE PRIMARY SUPPORTS | |
| Apr., 1983 | | B2 | |

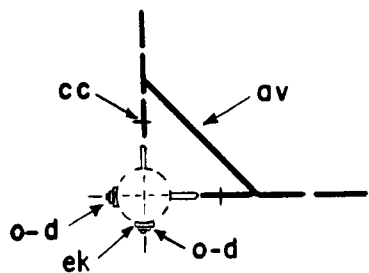
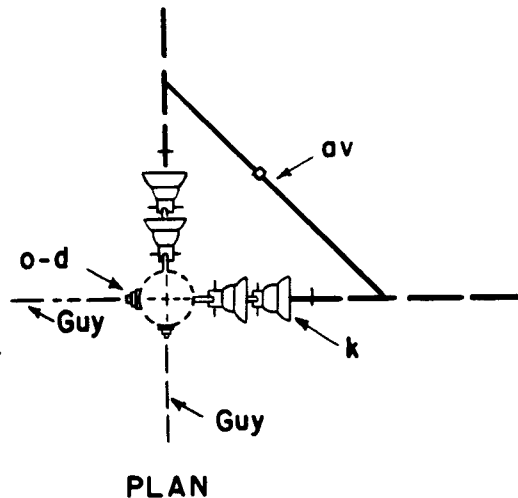
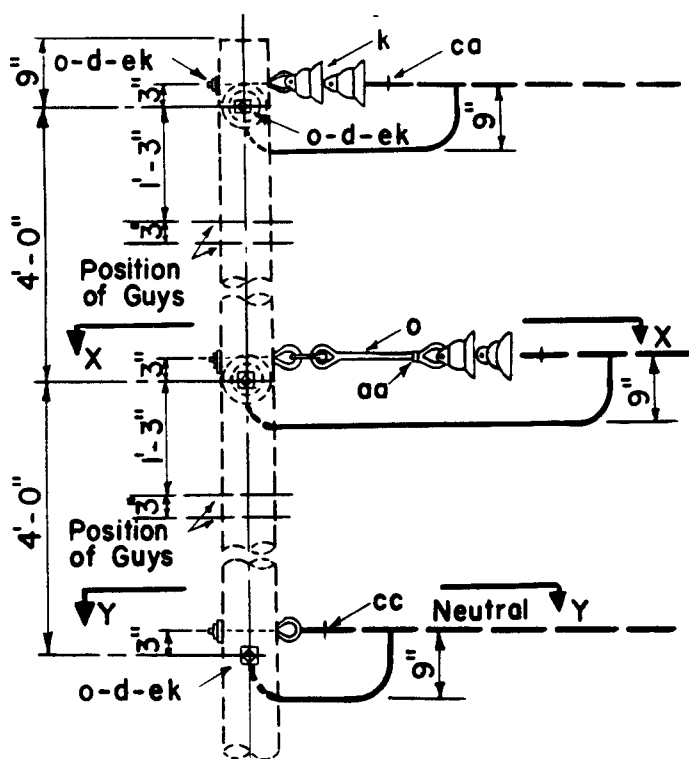


Note:

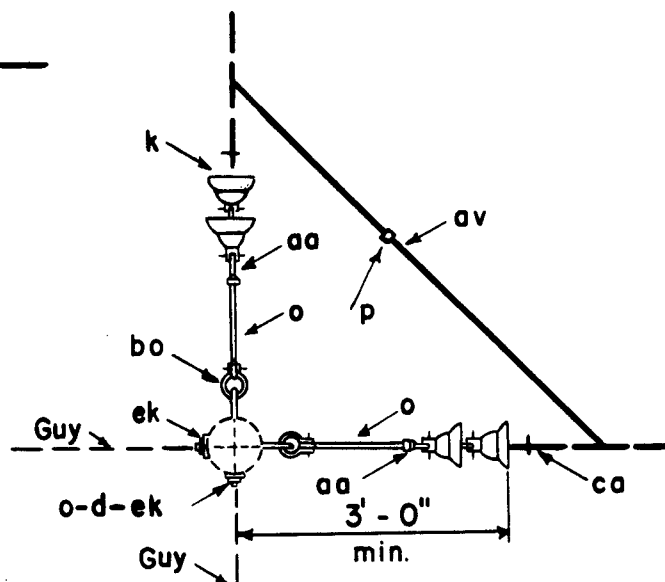
If future conversion is likely, allow space at top of pole for middle phase. Designate as B3A for this construction.

Items cd and ce are shown on assembly drawings M41-1 and M41-10.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---|--|---------------------------|
| | | bo | 2 Shackle, anchor |
| d | 2 Washer, 2 1/4" sq. x 3/16", 13/16" hole | cd | 2 Angle assembly, primary |
| k | 4 Insulator, suspension | ce | 1 Angle assembly, neutral |
| o | 2 Bolt, eye, 5/8" x req'd. length | ek | Locknuts, as required |
| DESIGN LIMITS Max. transverse load: 4000 lbs. per conductor Angle: 20° - 60° | | 12.5/7.2 kV - TWO PHASE VERTICAL CONSTRUCTION. | |
| Apr., 1983 | | B3, B3A | |



SECTION Y-Y



SECTION X-X

Note:

If future conversion is likely, allow space at top of pole for middle phase. Designate as B4-1A for this construction.

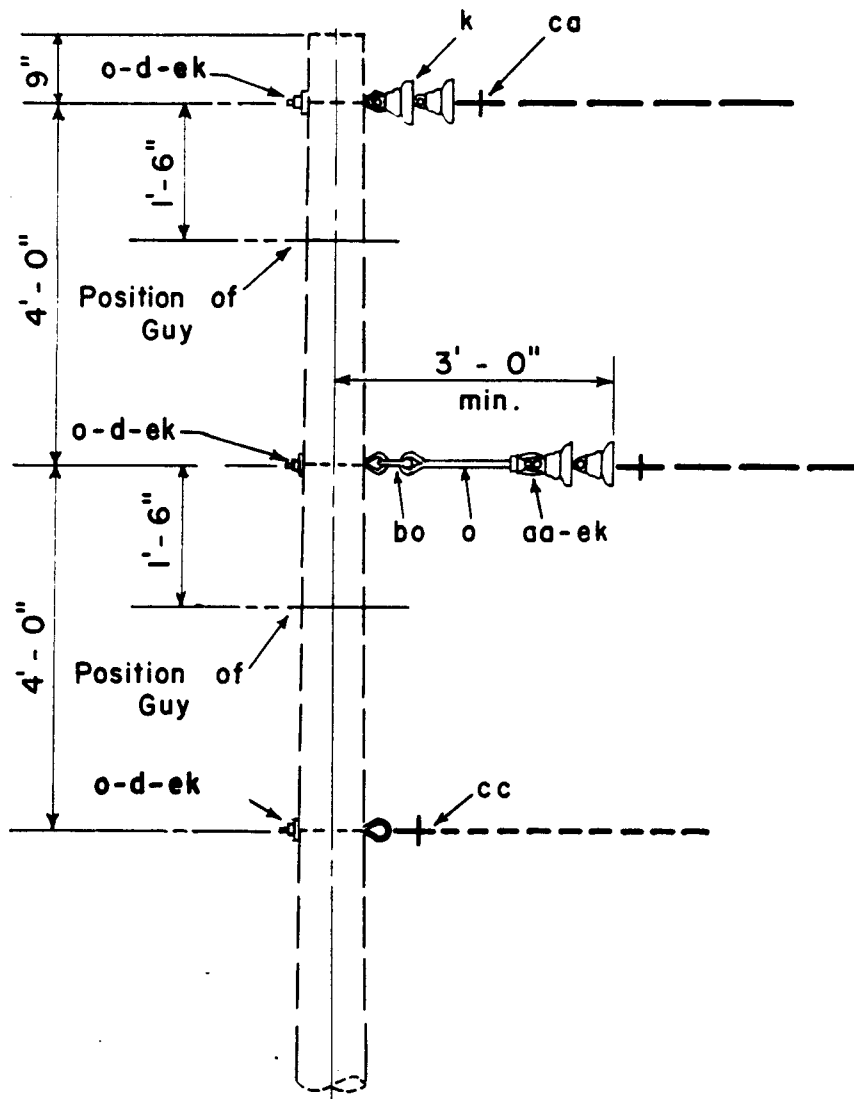
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, M42-21

| ITEM | NO. REQD | MATERIAL | ITEM | NO. REQD | MATERIAL |
|------|----------|--|------|----------|---------------------------|
| d | 6 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | bo | 2 | Shackle, anchor |
| k | 8 | Insulator, suspension | ca | 4 | Deadend assembly, primary |
| o | 8 | Bolt, eye, 5/8" x req'd length | cc | 2 | Deadend assembly, neutral |
| p | | Connectors, as required | ek | | Locknuts, as required |
| aa | 2 | Nut, eye, 5/8" | | | |
| av | | Jumpers | | | |

12.5/7.2 kV TWO PHASE, VERTICAL CONSTRUCTION

Apr., 1983

B4-1, B4-1A



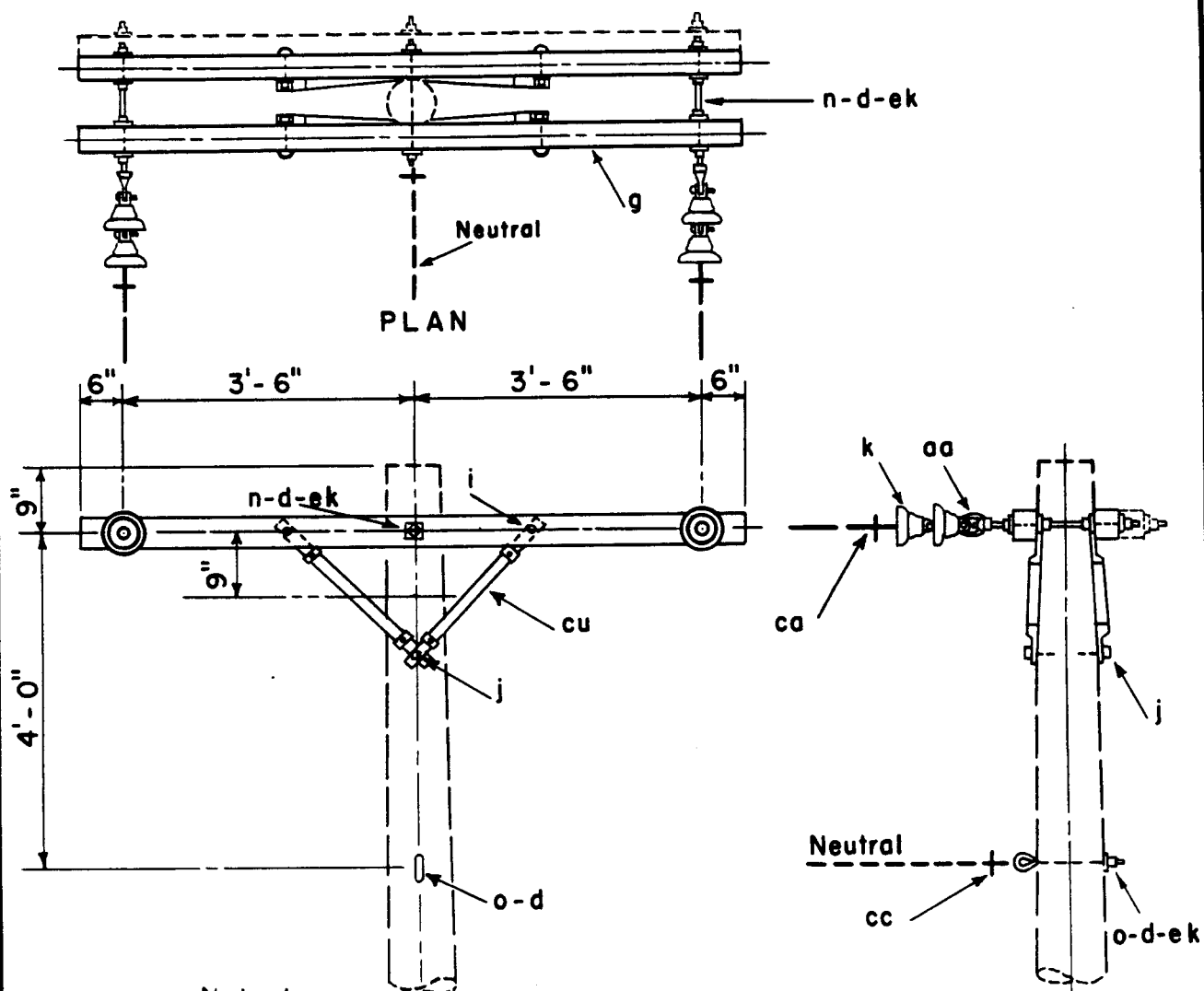
Note: B5 - 1
 Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.
 If future conversion is likely, allow space at top of pole for middle phase. Designate as B5-1A for this construction.

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|-----------------------------------|------|-----|---------------------------|
| d | 3 | Washer, square, 2 1/4" | bo | 1 | Shackle, anchor |
| k | 4 | Insulator, suspension | ca | 2 | Deadend assembly, primary |
| o | 4 | Bolt, eye, 5/8" x required length | cc | 1 | Deadend assembly, neutral |
| aa | 1 | Nut, eye, 5/8" | ek | | Locknuts, as required |

12.5/7.2 kV TWO PHASE
 VERTICAL CONSTRUCTION, DEADEND (SINGLE)

Apr, 1983

B5-1, B5-1A



Notes:

1. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-11.
2. Designate as B7-1 for assembly with three crossarms.
3. See drawing E5-1 for crossarm loading limitations.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|---|----------|-----------------------------------|
| d 11 | Washer, square, 2 1/4" | o 1 | Bolt, eye, 5/8" x required length |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | aa 2 | Nut, eye, 5/8" |
| i 4 | Bolt, carriage, 3/8" x 4 1/2" | ca 2 | Deadend assembly, primary |
| j 2 | Screw, lag, 1/2" x 4" | cc 1 | Deadend assembly, neutral |
| k 4 | Insulator, suspension | cu 4 | Brace, wood 28" |
| n 3 | Bolt, double arming, 5/8" x req'd. length | ek | Locknuts, as required |

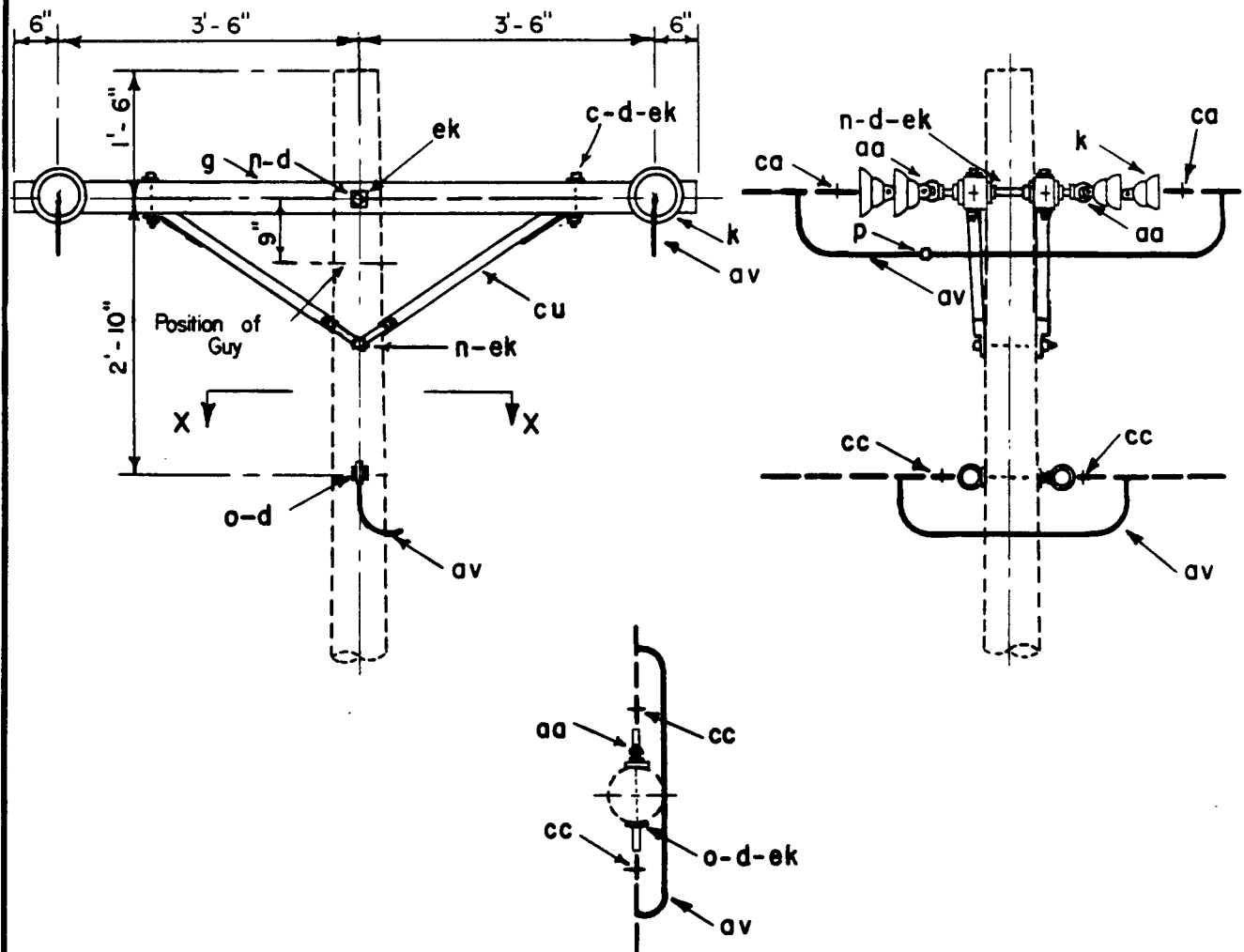
12.5/7.2 kv

TWO PHASE, CROSSARM CONSTRUCTION

DEADEND (SINGLE)

Apr., 1983

B7, B7-1



SECTION X-X

Note:

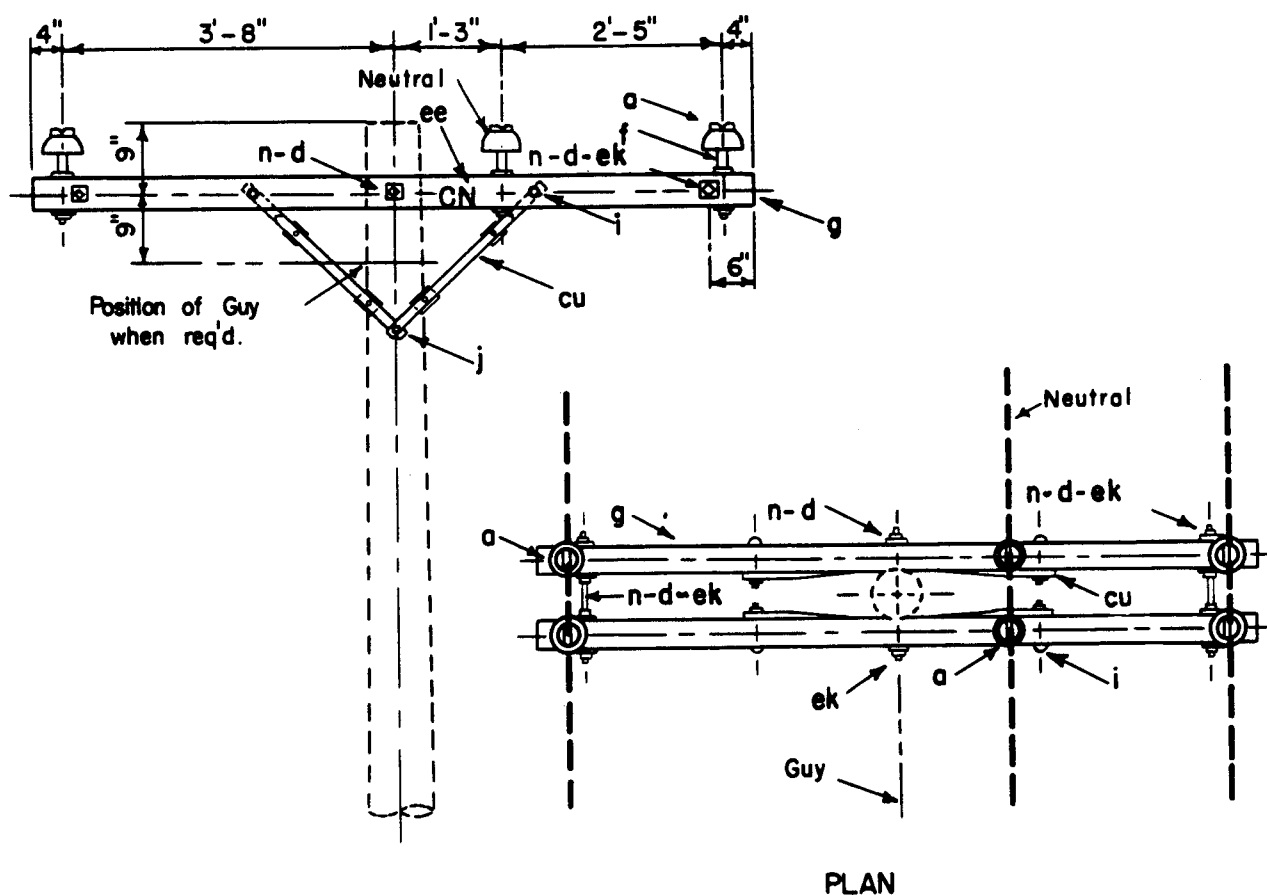
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|---------------------------------|
| d | 12 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | o | 1 | Bolt, eye, 5/8" x req'd. length |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | p | | Connectors, as required |
| c | 4 | Bolt, machine, 1/2" x req'd. length | aa | 5 | Nut, eye, 5/8" |
| | | | av | 3 | Jumpers, as required |
| cu | 2 | Brace, wood, 60" span | ca | 4 | Deadend assembly, primary |
| k | 8 | Insulator, suspension | cc | 2 | Deadend assembly, neutral |
| n | 4 | Bolt, double arming, 5/8" x req'd. length | ek | | Locknuts, as required |

12.5/7.2 kV TWO-PHASE
CROSSARM CONSTRUCTION - DEADEND (DOUBLE)

Apr., 1983

B8

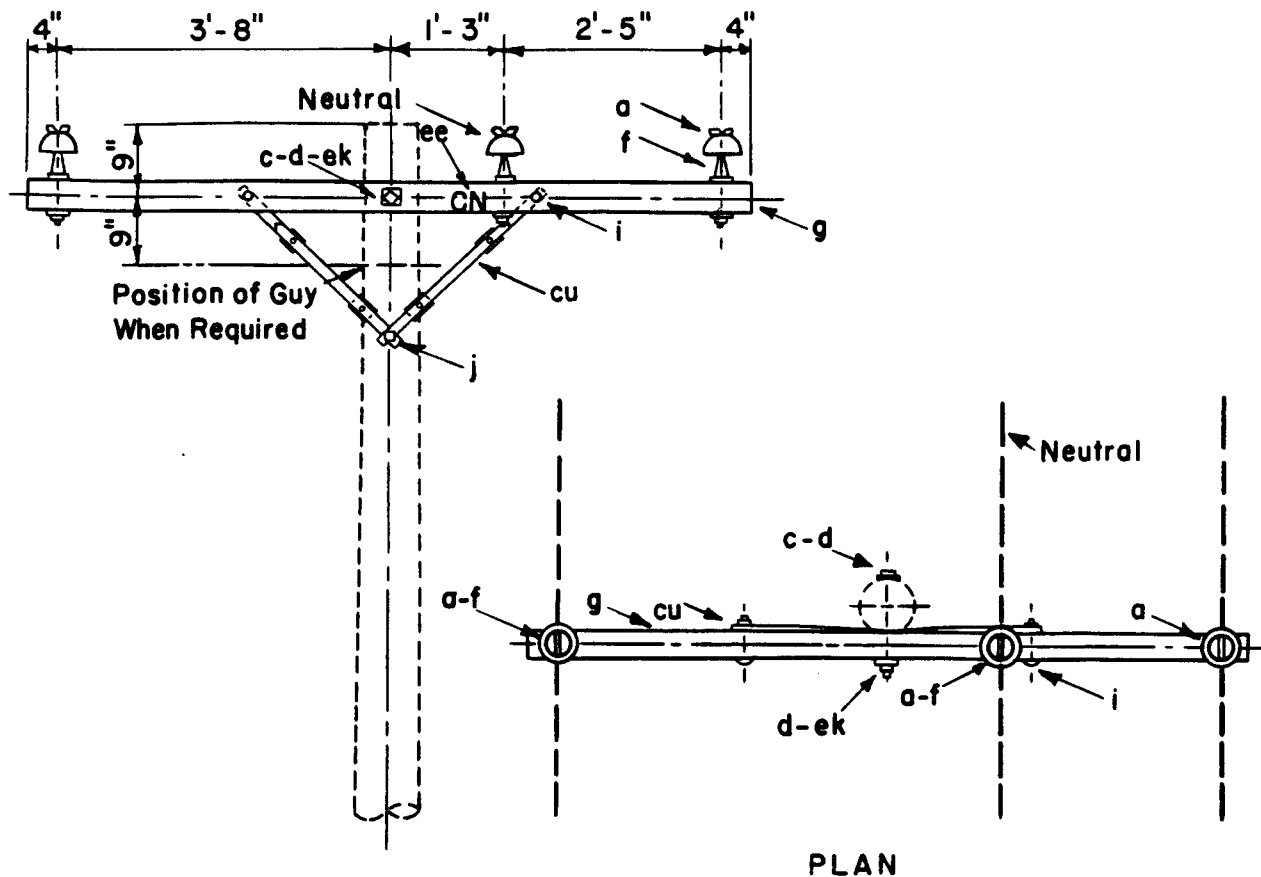


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|---|----------|--|
| a | 6 Insulator, pin type | cu | 4 Brace, wood, 28" |
| d | 10 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | i | 4 Bolt, carriage, 3/8" x 4 1/2" |
| f | 6 Pin, crossarm, steel, 5/8" x 10 3/4" | j | 2 Screw, lag, 1/2" x 4" |
| g | 2 Crossarm, 3 5/8" x 4 5/8" x 8'-0" | n | 3 Bolt, double arming, 5/8" x req'd. length |
| | | ek | Locknuts, as required |
| | | ee | 4 Letters, 2 "C", 2 "N", with 1" nails (B9 only) |

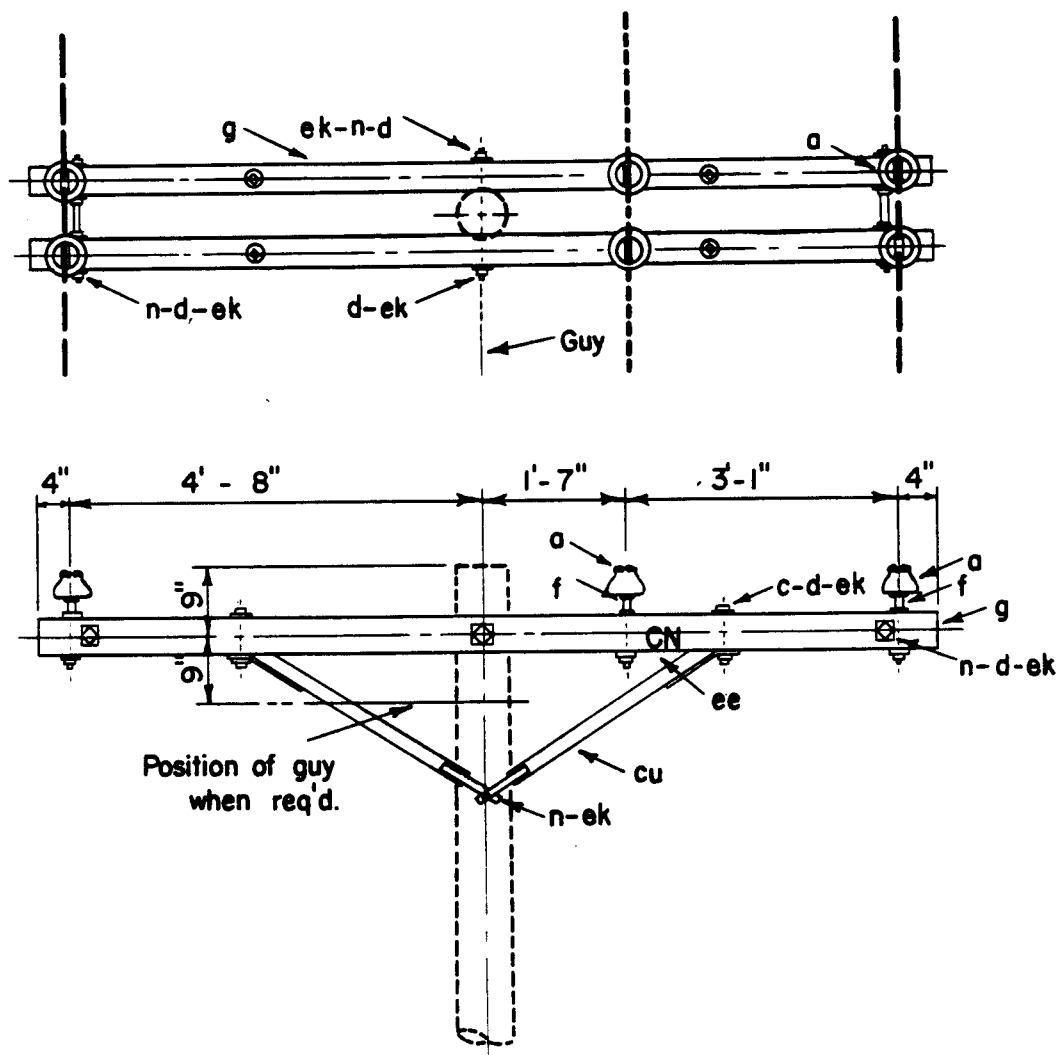
| DESIGN LIMITS | 12.5/7.2 kV TWO PHASE CROSSARM CONSTRUCTION-DOUBLE LINE ARM |
|---|---|
| Max. transverse load: 1000 lbs. per conductor | |
| Max. line angle within load limits: 20° | |
| Apr., 1983 | B 9 |

Apr., 1983

B 9

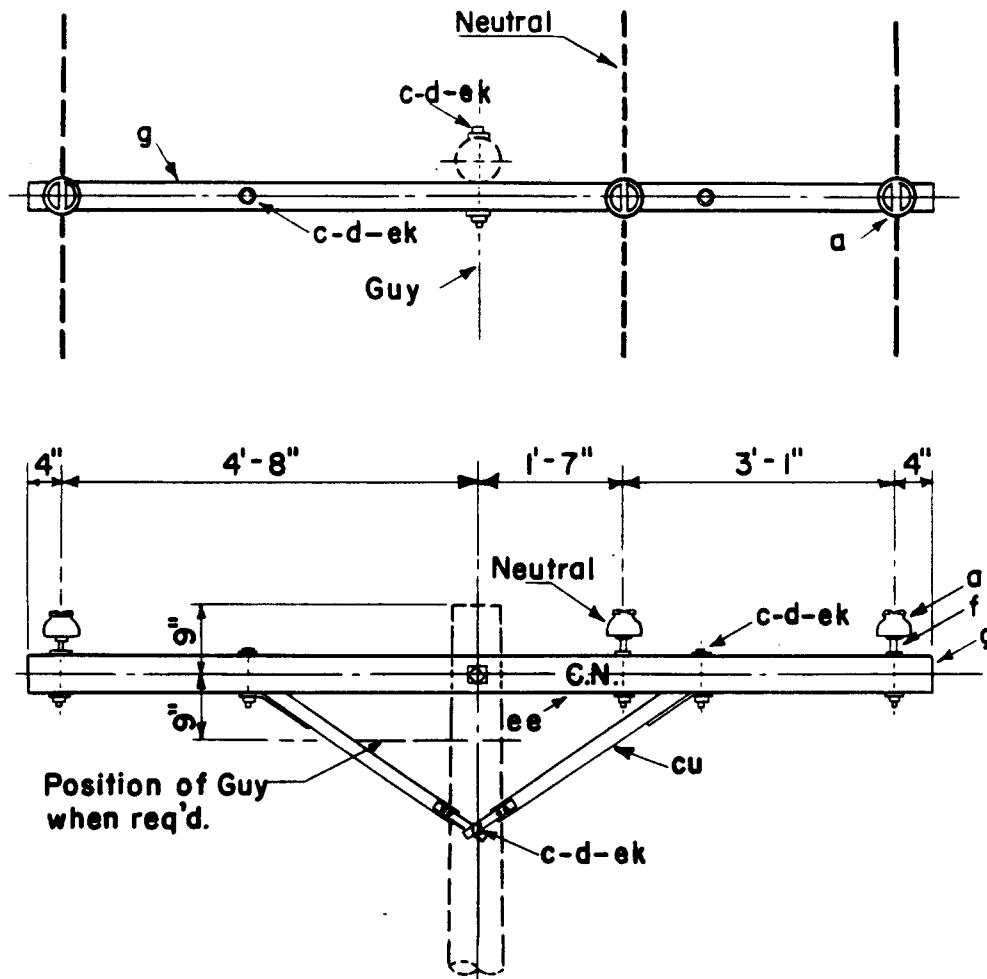


| ITEM | NO. REQD. | MATERIAL | ITEM | NO. REQD. | MATERIAL |
|---|-----------|--|---|-----------|-------------------------------------|
| a | 3 | Insulator, pin type | g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8' - 0" |
| ee | 4 | Letters, 2"C", 2"N", with 1" nails | cu | 2 | Brace, wood, 28" |
| c | 1 | Bolt, machine, 5/8" x req'd length | i | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| d | 2 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | j | 1 | Screw, lag, 1/2" x 4" |
| f | 3 | Pin, crossarm, steel, 5/8" x 10 3/4" | ek | | Locknuts, as required |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits 5° | | | 12.5/7.2 kV TWO PHASE, CROSSARM CONSTRUCTION SINGLE LINE ARM | | |
| | | | <div>Apr, 1983</div> <div>B9-1</div> | | |



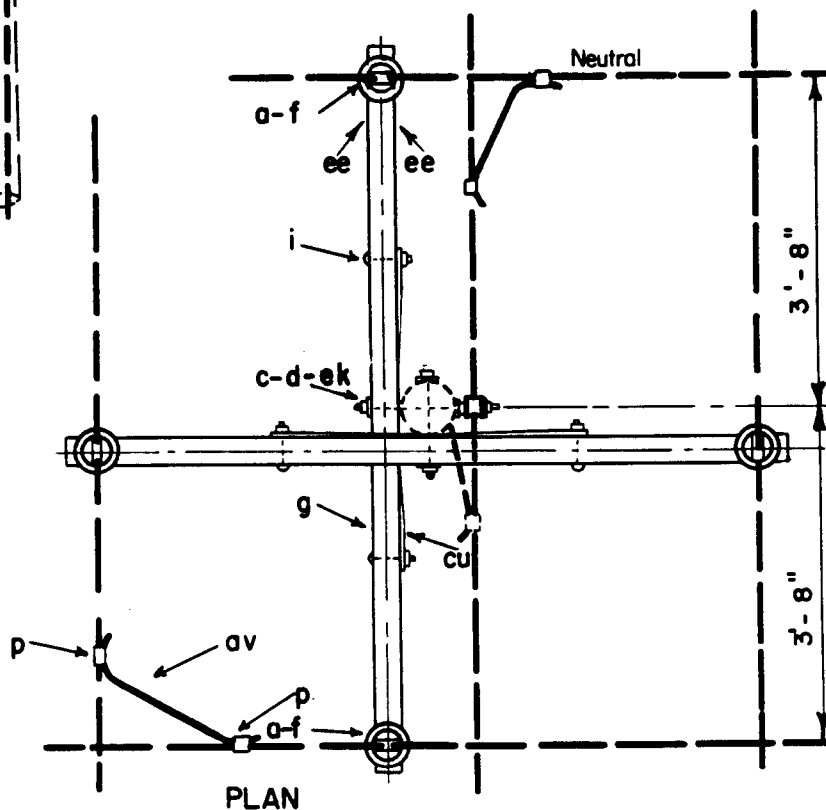
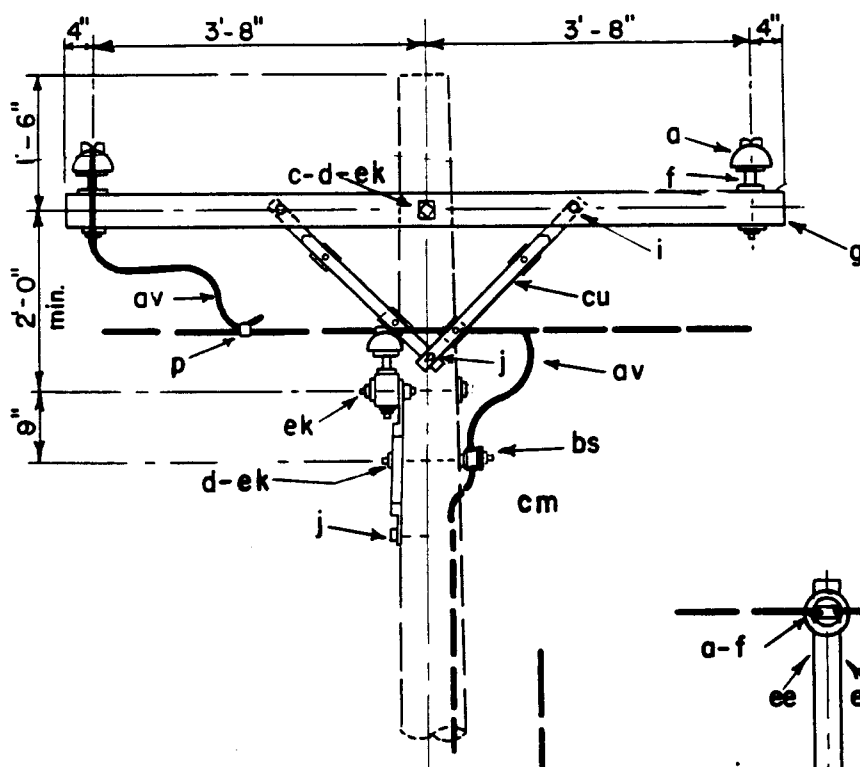
This construction should be used where future conversion to three phase is likely.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|--------------------------------------|---------------------------------------|--|
| a 6 | Insulator, pin type | g 2 | Crossarm, 3 $\frac{5}{8}$ " x 4 $\frac{5}{8}$ " x 10'-0" |
| | | n 4 | Bolt, double arming, 5/8" x req'd. length |
| c 4 | Bolt, machine, 1/2" x req'd. length | cu 2 | Brace, wood, 60" span |
| d 10 | Washer, square, 2 1/4" | ee 4 | Letters, 2 "C", 2 "N", with 1" nails |
| d 4 | Washer, round, 1 3/8" | ek | Locknuts, as required |
| f 6 | Pin, crossarm, steel, 5/8" x 10 3/4" | | |
| DESIGN LIMITS | | 12.5/7.2 kV, TWO PHASE | |
| Max. transverse load: 1000 lbs. per conductor | | CROSSARM CONSTRUCTION-DOUBLE LINE ARM | |
| Max. line angle within load limits: 20° | | | |
| Apr, 1983 | | B9-2 | |



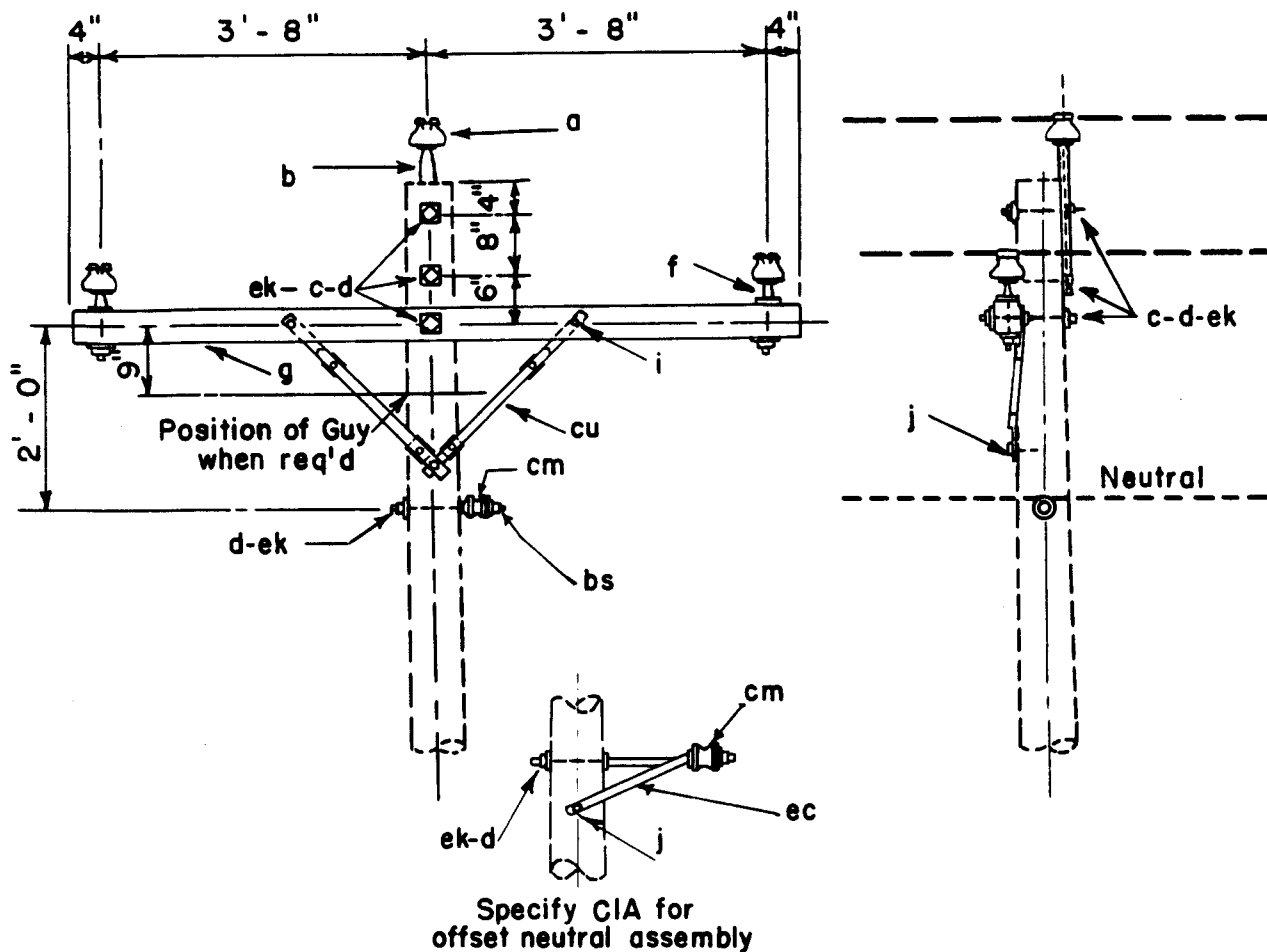
This construction should be used where future conversion to three phase is likely.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|--|---|--------------------------------------|
| a 3 | Insulator, pin type | f 3 | Pin, crossarm, steel, 5/8" x 10 3/4" |
| c 2 | Bolt, machine, 5/8" x req'd length | g 1 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" |
| c 2 | Bolt, machine, 1/2" x req'd length | cu 1 | Brace, wood, 60" span |
| d 3 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | ee 4 | Letters, 2 "C", 2 "N" with 1" nails |
| d 2 | Washer, round, 1 3/8" dia., 9/16" hole | ek | Locknuts, as required |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV TWO-PHASE CROSSARM CONSTRUCTION SINGLE LINE ARM | |
| Apr., 1983 | | B9-3 | |

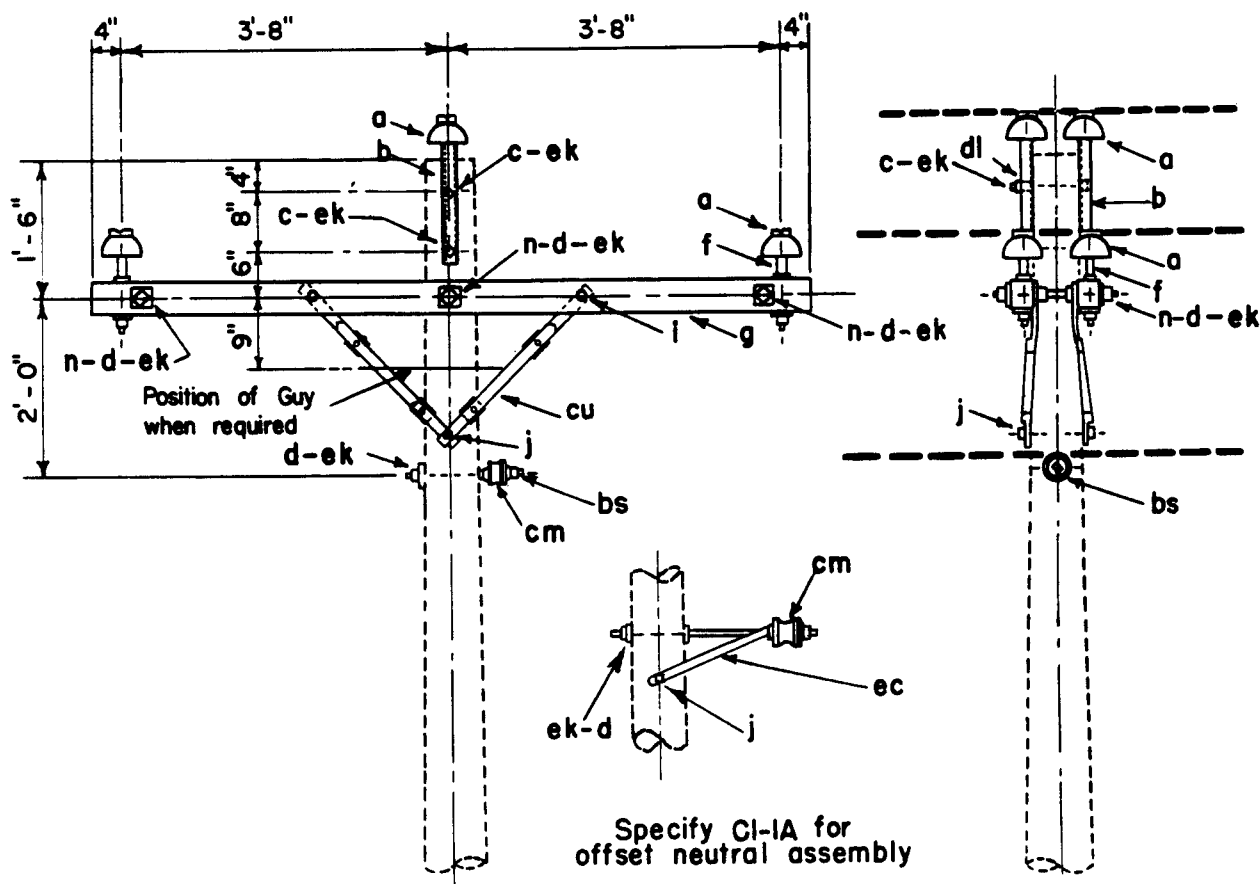


PLAN

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|--|--|--|
| a | 3 Insulator, pin type | i | 4 Bolt, carriage, 3/8" x 4 1/2" |
| a | 1 Insulator, pin type | j | 2 Screw, lag, 1/2" x 4" |
| c | 2 Bolt, machine, 5/8" x req'd. length | p | Connectors, as req'd. |
| d | 5 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | av | Jumpers and leads as req'd. |
| f | 4 Pin, crossarm, steel, 5/8" x 10 1/4" | bs | 1 Bolt, single upset, |
| g | 2 Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ek | Locknuts, as required |
| cu | 4 Brace, wood, 28" | ee | 4 Letters, 2 "C", 2 "N", with 1" nails |
| cm | 1 Spool insulator | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV TWO PHASE, CROSSARM CONSTRUCTION SINGLE PHASE JUNCTION | |
| | | Apr., 1983 | B22 |

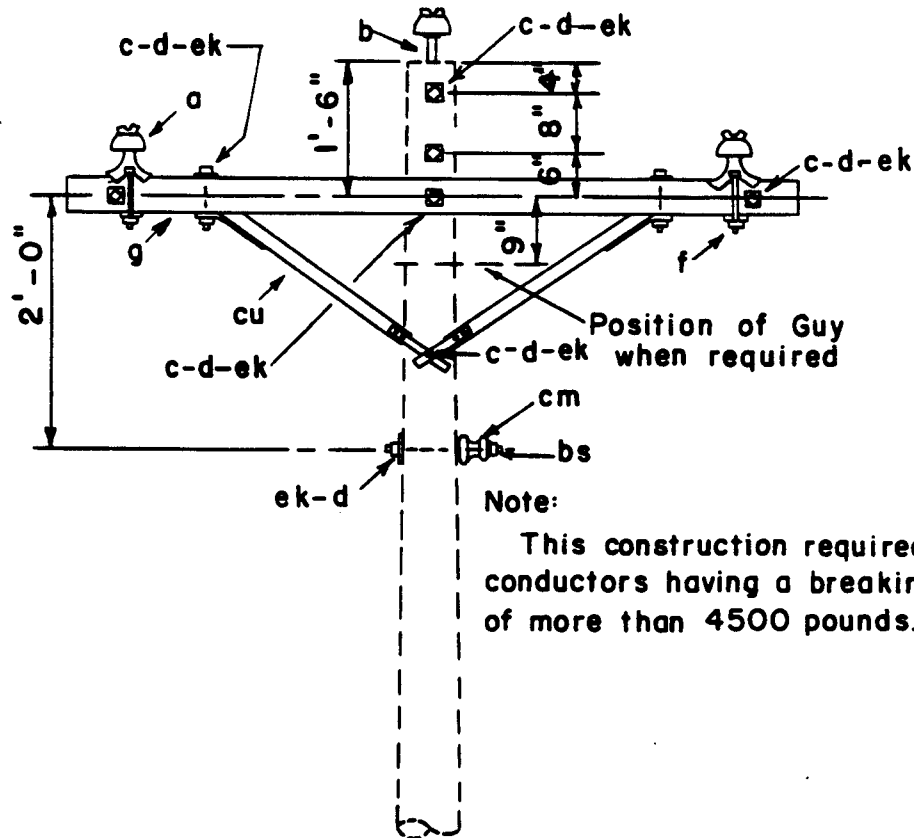
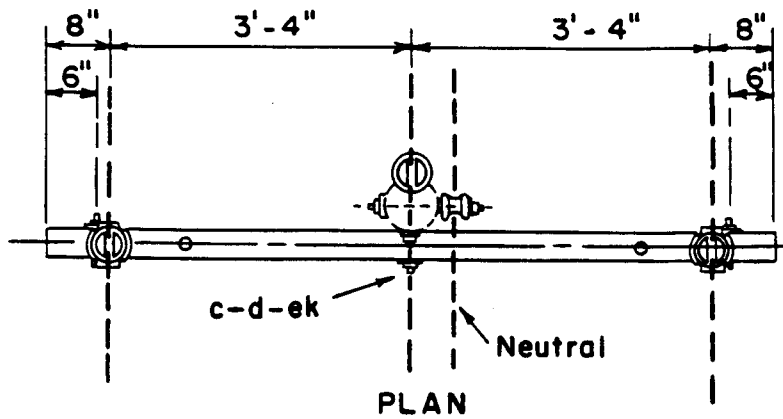


| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|---|-----|--|--|-----|------------------------------------|
| a | 3 | Insulator, pin type | cu | 2 | Brace, wood, 28" |
| b | 1 | Pin, pole top, 20" | i | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| c | 3 | Bolt, machine, 5/8" x req'd length | j | 1 | Screw, lag, 1/2" x 4" (CI only) |
| d | 5 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | bs | 1 | Bolt, single upset, (CI only) |
| f | 2 | Pin, crossarm, steel, 5/8" x 10 3/4" | ec | 1 | Bracket, offset neutral (CIA only) |
| g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | j | 3 | Screw, lag, 1/2" x 4" (CIA only) |
| ek | | Locknuts, as required | 12.5 / 7.2 kV 3-PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT | | |
| cm | 1 | Spool insulator | | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | | Apr, 1983 | | |
| | | | CI, CIA | | |

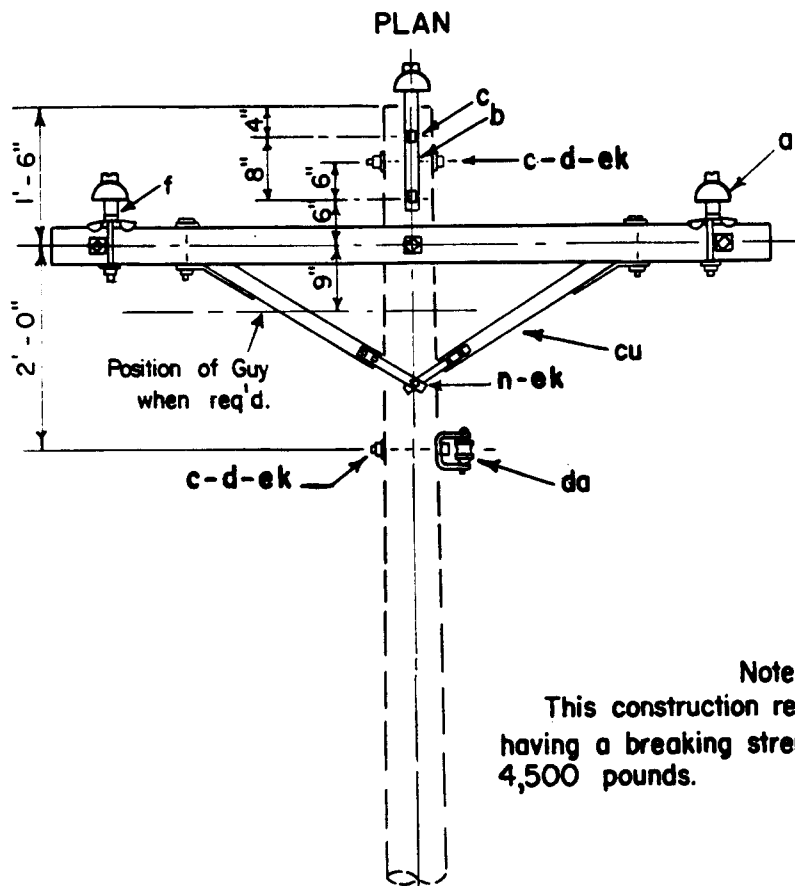
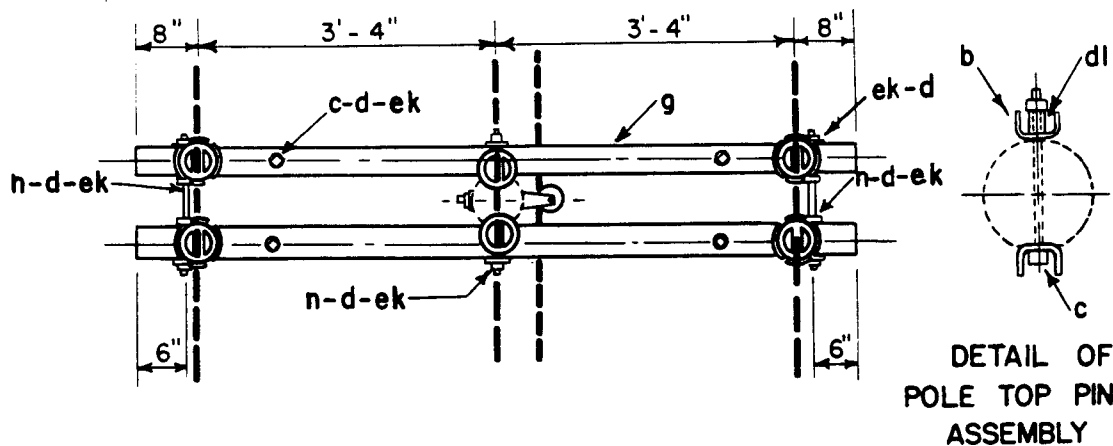


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|---|----------|---|
| a | 6 Insulator, pin type | i | 4 Bolt, carriage, 3/8" x 4 1/2" |
| b | 2 Pin, pole top, 20" | j | 2 Screw, lag, 1/2" x 4" (CI-1 only) |
| c | 2 Bolt, machine, 5/8" x req'd. length | n | 3 Bolt, double arming, 5/8" x req'd. length |
| d | 11 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | bs | 1 Bolt, single upset, (CI-1 only) |
| f | 4 Pin, crossarm, steel, 5/8" x 10 3/4" | dl | 2 Pipe spacer, 3/4" dia. x 1 1/2" |
| g | 2 Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ec | 1 Bracket, offset neutral (CI-1A only) |
| cu | 4 Brace, wood, 28" | j | 4 Screw, lag, 1/2" x 4" (CI-1A only) |
| ek | Locknuts, as required | cm | 1 Spool insulator |

| | | | |
|---|--|---|--|
| DESIGN LIMITS | | 12.5/7.2 kV 3-PHASE CROSSARM CONSTRUCTION | |
| Max. transverse load: 1000 lbs. per conductor | | DOUBLE PRIMARY SUPPORT | |
| Max. line angle within load limits: 5° | | CI-1, CI-1A | |
| Apr., 1983 | | | |



| ITEM | NO. | MATERIAL | | ITEM | NO. | MATERIAL | |
|--|-----|---|-------------------------------|------|-----|---------------------------------|--|
| a | 3 | Insulator, pin type | | f | 2 | Pin, crossarm, clamp type | |
| b | 1 | Pin, pole top, 20" | | g | 1 | Crossarm, 35/8" x 45/8" x 8'-0" | |
| c | 6 | Bolt, machine, 5/8" x req'd length | | bs | 1 | Bolt, single upset | |
| c | 2 | Bolt, machine, 1/2" x req'd length | | cu | 1 | Brace, wood, 60" span | |
| d | 10 | Washer, 2 1/4" x 2 1/4" x 3/16", 1/16" hole | | ek | | Locknuts , as required | |
| d | 2 | Washer, rd. 1 3/8" diam, 9/16" hole | | cm | 1 | spool insulator | |
| DESIGN LIMITS | | | 12.5 / 7.2 kV | | | | |
| Max. transverse load: 500 lbs. per conductor | | | 3-PHASE CROSSARM CONSTRUCTION | | | | |
| Max. line angle within load limits: 2° | | | (LARGE CONDUCTORS) | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |



Note:
This construction required for all conductors
having a breaking strength of more than
4,500 pounds.

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|---|
| a | 6 | Insulator, pin type | g | 2 | Crossarm, 3 $\frac{5}{8}$ " x 4 $\frac{5}{8}$ " x 8'-0" |
| b | 2 | Pin, pole top, 20" | n | 4 | Bolt, double arming, $\frac{5}{8}$ " x req'd. length |
| c | 4 | Bolt, machine, $\frac{5}{8}$ " x req'd. length | cu | 2 | Brace, wood, 60" span |
| c | 4 | Bolt, machine, $\frac{1}{2}$ " x req'd. length | da | 1 | Bracket, insulated |
| d | 13 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | dl | 2 | Pipe spacer, $\frac{3}{4}$ " dia. x $1\frac{1}{2}$ " |
| d | 4 | Washer, rd., $1\frac{3}{8}$ " diam, $\frac{9}{16}$ " hole | ek | | Locknuts, as required |
| f | 4 | Pin, crossarm, steel, clamp type | | | |

DESIGN LIMITS

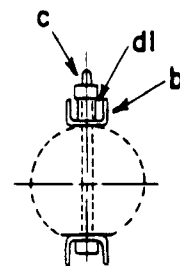
Max. transverse load: 1000 lbs. per
conductor
Max. line angle within load limits: 5°

12.5/7.2 kV

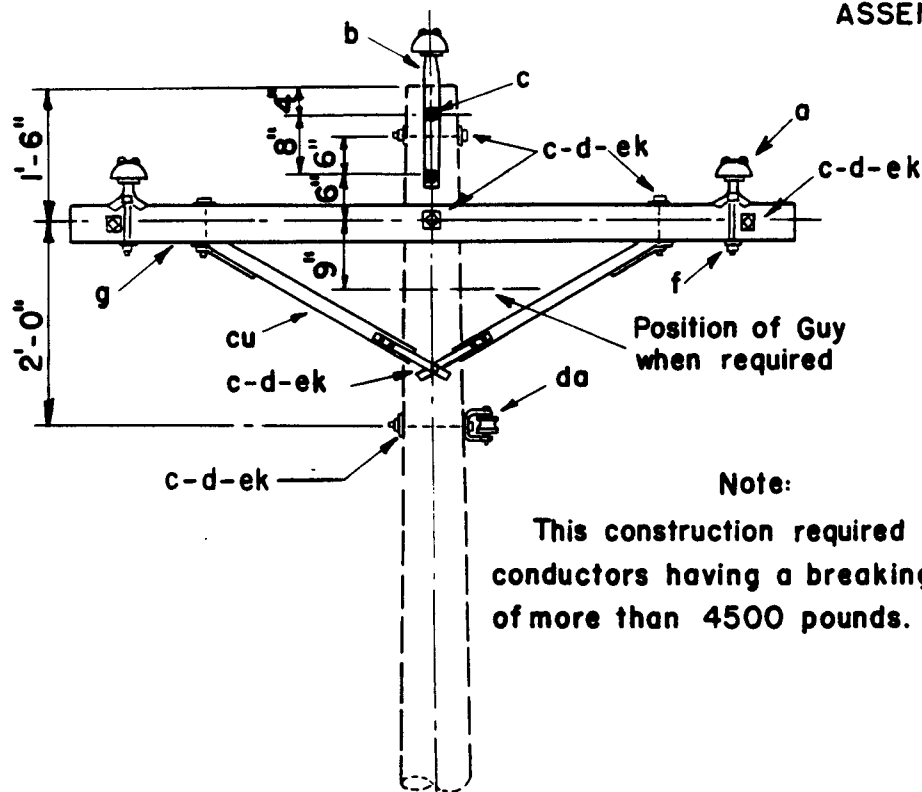
3-PHASE, CROSSARM CONSTRUCTION
DOUBLE PRIMARY SUPPORT, (LARGE CONDUCTORS)

Apr, 1983

CI-3

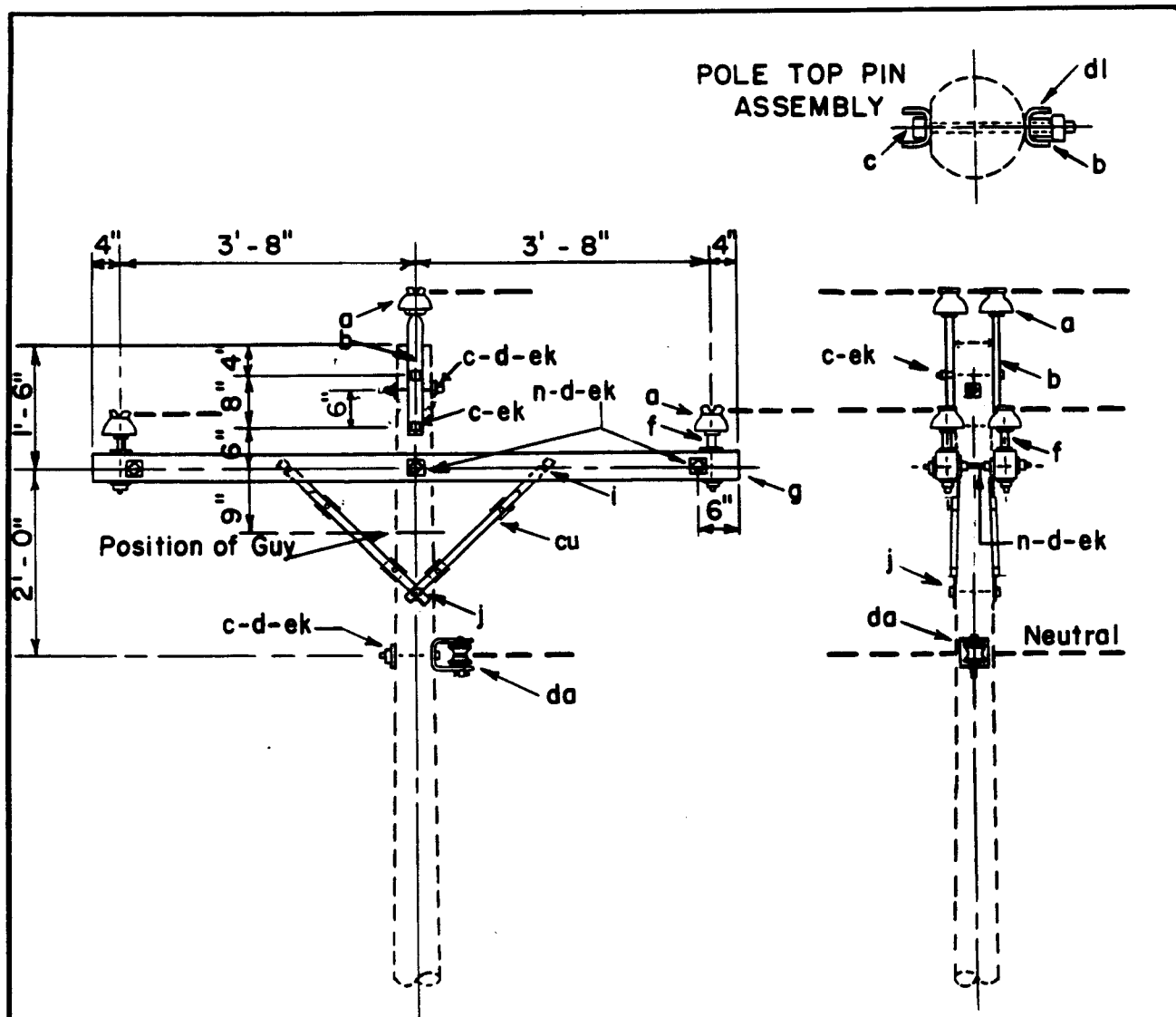


POLE TOP PIN ASSEMBLY



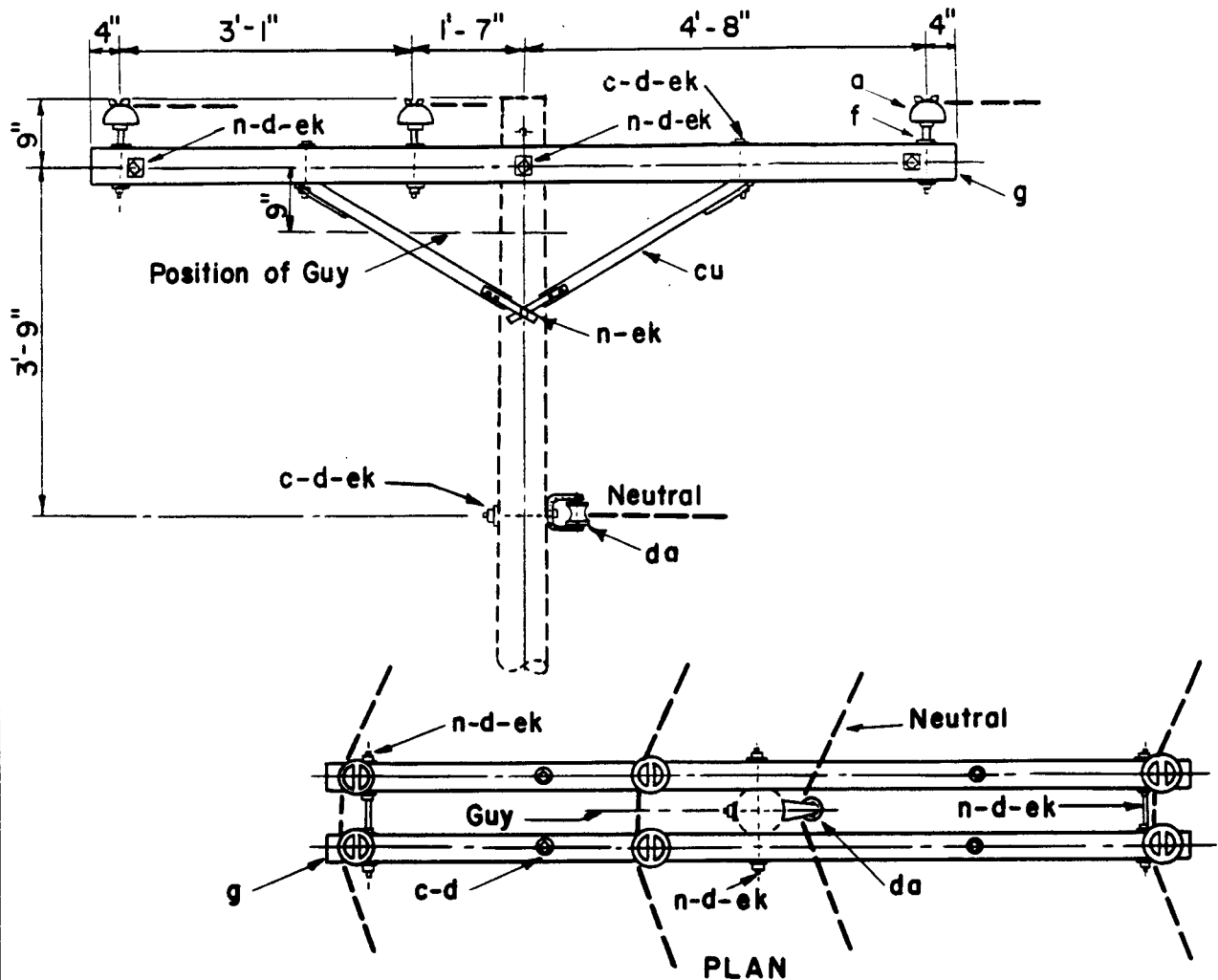
This construction required for all conductors having a breaking strength of more than 4500 pounds.

CI-4



NOTE: When the transverse load is more than 1000 pounds, substitute C2-1 or C2-2 as required.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|---|---|---|
| a | 6 Insulator, pin type | i | 4 Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " |
| b | 2 Pin, pole top, 20" | j | 2 Screw, lag, $\frac{1}{2}$ " x 4" |
| c | 4 Bolt, machine, $\frac{5}{8}$ " x req'd length | n | 3 Bolt, double arming, $\frac{5}{8}$ " x req'd l'gth |
| d | 13 Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | da | 1 Bracket, insulated |
| f | 4 Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ " | dl | 2 Pipe, spacer, $\frac{3}{4}$ " dia. x $1\frac{1}{2}$ " |
| g | 2 Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x 8' - 0" | ek | Locknuts, as required |
| cu | 4 Brace, wood, 28" | | |
| DESIGN LIMITS | | 12.5 / 7.2 kV - 3 PHASE | |
| Max. transverse load: 1000 lbs. per conductor | | CROSSARM CONSTR. DOUBLE PRIMARY SUPPORT | |
| Max. line angle within load limits: 20° | | | |
| Apr., 1983 | | C 2 | |

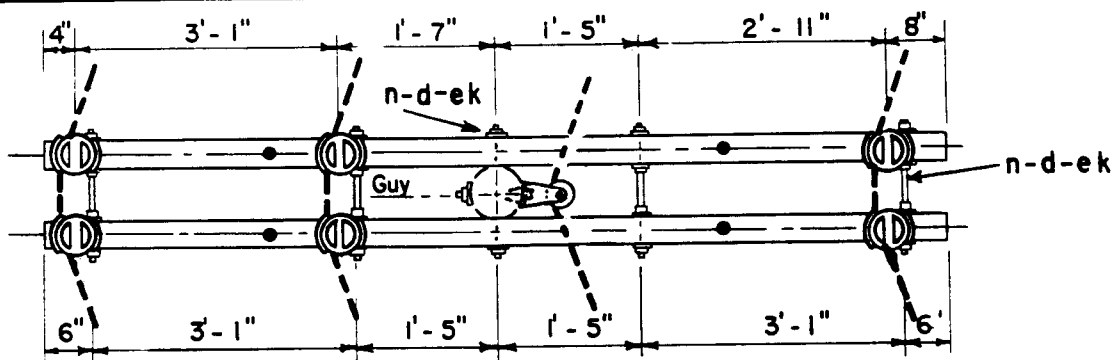


Notes: Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan.

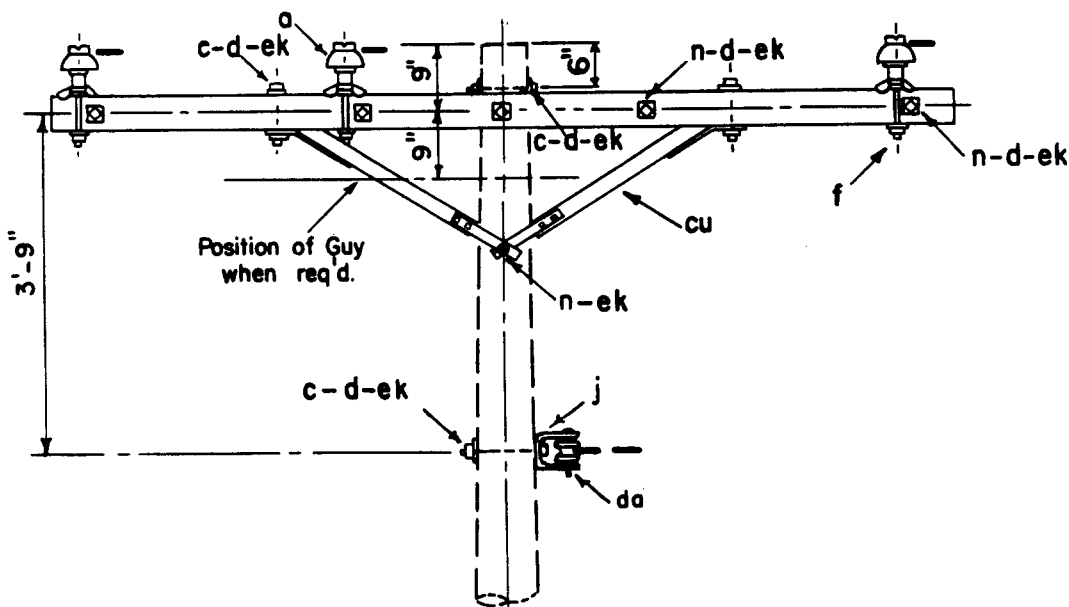
When the transverse load is more than 1000 pounds per conductor install a $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$ washer on the top of the crossarm for each pin. If the load is more than 1500 pounds, use the construction shown on C2-2.

| ITEM | NO. REQ'D | MATERIAL | ITEM | NO. REQ'D | MATERIAL |
|------|-----------|--|------|-----------|--|
| a | 6 | Insulator, pin type | g | 2 | Crossarm 3 5/8" x 4 5/8" x 10' - 0" |
| c | 1 | Bolt, machine, 5/8" x req'd length | n | 4 | Bolt, double arming, 5/8" x req'd length |
| c | 4 | Bolt, machine, 1/2" x req'd length | cu | 2 | Brace, wood, 60" span |
| d | 11 | Washer, 2 1/4" x 2 1/4" x 3/16", 15/16" hole | da | 1 | Bracket, insulated |
| d | 4 | Washer, rd., 1 3/8" diam., 3/16" hole | ek | | Locknuts, as required |
| f | 6 | Pin, crossarm, steel, 5/8" x 10 3/4" | | | |

| | | | |
|---|--|--|--|
| DESIGN LIMITS | | 12.5/7.2 kV 3 - PHASE | |
| Max. transverse load: 1500 lbs. per conductor | | CROSSARM CONSTR. DOUBLE PRIMARY SUPPORT | |
| Max. line angle within load limits: 20° | | | |
| Apr., 1983 | | C2-1 | |



PLAN



Notes:

1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods when required.
2. Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan.
3. This construction required for all conductors having a breaking strength of more than 4,500 pounds.
4. If transverse load exceeds 2000 pounds per conductor, use vertical construction.

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|---|
| a | 6 | Insulator, pin type | j | 2 | Screw, lag, 1/2" x 4" |
| c | 2 | Bolt, machine, 5/8" x req'd. length | n | 6 | Bolt, double arming, 5/8" x req'd. length |
| c | 4 | Bolt, machine, 1/2" x req'd. length | da | 1 | Bracket, neutral, insulated |
| d | 21 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | | | |
| d | 4 | Washer, rd., 1 3/8" diam., 9/16" hole | cu | 2 | Brace, wood, 60" span |
| f | 6 | Pin, crossarm, steel, clamp type | ek | | Locknuts, as required |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" | | | |

DESIGN LIMITS

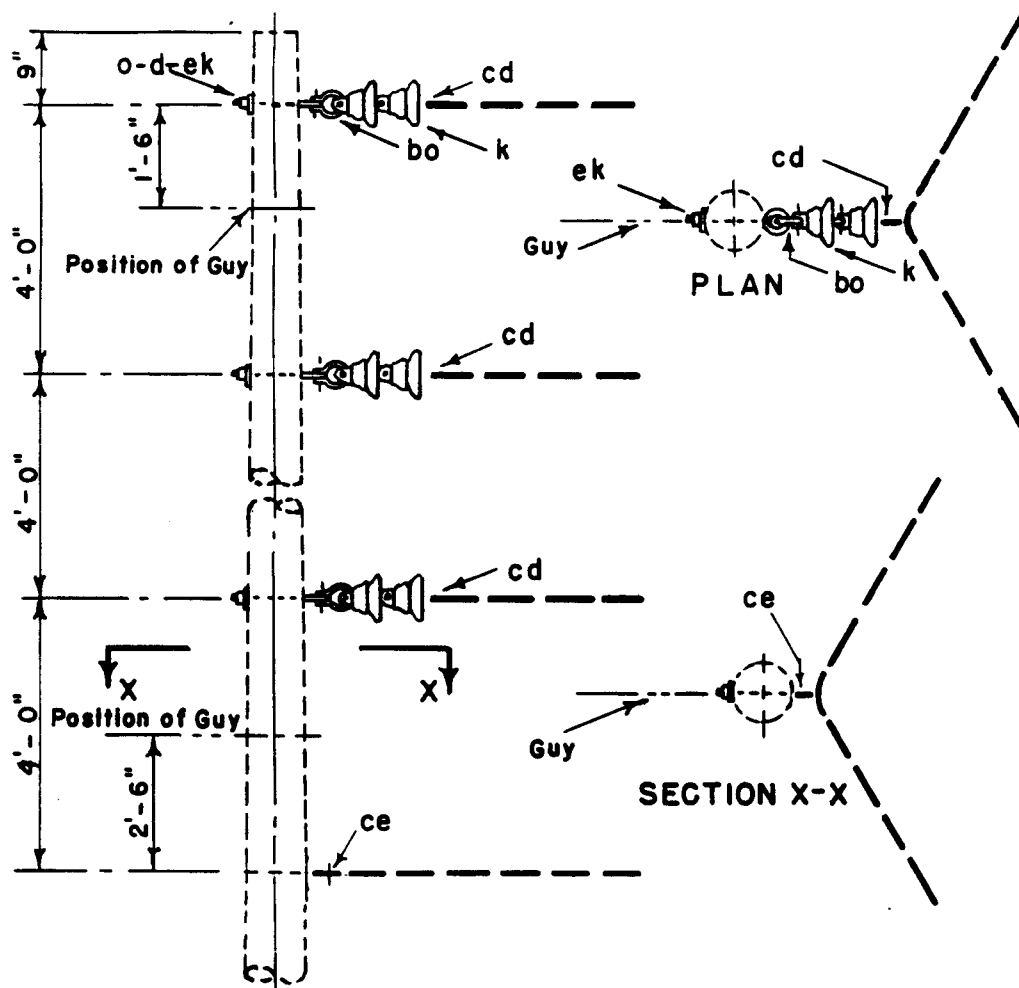
Max. transverse load: 2000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV 3-PHASE
CROSSARM CONSTR. DOUBLE PRIMARY SUPPORT
(LARGE CONDUCTORS)

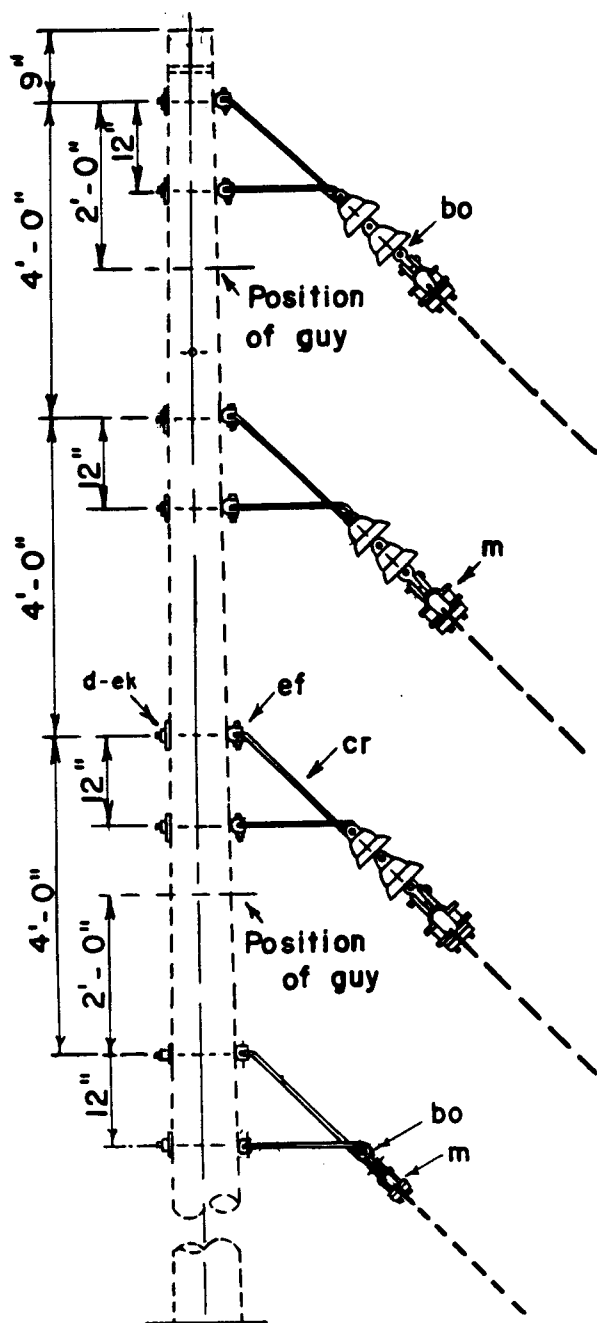
Apr., 1983

C2-2

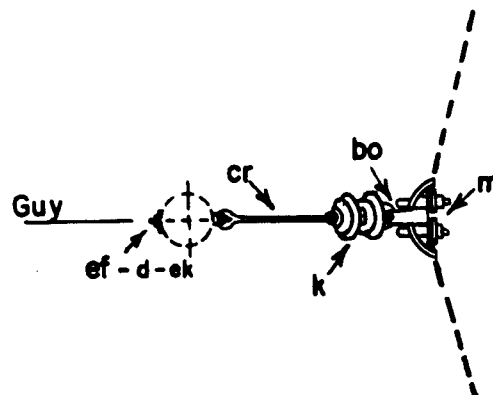


NOTE: Items cd and ce are shown on assembly drawings M41-1 and M41-10

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|--|--|---------------------------|
| | | bo | 3 Shackle, anchor |
| d | 3 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | cd | 3 Angle assembly, primary |
| k | 6 Insulator, suspension | ce | 1 Angle assembly, neutral |
| o | 3 Bolt, eye, 5/8" x req'd. length | ek | Locknuts, as required |
| DESIGN LIMITS Max. transverse load: 4000 lbs. per conductor Angle: 20° - 60° | | 12.5/7.2 kV - THREE PHASE VERTICAL CONSTRUCTION | |
| | | Apr., 1983 | |
| | | C 3 | |

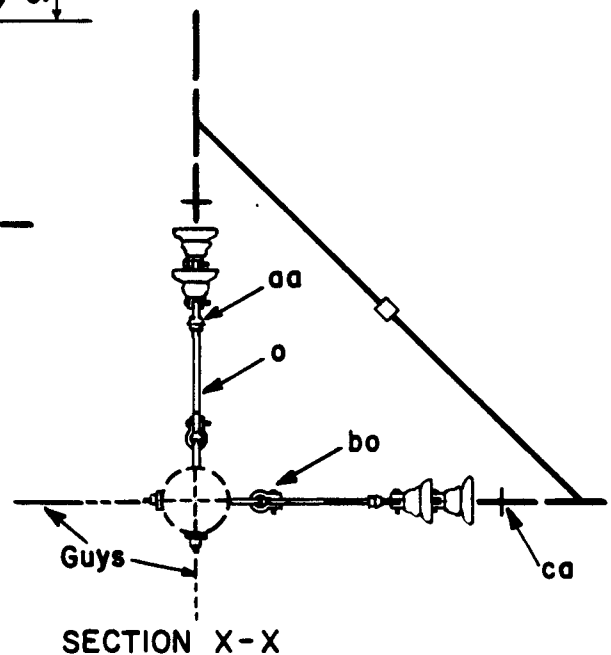
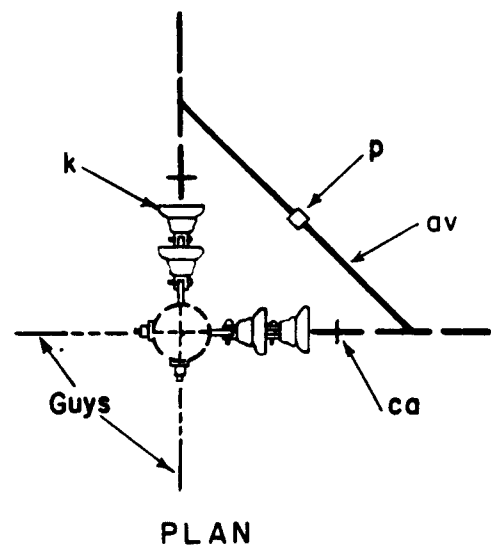
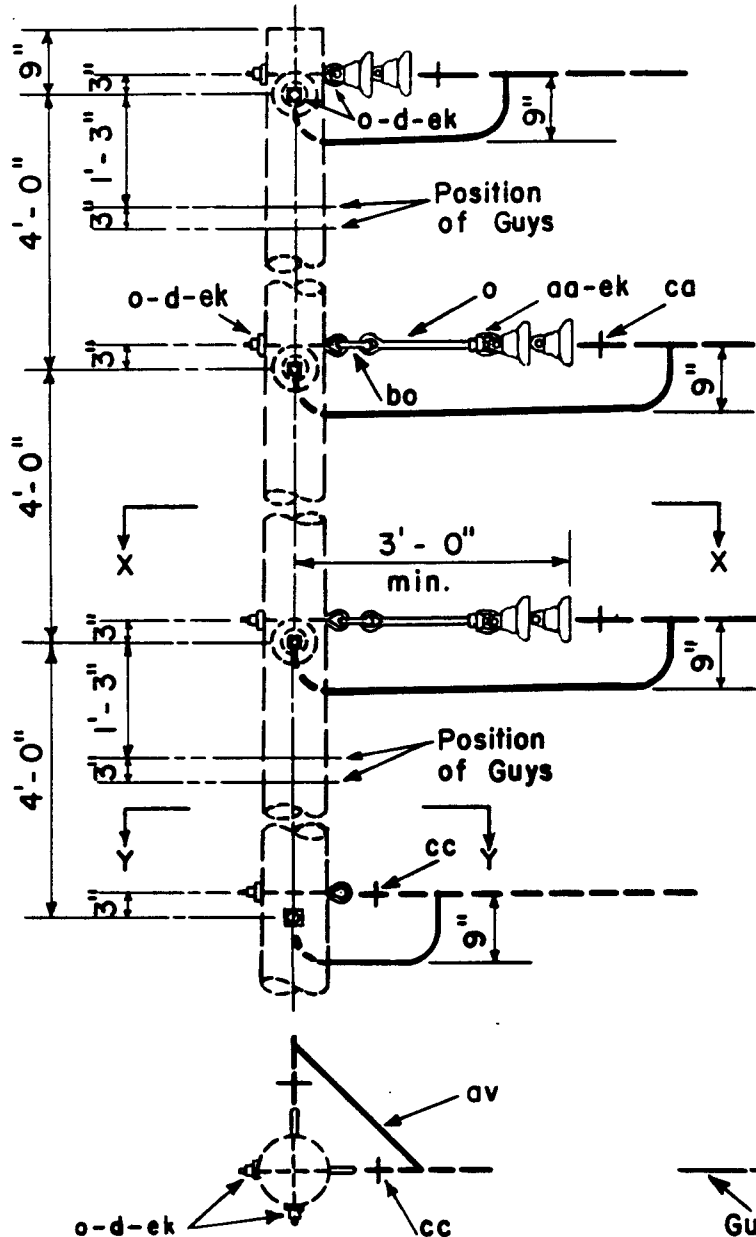


ELEVATION



PLAN

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|---|-----|--|---------------------------------|-----|-----------------------------------|
| d | 8 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | bo | 4 | Shackle, anchor |
| k | 6 | Insulator, suspension | cr | 4 | Bracket, angle, 5/8" |
| m | 4 | Clamp, suspension | ef | 8 | Bolt, clevis, 5/8" x req'd length |
| | | | ek | | Locknuts, as required |
| DESIGN LIMITS | | | 12.5/7.2 kV, | | |
| Max. transverse load: 4000 lbs. per conductor | | | VERTICAL CONSTRUCTION 3 - PHASE | | |
| Angle: 10° - 20° | | | (LARGE CONDUCTORS) | | |
| Apr., 1983 | | | C3-1 | | |



SECTION Y-Y

SECTION X-X

NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

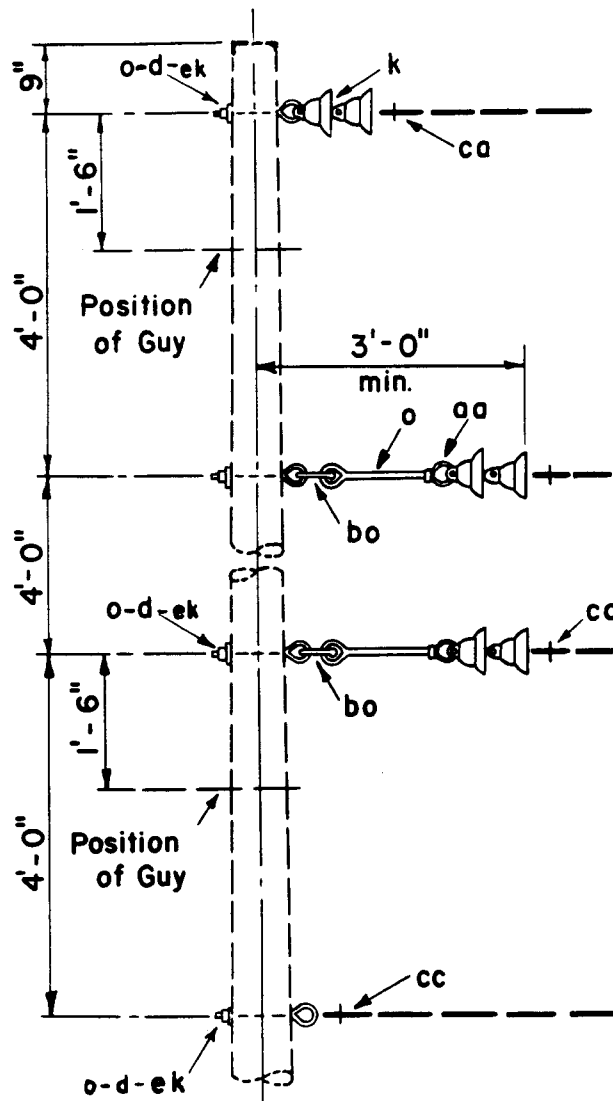
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--------------------------------------|----------|----------------------------|
| d | 8 Washer, square, 2 1/4" | av | Jumpers, as required |
| k | 12 Insulator, suspension | bo | 4 Shackle, anchor |
| o | 12 Bolt, eye, 5/8" x required length | ca | 6 Deadend assembly primary |
| p | Connectors, as required | cc | 2 Deadend assembly neutral |
| aa | 4 Nut, eye, 5/8" | ek | Locknuts, as required |

DESIGN LIMITS
Angle: 60°-90°

12.5 / 7.2 kV, 3 - PHASE
VERTICAL CONSTRUCTION

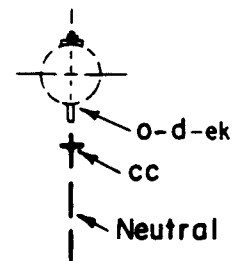
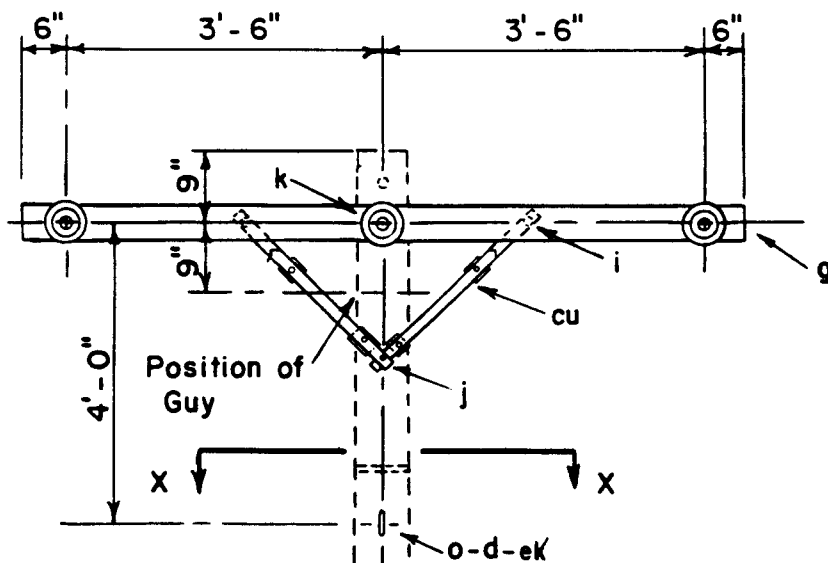
Apr., 1983

C4-1



NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

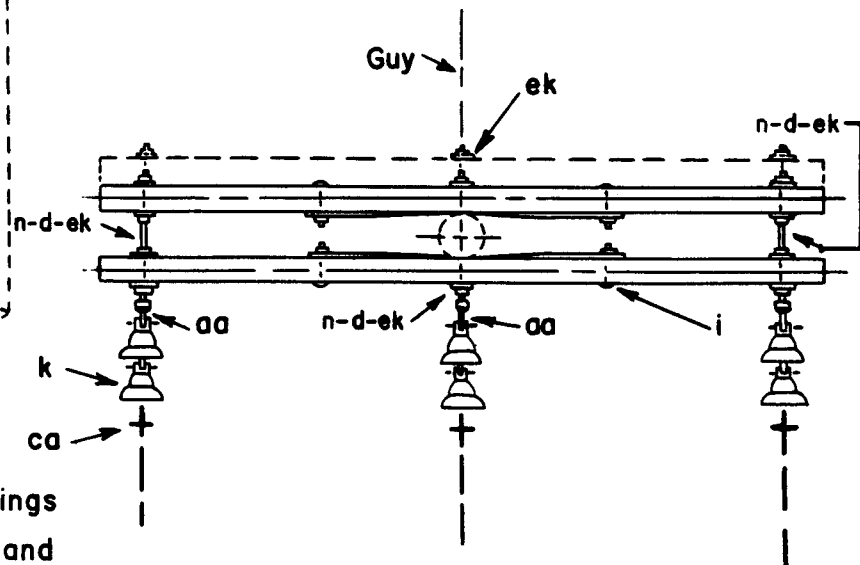
| ITEM | NO | MATERIAL | ITEM | NO | MATERIAL |
|------|----|---|---|----|---------------------------|
| d | 4 | Washer, $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$, $\frac{13}{16}$ hole | ca | 3 | Deadend assembly, primary |
| k | 6 | Insulator, suspension | cc | 1 | Deadend assembly, neutral |
| o | 6 | Bolt, eye, $\frac{5}{8}$ x req'd length | ek | | Locknuts, as required |
| oa | 2 | Nut, eye, $\frac{5}{8}$ | | | |
| bo | 2 | Shackle, anchor | | | |
| | | | 12.5/7.2 kV , 3-PHASE, VERTICAL CONSTRUCTION DEADEND (SINGLE) | | |
| | | | Apr., 1983 | | C5-1 |



SECTION X-X

NOTES:

1. See dwg. E5-1 for crossarm loading limitations.
2. Designate as C7-1 for assembly with three crossarms.
3. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

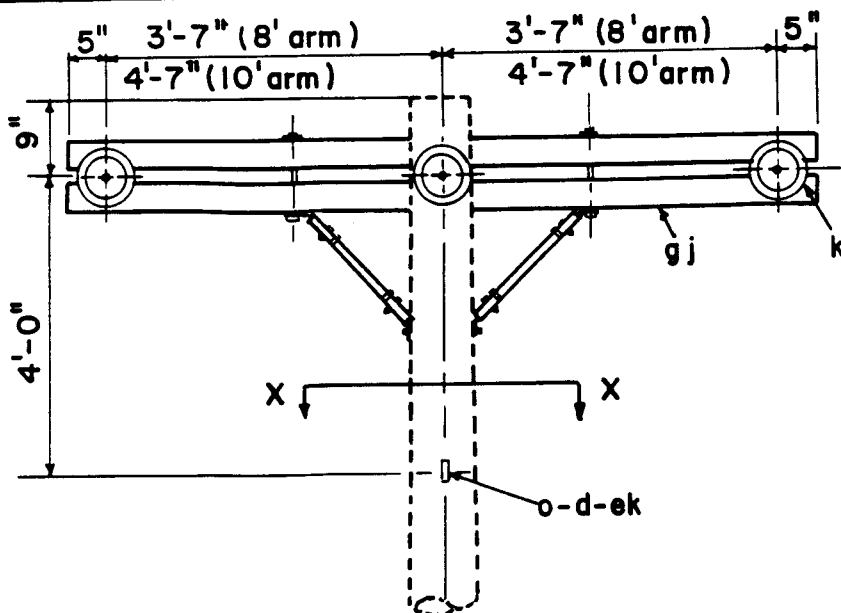


PLAN

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|---|
| d | 11 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | n | 3 | Bolt, double arming, $\frac{5}{8}$ " x req'd lgth |
| g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x 8'-0" | o | 1 | Bolt, eye, $\frac{5}{8}$ " x req'd length |
| cu | 4 | Brace, wood, 28" | aa | 3 | Nut, eye, $\frac{5}{8}$ " |
| i | 4 | Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " | ca | 3 | Deadend assembly, Primary |
| j | 2 | Screw, lag, $\frac{1}{2}$ " x 4" | cc | 1 | Deadend assembly, Neutral |
| k | 6 | Insulator, suspension | ek | | Locknuts, as required |

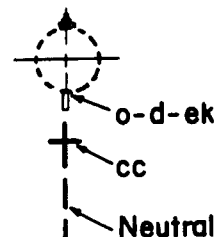
12.5/7.2 kV,
3-PHASE CROSSARM CONSTRUCTION
DEAD END (SINGLE)

Apr., 1983
C7,C7-1

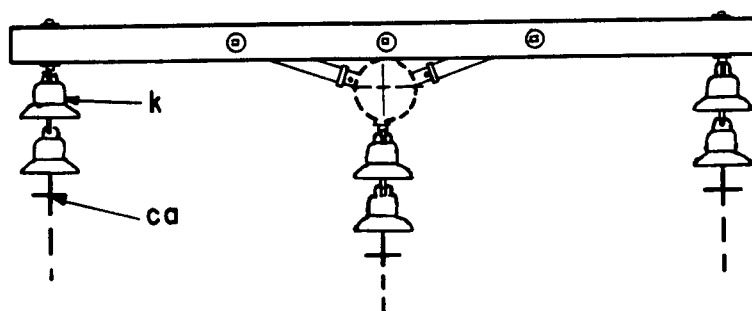


NOTE:

Items ca and cc are shown on assembly drawing M42-11, M42-13, and M42-21.



SECTION X-X



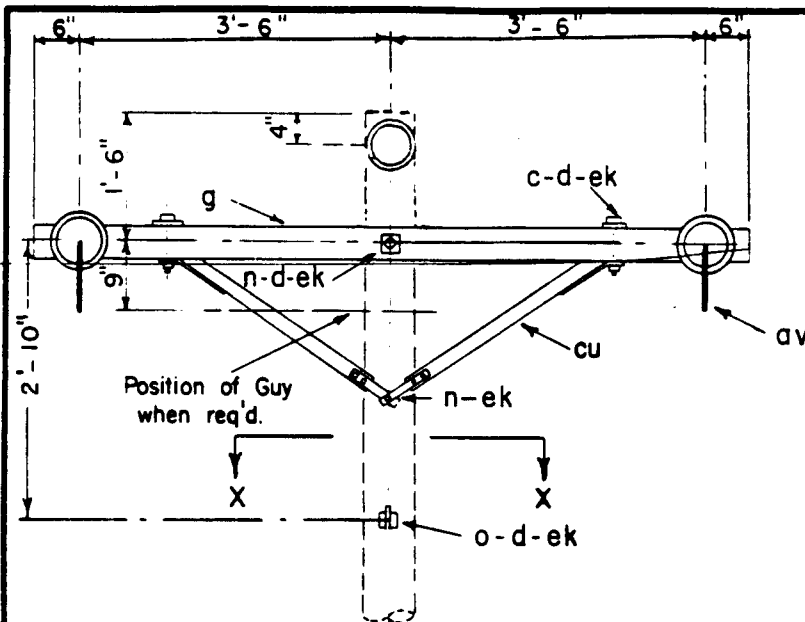
PLAN

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|---------------------|
| d | 1 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | gj | 1 Crossarm assembly |
| k | 6 Insulator, suspension | | |
| o | 1 Bolt, eye, 5/8" x req'd length | | |
| ca | 3 Deadend assembly, Primary | | |
| cc | 1 Deadend assembly, Neutral | | |
| ek | Locknuts, as required | | |

12.5/7.2 kV,
3 - PHASE CROSSARM CONSTRUCTION
DEAD END (SINGLE)

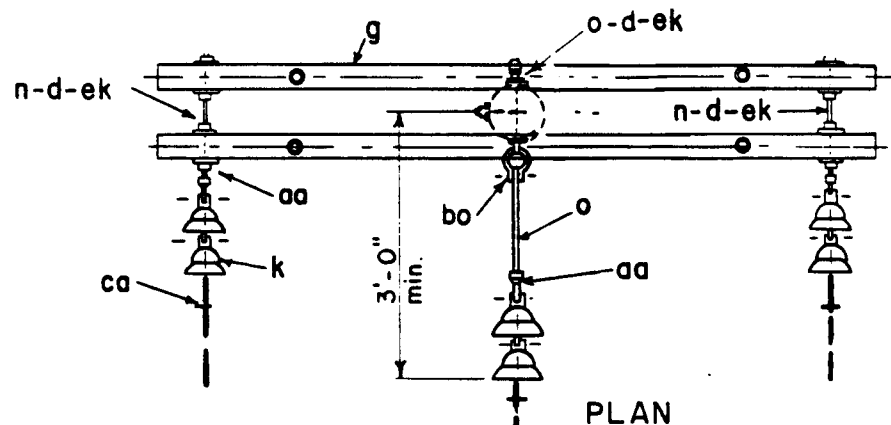
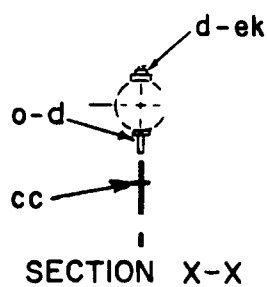
Apr., 1983

C 7A



NOTE:

Use this assembly when future conversion to C8 is likely.



NOTE

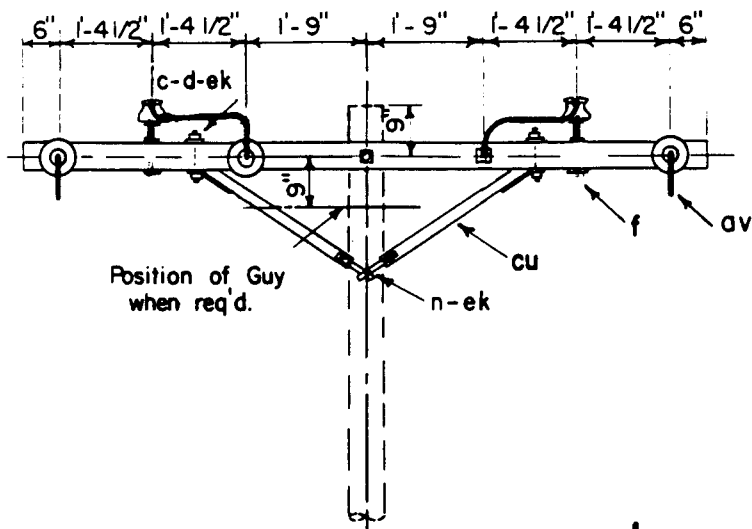
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|---|----------|-----------------------------------|
| | | o | 3 Bolt, eye, 5/8" x req'd. length |
| | | p | Connectors, as req'd. |
| c | 4 Bolt, machine, 1/2" x req'd. length | aa | 3 Nut, eye, 5/8" |
| d | 14 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | a | Jumpers and leads as req'd. |
| d | 4 Washer, round, 1 3/8" diam., 9/16" hole | bo | 1 Shackle, anchor |
| | | ca | 3 Deadend assembly, primary |
| g | 2 Crossarm, 35/8" x 45/8" x 8'-0" | cc | 1 Deadend assembly, neutral |
| k | 6 Insulators, suspension | cu | 2 Brace, wood, 60" span |
| n | 4 Bolt, double arming, 5/8" x req'd. length | ek | Locknuts, as required |

12.5/7.2 kV 3-PHASE
CROSSARM CONSTRUCTION, DEADEND (SINGLE)

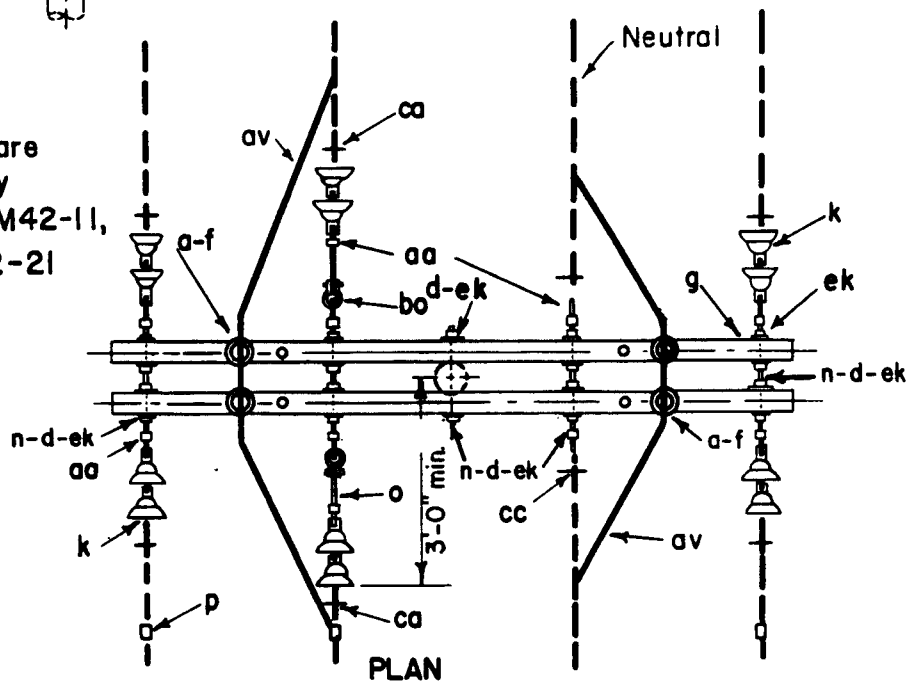
Apr., 1983

C7-2



NOTE:

Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21



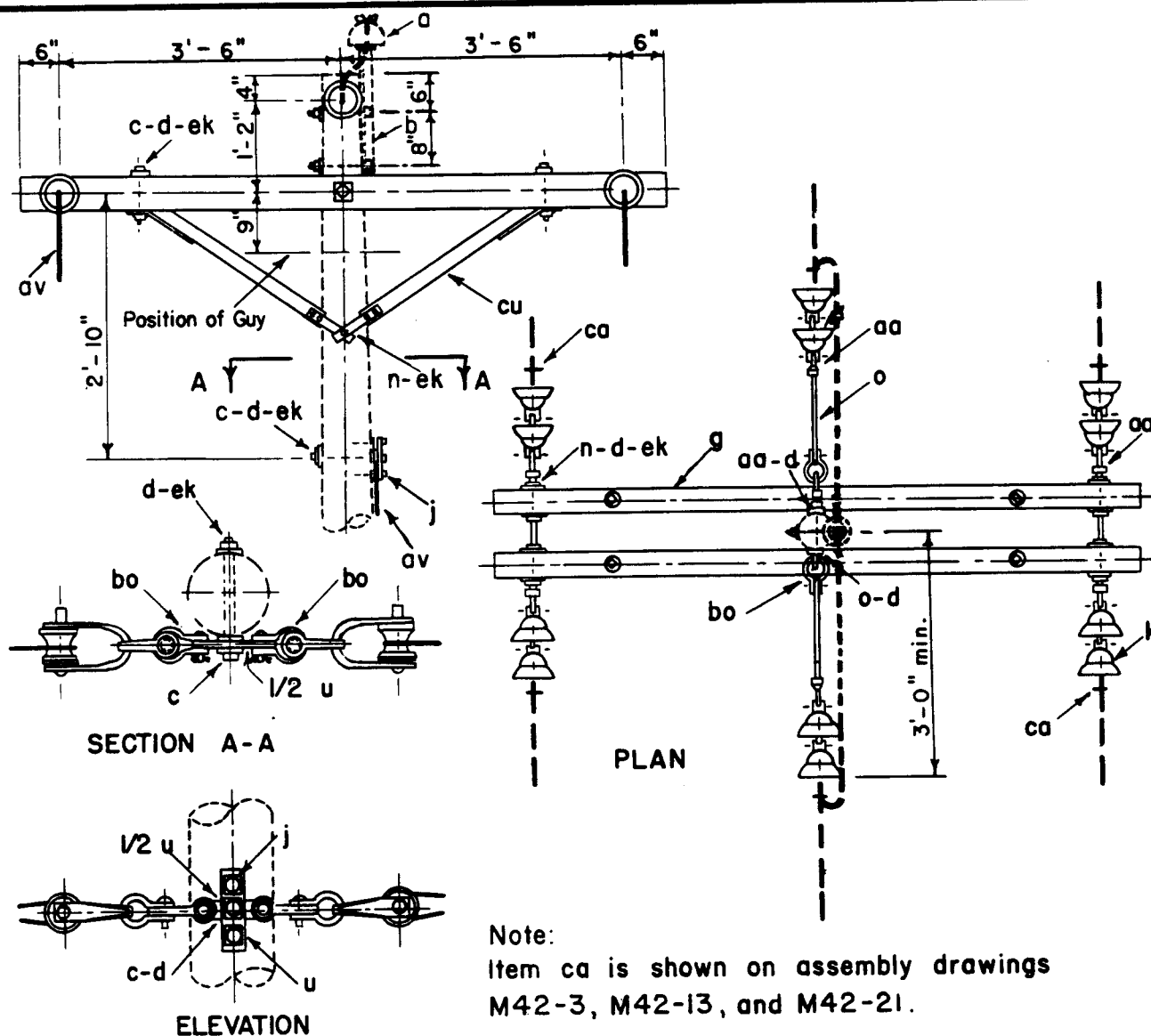
PLAN

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|---------------------------------|
| | | p | Connectors, as req'd. |
| a 4 | Insulator, pin type | o 2 | Bolt, eye, 5/8" x req'd. length |
| | | aa 10 | Nut, eye, 5/8" |
| c 4 | Bolt, machine, 1/2" x req'd. length | av | Jumpers and leads as req'd. |
| d 18 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | bo 2 | Shackle, anchor |
| d 4 | Washer, round, 1 3/8" dia, 9/16" hole | ca 6 | Deadend assembly, primary |
| f 4 | Pin, crossarm, steel, 5/8" x 10 3/4" | cc 2 | Deadend assembly, neutral |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" | cu 2 | Brace, wood, 60" span |
| k 12 | Insulator, suspension | ek | Locknuts, as required |
| n 6 | Bolt, double arming, 5/8" x req'd. length | | |

12.5/7.2 kV, 3-PHASE
CROSSARM CONSTRUCTION-DEADEND (DOUBLE)

Apr., 1983

C 8-1

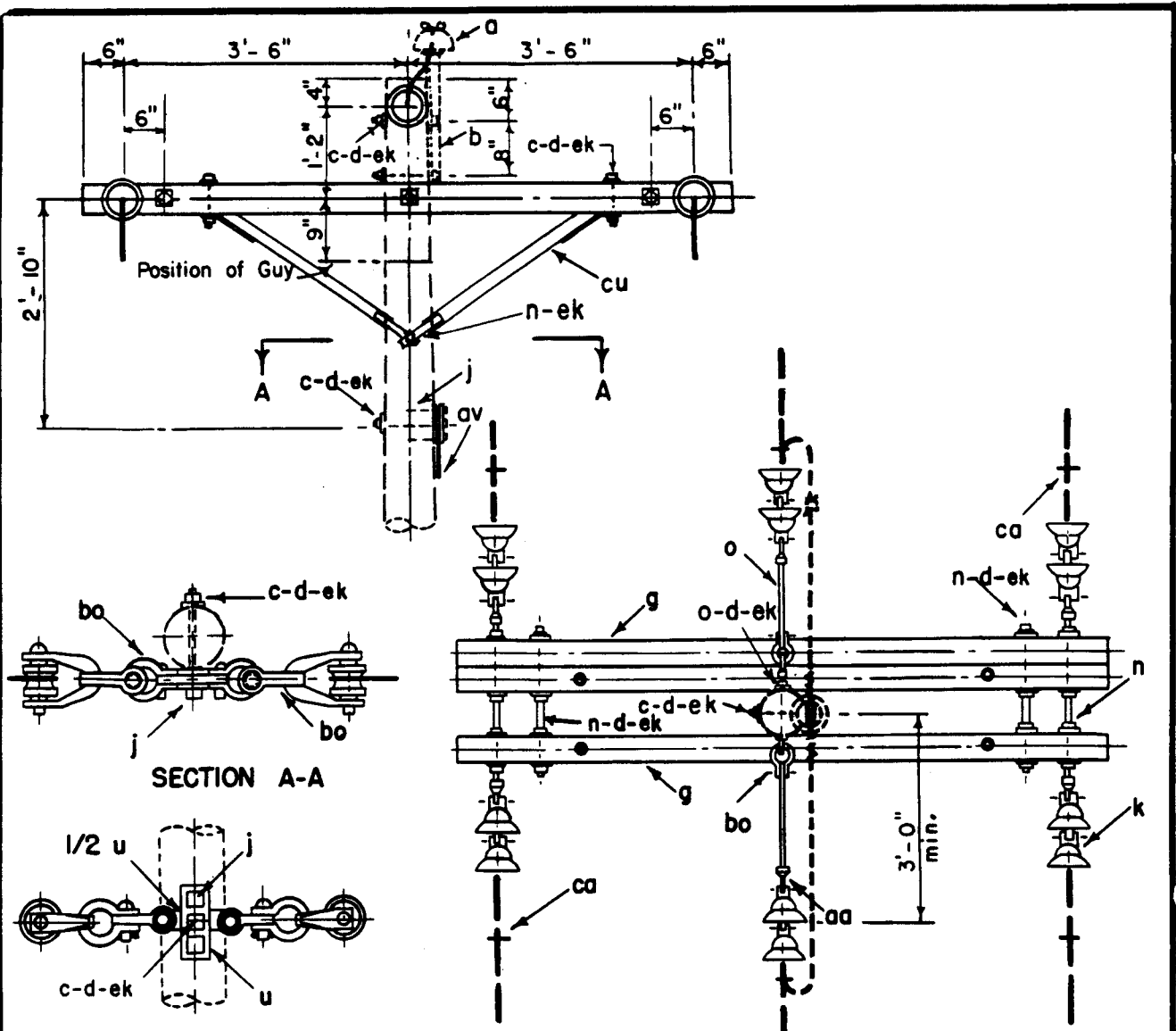


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|---------------------------------|
| c 1 | Bolt, machine, 5/8" x req'd. length | o 3 | Bolt, eye, 5/8" x req'd. length |
| c 4 | Bolt, machine, 1/2" x req'd. length | p | Connectors, as req'd. |
| d 13 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | u 1 1/2 | Clamp, guy, 6" heavy duty |
| d 4 | Washer, rd., 1 3/8" dia., 9/16" hole | aa 7 | Nut, eye, 5/8" |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | av | Jumpers |
| j 2 | Screw, lag, 1/2" x 4" | bo 6 | Shackle, anchor |
| k 12 | Insulator, suspension | ca 6 | Deadend assembly, primary |
| n 4 | Bolt, double arming, 5/8" x req'd. length | cc 2 | Deadend assembly, neutral |
| | | cu 2 | Brace, wood, 60" span |
| | | ek | Locknuts |

12.5/7.2 kV, 3 - PHASE
CROSSARM CONSTRUCTION-DEADEND (DOUBLE)
(LARGE CONDUCTORS)

Apr, 1983

C8-2



ELEVATION

NOTE:

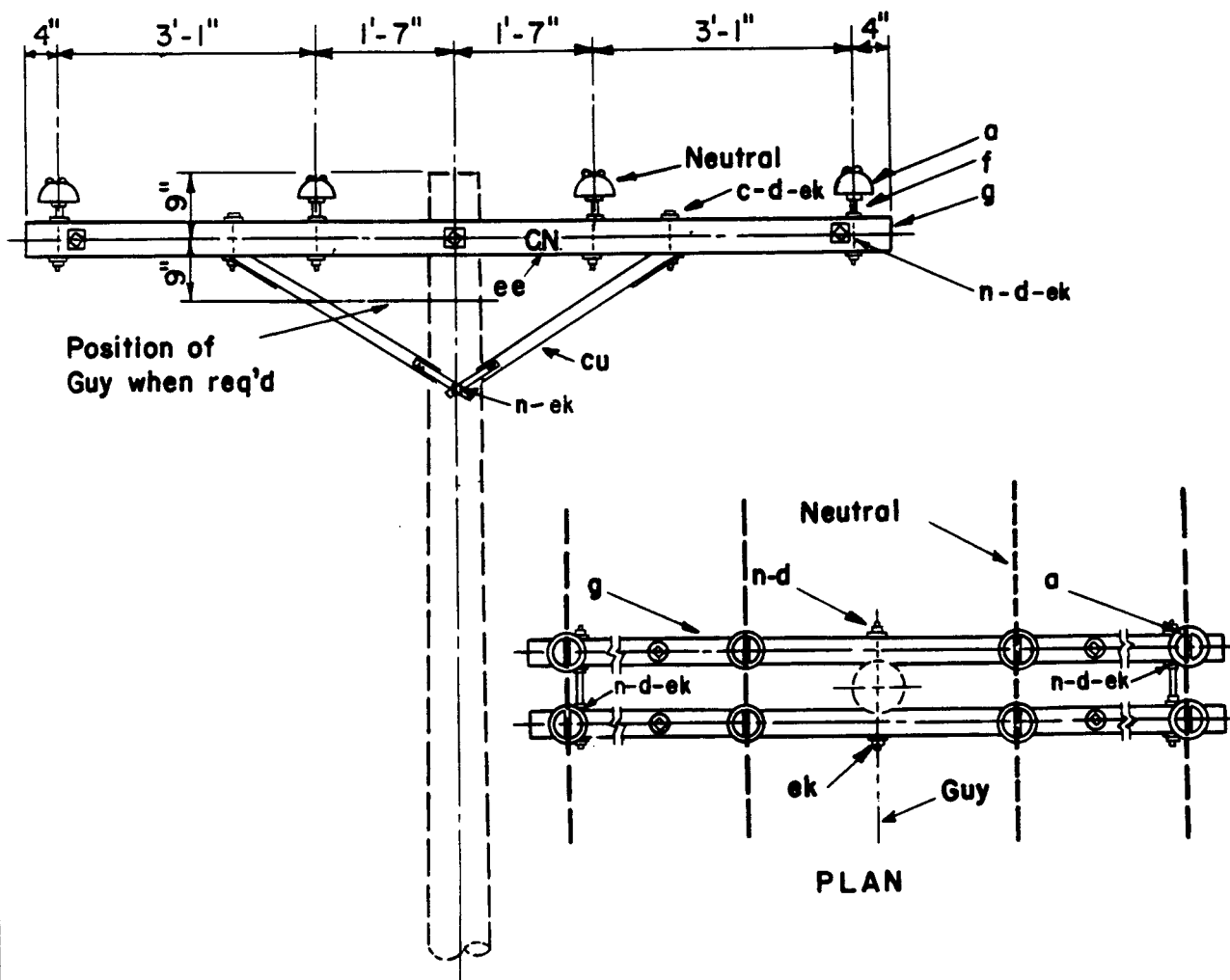
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-------|--------------------------------|
| | | | o | 3 | Bolt, eye, 5/8" x req'd length |
| c | 1 | Bolt, machine, 5/8" x req'd length | p | | Connectors, as req'd. |
| c | 4 | Bolt, machine, 1/2" x req'd length | u | 1 1/2 | Clamp, guy, 6" heavy duty |
| d | 21 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | aa | 7 | Nut, eye, 5/8" |
| d | 4 | Washer, rd., 1 3/8" diam., 9/16" hole | av | | Jumpers, as required |
| | | | bo | 6 | Shackle, anchor |
| g | 3 | Crossarm, 3 5/8" x 4 5/8" x 8' - 0" | ca | 6 | Deadend assembly, primary |
| j | 2 | Screw, lag, 1/2" x 4" | cc | 2 | Deadend assembly, neutral |
| k | 12 | Insulator, suspension | cu | 2 | Brace, wood, 60" span |
| n | 6 | Bolt, double arming, 5/8" x req'd length | ek | | Locknuts, as required |

12.5/7.2 kV,- 3 PHASE
CROSSARM CONSTRUCTION, DEADEND (DOUBLE)
LARGE CONDUCTORS WITH UNBALANCED LOADS

Apr., 1983

C8-3



| ITEM | NO. REQ'D | MATERIAL | ITEM | NO. REQ'D | MATERIAL |
|------|--------------|--|------|--------------|---|
| a | 8 | Insulator, pin type | f | 8 | Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ " |
| | | | g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x $10'-0"$ |
| | | | n | 4 | Bolt, double arming, $\frac{5}{8}$ " x req'd length |
| c | 4 | Bolt, machine, $\frac{1}{2}$ " x req'd length | cu | 2 | Brace, wood, 60" span |
| d | 10 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | ek | | Locknuts, as required |
| d | 4 | Washer, rd., $1\frac{3}{8}$ " dia., $\frac{9}{16}$ " hole | ee | 4 | Letters, 2C, 2N, with 1" nails |

DESIGN LIMITS

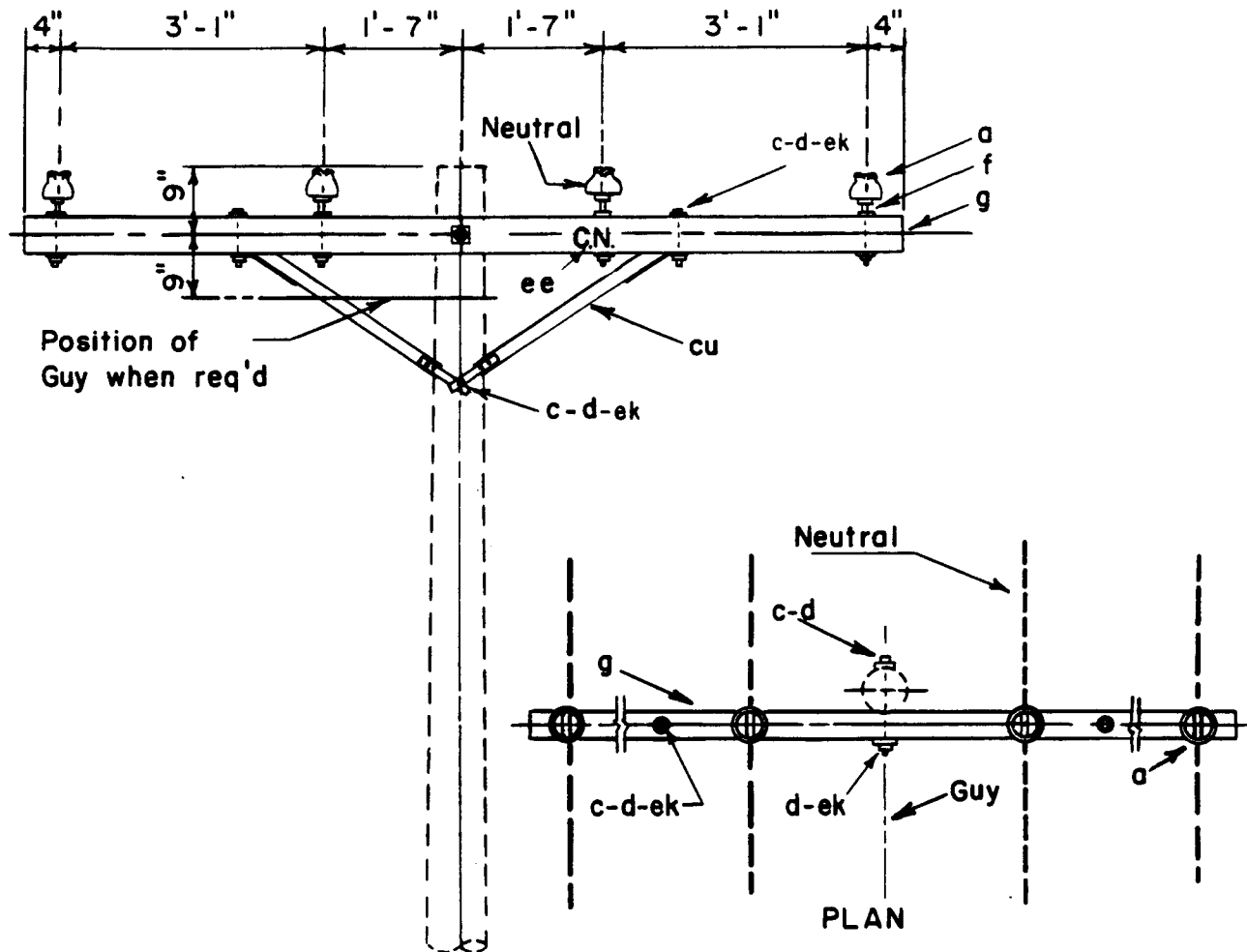
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

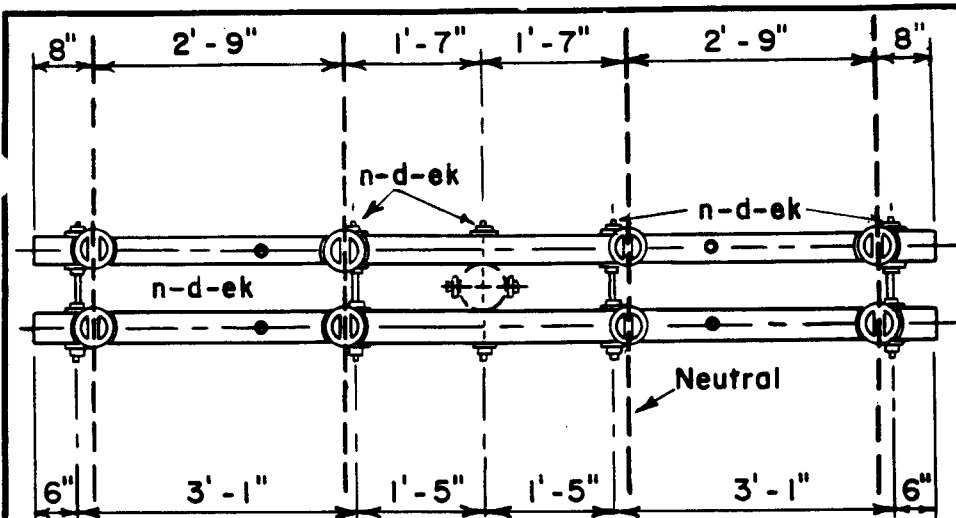
12.5/7.2 kV, 3-PHASE
CROSSARM CONSTRUCTION-DOUBLE LINE ARM

Apr., 1983

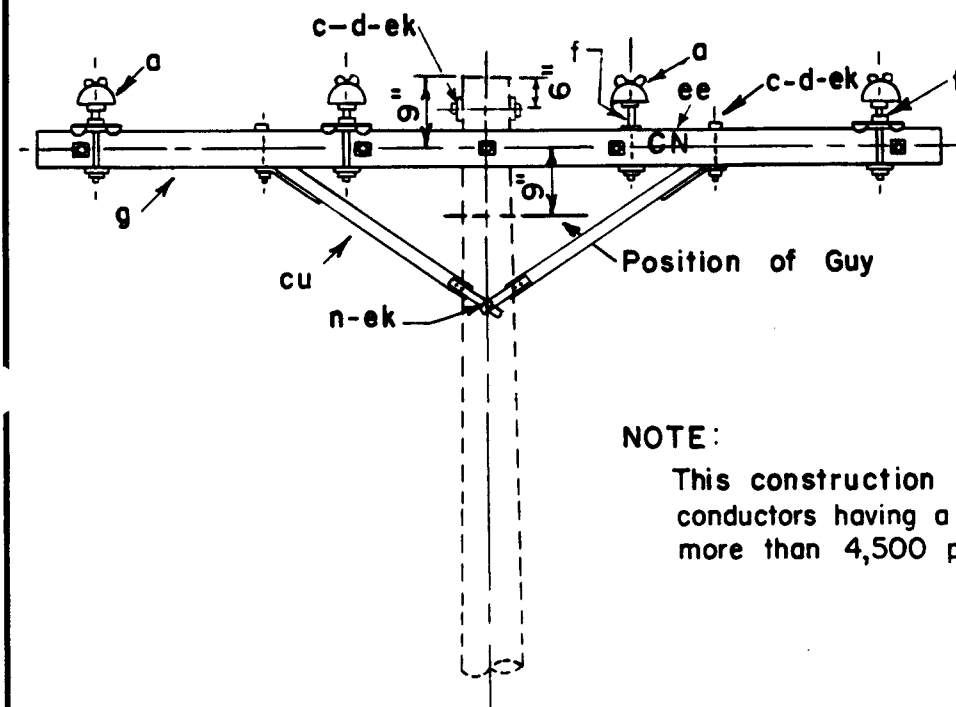
C9



| ITEM | NO. | MATERIAL | | ITEM | NO. | MATERIAL | |
|--|-----|--|--|------|-----|---------------------------------------|--|
| a | 4 | Insulator, pin type | | d | 2 | Washer, round, 1 3/8" dia, 9/16" hole | |
| | | | | f | 4 | Pin, crossarm, steel, 5/8" x 10 3/4" | |
| c | 2 | Bolt, machine, 5/8" x req'd length | | g | 1 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" | |
| c | 2 | Bolt, machine, 1/2" x req'd length | | cu | 1 | Brace, wood, 60" span | |
| d | 3 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | | ek | | Locknuts, as required | |
| ee | 4 | Letters, 2C, 2N, with 1" nails | 12.5/7.2 kV 3-PHASE CROSSARM CONSTR. SINGLE LINE ARM | | | | |
| DESIGN LIMITS | | | | | | | |
| Max. transverse load: 500 lbs. per conductor | | | | | | | |
| Max. line angle within load limits: 5° | | | | | | | |
| | | Apr., 1983 | | | | C9-1 | |



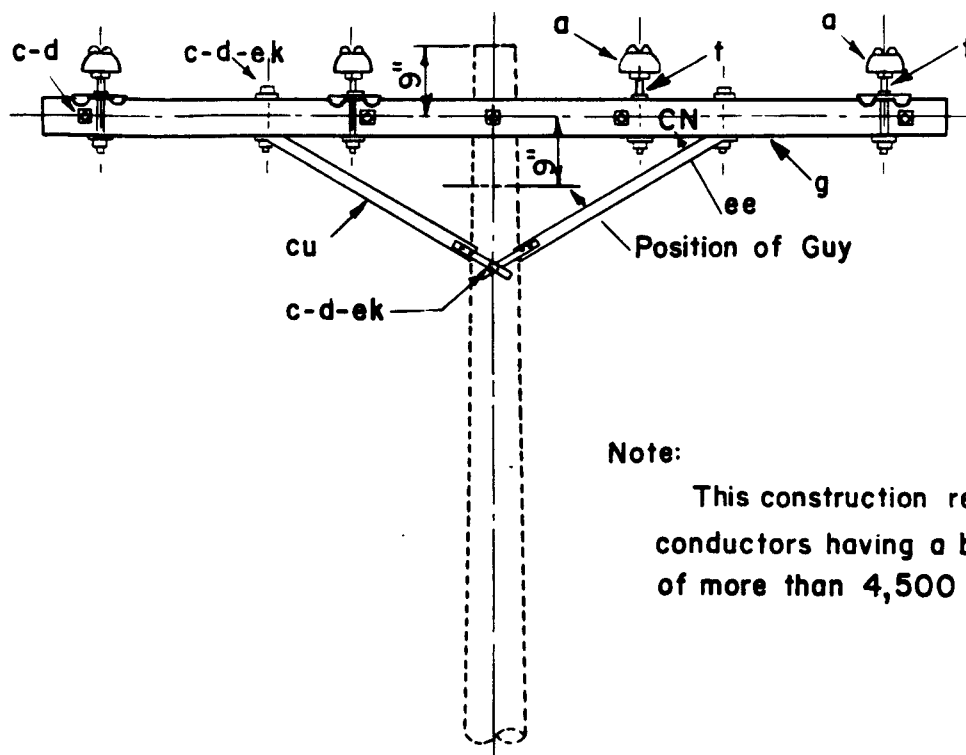
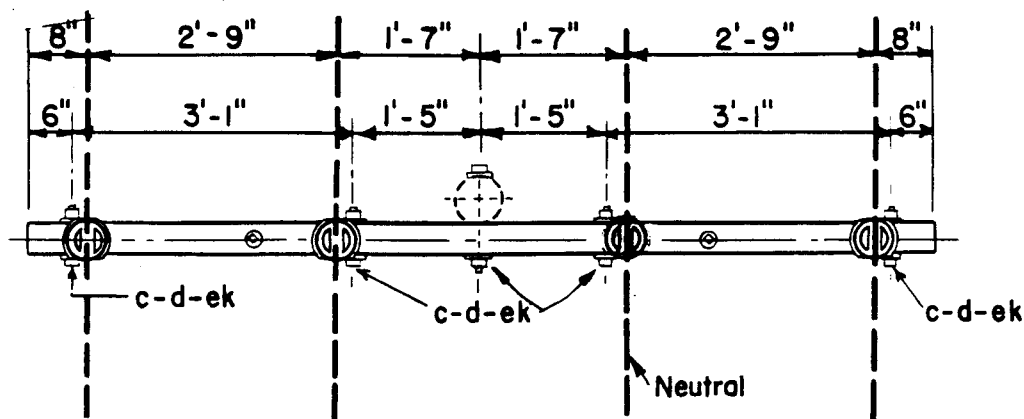
PLAN



NOTE:

This construction required for all conductors having a breaking strength of more than 4,500 pounds.

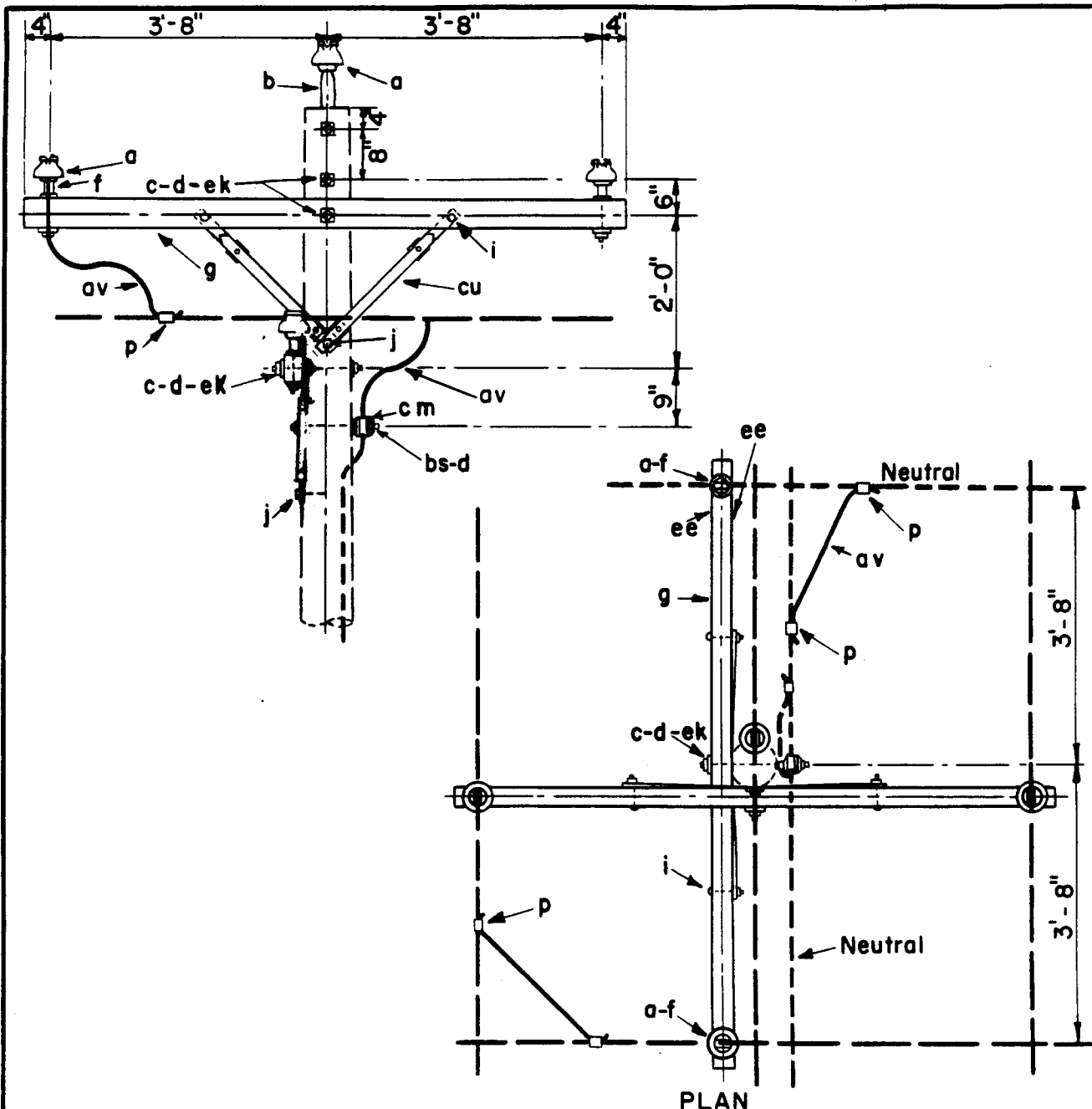
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|---|-----|---|--|-----|---|
| a | 8 | Insulator, pin type | f | 6 | Pin, crossarm, steel, clamp type |
| | | | g | 2 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" |
| c | 1 | Bolt, machine, 5/8" x req'd length | n | 6 | Bolt, double arming, 5/8" x req'd l'gth |
| c | 4 | Bolt, machine, 1/2" x req'd length | cu | 2 | Brace, wood, 60" span |
| d | 20 | Washer, 2 1/4" x 2 1/4" x 3/16" 13/16" hole | ek | | Locknuts, as required |
| d | 4 | Washer, rd. 1 3/8" diam. 9/16" hole | ee | 4 | Letters 2C, 2N, with 1" nails |
| f | 2 | Pin, crossarm, steel, 5/8" x 10 3/4" | | | |
| DESIGN LIMITS | | | 12.5/7.2 kV | | |
| Max. transverse load: 2000 lbs. per conductor | | | 3-PHASE CROSSARM CONSTR. - DOUBLE LINE ARM | | |
| Max. line angle within load limits: 5° | | | ANGLE (LARGE CONDUCTORS) | | |
| | | | | | |
| Apr., 1983 | | | C9-2 | | |



Note:

This construction required for all conductors having a breaking strength of more than 4,500 pounds.

| ITEM | NO. REQD | MATERIAL | ITEM | NO. REQD | MATERIAL |
|---|----------|--|---|----------|--------------------------------------|
| a | 4 | Insulator, pin type | f | 3 | Pin, crossarm, steel, clamp type |
| | | | g | 1 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" |
| c | 6 | Bolt, machine, 5/8" x req'd length | f | 1 | Pin, crossarm, steel, 5/8" x 10 3/4" |
| c | 2 | Bolt, machine, 1/2" x req'd length | cu | 1 | Brace, wood, 60" span |
| d | 11 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | ek | | Locknuts, as required |
| d | 2 | Washer, rd., 1 3/8" diam., 9/16" hole | ee | 4 | Letters, 2 "C", 2 "N" with 1" nails |
| DESIGN LIMITS Max. transverse load: 1000 lbs. per conductor Max. line angle within load limits: 5° | | | 12.5/7.2 kV 3-PHASE CROSSARM CONSTRUCTION - SINGLE LINE ARM (LARGE CONDUCTORS) | | |
| | | | Apr., 1983 | | |
| | | | C9-3 | | |



PLAN

| ITEM | NO. REQ'D | MATERIAL | ITEM | NO. REQ'D | MATERIAL |
|------|-----------|--|------|-----------|--|
| a | 5 | Insulator, pin type | i | 4 | Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " |
| b | 1 | Pin, pole top, 20" | j | 2 | Screw, log, $\frac{1}{2}$ " x 4" |
| c | 4 | Bolt, machine, $\frac{5}{8}$ " x req'd length | p | | Connectors, as required |
| d | 7 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | av | | Jumpers and leads as req'd |
| f | 4 | Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{1}{4}$ " | bs | 1 | Bolt, single upset, |
| g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x 8'-0" | ek | | Locknuts, as required |
| cu | 4 | Brace, wood, 28" | ee | 4 | Letters, 2 "C", 2 "N", with 1" nails |
| | | | cm | 1 | spool insulator |

DESIGN LIMITS

Max. transverse load: 500 lbs. per conductor

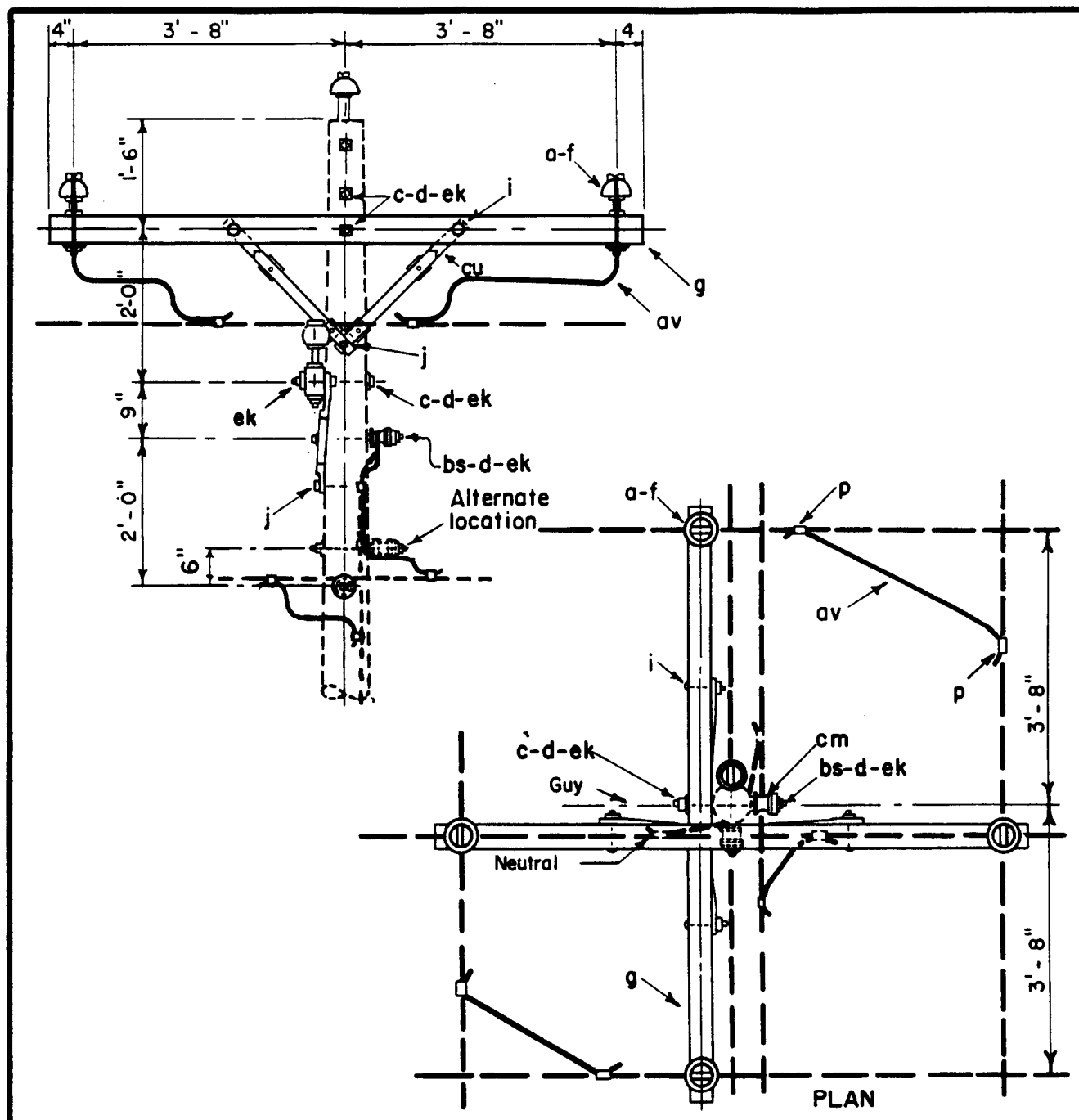
Max. line angle within load limits: 5°

12.5 / 7.2 kV

3-PHASE, CROSSARM CONSTRUCTION
SINGLE - PHASE JUNCTION

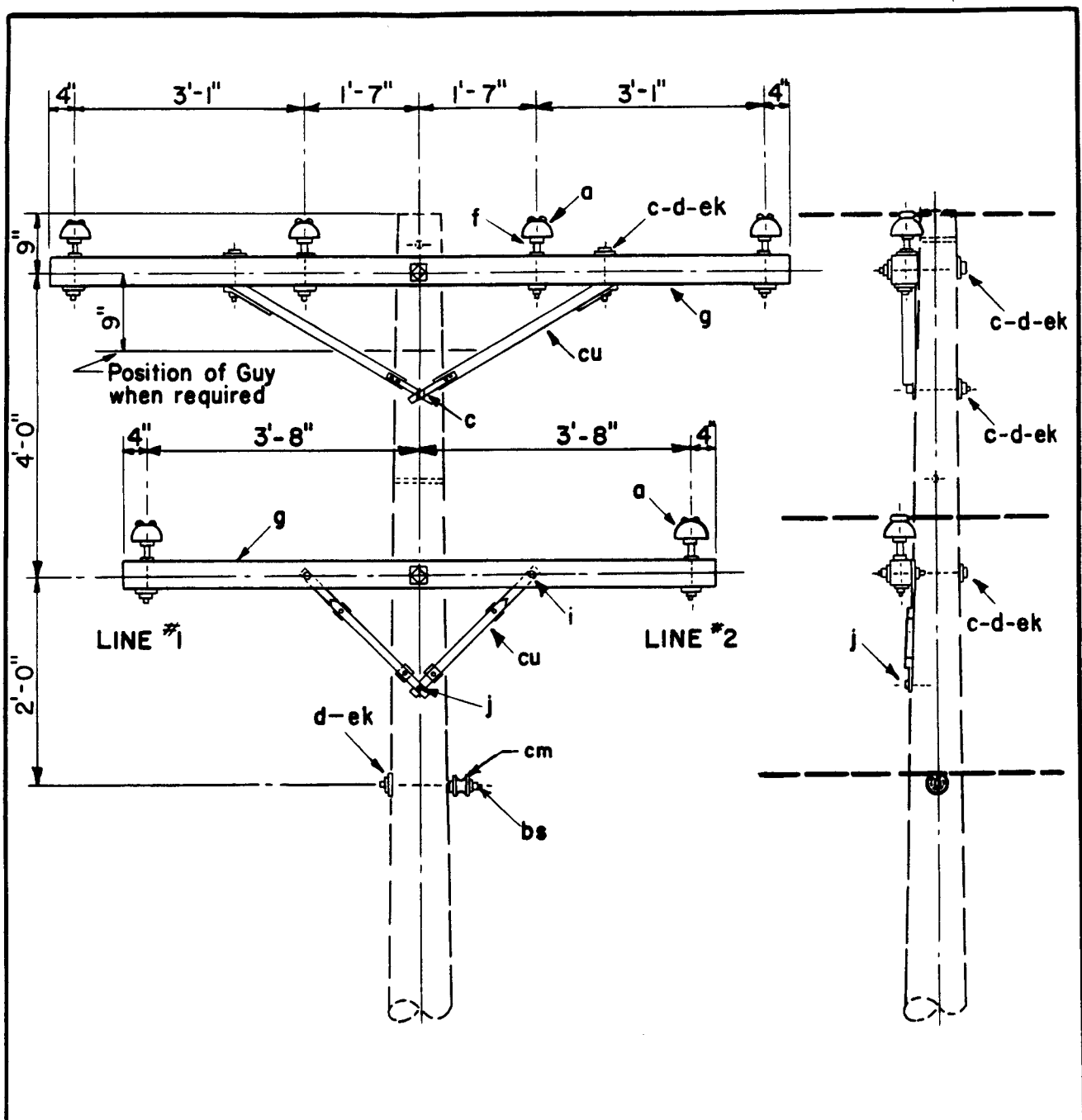
Apr., 1983

C22

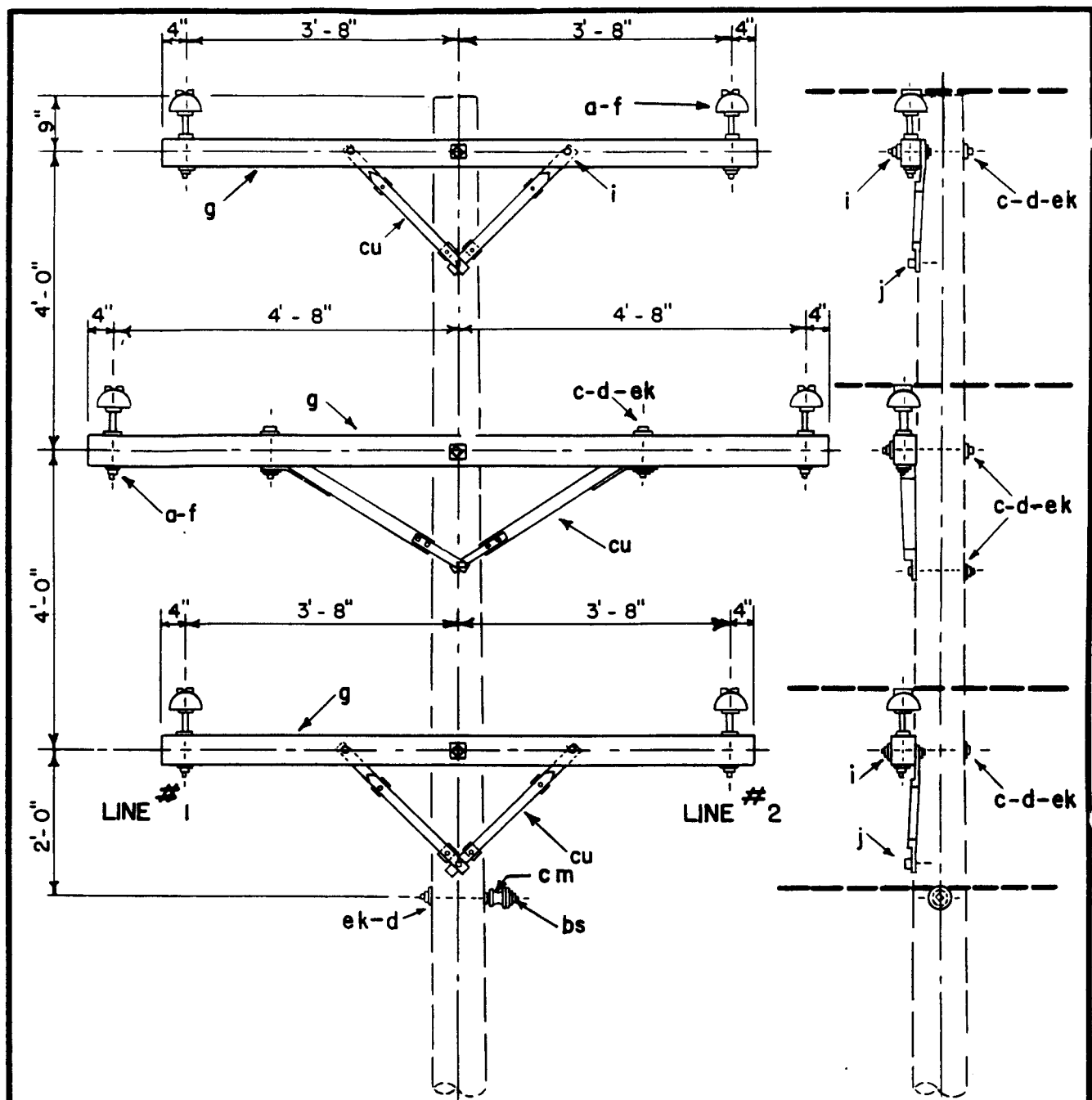


| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|-------------------------------|
| a | 5 | Insulator, pin type | i | 4 | Bolt, carriage, 3/8" x 4 1/2" |
| b | 1 | Pin, pole top, 20" | j | 2 | Screw, lag, 1/2" x 4" |
| c | 4 | Bolt, machine, 5/8" x req'd. length | p | | Connectors, as req'd. |
| d | 8 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | av | | Jumpers |
| f | 4 | Pin, crossarm, steel, 5/8" x 10 3/4" | bs | 2 | Bolt, single upset |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ek | | Locknuts, as required |
| cu | 4 | Brace, wood, 28" | cm | 2 | spool insulator |

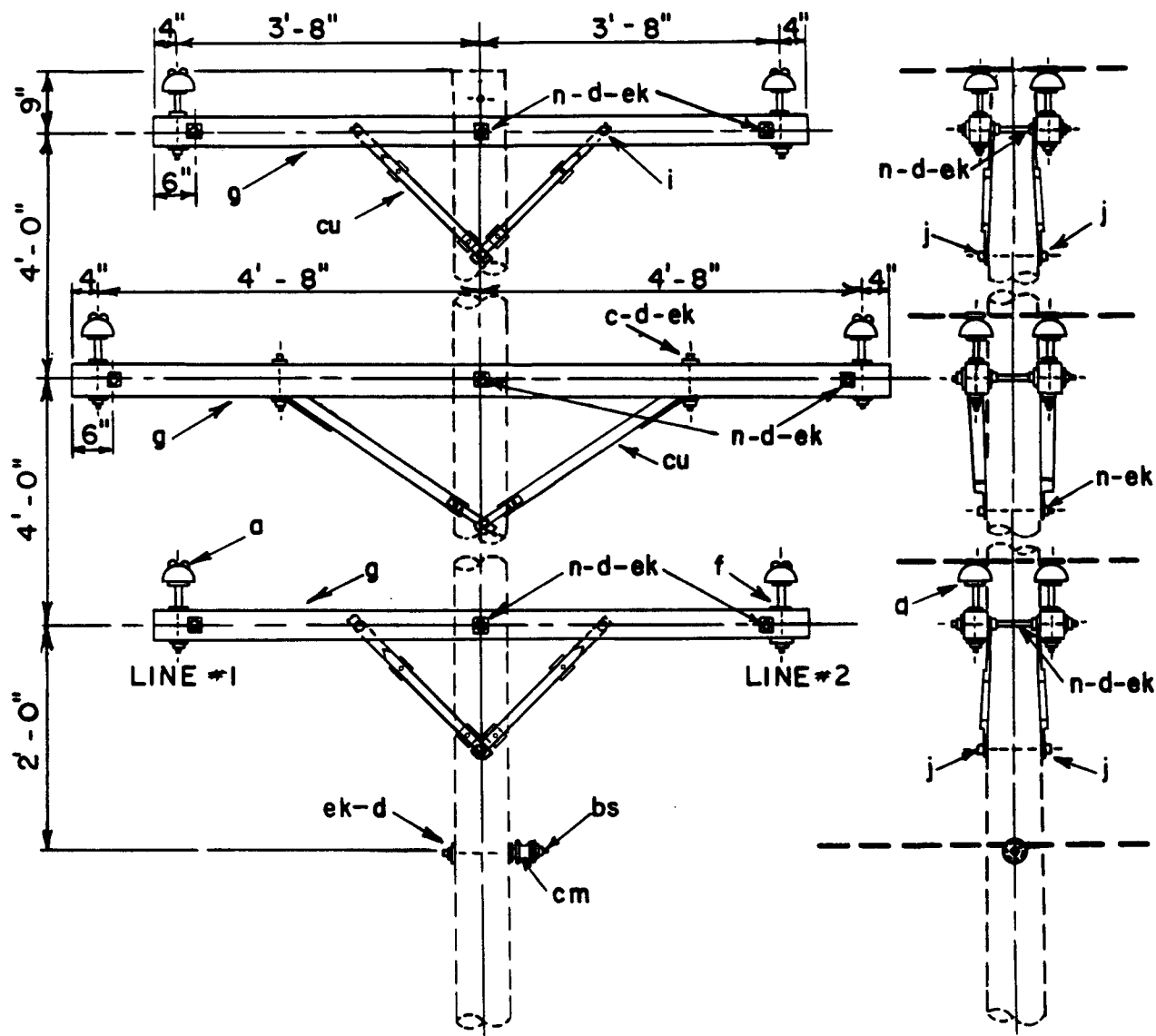
| | | | |
|--|--|---|--|
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV 3-PHASE, CROSSARM CONSTRUCTION TWO PHASE JUNCTION | |
| | | | |
| | | | |
| Apr, 1983 | | C24 | |



| ITEM | NO. REQ'D | MATERIAL | ITEM | NO. REQ'D | MATERIAL |
|--|-----------|--|--|-----------|---|
| a | 6 | Insulator, pin type | g | 1 | Crossarm, 3 ⁵ / ₈ " x 4 ⁵ / ₈ " x 8'-0" |
| c | 3 | Bolt, machine, ⁵ / ₈ " x req'd length | cu | 2 | Brace, wood, 28" |
| c | 2 | Bolt, machine, ¹ / ₂ " x req'd length | i | 2 | Bolt, carriage, ³ / ₈ " x 4 ¹ / ₂ " |
| d | 6 | Washer, 2 ¹ / ₄ " x 2 ¹ / ₄ " x ³ / ₁₆ ", ¹⁵ / ₁₆ " hole | j | 1 | Screw, lag, ¹ / ₂ " x 4" |
| d | 2 | Washer, rd., 1 ³ / ₈ " diam., ⁹ / ₁₆ " hole | bs | 1 | Bolt, single upset |
| f | 6 | Pin, crossarm, steel, ⁵ / ₈ " x 10 ³ / ₄ " | cu | 1 | Brace, wood, 60" span |
| g | 1 | Crossarm, 3 ⁵ / ₈ " x 4 ⁵ / ₈ " x 10'-0" | ek | | Locknuts, as required |
| cm | 1 | Spool insulator | | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | | 12.5/7.2 kV. 3-PHASE CROSSARM CONSTRUCTION-DOUBLE CIRCUIT SINGLE PRIMARY SUPPORT, 2 CROSSARM TYPE | | |
| | | | <div>Apr., 1983</div> <div>DC-CI</div> | | |



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|--|--|-------------------------------------|
| a | 6 Insulator, pin type | g | 2 Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| c | 4 Bolt, machine, 5/8" x req'd. length | cu | 4 Brace, wood, 28" |
| c | 2 Bolt, machine, 1/2" x req'd. length | i | 4 Bolt, carriage, 3/8" x 4 1/2" |
| d | 8 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | j | 2 Screw, lag, 1/2" x 4" |
| d | 2 Washer, round, 1 3/8" diam., 9/16" hole | bs | 1 Bolt, single upset |
| f | 6 Pin, crossarm, steel, 5/8" x 10 3/4" | cu | 1 Brace, wood, 60" span |
| g | 1 Crossarm, 3 5/8" x 4 5/8" x 10'-0" | ek | Locknuts, as required |
| cm | 1 Spool insulator | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV 3-PHASE CROSSARM CONSTRUCTION-DOUBLE CIRCUIT SINGLE PRIMARY SUPPORT 3 CROSSARM TYPE | |
| | | Apr, 1983 | DC-CIA |
| | | | |



| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|---|
| a | 12 | Insulator, pin type | g | 4 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| | | | cu | 8 | Brace, wood, 28" |
| c | 4 | Bolt, machine, 1/2" x req'd length | i | 8 | Bolt, carriage, 3/8" x 4 1/2" |
| d | 31 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | j | 4 | Screw, lag, 1/2" x 4" |
| d | 4 | Washer, round, 1 3/8" diam., 9/16" hole | n | 10 | Bolt, double arming, 5/8" x req'd l'gth |
| f | 12 | Pin, crossarm, steel, 5/8" x 10 3/4" | bs | 1 | Bolt, single upset |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" | cu | 2 | Brace, wood, 60" span |
| cm | 1 | Spool insulator | ek | | Locknuts, as required |

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

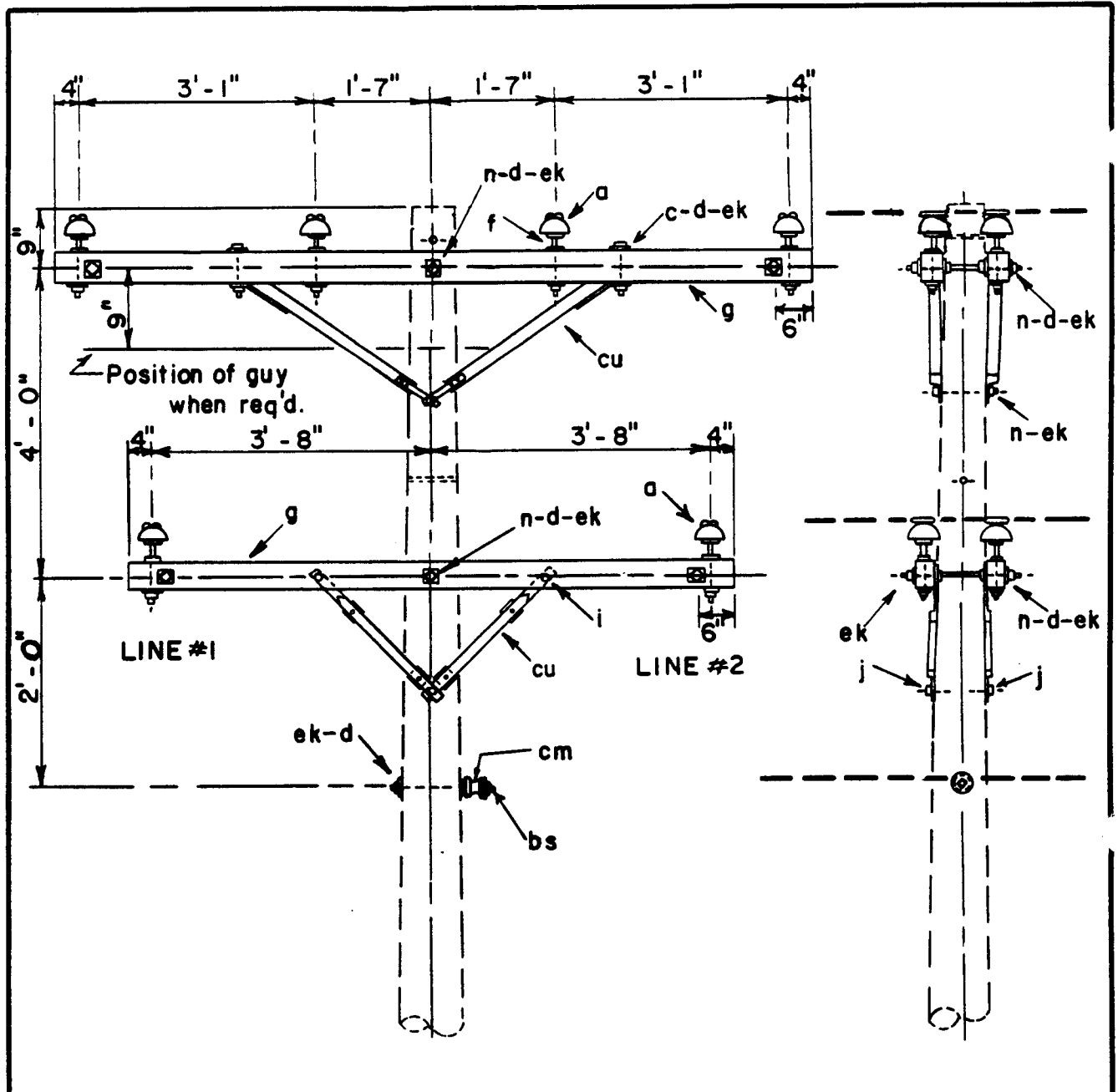
Max. line angle within load limits: 5°

12.5/7.2 kV

3-PHASE CROSSARM CONSTR.-DOUBLE CIRCUIT
DOUBLE PRIMARY SUPPORT 3 CROSSARM TYPE

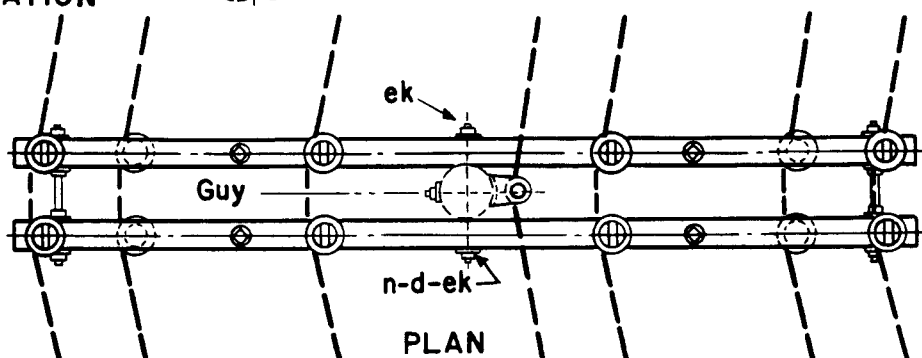
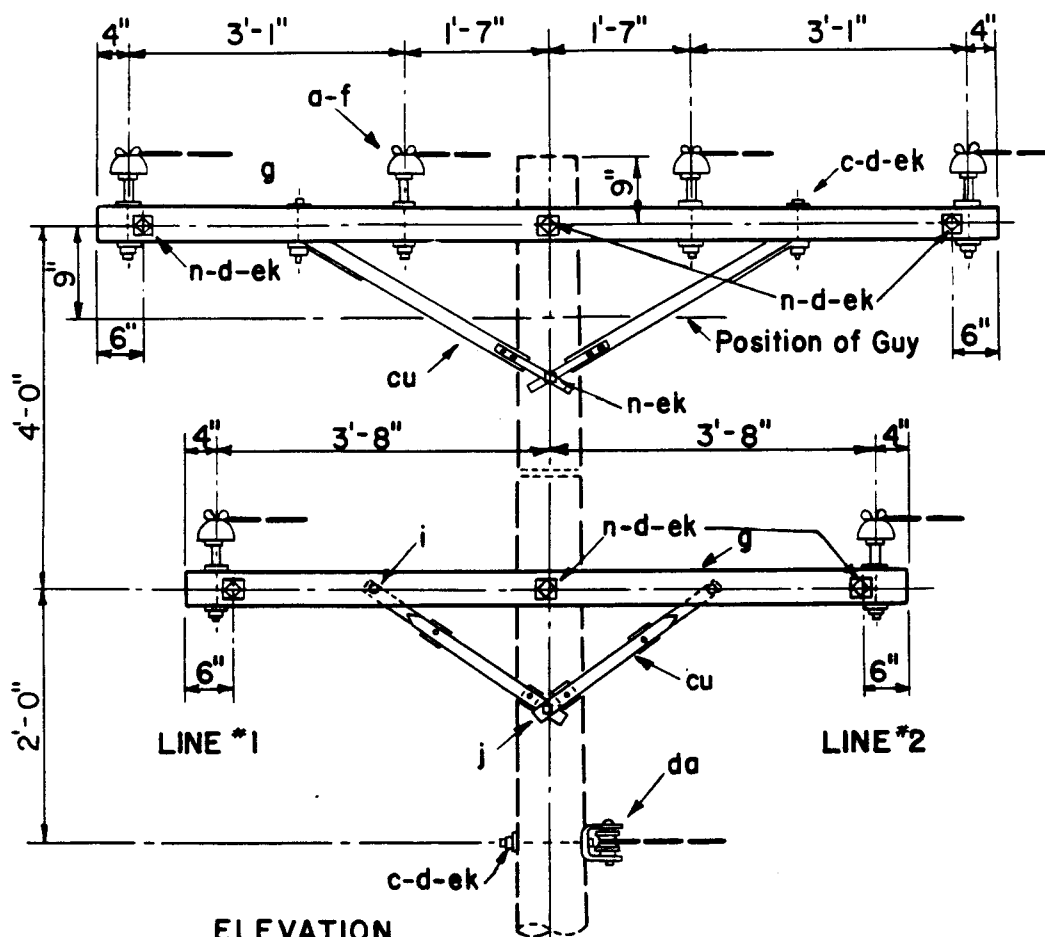
Apr, 1983

DC-CI-IA



| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|---|
| a | 12 | Insulator, pin type | cu | 4 | Brace, wood, 28" |
| | | | i | 4 | Bolt, carriage, $\frac{3}{8}$ " x 4 $\frac{1}{2}$ " |
| c | 4 | Bolt, machine, $\frac{1}{2}$ " x req'd length | j | 2 | Screw, lag, $\frac{1}{2}$ " x 4" |
| d | 21 | Washer, 2 $\frac{1}{4}$ " x 2 $\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | n | 7 | Bolt, double arming, $\frac{5}{8}$ " x req'd lgth |
| d | 4 | Washer, $\frac{13}{8}$ " diam., $\frac{9}{16}$ " hole | bs | 1 | Bolt, single upset |
| f | 12 | Pin, crossarm, steel, $\frac{5}{8}$ " x 10 $\frac{3}{4}$ " | cu | 2 | Brace, wood, 60" span |
| g | 2 | Crossarm, 3 $\frac{5}{8}$ " x 4 $\frac{5}{8}$ " x 10'-0" | ek | | Locknuts, as required |
| g | 2 | Crossarm, 3 $\frac{5}{8}$ " x 4 $\frac{5}{8}$ " x 8'-0" | cm | 1 | Spool insulator |

| | |
|---|---|
| DESIGN LIMITS Max. transverse load: 1000 lbs. per conductor Max. line angle within load limits: 5° | 12.5/7.2 kV 3-PHASE CROSSARM CONSTR.-DOUBLE CIRCUIT DOUBLE PRIMARY SUPPORT 2 CROSSARM TYPE |
| Apr., 1983 | DC-C2 |



| ITEM | NO. REQD | MATERIAL | ITEM | NO. REQD | MATERIAL |
|------|----------|--|------|----------|---|
| a | 12 | Insulator, pin type | cu | 4 | Brace, wood, 28" |
| c | 1 | Bolt, machine, $\frac{5}{8}$ " x req'd length | i | 4 | Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " |
| c | 4 | Bolt, machine, $\frac{1}{2}$ " x req'd length | j | 2 | Screw, lag, $\frac{1}{2}$ " x 4" |
| d | 21 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | n | 7 | Bolt, double arming, $\frac{5}{8}$ " x req'd length |
| d | 4 | Washer, round $1\frac{3}{8}$ " dia, $\frac{9}{16}$ " hole | cu | 2 | Brace, wood, 60" span |
| f | 12 | Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ " | da | 1 | Bracket, insulated |
| g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x $10'-0"$ | ek | | Locknuts, as required |
| g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x $8'-0"$ | | | |

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits 20°

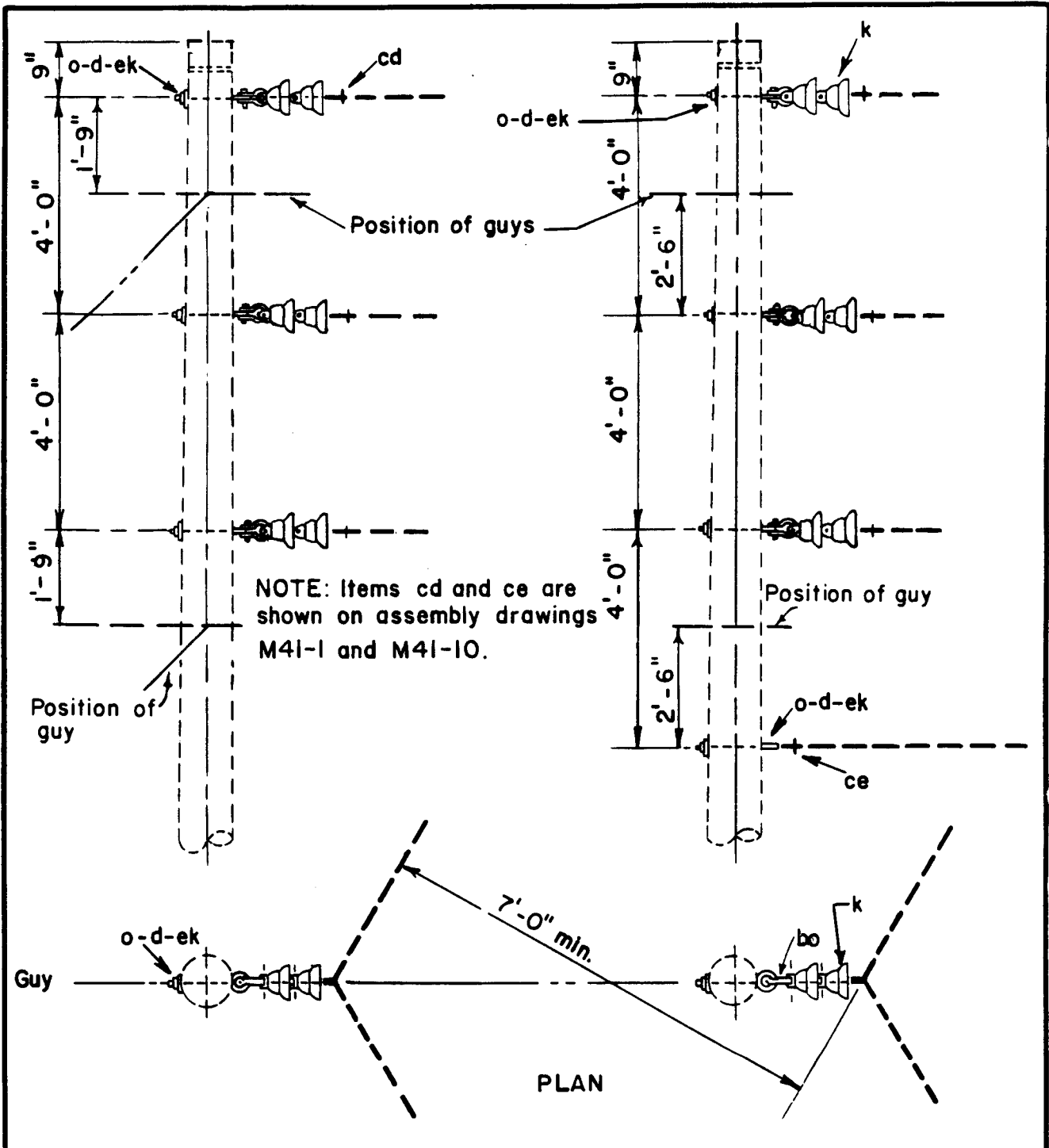
12.5/7.2 kV

3-PHASE, DOUBLE CIRCUIT

CROSSARM CONSTRUCTION 2 CROSSARM TYPE

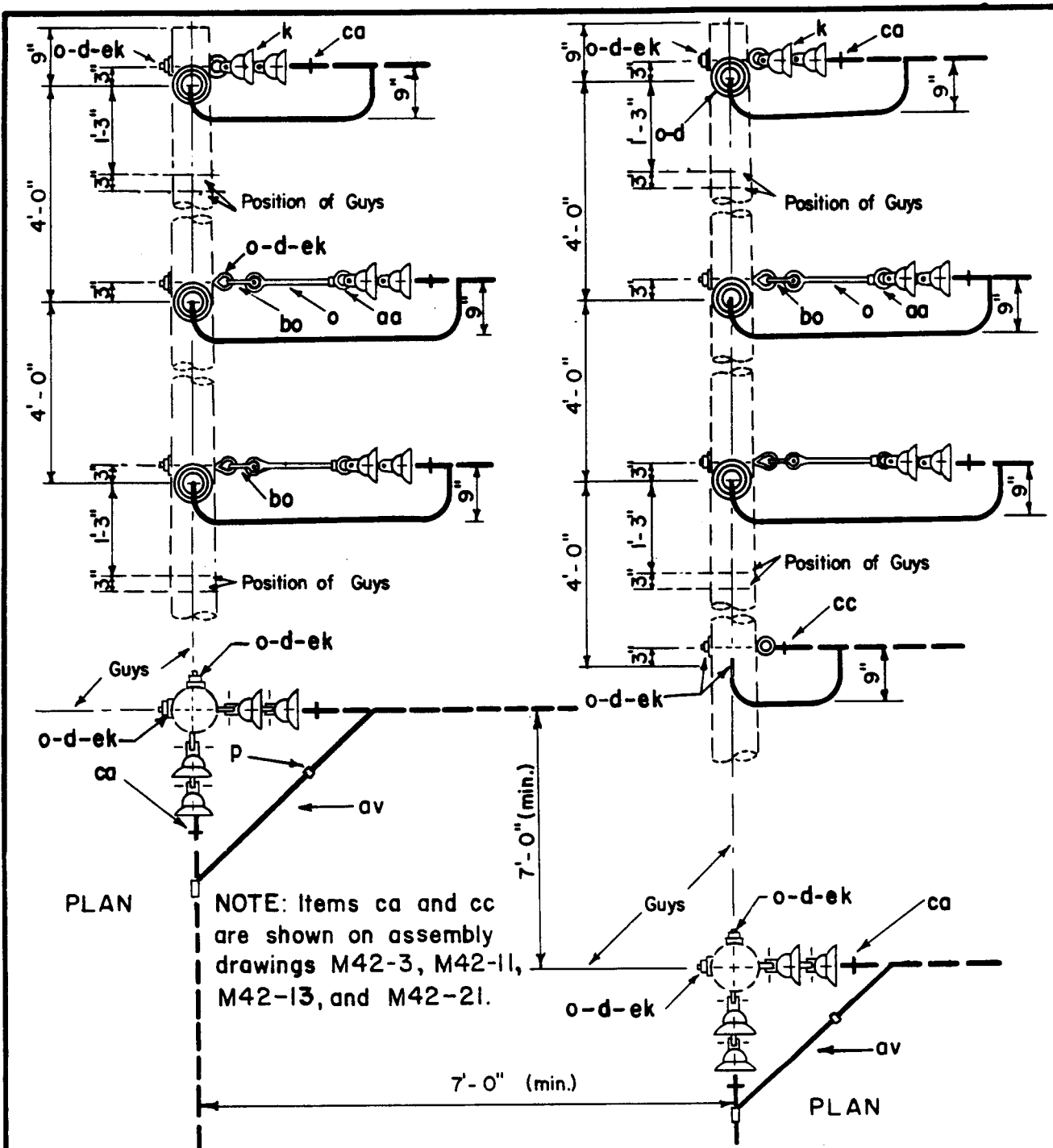
Apr., 1983

DC-C2-1



| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|-------------------------|
| d | 7 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | bo | 6 | Shackle, anchor |
| k | 12 | Insulator, suspension | cd | 6 | Angle assembly, primary |
| o | 7 | Bolt, eye, 5/8" x req'd length | ce | 1 | Angle assembly, neutral |
| | | | ek | | Locknuts, as required |

| | |
|---|---|
| DESIGN LIMITS Max. transverse load: 4000 lbs. per conductor Angle: 20°-60° | 12.5/7.2 kV. 3-PHASE, DOUBLE CIRCUIT VERTICAL CONSTRUCTION |
| Apr., 1983 | DC-C3 |



| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|---------------------------|
| d | 14 | Washers, 2 1/4" x 2 1/4" x 3/16, 13/16" hole | av | | Jumpers, as required |
| k | 24 | Insulator, suspension | bo | 8 | Shackle, anchor |
| o | 22 | Bolt, eye, 5/8" x req'd. length | ca | 12 | Deadend assembly, primary |
| p | | Connectors, as req'd. | cc | 2 | Deadend assembly, neutral |
| aa | 8 | Nut, eye, 5/8" | ek | | Locknuts, as required |

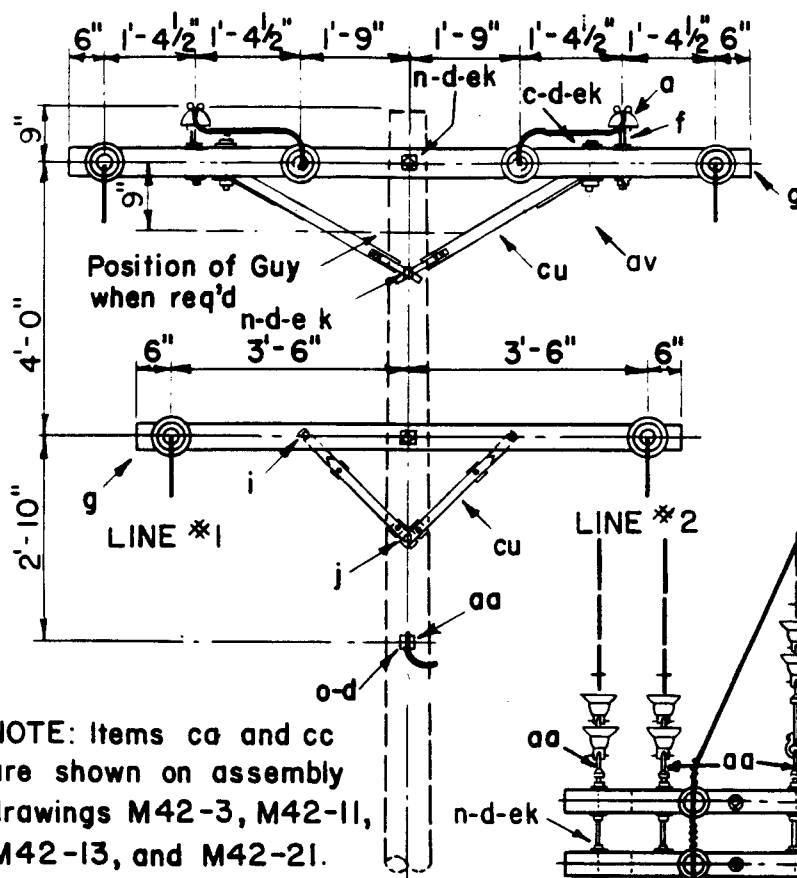
Angle: 60° - 90°

12.5 / 7.2 kV

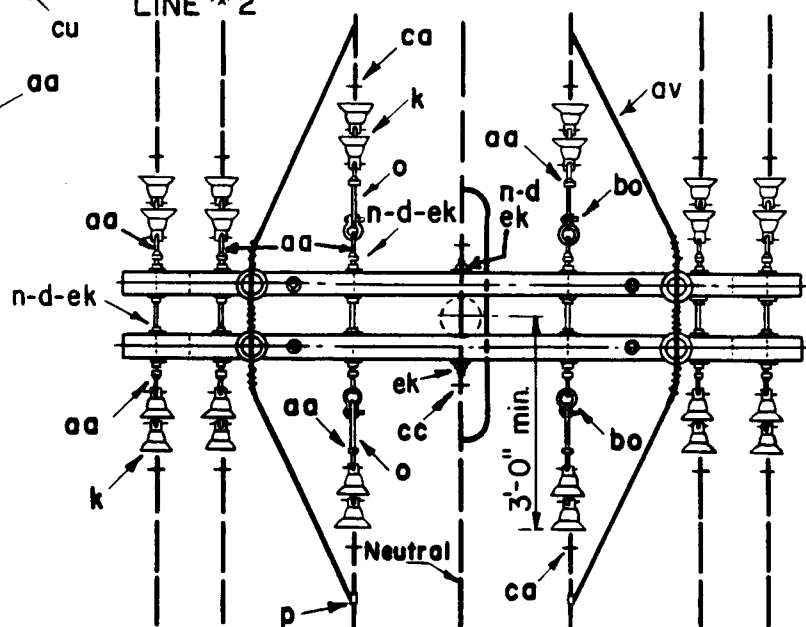
3-PHASE, DOUBLE CIRCUIT, VERTICAL CONSTRUCTION

Apr., 1983

DC-C4-1



NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

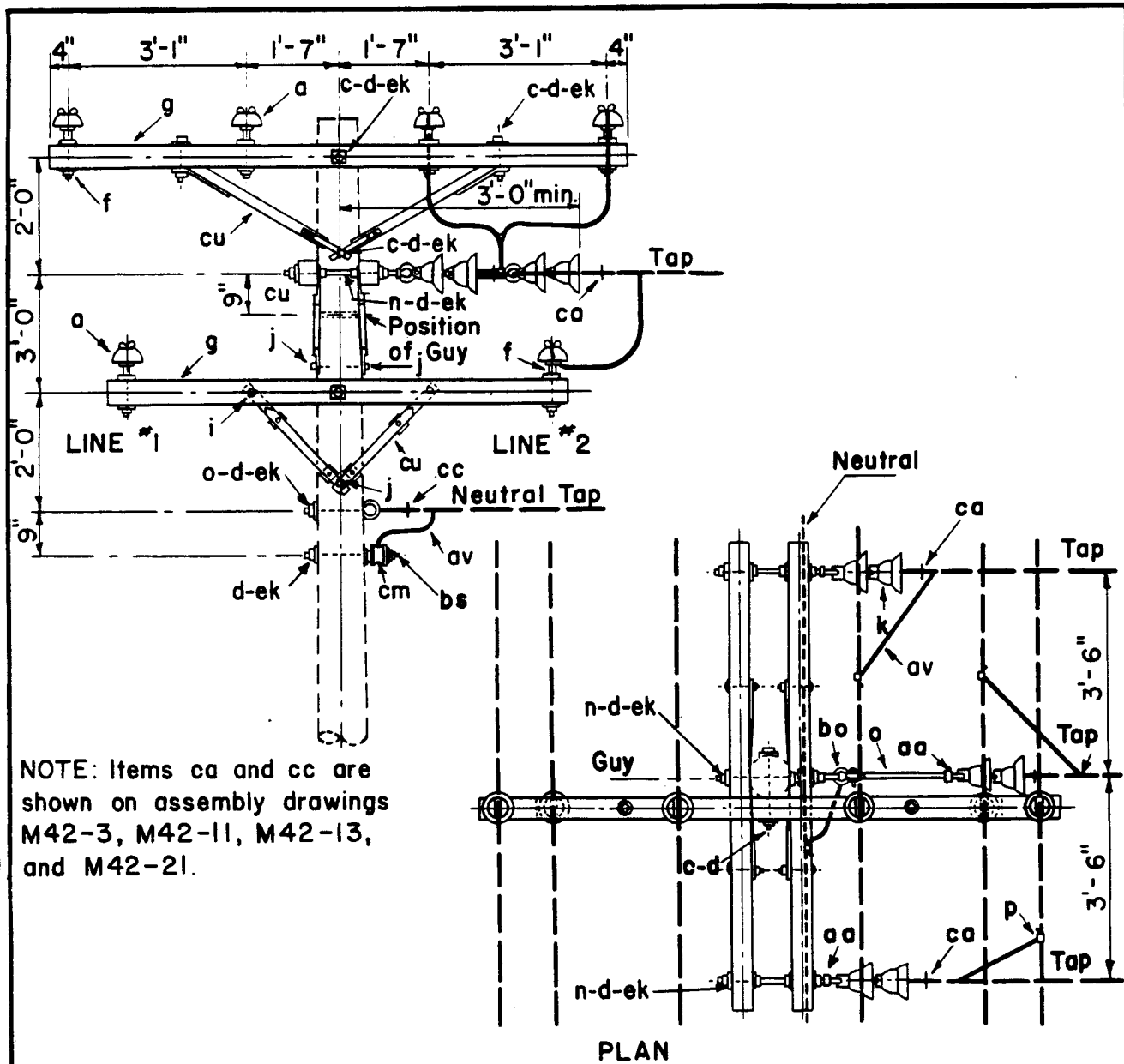


| ITEM | NO. REQD | MATERIAL | ITEM | NO. REQD | MATERIAL |
|------|----------|--|------|----------|---|
| a | 4 | Insulator, pin type | k | 24 | Insulator, suspension |
| c | 4 | Bolt, machine, $\frac{1}{2}$ " x req'd length | n | 9 | Bolt, double arming, $\frac{5}{8}$ " x req'd length |
| d | 30 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | o | 5 | Bolt, eye, $\frac{5}{8}$ " x req'd length |
| d | 4 | Washer, rd., $1\frac{3}{8}$ " diam., $\frac{9}{16}$ " hole | p | | Connectors, as required |
| f | 4 | Pin, crossarm, steel, $1\frac{5}{8}$ " x $10\frac{3}{4}$ " | aa | 17 | Nut, eye |
| g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x $10'-0"$ | av | | Jumpers, as required |
| g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x $8'-0"$ | bo | 4 | Shackle, anchor |
| cu | 4 | Brace, wood, 28" | ca | 12 | Deadend assembly, primary |
| i | 4 | Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " | cc | 2 | Deadend assembly, neutral |
| j | 2 | Screw, lag, $\frac{1}{2}$ " x $4\frac{1}{2}$ " | cu | 2 | Brace, wood, 60" span |
| | | | ek | | Locknuts as required |

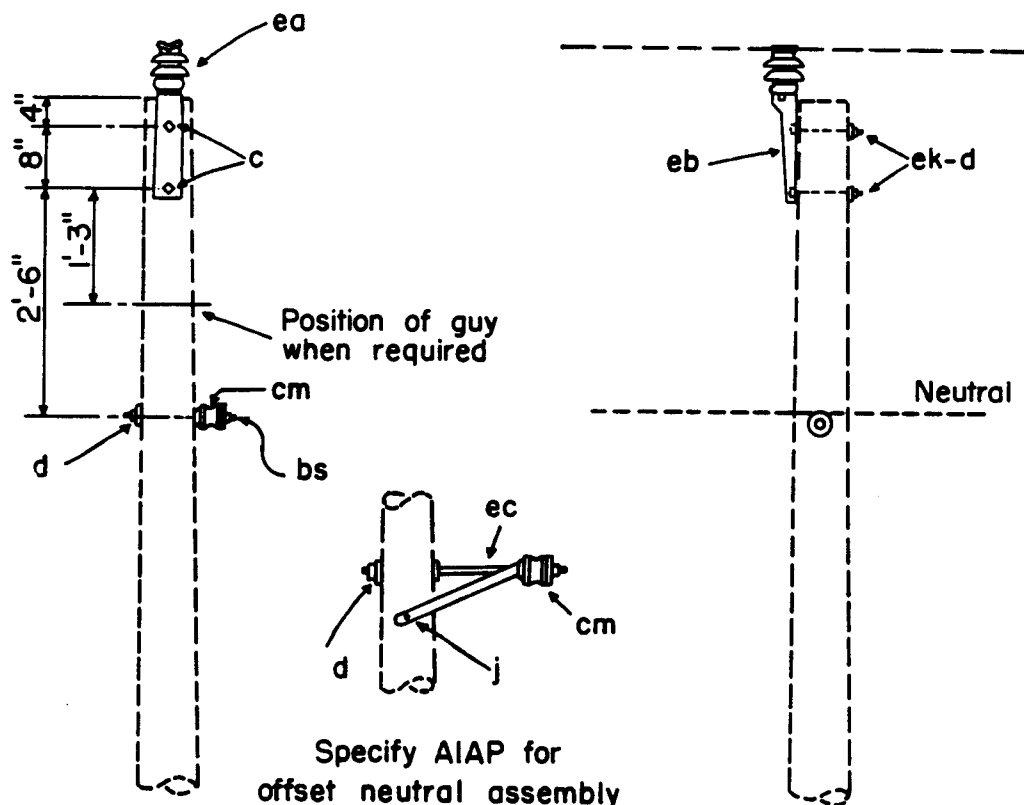
12.5/7.2 kV.
3-PHASE, CROSSARM CONSTRUCTION
DOUBLE CIRCUIT - DEADEND (DOUBLE)

Apr., 1983

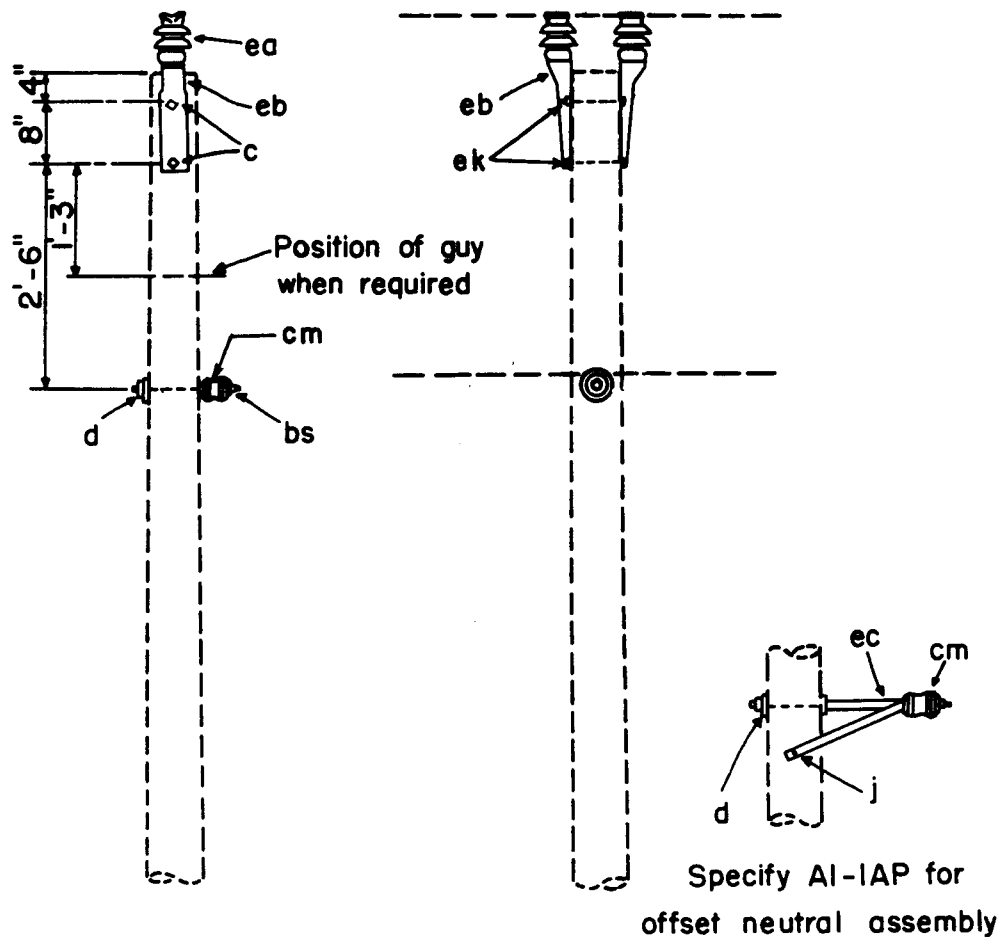
DC-C8



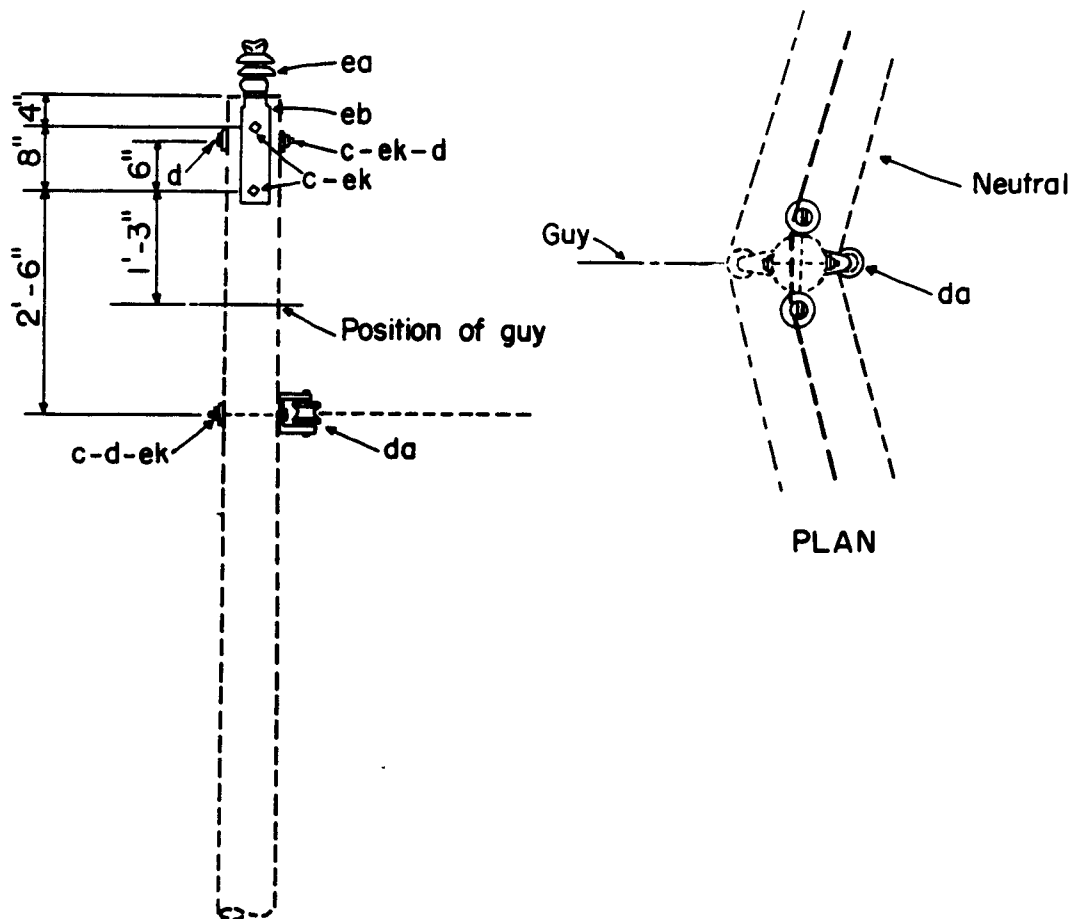
| ITEM | NO. REQD | MATERIAL | ITEM | NO. REQD | MATERIAL |
|--|-------------|--|---|-------------|---|
| a | 6 | Insulator, pin type | k | 6 | Insulator, suspension |
| c | 3 | Bolt, machine, $\frac{5}{8}$ " x req'd length | n | 3 | Bolt, double arming, $\frac{5}{8}$ " x req'd length |
| c | 2 | Bolt, machine, $\frac{1}{2}$ " x req'd length | o | 2 | Bolt, eye, $\frac{5}{8}$ " x req'd length |
| d | 17 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | p | | Connectors as required |
| d | 2 | Washer, rd., $1\frac{3}{8}$ " dia., $\frac{9}{16}$ " hole | aa | 4 | Nut, eye, $\frac{5}{8}$ " |
| f | 6 | Pin, steel, crossarm, $\frac{5}{8}$ " x $10\frac{3}{4}$ " | av | | Jumpers or leads as re |
| g | 1 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x $10'-0"$ | bo | 1 | Shackle, anchor |
| g | 3 | Crossarm, $3\frac{5}{8}$ " x $4\frac{5}{8}$ " x $8'-0"$ | bs | 1 | Bolt, single upset |
| cu | 6 | Brace, wood, 28" | ca | 3 | Deadend assembly, primary |
| i | 6 | Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " | cc | 1 | Deadend assembly, neutral |
| j | 3 | Screw, lag, $\frac{1}{2}$ " x 4" | cu | 1 | Brace, wood, 60" span |
| ek | | Locknuts, as required | 12.5/7.2 kV. 3-PHASE CROSSARM CONSTRUCTION-DOUBLE CIRCUIT 3-PHASE TAP | | |
| cm | 1 | Spool insulator | | | |
| DESIGN LIMITS | | | | | |
| Max. transverse load: 500 lbs. per conductor | | | | | |
| Max. line angle within load limits: 5° | | | Apr., 1983 | | |
| | | | | | |
| | | | DC-C25 | | |



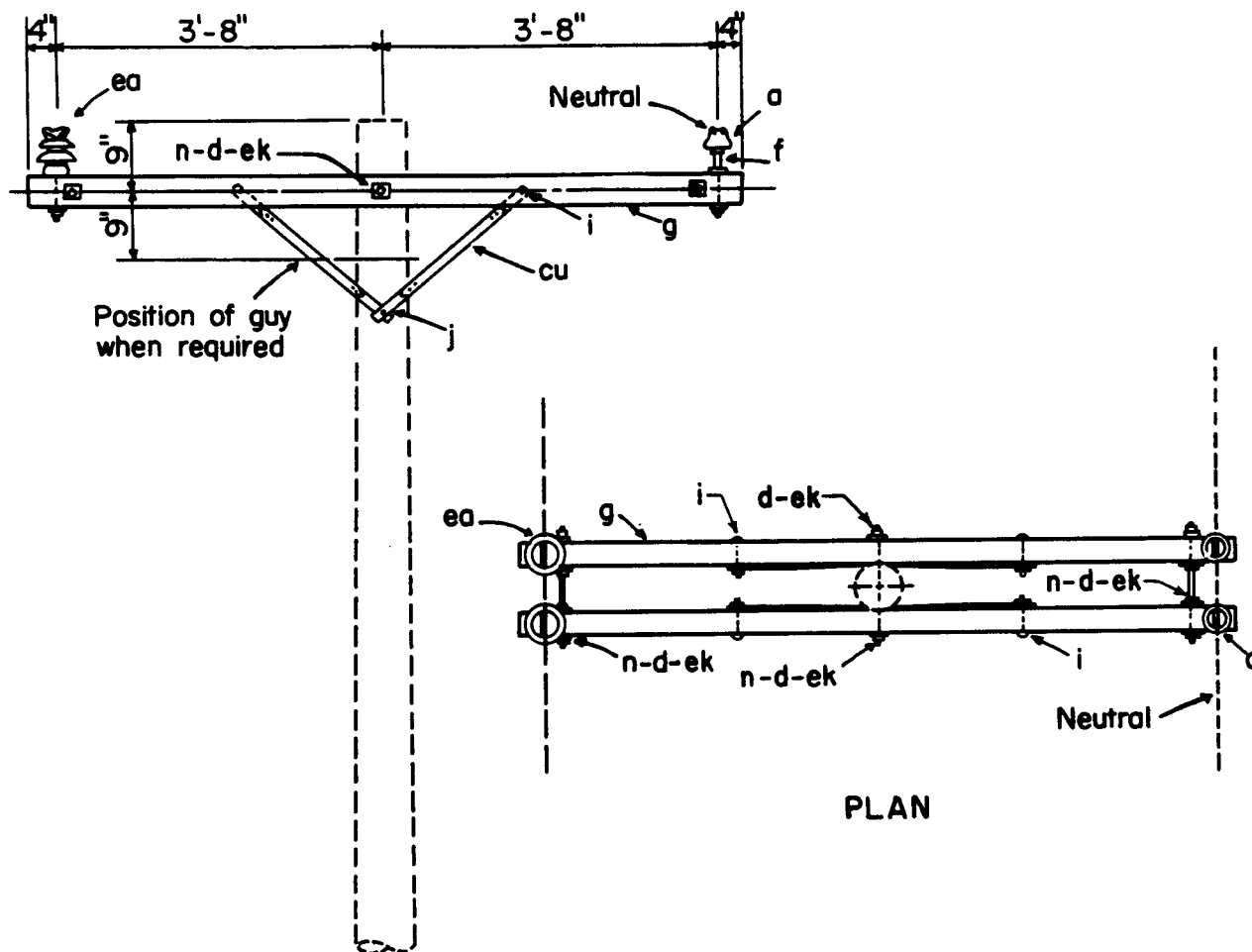
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---------------------------------------|---|--------------------------------------|
| c 2 | Bolt, machine, 5/8" x required length | ec 1 | Bracket, offset, neutral (AIAP only) |
| d 3 | Washer, square, 2 1/4" | ek | Locknuts, as required |
| bs 1 | Bolt, single upset (AIAP only) | j 2 | Screw, lag, 1/2" x 4" (AIAP only) |
| ea 1 | Insulator, post type | cm 1 | Spool insulator |
| eb 1 | Bracket, pole top | | |
| DESIGN LIMITS Max. transverse load: 750 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV I-PHASE SINGLE PRIMARY SUPPORT | |
| Apr, 1983 | | AIP, AIAP | |



| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|---|-----|---------------------------------------|--|---------------|--|
| d | 1 | Washer, square, 2 1/4" | eb | 2 | Bracket, pole top |
| c | 2 | Bolt, machine, 5/8" x required length | ek | | Locknuts |
| bs | 1 | Bolt, single upset (AI-IP only) | ec | 1 | Bracket, offset, neutral (AI-IAP only) |
| ea | 2 | Insulator, post type | j | 2 | Screw, lag, 1/2" x 4" (AI-IAP only) |
| cm | 1 | Spool insulator | <div>12.5/7.2 kV 1-PHASE</div> <div>0° TO 5° ANGLE, DOUBLE PRIMARY SUPPORT</div> | | |
| DESIGN LIMITS | | | | | |
| Max. transverse load: 750 lbs. per conductor | | | | | |
| Max. line angle within load limits: 5° | | | | | |
| | | Apr., 1983 | | AI-IP, AI-IAP | |

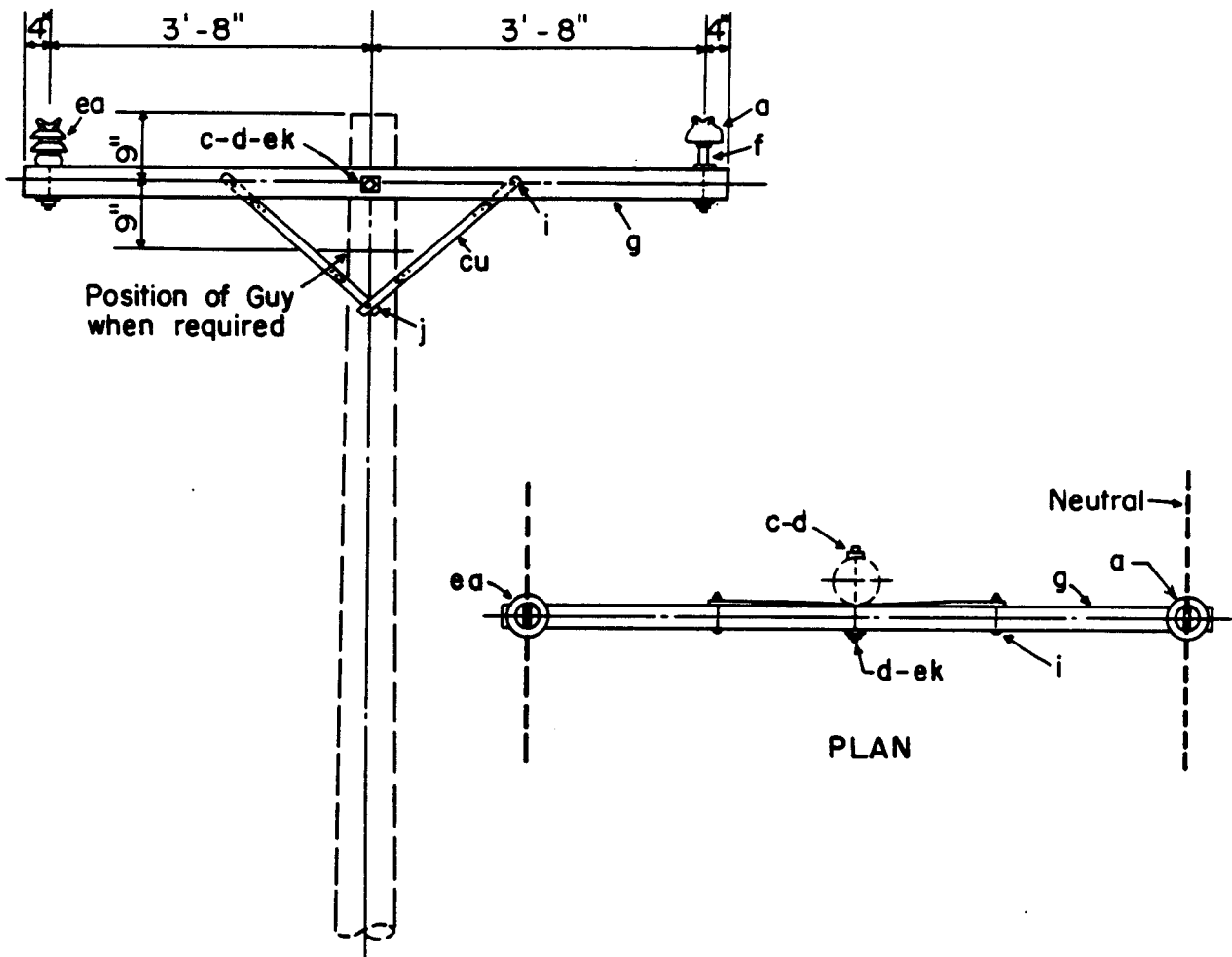


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|---------------------------------------|--|-----------------------|
| c 4 | Bolt, machine, 5/8" x required length | ea 2 | Insulator, post type |
| d 3 | Washer, square, 2 1/4" | eb 2 | Bracket, pole top |
| da 1 | Bracket, insulated | ek | Locknuts, as required |
| DESIGN LIMITS | | 12.5/7.2 kV, 1-PHASE DOUBLE PRIMARY SUPPORT | |
| Max. transverse load: 1500 lbs. per conductor | | | |
| Max. line angle within load limits: 20° | | | |
| Apr., 1983 | | A2P | |

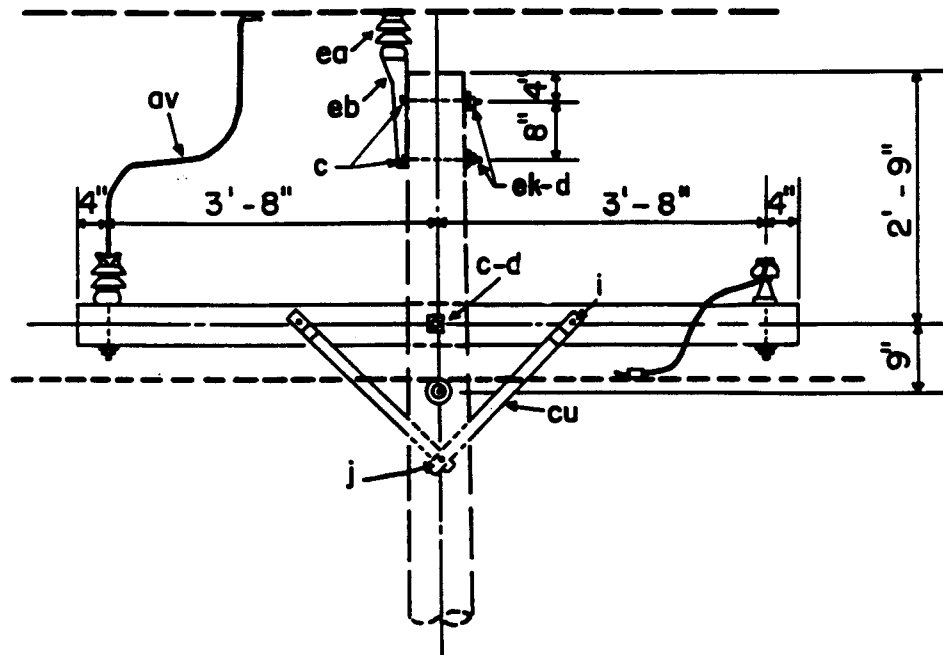
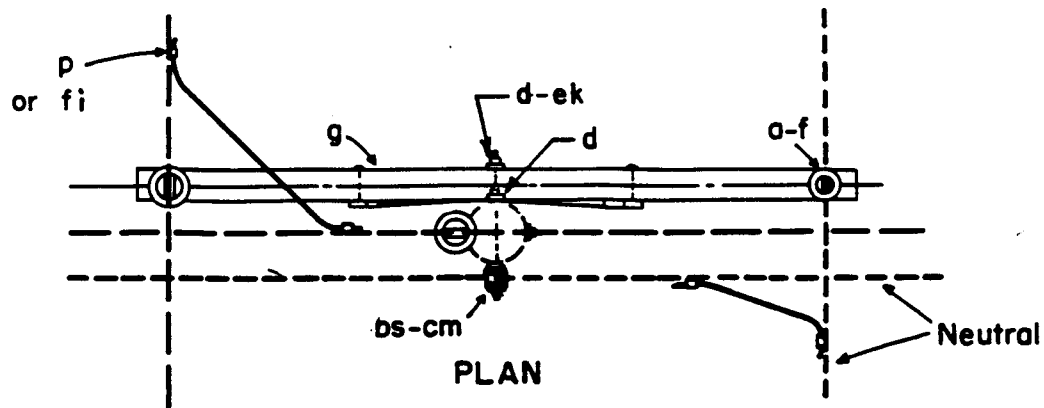


PLAN

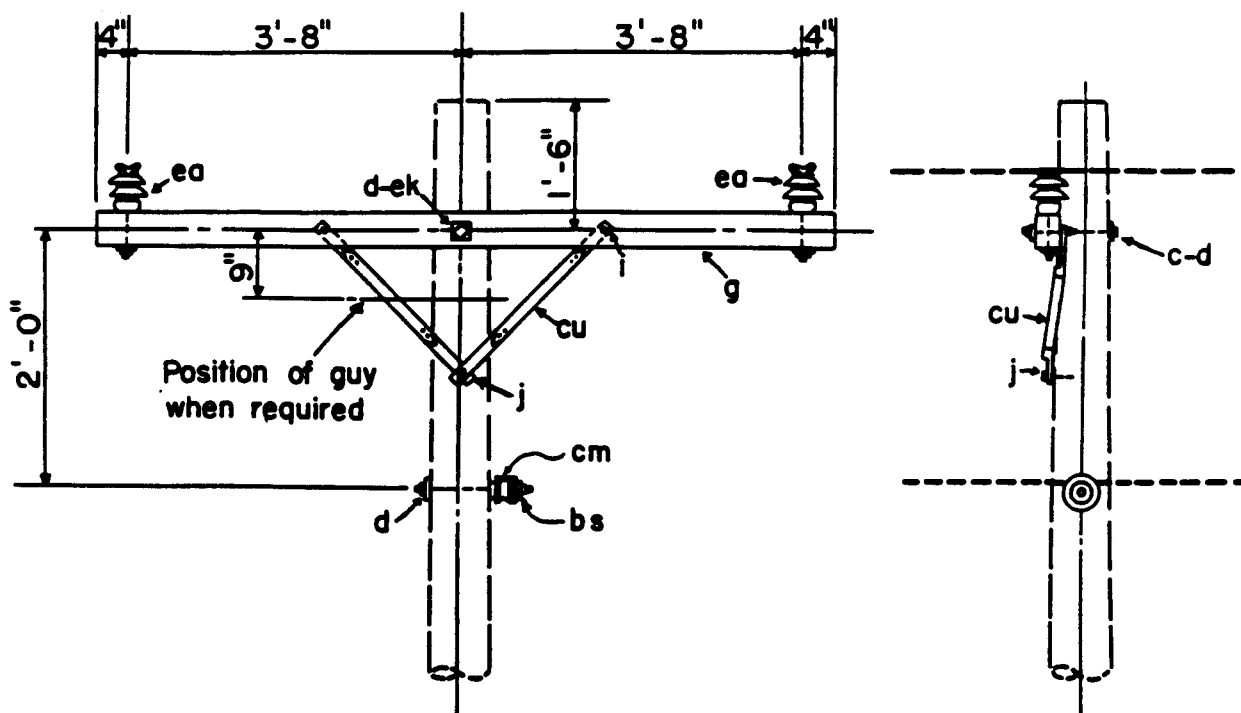
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|--|--------------------------------------|---|
| a | 2 Insulator, pin type | j | 2 Screw, lag, 1/2" x 4" |
| d | 10 Washer, square, 2 1/4" | n | 3 Bolt, double arming, 5/8" x req'd. length |
| f | 2 Pin, crossarm, steel, 5/8" x 10 3/4" | ea | 2 Insulator, post type |
| g | 2 Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ek | Locknuts, as required |
| cu | 4 Brace, wood, 28" | | |
| i | 4 Bolt, carriage, 3/8" x 4 1/2" | | |
| DESIGN LIMITS | | 12.5/7.2 kV, 1-PHASE | |
| Max. transverse load: 1000 lbs. per conductor | | CROSSARM CONSTRUCTION-DOUBLE SUPPORT | |
| Max. line angle within load limits: 20° | | | |
| Apr., 1983 | | | A9P |



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|---|---|---------------------------------|
| a | 1 Insulator, pin type | cu | 2 Brace, wood, 28" |
| c | 1 Bolt, machine, 5/8" x required length | i | 2 Bolt, carriage, 3/8" x 4 1/2" |
| d | 2 Washer, square, 2 1/4" | j | 1 Screw, lag, 1/2" x 4" |
| f | 1 Pin, crossarm, steel, 5/8" x 10 3/4" | ea | 1 Insulator, post type |
| g | 1 Crossarm, 3 5/8" x 4 5/8" x 8'-0" | | |
| ek | Locknuts, as required | | |
| DESIGN LIMITS | | 12.5/7.2 kV, 1-PHASE | |
| Max. transverse load: 500 lbs. per conductor. | | CROSSARM CONSTRUCTION - SINGLE LINE ARM | |
| Max. line angle within load limits: 5° | | | |
| Apr., 1983 | | A9-IP | |

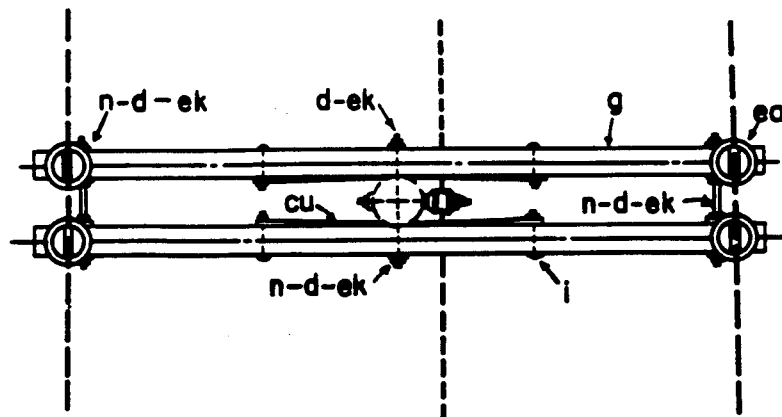


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---|---|----------------------------------|
| a | 1 Insulator, pin type | av | Jumpers, as required |
| d | 5 Washer, square, 2 1/4" | bs | 1 Bolt, single upset |
| c | 3 Bolt, machine, 5/8" x required length | ea | 2 Insulator, post type |
| f | 1 Pin, crossarm, steel, 5/8" x 10 3/4" | eb | 1 Bracket, pole top |
| g | 1 Crossarm, 3 5/8" x 4 5/8" x 8'-0" | fi | Hot line connectors, as required |
| i | 2 Bolt, carriage, 3/8" x 4 1/2" | cm | 1 Spool insulator |
| j | 1 Screw, lag, 1/2" x 4" | cu | 2 Braces, wood, 28" |
| p | Connectors, as required | ek | Locknuts, as required |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV I-PHASE CROSSARM CONSTRUCTION SINGLE PHASE JUNCTION | |
| | | Apr., 1983 | A22P |

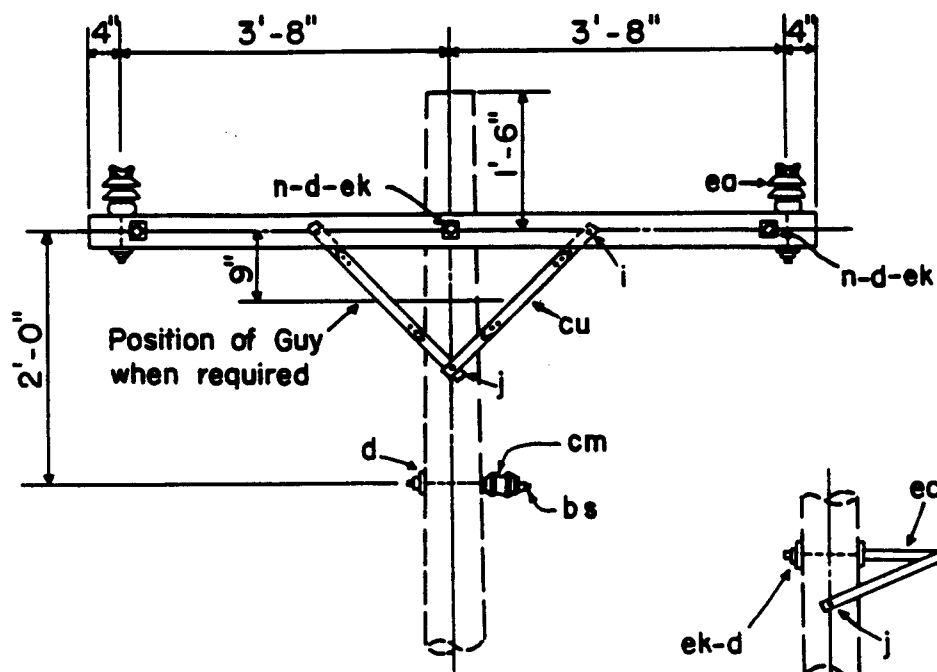


Specify BIAP for
offset neutral assembly

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---------------------------------------|--|-------------------------------------|
| c 1 | Bolt, machine, 5/8" x required length | bs 1 | Bolt, single upset (BIP only) |
| d 3 | Washer, square, 2 1/4" | cu 2 | Brace, wood, 28" |
| g 1 | Crossarm, 3 5/8" x 4 5/8" x 8' - 0" | ea 2 | Insulator, post type |
| i 2 | Bolt, carriage, 3/8" x 4 1/2" | ek | Locknuts as required |
| j 1 | Screw, lag, 1/2" x 4" (BIP only) | ec 1 | Bracket, offset neutral (BIAP only) |
| j 3 | Screw, lag, 1/2" x 4" (BIAP only) | cm 1 | Spool insulator |
| DESIGN LIMITS | | 12.5/7.2 kV, 2-PHASE CROSSARM CONSTRUCTION-SINGLE PRIMARY SUPPC | |
| Max. transverse load: 750 lbs. per conductor | | | |
| Max. line angle within load limits: 5° | | | |
| Apr., 1983 | | BIP, BIAP | |

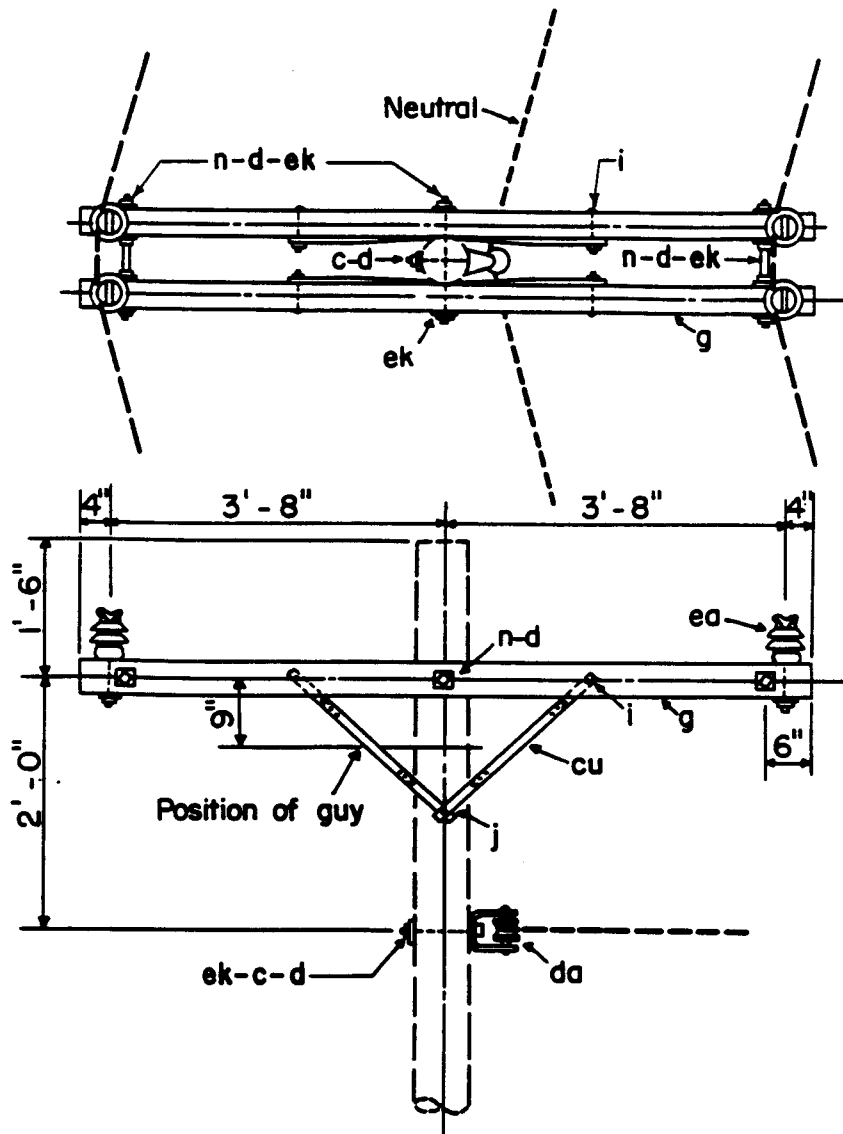


PLAN

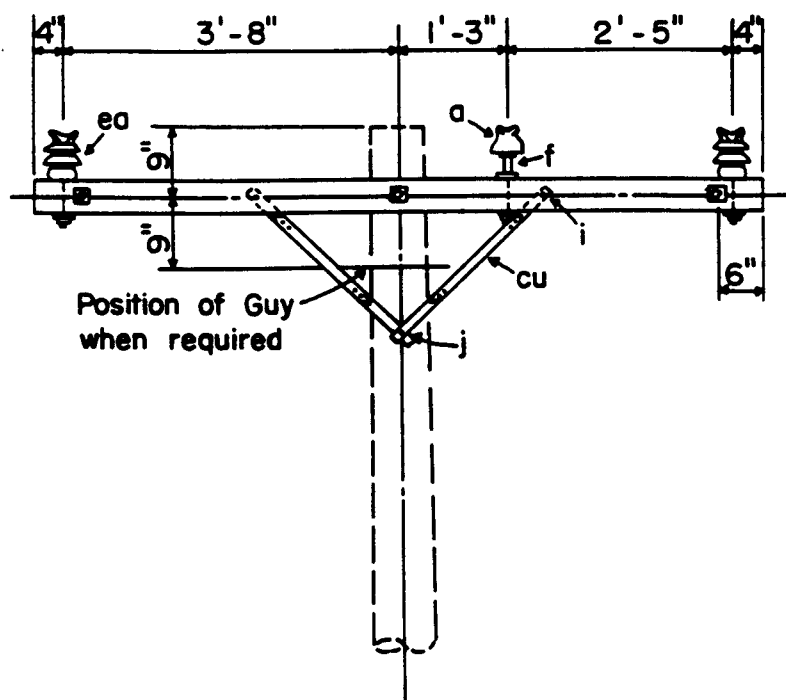
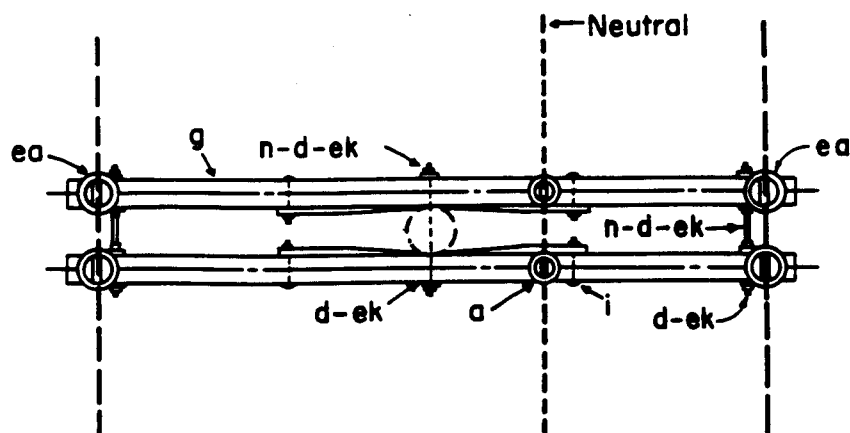


Specify BI-IAP for
offset neutral assembly

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|--|---|--------------------------------------|
| d 11 | Washer, square, 2 1/4" | cu 4 | Brace, wood, 28" |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ea 4 | Insulator, post type |
| i 4 | Bolt, carriage, 3/8" x 4 1/2" | ek | Locknuts, as required |
| j 2 | Screw, lag, 1/2" x 4" (BI-IP only) | ec 1 | Bracket, offset neutral (BI-IP only) |
| n 3 | Bolt, double arming, 5/8" x req'd length | j 4 | Screw, lag, 1/2" x 4" (BI-IP only) |
| bs 1 | Bolt, single upset (BI-IP only) | cm 1 | Spool insulator |
| DESIGN LIMITS Max. transverse load: 1500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5 / 7.2 kV, 2 - PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT | |
| | | Apr, 1983 | BI-IP, BI-IAP |



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---|---|-----------------------|
| c 1 | Bolt, machine, 5/8" x required length | cu 4 | Brace, wood, 28" |
| d 11 | Washer, square, 2 1/4" | da 1 | Bracket, insulated |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 8' - 0" | ea 4 | Insulator, post type |
| i 4 | Bolt, carriage, 3/8" x 4 1/2" | ek | Locknuts, as required |
| j 2 | Screw, lag, 1/2" x 4" | | |
| n 3 | Bolt, double arming, 5/8" x required length | | |
| DESIGN LIMITS Max. transverse load: 1500 lbs. per conductor Max. line angle within load limits: 20° | | 12.5/7.2 kV, 2-PHASE CROSSARM CONSTRUCTION | |
| | | | |
| | | | |
| Apr., 1983 | | B2P | |



| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--------------------------------------|------|-----|---|
| a | 2 | Insulator, pin type | n | 3 | Bolt, double arming, 5/8" x required length |
| d | 10 | Washer, square, 2 1/4" | cu | 4 | Brace, wood, 28" |
| f | 2 | Pin, crossarm, steel, 5/8" x 10 3/4" | ea | 4 | Insulator, post type |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ek | | Locknuts, as required |
| i | 4 | Bolt, carriage, 3/8" x 4 1/2" | | | |
| j | 2 | Screw, lag, 1/2" x 4" | | | |

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

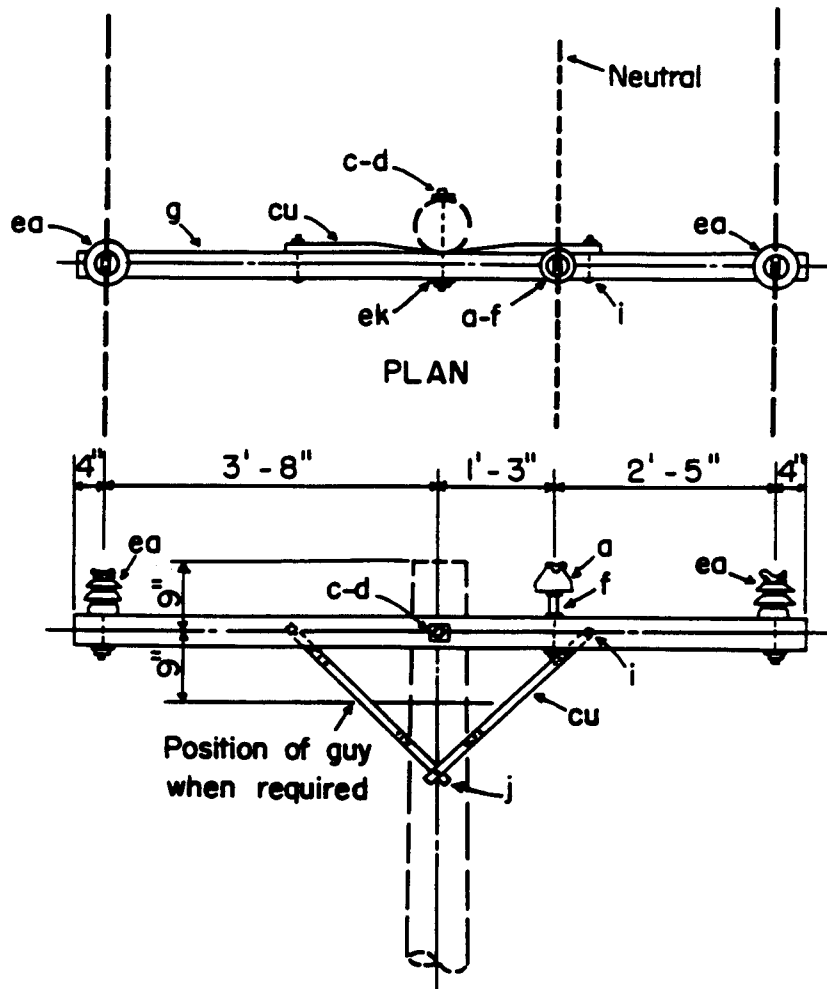
Max. line angle within load limits: 20°

12.5/7.2 kV, TWO PHASE

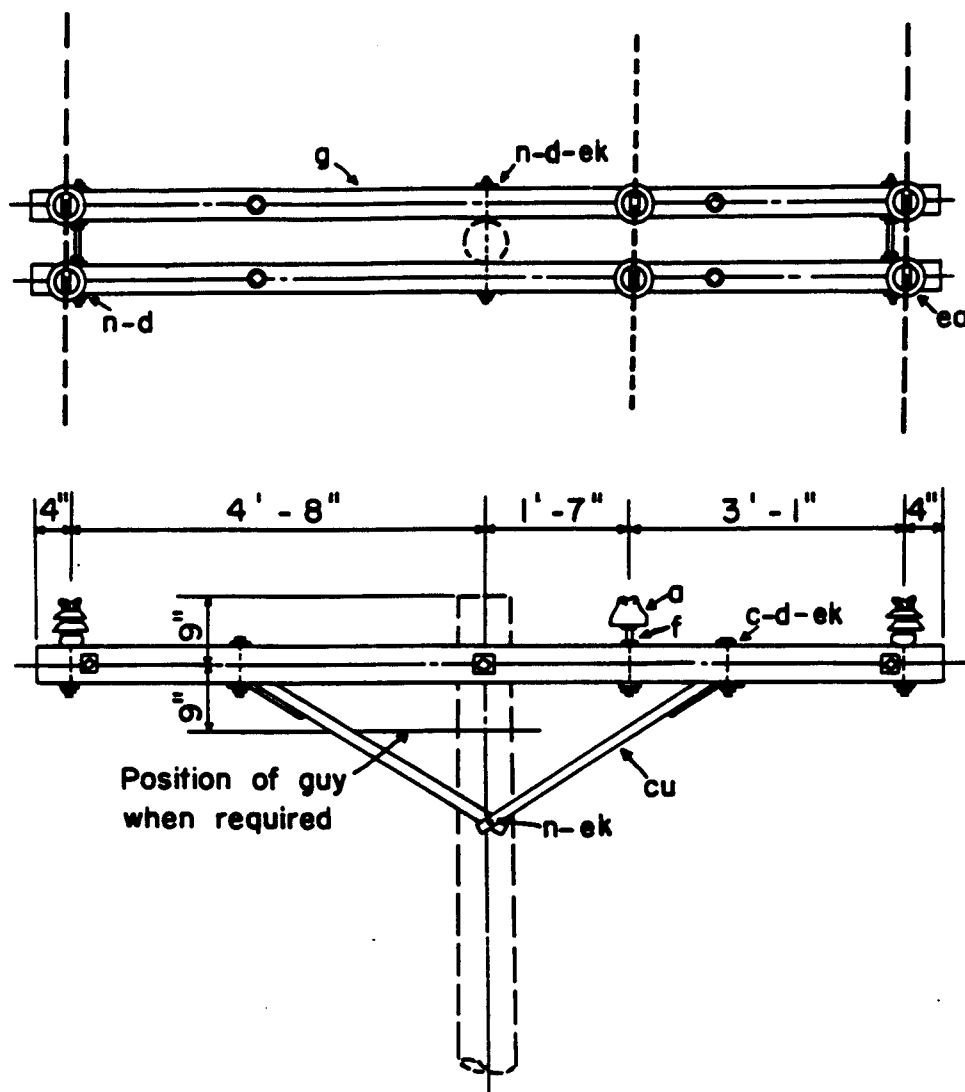
CROSSARM CONSTRUCTION - DOUBLE LINE ARM

Apr., 1983

B9P



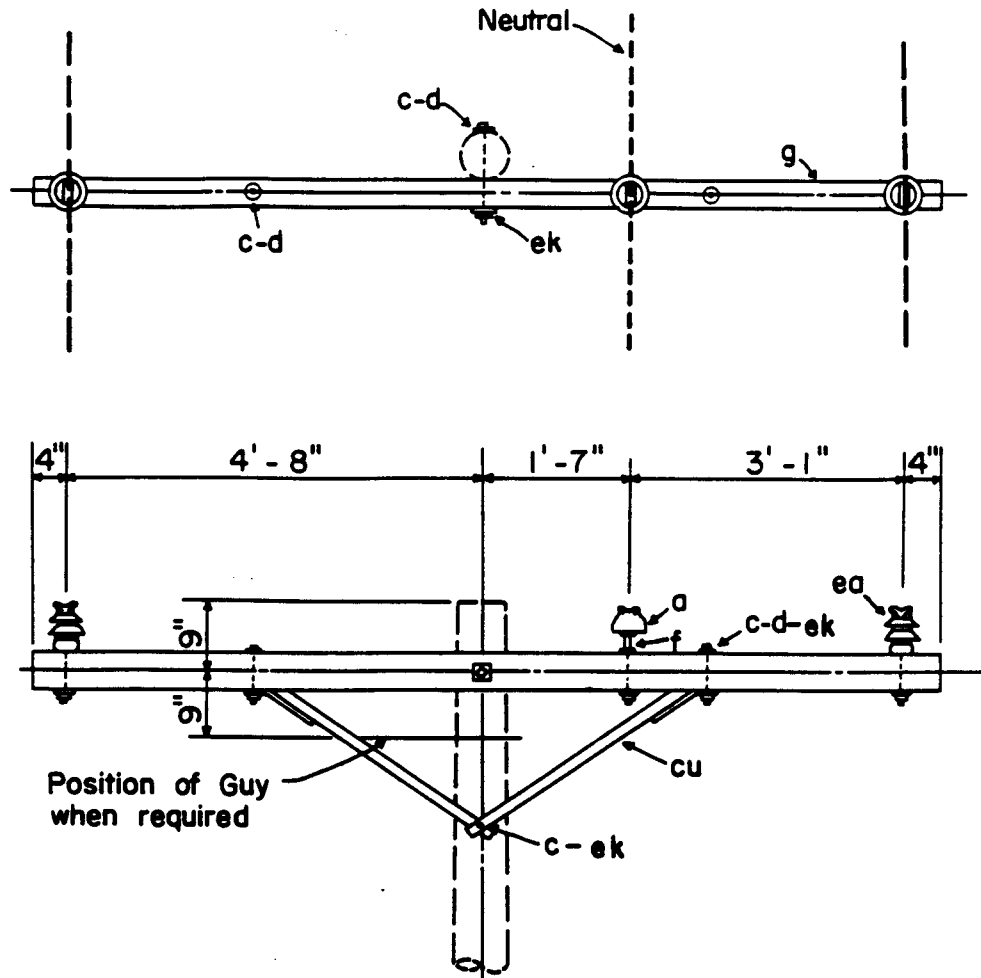
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---------------------------------------|---|-------------------------------|
| a 1 | Insulator, pin type | i 2 | Bolt, carriage, 3/8" x 4 1/2" |
| c 1 | Bolt, machine, 5/8" x required length | j 1 | Screw, lag, 1/2" x 4" |
| d 2 | Washer, square, 2 1/4" | cu .2 | Brace, wood, 2x8" |
| f 1 | Pin, crossarm, steel, 5/8" x 10 3/4" | ea 2 | Insulator, post type |
| g 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | | |
| ek | Locknuts, as required | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV, 2 - PHASE CROSSARM CONSTRUCTION SINGLE LINE ARM | |
| Apr, 1983 | | B9-IP | |



NOTE:

This construction should be used where future conversion to three phase is likely.

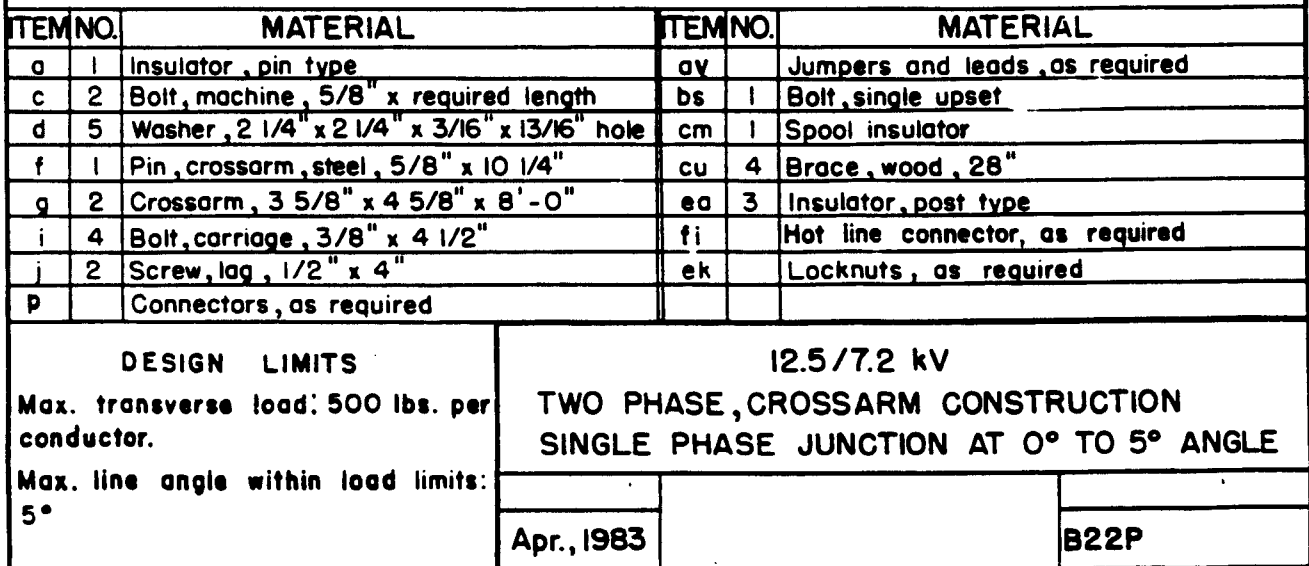
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|---|---------------------------------------|---|
| a | 2 Insulator, pin type | n | 4 Bolt, double arming, 5/8" x req d. length |
| c | 4 Bolt, machine, 1/2" x required length | cu | 2 Brace, wood, 60" span |
| d | 10 Washer, square, 2 1/4" | ea | 4 Insulator, post type |
| d | 4 Washer, round, 1 3/8" | | |
| g | 2 Crossarm, 3 5/8" x 4 5/8" x 10' - 0" | ek | Locknuts, as required |
| f | 2 Pin, crossarm, steel | | |
| DESIGN LIMITS | | 12.5/7.2 kV, TWO PHASE | |
| Max. transverse load: 1000 lbs. per conductor | | CROSSARM CONSTRUCTION-DOUBLE LINE ARM | |
| Max. line angle within load limits: 20° | | | |
| Apr., 1963 | | B9-2P | |

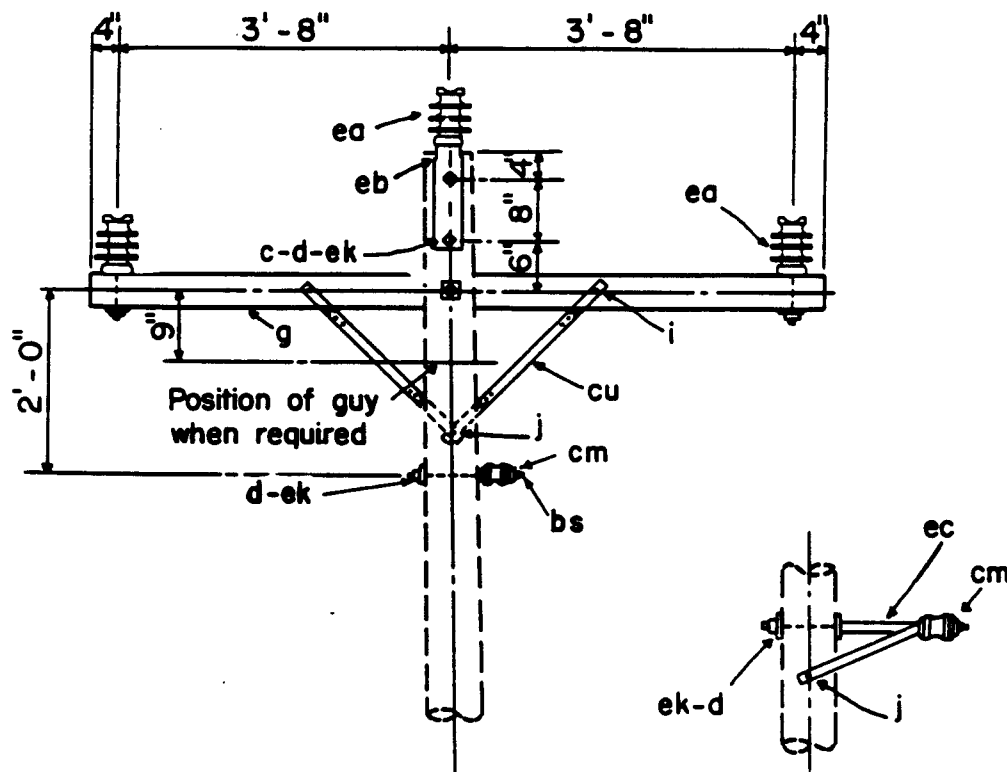


NOTE:

This construction should be used where future conversion to three phase is likely.

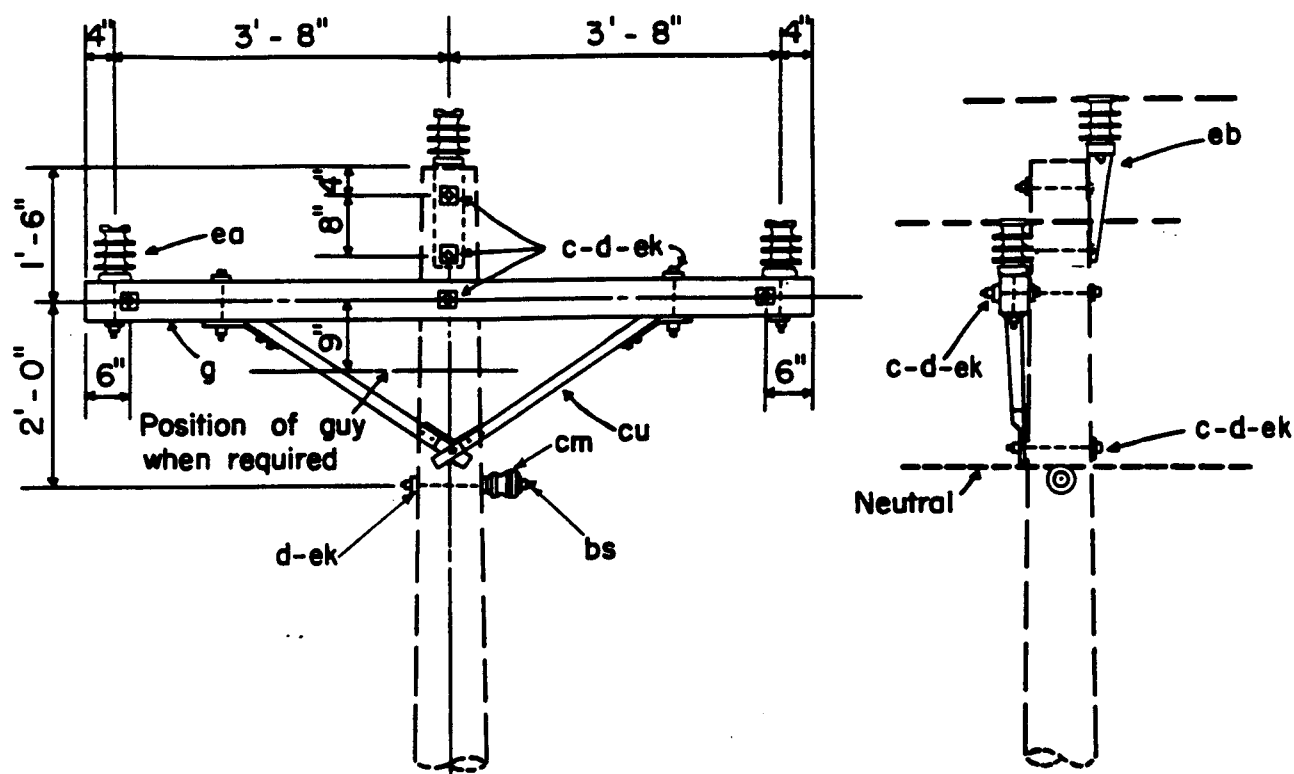
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|--|---|--|
| a | 1 Insulator, pin type | g | 1 Crossarm, 3 5/8" x 4 5/8" x 10' - 0" |
| c | 2 Bolt, machine, 5/8" x required length | cu | 1 Brace, wood, 60" span |
| c | 2 Bolt, machine, 1/2" x required length | ea | 2 Insulator, post type |
| d | 3 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | | |
| d | 2 Washer, round, 1 3/8" dia., 9/16" hole | ek | Locknuts, as required |
| f | 1 Pin, crossarm, steel, 5/8" x 10 3/4" | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV TWO-PHASE CROSSARM CONSTRUCTION SINGLE LINE ARM | |
| | | Apr., 1983 | B9-3P |



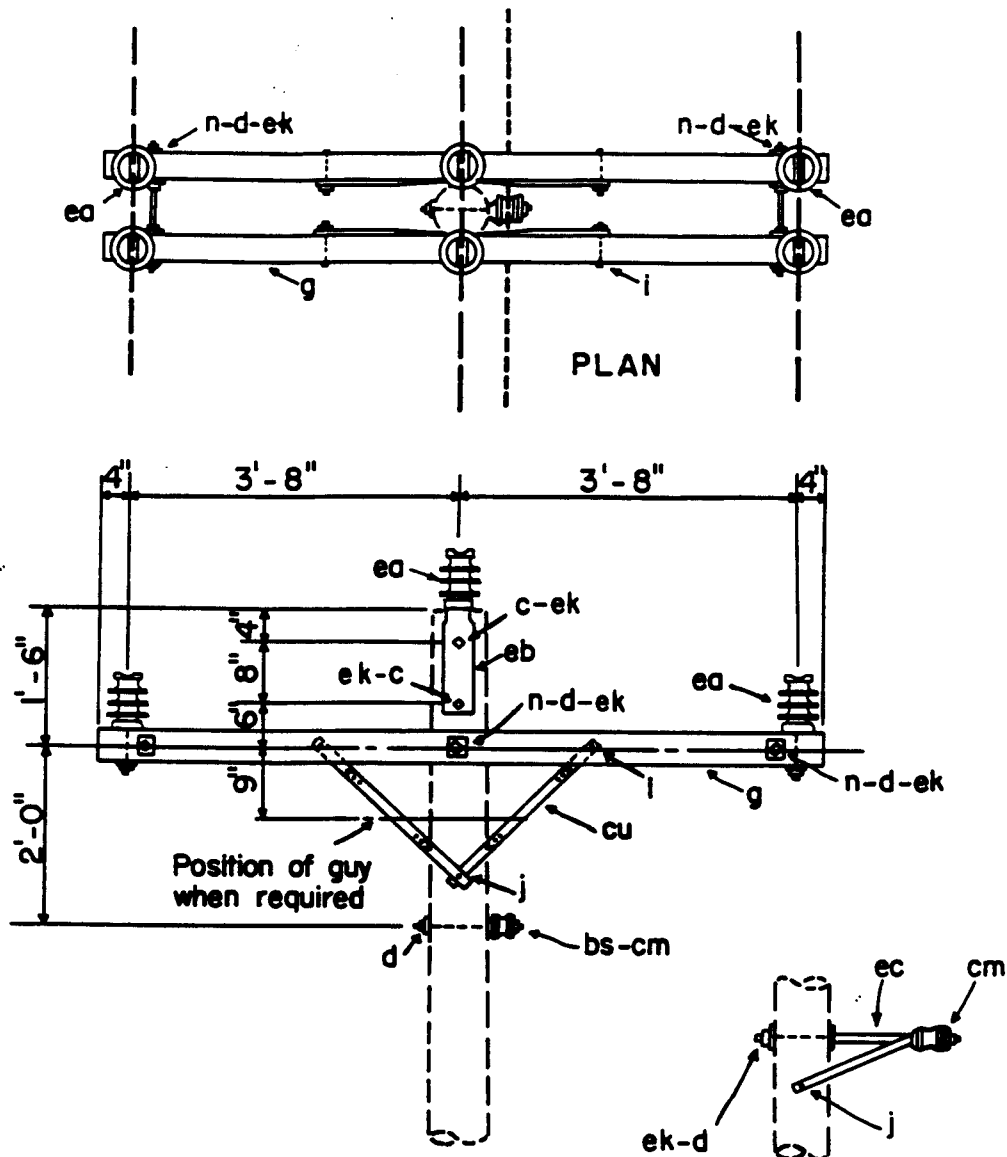


**Specify CIAP for
offset neutral assembly**

| ITEM NO. | | MATERIAL | ITEM NO. | | MATERIAL | | | |
|--|---|---------------------------------------|--|---|------------------------------------|-----------|--|--|
| cm | 1 | Spool insulator | | | | | | |
| c | 3 | Bolt, machine, 5/8" x required length | cu | 2 | Brace, wood, 28" | | | |
| d | 5 | Washer, square, 2 1/4" | ea | 3 | Insulator, post type | | | |
| g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | eb | 1 | Bracket, pole top | | | |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" | ek | | Locknuts, as required | | | |
| j | 1 | Screw, lag, 1/2" x 4" (CIP only) | ec | 1 | Bracket, offset, neut. (CIAP only) | | | |
| bs | 1 | Bolt, single upset (CIP only) | j | 3 | Screw, lag, 1/2" x 4" (CIAP only) | | | |
| DESIGN LIMITS Not to be used with large conductor Max. transverse load: 750 lbs. per conductor Max. line angle within load limits: 5° | | | 12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT | | | | | |
| | | | | | | | | |
| | | | | | | CIP, CIAP | | |
| | | | Apr., 1983 | | | | | |

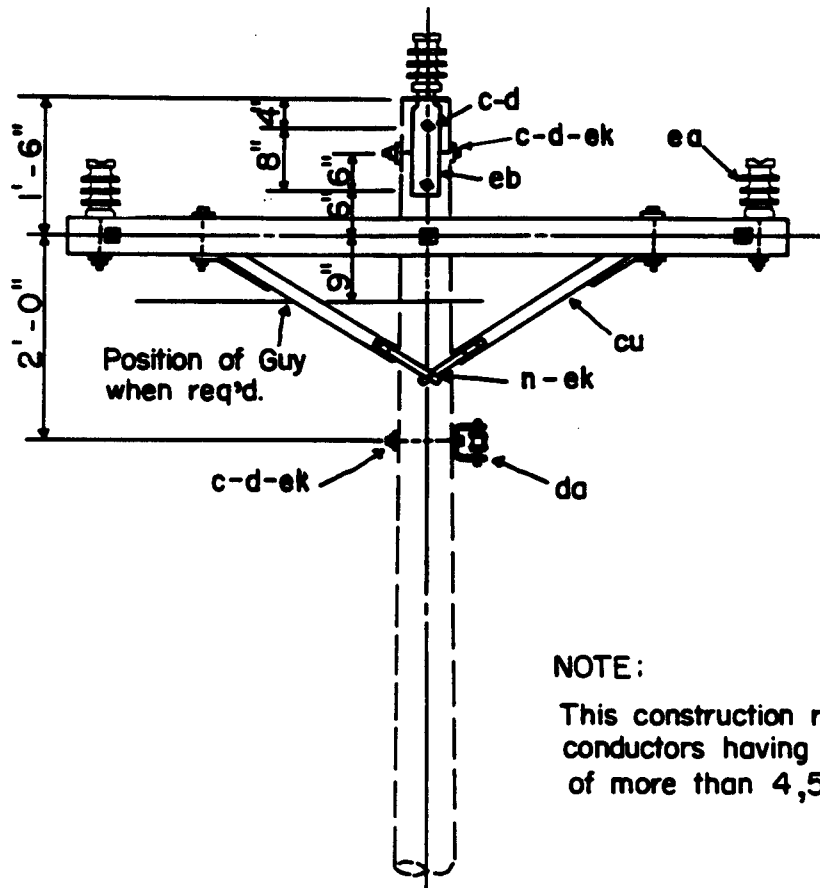


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---------------------------------------|---|-----------------------|
| c 2 | Bolt, machine, 1/2" x required length | ea 3 | Insulator, post type |
| c 6 | Bolt, machine, 5/8" x required length | eb 1 | Bracket, pole top |
| d 2 | Washer, round, 1 3/8" diameter | ek | Locknuts, as required |
| d 10 | Washer, square, 2 1/4" | cm 1 | Spool insulator |
| g 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | | |
| bs 1 | Bolt, single upset | | |
| cu 1 | Brace, wood, 60" span | | |
| DESIGN LIMITS Max. transverse load: 750 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT (LARGE CONDUCTORS) | |
| | | Apr., 1983 | CIPL |



Specify CI-IAP for
offset neutral assembly

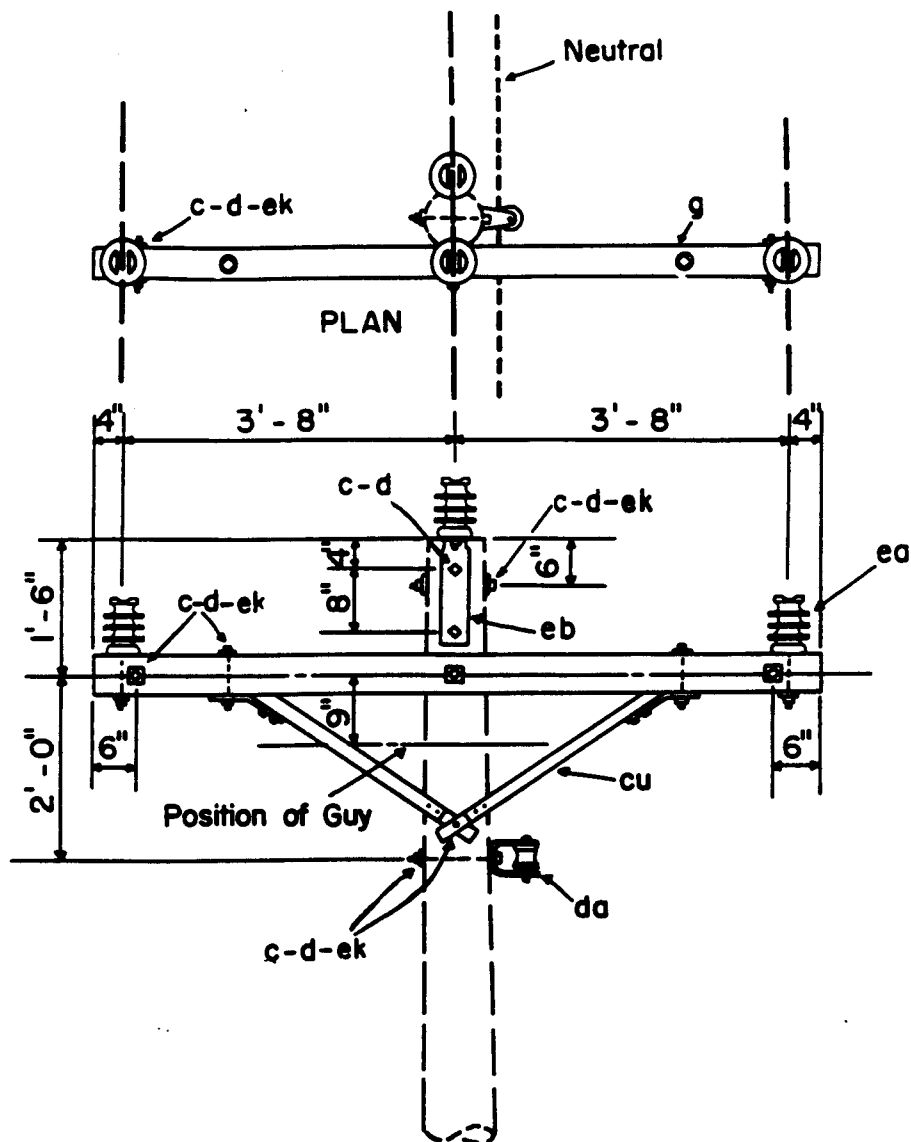
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|--|-----|---|--|-----|-------------------------------------|
| c | 2 | Bolt, machine, 5/8" x required length | bs | 1 | Bolt, single upset |
| d | 11 | Washer, square, 2 1/4" | ea | 6 | Insulator, post type |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8' - 0" | eb | 2 | Bracket, pole top |
| i | 4 | Bolt, carriage, 3/8" x 4 1/2" | ek | | Locknuts, as required |
| j | 2 | Screw, lag, 1/2" x 4" (CI-IP only) | ec | 1 | Bracket offset, neut. (CI-IAP only) |
| n | 3 | Bolt, double arming, 5/8" x required length | j | 4 | Screw, lag, 1/2" x 4" (CI-IAP only) |
| cu | 4 | Brace, wood, 28" | cm | 1 | Spool insulator |
| DESIGN LIMITS Max. transverse load: 750 lbs. per conductor Max. line angle within load limits: 5° | | | 12.5/7.2 kV, 3 - PHASE CROSSARM CONSTRUCTION-DOUBLE PRIMARY SUPPORT | | |
| | | | Apr, 1983 | | |
| | | | CI-IP, CI-IAP | | |



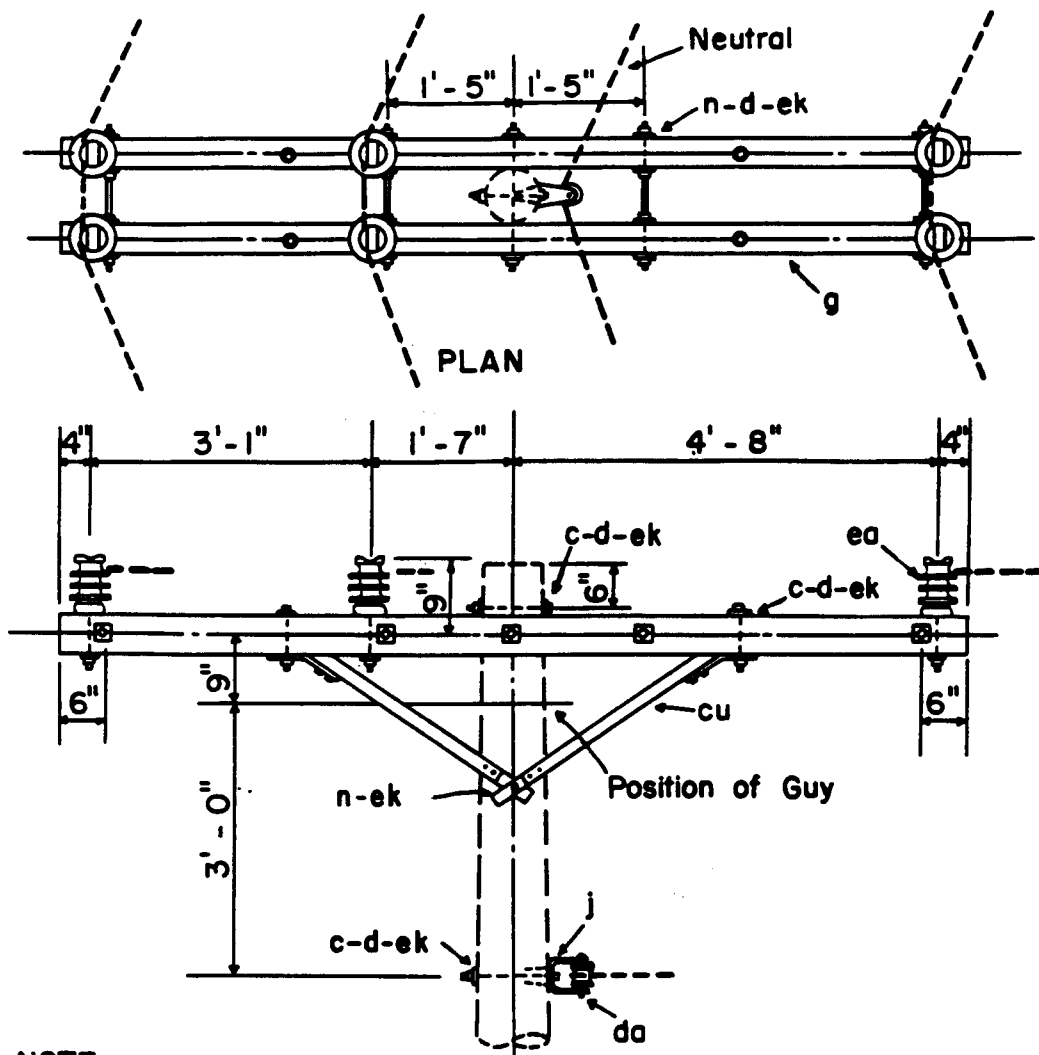
This construction required for all conductors having a breaking strength of more than 4,500 pounds.

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|---|------|-----|-----------------------|
| c | 4 | Bolt,machine ,5/8" x required length | ea | 6 | Insulator ,post type |
| c | 4 | Bolt,machine ,1/2" x required length | eb | 2 | Bracket ,pole top |
| d | 13 | Washer ,2 1/4" x 2 1/4" x 3/16",13/16" hole | cu | 2 | Brace ,wood ,60" span |
| d | 4 | Washer ,round ,1 3/8" diam., 9/16" hole | da | 1 | Bracket , insulated |
| g | 2 | Crossarm , 3 5/8" x 4 5/8" x 8'-0" | | | |
| n | 4 | Bolt ,double arming ,5/8" x req'd. length | ek | | Locknuts- as required |
| | | | | | |

| | | |
|--|--|-------|
| <p align="center">DESIGN LIMITS</p> <p>Max. transverse load: 1500 lbs. per conductor</p> <p>Max. line angle within load limits: 5°</p> | <p>12.5/7.2 kV</p> <p>3-PHASE ,CROSSARM CONSTRUCTION</p> <p>DOUBLE PRIMARY SUPPORT</p> <p>(LARGE CONDUCTORS)</p> | |
| | | |
| | Apr.,1983 | CI-3P |



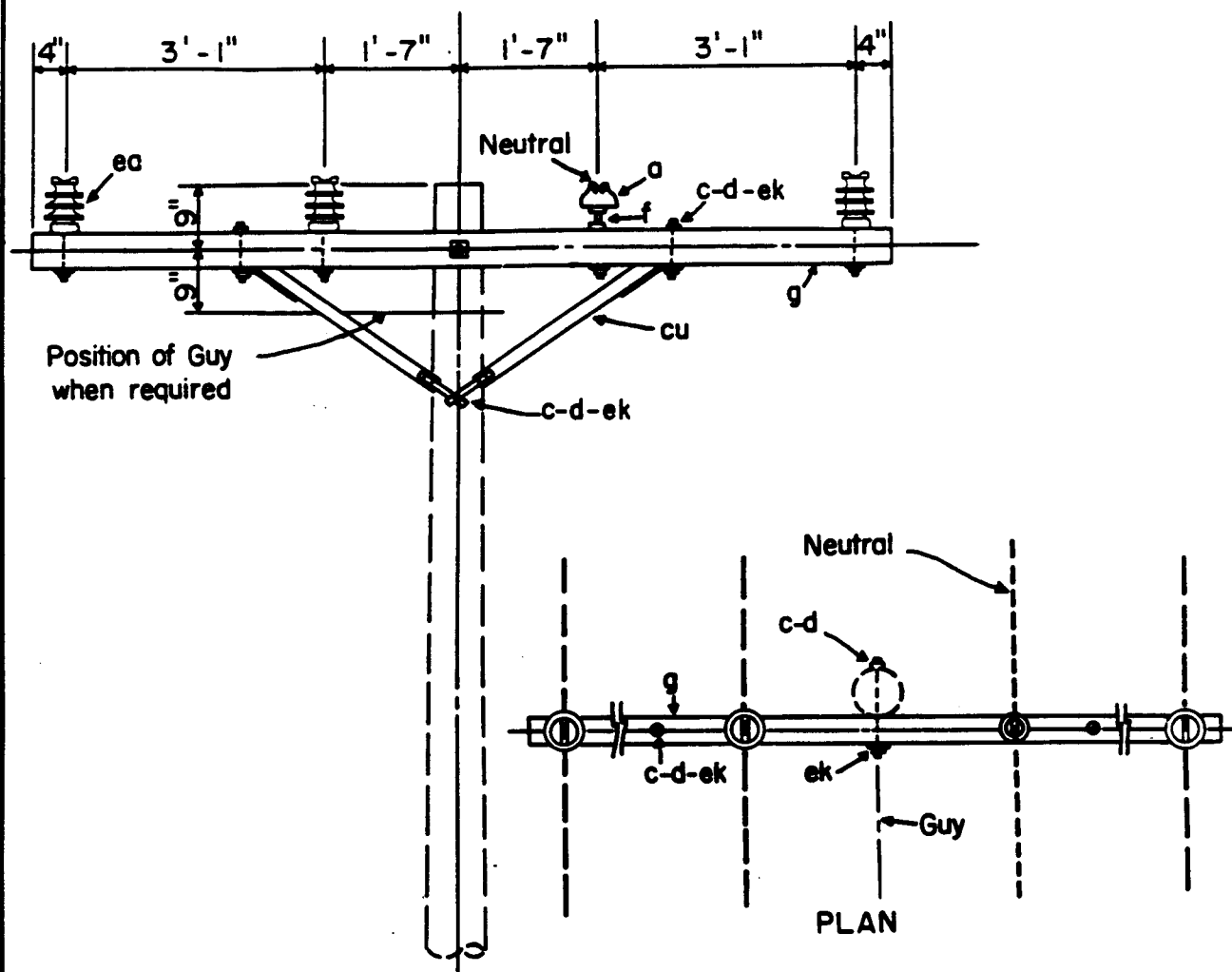
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|---|---------------------------------------|--|-----------------------|
| c 2 | Bolt, machine, 1/2" x required length | ea 4 | Insulator, post type |
| c 8 | Bolt, machine, 5/8" x required length | eb 2 | Bracket, pole top |
| d 2 | Washer, round, 1 3/8" diameter | ek | Locknuts, as required |
| d 10 | Washer, square, 2 1/4" | | |
| g 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | | |
| cu 1 | Brace, wood, 60" span | | |
| da 1 | Bracket, insulated | | |
| DESIGN LIMITS Max. transverse load: 1000 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV, 3-PHASE, CROSSARM CONSTRUCTION DOUBLE POLE-TOP SUPPORT (LARGE CONDUCTORS) | |
| | | Apr., 1983 | |
| | | | CI-4PL |



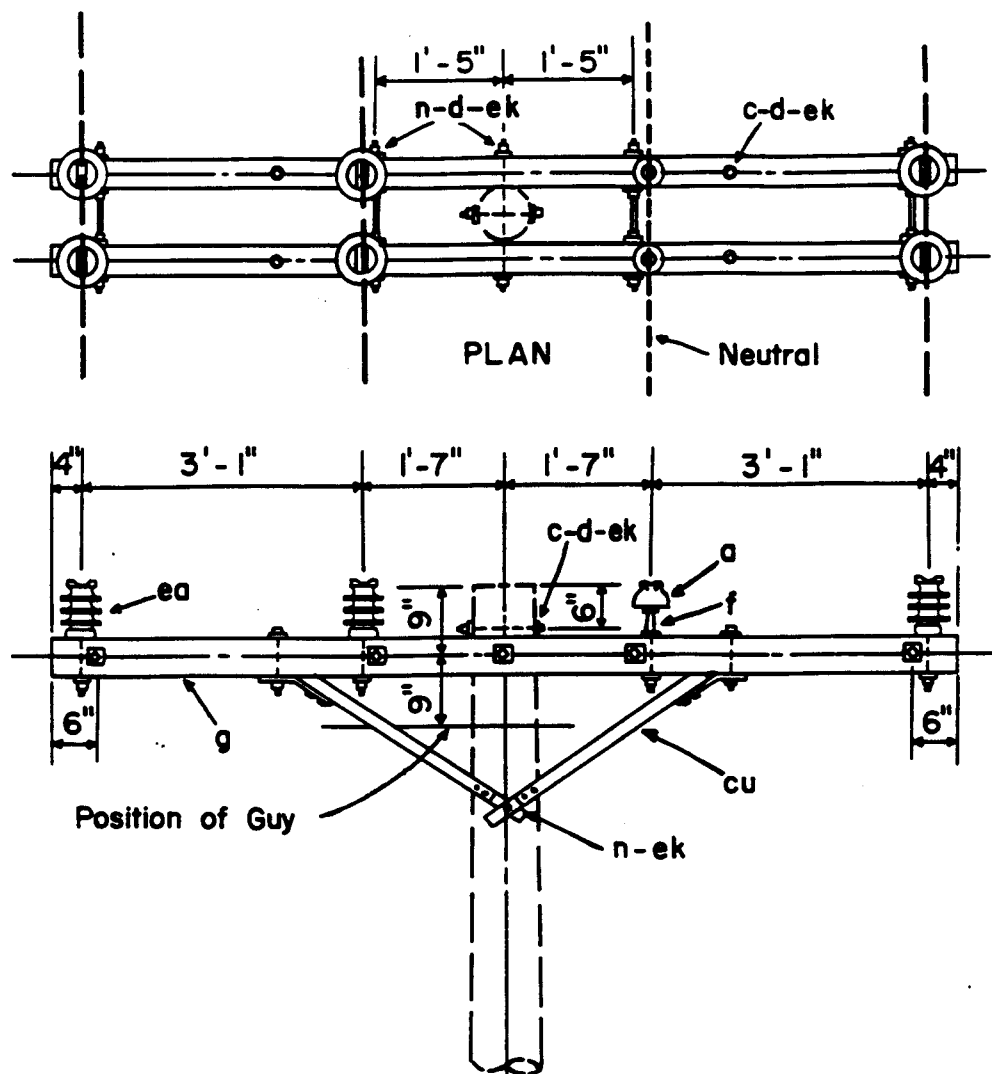
NOTE:

Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan.

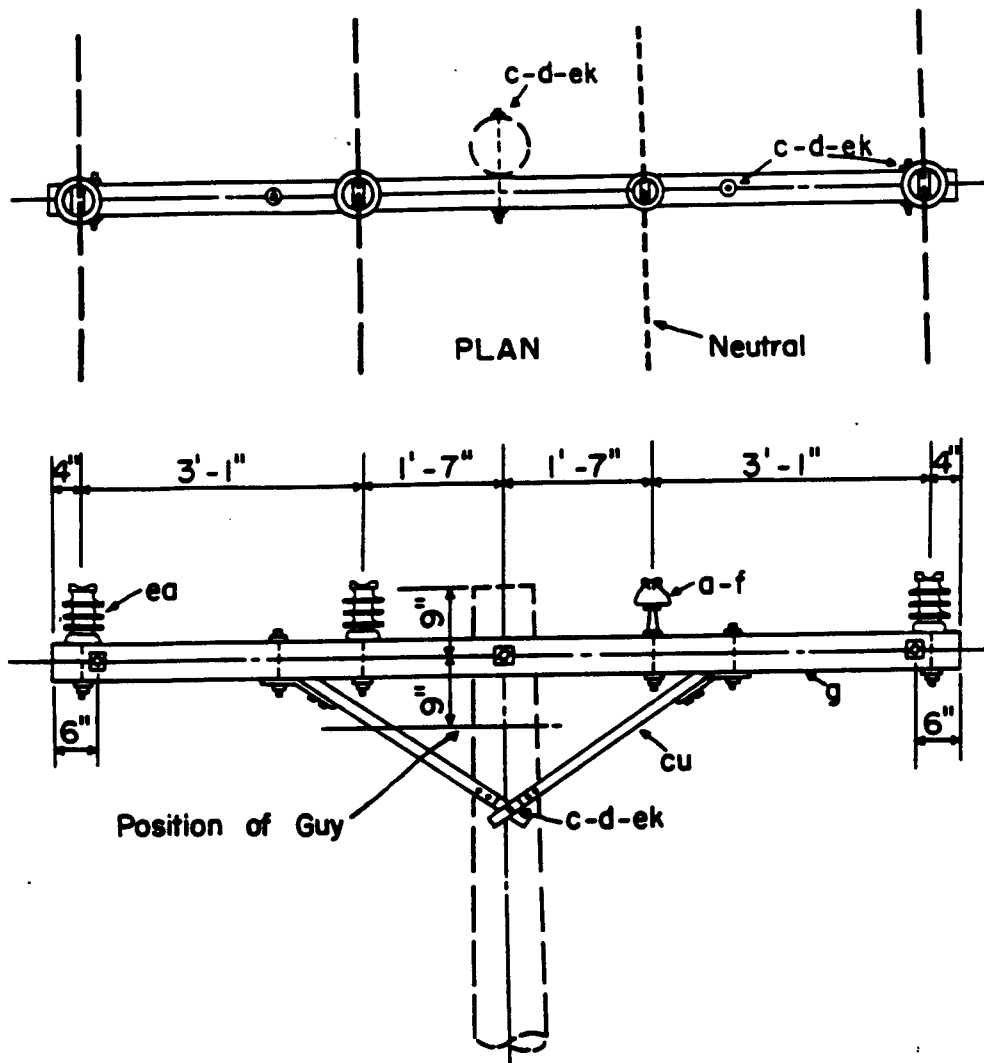
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|--|-----|---|--|-----|-----------------------|
| c | 4 | Bolt, machine, 1/2" x required length | cu | 2 | Brace, wood, 60" span |
| c | 2 | Bolt, machine, 5/8" x required length | da | 1 | Bracket, insulated |
| d | 4 | Washer, round, 1 3/8" diameter | ea | 6 | Insulator, post type |
| d | 21 | Washer, square, 2 1/4" | ek | | Locknuts, as required |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 10' - 0" | | | |
| j | 2 | Screw, lag, 1/2" x 4" | | | |
| n | 6 | Bolt, double arming, 5/8" x req'd. length | | | |
| DESIGN LIMITS Max. transverse load: 2000 lbs. per conductor Max. line angle within load limits: 20° | | | 12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT (LARGE CONDUCTORS) | | |
| | | | | | |
| | | | | | |
| Apr., 1983 | | | C2 - 2 PL | | |



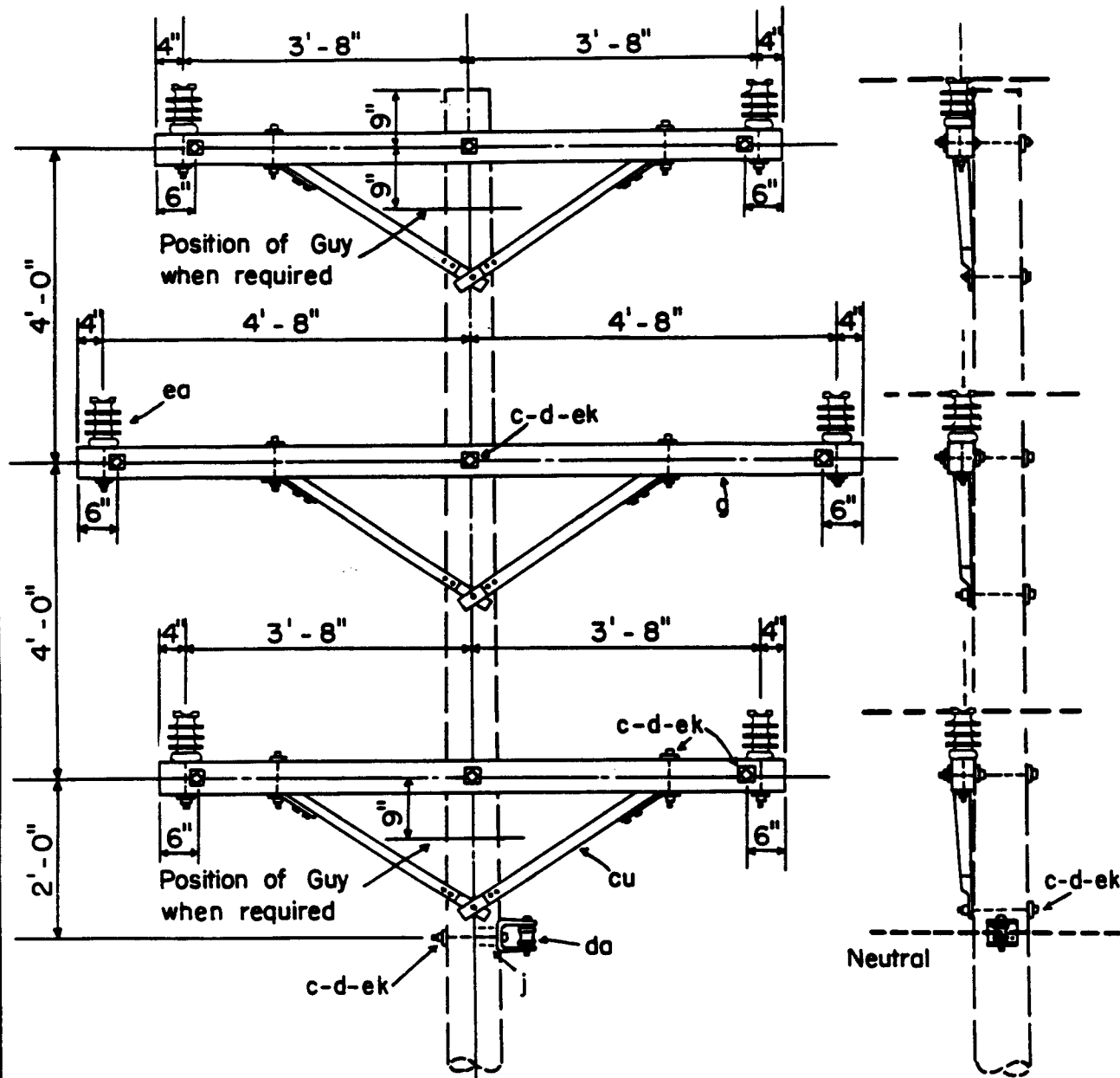
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|--|---|--------------------------------------|
| a 1 | Insulator, pin type | g 1 | Crossarm, 3 5/8" x 4 5/8" x 10' - 0" |
| c 2 | Bolt, machine, 5/8" x required length | cu 1 | Brace, wood, 60" span |
| c 2 | Bolt, machine, 1/2 x required length | ea 3 | Insulator, post type |
| d 3 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | | |
| d 2 | Washer, round, 1 3/8" diameter, 9/16" hole | ek | Locknuts, as required |
| f 1 | Pin, crossarm, steel, 5/8" x 10 3/4" | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV 3 - PHASE CROSSARM CONSTRUCTION SINGLE LINE ARM | |
| | | Apr., 1983 | C9-IP |



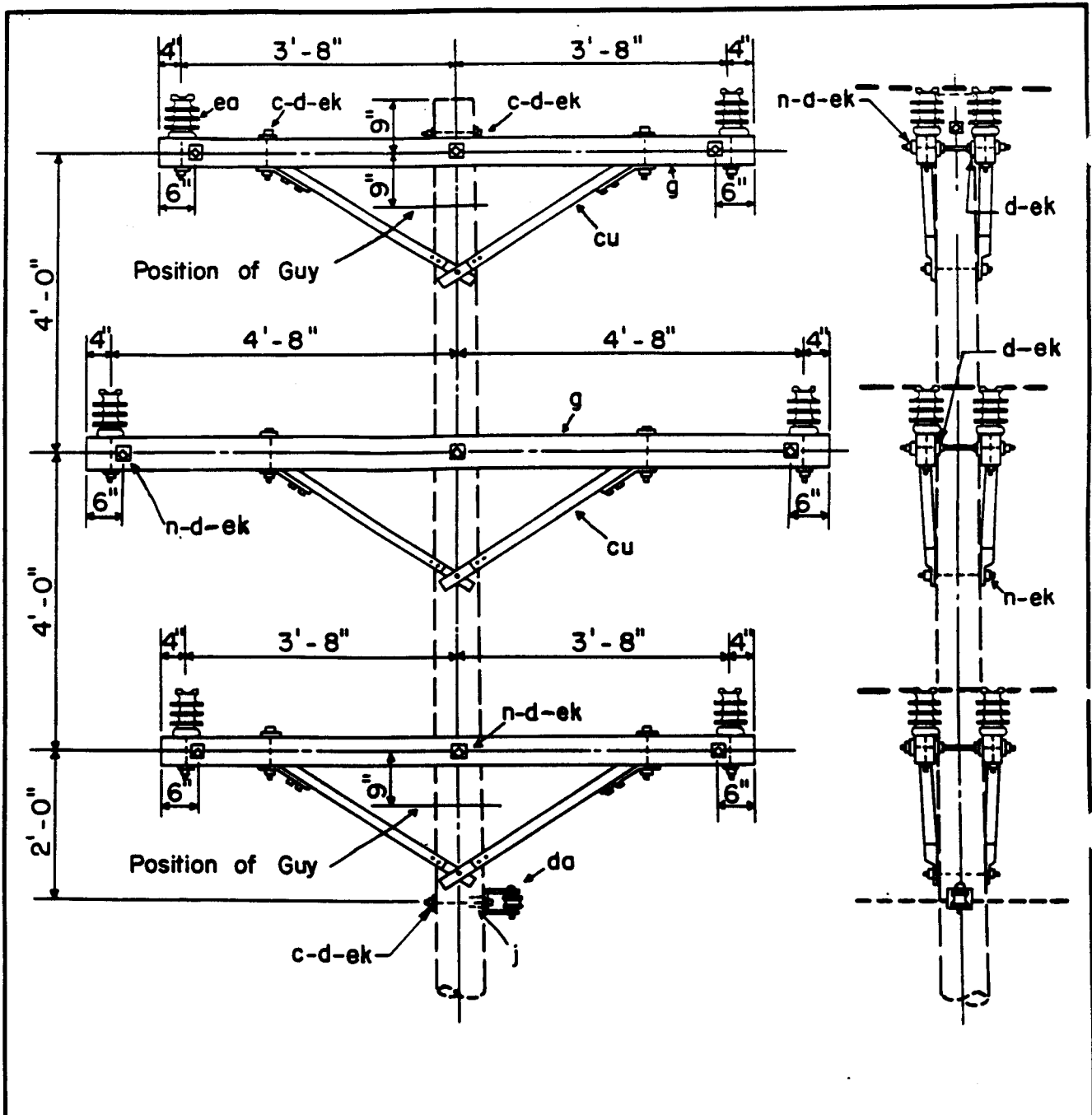
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|--|-----|---|--|-----|---------------------------------------|
| a | 2 | Insulator, pin type | cu | 2 | Brace, wood, 60" span |
| f | 2 | Pin, crossarm, steel, 5/8" x 10 3/4" | ea | 6 | Insulator, post type |
| c | 4 | Bolt, machine, 1/2" x required length | | | |
| d | 4 | Washer, round, 1 3/8" diameter | ek | | Locknuts, as required |
| d | 20 | Washer, square, 2 1/4" | c | 1 | Bolt, machine, 5/8" x required length |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 10' - 0" | | | |
| n | 6 | Bolt, double arming, 5/8" x req'd. length | | | |
| DESIGN LIMITS Max. transverse load: 1000 lbs. per conductor. Max. line angle within load limits: 5° | | | 12.5/7.2 kV THREE PHASE CROSSARM CONSTRUCTION - DOUBLE LINE ARM (LARGE CONDUCTORS) | | |
| | | | Apr., 1983 | | |
| | | | C9-2PL | | |



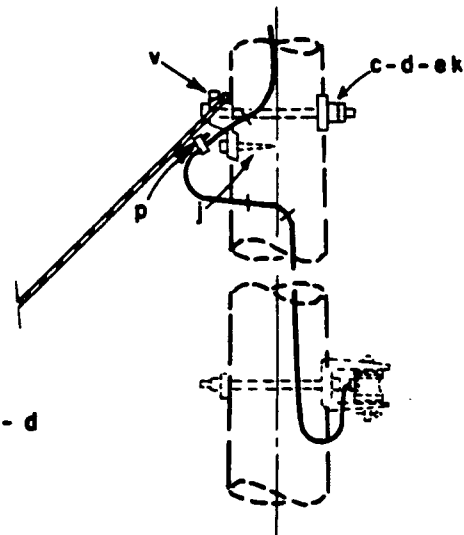
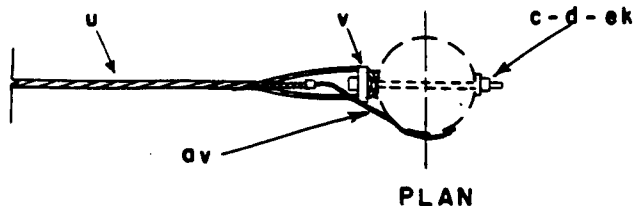
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---|---|-------------------------|
| a | 1 Insulator, pin type | cu | 1 Brace, wood, 60" span |
| f | 1 Pin, crossarm, steel, 5/8" x 10 3/4" | ea | 3 Insulator, post type |
| c | 2 Bolt, machine, 1/2" x required length | ek | Locknuts, as required |
| c | 4 Bolt, machine, 5/8" x required length | | |
| d | 2 Washer, round, 1 3/8" diameter | | |
| d | 7 Washer, square, 2 1/4" | | |
| g | 1 Crossarm, 3 5/8" x 4 5/8" x 10' - 0" | | |
| DESIGN LIMITS Max. transverse load: 500 lbs. per conductor Max. line angle within load limits: 5° | | 12.5/7.2 kV THREE PHASE CROSSARM CONSTRUCTION-SINGLE LINE ARM (LARGE CONDUCTORS) | |
| | | Apr, 1983 | C9-3PL |



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---------------------------------------|--|-----------------------|
| c 6 | Bolt, machine, 1/2" x required length | da 1 | Bracket, insulated |
| c 13 | Bolt, machine, 5/8" x required length | ea 6 | Insulator, post type |
| d 6 | Washer, round, 1 3/8" diameter | ek . | Locknuts, as required |
| d 22 | Washer, square, 2 1/4" | j 2 | Screw, lag, 1/2" x 4" |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | | |
| g 1 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" | | |
| cu 3 | Brace, wood, 60" span | | |
| DESIGN LIMITS Max. transverse load: 1000 lbs. per conductor Max. line angle within load limits: 20° | | 12.5/7.2 kV THREE PHASE CROSSARM CONSTRUCTION - DOUBLE CIRCUIT SINGLE PRIMARY SUPPORT (LARGE CONDUCTORS) | |
| | | Apr., 1983 | DC-CIPL |



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|--|---------------------------------------|---|---|
| c 12 | Bolt, machine, 1/2" x required length | n 12 | Bolt, double arming, 5/8" x required length |
| c 2 | Bolt, machine, 5/8" x required length | cu 6 | Brace, wood, 60" span |
| d 33 | Washer, square, 2 1/4" | da 1 | Bracket, insulated |
| d 12 | Washer, round, 1 3/8" diameter | ea 12 | Insulator, post type |
| g 4 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | ek | Locknuts, as required |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" | | |
| j 2 | Screw, lag, 1/2" x 4" | | |
| DESIGN LIMITS Max. transverse load: 2000 lbs per conductor Max line angle within load limits: 20° | | 12.5/7.2 kV THREE PHASE CROSSARM CONSTRUCTION - DOUBLE CIRCUIT DOUBLE PRIMARY SUPPORT (LARGE CONDUCTORS) | |
| Apr., 1983 | | DC-CI-3PL | |

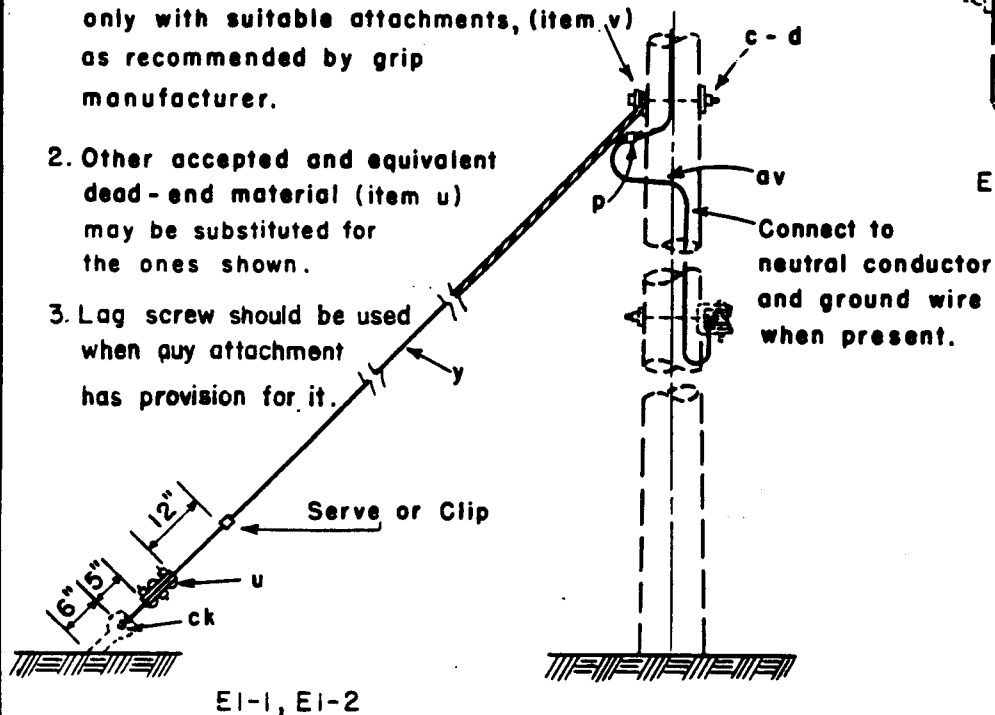


NOTES:

1. Formed type grips may be used only with suitable attachments, (item v) as recommended by grip manufacturer.

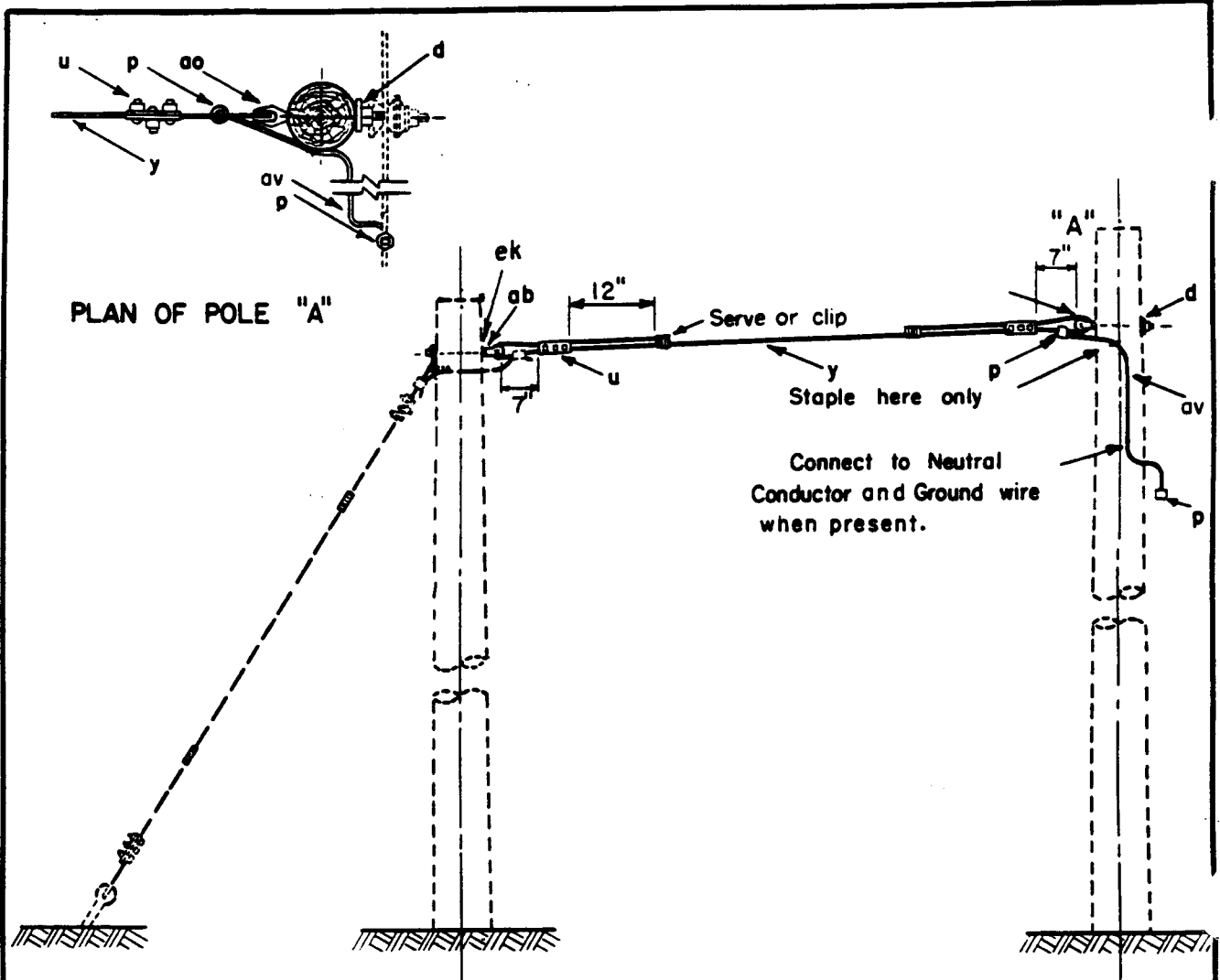
2. Other accepted and equivalent dead-end material (item u) may be substituted for the ones shown.

3. Lag screw should be used when guy attachment has provision for it.



See guide drawings M30 - 1 and M30 - 2

| See guide drawings M30 - 1 and M30-2 | | ASSEMBLY UNIT | | |
|--------------------------------------|--|------------------------------------|---------------|---------------|
| | | EI-1 | EI-2 | EI-3 |
| ITEM | MATERIAL | No. REQ'D. | No. REQ'D. | No. REQ'D. |
| c | Bolt, machine, 5/8" x required length | 1 | 1 | 1 |
| d | Washer, curved | 1-2 1/4"x2 1/4" | 1-3"x3" | 1-4"x4" |
| j | Screw, lag, 1/2" x 4" | | | 1 |
| p | Connectors | as req'd | as req'd | as req'd |
| u | Deadend for guy strand | 2 | 2 | 2 |
| v | Guy attachment(rating) | 1-(5200 lbs.) | 1-(5200 lbs.) | 1-(8500 lbs.) |
| y | Guy wire, S.M., 7 strand req'd length by | 1/4" | 3/8" | 7/16" |
| av | Jumper, No. 4 stranded Al. alloy or equiv. | req'd length | req'd length | req'd length |
| ck | Clamp, anchor rod bonding | 1 | 1 | 1 |
| ek | Locknuts, as required | | | |
| | | 12.5 / 7.2 kV | | |
| | | SINGLE DOWN GUY, THROUGH BOLT TYPE | | |
| | | Apr., 1983 | | |
| | | EI-1, EI-2, EI-3 | | |

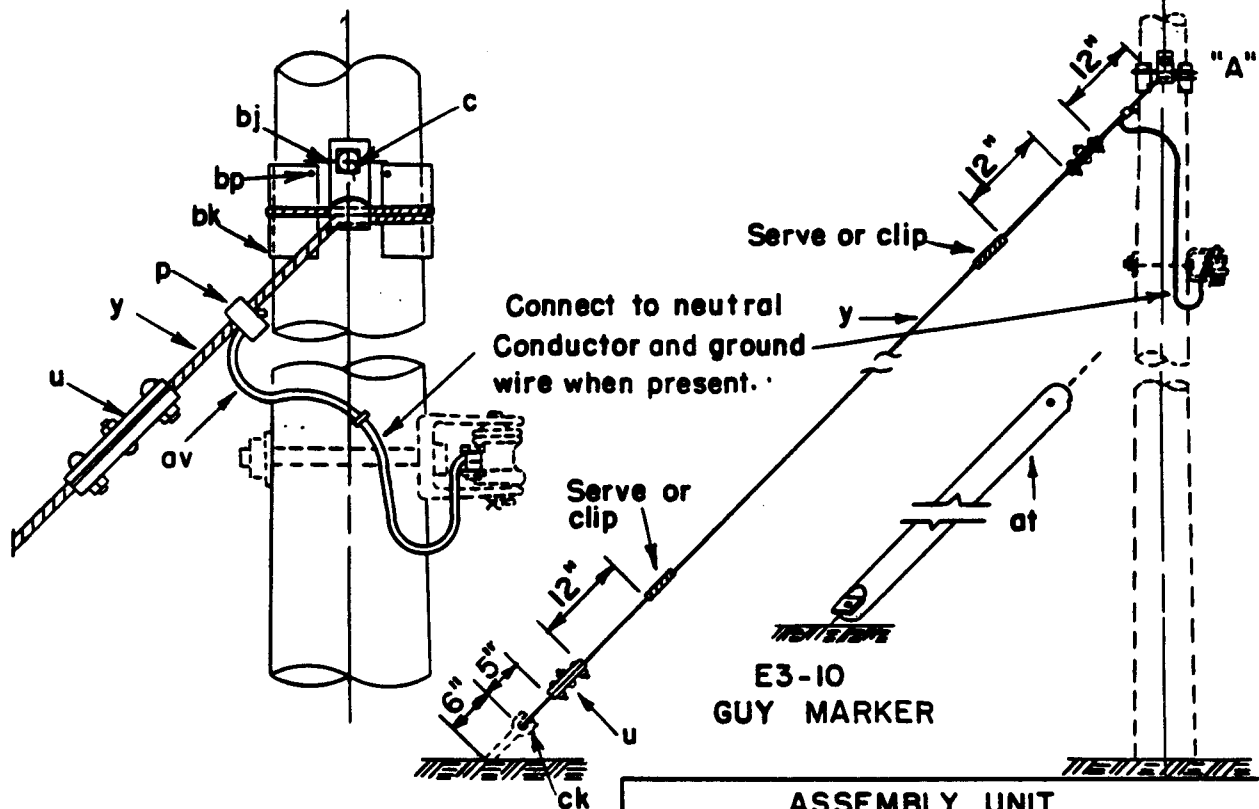


Note:

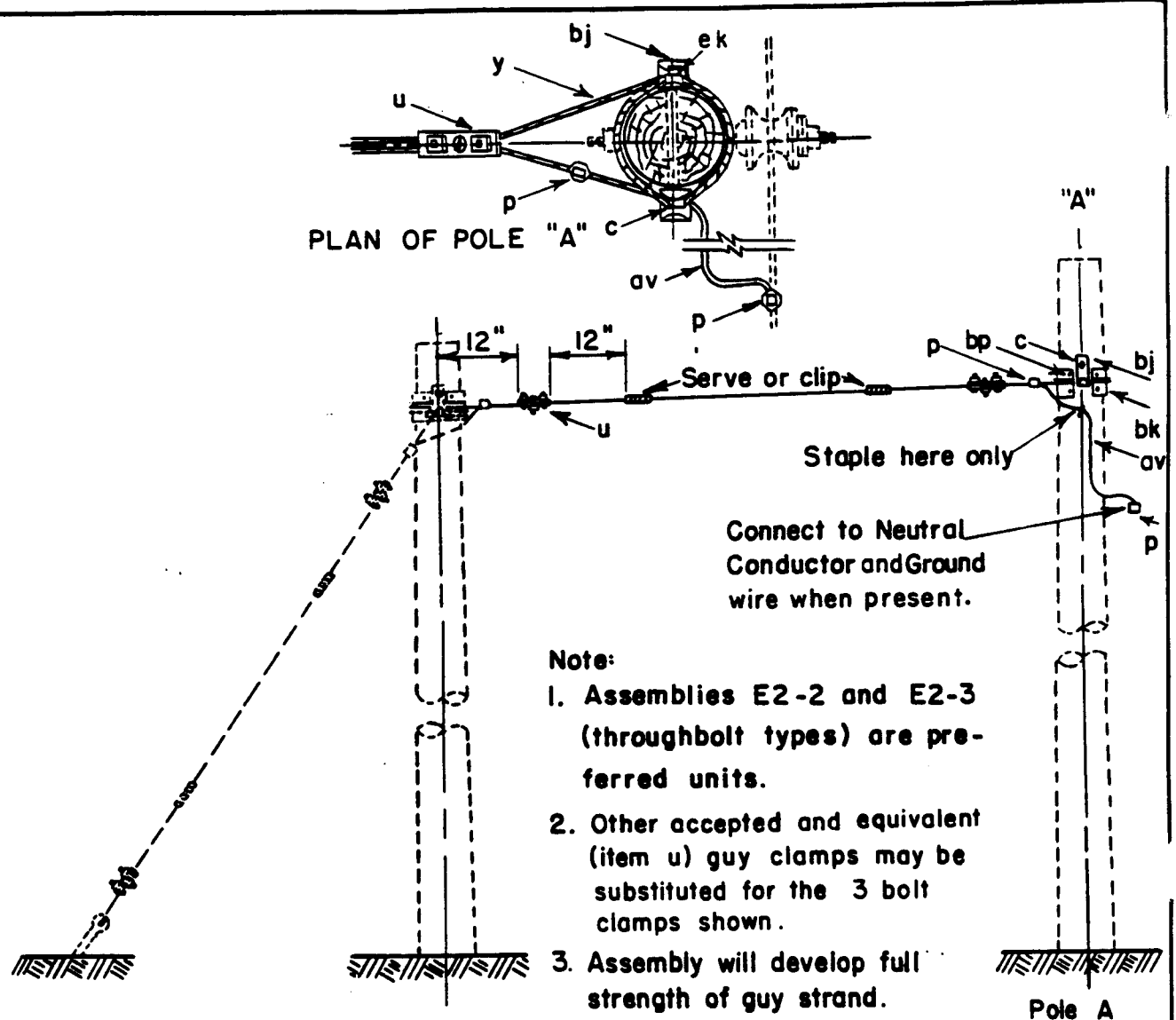
Other accepted and equivalent items of deadend material may be substituted for the 3-bolt clamp shown.

| | | ASSEMBLY UNIT | | |
|------|--|--|------------------|---------------|
| | | E2-1 | E2-2 | E2-3 |
| ITEM | MATERIAL | NO. REQ'D. | NO. REQ'D. | NO. REQ'D. |
| d | Washer, curved | 1-2 1/4" x 2 1/4" | 1-3" x 3" | 1-4" x 4" |
| u | Deadend for guy strand | light duty(2) | heavy duty(2) | heavy duty(2) |
| y | Guy wire, 7 strand S.M. req'd length | 1/4" | 3/8" | 7/16" |
| ab | Nut, thimble type eye, 5/8" | 1 | 1 | 1 |
| ao | Bolt, thimble eye, 5/8" x req'd. length by | 1 | 1 | 1 |
| av | Jumper, #4 stranded AL. alloy or equiv. | 1 | 1 | 1 |
| p | Connectors, as req'd. | | | |
| ek | Locknuts, as required | | | |
| | | 12.5/7.2 kV | | |
| | | SINGLE OVERHEAD GUY, THROUGH BOLT TYPE | | |
| | | Apr., 1983 | E2-1, E2-2, E2-3 | |

1. Other accepted and equivalent (item u) guy clamps may be substituted for the 3-bolt clamps shown.
2. Assemblies E1-2 and E1-3 (throughbolt type) are preferred units.



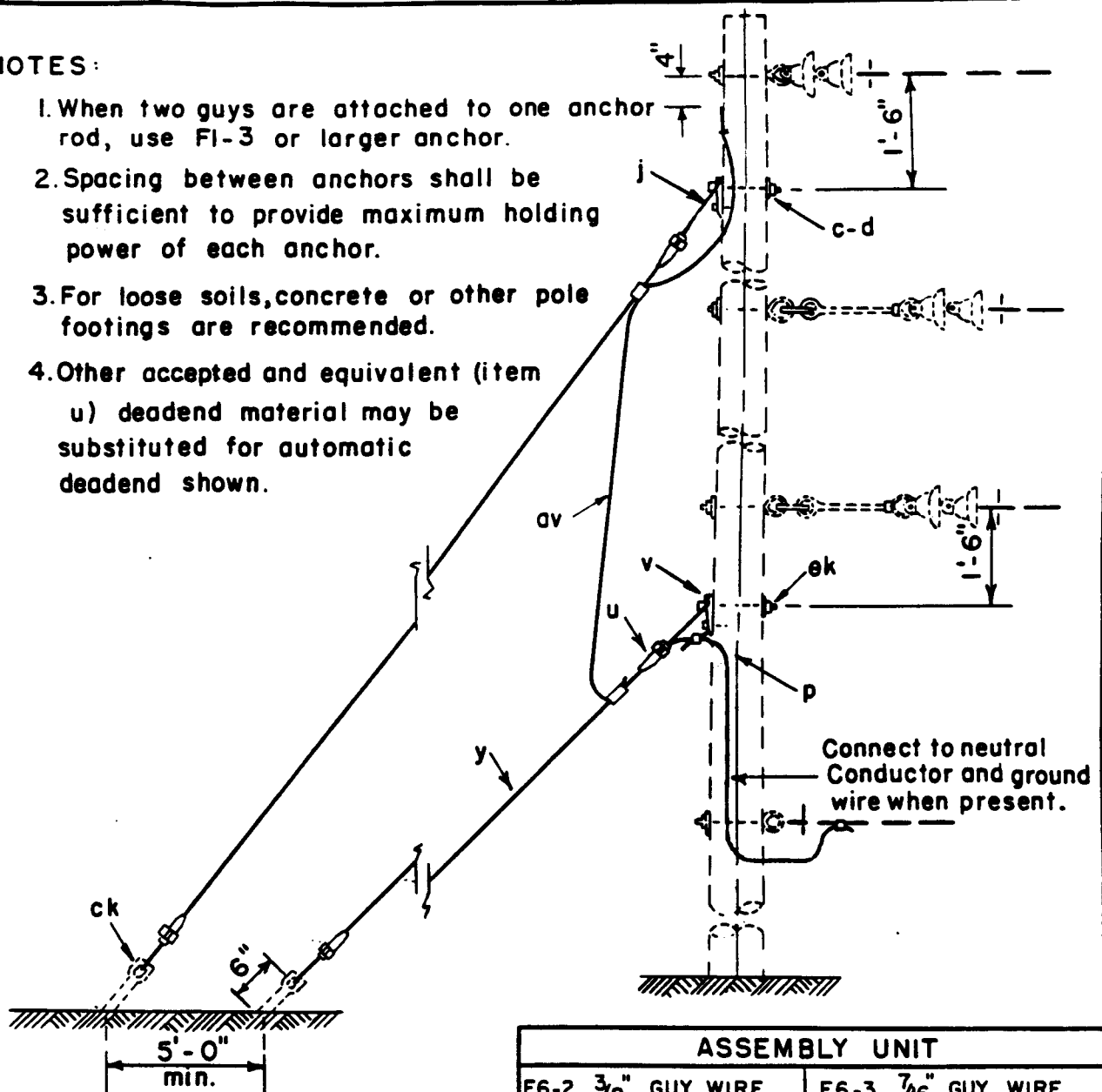
| | | | | | |
|-------------------------------------|---|-------------------------------|--------------|------------|--|
| See guide drawings M30-1 and M30-2. | | ck | | | |
| | | ASSEMBLY UNIT | | | |
| | | E3-2 | E3-3 | E3-10 | |
| | | | | Guy Marker | |
| ITEM | MATERIAL | No. REQ'D | No. REQ'D | | |
| c | Bolt, machine, 5/8" x req'd length | 1 | 1 | | |
| p | Connectors, as req'd | | | | |
| u | Clamp, guy | 2-Heavy Duty | 2-Heavy Duty | | |
| y | Guy Wire, S-M, 7-strand Req'd length by | 3/8" | 7/16" | | |
| av | Jumper, *4 stranded AL. alloy or equip. | as req'd | as req'd | | |
| at | Guy Marker, 8' min. length | | | 1 | |
| bj | Guy Hook, J | 2 | 2 | | |
| bk | Guy Plate, 4" x 8", 14 gauge | 2 | 2 | | |
| bp | Nail, 8 penny, galv. | 8 | 8 | | |
| ck | Clamp, anchor rod bonding | 1 | 1 | | |
| ek | Locknuts, as required | | | | |
| | | 12.5/7.2 kV | | | |
| | | SINGLE DOWN GUY, WRAPPED TYPE | | | |
| | | | | | |
| | | E3-2, E3-3, E3-10 | | | |
| | | Apr., 1983 | | | |



| | | ASSEMBLY UNIT | | | |
|------|---|-----------------------------------|------------|------------|--|
| | | E4-2 | E4-3 | | |
| | | 3/8" S.M. | 7/16" S.M. | | |
| ITEM | MATERIAL | No. Req'd | No. Req'd | | |
| c | Bolt, machine, 5/8" x req'd length | 1 | 1 | | |
| p | Connectors | as req'd | as req'd | | |
| u | Deadend for guy strand | 2 | 2 | | |
| y | Guy Wire, 7 strand | as req'd | as req'd | | |
| av | Jumper, #4 stranded AL. alloy or equiv. | as req'd | as req'd | | |
| bj | Guy Hook, J | 2 | 2 | | |
| bk | Guy Plate, 4"x 8", 14 gauge | 2 | 2 | | |
| bp | Nail, 8 penny, galv. | 8 | 8 | | |
| ek | Locknuts | as req'd | as req'd | | |
| | | 12.5/7.2 kV | | | |
| | | SINGLE OVERHEAD GUY, WRAPPED TYPE | | | |
| | | Apr, 1983 | | E4-2, E4-3 | |

NOTES:

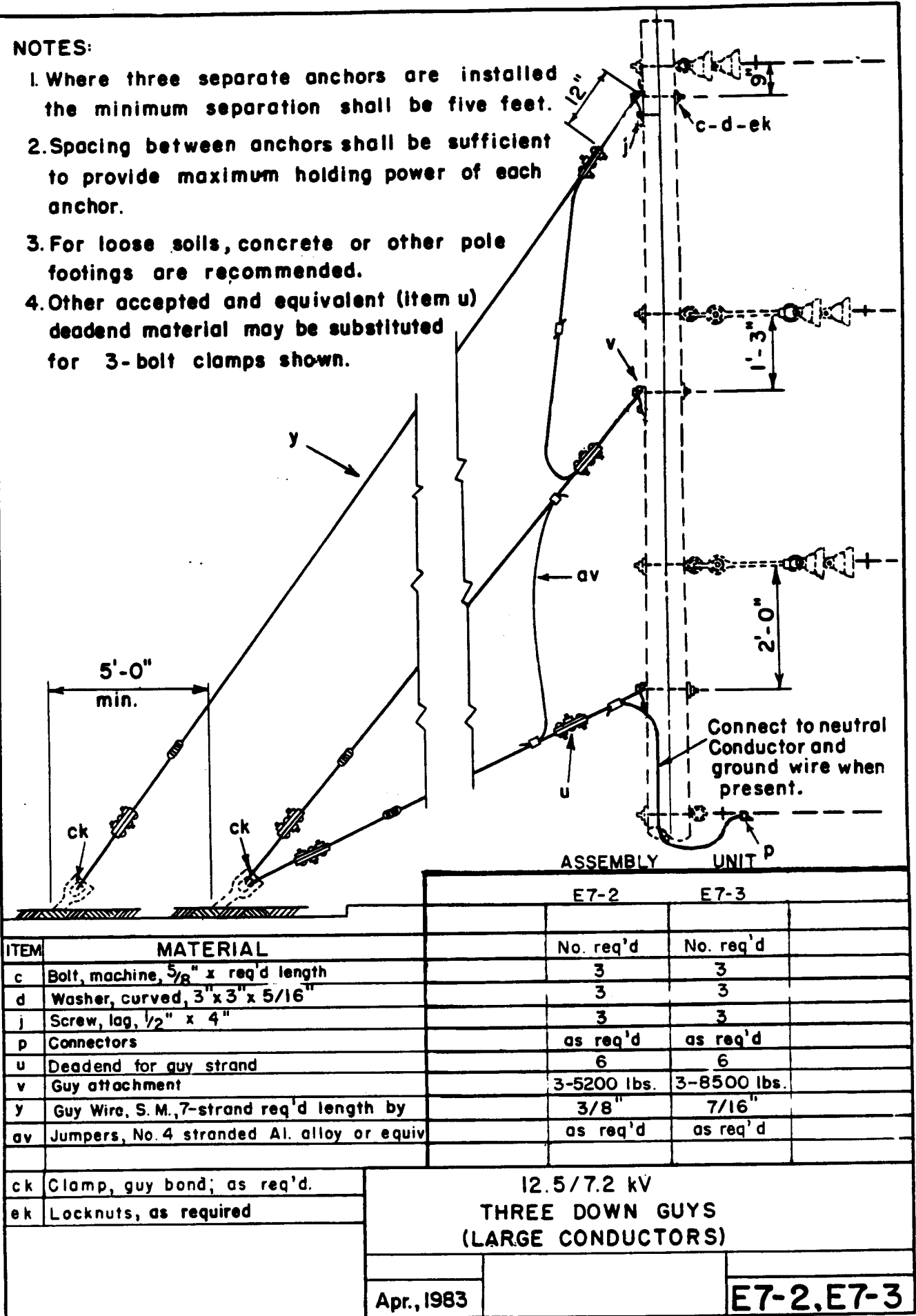
1. When two guys are attached to one anchor rod, use F1-3 or larger anchor.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. For loose soils, concrete or other pole footings are recommended.
4. Other accepted and equivalent (item u) deadend material may be substituted for automatic deadend shown.



| | | ASSEMBLY UNIT | |
|------|--|--------------------------------|--------------------------------|
| | | E6-2 $\frac{3}{8}$ " GUY WIRE | E6-3 $\frac{7}{16}$ " GUY WIRE |
| ITEM | MATERIAL | No. Req'd | No. Req'd |
| c | Bolt, machine, $\frac{5}{8}$ " x req'd length | 2 | 2 |
| d | Washer, 3" x 3" x $\frac{5}{16}$ " curved | | 2 |
| d | Washer, 2 $\frac{1}{4}$ " x 2 $\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | 2 | |
| j | Screw, lag, $\frac{1}{2}$ " x 4" | | 2 |
| p | Connectors, as req'd | | |
| u | Deadend for guy strand | 4 | 4 |
| v | Guy attachment, Mall. Iron, Heavy Duty | | 2 |
| v | Guy attachment, through bolt type | 2 | |
| y | Guy wire, S. M., 7-strand, | Req'd. Length | Req'd. Length |
| av | Jumpers, No. 4 stranded Al. alloy or equiv. | as required | as required |
| ck | Clamp, guy bond, as req'd | | |
| ek | Locknuts, as required | | |
| | | 12.5/7.2 kV DOUBLE DOWN GUY | |
| | | Apr., 1983 | E6-2, E6-3 |

NOTES:

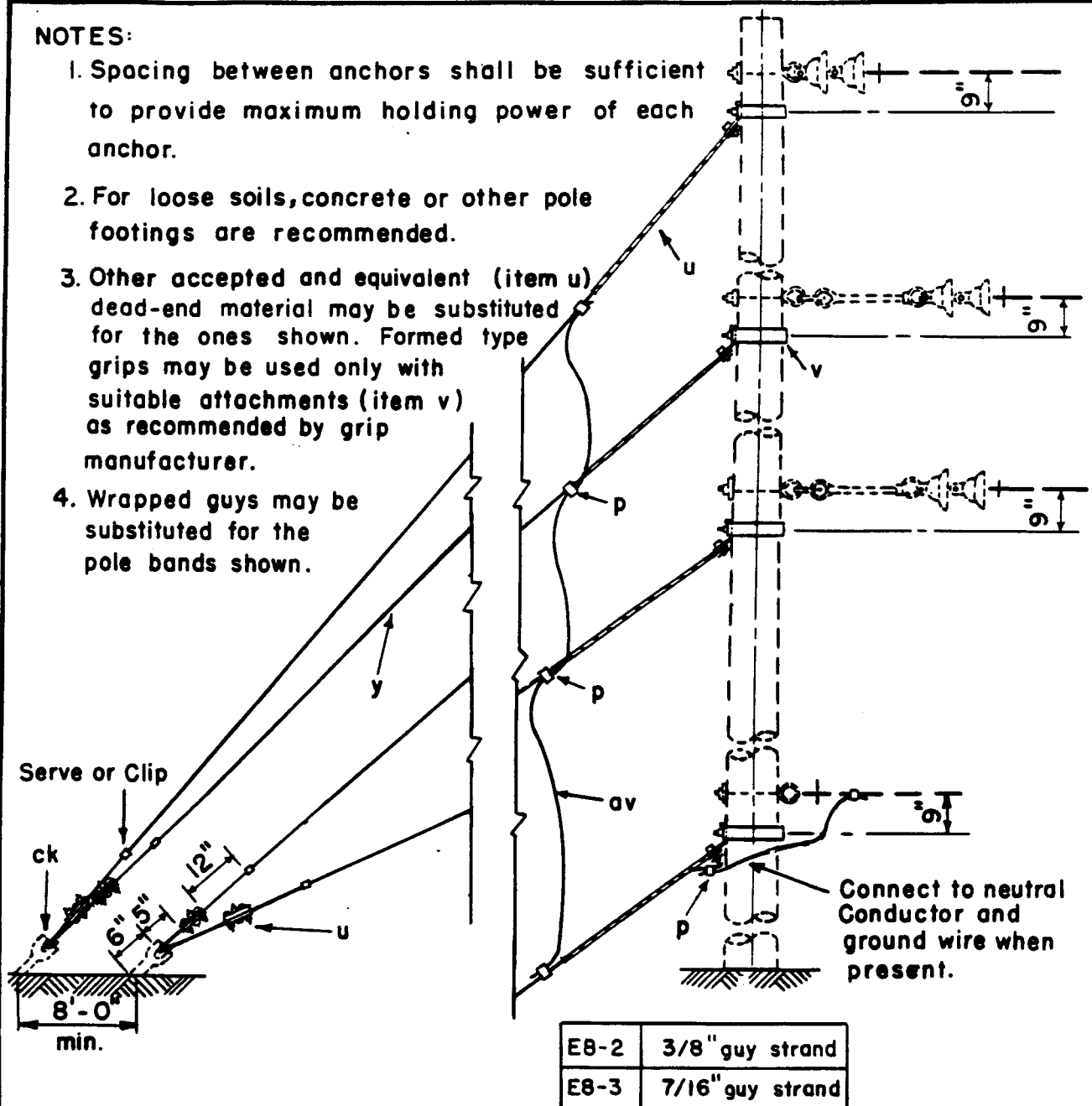
1. Where three separate anchors are installed the minimum separation shall be five feet.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. For loose soils, concrete or other pole footings are recommended.
4. Other accepted and equivalent (item u) deadend material may be substituted for 3-bolt clamps shown.



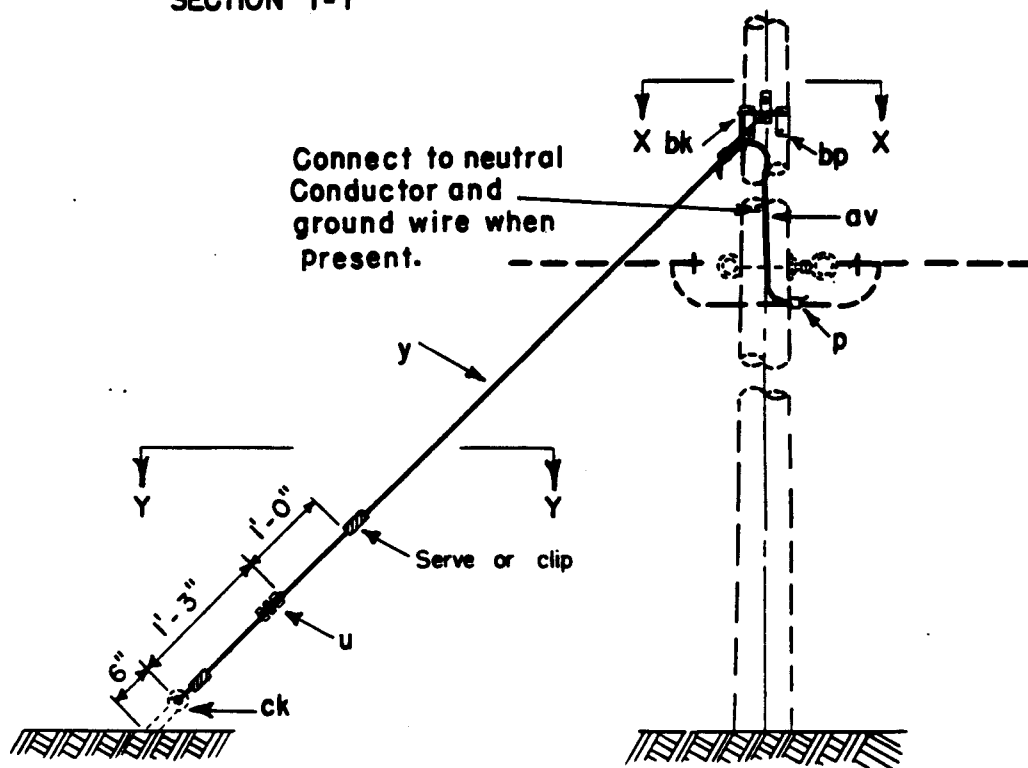
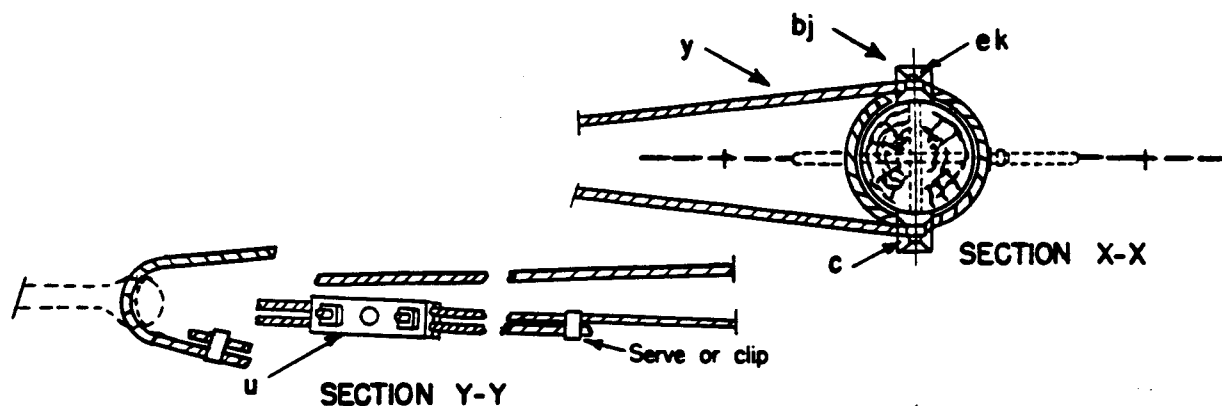
| | | ASSEMBLY UNIT P | |
|------|--|--|-------------|
| | | E7-2 | E7-3 |
| ITEM | MATERIAL | No. req'd | No. req'd |
| c | Bolt, machine, 5/8" x req'd length | 3 | 3 |
| d | Washer, curved, 3" x 3" x 5/16" | 3 | 3 |
| j | Screw, lag, 1/2" x 4" | 3 | 3 |
| p | Connectors | as req'd | as req'd |
| u | Deadend for guy strand | 6 | 6 |
| v | Guy attachment | 3-5200 lbs. | 3-8500 lbs. |
| y | Guy Wire, S. M., 7-strand req'd length by | 3/8" | 7/16" |
| av | Jumpers, No. 4 stranded Al. alloy or equiv | as req'd | as req'd |
| ck | Clamp, guy bond; as req'd. | 12.5/7.2 kV THREE DOWN GUYS (LARGE CONDUCTORS) | |
| ek | Locknuts, as required | | |
| | | Apr., 1983 | E7-2, E7-3 |

NOTES:

1. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
2. For loose soils, concrete or other pole footings are recommended.
3. Other accepted and equivalent (item u) dead-end material may be substituted for the ones shown. Formed type grips may be used only with suitable attachments (item v) as recommended by grip manufacturer.
4. Wrapped guys may be substituted for the pole bands shown.

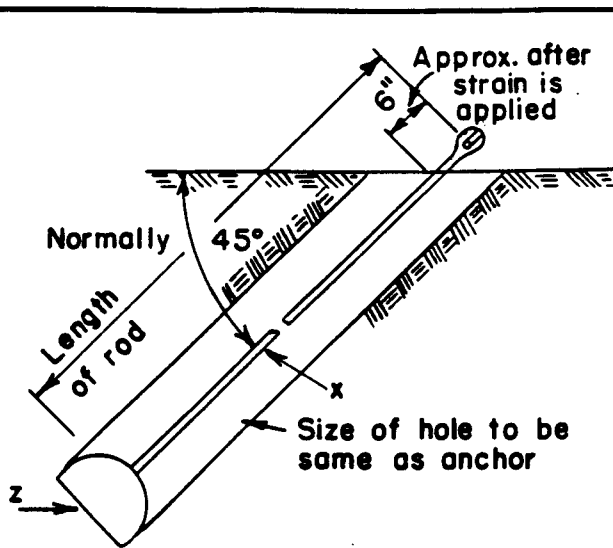


| ITEM | MATERIAL | No. Required | |
|------|---|---|------------|
| p | Connectors, | as req'd | |
| u | Deadend for guy strand | 8 | |
| v | Guy attachment, pole band type | 4 | |
| y | Guy Wire S.M. 7 strand | req'd length | |
| av | Jumpers, No. 4 stranded Al. alloy or equiv. | as required | |
| ck | Clamp, guy bonding | 2 | |
| | | | |
| | | | |
| | | 12.5/7.2 kV FOUR DOWN GUYS (LARGE CONDUCTORS) | |
| | | Apr., 1983 | E8-2, E8-3 |



| | |
|-----|-----------------|
| E11 | 1/4" guy strand |
| E12 | 3/8" guy strand |

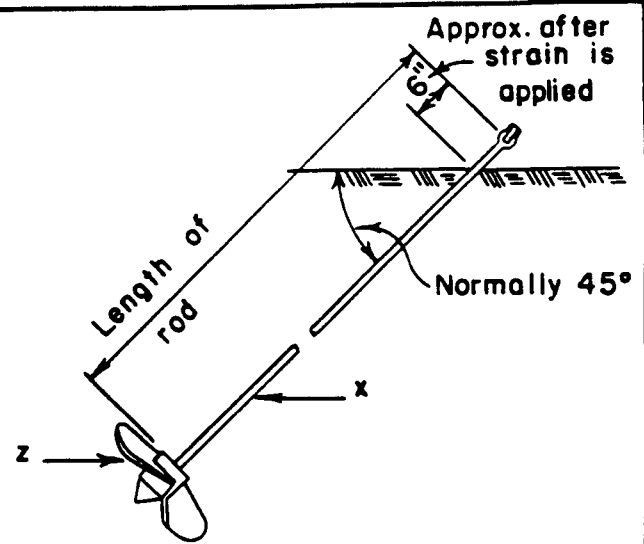
| ITEM | MATERIAL | NO. REQ'D. | | | |
|------|---|--|--|----------|--|
| c | Bolt, machine, 5/8"x req'd. length | 1 | | | |
| u | Deadend for guy strand | 1 | | | |
| y | Guy wire, 7 strand, S.M. | Req'd Length | | | |
| ck | Clamp, anchor rod bonding | 1 | | | |
| bj | Guy hook, J | 2 | | | |
| bk | Guy plate, 4"x 8", 14 gauge | 2 | | | |
| bp | Nail, 8 penny, galv. | 8 | | | |
| av | Jumper, #4 stranded AL. alloy or equiv. | | | | |
| p | Connectors, as req'd. | | | | |
| ek | Locknuts, as required | | | | |
| | | 12.5/7.2 kV SINGLE LOOP GUY, WRAPPED TYPE | | | |
| | | Apr., 1983 | | E11, E12 | |



CONE

FI-1C, FI-2C, FI-3C

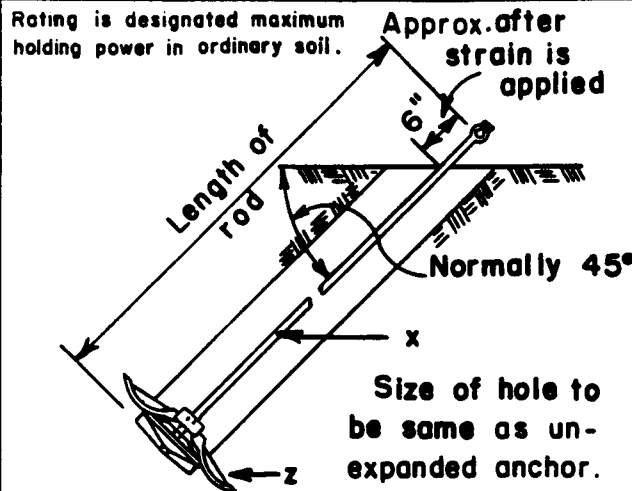
Rating is designated maximum holding power in hardpan and rocky soil.



SCREW

FI-1S, FI-2S, FI-3S, FI-4S

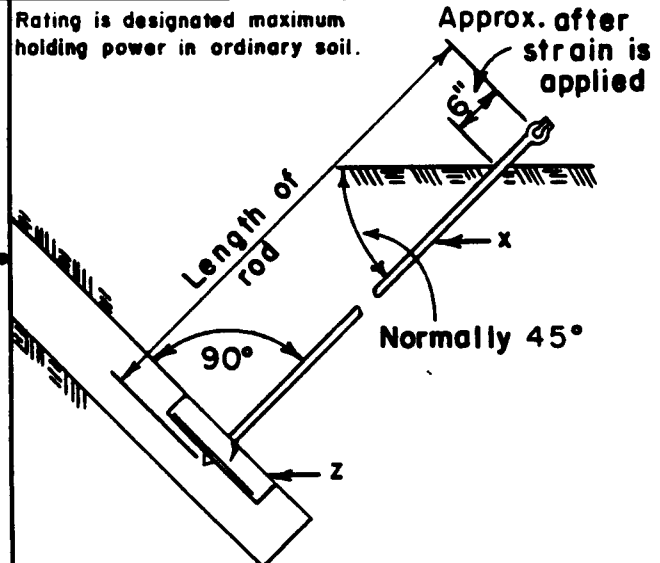
Rating is designated maximum holding power in ordinary soil.



EXPANDING

FI-1, FI-2, FI-3, FI-4

Note: Projection of anchor rods above earth may be increased to a max. of 12" in cultivated fields or other locations where necessary to prevent burying of the rod eye.



PLATE

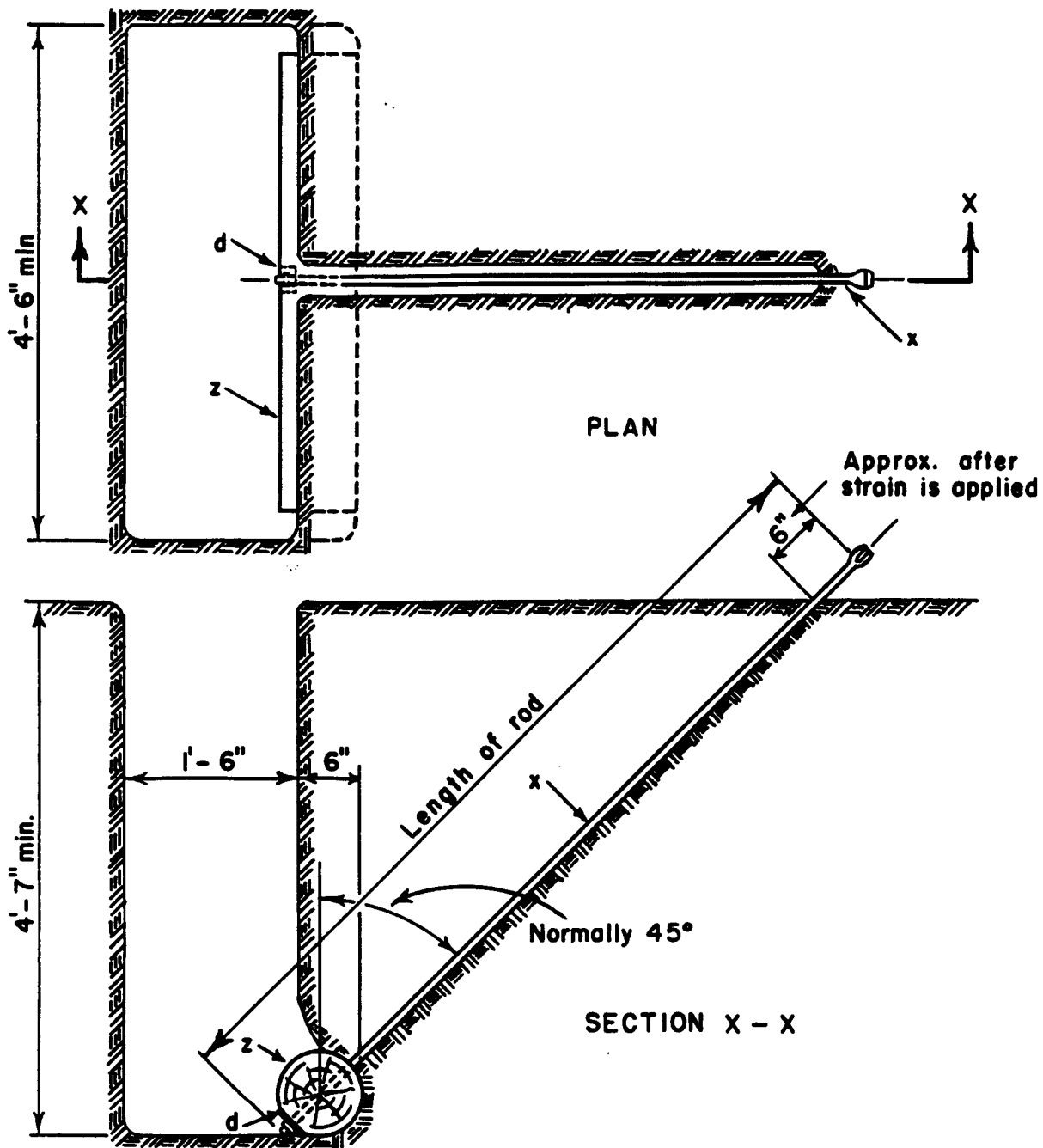
FI-1P, FI-2P, FI-3P, FI-4P

| | | ASSEMBLY UNIT | | | | | | | |
|-----------------|--------------------------|---------------|--------------|------|--------------|--------|--------------|--------|--------------|
| | | FI-1 | | FI-2 | | FI-3 | | FI-4 | |
| Rating (pounds) | | 6000 | | 8000 | | 10,000 | | 12,000 | |
| ITEM | MATERIAL | NO. | | NO. | | NO. | | NO. | |
| x | Rod, anchor, thimble eye | 1 | 5/8" x 7'-0" | 1 | 5/8" x 7'-0" | | | | |
| x | Rod, anchor, twin eye | | | | | 1 | 3/4" x 8'-0" | 1 | 3/4" x 8'-0" |
| z | Anchor ----- type | 1 | | 1 | | 1 | | 1 | |

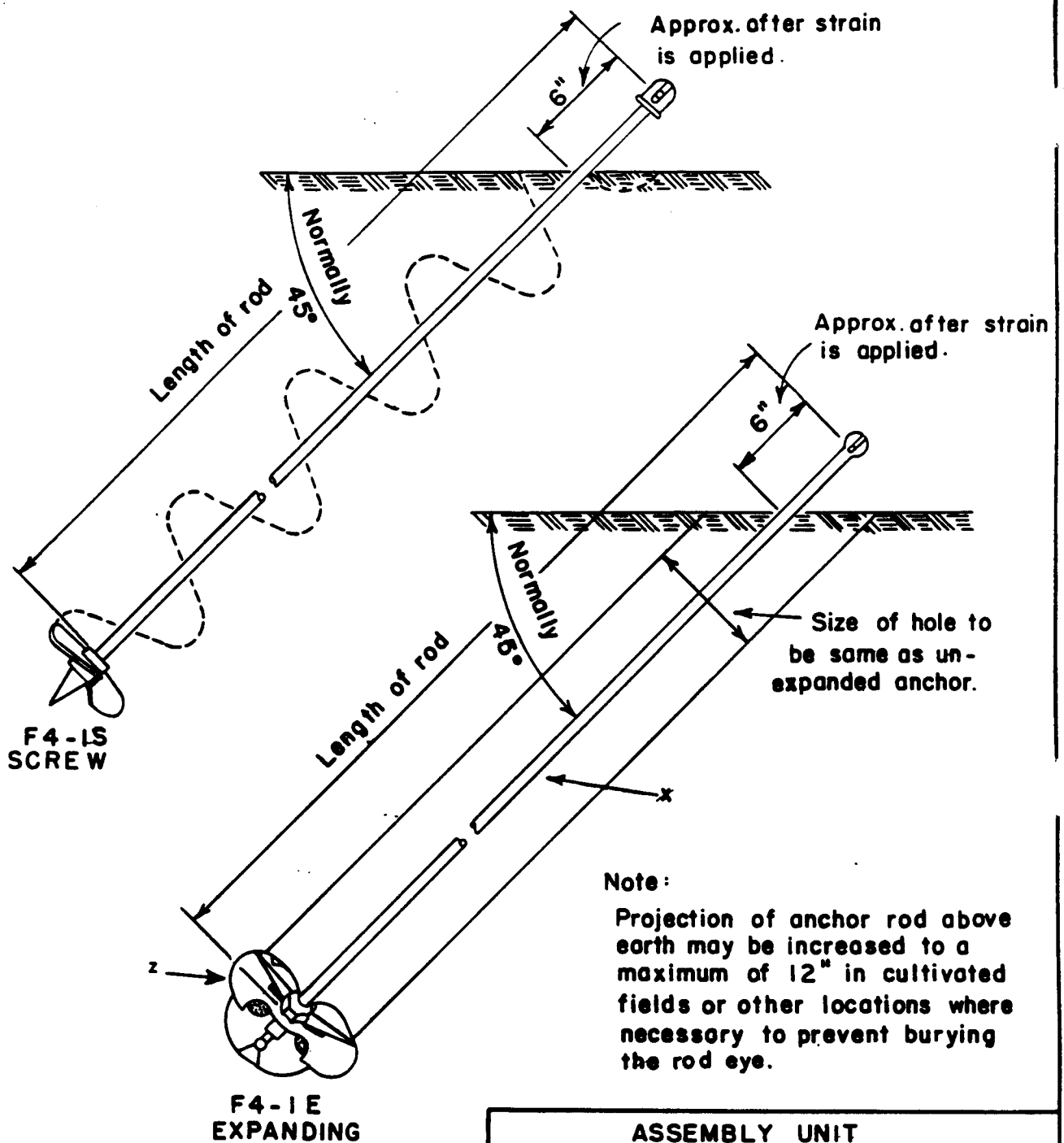
LINE ANCHOR ASSEMBLIES

Apr., 1983

FI-1 TO FI-4



| | | ASSEMBLY UNIT | | | | | | | |
|-------------------------------------|---|---------------------|---------------|--------------|---------------|---------|----------------|---------|----------------|
| | | F 2-1 | | F 2-2 | | F 2-3 | | F 2-4 | |
| ITEM | MATERIAL | NO. | TYPE | NO. | TYPE | NO. | TYPE | NO. | TYPE |
| d | Washer, 13/16" hole, (1 1/8" min. for F2-4) | 1 | 4"x 4"x 1/2" | 1 | 4"x 4"x 1/2" | 1 | 4"x 4"x 1/2" | 1 | 4"x 4"x 1/2" |
| x | Rod, anchor, thimble type eye | 1 | 5/8"x 7'-0" | 1 | 3/4"x 8'-0" | 1 | 3/4"x 8'-0" | 1 | 1"x 9'-0" |
| z | Anchor, (creosoted log) | 1 | 8"dia x 4'-0" | 1 | 9"dia x 4'-6" | 1 | 10"dia x 5'-0" | 1 | 12"dia x 5'-0" |
| Designated maximum holding power in | | 8000* | | 10,000* | | 12,000* | | 16,000* | |
| ordinary soil | | LOG ANCHOR ASSEMBLY | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | Apr., 1983 | | F2-1 TO F2-4 | | | | | |

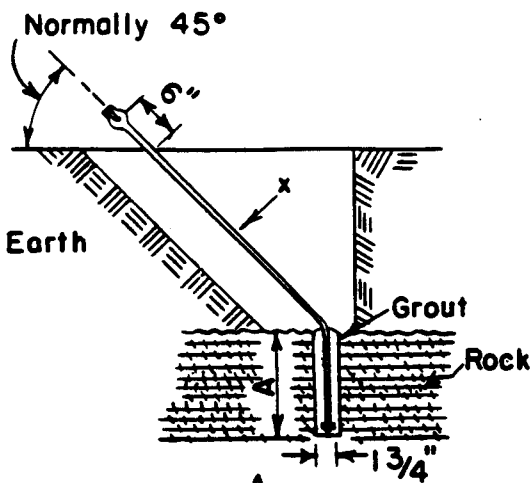


| | | ASSEMBLY UNIT | | | | | |
|------|--|---------------|-------|-------|--------------|--|--|
| | | F4-1S | | F4-1E | | | |
| ITEM | MATERIAL | NO. | | NO. | | | |
| x | Rod, anchor, thimble type eye | | | 1 | 5/8" x 6'-0" | | |
| z | Anchor, service | 1 | | 1 | | | |
| | Designated maximum holding power in sand | | 2500* | | 2500** | | |

SERVICE ANCHOR ASSEMBLY

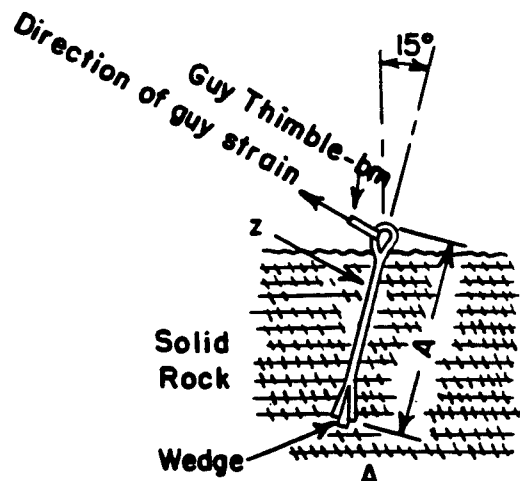
Apr., 1983

F4-1



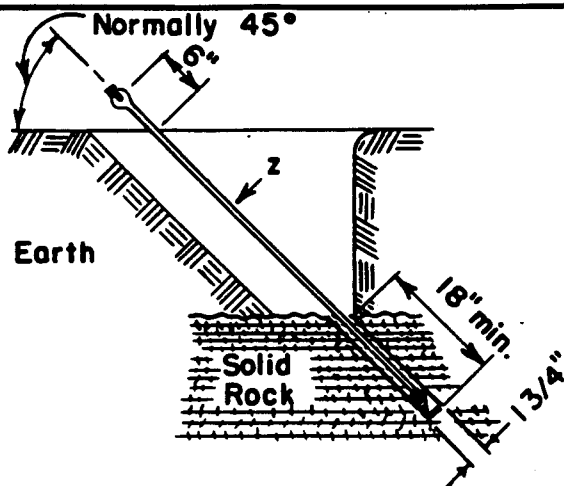
18"min. for sound solid rock
30"min. for stratified rock

F5 - 1



Guy Bolt 18"
Rock Anchor 15"

F5 - 2



F5 - 3

Notes:

1. Only one guy shall be attached to a rock anchor. Where more than one guy is required space anchors 2 ft. minimum and where practical they shall be in direct line with pole.
2. Do not anchor to any boulder measuring less than 5 ft. in two directions at right angles to each other.

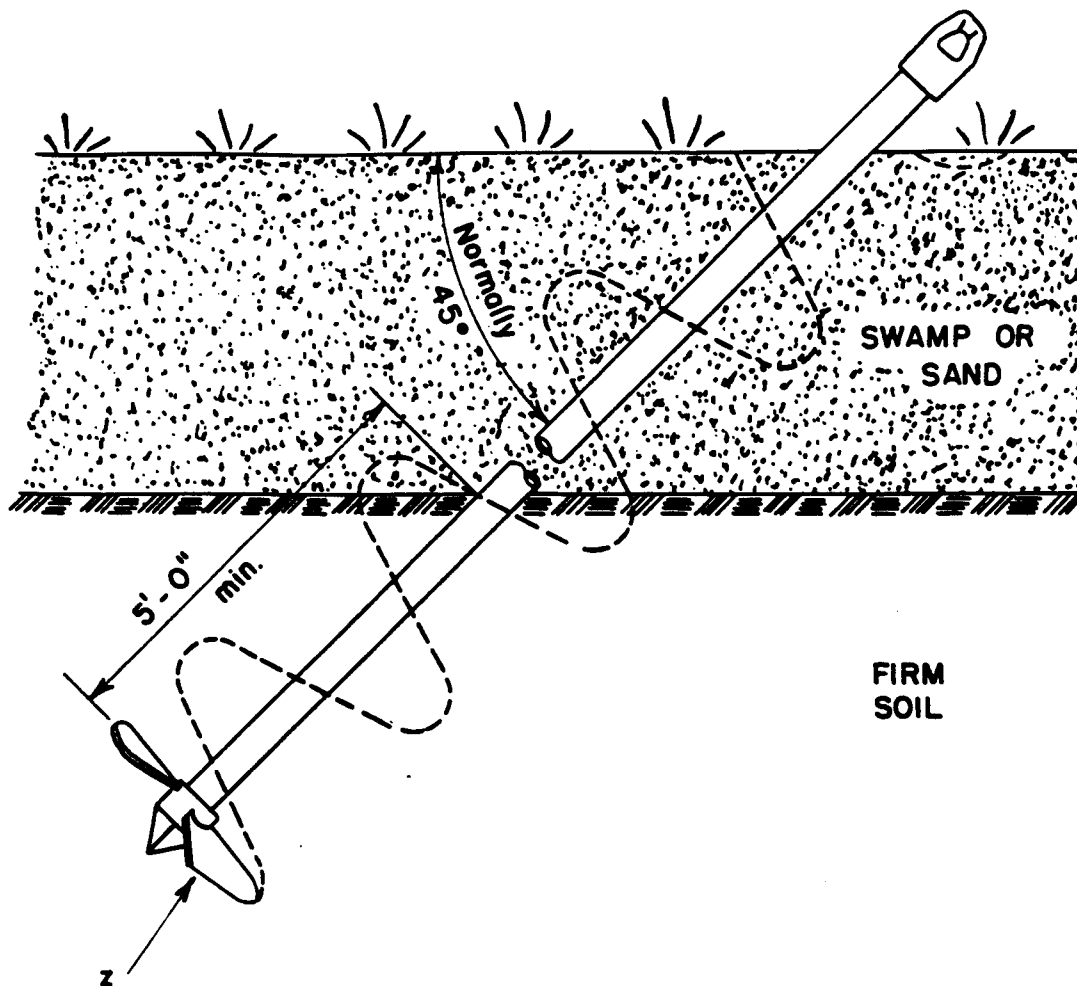
ASSEMBLY UNIT

| | | F5 - 1 | F5 - 2 | F5 - 3 | |
|------|--------------------------|-----------|-----------|-----------|--|
| ITEM | MATERIAL | No. REQ'D | No. REQ'D | No. REQ'D | |
| x | Rod, anchor, thimble eye | 1 | | | |
| z | Anchor, rock | | 1 | 1 | |
| bm | Thimble, guy | | 1 | | |

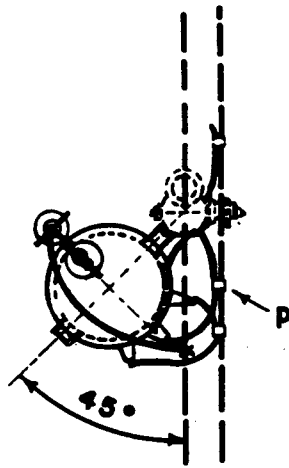
ROCK ANCHOR ASSEMBLIES

Apr., 1983

F5-1, F5-2, F5-3



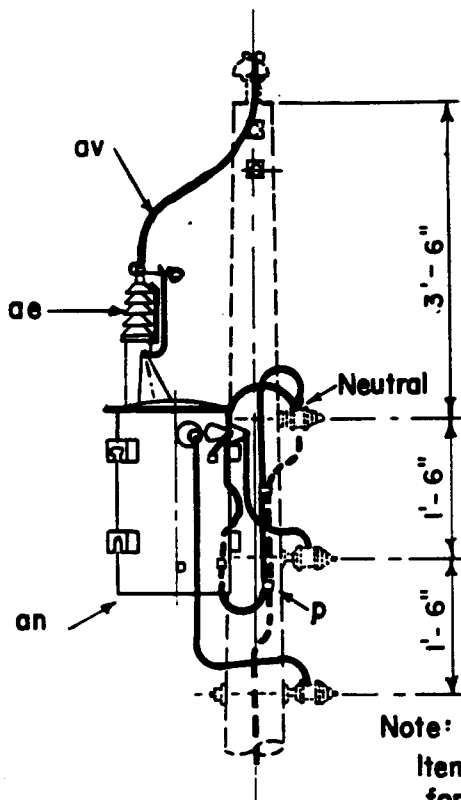
| | | ASSEMBLY UNIT | | | | | | | |
|------|----------------------------------|-----------------------|-------|------|-------|------------------|---------|-----|------|
| | | F6-1 | | F6-2 | | F6-3 | | | |
| ITEM | MATERIAL | NO. | TYPE | NO. | TYPE | NO. | TYPE | NO. | TYPE |
| z | Anchor, swamp | 1 | 10" | 1 | 12" | 1 | 15" | | |
| | Designated maximum holding power | | 6000* | | 8000* | | 10,000* | | |
| | Nut, thimble type eye | 1 | | 1 | | 1 | | | |
| | Pipe, galvanized, as req'd | | | | | | | | |
| | | SWAMP ANCHOR ASSEMBLY | | | | | | | |
| | | | | | | | | | |
| | | Apr., 1983 | | | | F6-1, F6-2, F6-3 | | | |



PLAN

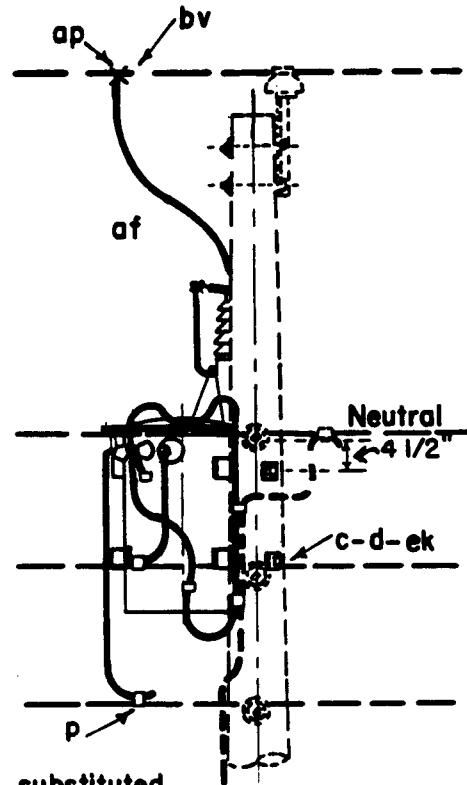
Notes:

1. Designate G9 for conventional transformer with tank mounted cutout and arrester, G65 for transformer with double gap and internal fuse, G105 for self protected transformer.
2. See guide drawings for details of transformer secondary and service connections.
3. Do not disconnect transformer neutral without first disconnecting primary.



Note:

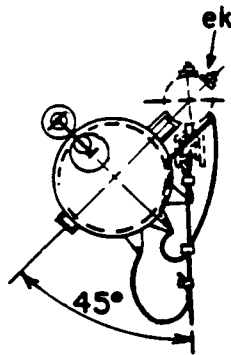
Item ax may be substituted for items ae and af.



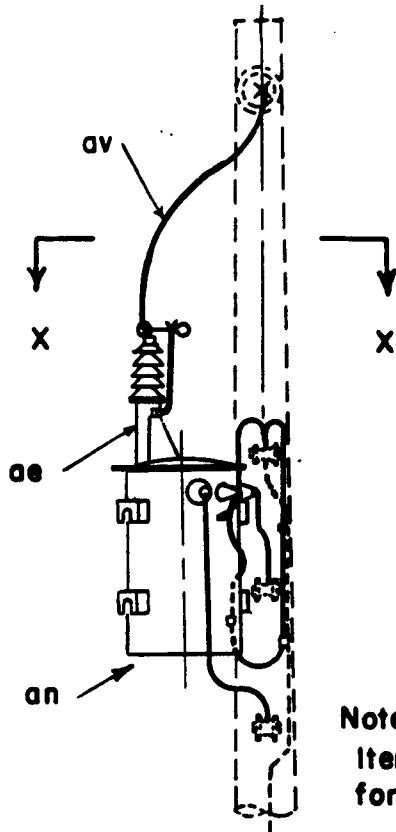
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------------|-----|--|---|-----|--------------------------------|
| c | 2 | Bolt, machine, 5/8" x req'd. length | an | 1 | Transformer |
| d | 2 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | ap | 1 | Clamp, hot line, tap assembly |
| p | | Connectors, as required | av | | Jumpers, stranded, as required |
| ae | | Surge arrester (G9 only) | bv | 1 | Rods, armor |
| af | | Cutout, fuse, open link (G9 only) | ek | | Locknuts, as req'd. |
| | | | 12.5/7.2 kV SINGLE PHASE TRANSFORMER AT 1-PHASE TANGENT | | |
| | | | | | |
| | | | | | |
| Apr., 1983 | | | G9-, G65-, G105- | | |

Notes:

1. Designate G10 for conventional transformer with tank mounted cutout and arrester, G66 for transformer with double gaps and internal fuse, G106 for self protected transformer.
2. See guide drawings for details of transformer secondary and service connections.
3. Do not disconnect transformer neutral without first disconnecting primary.

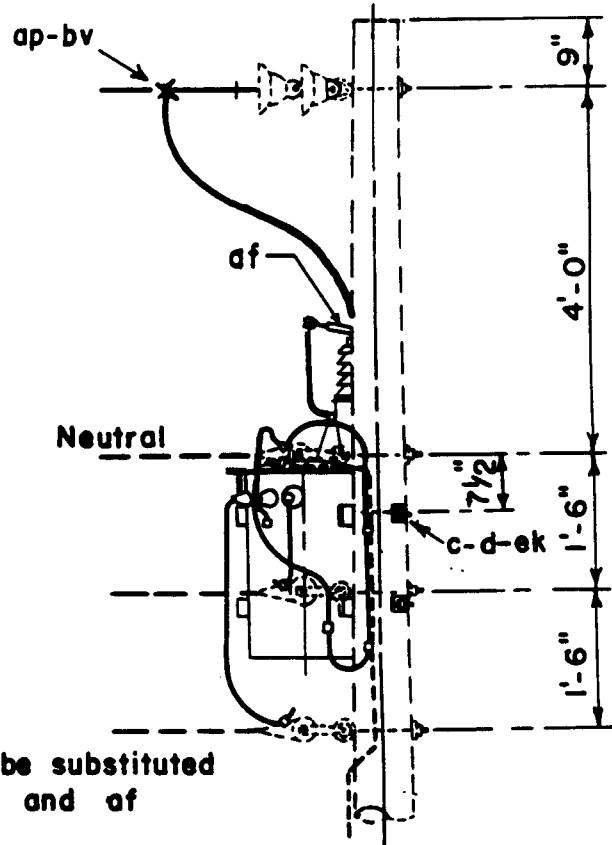


SECTION X-X



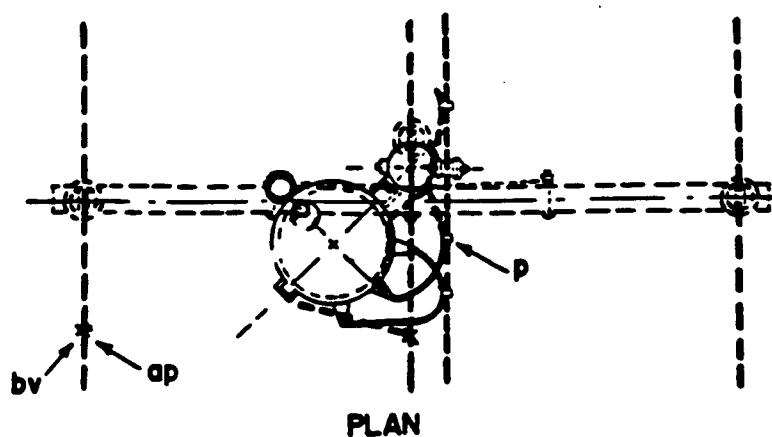
Note:

Item ax may be substituted for items ae and af

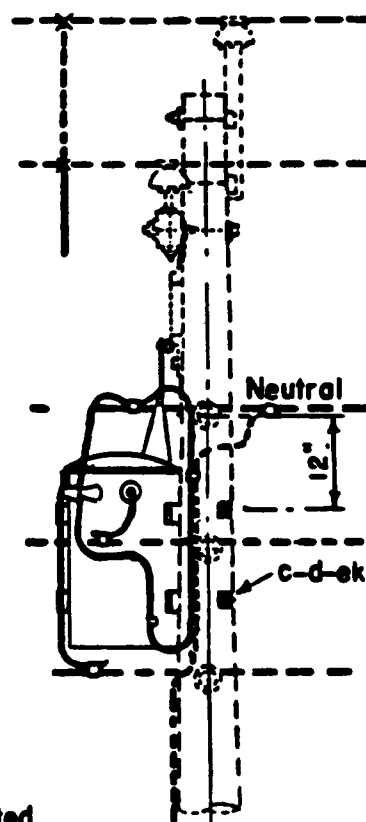
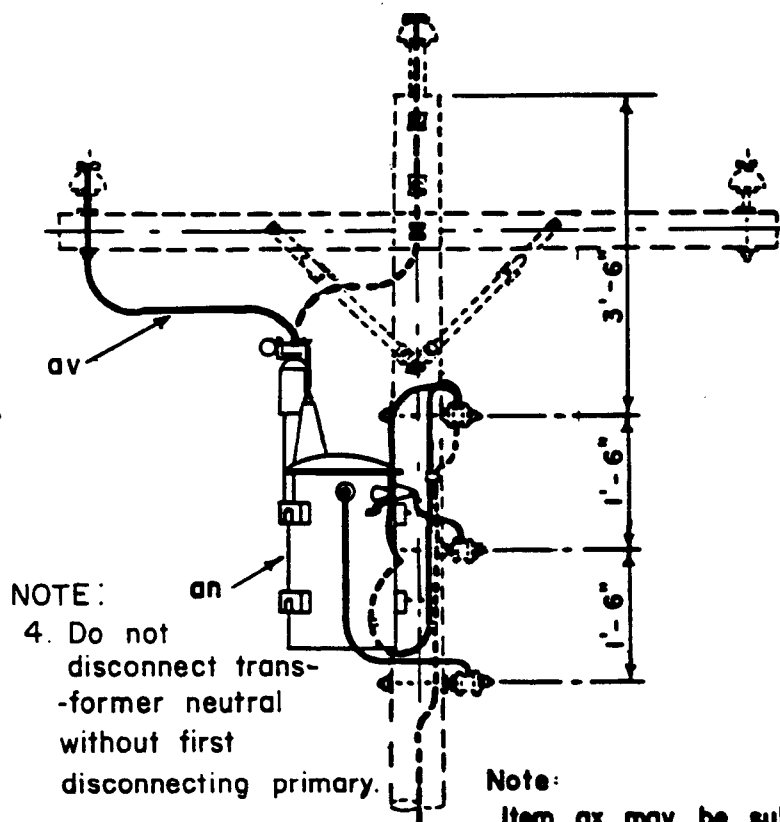


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|--------------------------------|
| c 2 | Bolt, machine, $\frac{5}{8}$ " x req'd length | an 1 | Transformer |
| d 2 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | ap 1 | Clamp, hot line, tap assembly |
| p | Connectors, as required | av | Jumpers, stranded, as required |
| ae 1 | Surge arrester (G10 only) | bv 1 | Rods, armor |
| af 1 | Cutout, fuse, open link (G10 only) | ek | Locknuts, as req'd |

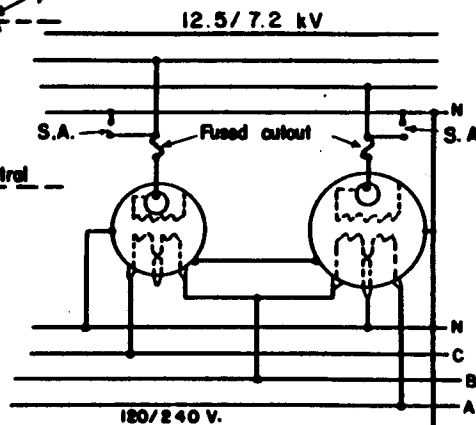
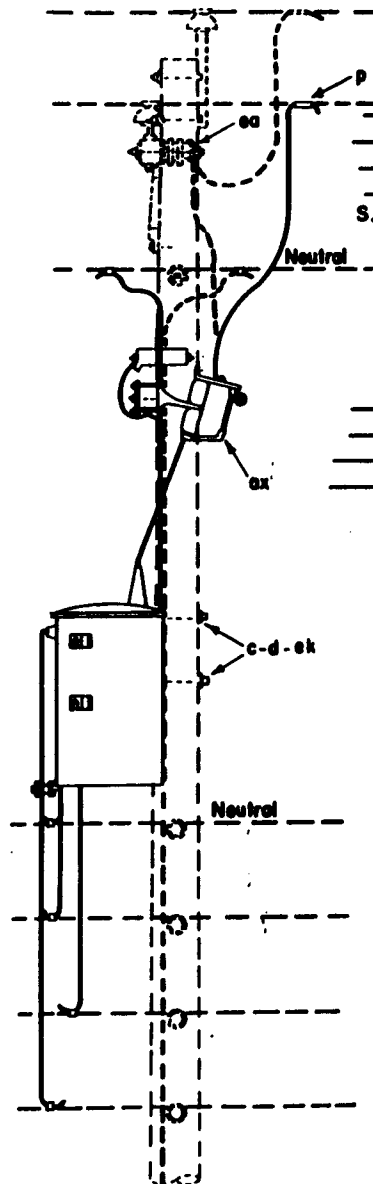
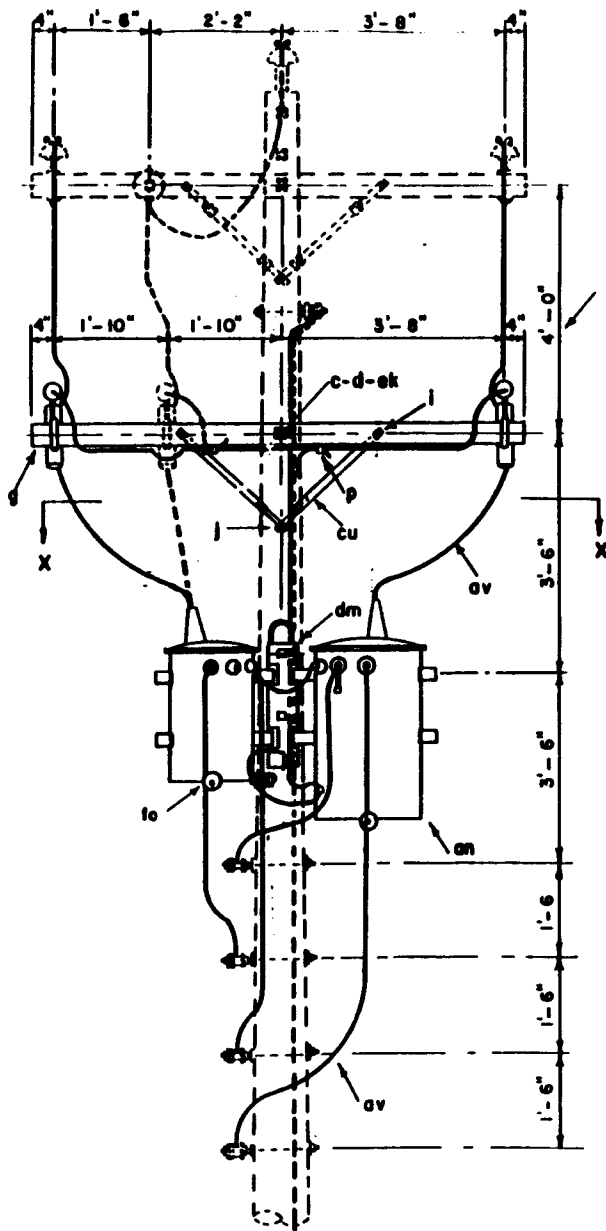
| | | |
|--------------------------|--|-------------------|
| 12.5/7.2 kV | | |
| SINGLE PHASE TRANSFORMER | | |
| AT DEADEND | | |
| Apr., 1983 | | G10-, G66-, G106- |



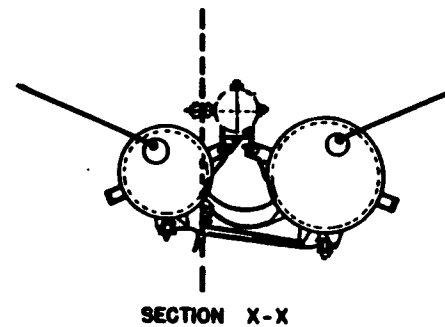
- Notes: 1. Designate G39 for conventional transformer with tank mounted cutout and arrester, G67 for transformer with double gap and internal fuse and G136 for self protected transformer.
2. See guide drawings for details of transformer secondary and service connections.
3. Reverse for connection to other outside phase.



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|--|-------------------------------------|
| c 2 | Bolt, machine, 5/8" x req'd length | av | Jumpers, stranded, as required |
| d 2 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | af 1 | Cutout, fuse, open link (G 39 only) |
| p | Connectors, as required | ae 1 | Surge arrester (G 39 only) |
| an 1 | Transformer | bv 1 | Rods, armor |
| ap 1 | Clamp, hot line, top assembly | ek | Locknuts as required |
| | | 12.5/7.2 kV | |
| | | SINGLE PHASE TRANSFORMER ON THREE PHASE CIRCUIT | |
| | | G 39-G67-G136- | |
| | | Apr, 1983 | |



WIRING DIAGRAM



SECTION X-X

| ITEM | NO. | MATERIAL |
|------|-----|--|
| c | 3 | Bolt, machine, 5/8" x req'd length |
| d | 4 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole |
| g | 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| j | 1 | Screw, lag, 1/2" x 4" |
| p | 2 | Connectors, compression type |
| p | | Connectors, as required |
| ea | 2 | Transformer, conventional, 50 kVA max |
| av | | Jumper, secondary, weather-proof |
| av | | Jumper, primary, bare, stranded, as req'd |
| ex | 2 | Outlet and arrester, combination |
| cu | 2 | Brace, wood, 2B" |
| dm | 1 | Bracket, transformer |
| ea | | Insulator, post type, with 7" stud |
| fe | 3 | Transformer, secondary bracket |
| ek | | Locknuts, as required |

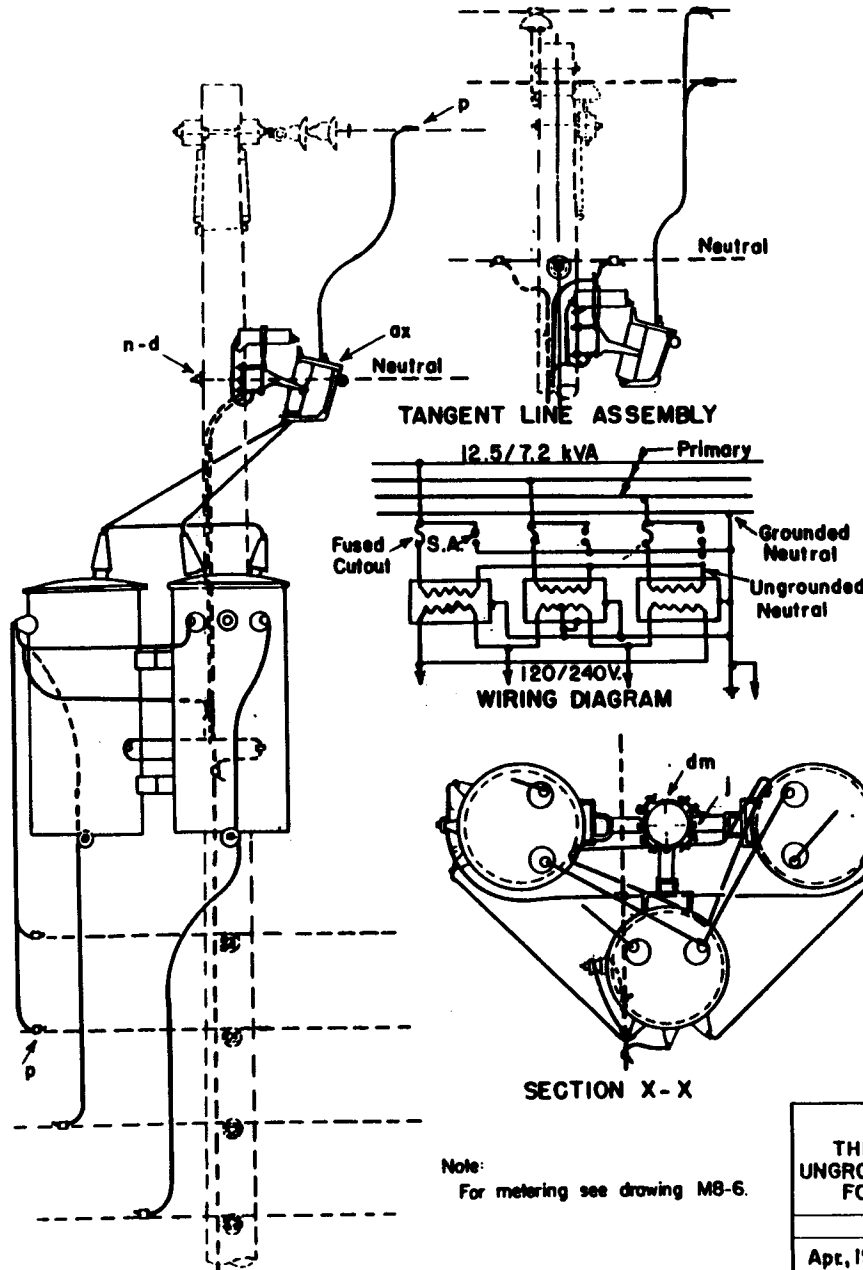
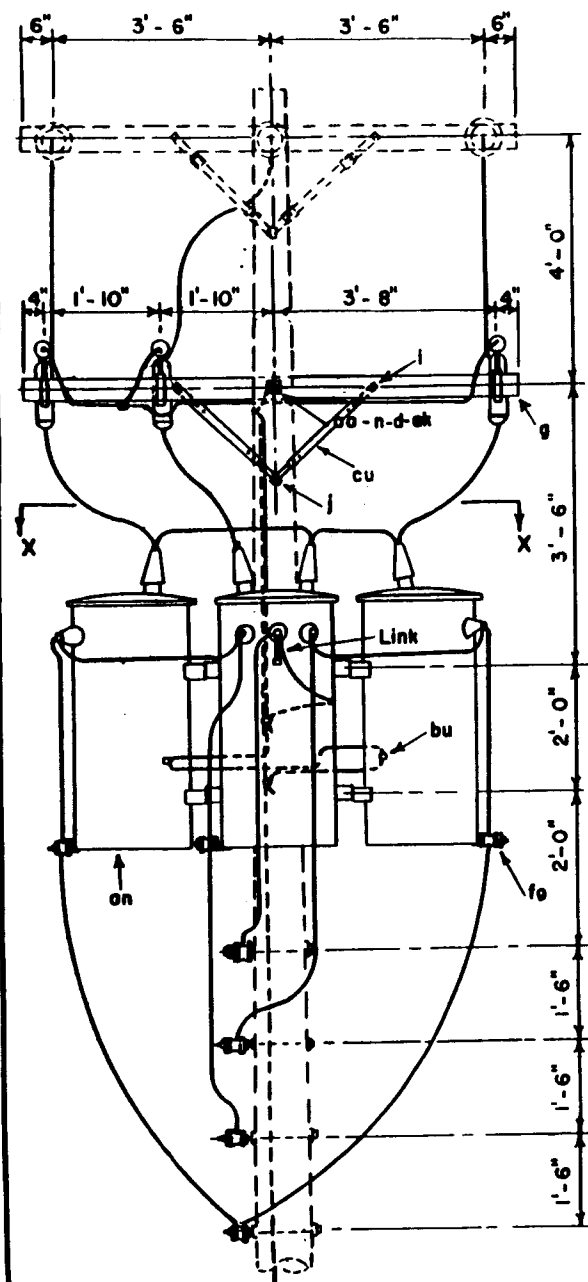
NOTE:

Do not disconnect transformer neutral without first disconnecting primary.

12.5/7.2 kV
TWO TRANSFORMERS, CLUSTER MOUNTED
OPEN WYE-OPEN DELTA FOR
120/240 VOLT POWER LOADS

Apr., 1983

G210-



| ITEM | NO. | MATERIAL |
|------|-----|---|
| d | 2 | Washer, 2 1/2" x 2 1/4" x 3/8", 1 1/2" hole |
| g | 1 | Crossarm, 3 3/8" x 4 3/8" x 8'-0" |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| j | 4 | Screw, lag, 1/2" x 4" |
| p | 3 | Connector, compression type |
| p | | Connectors, as required |
| on | 3 | Transformer, 100 kVA max. conv. |
| av | | Jumper, secondary, weather-proof |
| av | | Jumper, primary, bare, stranded, as req'd |
| ax | 3 | Cutout and arrester, comb. |
| bu | 4 | Connector, transformer grounding * |
| cc | 1 | Deadend, assembly, neutral |
| cu | 2 | Brace, wood, 2x8" |
| dm | | Bracket, transformer, cluster and adapter plates as req'd |
| | 1 | Link, grounding * |
| fo | 3 | Transformer secondary bracket |
| n | 1 | Bolt, double arming, 1/2" x req'd. length |
| ek | | Locknuts, as required |

*Specify this item to be furnished by the transformer manufacturer.

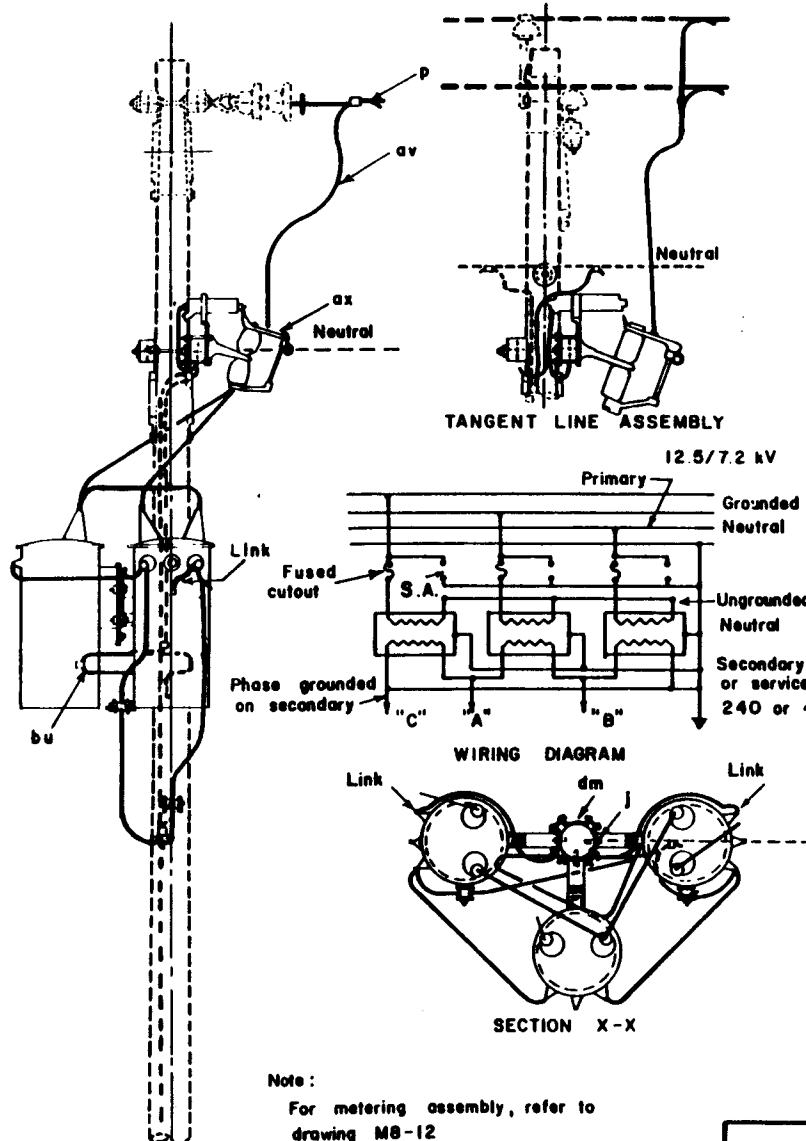
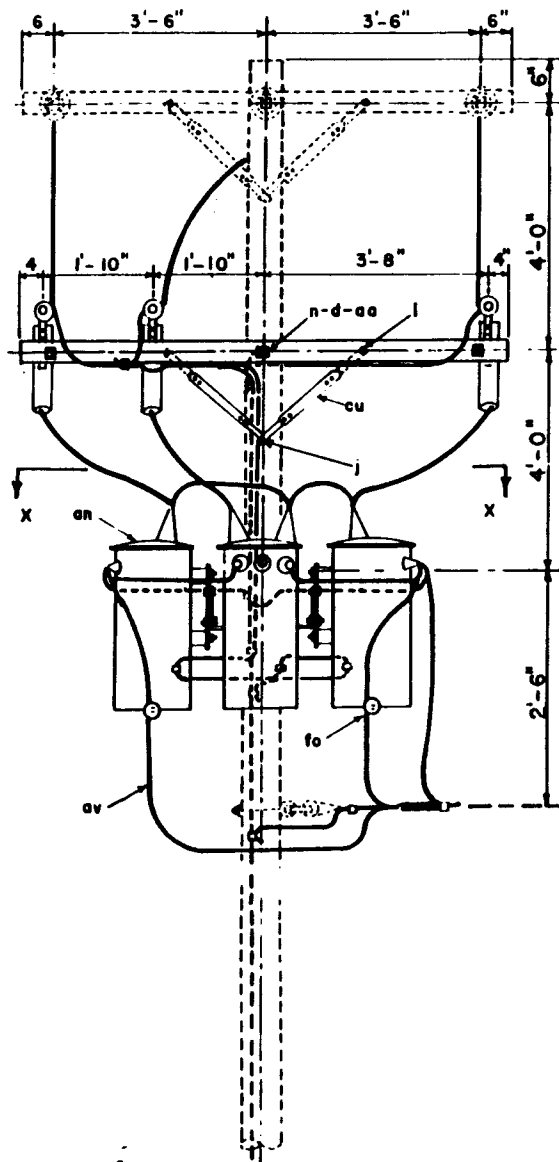
Notes:

1. All tanks to be grounded.
2. Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded.
3. When used for combined 1-phase and 3-phase load the transformer for the 1-phase load shall not be larger than twice the capacity of one of the others.
4. For transformers 50 kVA and smaller, use one cluster bracket with adapter plates and dimension as shown on G311.

12.5/7.2 kV
THREE TRANSFORMERS CLUSTER MOUNTED
UNGROUND WYE-CENTER TAP GROUNDED DELTA
FOR 120/240 VOLT POWER LOADS

Apr, 1983

G310-



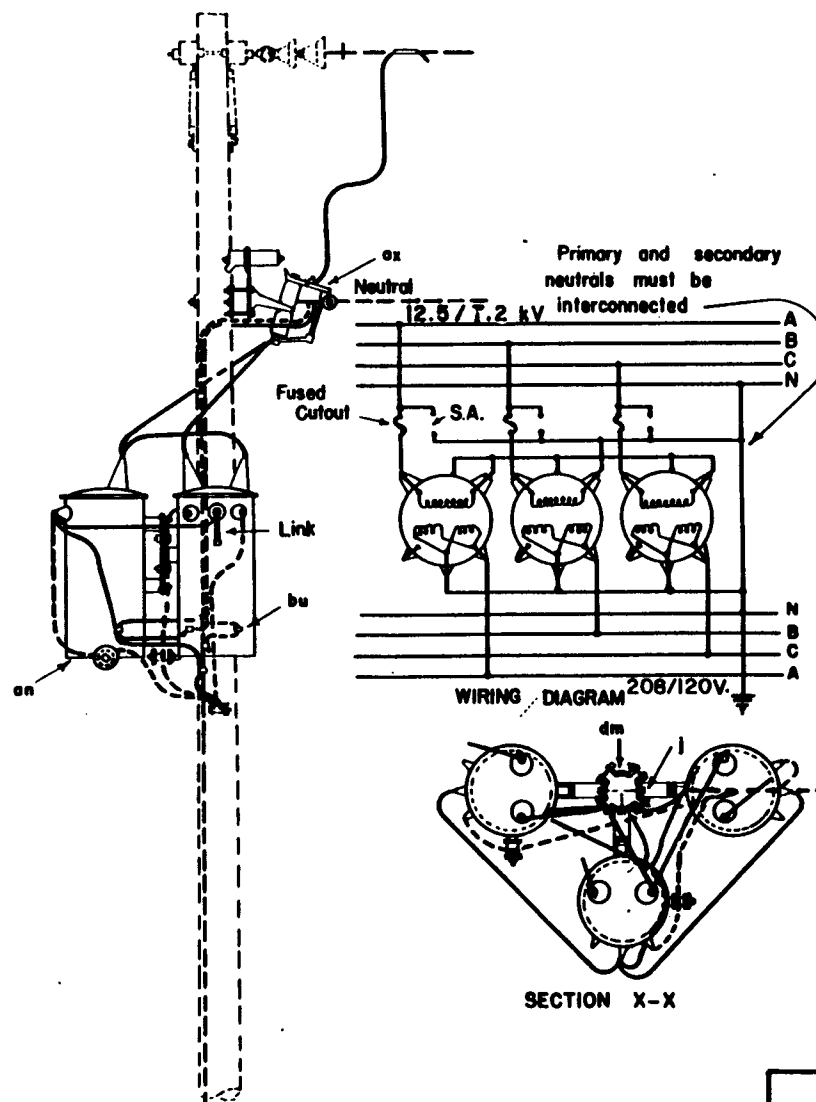
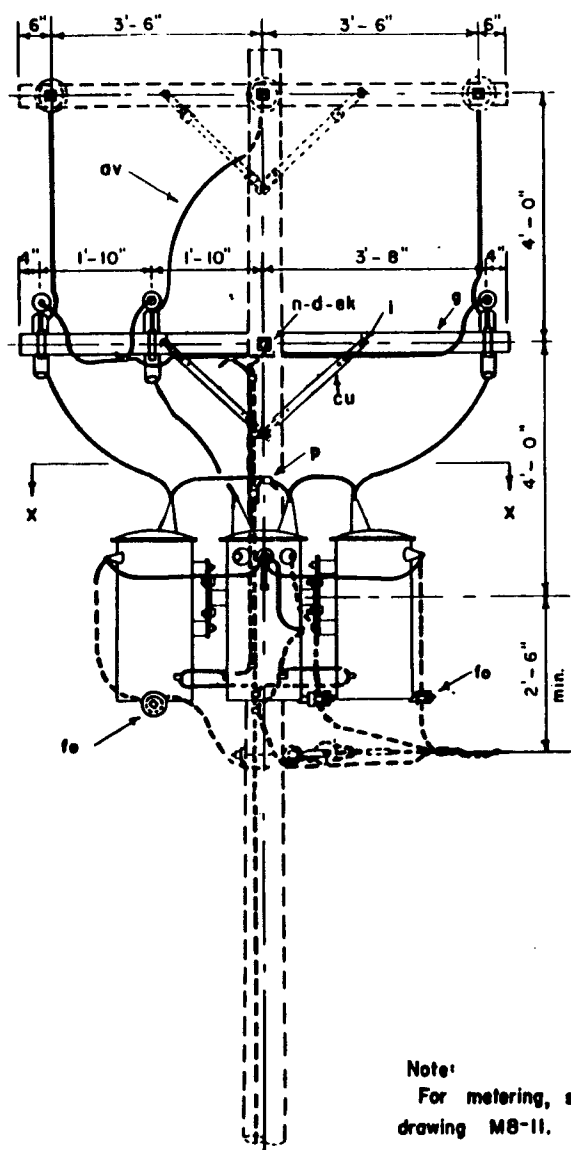
| ITEM NO. | MATERIAL |
|----------|---|
| d 2 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole |
| g 2 | Crossarm, 35/8" x 45/8" x 6'-0" |
| l 2 | Bolt, carriage 3/8 x 4 |
| j 4 | Screw, lag, 1/2" x 4" |
| n 1 | Bolt, double arming, 5/8" x req'd. lgth |
| P 3 | Connectors, compression type |
| P | Connectors, as req'd. |
| ea 1 | Eye nut |
| an 3 | Transformer, 100 kVA max. |
| av | Jumper, bare, stranded, as req'd. |
| ax | Jumper, secondary, weather-proof |
| as 3 | Cutout and Arrester, combination |
| cu 2 | Brace, wood, 28" |
| fo 2 | Transformer secondary bracket |
| bu 3 | Connector, transformer grounding |
| dm | Bracket, transformer, cluster and adapter plates, as req'd. |
| 2 | Link, grounding |
| ek | Locknuts, as req'd. |

* Specify these items to be furnished by the manufacturer.

Notes:

1. All tanks to be grounded.
2. Secondary neutrals shall be disconnected from tanks and not grounded.
3. Grounded secondary phase wire must be identified throughout circuit run.
4. For transformers 75 kVA and larger use two cluster brackets and dimension as shown on G310.

| | | |
|--|--|-------|
| 12.5/7.2 kV THREE TRANSFORMERS, CLUSTER MOUNTED UNGROUND WYE - CORNER GROUNDED DELTA FOR 240 OR 480 V POWER LOADS | | |
| Apr., 1983 | | G311- |



| ITEM NO. | MATERIAL |
|----------|--|
| d | 2 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole |
| g | 1 Crossarm, 35/8" x 45/8" x 8'-0" |
| i | 2 Bolt, carriage, 3/8" x 4 1/2" |
| j | 4 Screw, lag, 1/2" x 4" |
| n | 1 Bolt, double, arming, 5/8" x req'd. length |
| p | 3 Connector, compression type |
| p | Connectors, as required |
| an | 3 Transformer, 100 kVA max. |
| av | Jumper, secondary, weather-proof |
| av | Jumper, pri. bare, stranded, as req'd |
| ex | 3 Cutout and arrester, combination |
| bu | 3 Connector, transformer grounding * |
| cu | 2 Brace, wood, 28" |
| dm | Bracket, transformer, cluster and adpater plates as required |
| fo | 3 Transformer secondary bracket, insulated |
| l | 3 Link, grounding |
| ek | Locknuts, as required |

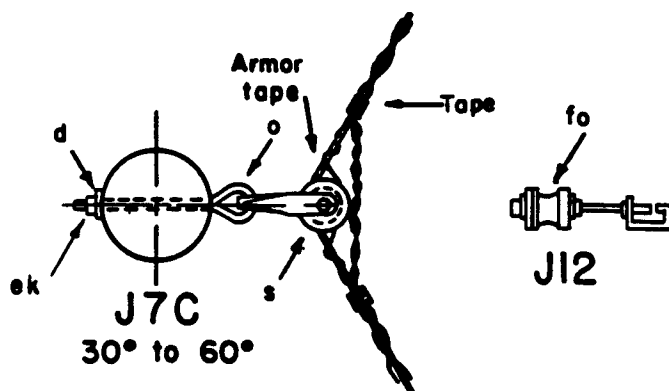
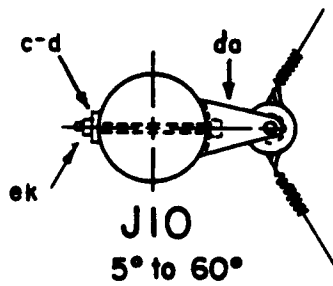
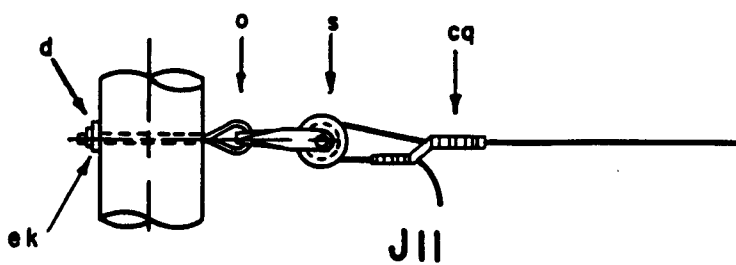
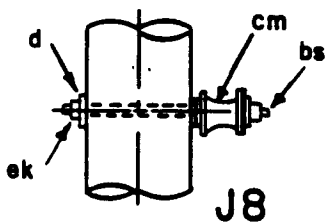
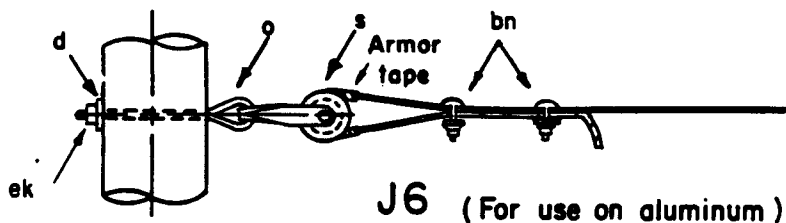
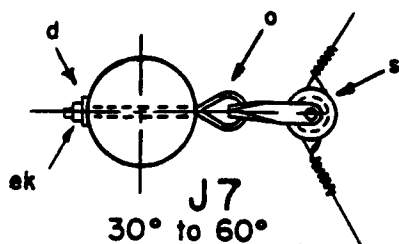
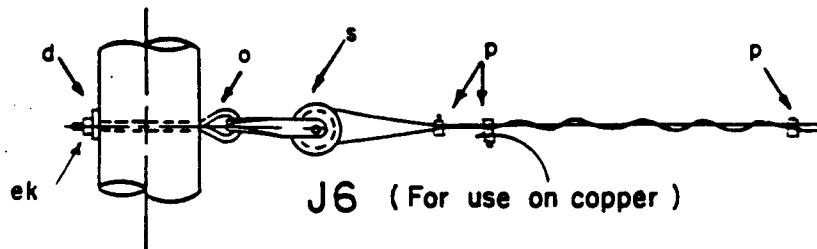
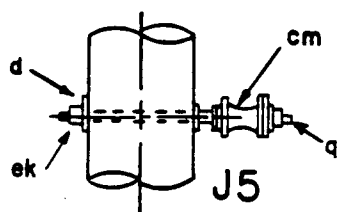
* Specify these items to be furnished by the manufacturer.

- Notes:
1. For transformers 50 kVA and larger, use two cluster brackets and dimensions as shown on G310.
 2. Single bushing transformers may be used if desired. If used, do not disconnect transformer neutral without first disconnecting primary.
 3. Re-connect internal windings of secondary as shown.

12.5/7.2 kV
THREE TRANSFORMERS, CLUSTER MOUNTED
4-WIRE GROUND WYE-GROUNDED WYE
FOR 208/120 VOLT POWER LOADS

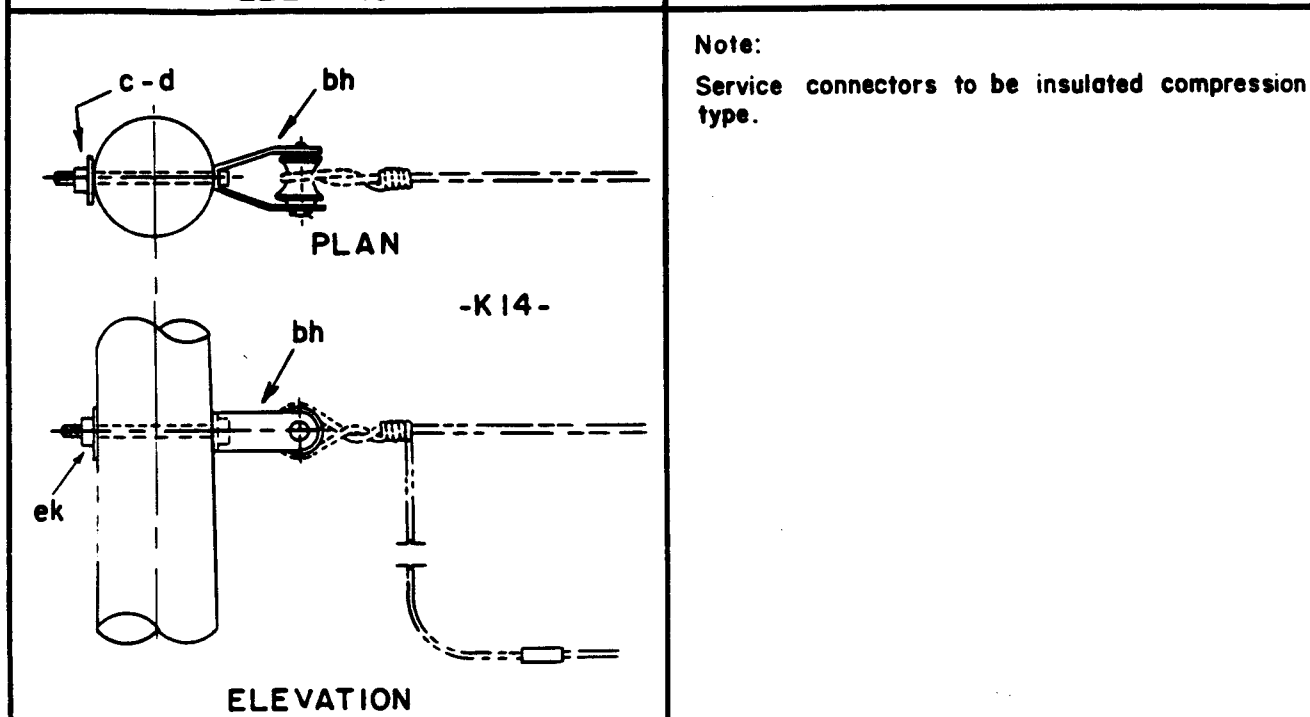
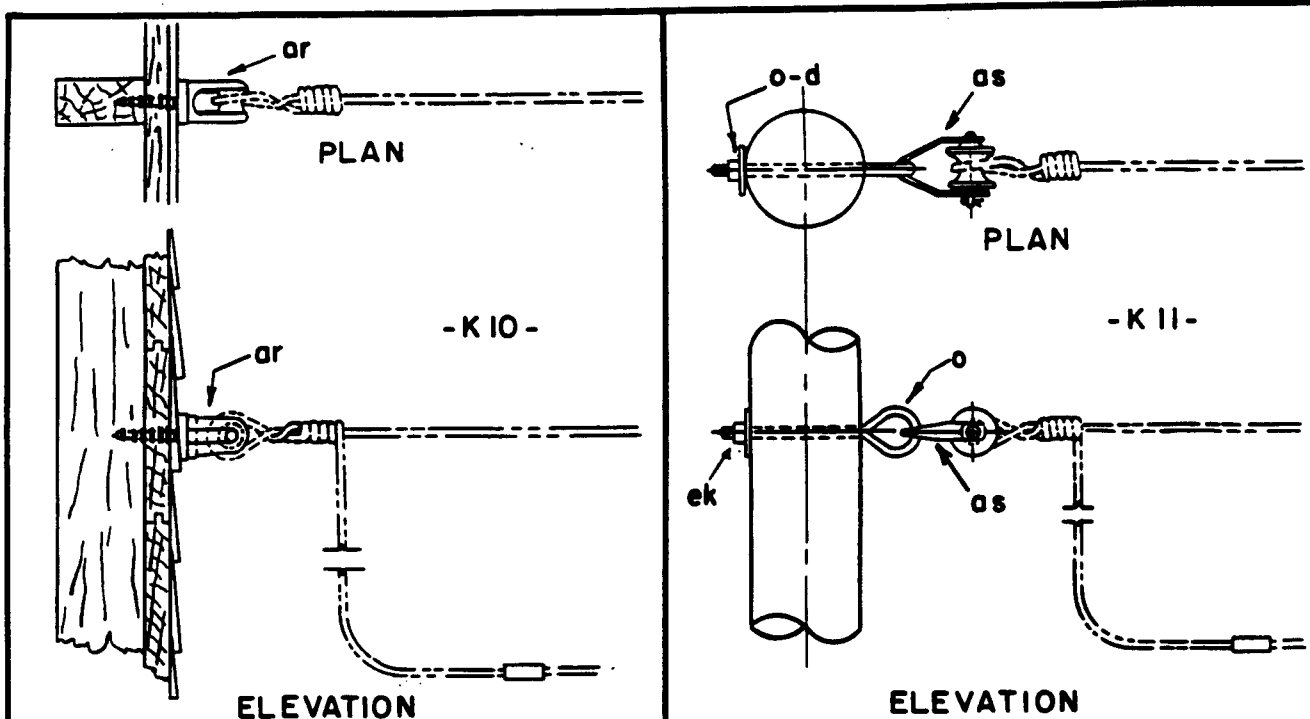
Apr., 1983

G312-



For use on Self Supporting Service Cable

| ITEM NO. | MATERIAL | | MATERIAL |
|----------------------|--|----|-------------------------------|
| c | Bolt, machine, 5/8" x required length | bs | Bolt, single upset |
| d | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | bn | Clamp, loop, deadend |
| o | Bolt, eye, 5/8" x required length | cq | Sleeve, offset, splicing |
| p | Connectors, as required | do | Bracket, insulated |
| q | Bolt, double upset, | fo | Transformer secondary bracket |
| s | Clevis, secondary, swinging, insulated | ek | Locknuts as required |
| cm | Insulator, spool | | |
| SECONDARY ASSEMBLIES | | | |
| Apr., 1983 | | | |
| J5 to J12 | | | |



Note:

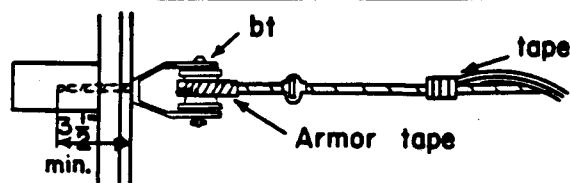
Service connectors to be insulated compression type.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|--------------------------------------|
| c | Bolt, machine, $\frac{5}{8}$ " x req'd length | as | Clevis, service, swinging, insulated |
| d | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{15}{16}$ " hole | bh | Clevis, service, deadend, insulated |
| o | Bolt, eye, $\frac{5}{8}$ " x req'd length | ek | Locknuts as required |
| ar | Wire holder | | |

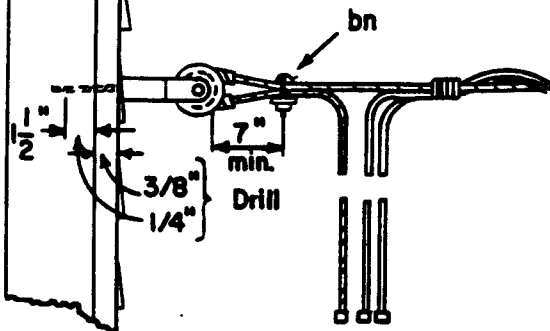
SERVICE ASSEMBLIES

Apr., 1983

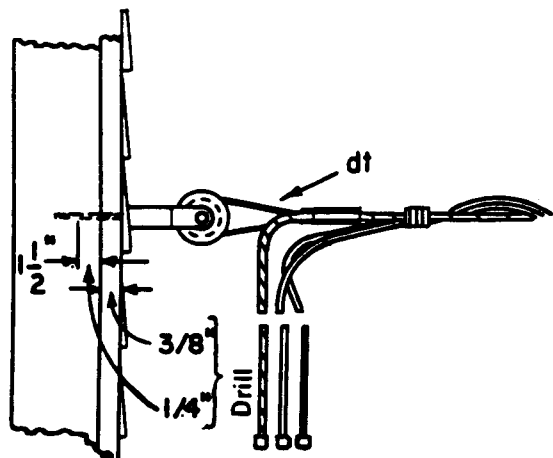
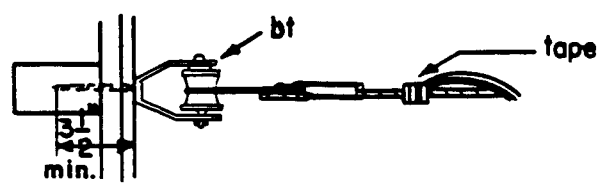
K10, K11, K14



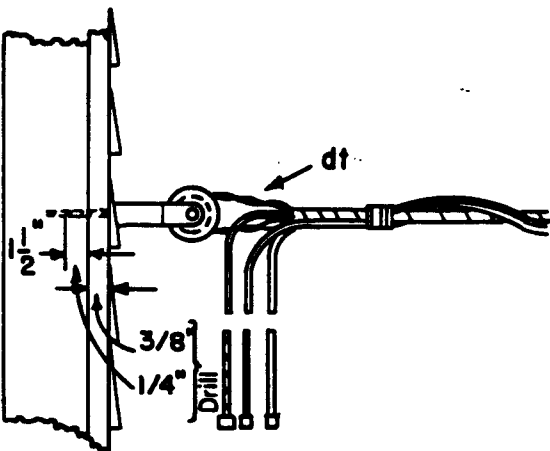
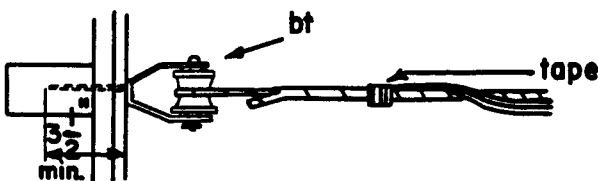
Note:
Groove diameter of
insulator 1 3/4" min.



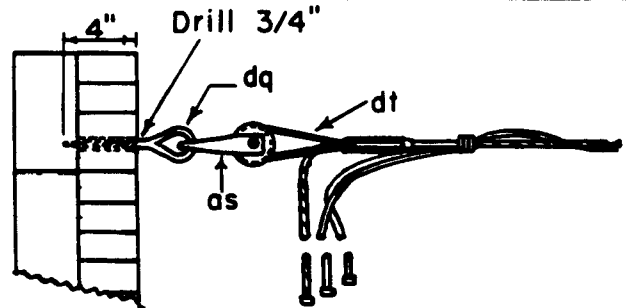
LOOP TYPE



WEDGE TYPE



FORMED TYPE



BRICK OR MASONRY

Notes:

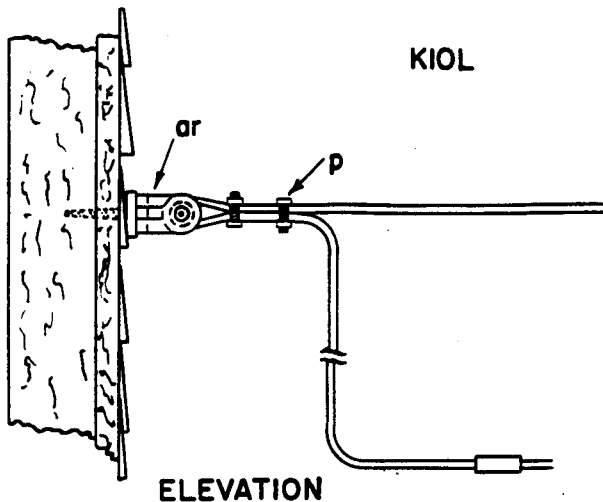
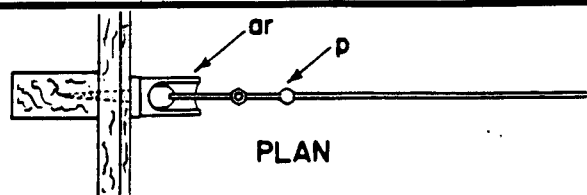
Wedge and formed type service dead-ends in sizes shown on page dt of the List of Materials may be subst. for those shown on KIIC, KI4C, KI5C, and KI6C. This type construction should be used for 3 or 4 conductor service cables with bare ACSR neutral. Service connectors to be insulated compression type.

| ITEM | MATERIAL | ITEM | MATERIAL |
|------|-------------------------------------|------|----------------------------------|
| bt | Wireholder, clevis type, insulated. | dt | Service deadend, wedge type. |
| | #24 woodscrew, | dt | Service deadend, preformed type. |
| p | Connectors, as required. | dq | Eye screw, elliptical, 1/2" x 6" |
| bn | Clamp, loop deadend. | | 3/4" x 3 1/2" expansion shield |
| as | Clevis, service, insulated | | |

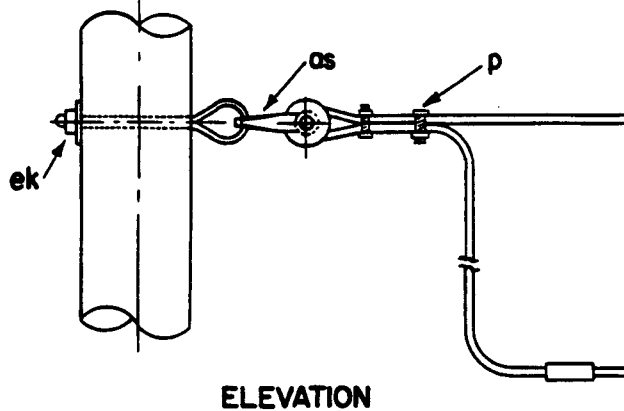
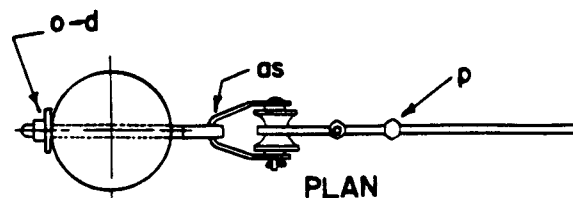
SERVICE ASSEMBLIES, CABLE

Apr., 1983

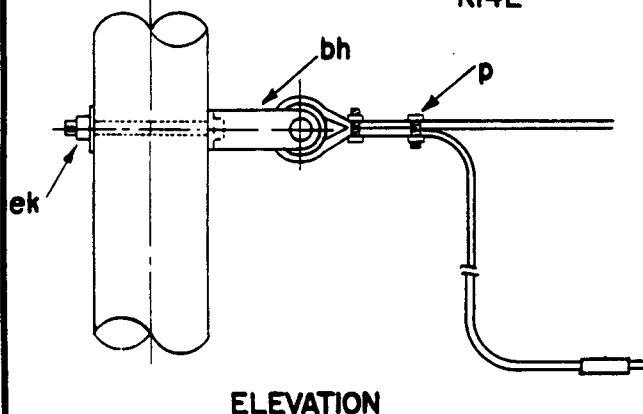
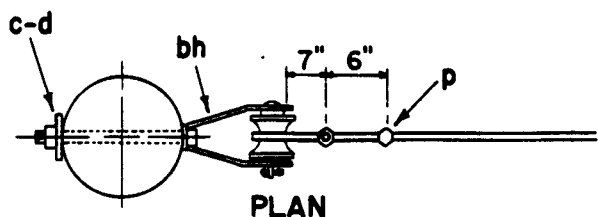
KIOC



KIOL



KIIL



KI4L

NOTE 1:

This type construction should be used for No. 2 covered aluminum conductor and larger.

NOTE 2:

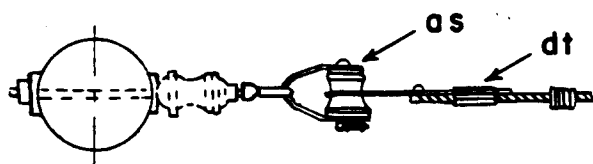
Service connectors to be insulated compression type.

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|--------------------------------------|
| c | Bolt, machine, 5/8" x req'd. length | ar | Wireholder |
| d | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | as | Clevis, service, swinging, insulated |
| o | Bolt, eye, 5/8" x req'd. length | bh | Clevis, service, deadend, insulated |
| p | Connectors, as req'd. | ek | Locknuts, as required |

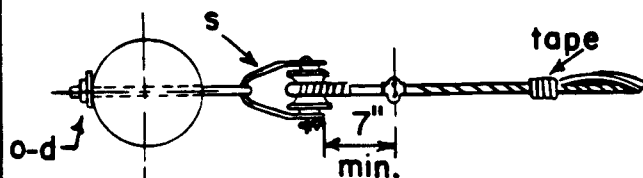
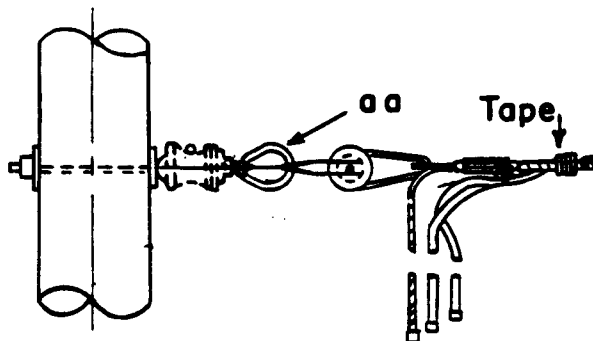
**SERVICE ASSEMBLIES
(LARGE CONDUCTORS)**

Apr., 1983

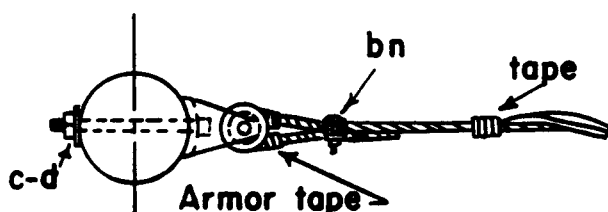
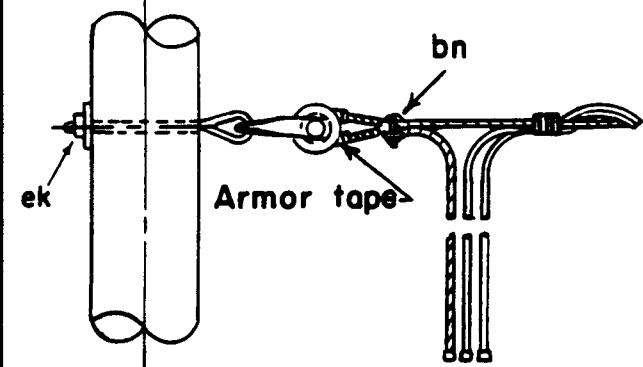
KIOL, KIIL, KI4L



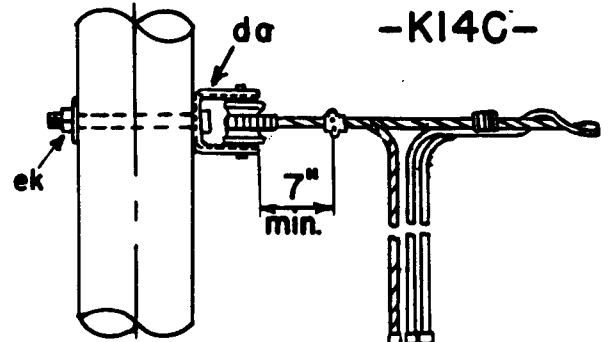
- KI5C -



-KIIC-



-KI4C-



NOTES

This type construction should be used for 3 or 4 conductor service cables with bare A.C.S.R. neutral.

Service connectors to be insulated compression type.

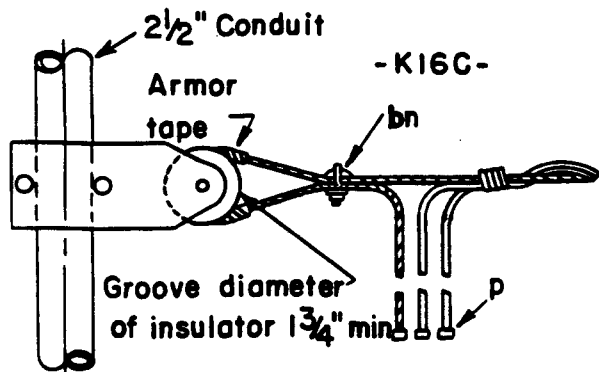
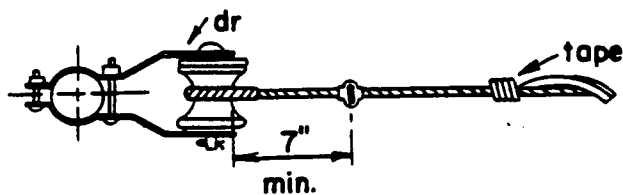
Groove diameter of insulators $1 \frac{3}{4}$ " minimum for loop deadends.

| ITEM | MATERIAL | ITEM | MATERIAL |
|------|--|------|--------------------------|
| c | Bolt, machine, $\frac{3}{8}$ " x req'd. length | bn | Clamp, loop deadend |
| d | Washer, $2 \frac{1}{2}$ " x $2 \frac{1}{2}$ " x $\frac{3}{8}$ " hole | da | Bracket, insulated |
| o | Bolt, eye, $\frac{3}{8}$ " x req'd. length | as | Clevis, service swinging |
| s | Clevis, secondary, swinging, insul. | p | Connectors, as required |
| aa | Nut, eye | dt | Service deadend |
| ek | Locknuts, as required | | |

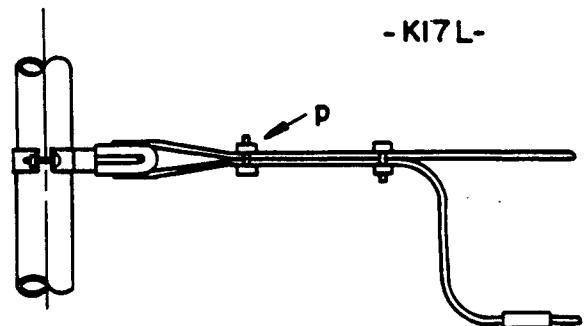
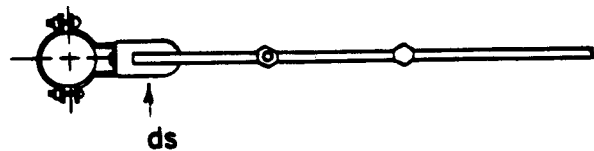
SERVICE ASSEMBLIES, CABLE

Apr., 1983

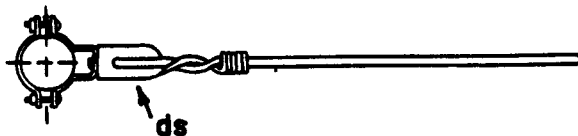
KIIC, KI4C, KI5C



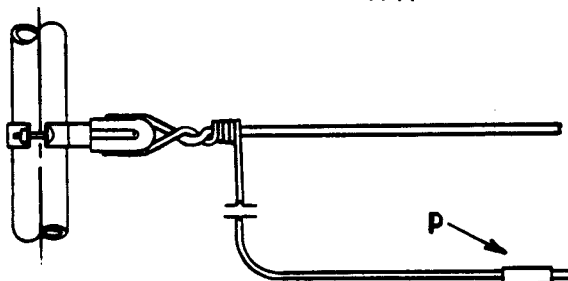
NOTE: This type constr. should be used for three conductor service cables with bare ACSR neutral.



NOTE: This type constr. should be used for No. 2 covered aluminum conductor.



- K17-



NOTES:

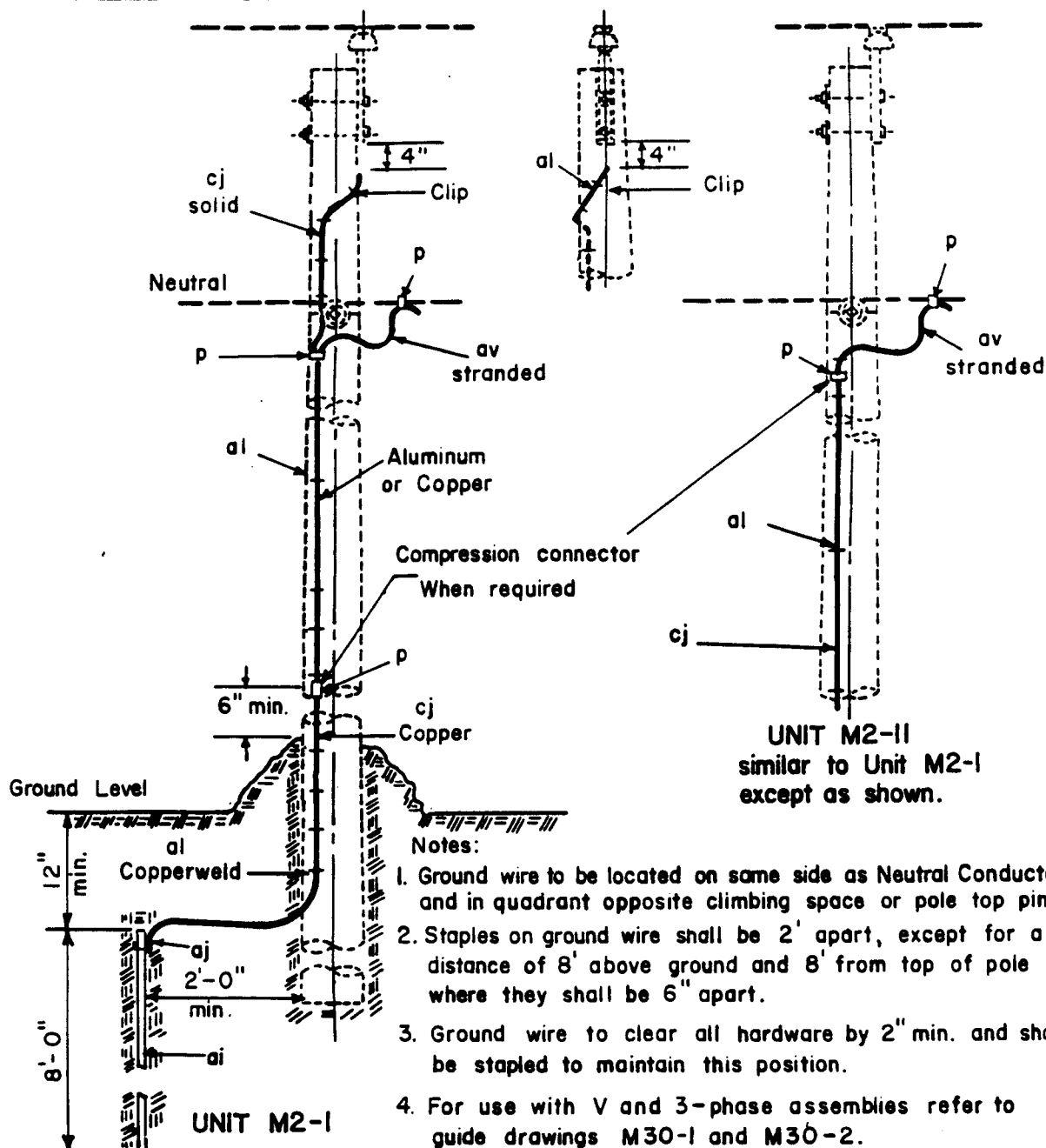
1. Service connectors to be insulated compression type.
2. For arrangement of service assembly units see drawing M24-10.

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|----------------------|------|-----|---------------------------|
| p | | Connectors, as req'd | dr | | Clevis, conduit insulated |
| bn | | Clamp, loop deadend | ds | | Wireholder, conduit |
| | | | | | |
| | | | | | |
| | | | | | |

SERVICE ASSEMBLIES (FOR RANCH TYPE HOUSES)

Apr., 1983

K16 C, K17L, K17

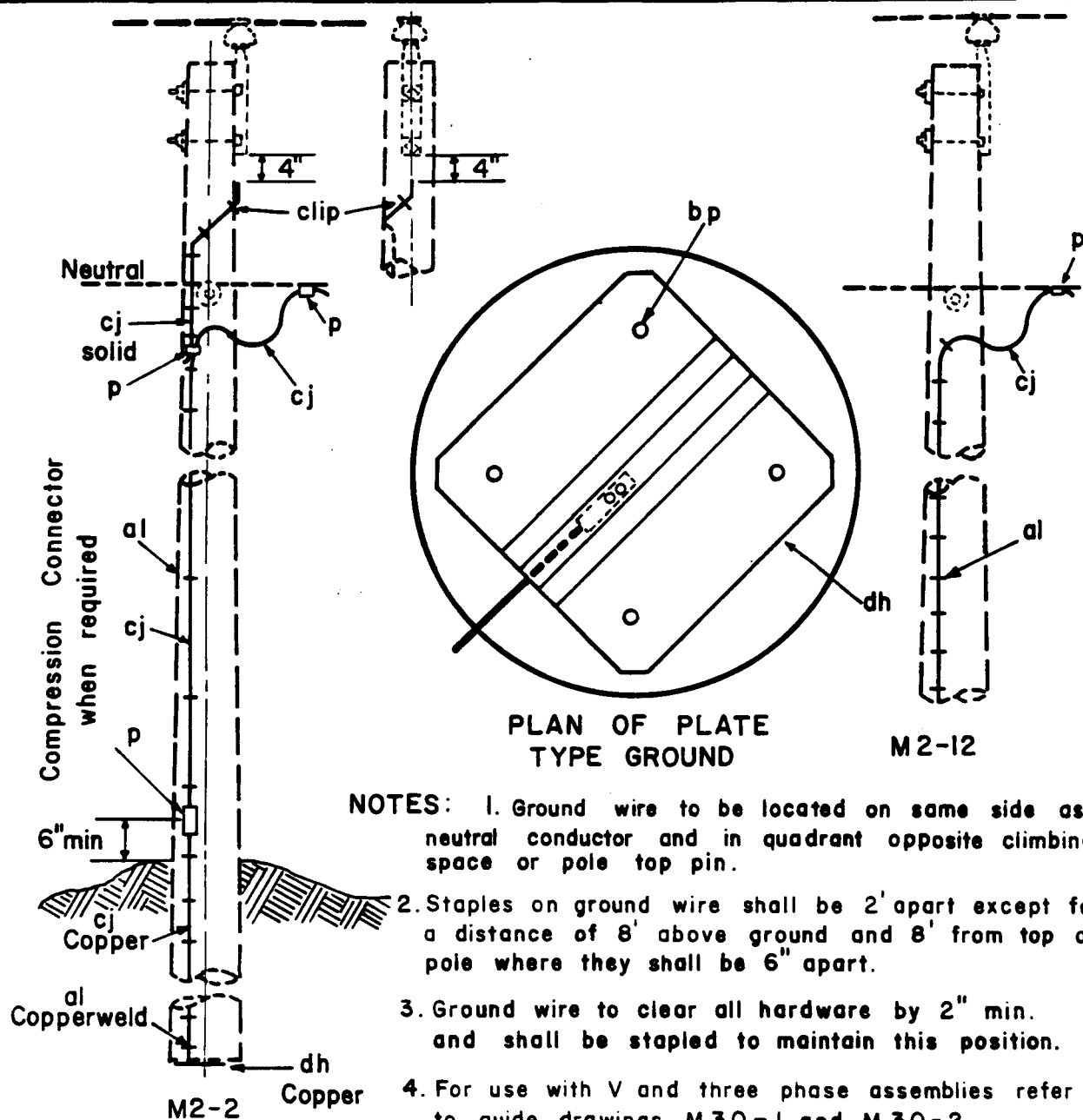


| ITEM | MATERIAL | ASSEMBLY UNIT | |
|------|---|---------------|-----------|
| | | M2-I | M2-II |
| P | Connector, compression | as req'd. | as req'd. |
| ai | Rod, ground, 5/8" minimum diameter | 1 | 1 |
| aj | Clamp, ground rod wire | 1 | 1 |
| al | Staples, ground wire (copper or steel to match ground wire) | as req'd. | as req'd. |
| al | Ground wire clip | 1 | |
| cj | Ground wire, minimum No. 6 copper or equiv. conductivity | as req'd. | as req'd. |
| av | Jumper, stranded, min. No 6 copper or equiv. conductivity | as req'd. | as req'd. |

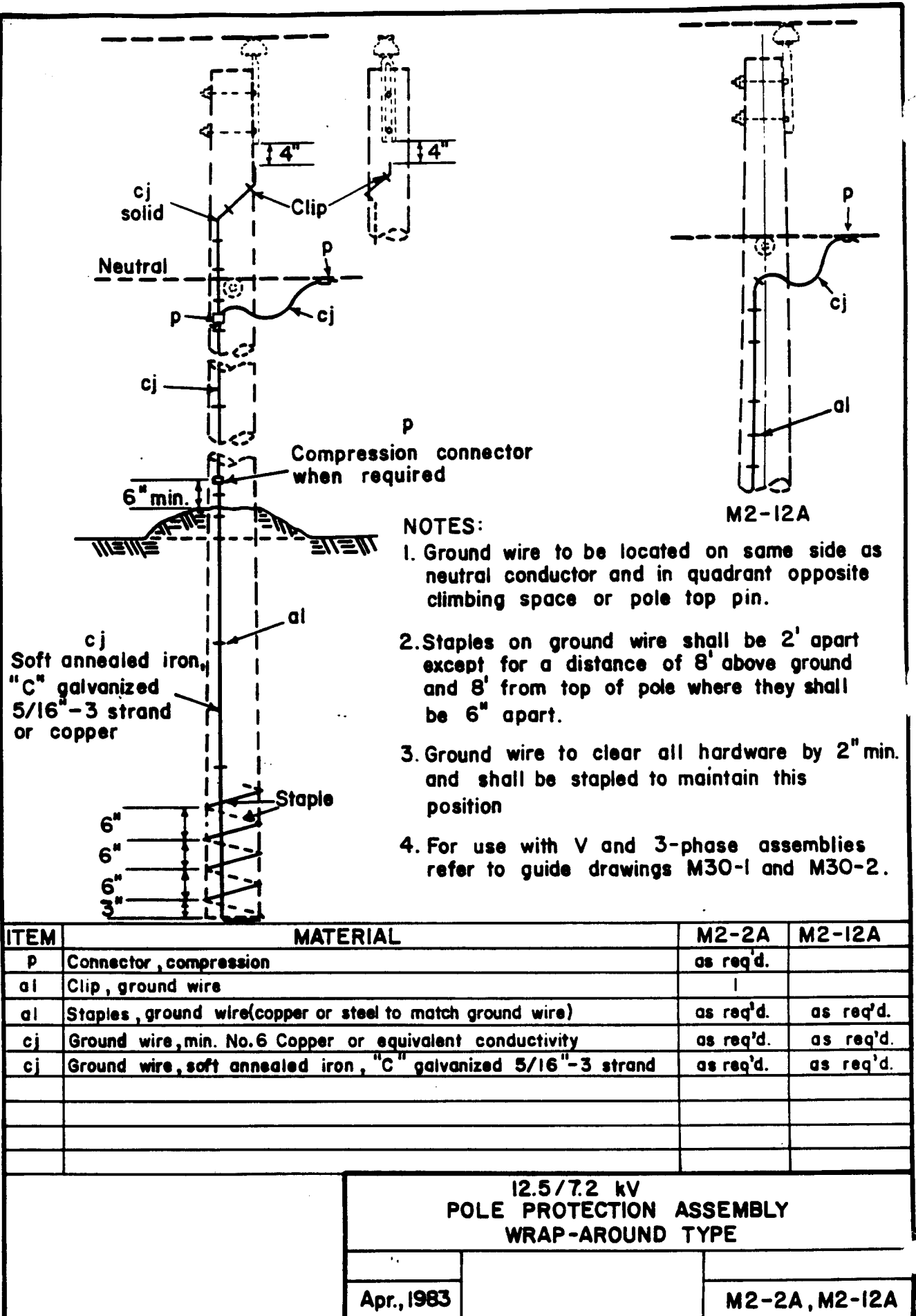
12.5/7.2 kV
GROUNDING ASSEMBLY - GROUND ROD TYPE

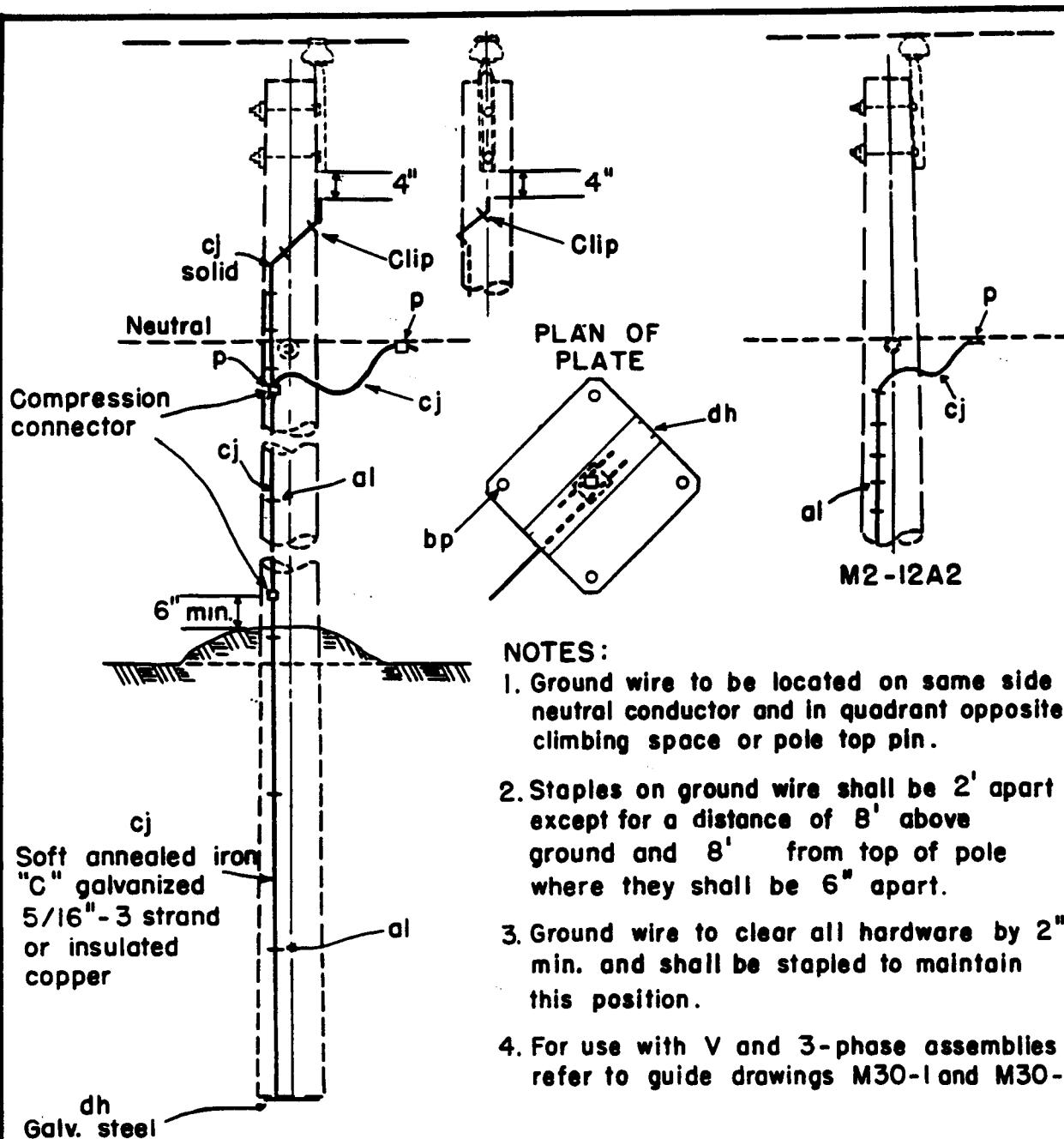
Apr, 1983

M2-I, M2-II



| ITEM | MATERIAL | M2-2 | M2-12 |
|--|---|-------------|-----------|
| cj | Ground wire, min. No. 6 Copper or equiv. conductivity | as req'd. | as req'd. |
| dh | Grounding plate, butt type, copper | 1 | 1 |
| al | Staples, ground wire (copper or steel to match ground wire) | as req'd. | as req'd. |
| p | Connector, compression | as req'd. | |
| al | Ground wire clip | 1 | |
| bp | Nails, galvanized, 1" | 4 | 4 |
| 12.5 / 7.2 kV POLE PROTECTION ASSEMBLY - PLATE TYPE | | | |
| | | | |
| Apr., 1983 | | M2-2, M2-12 | |





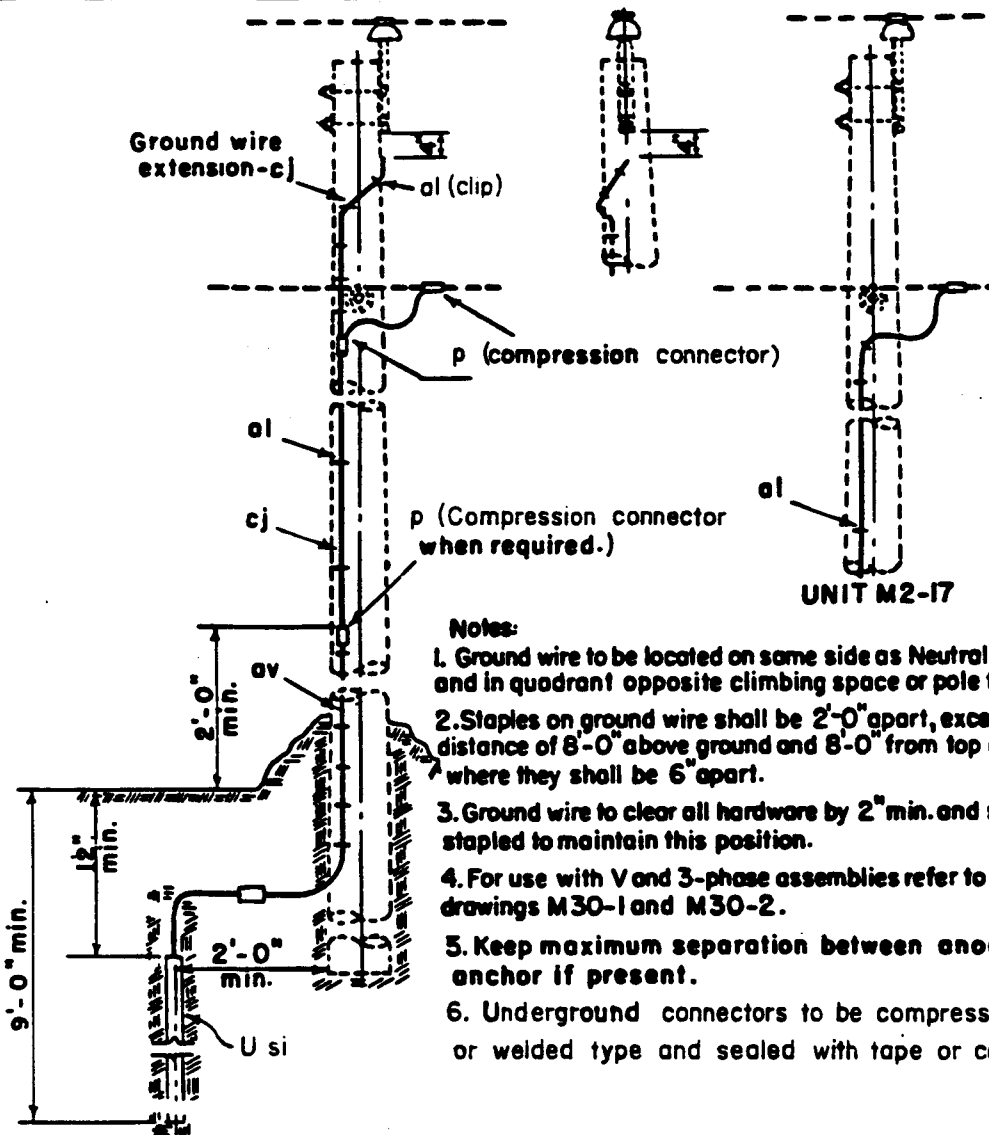
| ITEM | MATERIAL | M2-2A2 | M2-12A2 |
|------|--|-----------|-----------|
| dh | Grounding plate, butt type, galv. steel | 1 | 1 |
| bp | Nails, galvanized, 1" | 4 | 4 |
| p | Connectors, compression | as req'd. | |
| cj | Ground wire, min. No.6 Copper or equivalent conductivity | as req'd. | as req'd. |
| al | Clip, ground wire | 1 | |
| al | Staples, ground wire (copper or steel to match ground wire) | as req'd. | as req'd. |
| cj | Ground wire, soft annealed iron, "C" galvanized 5/16"-3 strand | as req'd. | as req'd. |
| | | | |
| | | | |

12.5/7.2 kV
POLE PROTECTION ASSEMBLY
PLATE TYPE

Apr., 1983

M2-2A2, M2-12A2

| | | |
|--|--|-------------|
| | 12.5/7.2 kV GROUNDING ASSEMBLY TRENCH TYPE | |
| | Apr., 1983 | M2-3, M2-13 |

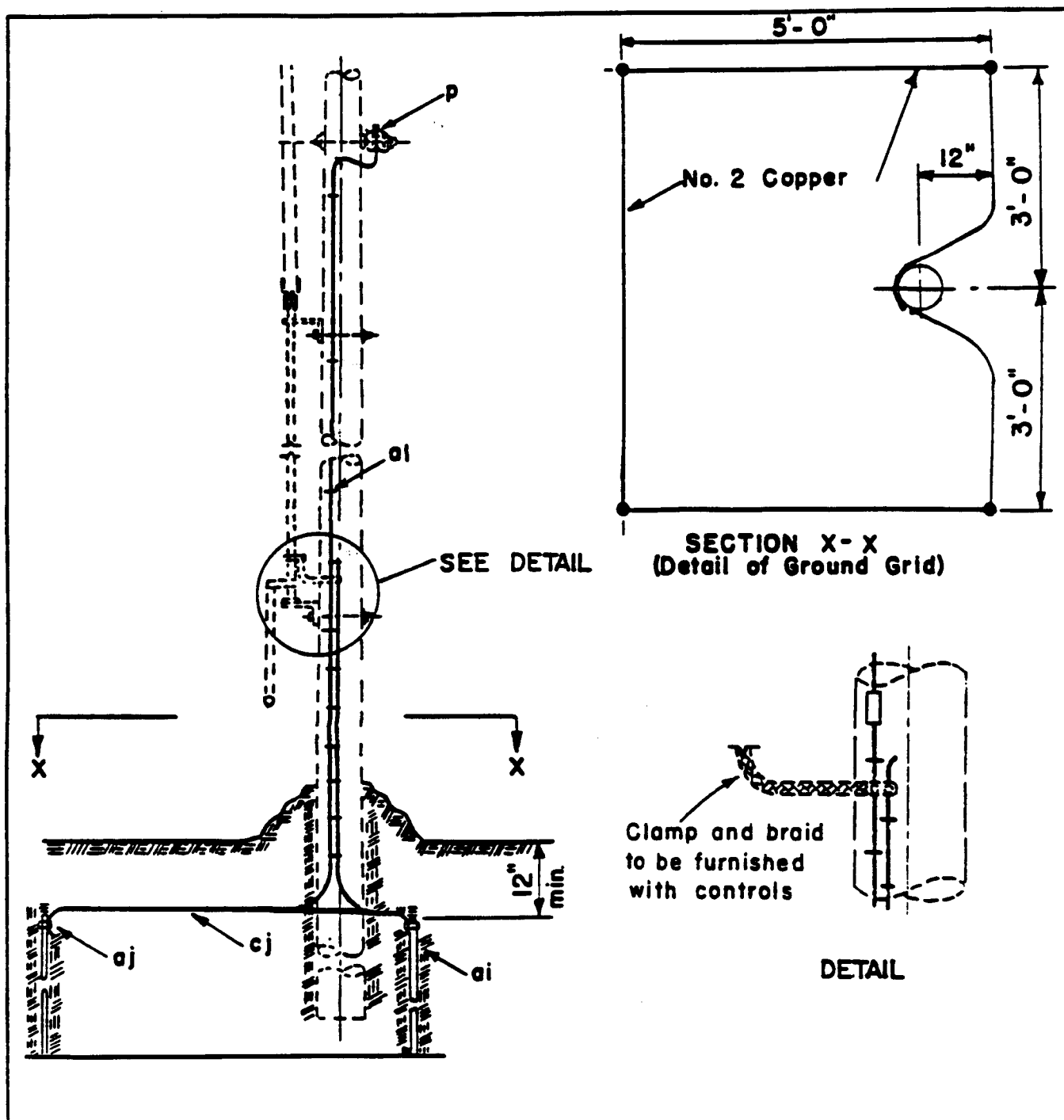


See REA Bull. 161-23, part IV

| | | Assembly Unit | |
|------|---|-------------------------|-------------|
| ITEM | MATERIAL | M2-7 | M2-17 |
| P | Connector, compression as req'd. | | |
| al | Staples, ground wire, (copper or steel to match gnd wire) | as req'd | as req'd |
| al | Ground wire clip | 1 | |
| av | Conductor, M.H.D. or S.D. copper, TW insulated #12 AWG min. | as req'd | as req'd |
| cj | Ground wire, #6 S.D. copper or equivalent | as req'd | as req'd |
| cj | Ground wire, extension, #6 S.D. copper or equiv. | 1 | |
| U si | Anode, as specified, (See REA Bulletin 161-23 part IV page 7) | | |
| | | GALVANIC ANODE ASSEMBLY | |
| | | | |
| | | Apr., 1983 | M2-7, M2-17 |



| ITEM | NO. REQ'D | MATERIAL | ITEM | NO. REQ'D | MATERIAL |
|------|--------------|----------------------------------|--|--------------|---------------------------------------|
| p | 1 | Connector | al | 1 | Ground wire clip |
| a1 | | Staples ground wire, as required | cj | | Ground wire, minimum No.6 copper |
| | | | | | or equivalent conductivity, as req'd. |
| | | | 12.5/7.2 kV | | |
| | | | POLE TOP PROTECTION ASSEMBLY | | |
| | | | <div> <div>Apr., 1983</div> <div>M2-9</div> </div> | | |

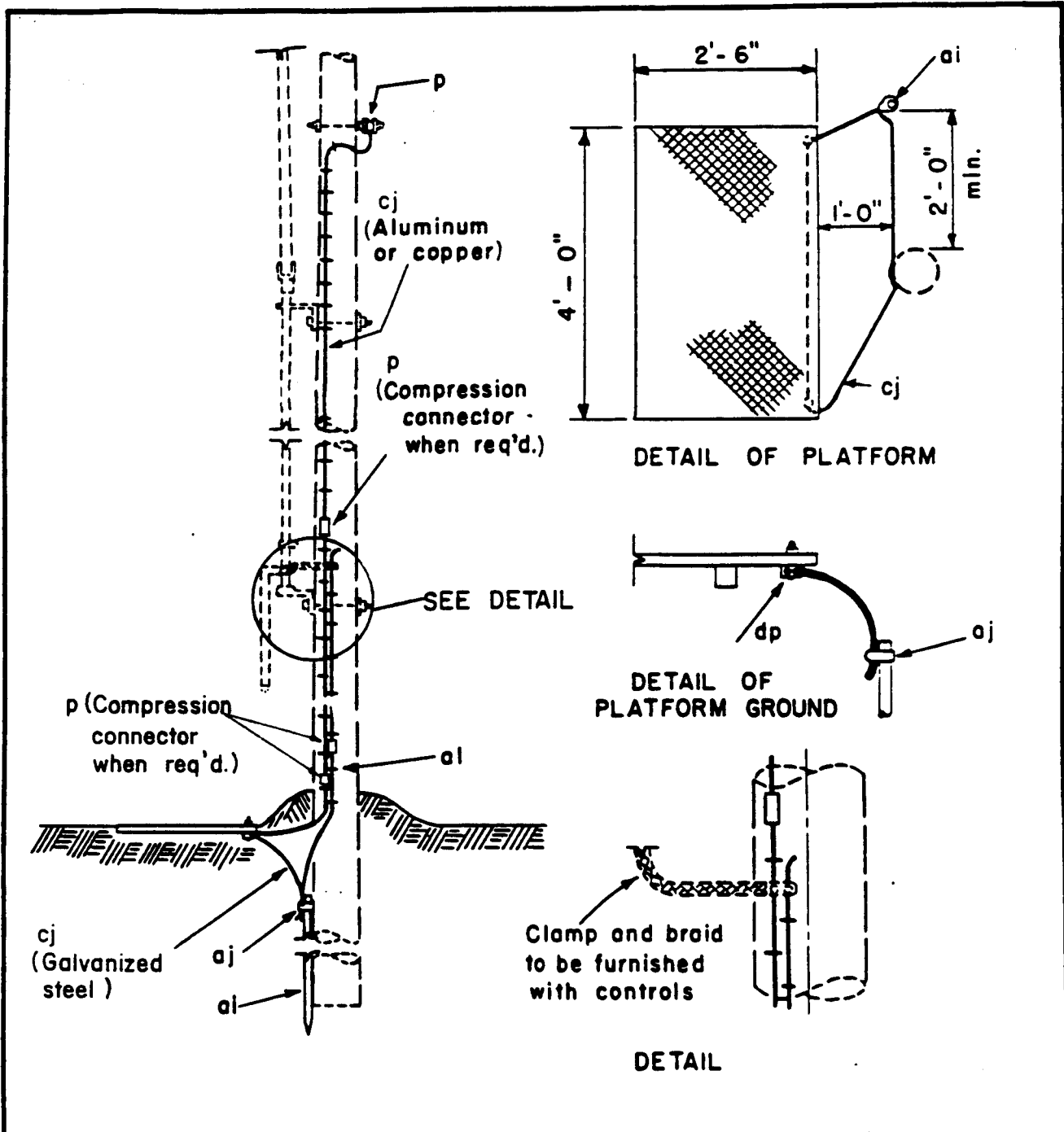


| ITEM | NO. REQD. | MATERIAL | ITEM | NO. REQD. | MATERIAL |
|------|--------------|------------------------------------|------|--------------|----------|
| ai | 4 | Rod, ground 5/8" dia. min. x 8'-0" | | | |
| aj | 4 | Clamp, ground rod | | | |
| al | | Staples, ground wire, (copper) | | | |
| cj | | Ground wire, "2 S.D. Copper | | | |
| P | | Connector | | | |

GROUNDING ASSEMBLY-GROUND ROD
TYPE FOR SECTIONALIZING
AIR BREAK SWITCH

Apr., 1983

M2-15

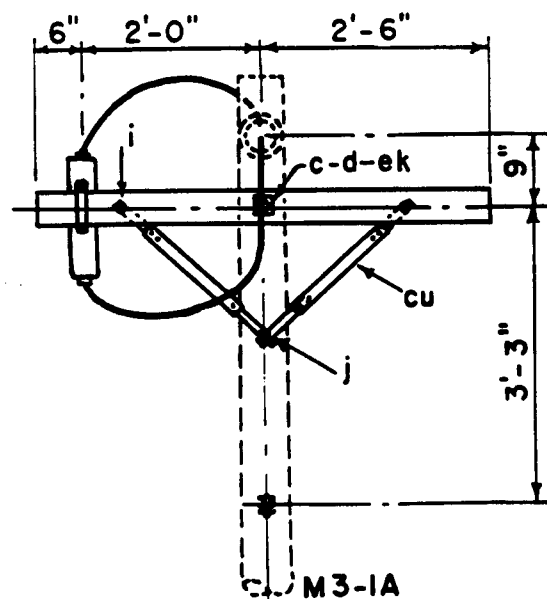
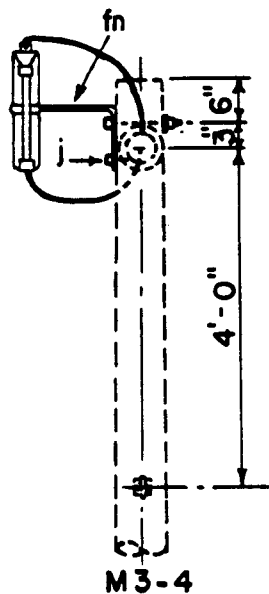
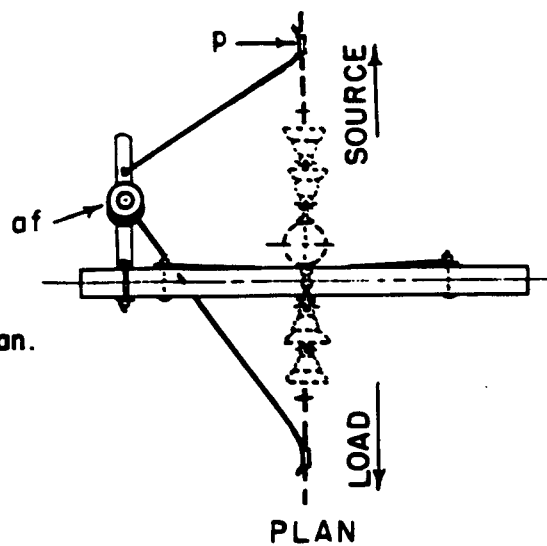


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|----------|---|
| p | Connectors, as required | cj | Ground wire, No. 2 copper or equiv. conductivity, as required |
| ai | 1 Rod, ground, 5/8" dia. x 8' - 0" (galv.) | dp | 2 Grounding connector and lockwasher |
| aj | 1 Clamp, ground rod (galvanized steel) | 1 | Iron grounding platform plate (galv.) |
| al | Staples, ground wire, as required (galv.) | | |
| | | | |
| | | | |

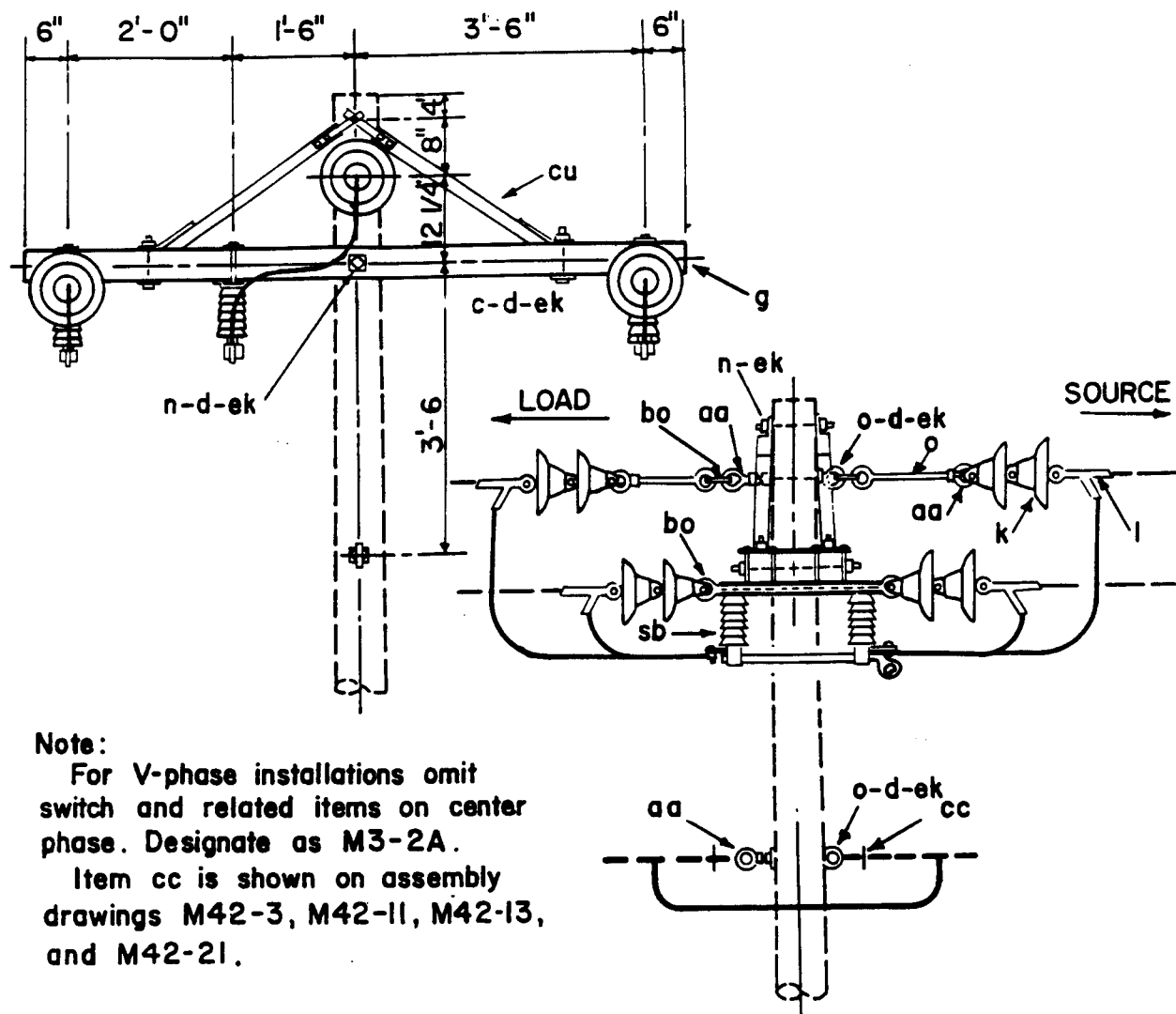
GROUNDING ASSEMBLY - PLATFORM TYPE
FOR SECTIONALIZING AIR BREAK SWITCH

Apr., 1983

M2 - 15A



| | | |
|--|--|-------------|
| | 12.5/7.2 kV, 1-PHASE ONE SECTIONALIZING FUSE CUTOUT | |
| | Apr, 1983 | M3-1A, M3-4 |



Note:

For V-phase installations omit switch and related items on center phase. Designate as M3-2A.

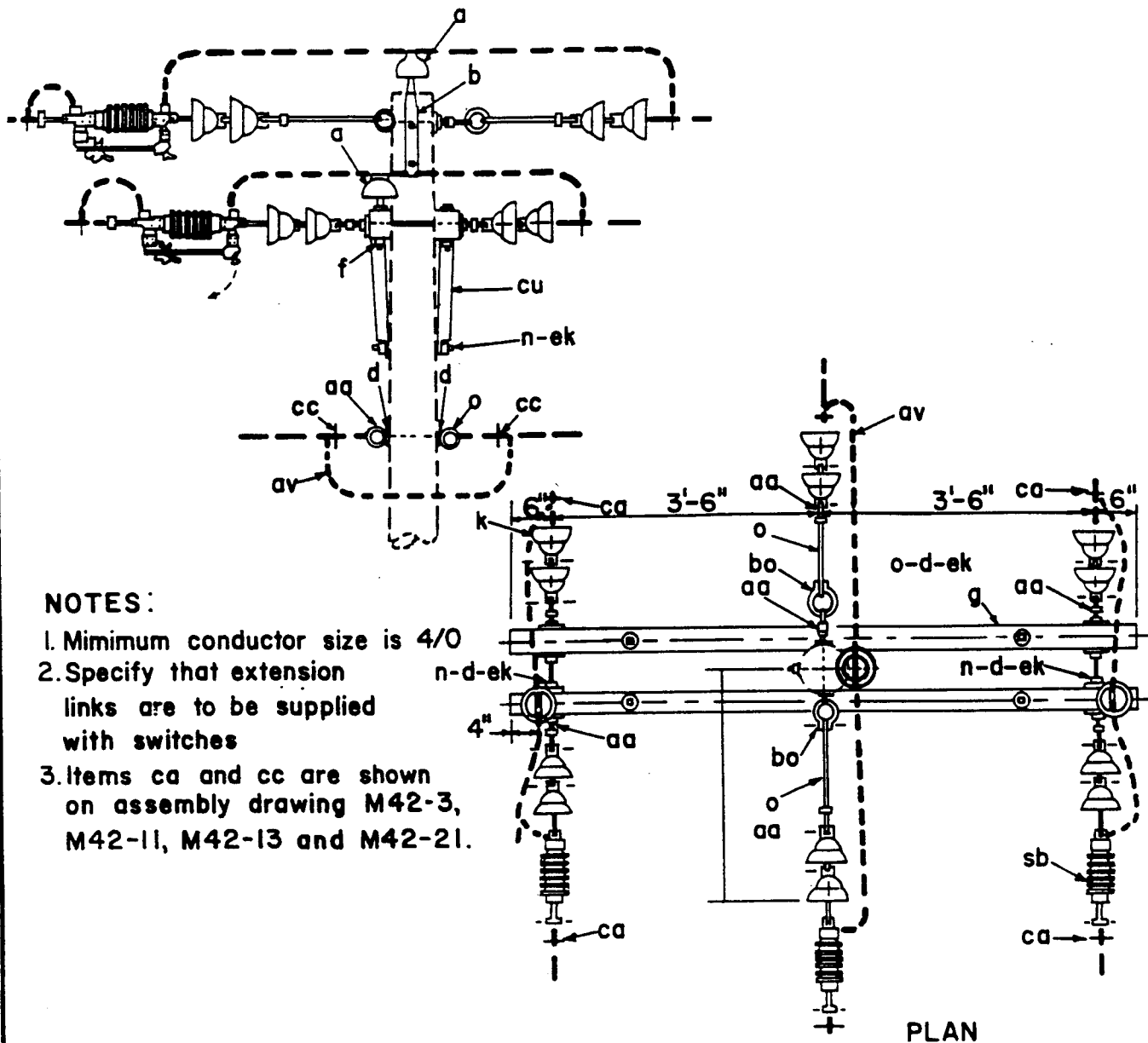
Item cc is shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

| ITEM | NO. | MATERIAL | | ITEM | NO. | MATERIAL | |
|------|-----|--|--|------|-----|---|--|
| c | 4 | Bolt, machine, 1/2" x req'd. length | | aq | | Jumpers, as required | |
| d | 4 | Washer, round, 1 3/8" dia. | | bo | 6 | Shackle, anchor | |
| d | 3 | Washer, square, 2 1/4" | | cc | 2 | Deadend assembly, neutral | |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | | cu | 2 | Brace, crossarm, wood, 60" span | |
| l | 6 | Clamp, deadend | | ek | | Locknuts, as required | |
| n | 2 | Bolt, double arming, 5/8" x req'd. lgth. | | sb | 3 | Switch, disconnect, 15 kV, with mounting hardware | |
| o | 4 | Bolt, eye, 5/8" x required length | | k | 12 | Insulator, suspension | |
| p | | Connectors, as required | | | | | |
| aa | 4 | Nut, eye, 5/8" | | | | | |

12.5/7.2 kV
TWO OR THREE SECTIONALIZING
DISCONNECT SWITCHES

Apr., 1983

M3-2A, M3-3A



NOTES:

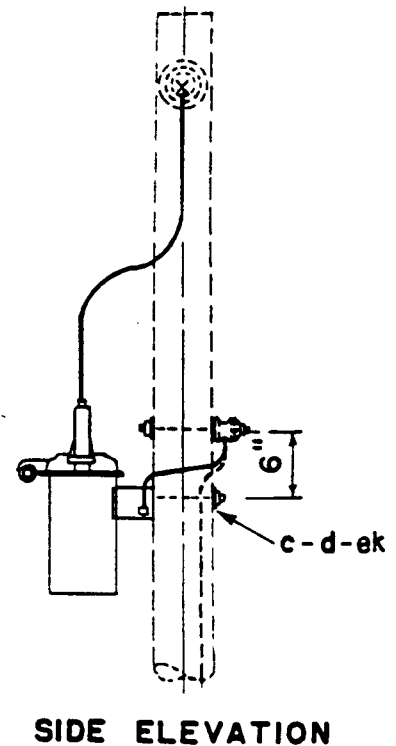
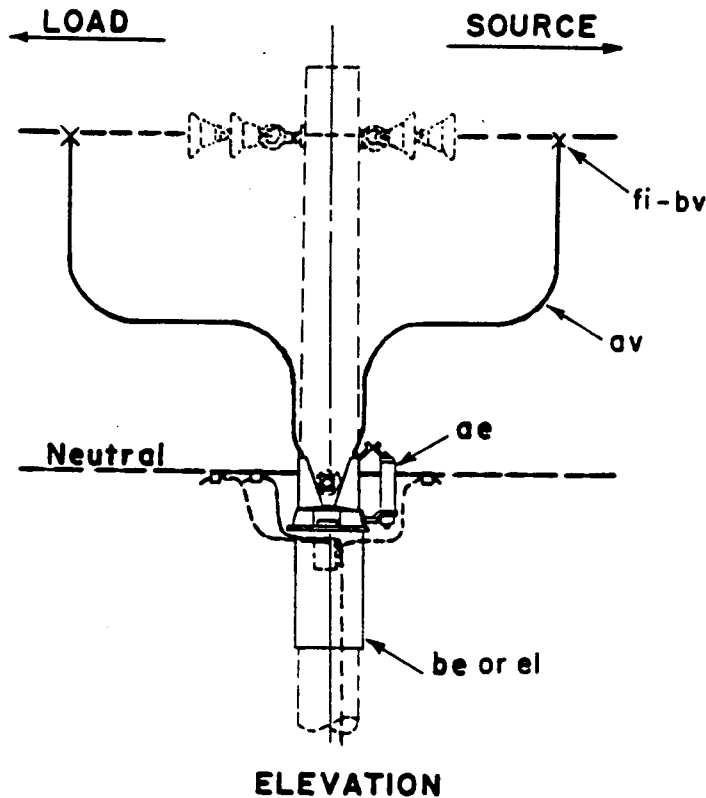
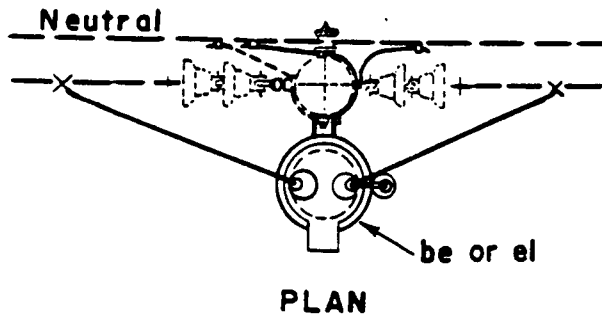
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|--|-----|---------------------------------|
| a | 3 | Insulator, pin type | | | |
| b | 1 | Pin, pole top, 20" | o | 4 | Bolt, eye, 5/8" x req'd. length |
| c | 4 | Bolt, machine, 1/2" x req'd length | P | | Connectors as required |
| c | 2 | Bolt, machine, 5/8" x req'd length | aa | 8 | Nut, eye, 5/8" |
| d | 14 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | av | | Jumpers and leads as req'd. |
| d | 4 | Washer, round, 1 3/8" diam., 9/16" hole | bo | 2 | Shackle, anchor |
| f | 2 | Pin, crossarm, steel, 5/8" x 10 3/4" | ca | 6 | Deadend assembly, primary |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | cc | 2 | Deadend assembly, neutral |
| k | 12 | Insulators, suspension | cu | 2 | Brace, wood, 60" span |
| n | 4 | Bolt, double arming, 5/8" x req'd. length | du | 3 | Extension Links |
| ek | | Locknuts as required | 12.5 / 7.2 kV LINE TENSION SWITCHES | | |
| sb | 3 | Switch, line tension | | | |
| | | | | | |
| | | | Apr., 1983 | | M3-3B |

Apr., 1983

M3-3B

NOTE:

The terminal bushing connected directly to the coil should be connected to the source. Where necessary to provide for this connection the recloser may be mounted on the other side of the pole and the neutral deadended.



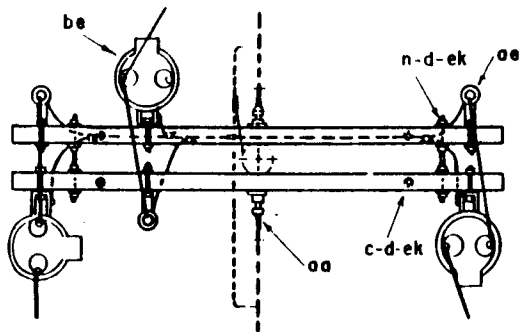
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|--|------|-----|----------------------------|
| C | 1 | Bolt, machine, 5/8" x req'd length | ae | 1 | Surge arrester |
| d | 1 | Washer, 2 1/4" x 2 1/4" x 3/16" 1 3/16" hole | bv | 2 | Rods, armor |
| p | | Connectors, as required | el | 1 | Sectionalizer (M3-41 only) |
| | | | ek | | Locknuts, as required |
| fi | 2 | Connector, hot line, tap assembly | | | |
| av | | Jumpers, stranded, as required | | | |
| be | 1 | Recloser, oil circuit (M3-10 only) | | | |

12.5/7.2 kV

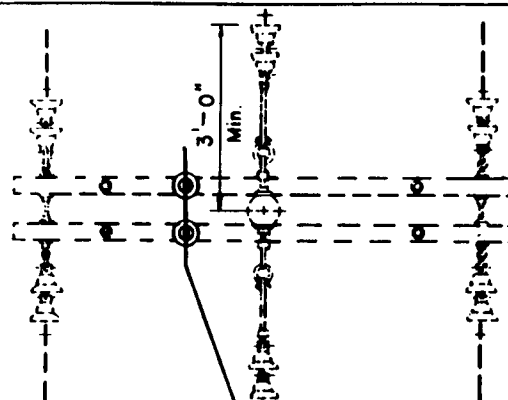
ONE SECTIONALIZER OR OIL CIRCUIT RECLOSER

Apr, 1983

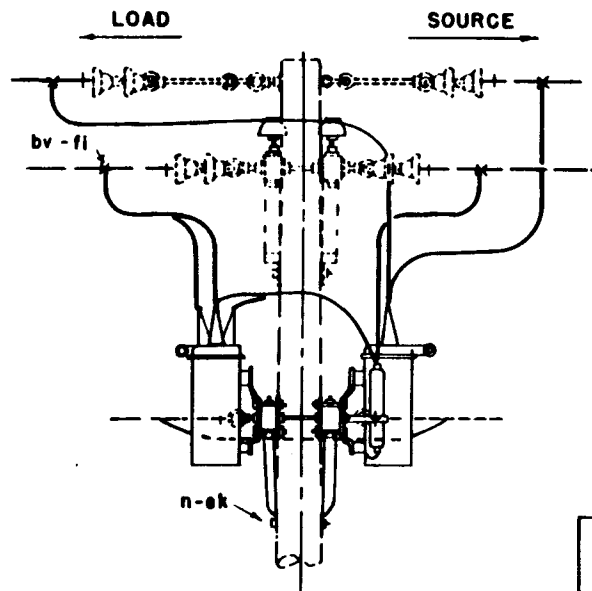
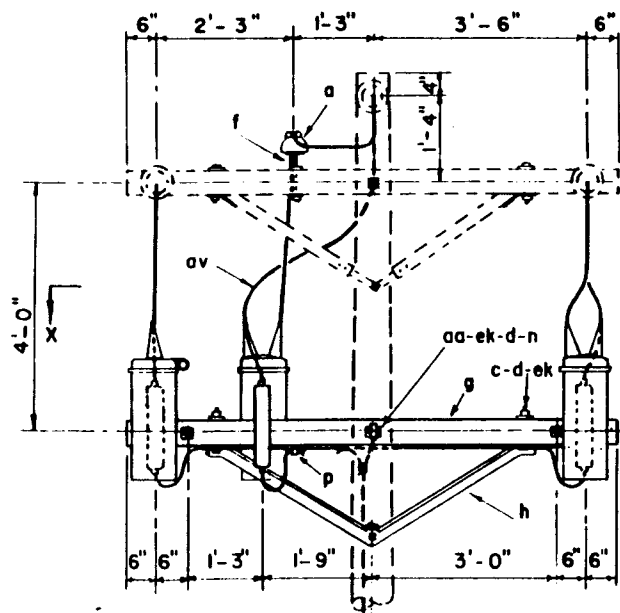
M3-10, M3-41



SECTION X-X



PLAN



| ITEM NO. | MATERIAL |
|----------|--|
| a 2 | Insulator, pin type |
| c 4 | Bolt, machine, 1/2" x req'd lg'th. |
| d 4 | Washer, Rd. 1 1/8" dia. 9/16" hole |
| d 10 | Washer, 2 1/4" x 2 1/4" x 3/16", 1/8" hole |
| f 2 | Pin, crossarm, steel 1/2" x 10 1/2" |
| g 2 | Crossarm, 3 1/2" x 4 1/2" x 8'-0" |
| h 2 | Brace, 1 1/2" x 1 1/2" x 7/8", 60" span |
| n 4 | Bolt, double arming, 5/8" x req'd. length |
| p | Connectors, as req'd. |
| aa 1 | Nut, eye, 5/8" |
| ae 3 | Surge arrester |
| av | Jumpers, stranded, as req'd. |
| be 3 | Recloser, oil circuit |
| bv 6 | Rods, armor |
| ek | Locknuts, as required |
| fi 6 | Connector, hot line, tap assembly |

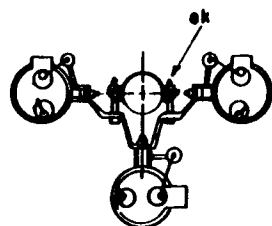
NOTES:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. For V-phase installation omit center phase; adjust material list and designate M3-II.
3. Each recloser tank shall have two separate connections to ground.

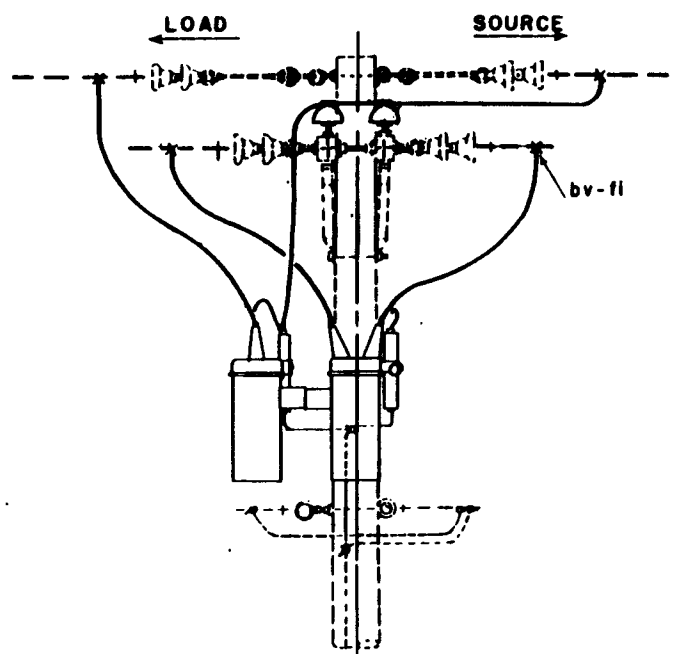
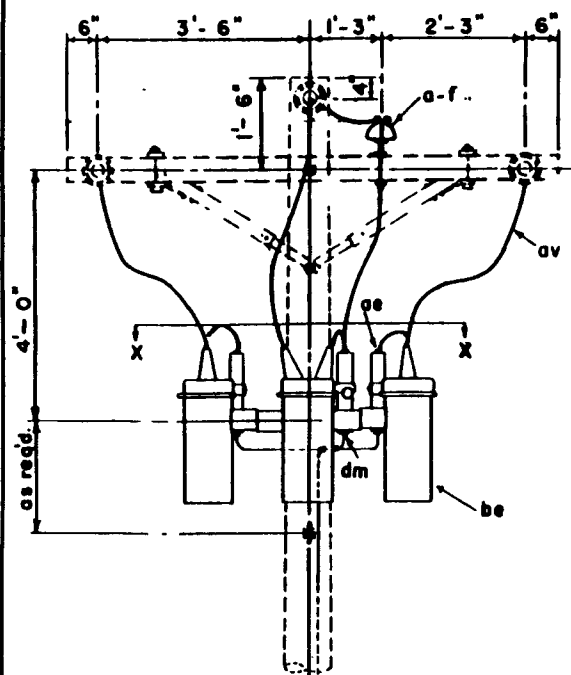
12.5/7.2 kV
2 OR 3-PHASE, THREE SECTIONALIZING
OIL CIRCUIT REclosERS

Apr, 1983

M3-II, M3-I2



SECTION X-X



| ITEM | No. Req'd. | MATERIAL |
|------|---------------|--------------------------------------|
| f | 2 | Pin, crossarm, steel, 5/8" x 10 3/4" |
| p | | Connectors, as required |
| ae | 3 | Surge arrester |
| av | | Jumpers, stranded, as req'd. |
| be | 3 | Recloser, oil circuit |
| bv | 6 | Rods, armor |
| dm | 1 | Bracket, cluster type |
| ek | | Locknuts, as required |
| fi | 6 | Connector, hot line, tap assembly |
| a | 2 | Insulator, pin type |

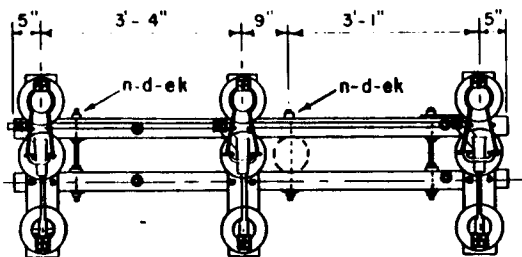
NOTES:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. For V Phase installations omit recloser and related items on center phase. Designate as assembly M3-IIA
3. Each recloser tank shall have two separate connections to ground.

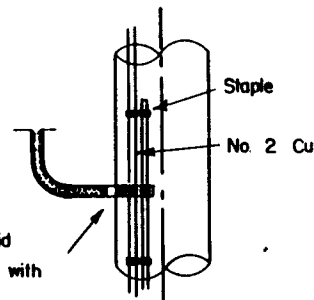
12.5/7.2 kV
2 OR 3 SECTIONALIZING OIL CIRCUIT RECLOSERS

Apr., 1983

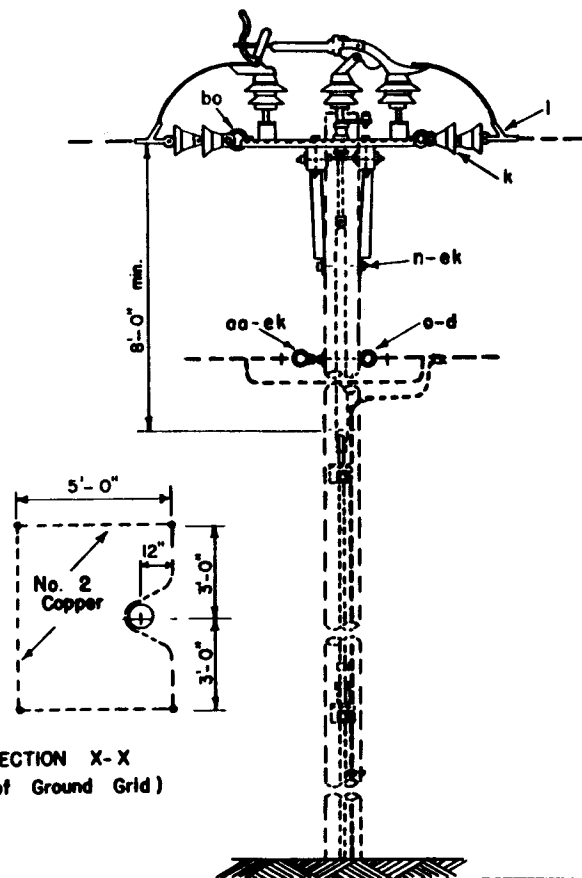
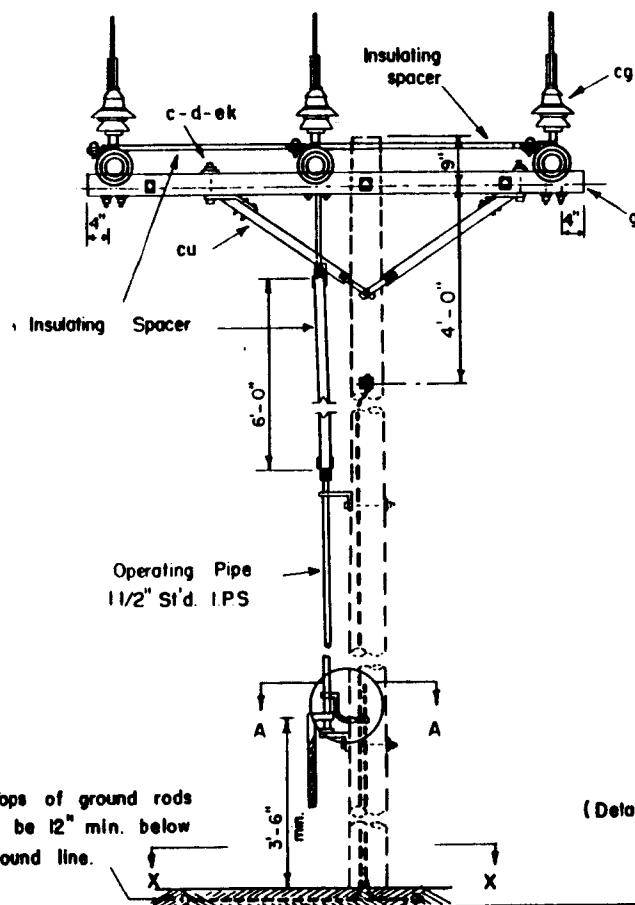
M3-IIA, M3-I2A



PLAN VIEW
OF SWITCH ARRANGEMENT



DETAIL OF A-A



SECTION X-X
(Detail of Ground Grid)

| ITEM | NO. | MATERIAL |
|------|-----|--|
| c | 14 | Bolt, machine, 5/8" x req'd. length |
| c | 2 | Bolt, machine, 1/2" x req'd. length |
| d | 25 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole |
| d | 4 | Washer, rd., 1 3/8" dia., 9/16" hole |
| g | 2 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| k | 12 | Insulator, suspension |
| l | 6 | Clamp, deadend |
| n | 4 | Bolt, double arming, 5/8" x req'd. length |
| bo | 6 | Shackle, anchor |
| cc | 2 | Deadend assembly, neutral |
| cg | 1 | Switch, airbreak, 3 pole unit 15 KV with operating mechanism, and insul. spacers |
| cu | 2 | Brace, wood, 60" span |
| e | 1 | Bolt, eye, 5/8" x required length |
| ek | | Locknuts, as required |
| ea | 1 | Nut, eye, 5/8" |

Note:

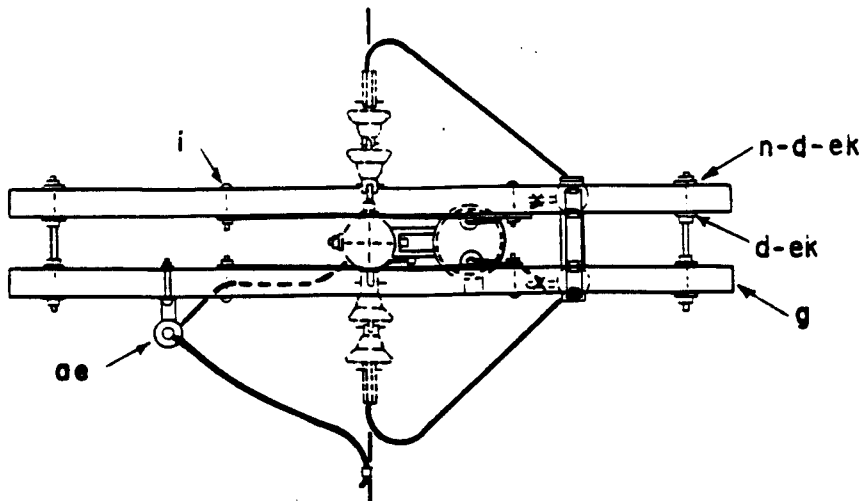
For ground assembly, see drawings M2-15 and M2-15A.

See drawings M42-3, M42-11, M42-13, M42-21 for item cc.

12.5/7.2 kV
SECTIONALIZING AIR BREAK SWITCH

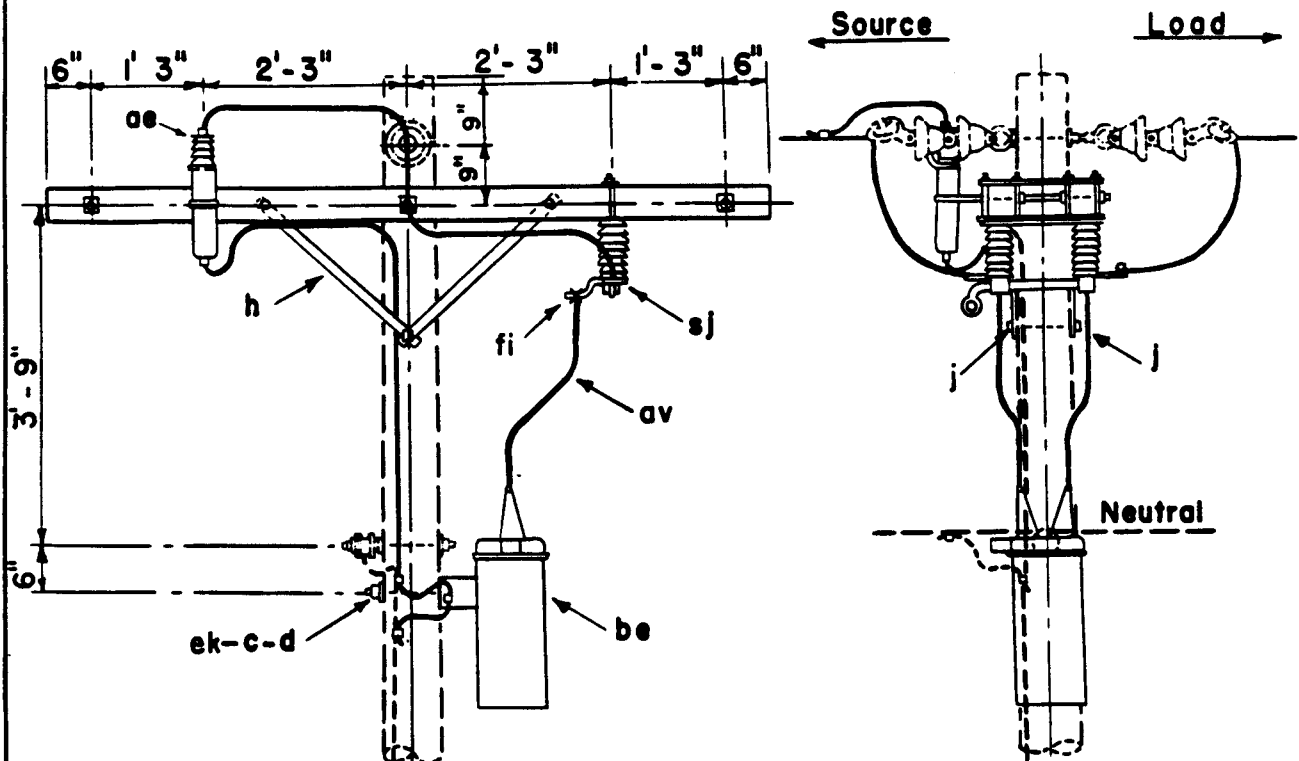
Apr., 1983

M3-15



Note:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. Each recloser tank shall have two separate connections to ground.



| ITEM | NO. REQ'D | MATERIAL | ITEM | NO. REQ'D | MATERIAL |
|------|--------------|--|------|--------------|--------------------------------|
| c | 1 | Bolt, machine, $\frac{5}{8}$ " x req'd length | p | | Connectors, as required |
| d | 11 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole | | | |
| g | 2 | Crossarm, $3\frac{5}{8}$ " x $4\frac{7}{8}$ " x 8'-0" | ae | 1 | Surge arrester |
| h | 4 | Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28" | fi | 2 | Conn., hotline, tap assembly |
| i | 4 | Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " | av | | Jumpers, stranded, as required |
| j | 2 | Screw, lag, $\frac{1}{2}$ " x 4" | be | 1 | Recloser, oil circuit |
| n | 3 | Bolt, double arming, $\frac{5}{8}$ " x req'd length | ek | | Locknuts, as required |
| | | | sj | 1 | Switch, recloser by-pass |

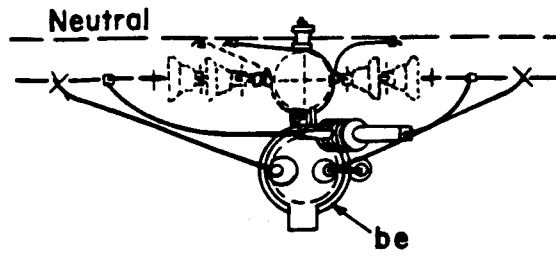
12.5/7.2 kV
ONE SECTIONALIZING OIL CIRCUIT RECLOSER
WITH BY PASS SWITCH

Apr., 1983

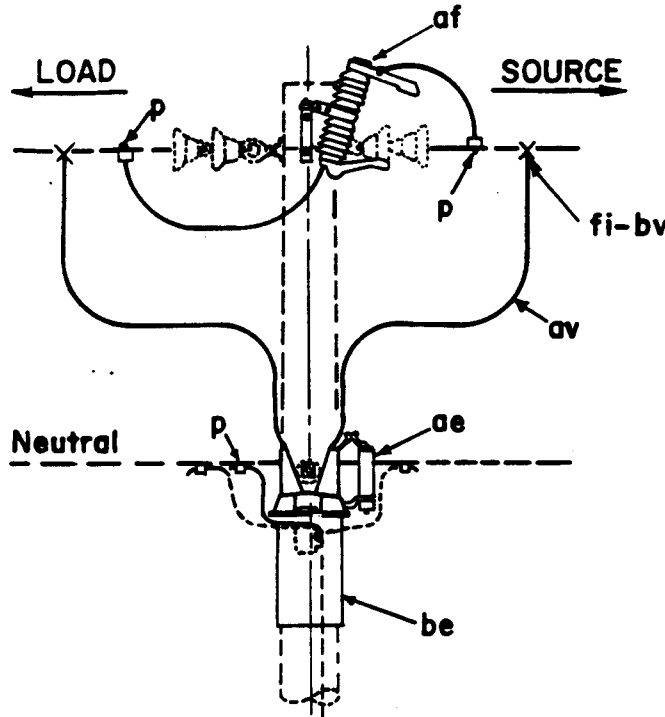
M3-23

NOTE:

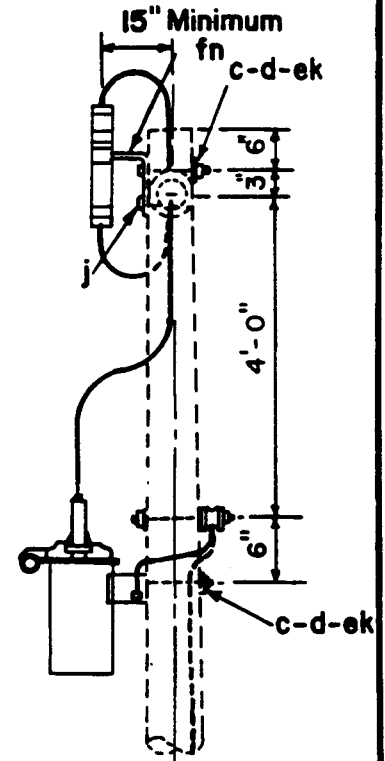
The terminal bushing connected directly to the coil should be connected to the source. Where necessary to provide for this connection the recloser and cutout may be mounted on the other side of the pole and the neutral deadended.



PLAN



ELEVATION



SIDE ELEVATION

NOTES:

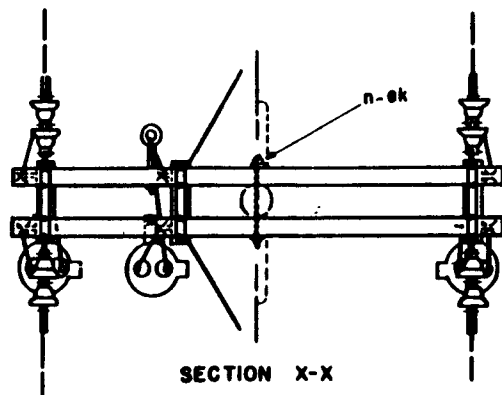
1. Mount cutout so that exhaust blast of arc is directed away from linemen
2. At borrower's option, cutout may be mounted on opposite side of pole.

| ITEM | NO | MATERIAL | ITEM | NO | MATERIAL |
|------|----|---|------|----|-----------------------|
| c | 2 | Bolt, machine, 5/8" x req'd length | ae | 1 | Surge arrester |
| d | 2 | Washer, 2 1/4" x 2 1/4" x 3/16" x 13/16" hole | | | |
| p | | Connectors, as required | bv | 2 | Armor rods |
| fn | 1 | Bracket, extension, L type | ek | | Locknuts, as required |
| fi | 2 | Connector, hot line, tap assembly | j | 1 | Screw lag, 1/2" x 4" |
| av | | Jumpers, stranded, as required | af | 1 | Cutout |
| be | 1 | Recloser, oil circuit | | | |

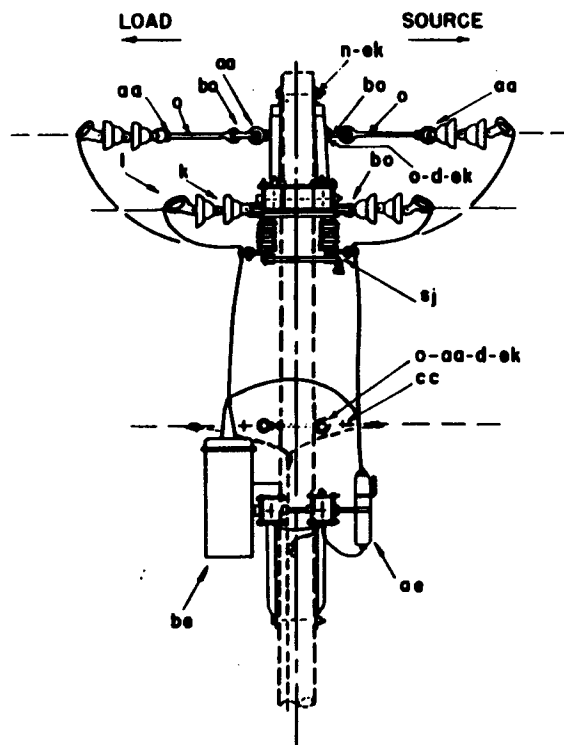
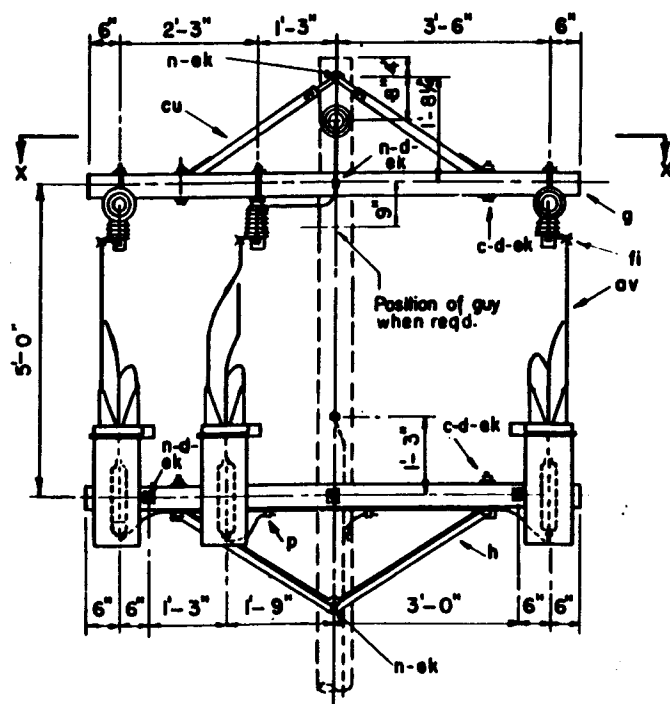
12.5/7.2 kV
OIL CIRCUIT RECLOSER WITH BYPASS CUTOUT

Apr., 1983

M3-23A



SECTION X-X



| ITEM | NO. | MATERIAL |
|------|-----|--|
| c | 8 | Bolt, machine, $\frac{1}{2}$ " x required length |
| d | 16 | Washer, $2\frac{1}{8}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole |
| d | 8 | Washer, Rd. $1\frac{1}{8}$ " dia., $\frac{7}{16}$ " hole |
| g | 4 | Crossarm, $3\frac{3}{8}$ " x $4\frac{1}{2}$ " x 8'-0" |
| h | 2 | Brace, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ ", 60" span |
| k | 12 | Insulator, suspension |
| i | 6 | Clamp, deadend |
| n | 6 | Bolt, double arming, $\frac{5}{8}$ " x req'd lg'th |
| p | | Connectors, as required |
| aa | 4 | Nut, eye, $\frac{5}{8}$ " |
| ae | 3 | Surge arrester |
| av | | Jumpers, stranded, as required |
| bo | 6 | Shackle, anchor |
| be | 3 | Recloser, oil circuit |
| cc | 2 | Deadend assembly, neutral |
| cu | 2 | Brace, crossarm, wood, 60" span |
| sj | 3 | Switch, recloser by-pass |
| fi | 6 | Connector, hot line, top assembly |
| o | 4 | Bolt, eye, $\frac{5}{8}$ " x req'd length |
| ek | | Locknuts, as required |

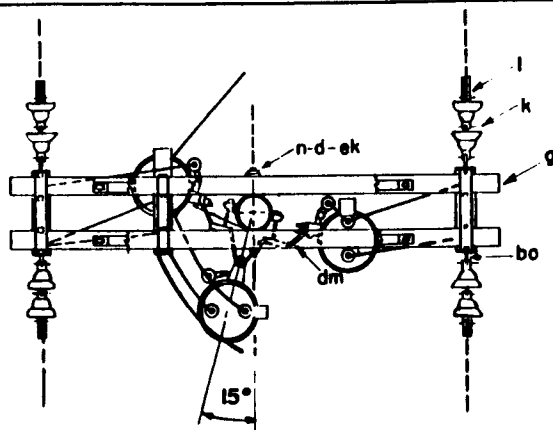
Notes:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. For V-Phase installations omit recloser and related items on center phase. Designate as assembly M3-24.
3. Each recloser tank shall have two separate connections to ground.
4. See drawings M42-3, M42-11, M42-13, M42-21 for item cc.

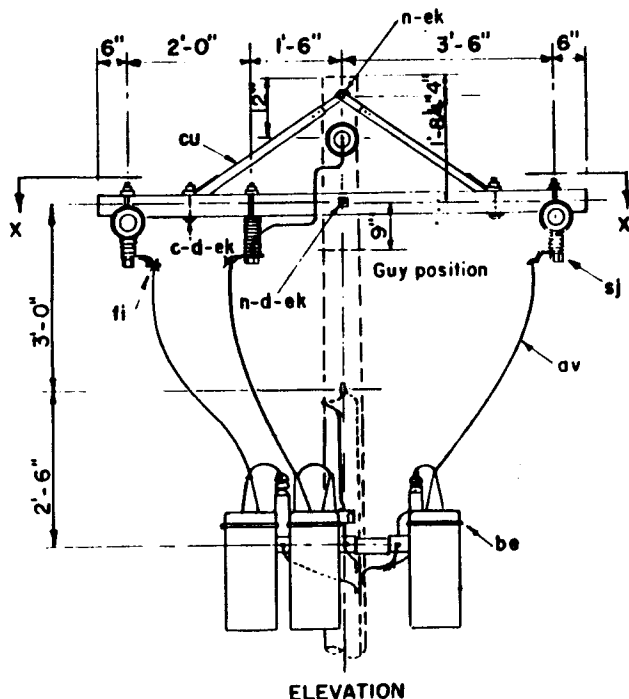
12.5/7.2 kV
2 OR 3 SECTIONALIZING OIL CIRCUIT RECLOSERS
WITH BY-PASS SWITCHES

Apr., 1983

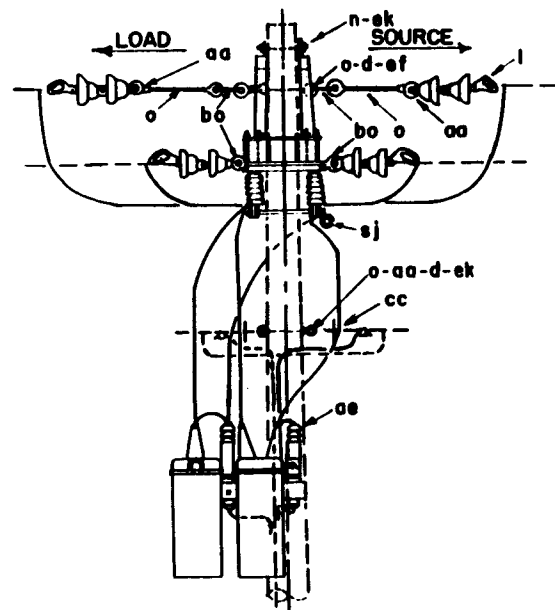
M3-24, M3-25



SECTION X-X



ELEVATION

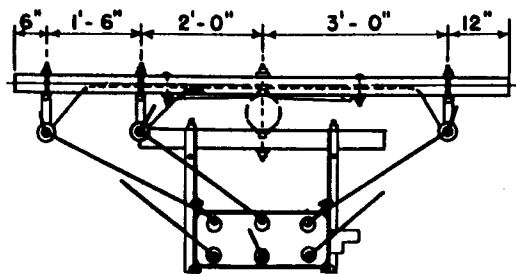


| ITEM NO. | MATERIAL |
|----------|---|
| c 4 | Bolt, machine, 1/2" x req'd. length |
| d 4 | Washer, 2 1/4" x 2 1/4" x 3/16" hole |
| d 4 | Washer, Rd. 1 3/8" dia. 9/16" hole |
| g 2 | Crossarm, 3 7/8" x 4 7/8" x 8'-0" |
| k 12 | Insulator, suspension |
| l 6 | Clamp, deadend |
| n 2 | Bolt, double arming, 5/8" x req'd. length |
| p | Connectors, as required |
| ea 4 | Nut, eye 5/8" |
| ae 3 | Surge arrester |
| av | Jumpers, stranded, as req'd. |
| fi 6 | Connector, hotline, top assembly |
| be 3 | Recloser, oil circuit |
| bo 6 | Shackle, anchor |
| cc 2 | Deadend assembly, neutral |
| cu 2 | Brace, crossarm, wood, 60" span |
| dm 1 | Bracket, cluster type |
| sj 3 | Switch, recloser by-pass |
| o 4 | Bolt, eye, 5/8" x req'd. length |
| ek | Locknuts, as required |

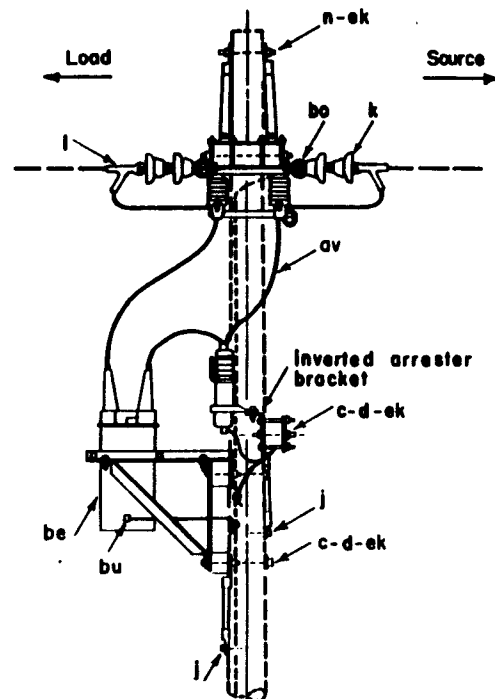
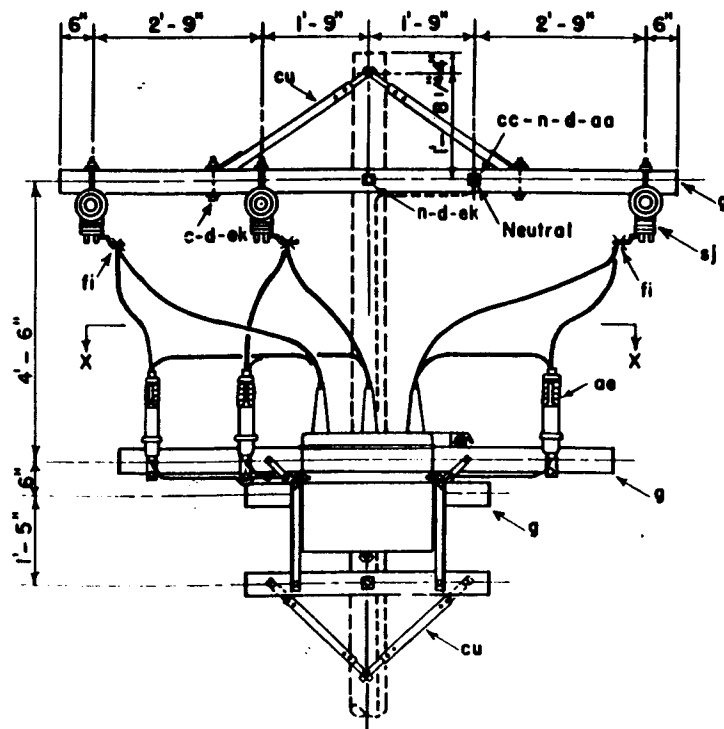
Notes:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. For V-Phase installations omit recloser and related items on center phase. Designate as assembly M3-24A.
3. Each recloser tank shall have two separate connections to ground.
4. See drawings M42-3, M42-11, M42-13, M42-21 for item cc.

12.5/7.2 kV
2 OR 3 SECTIONALIZING OIL CIRCUIT RECLOSERS
WITH BY-PASS SWITCHES
Apr, 1983 M3-24A M3-25A



SECTION XX



| ITEM NO. | MATERIAL |
|----------|---|
| c 3 | Bolt, machine, 5/8" x req'd. length |
| c 4 | Bolt, machine, 1/2" x req'd. length |
| d 12 | Washer, 2 1/4" square |
| d 4 | Washer, round, 1 3/8" diameter |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 10'-0" |
| g 1 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| g 2 | Crossarm, 3 5/8" x 4 5/8" x 4'-0" |
| k 12 | Insulator, suspension |
| l 6 | Clamps, deadend |
| l 2 | Screw, lag, 5/8" x req'd. length |
| n 3 | Bolt, double arming, 5/8" x req'd. length |
| p | Connectors, as required |
| aa 2 | Nut, eye, 5/8" |
| ae 3 | Surge arrester |
| av | Jumpers, stranded, as required |
| be 1 | Recloser, oil circuit - 3 phase |
| * 1 | Mounting bracket for 3 phase recloser |
| bo 6 | Shackle, anchor |
| bu 1 | Connector, solderless |
| cc 2 | Deadend assembly, neutral |
| cu 2 | Brace, crossarm, wood, 60" span |
| cu 4 | Brace, crossarm, wood, 28" |
| ek | Locknuts, as required |
| fi 6 | Connector, hot line |
| sj 3 | Switch, recloser, by-pass |

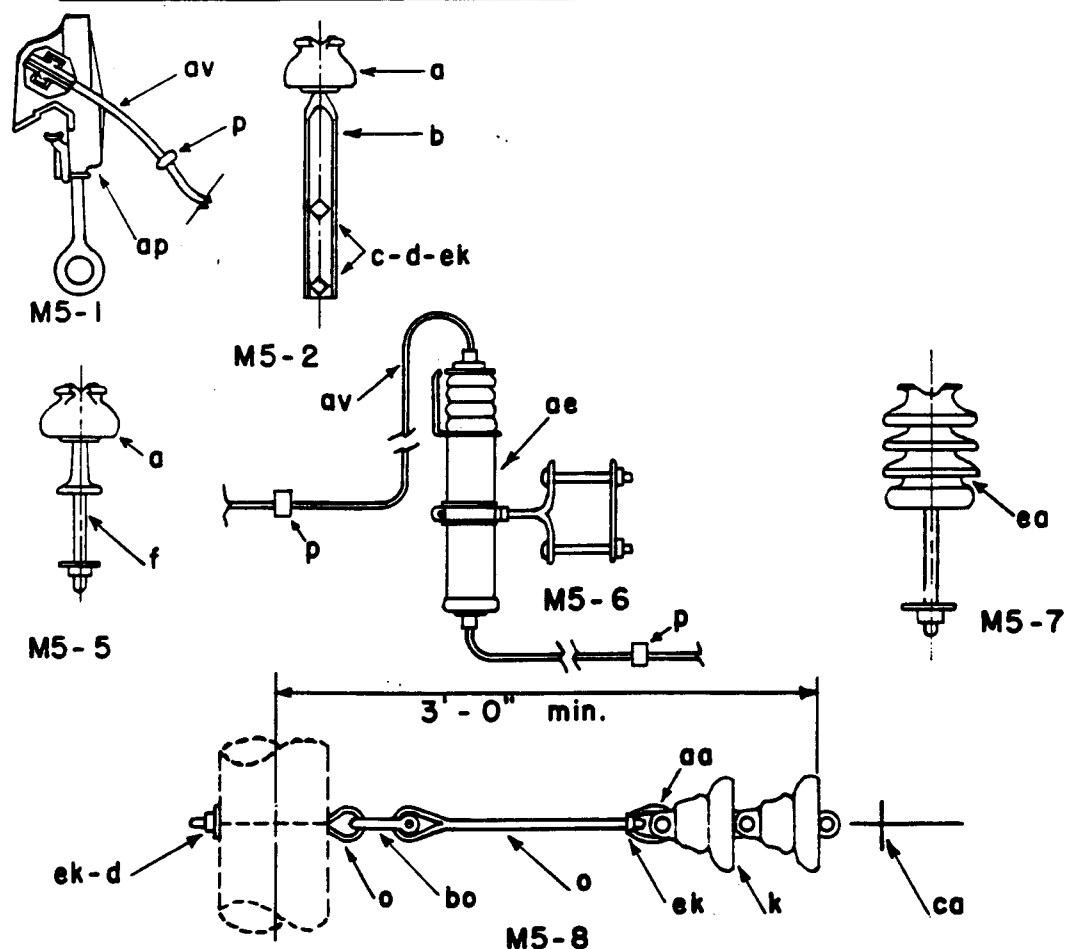
* Specify this item to be furnished by recloser manufacturer

See drawings M42-3, M42-11, M42-13, M42-21 for item cc

THREE PHASE OIL CIRCUIT RECLOSER
WITH BY-PASS SWITCHES

Apr., 1983

M3-30

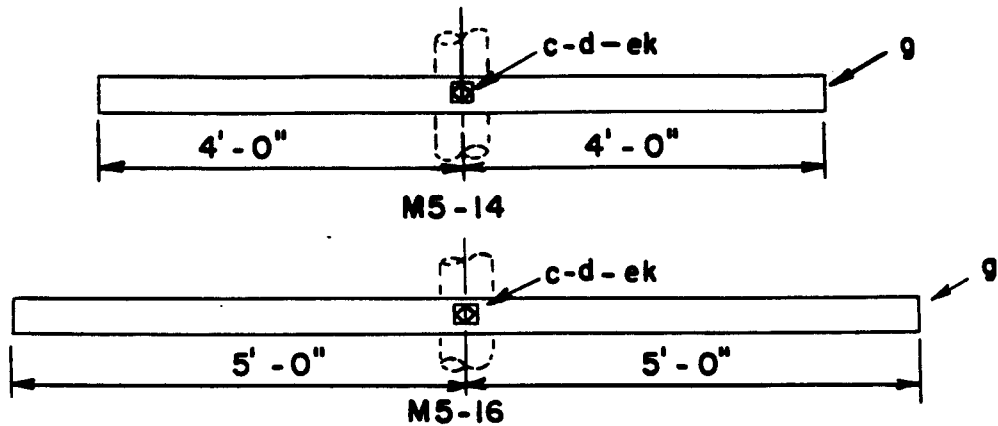
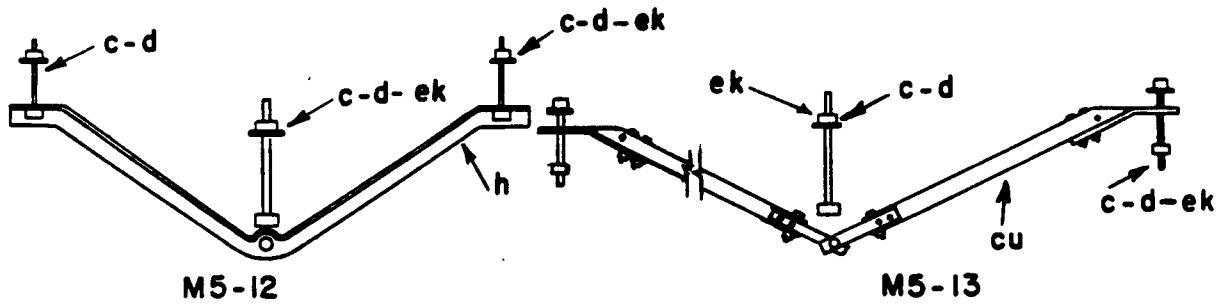
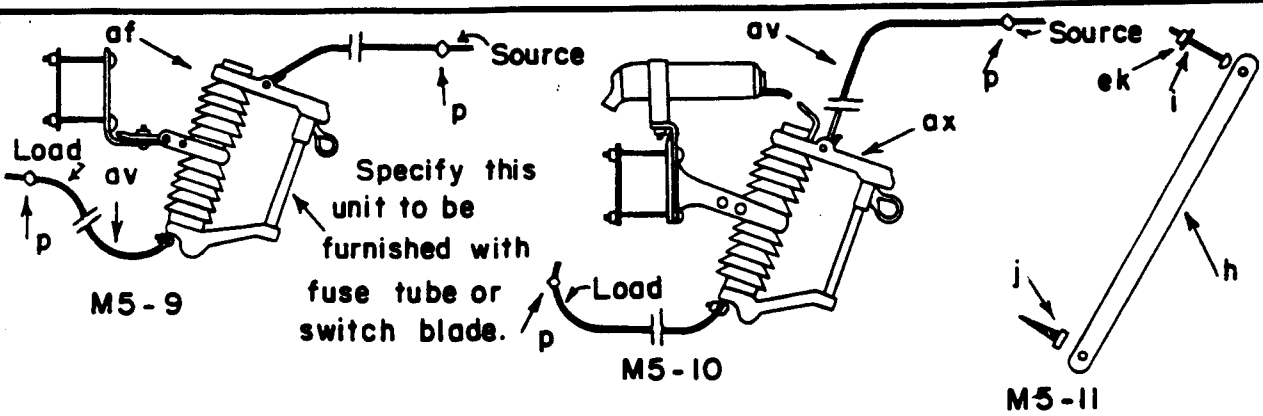


| ITEM | MATERIAL | M5-1 | M5-2 | | | M5-5 | M5-6 | M5-7 | M5-8 |
|------|-------------------------------------|------|------|--|--|------|------|------|------|
| a | Insulator, pin type | | 1 | | | 1 | | | |
| b | Pin, pole top, 20" | | 1 | | | | | | |
| c | Bolt, machine, 5/8"x req'd. length | | 2 | | | | | | |
| d | Washer, square, 2 1/4" | | 2 | | | | | 1 | 1 |
| f | Pin, crossarm, steel, 5/8"x 10 3/4" | | | | | 1 | | | |
| k | Insulator, suspension | | | | | | | | 2 |
| o | Bolt, eye, 5/8"x req'd. length | | | | | | | | 2 |
| p | Connector | 1 | | | | | 2 | | |
| aa | Nut, eye, 5/8" | | | | | | | | 1 |
| ae | Lightning arrester | | | | | | 1 | | |
| ap | Clamp, hot line | 1 | | | | | | | |
| av | Jumper | 1 | | | | | | | |
| bo | Shackle, anchor | | | | | | | | 1 |
| ea | Insulator, post type, 7" stud | | | | | | | 1 | |
| ek | Locknuts, as required | | | | | | | | |

12.5/7.2 kV
MISCELLANEOUS PRIMARY ASSEMBLIES

Apr., 1983

M5-1 TO 8

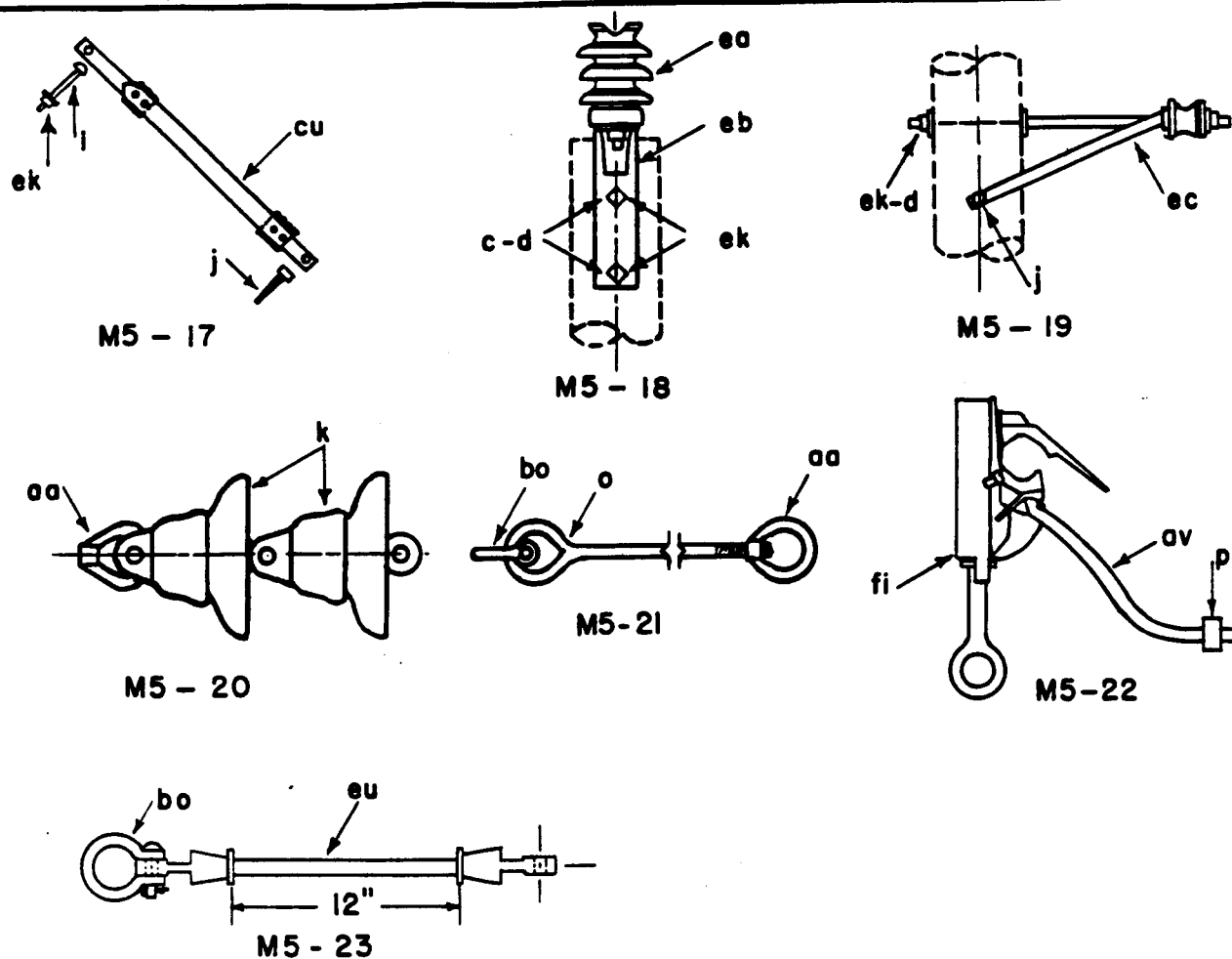


| ITEM | MATERIAL | NUMBER REQUIRED | | | | | | | |
|------|---|-----------------|-------|-------|-------|-------|-------|--|-------|
| | | M5-9 | M5-10 | M5-11 | M5-12 | M5-13 | M5-14 | | M5-16 |
| c | Bolt, machine, 5/8" x req'd length | | | | 1 | 1 | 1 | | |
| c | Bolt, machine, 1/2" x req'd length | | | | 2 | 2 | | | |
| d | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | | | | 1 | 1 | 2 | | 2 |
| d | Washer, round, 1 3/8" dia., 9/16" hole | | | | 2 | 2 | | | |
| g | Crossarm, 3 5/8" x 4 5/8" x 8'-0" | | | | | | 1 | | |
| g | Crossarm, 3 5/8" x 4 5/8" x 10'-0" | | | | | | | | 1 |
| h | Brace, flat, 1 1/4" x 1/4" x 28" | | | 1 | | | | | |
| h | Brace, angle, 1 1/2" x 1/2" x 3/16", 60" span | | | | 1 | | | | |
| i | Bolt, carriage, 3/8" x 4 1/2" | | | 1 | | | | | |
| j | Screw, lag, 1/2" x 4" | | | 1 | | | | | |
| p | Connector | 2 | 2 | | | | | | |
| af | Cutout, single-shot | 1 | | | | | | | |
| av | Jumper | 2 | 2 | | | | | | |
| ax | Cutout and arrester combination | | 1 | | | | | | |
| cu | Brace, wood, 60" span | | | | | 1 | | | |
| ek | Locknuts, as required | | | | | | | | |

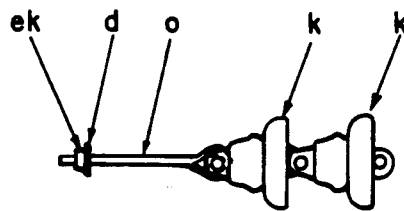
MISCELLANEOUS PRIMARY ASSEMBLIES

Apr., 1983

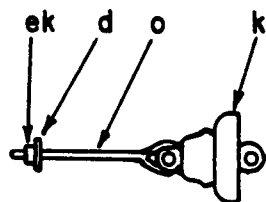
M5-9 TO 16



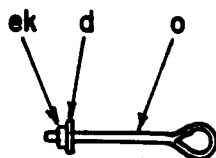
| ITEM | MATERIAL | M5-17 | M5-18 | M5-19 | M5-20 | M5-21 | M5-22 | M5-23 |
|------|--------------------------------------|----------------------------------|-------|-------|-------|-------|------------|-------|
| c | Bolt, machine, 5/8"x required length | | 2 | | | | | |
| d | Washer, 2 1/4" square | | 2 | 1 | | | | |
| i | Bolt, carriage, 3/8"x 4 1/2" | 1 | | | | | | |
| j | Screw, lag, 1/2" x 4" | 1 | | 2 | | | | |
| k | Insulator, suspension | | | | 2 | | | |
| ea | Insulator, post type, 1 3/4" stud | | 1 | | | | | |
| eb | Bracket, for post type insulator | | 1 | | | | | |
| ec | Bracket, offset, neutral, insulated | | | 1 | | | | |
| ek | Locknuts, as required | | | | | | | |
| cu | Brace, wood, 28" | 1 | | | | | | |
| aa | Eye nut | | | | 1 | 1 | | |
| bo | Shackle, anchor | | | | | 1 | | 1 |
| o | Bolt, eye, 5/8" x reqd. length | | | | | 1 | | |
| fi | Connector, hot line | | | | | | 1 | |
| av | Jumper | | | | | | 1 | |
| p | Connector | | | | | | 1 | |
| eu | Link, extension, insulated | | | | | | | 1 |
| | | MISCELLANEOUS PRIMARY ASSEMBLIES | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | Apr., 1983 | | | | | M5-17 T023 | |



M5-24 (PRIMARY)



M5-26 (NEUTRAL OR SECONDARY ONLY)



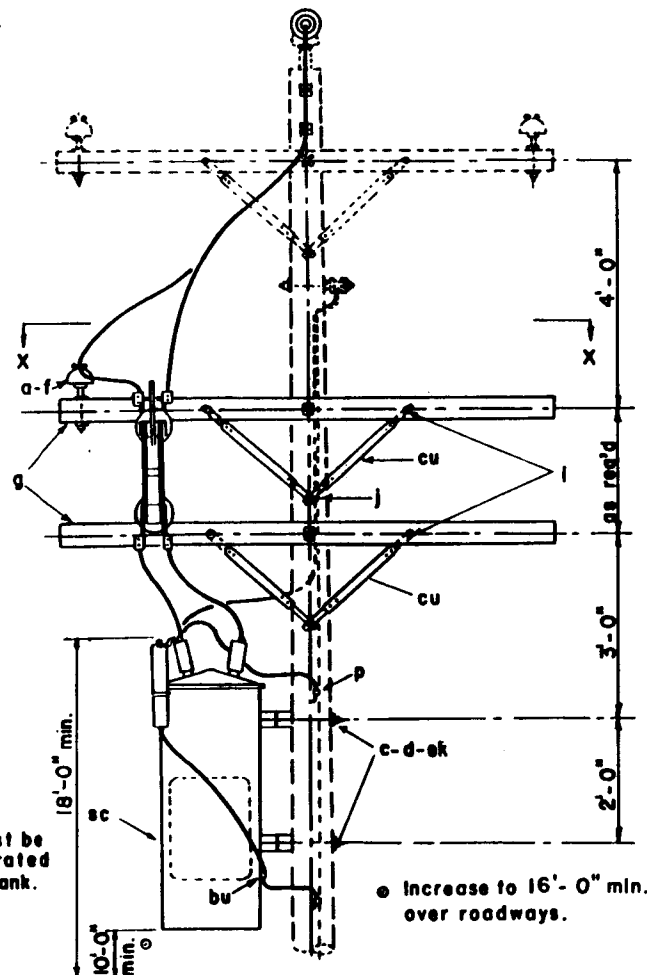
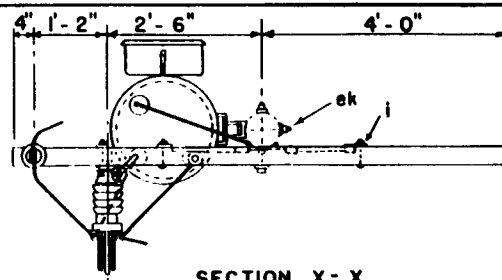
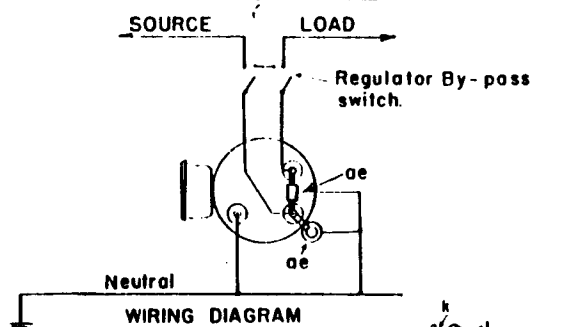
M5-25 (NEUTRAL ONLY)

| ITEM | MATERIAL | M5-24 | M5-25 | M5-26 | | |
|------|--------------------------------|-------|-------|-------|--|--|
| d | Washer, 2 1/4" square | 1 | 1 | 1 | | |
| k | Insulator, suspension | 2 | | 1 | | |
| o | Bolt, eye, 5/8" x req'd length | 1 | 1 | 1 | | |
| ek | Locknuts as req'd | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

12.5/7.2 kV
MISCELLANEOUS ASSEMBLIES

Apr., 1983

M5-24 TO M5-26



Note:
Control box may be located on the pole below regulator. If so, add the required amount of control cable.

Control cabinet must be grounded when separated from the regulator tank.

| ITEM | NO. | MATERIAL | |
|------|-----|--|---|
| a | 1 | Insulator, pin type | |
| c | 4 | Bolt, machine, $\frac{1}{2}$ " x req'd length | |
| c | 4 | Bolt, machine, $\frac{3}{8}$ " x req'd length | |
| d | 4 | Washer, round, $1\frac{1}{2}$ " dia, $\frac{3}{8}$ " hole | |
| d | 6 | Washer, $2\frac{1}{2}$ " x $2\frac{1}{4}$ " x $\frac{3}{8}$ " hole | |
| f | 1 | Pin, crossarm, $5/8$ " x $10\ 3/4$ " | |
| g | 2 | Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{8}$ " x $8'-0"$ | |
| i | 4 | Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ " | |
| j | 2 | Screw, lag, $\frac{1}{2}$ " x $4"$ | |
| k | 1 | Insulator, suspension | |
| ek | | Locknuts, as required | |
| l | 2 | Clamp, deadend | |
| p | | Connectors as required | |
| ae | 1 | Surge arrester | |
| ae | 1 | By-pass arrester | x |
| av | | Jumpers, stranded, as required | |
| br | 1 | Chain link, $5/8$ " x $3\ 1/4$ " | |
| bu | 1 | Connector, grounding | x |
| cu | 4 | Brace, wood, $2\theta"$ | |
| sc | 1 | Regulator, step type | |
| sk | 1 | Regulator by-pass switch | |

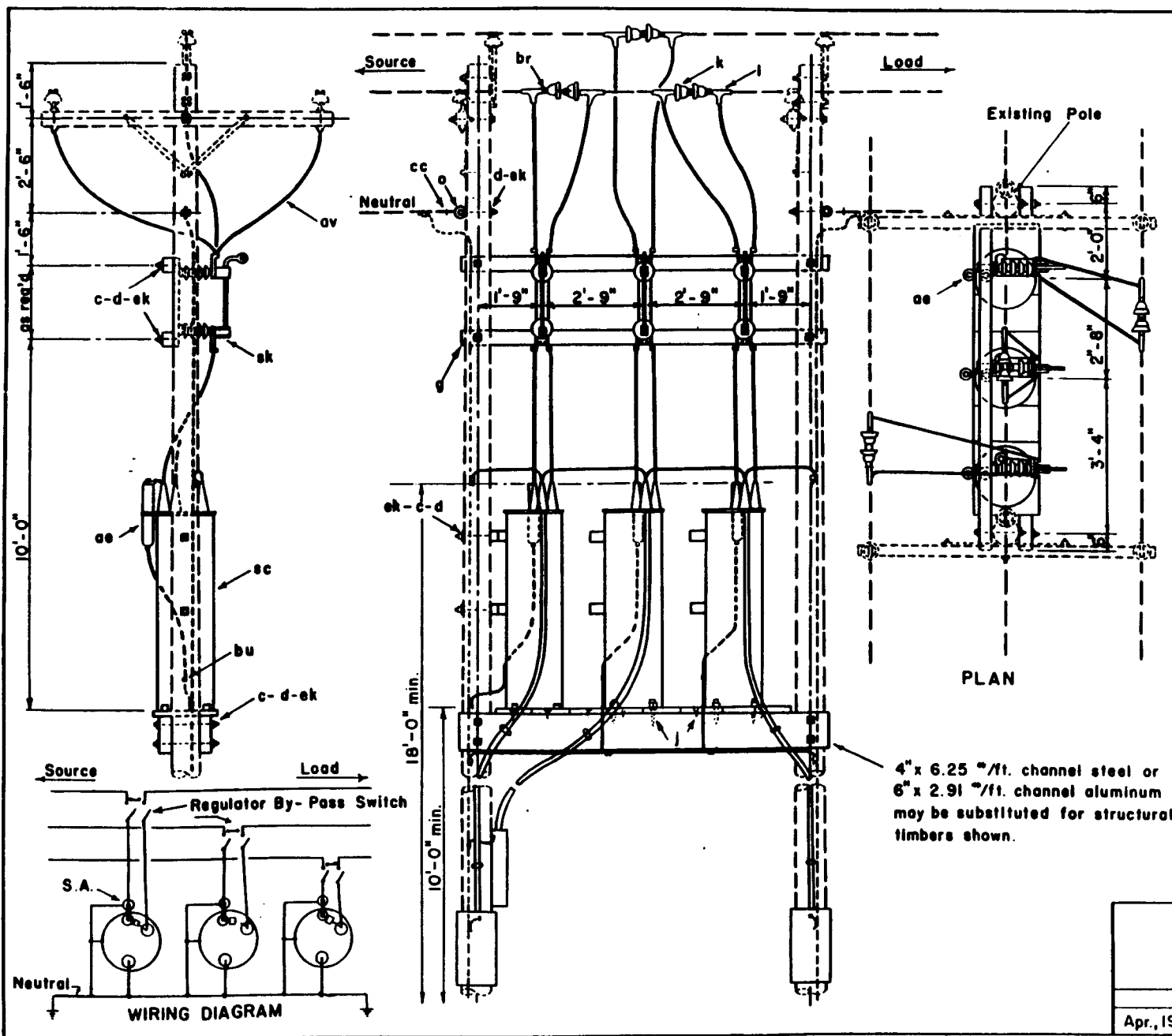
* Specify this item to be furnished by the Regulator manufacturer.

Note:
Where strength of existing pole is inadequate for regulator weight, use two pole structure as shown on drawing VM 7-1.

12.5/7.2 kV
ONE VOLTAGE REGULATOR
POLE MOUNTED

Apr., 1983

M7-11



| ITEM | No. req'd | MATERIAL |
|------|--------------|--|
| c | 6 | Bolt, machine, $\frac{1}{2}$ " x req'd. length |
| c | 4 | Bolt, machine, $\frac{3}{4}$ " x req'd. length |
| d | 20 | Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{1}{8}$ ", $1\frac{3}{8}$ " hole |
| g | 2 | Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 10'-0" |
| j | | Screw lag, $\frac{1}{2}$ " x 5" as req'd. |
| j | 8 | Screw lag, $\frac{1}{2}$ " x 6" |
| k | 6 | Insulator, suspension |
| l | 6 | Clamp, deadend |
| o | 2 | Bolt, eye, $\frac{1}{2}$ " x req'd. length |
| p | | Connectors, as required |
| ae | 3 | Surge arrester |
| ae | 3 | By-pass arrester " |
| av | | Jumpers, stranded, as required |
| br | 3 | Chain link, $\frac{5}{8}$ " x $3\frac{1}{4}$ " |
| bu | 3 | Connector, solderless " |
| cc | 2 | Deadend assembly, neutral |
| sc | 3 | Regulator, step type |
| sk | 3 | Regulator by-pass switch |
| | 2 | Structural timber, 4" x 12" x 10'-0" |
| | | Planks, 2" thick, length as req'd. |
| ek | | Locknuts, as required |
| | | Remote control kit with mounting hardware " |
| c | 12 | Bolt, machine, $\frac{1}{2}$ " x req'd. length |

* Specify this item to be furnished by the regulator manufacturer.

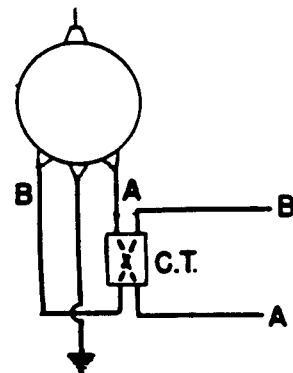
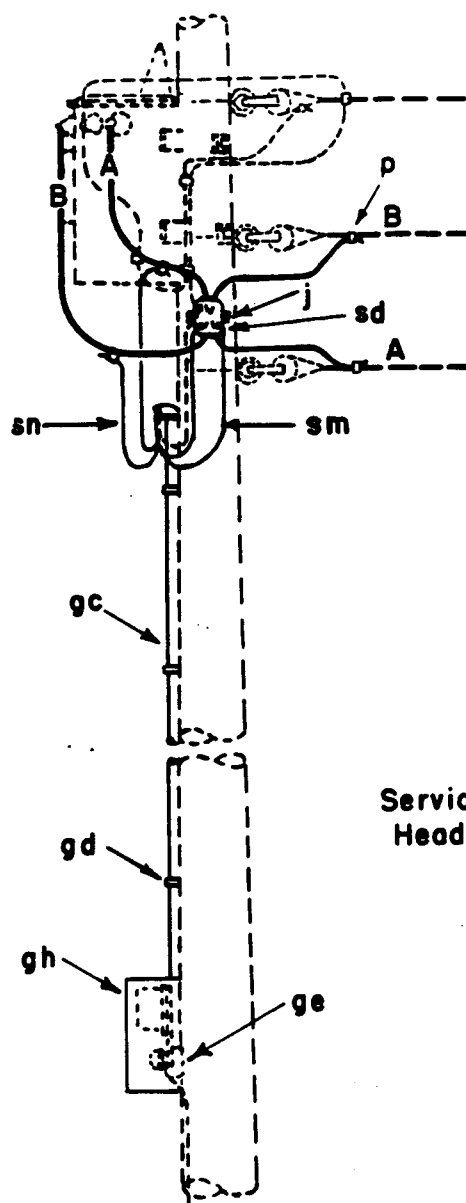
Note: All structural timber and planks to be treated as per REA Specification DT-5B.

See drawings M42-3, M42-11, M42-13, M42-21 for item cc.

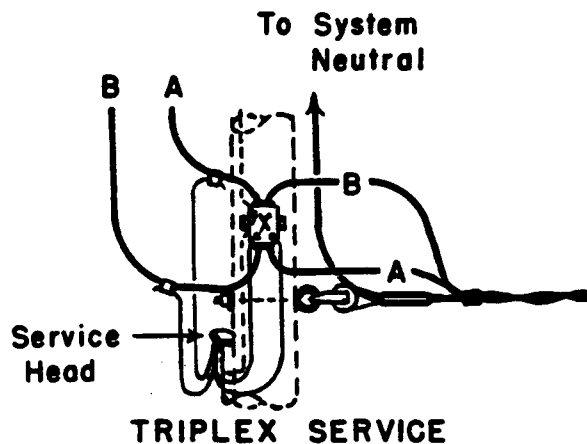
12.5/7.2 kV
THREE VOLTAGE REGULATORS
PLATFORM MOUNTED

Apr., 1983

M7-13



Note: WIRING DIAGRAM
For more detailed wiring diagram,
see REA Bulletin 161-12

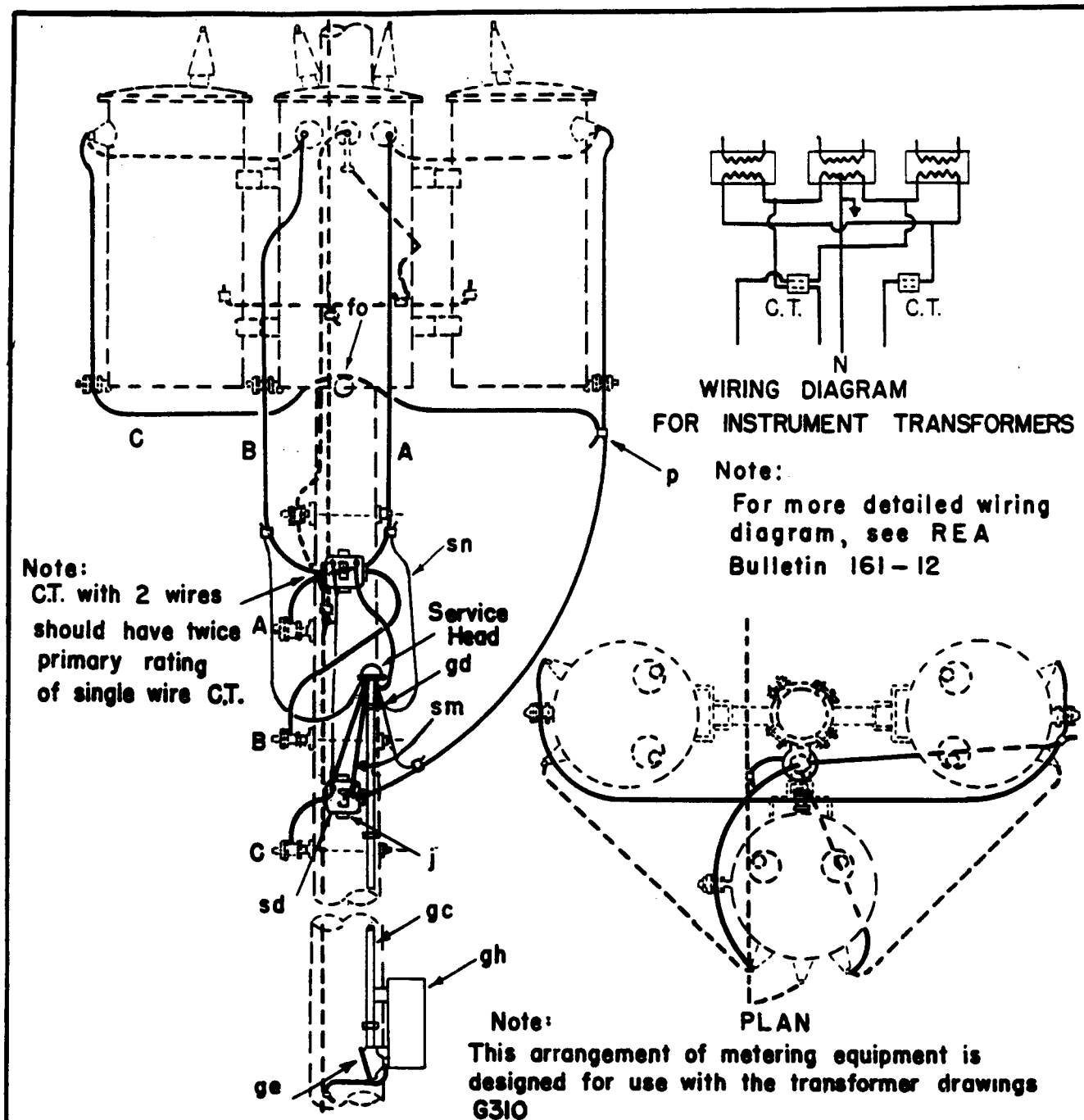


| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|-----------------------------------|----------|------------------------------------|
| j 2 | Screw, lag, 1/2" x 4" | sd 1 | Transformer, current |
| p | Connectors, as required | sm | Wire, No. 12, insul. for current |
| gc | Conduit, 1 1/4", as required | sn | Wire, No. 14, insul. for potential |
| gd | Straps, conduit, as required | 1 | Service head |
| ge | Condulet, type "LB" | | |
| gh | 1 Meter box, meter and test block | | |

SECONDARY METERING GUIDE
SINGLE PHASE 120 / 240 VOLTS

Apr., 1983

M8

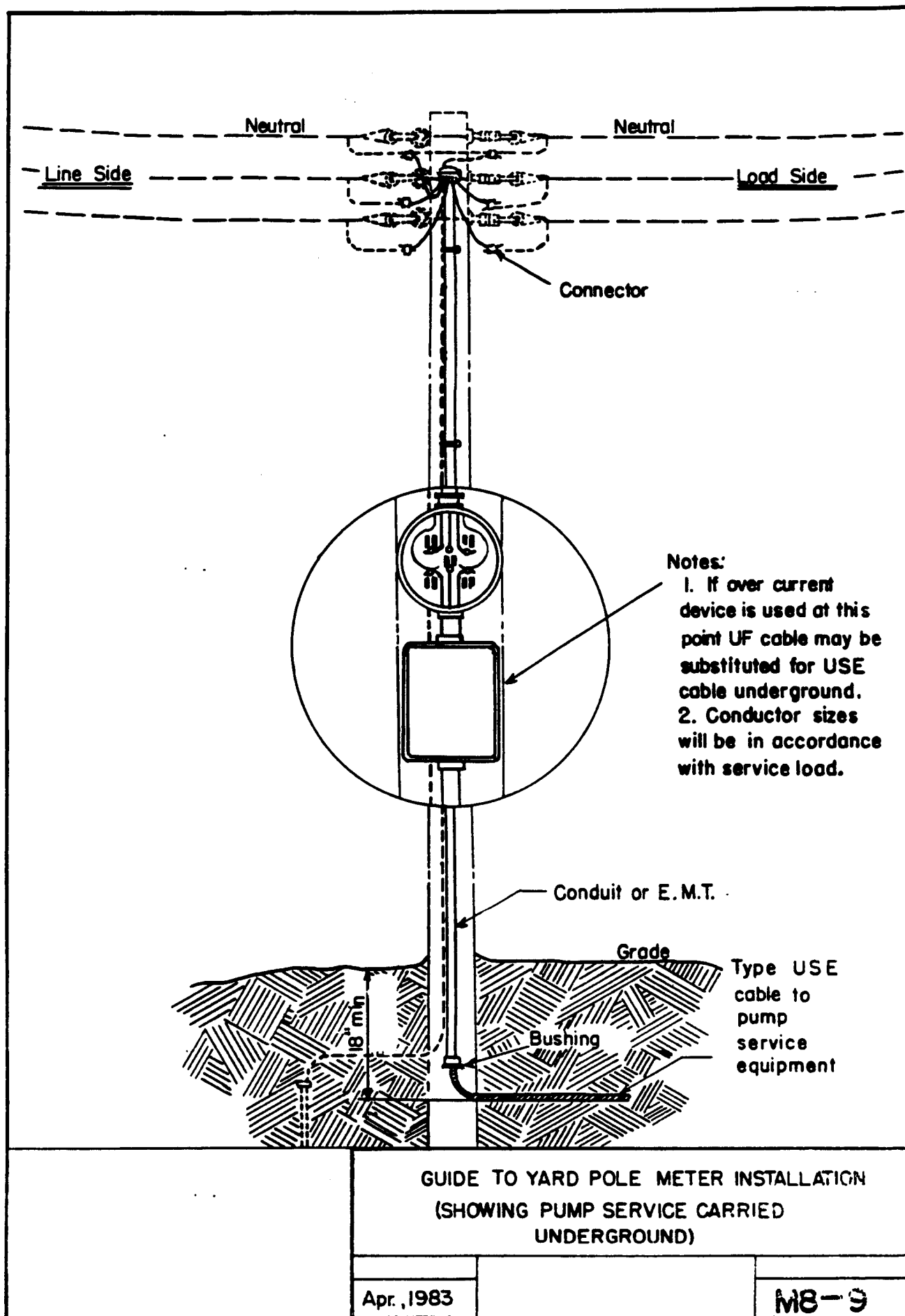


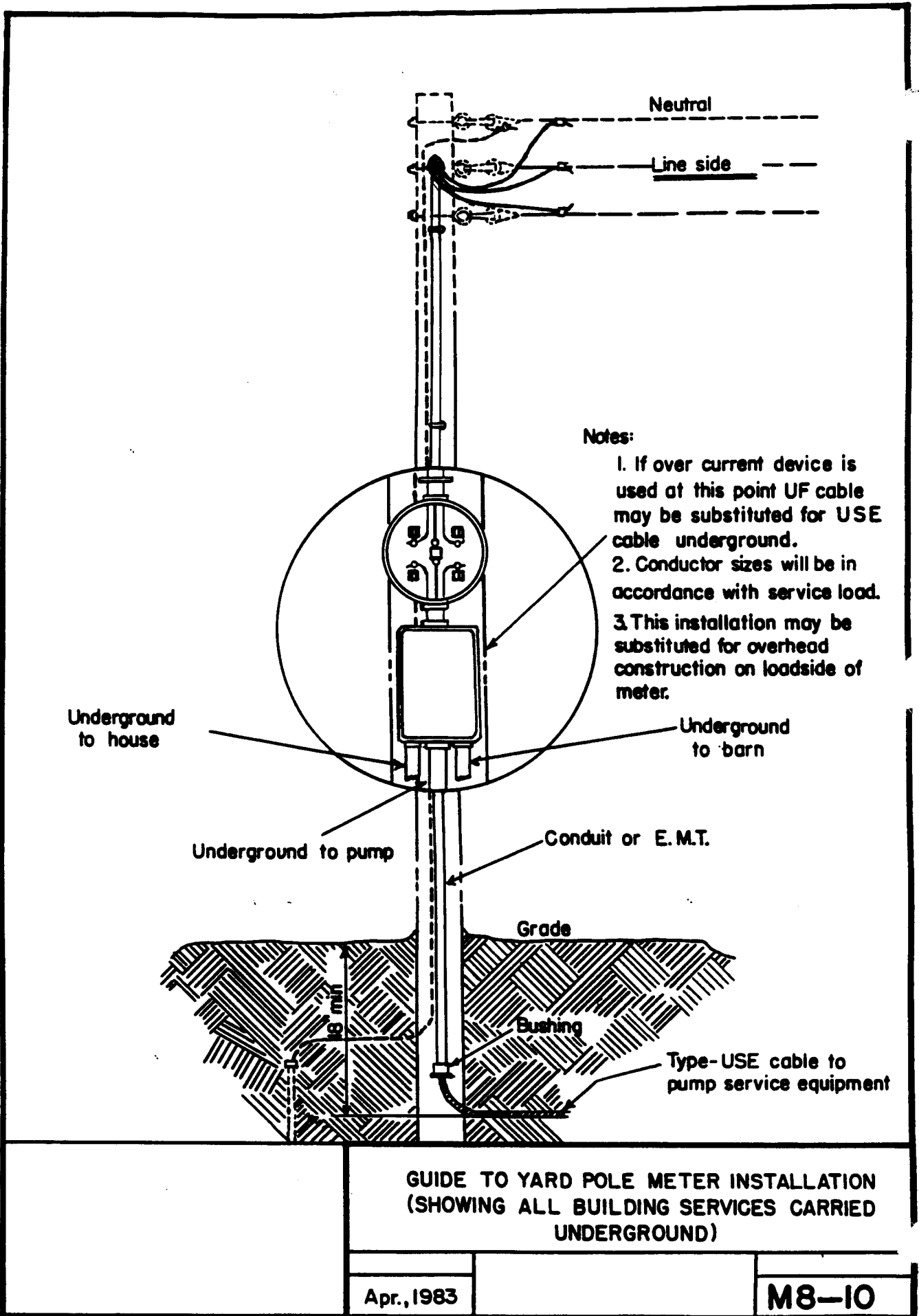
| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|-------------------------------|----------|------------------------------------|
| j 4 | Screw, lag, 1/2" x 4" | gh 1 | Meter box, meter and test block |
| p | Connectors, as required | sd 2 | Transformer, current |
| | | l | Service Head |
| gc | Conduit, 1 1/4" as required | sm | Wire, No. 12, insul. for current |
| ge 1 | Condulet, type "LB" | sn | Wire, No. 14, insul. for potential |
| gd | Straps, conduit, as required | | |
| fo 1 | Transformer secondary bracket | | |

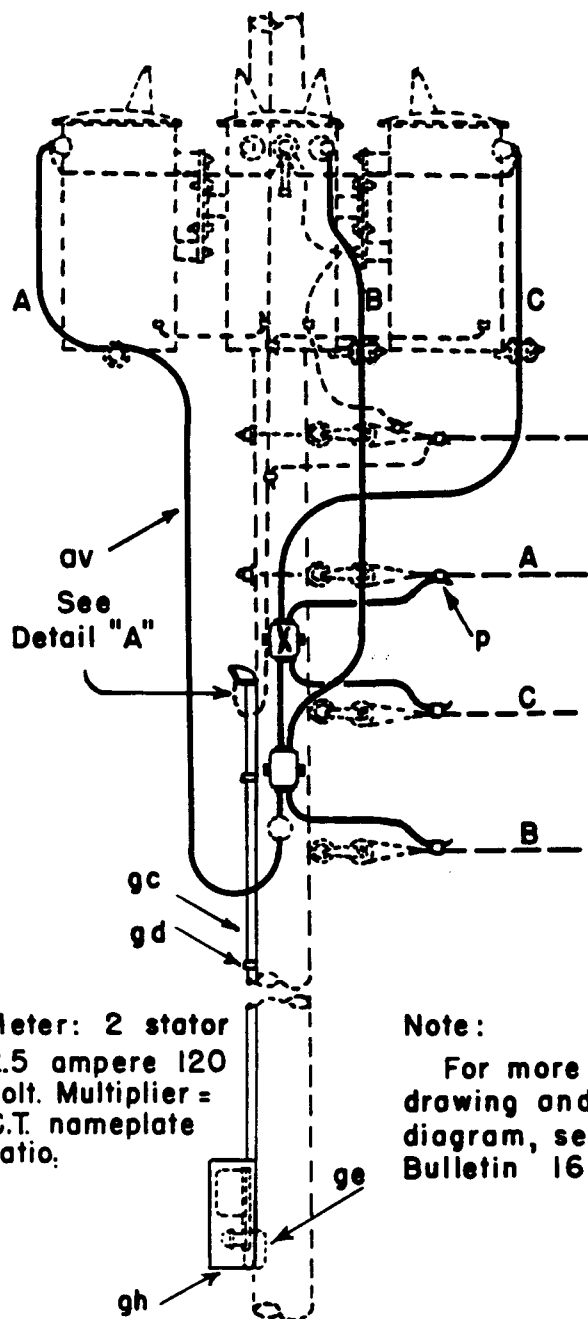
SECONDARY METERING GUIDE
THREE PHASE 120/240 VOLTS
4 WIRE DELTA

Apr., 1983

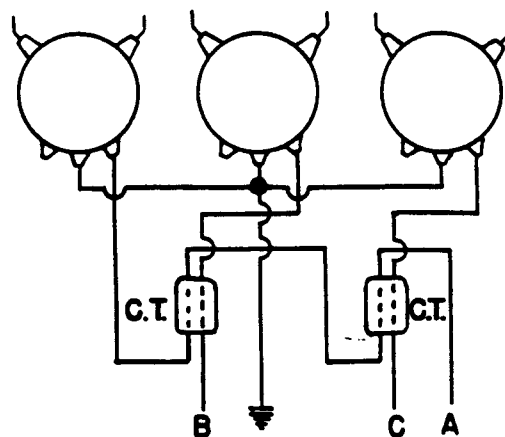
M8-6



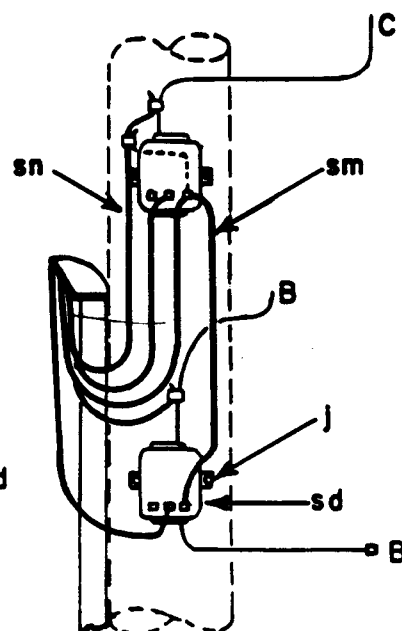




Note:
For more detailed
drawing and wiring
diagram, see REA
Bulletin 161 - 12



WIRING DIAGRAM



DETAIL "A"

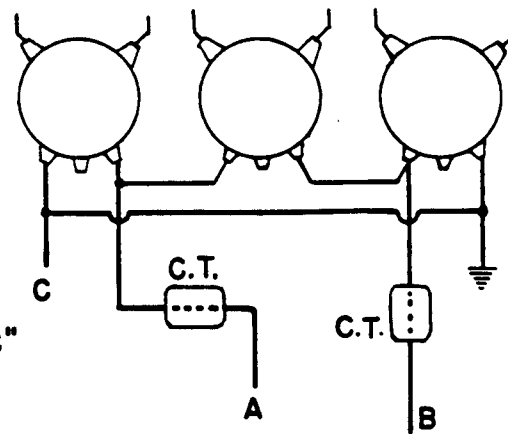
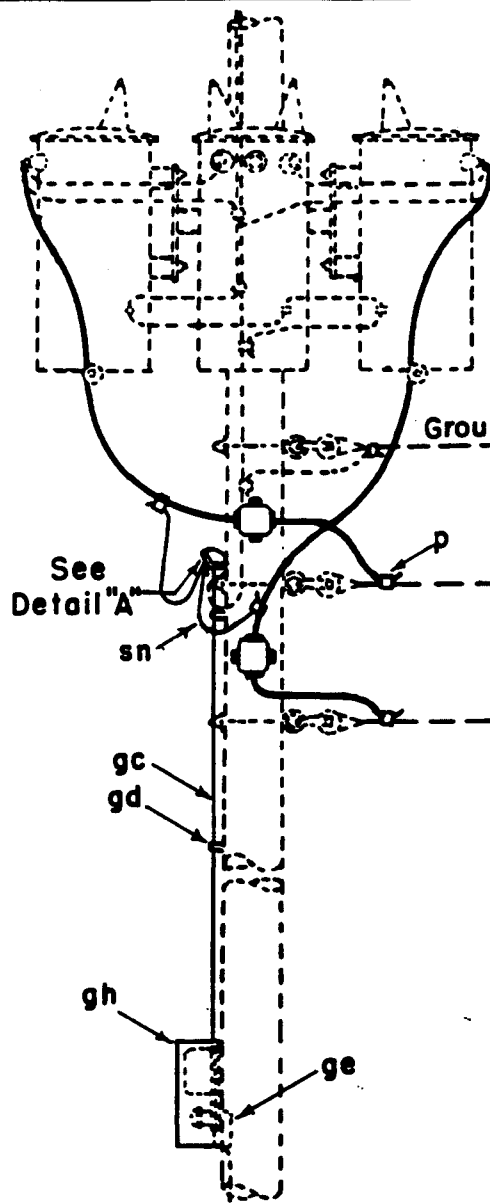
Connections from C.T.'s to Service Head

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|------------------------------|------|-----|------------------------------------|
| j | 4 | Screw, lag | gh | 1 | Meter box, meter and test block |
| p | | Connectors, as required | sd | 2 | Transformer, current |
| av | | Jumpers, insulated | sm | | Wire, No. 12, insul. for current |
| gc | | Conduit, 1 1/4", as required | sn | | Wire, No. 14, insul. for potential |
| gd | | Straps, conduit, as required | | 1 | Service Head |
| ge | 1 | Condulet, type "LB" | | | |

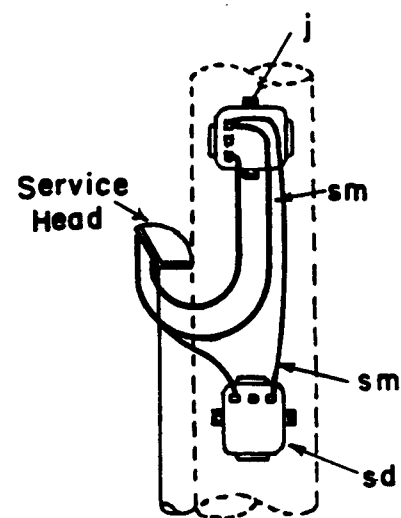
SECONDARY METERING GUIDE
THREE PHASE, 120/208 VOLTS
4 WIRE GROUNDED WYE

Apr., 1983

M8-11



Note: WIRING DIAGRAM
For more detailed wiring diagram, see
REA Bulletin 161-12



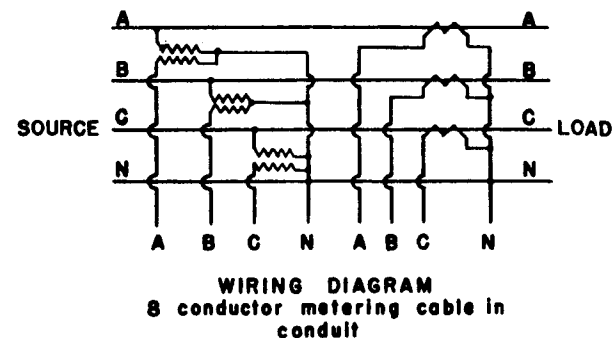
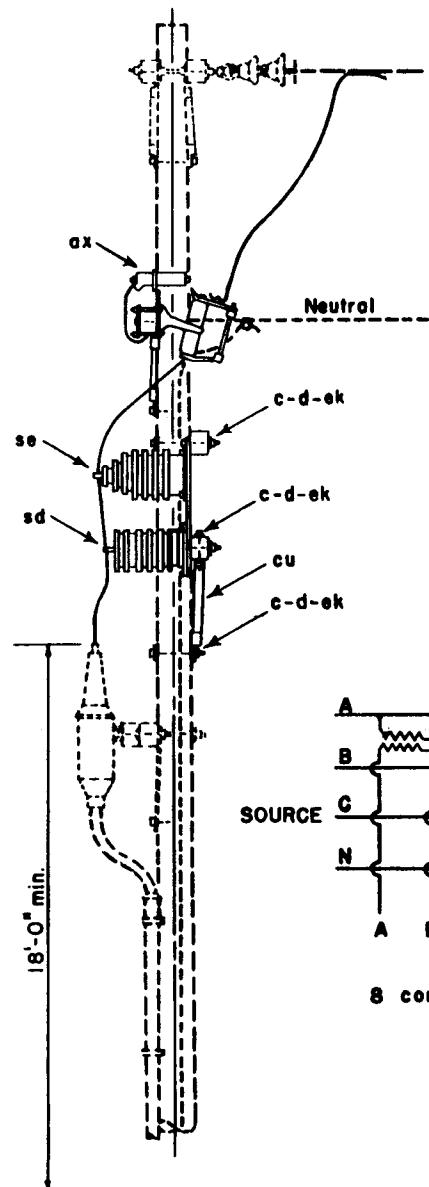
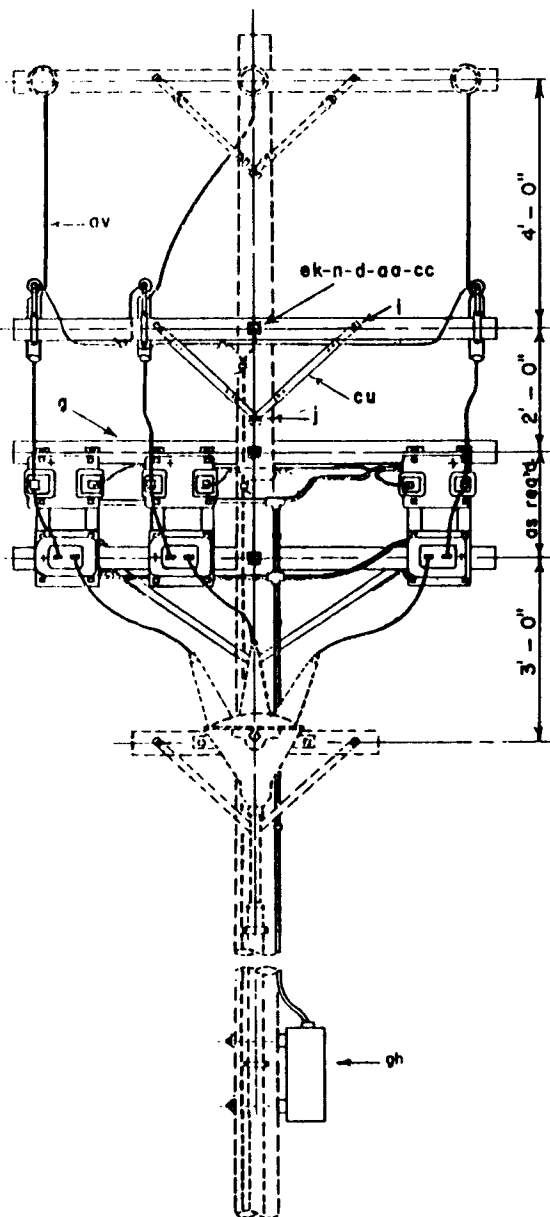
DETAIL "A"
Connections from C.T.'s to Service Head

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|---------------------------------|----------|------------------------------------|
| j 4 | Screw, lag, 1/2" x 4" | sd 2 | Transformer, current |
| p | Connectors, as required | sm | Wire, No. 12, insul. for current |
| l | Service head | sn | Wire, No. 14, insul. for potential |
| gc | Conduit, 1 1/4", as required | av | Jumper |
| gd | Straps, conduit, as required | | |
| ge l | Condulet, type "LB" | | |
| gh t | Meter box, meter and test block | | |

SECONDARY METERING GUIDE
THREE PHASE 240 VOLTS
3 WIRE CORNER GROUNDED DELTA

Apr, 1983

M8-12



| ITEM NO. | MATERIAL |
|----------|---|
| c 16 | Bolt, machine, 5/8" x req'd. length |
| c 29 | Bolt, machine, 1/2" x req'd. length |
| d 22 | Washer, 2 1/4" square |
| d 4 | Washer, round, 1 3/8" dia |
| g 3 | Crossarm, 3 5/8" x 4 5/8" x 8'-0" |
| | |
| i 2 | Bolt, carriage, 3/8" x 4 1/2" |
| j 1 | Screw, lag, 1/2" x 4" |
| n 1 | Bolt, double arming, 5/8" x req'd. length |
| p | Connectors, as required |
| aa 1 | Nut, eye, 5/8" |
| av | Jumper, primary, bare, as required |
| ax 3 | Cutout and arrester combination |
| cc 1 | Deadend assembly, neutral |
| cu 2 | Brace, wood, 28" |
| cu 1 | Brace, wood, 60" span |
| gh | Meter box, meter and test block |
| ge | Condulets, as required |
| sd 3 | Transformer, current |
| se 3 | Transformer, potential |
| ek | Locknuts, as required |
| * 6 | Mounting brackets |
| | Metering cable as required |

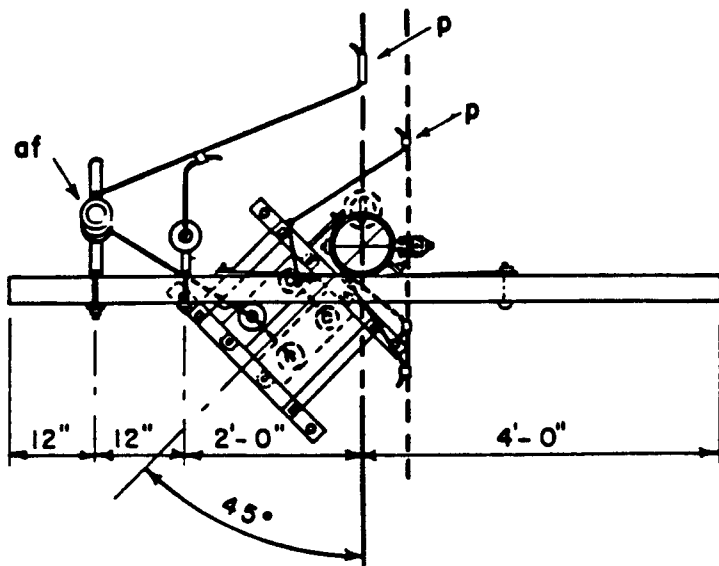
* Specify this item to be furnished by the transformer manufacturer

See drawings M42-3, M42-13, M42-21 for item cc.

12.5/7.2 kV PRIMARY METERING GUIDE
THREE PHASE 4-WIRE WYE

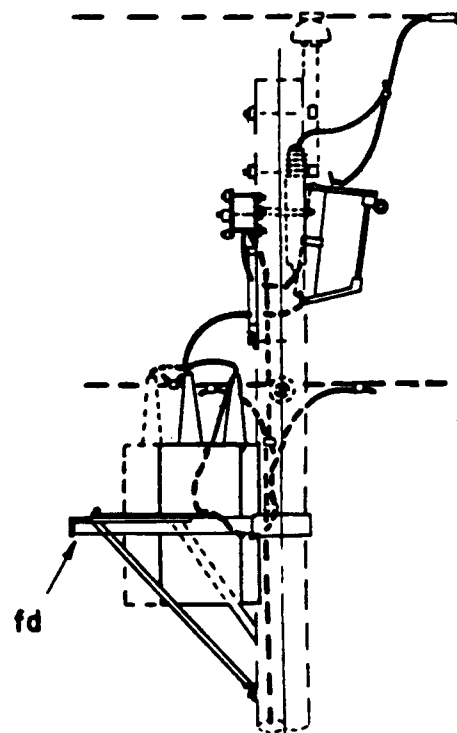
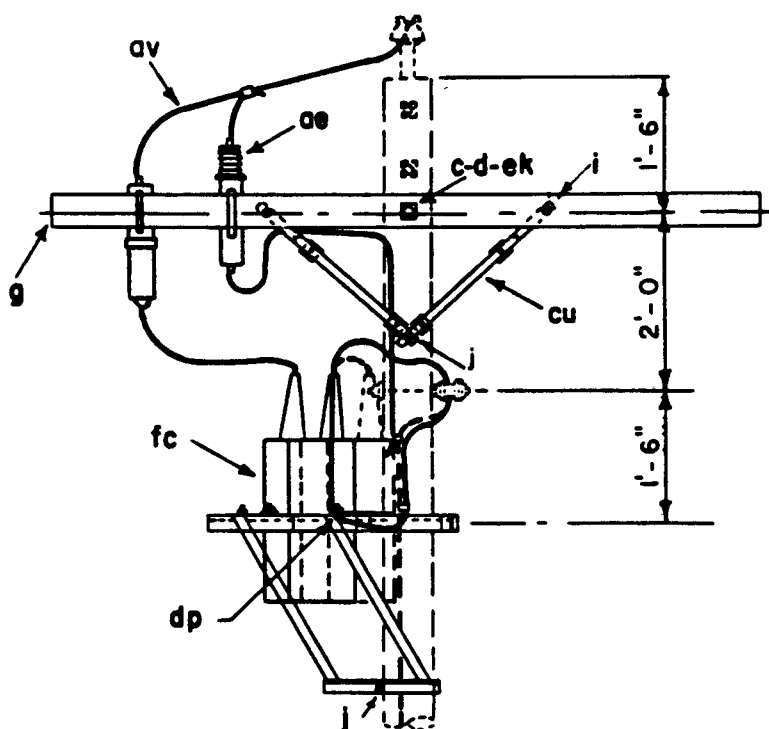
Apr., 1983

M8-15

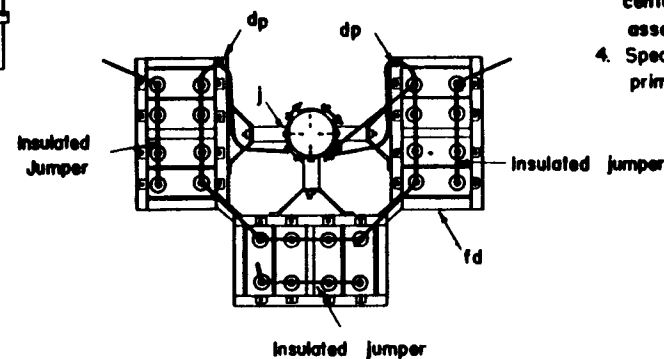
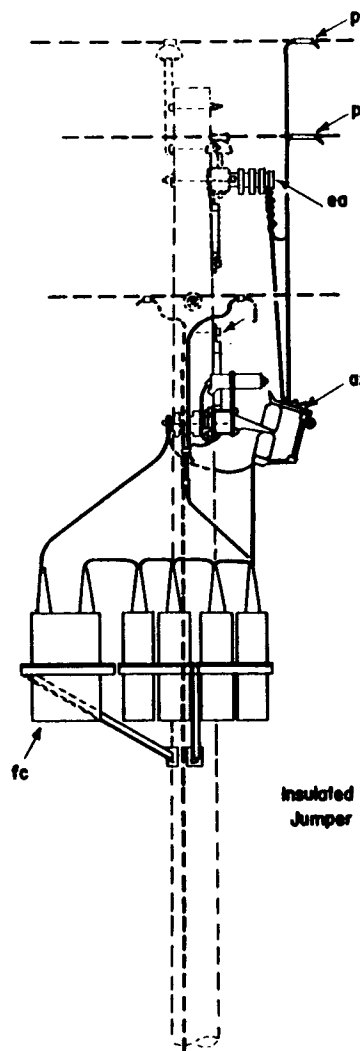
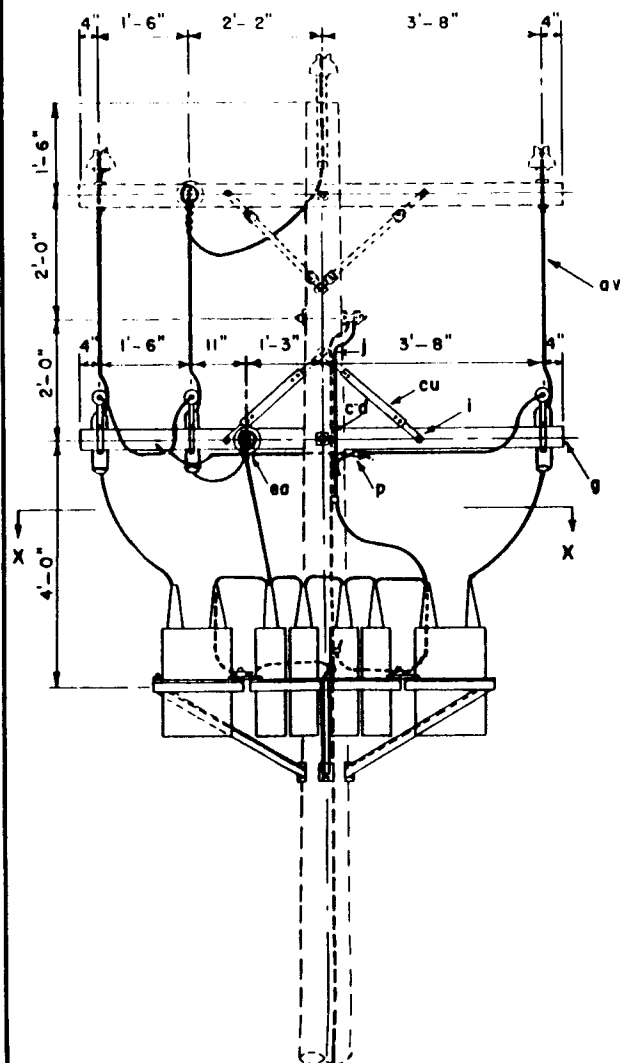


NOTES:

1. Specify number and kVAr required.
2. Load Break cutouts for installations over 75 kVAr.
3. Specify insulating caps for primary terminal bushings.



| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|-----------|-----|--|---------------------------------|-----|--------------------------------|
| c | 1 | Bolt, machine, 5/8" x req'd. length | p | 1 | Connector, compression type |
| d | 2 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole | p | | Connectors, as required |
| g | 1 | Crossarm, 3 1/2" x 4 1/2" x 8'-0" | oe | 1 | Surge arrester |
| cu | 2 | Brace, wood, 2x8" | af | 1 | Cutout, fuse |
| i | 2 | Bolt, carriage, 3/8" x 4 1/2" | av | | Jumpers or Leads as required |
| j | 1 | Screw, lag, 1/2" x 4" | dp | 1 | Clamp, ground wire |
| fc | | Capacitor, _____ kVA each | fd | 1 | Capacitor Hanger, pole mounted |
| ek | | Locknuts | | | |
| | | | 12.5/7.2 kV | | |
| | | | SINGLE PHASE CAPACITOR ASSEMBLY | | |
| | | | | | |
| Apr, 1983 | | | M9-11 | | |



SECTION X-X

SUGGESTED FUSING TABLE

| kVAR Connected to each Cutout | 25 | 50 | 75 | 100 | 150 |
|-------------------------------|----|----|----|-----|-----|
| Fuse Size (Amp.) | 7 | 15 | 25 | 25 | 40 |

Note: Care must be taken to coordinate fuse with sectionalizing plan.

| ITEM | NO. | MATERIAL |
|------|-----|--|
| c | 1 | Bolt, machine, 5/8" x req'd. length |
| d | 2 | Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole |
| g | 1 | Crossarm, 3/8" x 4 5/8" x 8'-0" |
| l | 2 | Bolt, carriage, 3/8" x 4 1/2" |
| j | 4 | Screw, lag, 1/2" x 4" |
| p | 3 | Connector, compression type |
| p | | Connector, as required |
| av | | Jumpers, stranded, as required |
| ax | 3 | Cutout and arrester combination |
| cu | 2 | Brace, wood, 2x8" |
| dp | 2 | Clamp, ground wire |
| ea | 2 | Insulator, post type, with 7" stud |
| fc | | Capacitor, kVAR each |
| fd | 1 | Hanger, cluster type |
| ek | | Locknuts, as required |

Notes:

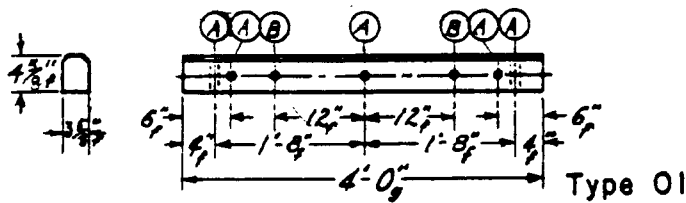
1. Specify number and kVAR required.
- * 2. Load Break cutouts for installations over 75 kVAR /phase.
3. For V-Phase installations omit capacitors and related items on center phase. Designate as assembly M9-2.
4. Specify insulating caps for primary terminal bushings.

12.5/7.2 kV

TWO OR THREE PHASE CAPACITOR ASSEMBLY

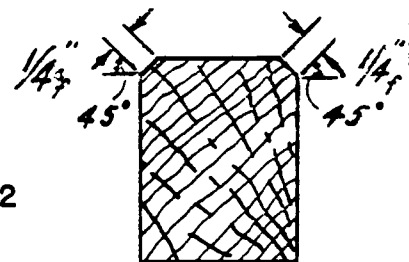
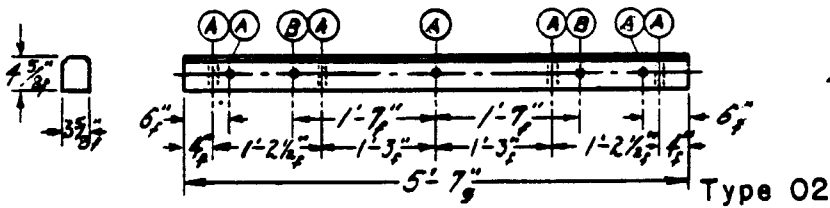
Apr, 1983

M9-12, M9-13

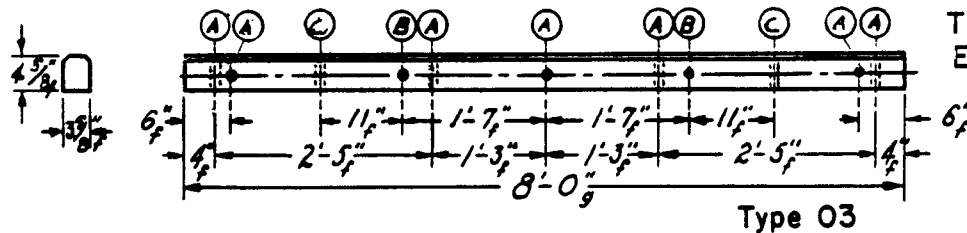


TOLERANCES SIZES OF HOLES

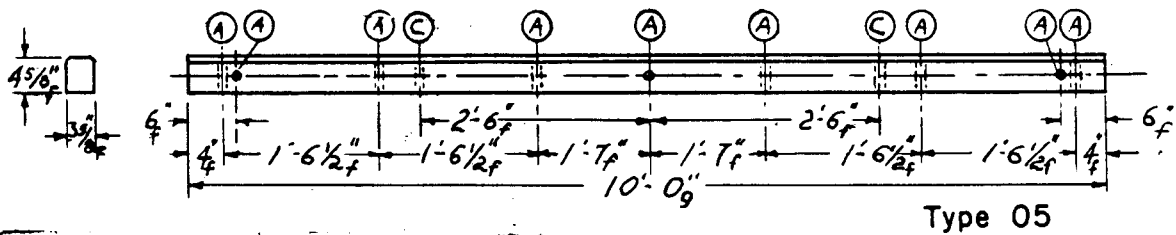
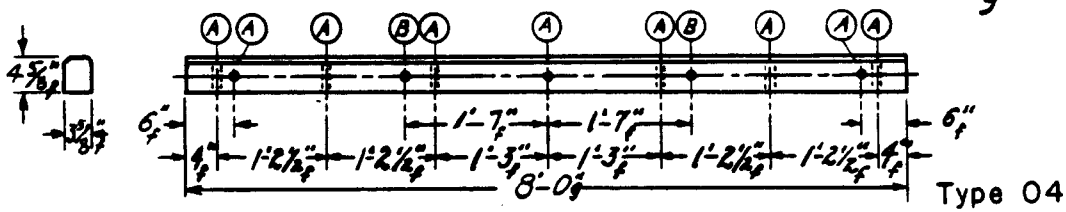
| | Nominal | Go | No Go |
|-----|---------|------|-------|
| (A) | 1/16" | 3/8" | 3/4" |
| (B) | 3/16" | 3/8" | 1/2" |
| (C) | 9/16" | 1/2" | 5/8" |



TYPICAL
ENLARGED
SECTION



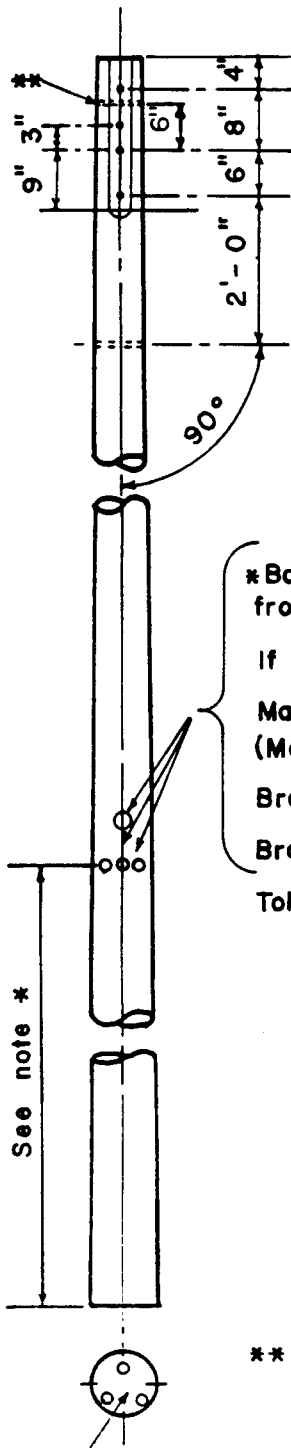
f --- ± 1/8"
g --- ± 1/4"



CROSSARM DRILLING GUIDE

Apr., 1983

M19



Through-bolt holes must be parallel and in the same plane.

HOLES: Drill 11/16" diameter.

GAINS: Gains are to be flat with plane at right angles to bolt hole.

Neutral bolt hole must be at 90° angle with through-bolt holes.

All poles shorter than 50 feet must be bored, rooved and gained before treatment, except that Class 7 and smaller poles need not be gained unless requested by purchaser. Roofs may be flat or at a 15° angle at the producer's option.

*Bottom of brand or center of metal disk shall be 10'±1" from pole butt; 14'±1" mark for poles 55' and longer.

If insured warranted pole, Brand "IW".

Manufacturer's Mark and Date of Treatment, (Month and Year).

Brand with proper length and class.

Brand with species, preservative code and retention.

Tolerance:

Holes

On the gain ± 1/8" from the centerlines of the holes.

On the side opposite the gain ± 1/4" from the centerlines of the holes.

Location - measured from roof

Gain side ± 1/4"

Opposite side ± 1/2"

Diameter ± 1/16"

Gains out of parallel ± 1/2"

** Optional, anti-split bolt hole to be drilled only when so specified by the purchaser.

Brand butt with proper length and class

POLE FRAMING GUIDE

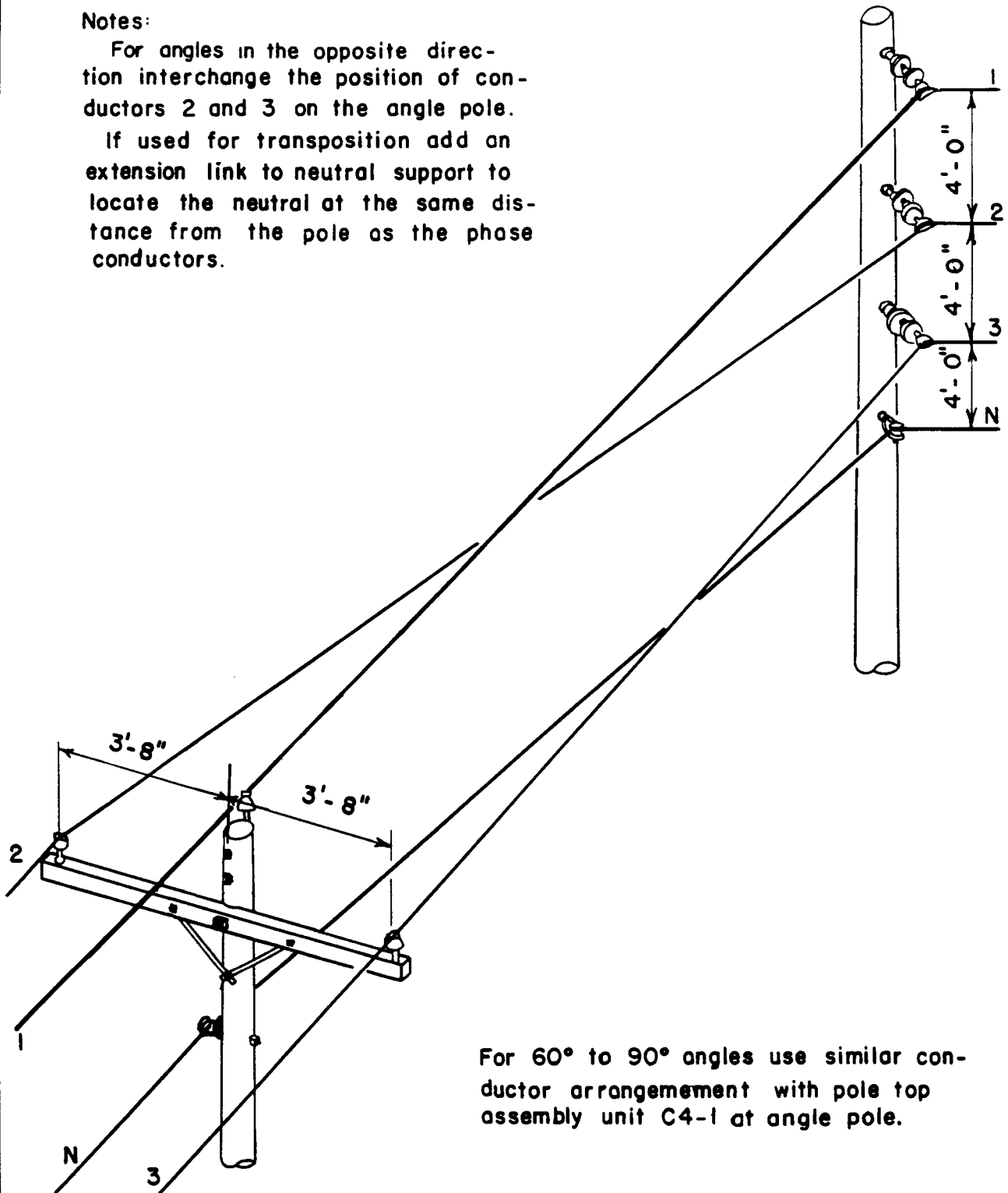
Apr., 1983

M20

Notes:

For angles in the opposite direction interchange the position of conductors 2 and 3 on the angle pole.

If used for transposition add an extension link to neutral support to locate the neutral at the same distance from the pole as the phase conductors.

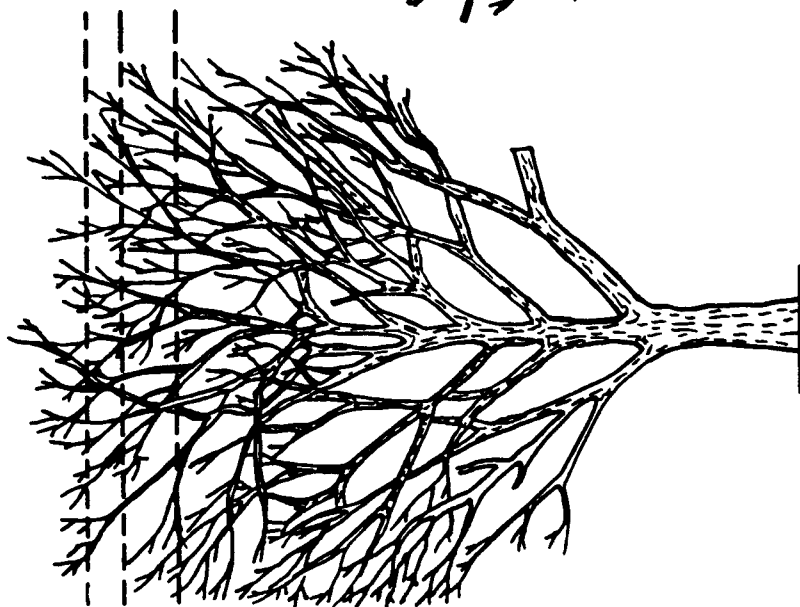


For 60° to 90° angles use similar conductor arrangement with pole top assembly unit C4-1 at angle pole.

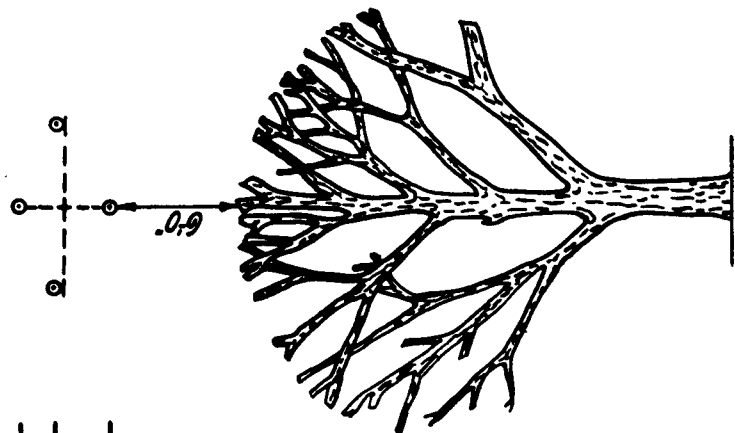
**ANGLE CONSTRUCTION GUIDE
CROSSARM TO VERTICAL CONST.- 30° TO 60° ANGLE**

Apr., 1983

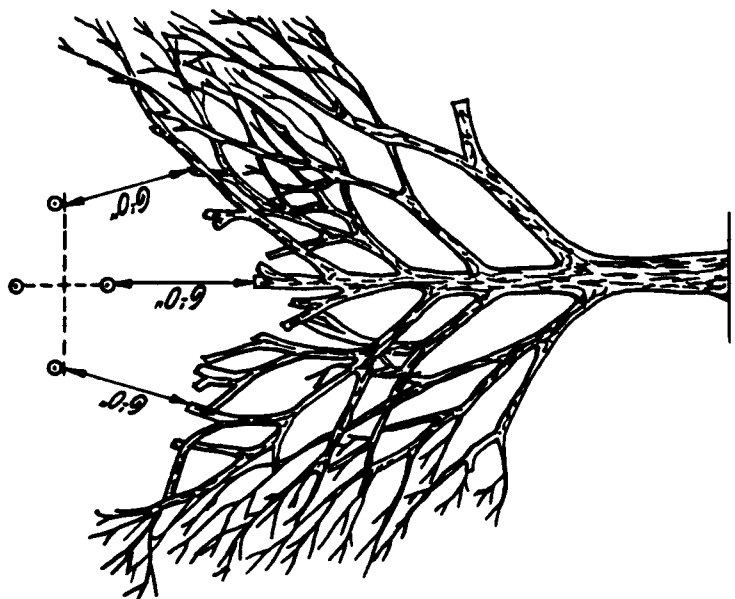
M21



Before Trimming



Right Way



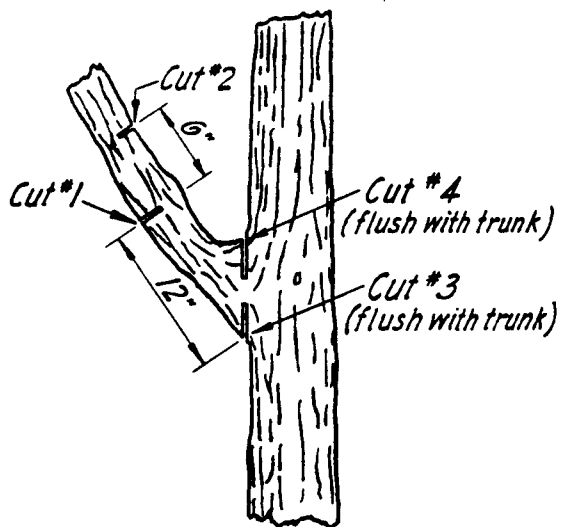
Wrong Way

Note: No parts of tree should be closer than 6'-0" from open wiring.
Trimming should leave tree with symmetrical appearance.

TREE TRIMMING GUIDE

Apr, 1983

M22-1



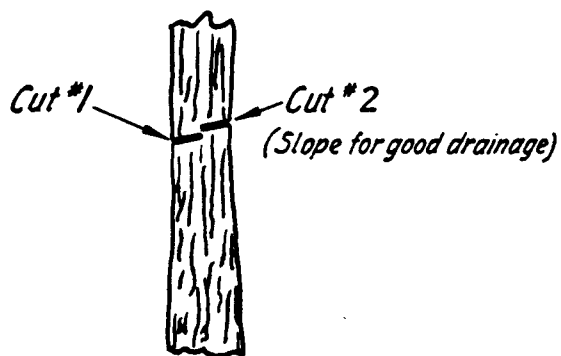
Right Way



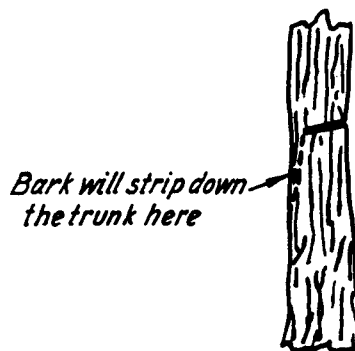
Wrong Way

*For small branches
omit Cuts #1 and #2*

REMOVAL OF HEAVY SIDE LIMB



Right Way



Wrong Way

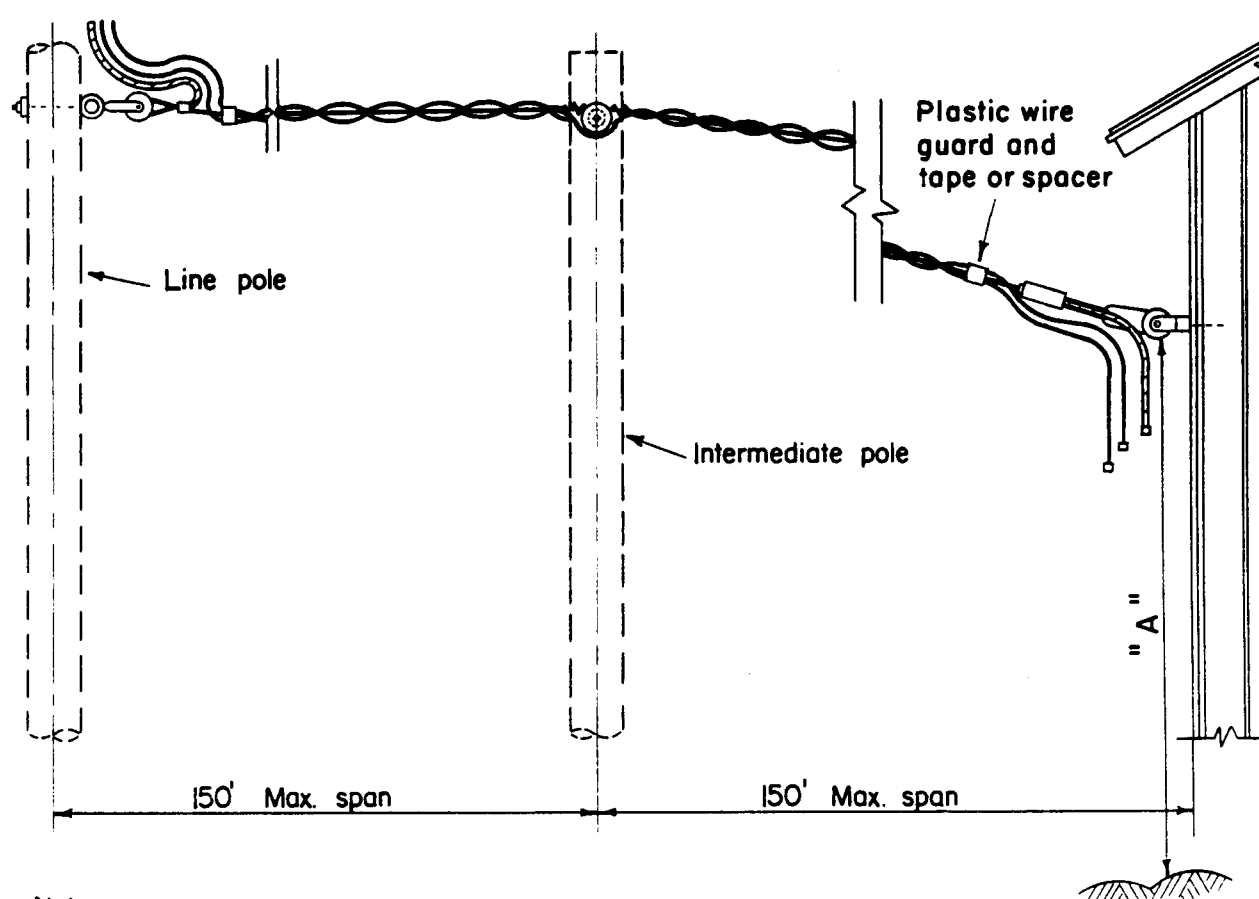
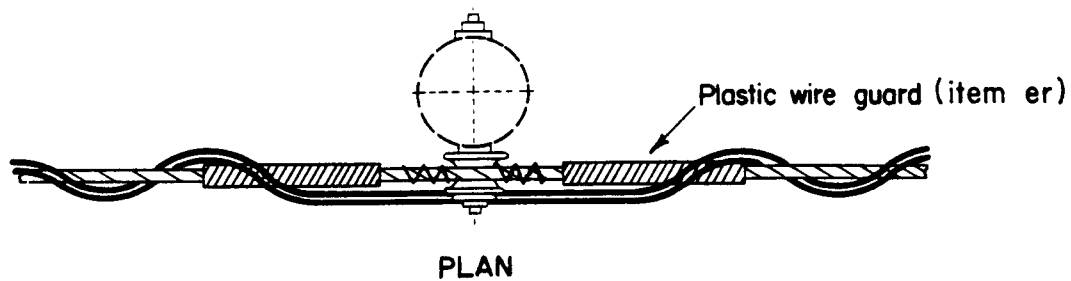
REMOVAL OF VERTICAL LIMB

NOTE: Coat final cut with tree paint.

TREE TRIMMING GUIDE

Apr., 1983

M22-2



Notes:

1. Services as short as possible are preferred.
2. Refer to secondary and service assemblies for construction details.
3. Service connectors to be insulated compression type.

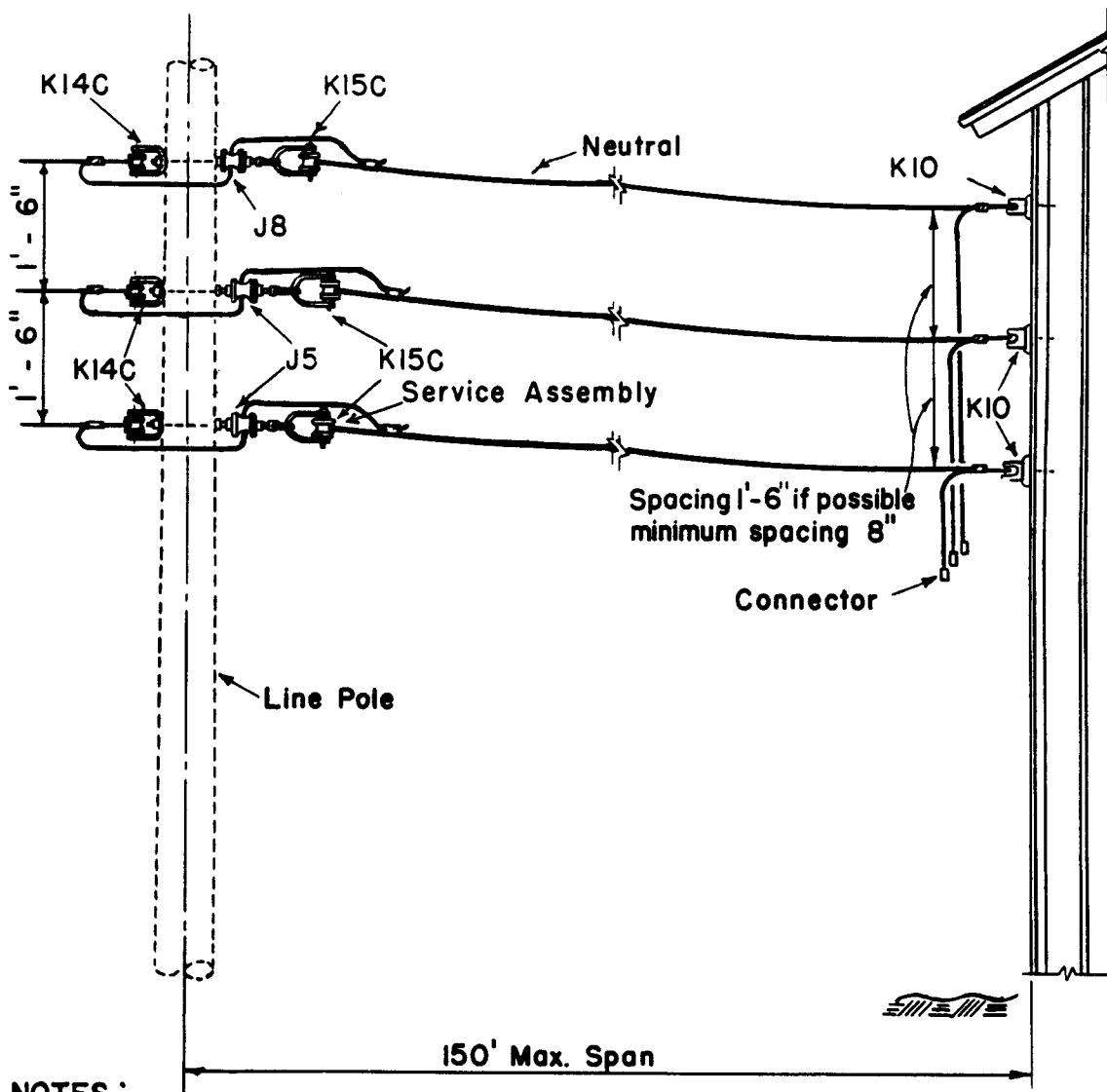
Clearance "A" minimum

| | |
|--|-----|
| To bottom of drip loop | 10' |
| To service assembly and service drop conductor in span | 12' |

CABLE SERVICE ASSEMBLY GUIDE

Apr., 1983

M24



NOTES:

Service connectors to be insulated compression type.

Clearance from final grade to bottom of drip loop, to service assembly, and to service drop conductor in span shall be 12' minimum.

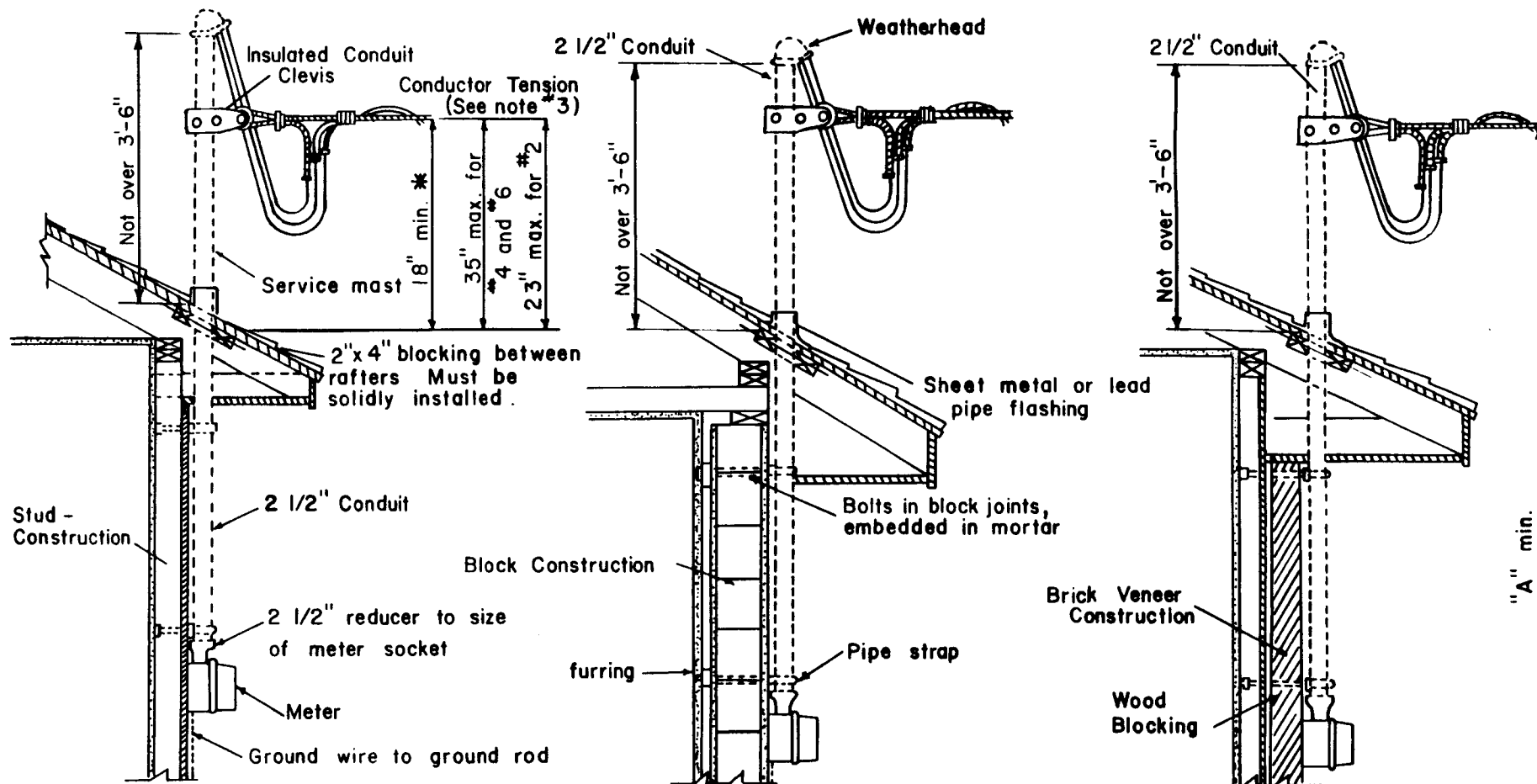
Insulation on covered conductor that is under strain should not be cut.

In brick or concrete walls use 3/8" expansion bolts or shields in 5/8" holes at least 2 1/2" deep, or wedge expanded eyebolts.

**OPEN WIRE
SECONDARY OR SERVICE ASSEMBLY GUIDE**

Apr., 1983

M24-1



| Clearance "A" | Minimum |
|--|---------|
| To bottom of drip loop | 10' |
| To service assembly and service drop conductor in span | 12' |

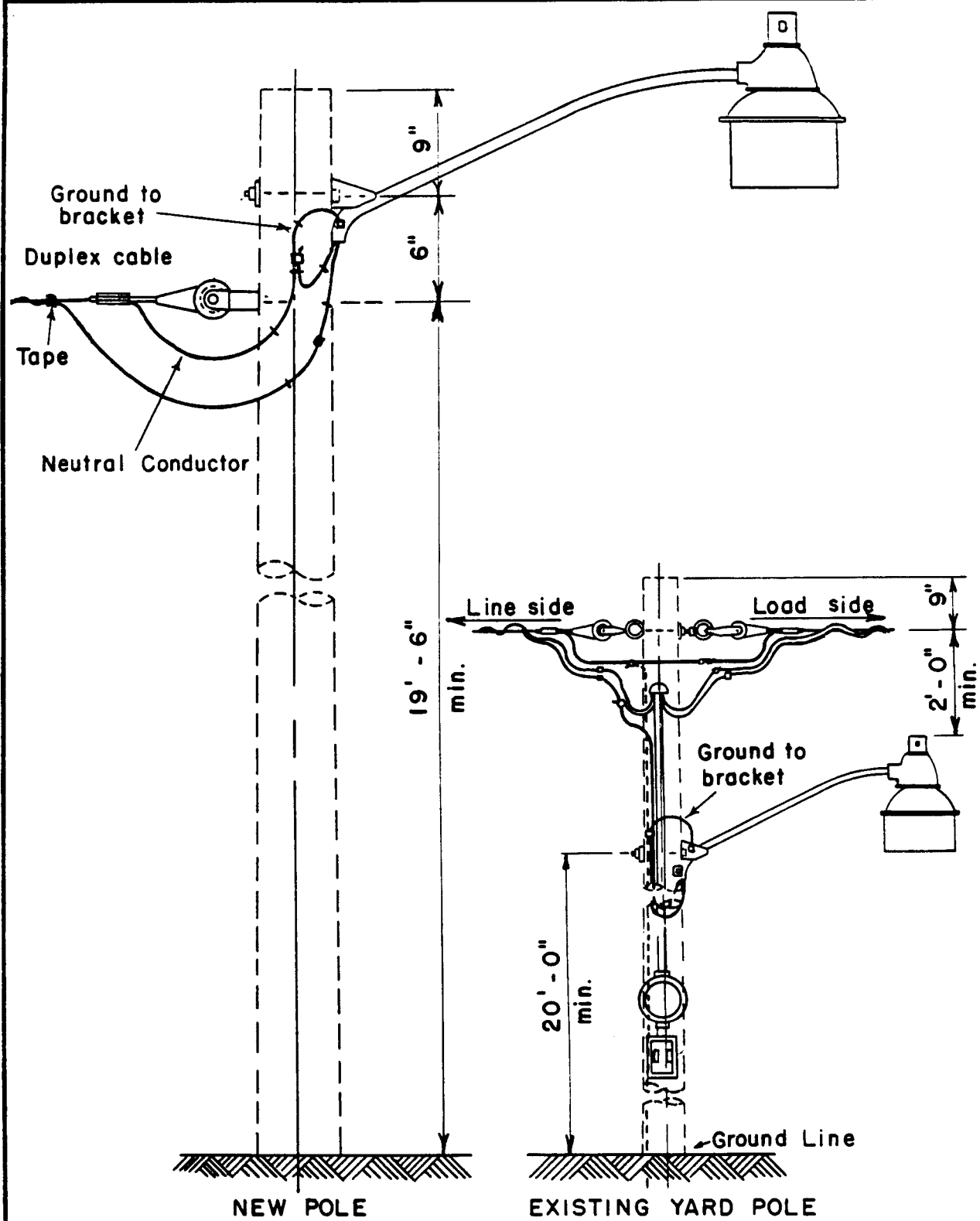
Notes :

1. If length of conduit exceeds ten feet, coupling will be permitted on end adjacent to meter.
2. Meter to be located 5'-6" from ground level.
3. Maximum tension of conductor not to exceed 50% of ultimate strength.
4. For service assemblies see drawings K16C, K17, K17L.
5. Service connectors to be insulated compression type.

**ASSEMBLY GUIDE OF SERVICE MAST
FOR RANCH TYPE HOUSE**

Apr., 1983

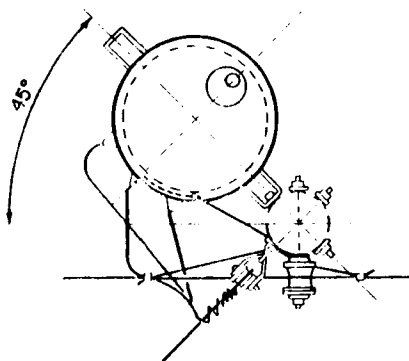
M24-10



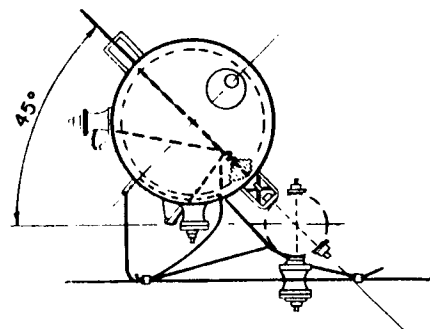
SECURITY LIGHT INSTALLATION GUIDE (UNMETERED)

Apr., 1983

M26-5

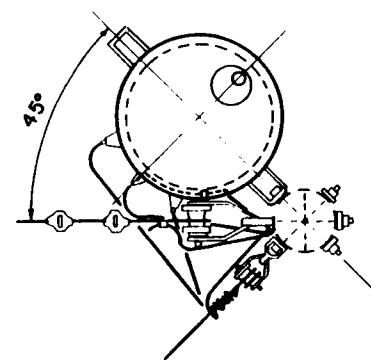


PLAN

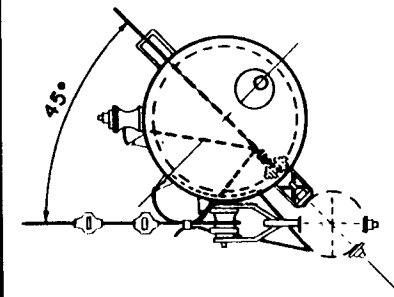


PLAN

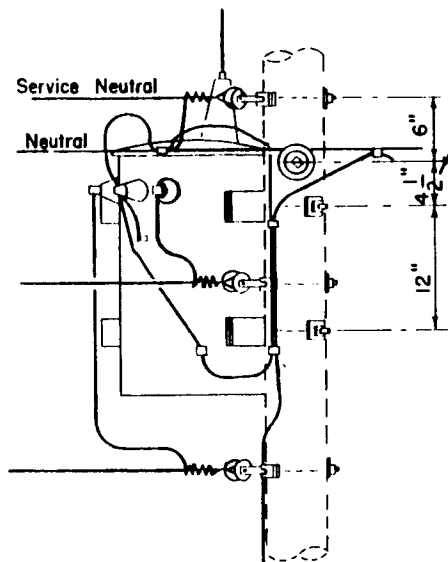
For multiphase primary line construction with the crossarm in the revised lower position, change this dimension to 12 inches.



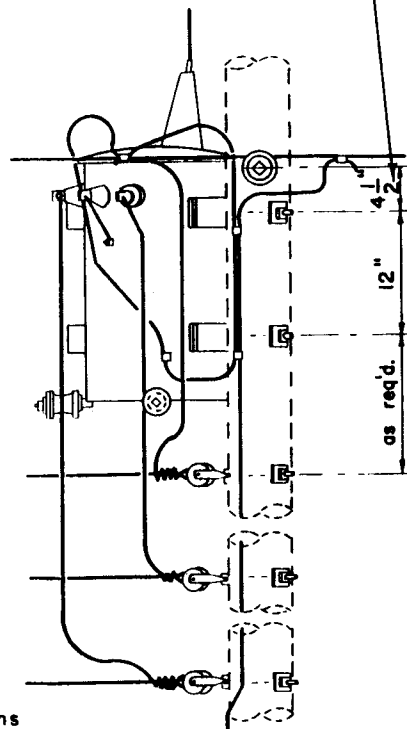
PLAN



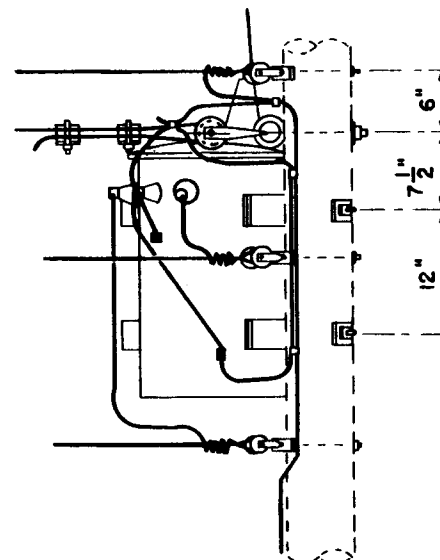
PLAN



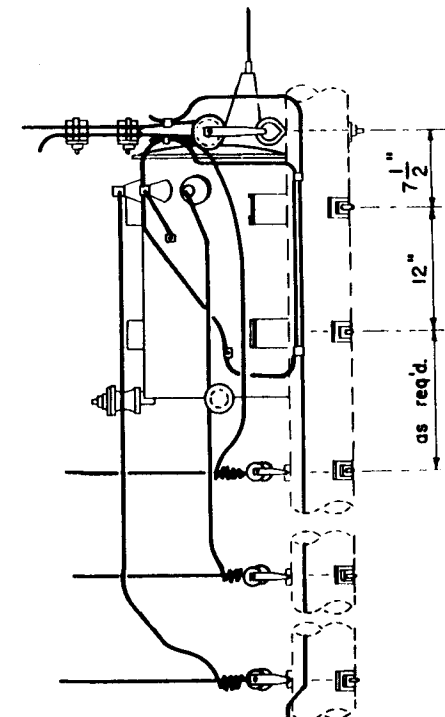
PRIMARY TANGENT
SERVICE TAKE-OFF AT
TRANSFORMER LEVEL



PRIMARY TANGENT
SERVICE TAKE-OFF BELOW
TRANSFORMER



PRIMARY DEADEND
SERVICE TAKE-OFF AT
TRANSFORMER LEVEL



PRIMARY DEADEND
SERVICE TAKE-OFF BELOW TRANSFORMER

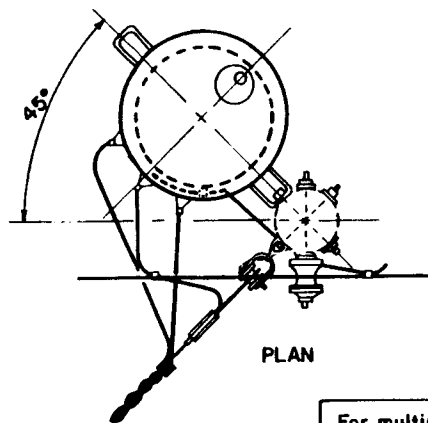
Note:

Transformers may be mounted in alternate positions and quadrants as practical in order to facilitate services in directions not shown.

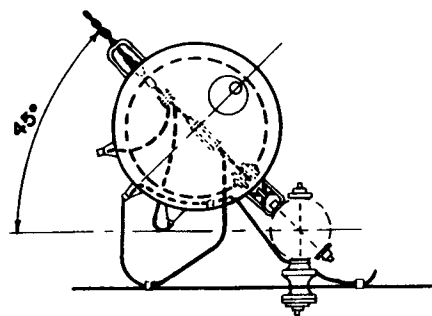
TRANSFORMER CONNECTION GUIDE
OPEN WIRE SERVICES

Apr, 1983

M27

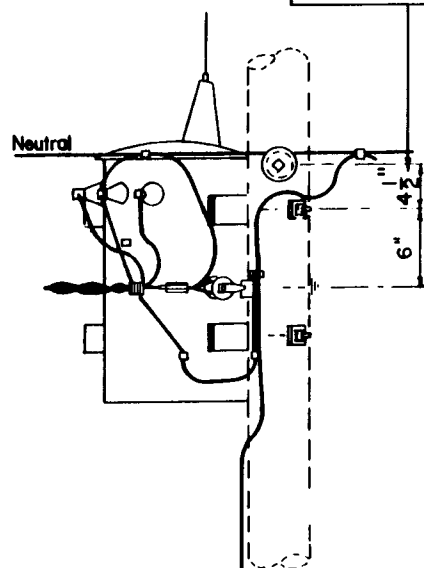


PLAN

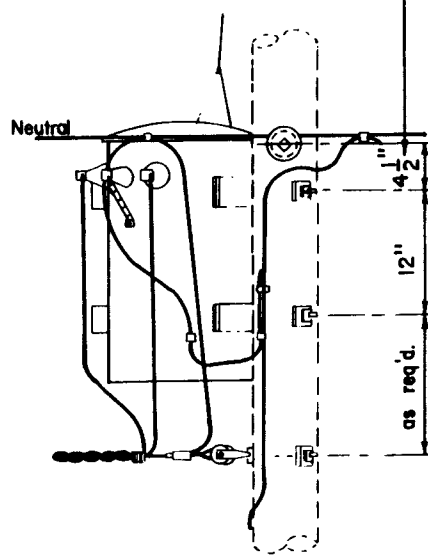


PLAN

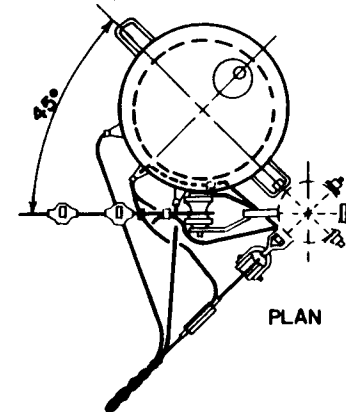
For multiphase primary line construction with the crossarm in the revised lower position, increase this dimension to 12"



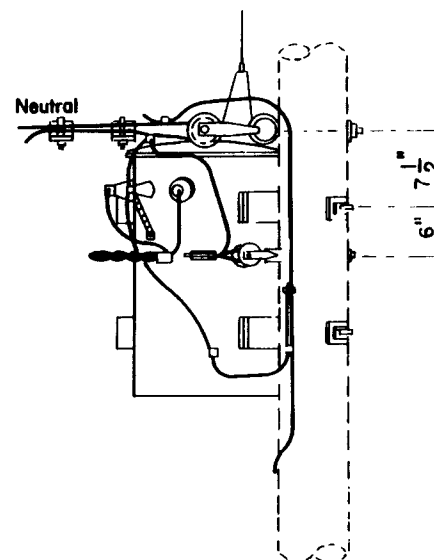
PRIMARY TANGENT
SERVICE TAKE-OFF AT
TRANSFORMER.



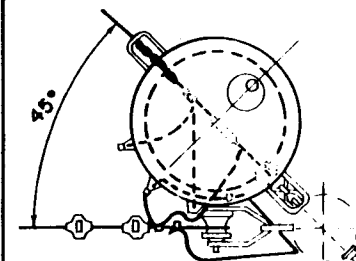
PRIMARY TANGENT
SERVICE TAKE-OFF
BELOW TRANSFORMER.



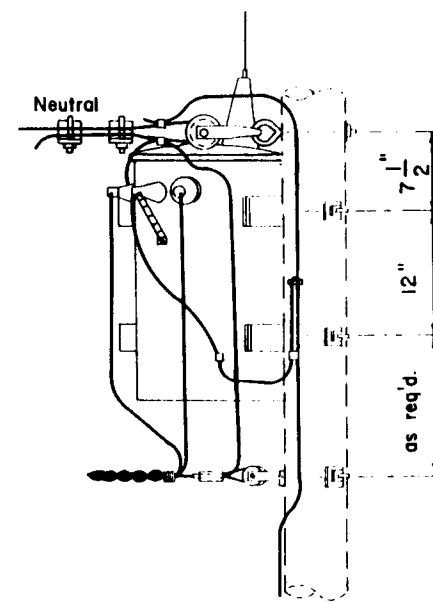
PLAN



PRIMARY DEADEND
SERVICE TAKE-OFF AT
TRANSFORMER.



PLAN



PRIMARY DEADEND
SERVICE TAKE-OFF BELOW
TRANSFORMER.

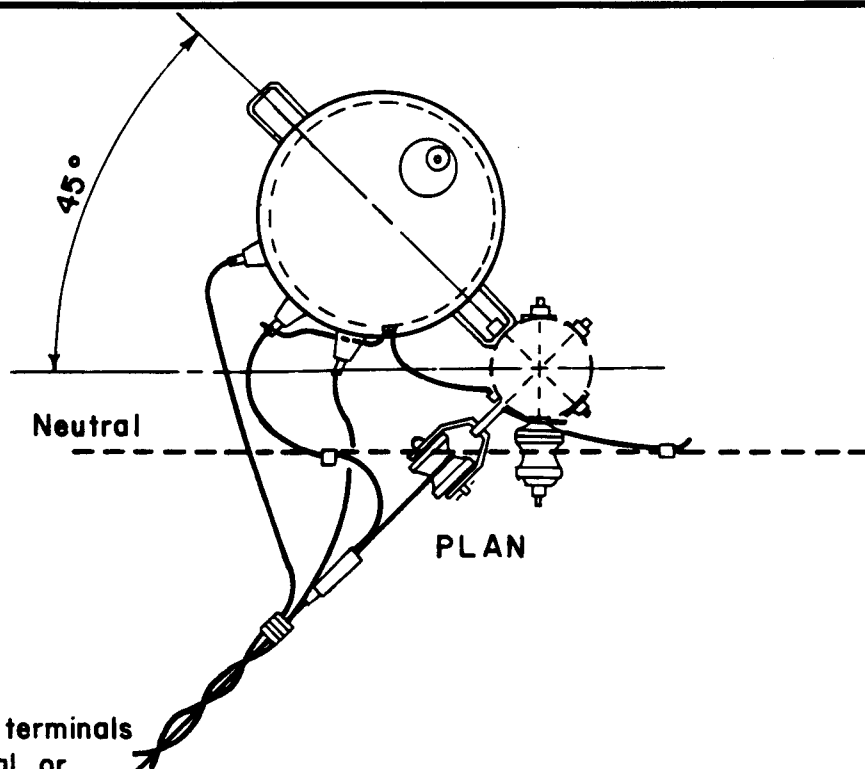
NOTES:

1. Secondary bushing not to be used for bi-metal connection.
2. Transformers may be mounted in alternative positions and quadrants as practical in order to facilitate services in directions not shown.
3. For more detail see Guide Drawing M27-1A.

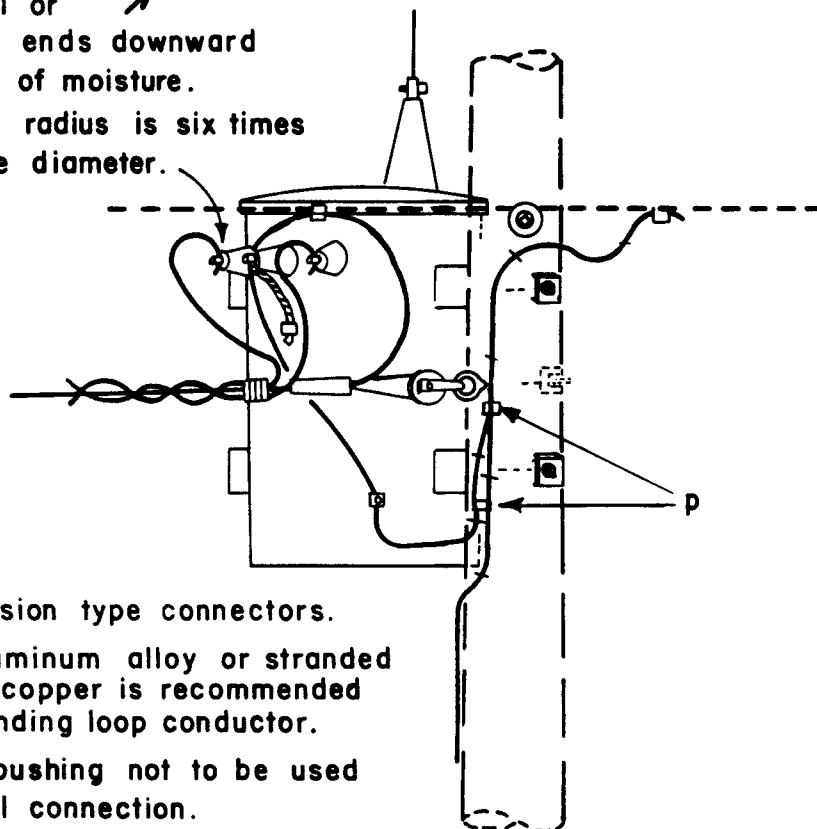
TRANSFORMER CONNECTION GUIDE
TRIPLEX CABLE SERVICES

Apr., 1983

M27-1



Cover secondary terminals with moisture seal or dress conductor ends downward to prevent entry of moisture. Minimum bending radius is six times the overall cable diameter.



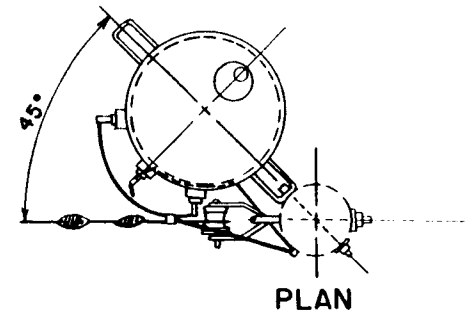
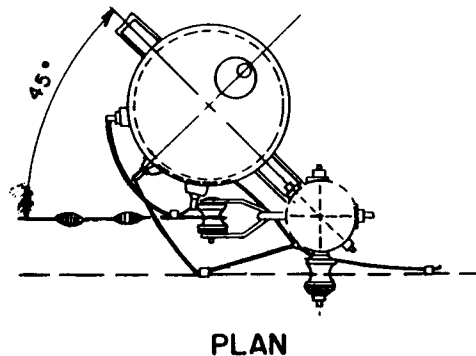
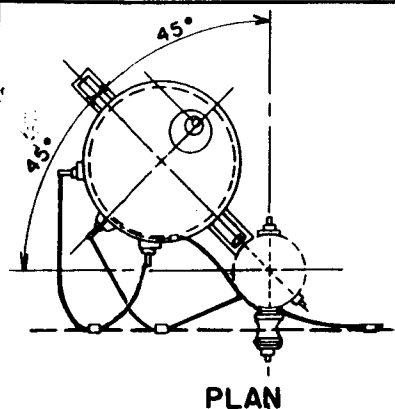
NOTES:

1. Use compression type connectors.
2. Stranded aluminum alloy or stranded soft-drawn copper is recommended for the grounding loop conductor.
3. Secondary bushing not to be used for bi-metal connection.

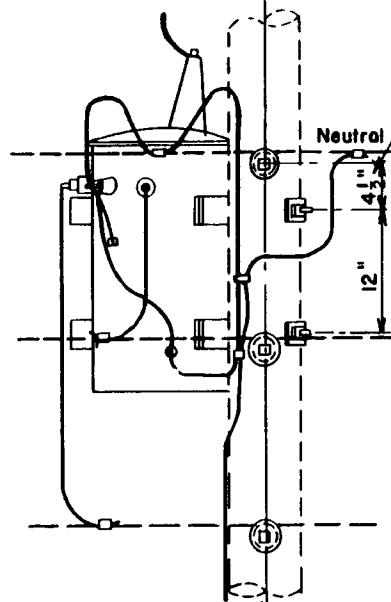
DETAIL OF ALTERNATIVE TRANSFORMER
CONNECTION
(PRIMARY TANGENT, SERVICE TAKE-OFF AT
TRANSFORMER)

Apr., 1983

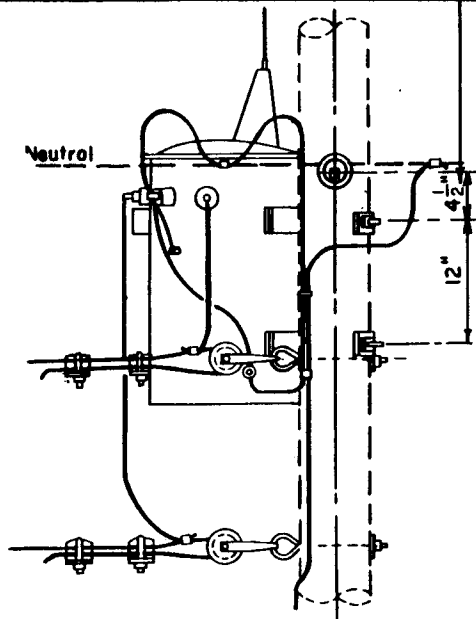
M27-1A



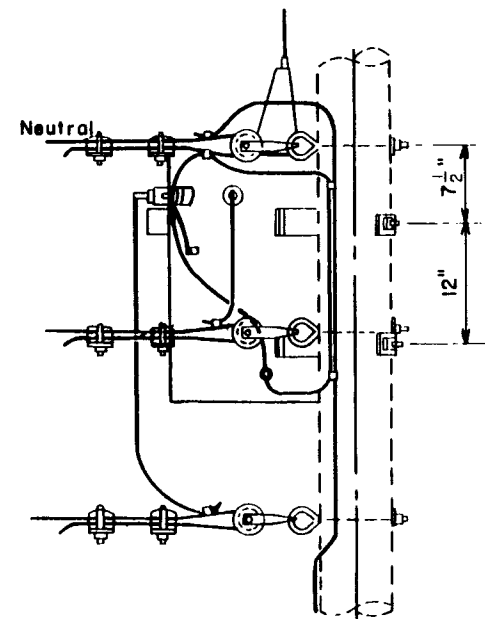
For multiphase primary line construction with the crossarm in the revised lower position, increase this dimension to 12 inches.



PRIMARY TANGENT
SECONDARY TANGENT



PRIMARY TANGENT
SECONDARY DEADEND

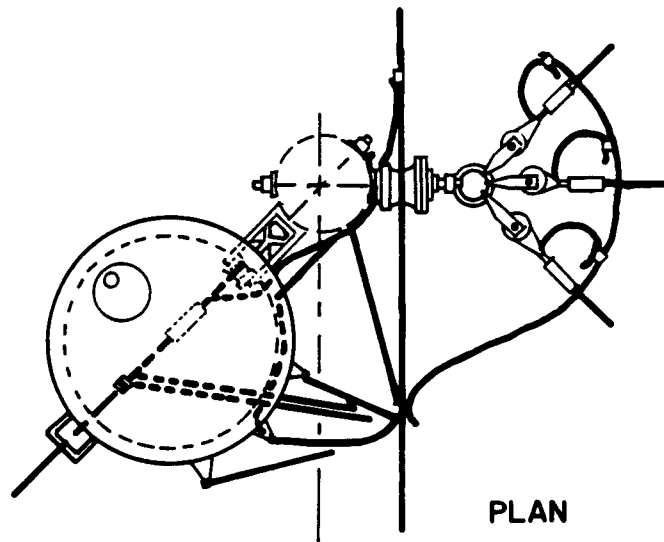


PRIMARY DEADEND
SECONDARY DEADEND

TRANSFORMER CONNECTION GUIDE
SECONDARY UNDERBUILD

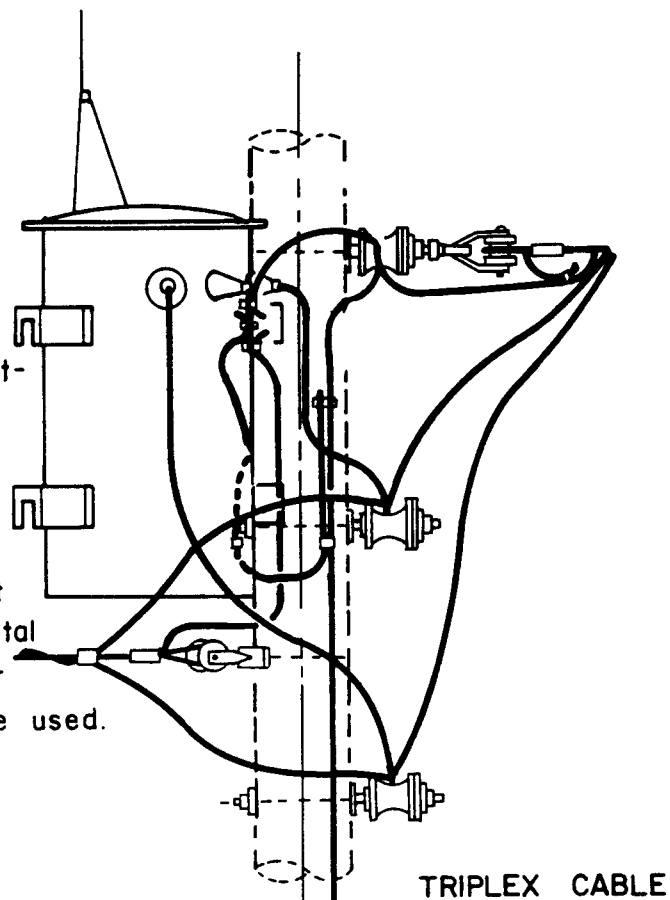
Apr., 1983

M27-2



NOTES:

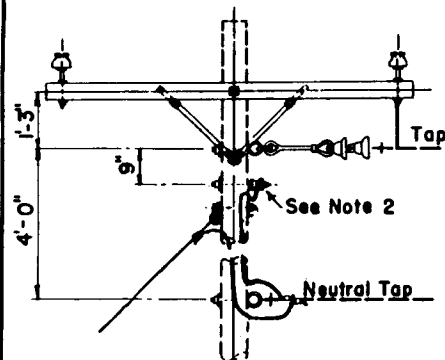
1. Use compression type connectors.
2. Stranded aluminum alloy or stranded soft-drawn copper is recommended for the grounding loop conductor.
3. Secondary bushing not to be used for bi-metal connection. Spades or copper studs may be used.



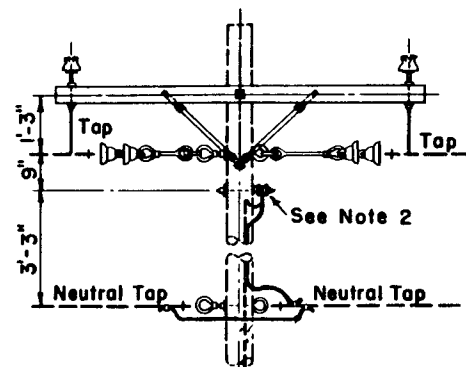
**TRANSFORMER CONNECTION AND SERVICE
TAKE-OFF GUIDE FROM SECONDARY**

Apr., 1983

M28



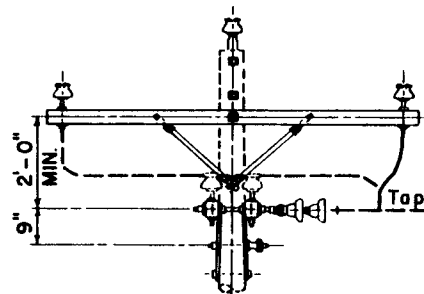
COMPLETE ASSEMBLY
A5-2 AND B1



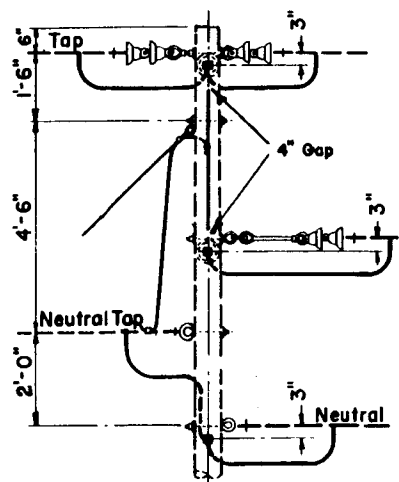
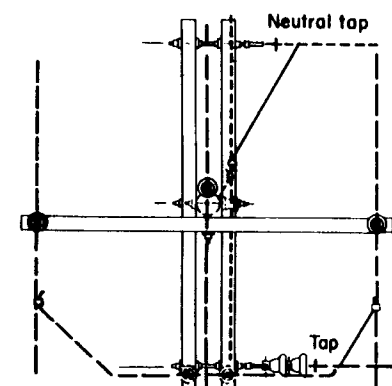
COMPLETE ASSEMBLY
A5-2, A5-2A and B1

Notes:

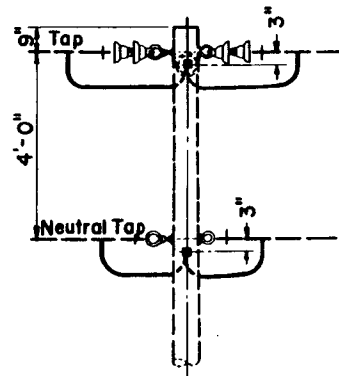
1. Maintain 2" minimum spacing between ground wire and hardware associated with energized conductors.
2. Where ground clearance permits mount all neutrals at lower level.



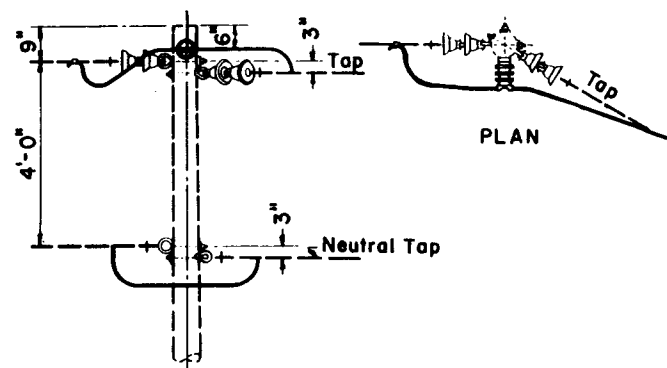
COMPLETE ASSEMBLY
C1, A7 and M5-5



COMPLETE ASSEMBLY
A5-3 AND B4-1



COMPLETE ASSEMBLY
A5-3 AND A4

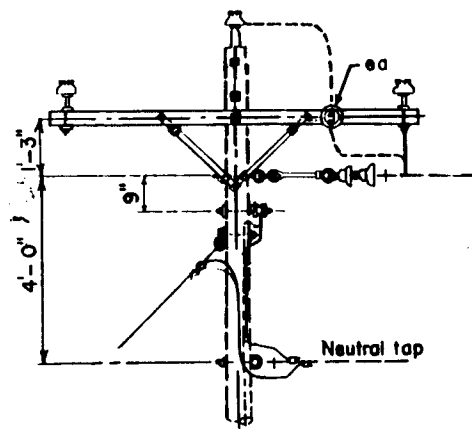


COMPLETE ASSEMBLY
A5-1, M5-7 and A5

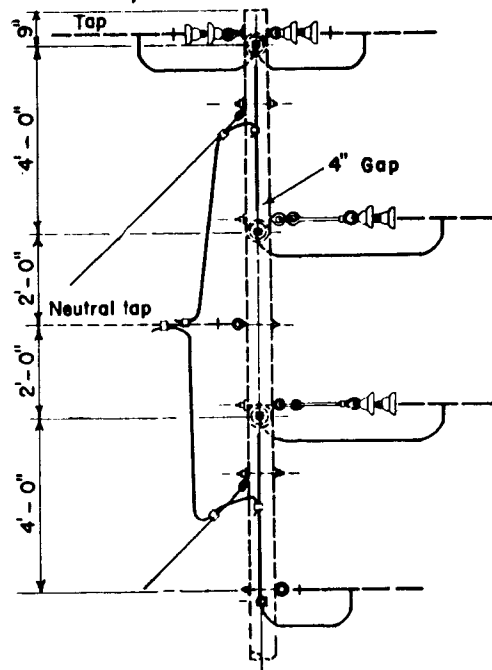
TAP ASSEMBLY GUIDE

Apr, 1983

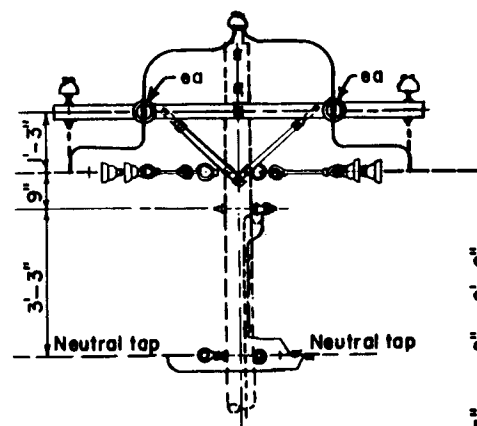
M29-1



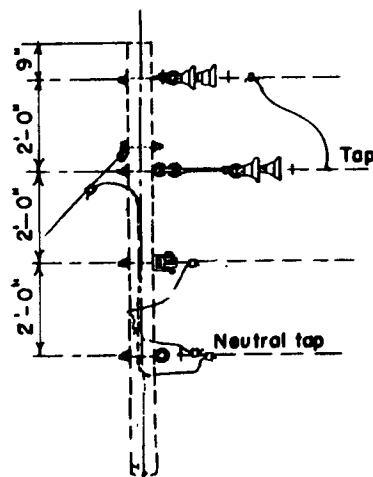
COMPLETE ASSEMBLY
A5-2, C1 AND M5-7 (if needed)



COMPLETE ASSEMBLY
A5-3 AND C4-1



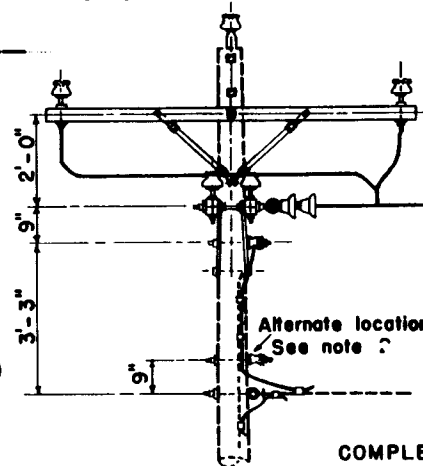
COMPLETE ASSEMBLY
A5-2, A5-2A, C1, AND M5-7 (if needed)



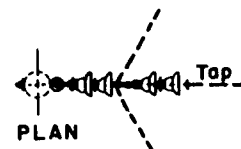
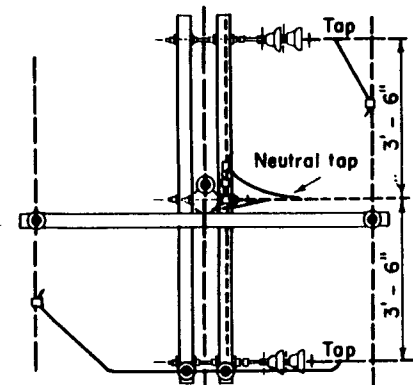
COMPLETE ASSEMBLY
A5-2 AND A3

Notes:

1. Maintain 2" minimum spacing between ground wire and hardware associated with energized conductors.
2. Where ground clearance permits mount all neutrals at lower level.



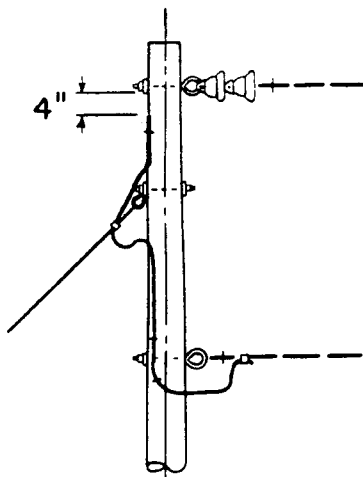
COMPLETE ASSEMBLY
C1, B7 AND M5-5



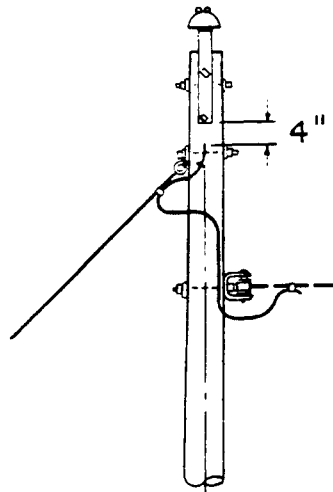
TAP ASSEMBLY GUIDE

Apr., 1983

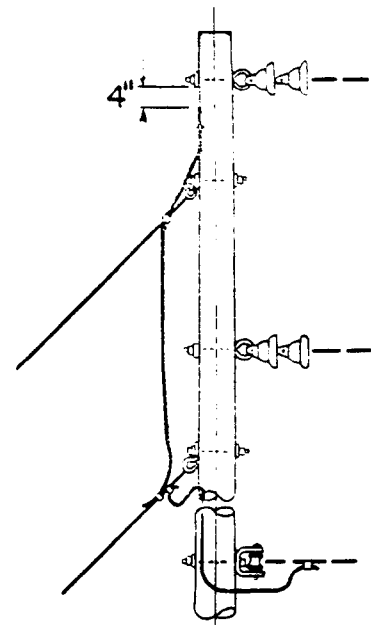
M29-2



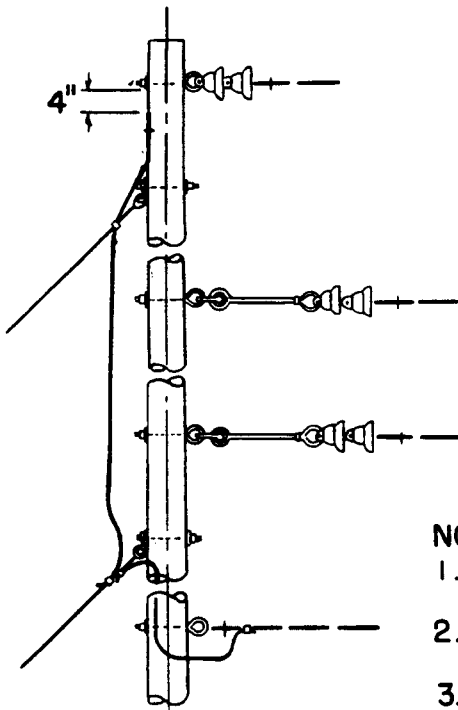
AT SINGLE PHASE ANGLES
AND DEADENDS



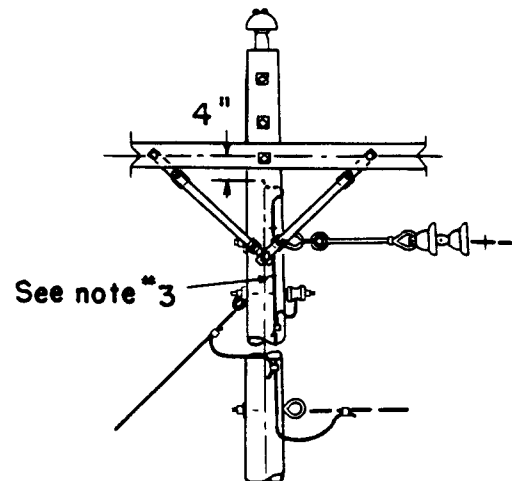
AT SINGLE
PHASE ANGLES



AT V-PHASE ANGLES
AND DEADENDS



AT THREE PHASE ANGLES
AND DEADENDS



AT V OR THREE PHASE
TAP ASSEMBLY

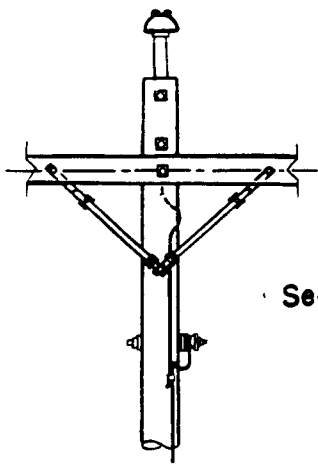
NOTES:

1. A solid conductor should be used for the pole top extension wire.
2. The jumper wire on system grounding assemblies should be stranded.
3. Position of staple is important. Maintain 4" min. distance from staple or clip to lag screw or eye bolt.
4. Maintain 2" min. spacing between ground wire and hardware associated with energized conductors.
5. An M2-12, 12A, 12A2 or M2-11 ground assembly may be added if desired.

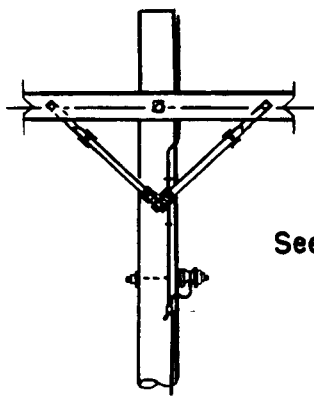
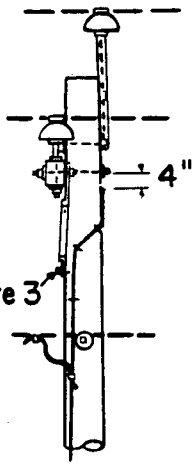
12.5 / 7.2 kV
GUIDE FOR INSTALLATION OF GROUND WIRE
ABOVE NEUTRAL ON GUYED POLES

Apr., 1983

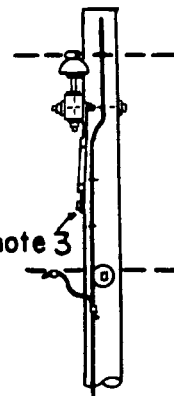
M30-1



See note 3



See note 3



AT SINGLE ARM ASSEMBLIES WITH
POLE TOP PIN

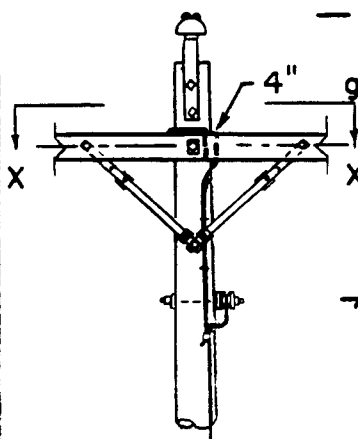
AT SINGLE ARM ASSEMBLIES WITH-
OUT POLE TOP PIN

NOTES:

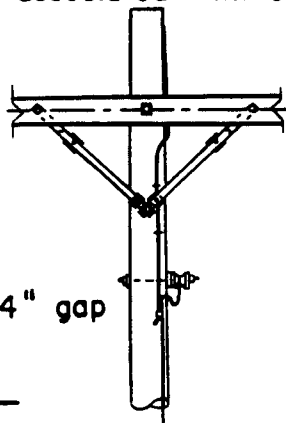
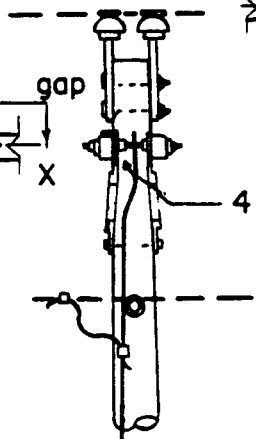
1. A solid conductor should be used for the pole top extension wire.
2. The jumper wire on system grounding assemblies should be stranded.
3. Position of staple is important. Maintain 4" minimum distance from staple or clip to lag screw or eye bolt.
4. Maintain 2" minimum spacing between ground wire and hardware associated with energized conductors.



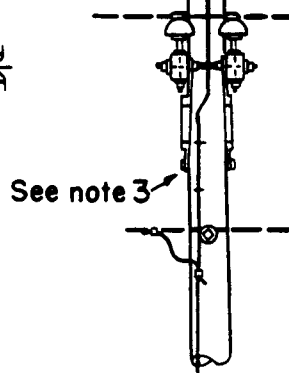
Section X-X



AT DOUBLE ARM ASSEMBLIES
WITH POLE TOP PINS



AT DOUBLE ARM ASSEMBLIES
WITHOUT POLE TOP PINS

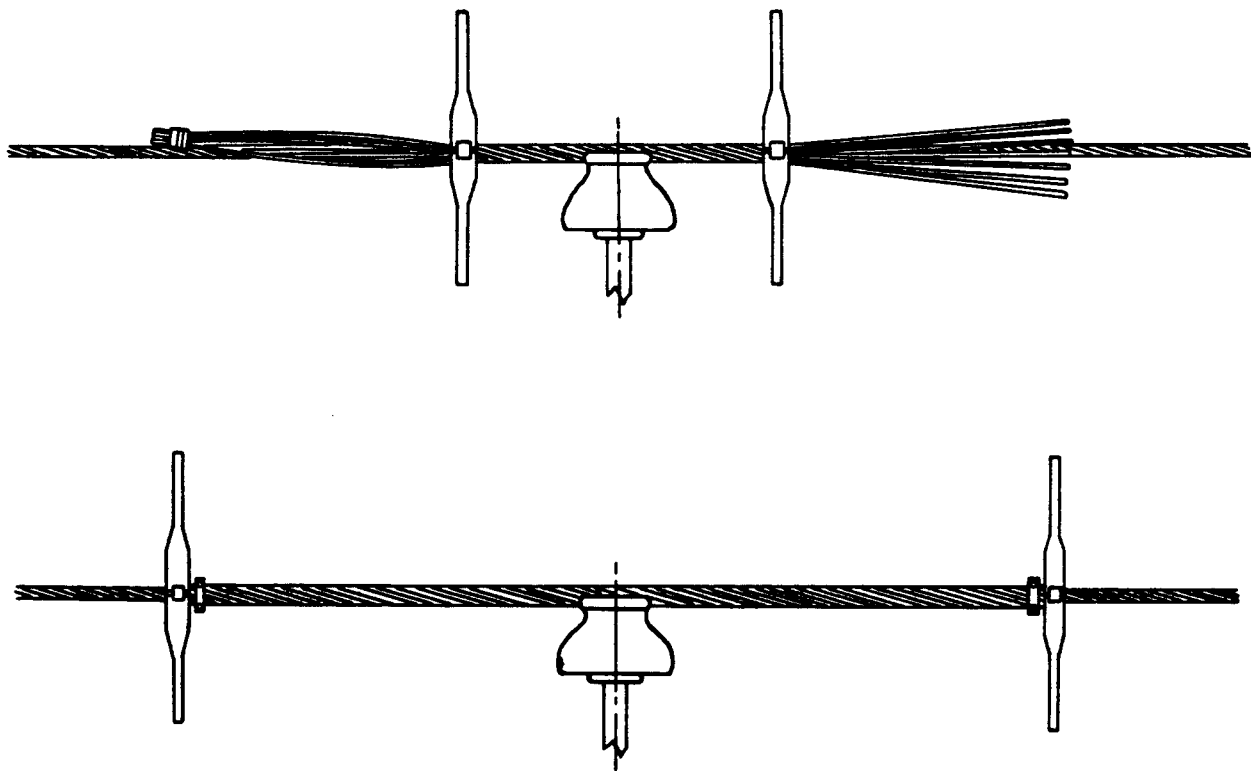


See note 3

12.5/7.2 kV
GUIDE FOR INSTALLATION OF GROUND WIRE ABOVE
NEUTRAL ON POLES WITH BUTT WRAPPED OR
DRIVEN GROUNDS

Apr., 1983

M30-2



Note:

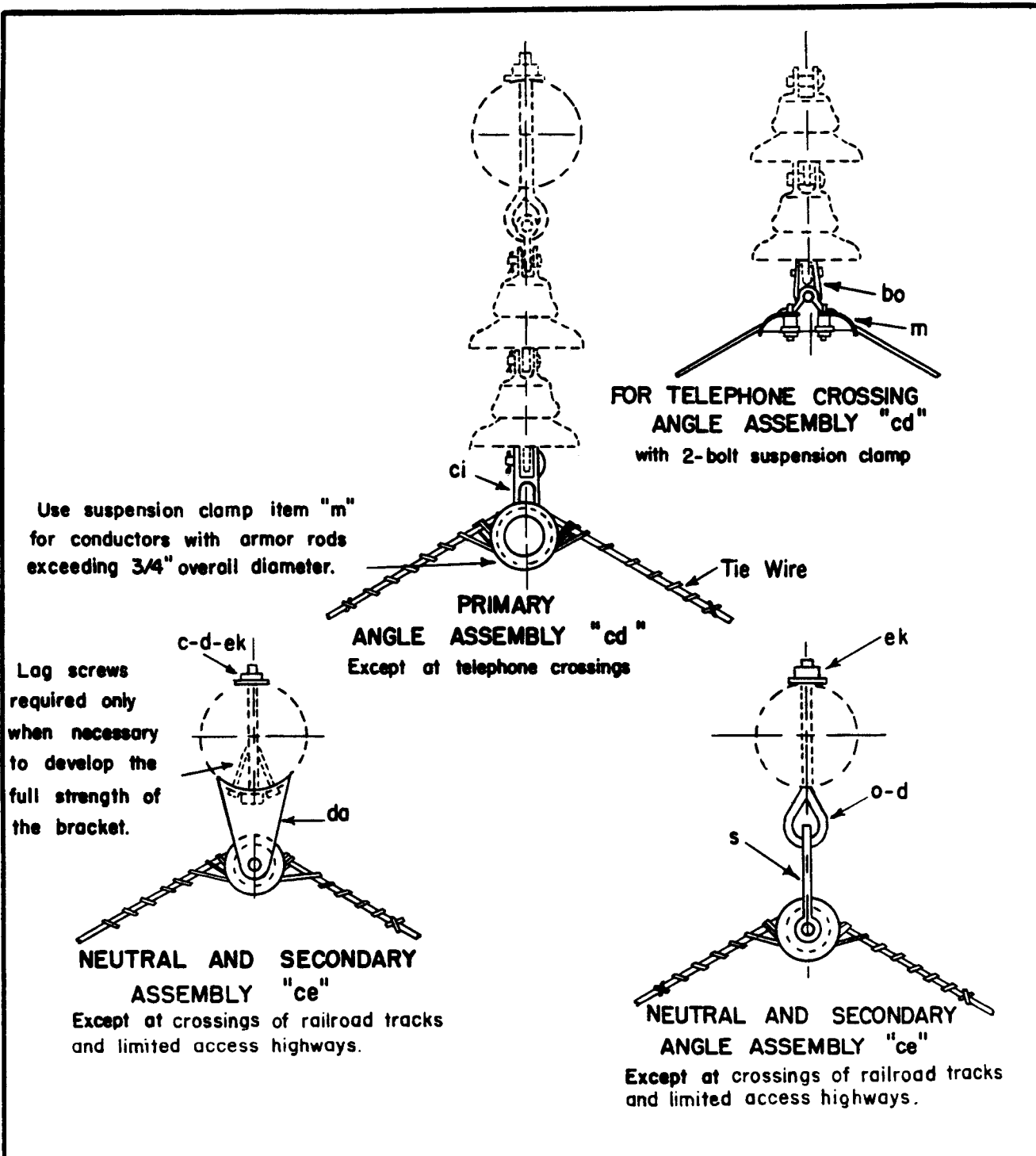
With tape still on one end of rods and other end threaded through wrenches so they open between the same two rods, center on conductor over point of support and close around conductor as shown above. Twist rods enough to give permanent set. Remove tape and slide wrenches half way to ends and repeat. Move wrenches to end of rods and twist. Attach clips and tighten before removing so end of rods will flare after removal. Rods should be twisted snugly with a smooth lay in same direction as lay of conductor. For further information and method of installing rods on angle see manufacturer's instructions for Construction.

| Conductor Size | Support | |
|------------------------------------|---------|--------|
| | Single | Double |
| | Twists | |
| | | |
| 4 A.C.S.R. (6Al/1St.) 8 (7Al/1St.) | 5-6 | 7-8 |
| 2 A.C.S.R. (6Al/1St.) 8 (7Al/1St.) | 6-7 | 8-9 |
| 1/0 A.C.S.R. (6Al/1St.) | 4-5 | 6-7 |
| 2/0 A.C.S.R. (6Al/1St.) | 5-6 | 7-8 |
| 3/0 A.C.S.R. (6Al/1St.) | 5-6 | 7-8 |
| 4/0 A.C.S.R. (6Al/1St.) | 5-6 | 7-8 |

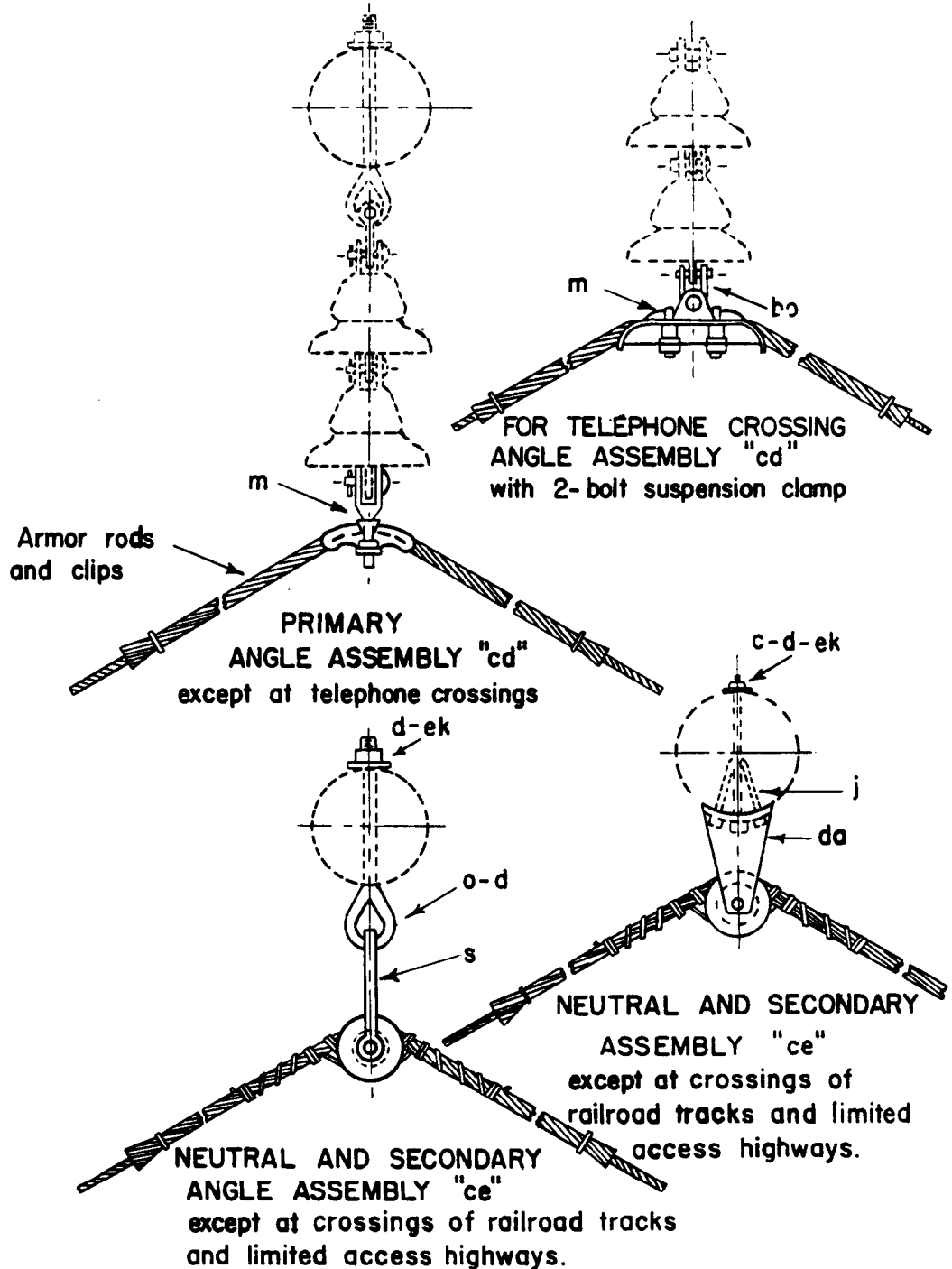
**ARMOR RODS
A.C.S.R. CONDUCTOR**

Apr., 1983

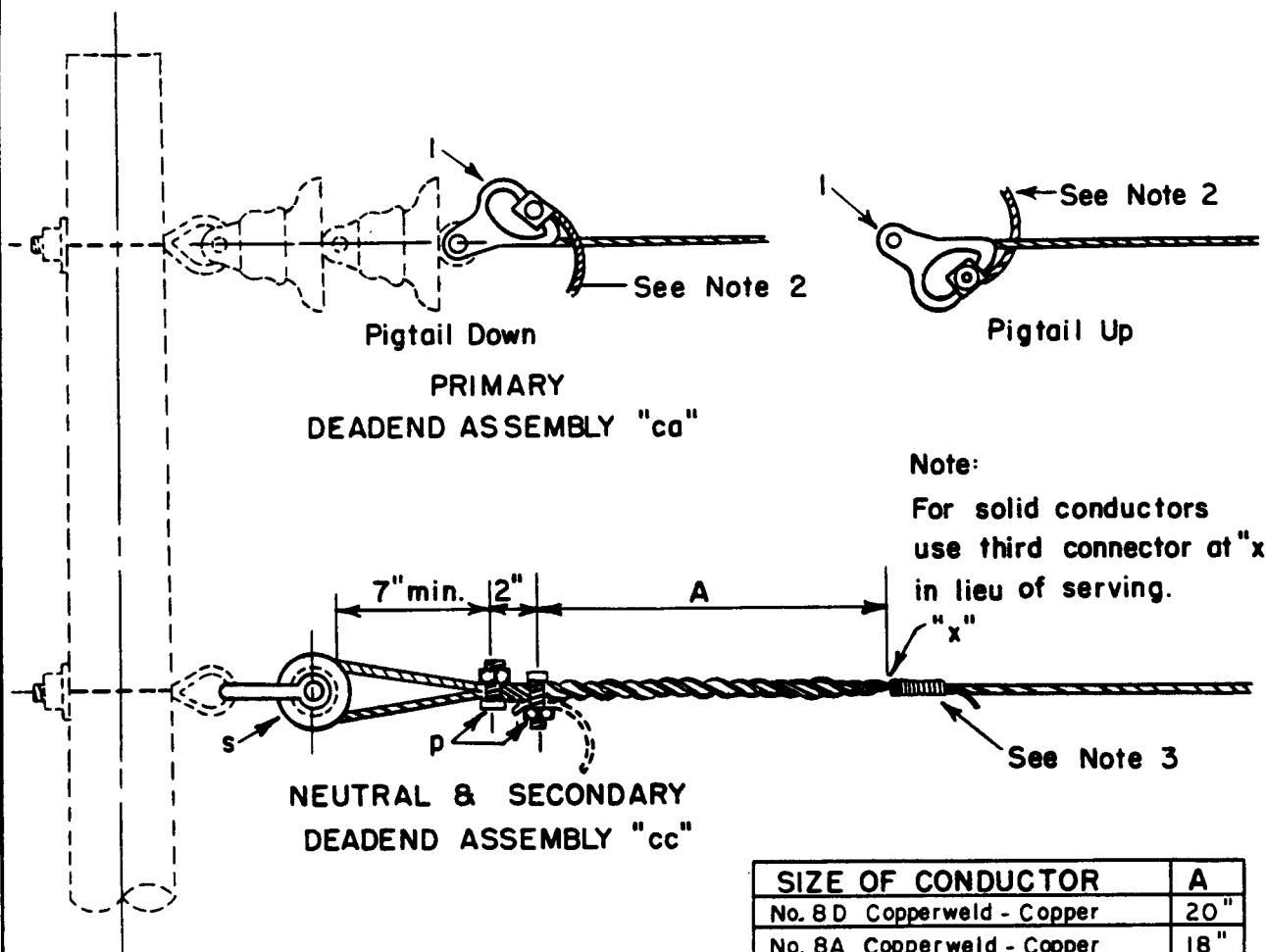
M40-II



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|---|-------------------------------|
| c | Bolt, machine, 5/8" x req'd. length | bo | Shackle, anchor |
| m | Clamp, suspension | da | Bracket, insulated |
| | | ci | Clevis, thimble, side opening |
| s | Clevis, secondary, swinging, insulated | | |
| ek | Locknuts, as required | ANGLE ASSEMBLY GUIDE, VERTICAL CONSTRUCTION 30° TO 60° ANGLE, COPPER TYPE CONDUCTORS WITH FORMED TYPE ARMOR RODS | |
| d | Washer, square, 2 1/4" | | |
| j | Screw, lag, 1/2" x 4" | | |
| o | Bolt, eye, 5/8" x req'd. length | | |
| | | | |
| | | Apr., 1983 | M 41-1 |



| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|--|--|-----------------------------------|
| c | Bolt, machine, 5/8" x req'd length | bo | Shackle, anchor |
| m | Clamp, suspension | da | Bracket, insulated |
| s | Clevis, secondary, swinging, insulated | o | Bolt, eye, 5/8" x required length |
| ek | Locknuts, as required | ANGLE ASSEMBLY GUIDE, VERTICAL CONSTRUCTION 30° TO 60° ANGLE, ACSR CONDUCTORS WITH STRAIGHT OR FORMED TYPE ARMOR RODS | |
| d | Washer, square, 2 1/4" | | |
| j | Screw, lag, 1/2" x 4" | | |
| | | Apr., 1983 | M41-10 |



Note:

For solid conductors
use third connector at "x"
in lieu of serving.

Notes:

- 1.- For alternate method of deadending primary conductors, see Drawing M 42-21.
- 2.- Bend pigtail away from line conductor to avoid chafing.
- 3.- Wrap free end of conductor along line conductor using same lay. Extend one strand of free end (for copperweld-copper this is the copperweld strand) against line conductor. Serve the other two strands six turns each and cut them off. (Always serve copper strand (s) first.) Bend extended strand away from line conductor and cut off.

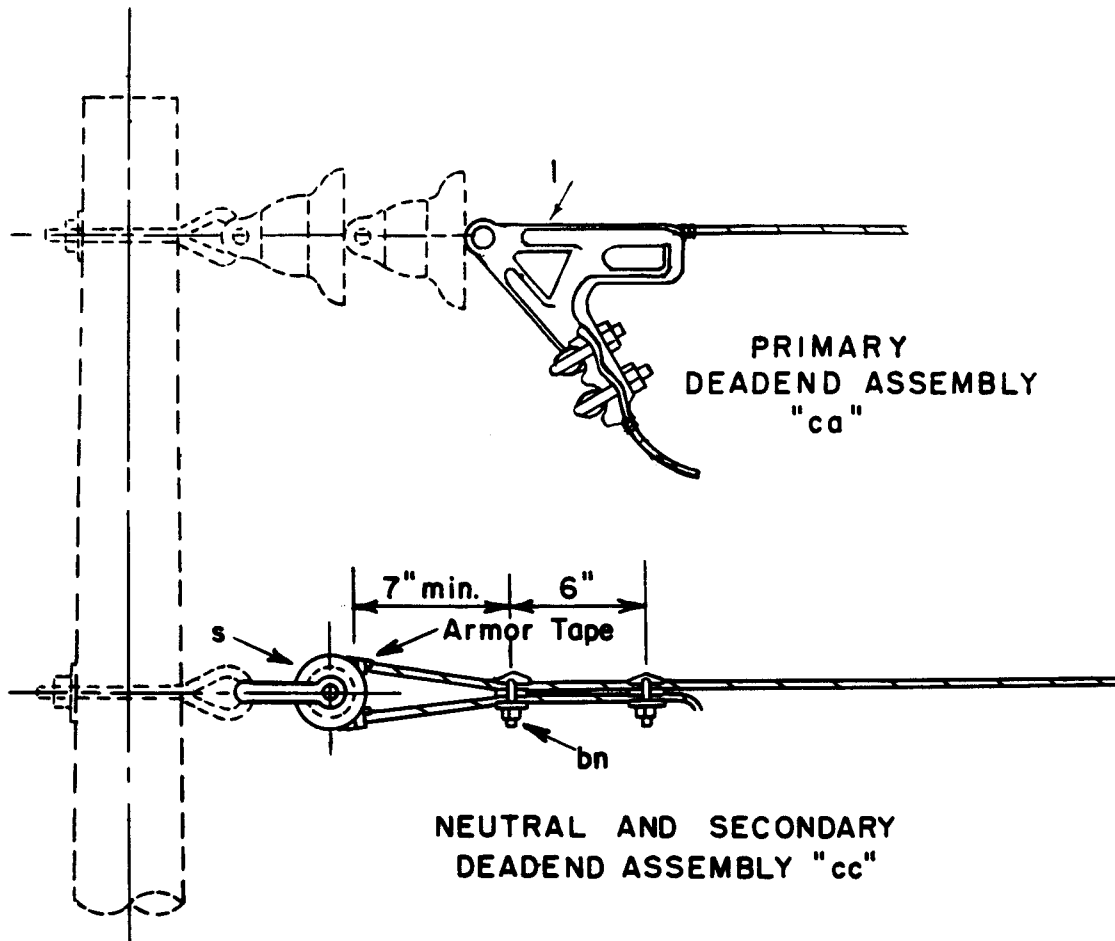
| SIZE OF CONDUCTOR | A |
|-----------------------------|-----|
| No. 8 D Copperweld - Copper | 20" |
| No. 8 A Copperweld - Copper | 18" |
| No. 6 A Copperweld - Copper | 20" |
| No. 4 A Copperweld - Copper | 22" |
| No. 2 Copper, 3- Strand | 22" |

| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|------|-----|----------------------|------|-----|-------------------------------------|
| I | | Clamp, deadend | s | | Clevis, secondary, swinging, insul. |
| p | | Connectors, as req'd | | | |

DEADEND ASSEMBLY GUIDE - DEADEND CLAMP METH.
COPPERWELD COPPER & COPPER CONDUCTORS

Apr., 1983

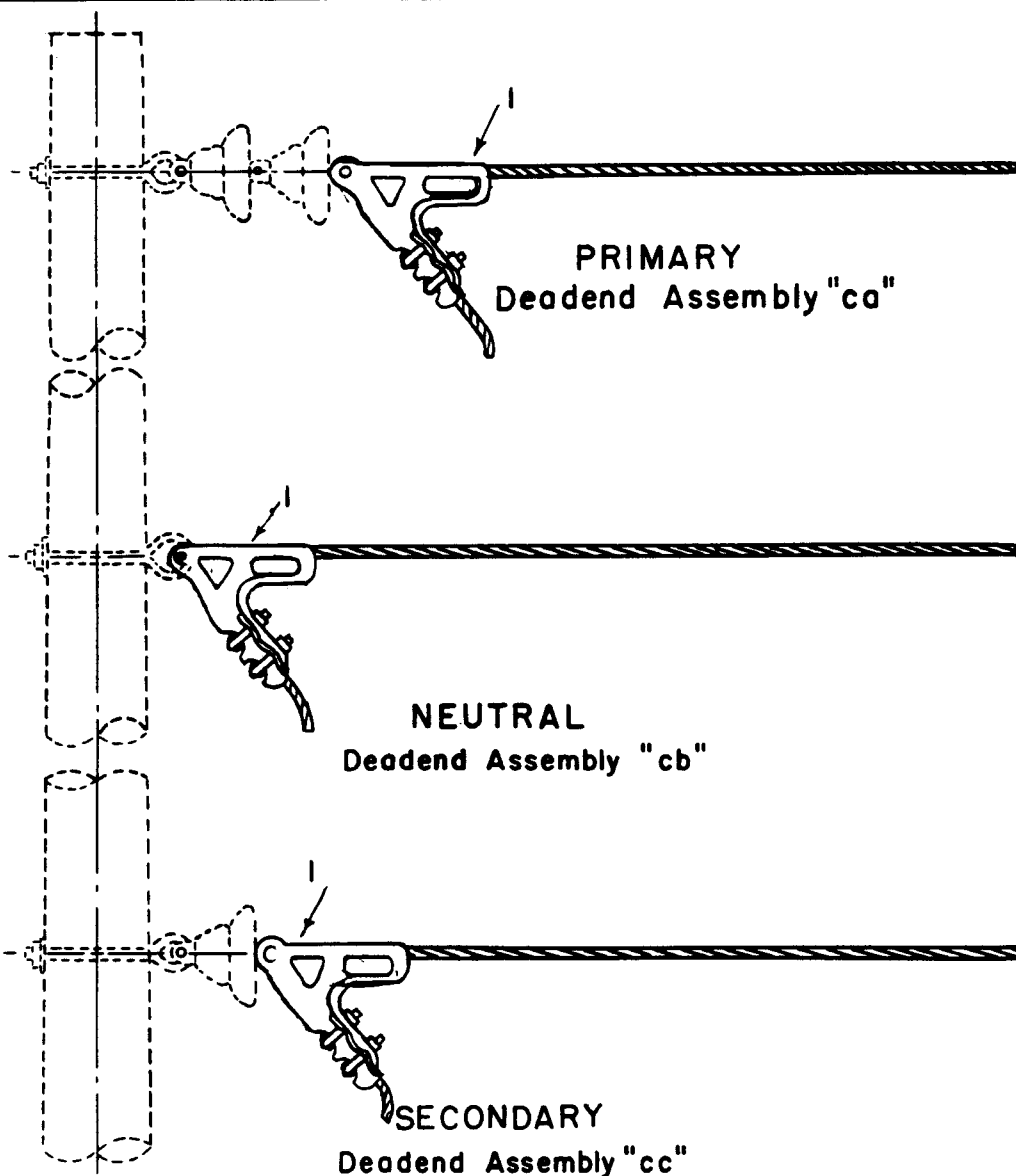
M42-3



Notes:

1. - Armor tape wrapping to extend not more than two wraps beyond the mouth of deadend clamp or spool insulator.
2. For 1/O and larger use spool of 3" min. groove diameter on neutral and secondary deadends.

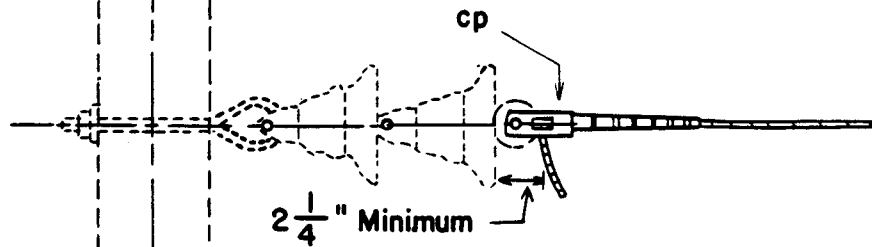
| ITEM | MATERIAL | ITEM | MATERIAL |
|------|--|------------------------|----------|
| I | Clamp, deadend | | |
| s | Clevis, secondary, swinging, insulated | | |
| bn | Clamp, loop deadend | | |
| | | DEADEND ASSEMBLY GUIDE | |
| | | DEADEND CLAMP METHOD | |
| | | A.C.S.R. CONDUCTORS | |
| | | Apr, 1983 | M42-11 |



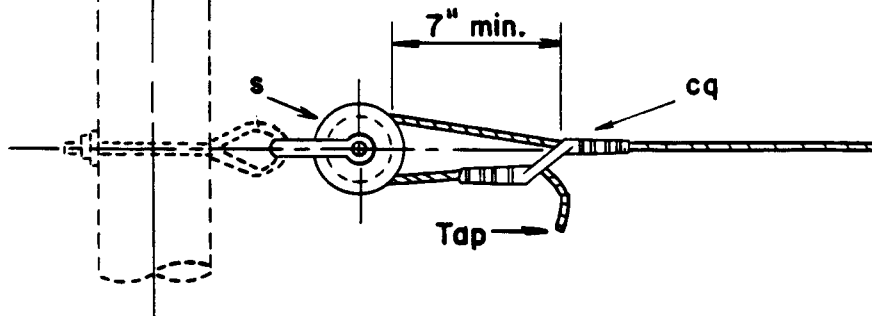
| ITEM | NO. REQ'D | MATERIAL | ITEM | NO. REQ'D | MATERIAL |
|------|--------------|----------------|--|--------------|----------|
| 1 | | Clamp, deadend | | | |
| | | | | | |
| | | | | | |
| | | | DEADEND ASSEMBLY GUIDE (LARGE CONDUCTORS) | | |
| | | | | | |
| | | | Apr., 1983 | | M42-13 |

Note:

Item "by" may be substituted
for item "cp" shown.

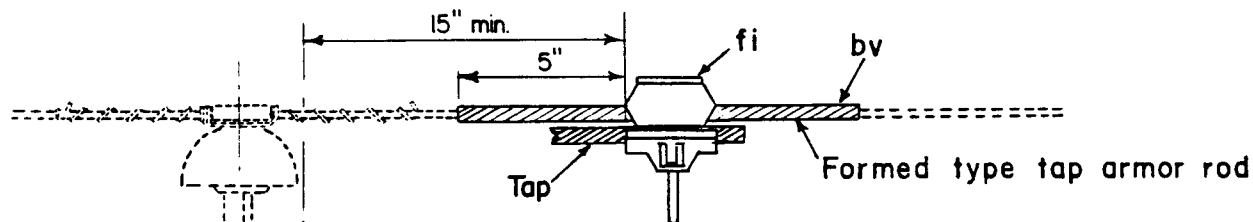


PRIMARY
DEADEND ASSEMBLY "cd"



NEUTRAL AND SECONDARY
DEADEND ASSEMBLY "cc"

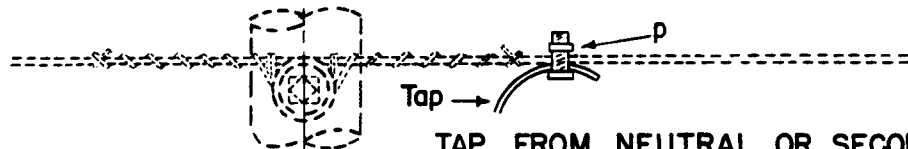
| ITEM | NO. | MATERIAL | ITEM | NO. | MATERIAL |
|---|-----|--|--------|-----|--------------------------|
| s | | Clevis, secondary, swinging, insulated | cq | | Sleeve, offset, splicing |
| cp | | Sleeve, deadend, compression | | | |
| DEADEND ASSEMBLY GUIDE-COMPRESSION METHOD COPPER TYPE CONDUCTORS | | | | | |
| | | Apr, 1983 | M42-21 | | |



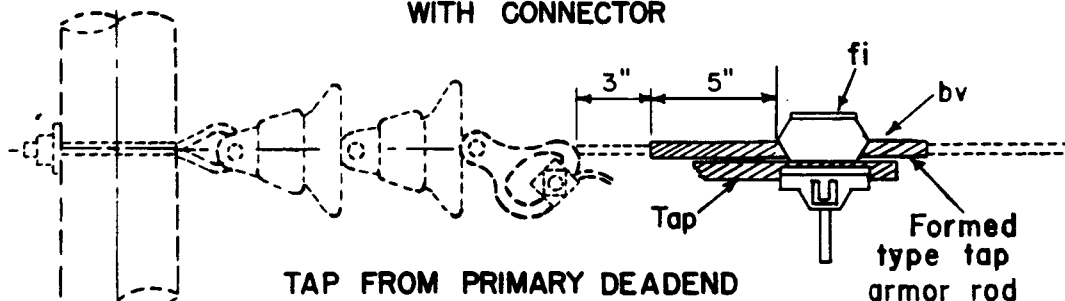
TAP FROM PRIMARY LINE

Note:

To be used on existing construction where full length armor rods were not installed.



TAP FROM NEUTRAL OR SECONDARY LINE WITH CONNECTOR

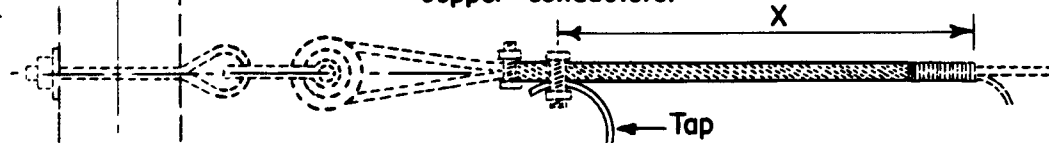


TAP FROM PRIMARY DEADEND WITH HOT LINE CLAMP

Notes:

1. Arrangement shown on M42-11 may be used for neutral and secondary deadend if preferred.

Add third connectors at "X" for solid copper conductors.



TAP FROM NEUTRAL OR SECONDARY DEADEND

2. When installing armor rods on existing lines, both conductor and armor rods should be wire brushed to provide clean contact surfaces. A corrosion inhibitor should be applied before or immediately after brushing.
3. Taps to be slack.

| | |
|-------------------------|-----|
| Size of solid conductor | X |
| No. 6 Copper | 18" |
| No. 4 Copper | 20" |

| ITEM NO. | MATERIAL | ITEM NO. | MATERIAL |
|----------|-----------------------------------|----------|------------------------|
| p | Connectors, as required | bv | Tap armor rods, bronze |
| fi | Connector, hot line, tap assembly | | |

TAP ASSEMBLY GUIDE COPPERWELD-COPPER AND COPPER CONDUCTORS

Apr., 1983

M43-4

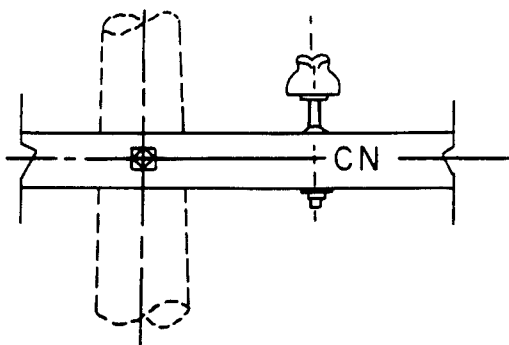


TAP FROM NEUTRAL OR ZERO

Notes:

1. On new construction, top may be made directly over armor rods provided conductor is thoroughly cleaned and inhibitor used before installing rods.
2. When installing armor rods on existing lines, conductor should be wire brushed thoroughly and inhibitor used before installing rods.

1. *Journal of the American Medical Association*, 1997; 277: 1033-1036.



M52-4

1A 23

M52-3

May be placed
1A
23
instead of as shown

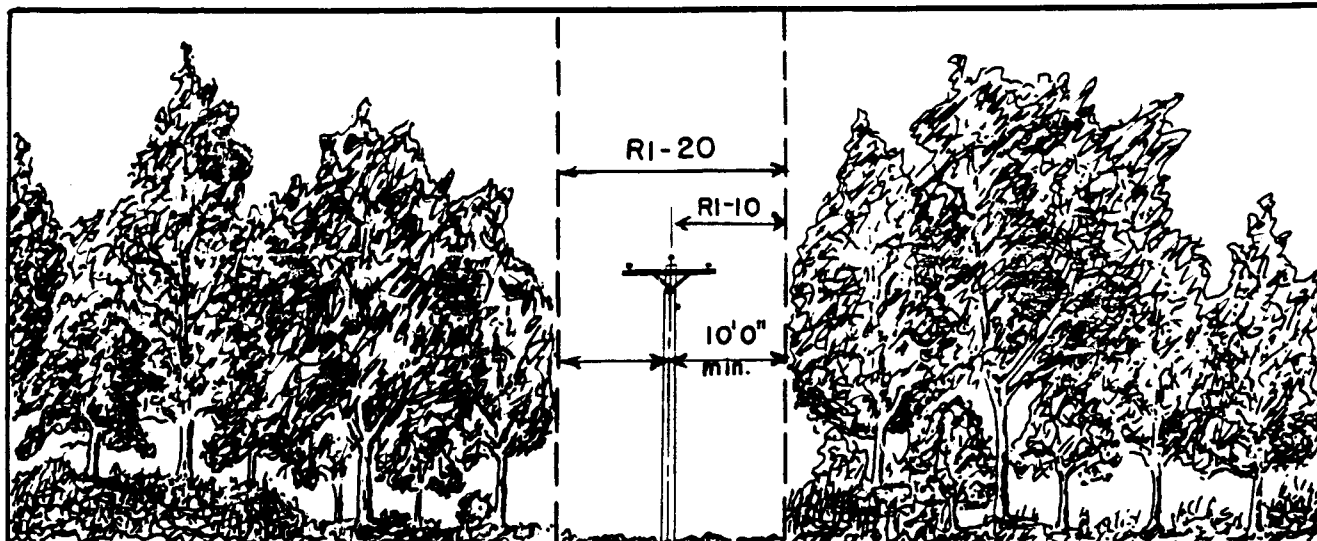
NOTES:

1. Numbers and letters shall:
 - a) be of cutout aluminum or electrogalvanized soft steel, fastened to pole with galvanized or aluminum barbed 1" round head nails; or
 - b) be either die stamped or printed with a reflectorized background on individual pieces of aluminum and mounted in an aluminum holder and fastened to pole with aluminum barbed round head nails. If numbers smaller than 1-1/2" are used, they shall be reflectorized.
2. Pole legends to be 1-1/2" to 3" high. Reflectorized numbers and letters may be 1" to 3" high.
3. "CN" to be 2" high.
4. Pole to be staggered 30° from direct facing highway. When line crosses highway or R.R., legend should face same.
5. On poles having limited climbing space due to special equipment, pole legend should be so located as to leave climbing space quadrant unobstructed.

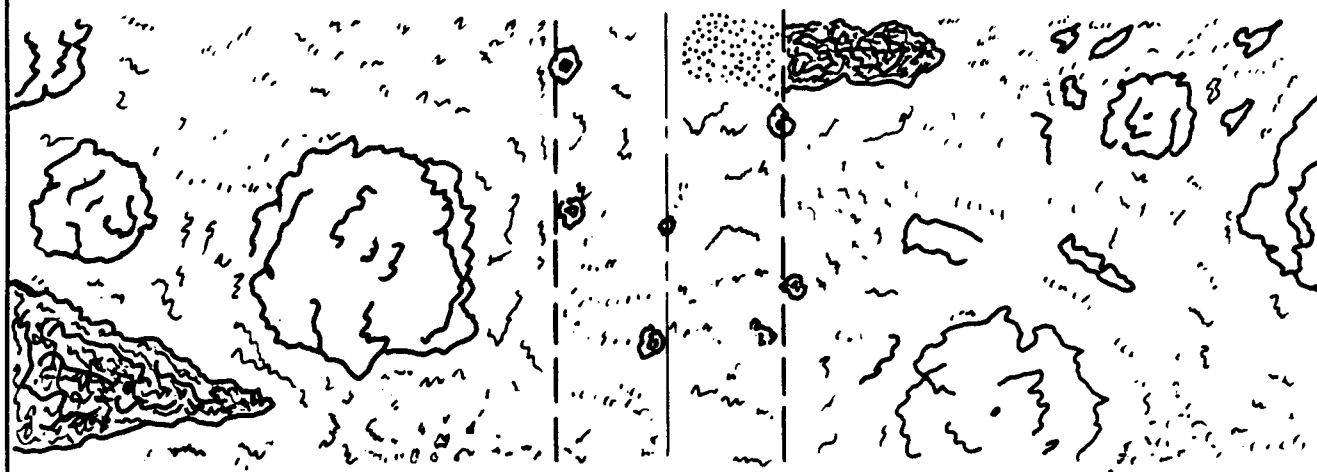
8'-0"

Ground Line

| ITEM | NO. | MATERIAL | | | MATERIAL |
|------|-----|--------------------------------------|--|--|--------------|
| az | | Pole numbers and letters as required | | | |
| ee | | Letters "CN" with 1" nails | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | NEUTRAL IDENTIFICATION AND POLE NUMBERING GUIDE | | |
| | | | Apr., 1983 | | M52-3, M52-4 |



ELEVATION



AFTER CLEARING



BEFORE CLEARING

CLEARING RIGHT-OF-WAY GUIDE

Apr., 1983

RI