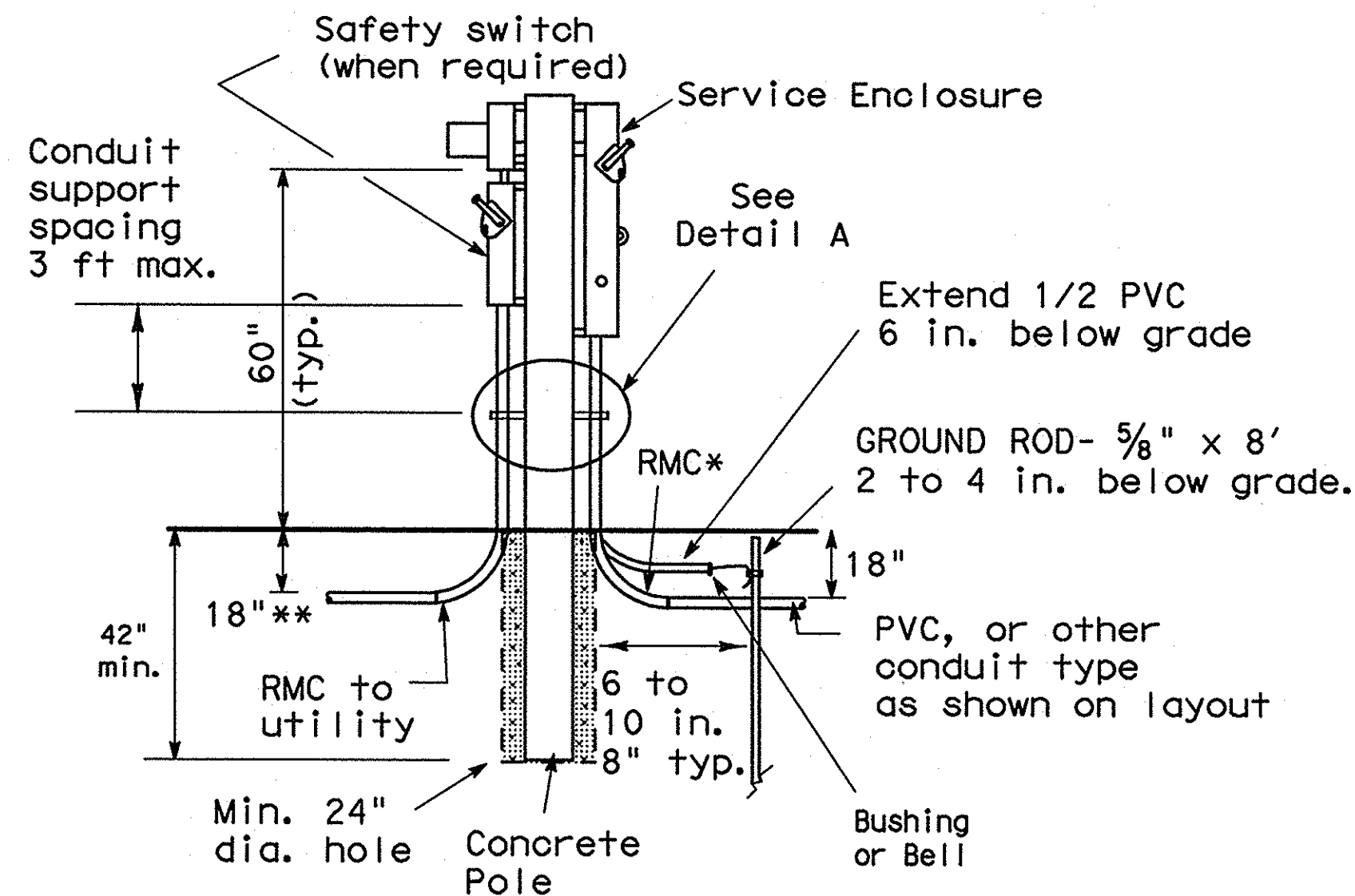


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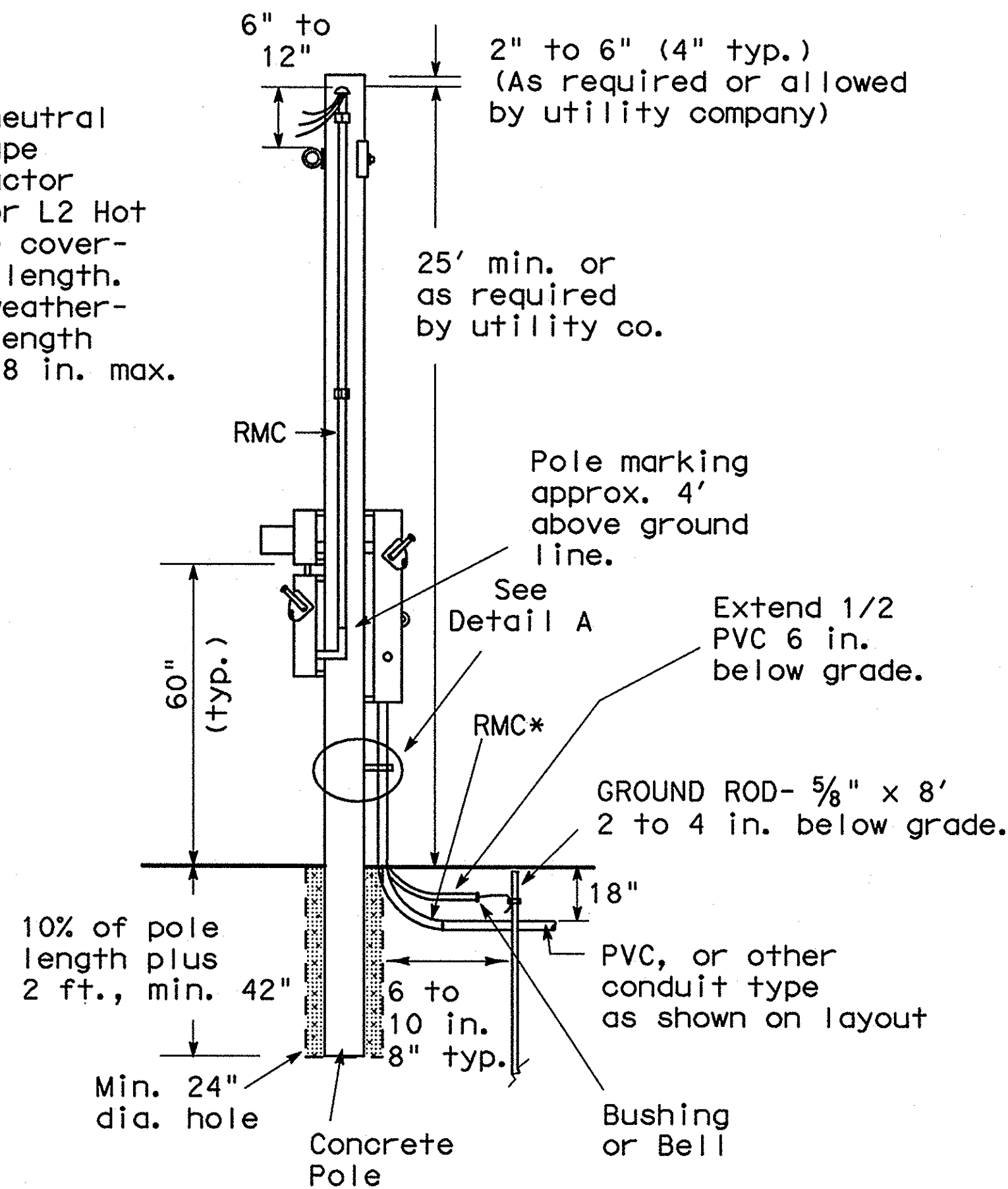
DISCLAIMER:

DATE: FILE:

Color code grounded - neutral conductor with white tape covering 6 in. of conductor length. Color code L1 or L2 Hot conductor with red tape covering 6 in. of conductor length. Where conductors exit weather-head, conductors free length shall be 12 in. min., 18 in. max.

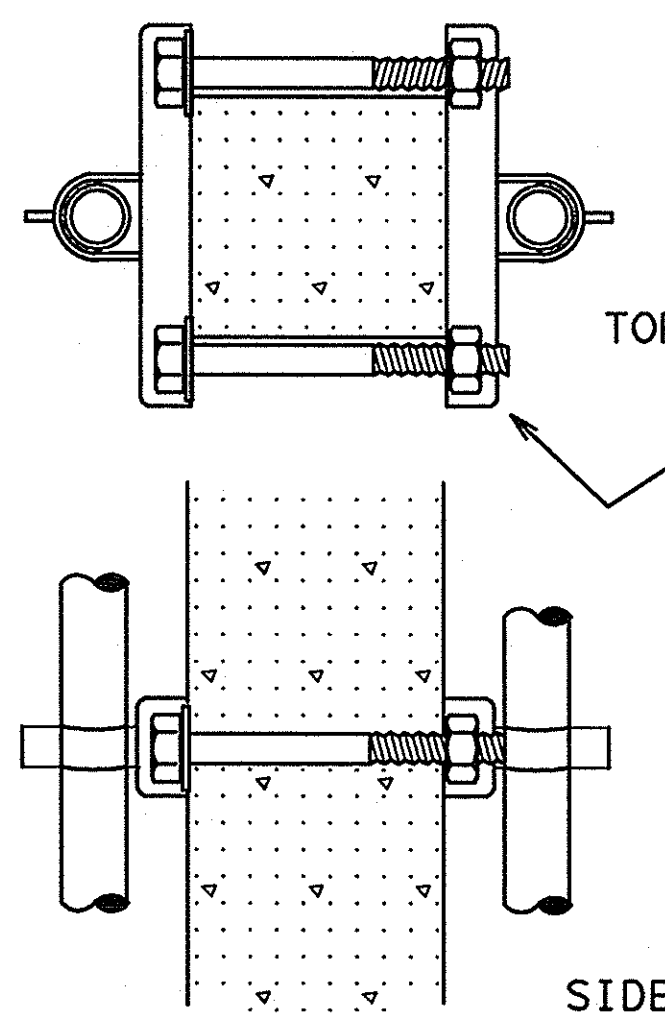


CONCRETE SERVICE SUPPORT
 (Underground)



CONCRETE SERVICE SUPPORT
 (Overhead)

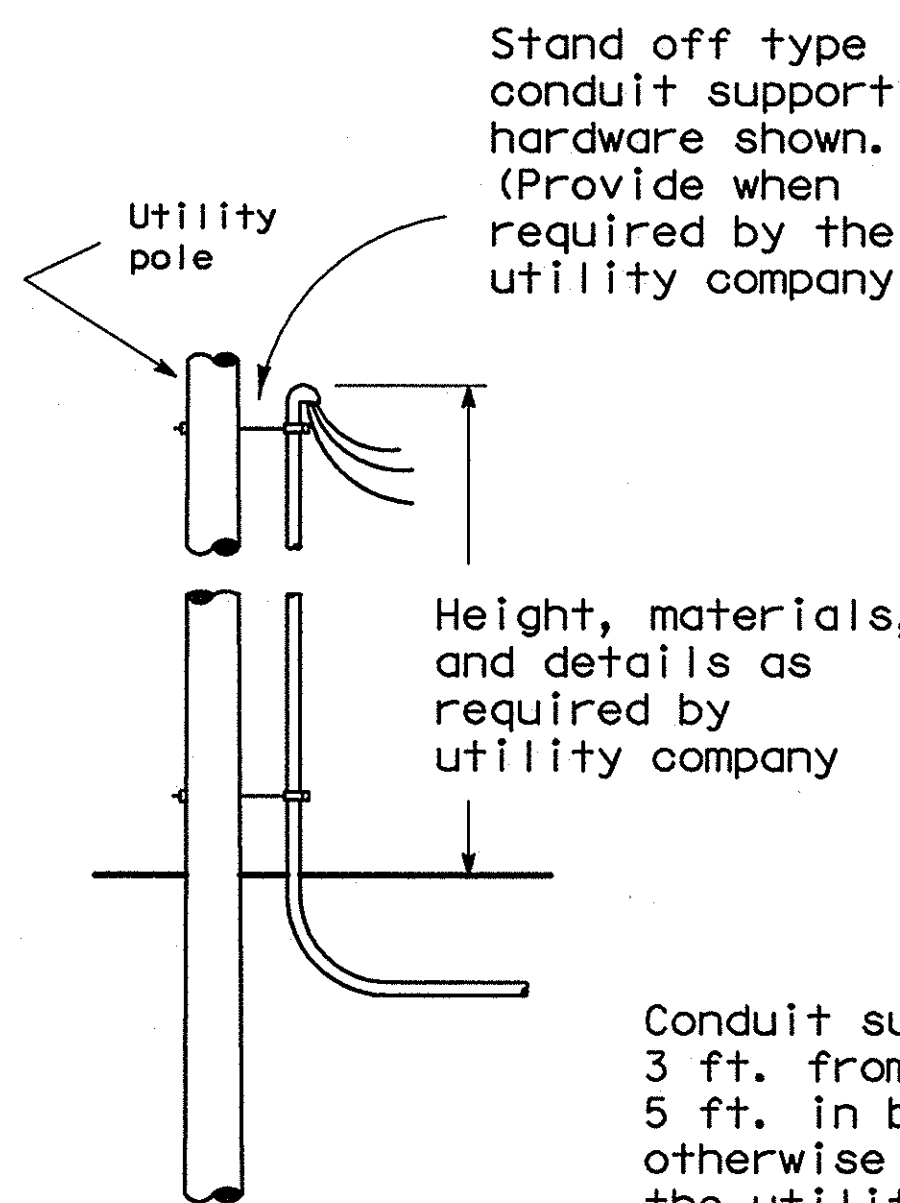
*same size as branch circuit conduit shown on layout sheets.
 ** or as required by utility company.



DETAIL A

Channel bracket or other arrangement approved by the Engineer. (Kindorf, Unistrut, B-line or equal)

Note: Attach channels with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel with long bolts, or other secure mounting as approved by the Engineer. Bolts galvanized in accordance with ASTM A153. Channel shall be galvanized.



UTILITY POLE CONNECTIONS

(When underground service is required by descriptive code and utility is overhead.)

NOTES:

- Electrical service support structures bid as type GC or OC shall be concrete poles and shall meet the following specifications.
- Poles shall be prestressed concrete and suitable for direct embedment into the ground without special foundations.
- Poles bid as type "GC" shall be a granite concrete mixture consisting of gray Portland cement with exposed pink granite aggregate. Poles bid as type "OC" shall be other concrete mixture as shown elsewhere on the plans or as directed by the Engineer.
- Poles greater than 10' shall be square in cross-section, with chamfered corners, and shall have a standard taper of 0.162 inch per foot. Cross sectional dimensions shall not deviate by more than 3/8 inch. Poles 10' or less may be tapered .162"/ft or may be non-tapered. The allowable tolerance shall be plus 3 inches and -2 inches in the overall length. The width of the bottom face of the pole as it is cast may be less than the top face. All small cavities shall be cleaned, saturated with water and then filled with mortar. A small cavity is defined as one larger than 1/4 inch but smaller than 3/4 inch in diameter, and less than 3/8 inch deep. Larger non-structural cavities and spalls shall be repaired by opening side of the damaged area on a 1 to 1 slope using a mechanical grinder, cleaning thoroughly and filling with a high-strength non-shrink concrete repair material. Poles with other defects may be repaired only upon authorization of and using the method prescribed by the Engineer.
- The end of each steel reinforcing strand in the tip and butt shall be burned back to a minimum depth of 1/2 inch. The holes left by the removal of the strand shall be thoroughly cleaned of any loose residue. The holes shall then be completely filled with non-shrink grout and smoothed evenly with tip or butt surface.
- Prestressing strands shall have a minimum concrete cover of 1 1/4 inch.
- A straight line joining the edge of the pole at the butt and the edge of the pole at the top shall not be distant from the surface of the pole at any point by more than 3/8 inch for each 10 feet of length.
- The chloride content of the concrete mix, including all ingredients shall be 0.4 pounds per cubic yard, or less.
- Concrete used in poles shall have a compressive strength at transfer of not less than 4,000 PSI, and a 28-day compressive strength of not less than 7,000 PSI.
- Materials shall comply with the latest version of the following standards:
 - Portland Cement - ASTM C105
 - Admixtures - ASTM C494
 - Aggregates - ASTM C33 or C330
 - Reinforcing Bars - ASTM A615
 - Cold-Drawn Spiral Wire - ASTM A82
 - Prestressing Strand, 270K - ASTM A416
- Poles greater than 10' shall have a 4 inch tip and 3/8 inch strands. Poles 10' or less shall have a 5 inch min. tip and 3/8 inch strands. Pole shall have a load capacity of greater than 1188 lbs. applied 2 ft. below tip.
- Poles shall be capable of withstanding single point pick up from the horizontal position when lifting from a point 30% of the overall length down from the tip.
- All poles shall be marked by imprinting on one face. Marking shall indicate manufacturer's name, year of manufacture, length and name or type of pole. Marking shall be located approximately 4 ft. above ground line.
- Dunnage points, two-point pickup locations for handling pole in horizontal position, and one-point pickup locations for use in raising the pole to a vertical position and handling in setting operation shall be marked on the pole with durable ink or paint or cast into the pole. These marks shall be small but conspicuous.
- Poles shall be embedded 42 inches or 10% of length plus 2 ft. into the ground whichever is greater.
- When required by utility company for overhead services, poles longer than 10 feet shall have a #6 solid ground wire running the entire length exiting within 6 inches from the top and bottom of the pole. The Contractor shall connect the bottom to a butt wrap or butt plate grounding device.
- All conduit and conductors attached to the service support and within 12 inches of the service support will not be paid for directly, but shall be subsidiary to the electrical service. All conduit and conductors from the utility company pole to a point 12 inches from the service support, including conduit and conductors required for the utility pole riser when furnished by the Contractor, will be paid for separately.
- All mounting hardware and installation details of services shall be in accordance with utility company specifications.
- All conduit on service supports shall be rigid metal conduit except the conduit for grounding electrode conductor (ground wire) shall be 1/2 inch PVC. Service entrance conduit size shall be as shown elsewhere. Conduit for branch circuit entry to enclosure shall be the same size as that shown on the layout sheets for branch circuit conduit. Rigid metal conduit shall extend a minimum of six inches underground and then coupled to the type conduit shown on the layout for that particular branch circuit. RMC shall have grounding bushings in enclosures.
- Backfill shall be in accordance with Item 400 except for measurement and payment. Backfilling will not be paid for directly but shall be subsidiary to the various bid items.
- Liquid tight flexible metal conduit (LFMC), may be used when meter and service enclosure are mounted 90 to 180 degrees to each other. LFMC shall not exceed 3 ft. and shall be securely supported within one ft. of each end. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. A neutral conductor must be installed within the LFMC. Bend in LFMC shall not exceed 180 degrees. LFMC may not be installed on utility company owned poles. A pull test is required on all installed conductors, at least six inches of free conductor movement shall be demonstrated to the satisfaction of the Engineer.
- Contractor may order concrete service support structures with 3/4" hole near top of pole for eye bolt type bracket. Eye bolt bracket may be installed as means of overhead service drop anchoring point by utility. Pole may also be center drilled in the field for installation of eye bolt bracket. When used, install bracket 6" to 12" below weatherhead.

**ELECTRICAL DETAILS-
 SERVICE SUPPORT
 TYPES GC AND OC**

ED(9)-03

RECORD DRAWINGS
 (July 2013)
 INFORMATION PROVIDED BY:
 Rogers-O'Brien Construction Company

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