

SECTION 16503 POLES AND STANDARDS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK:

- A. Extent of lighting poles and standards work is indicated by drawings and schedules.
- B. Applications of lighting poles and standards for this project include the following:
 - 1. Private roadways.
 - 2. Automobile parking lots.
 - 3. Vehicular storage areas.
 - 4. Promenades/plazas.
 - 5. Parks.
 - 6. Pedestrian walkways.
 - 7. Building entrances.

1.2 QUALITY ASSURANCE:

- A. Manufacturers: Firms regularly engaged in manufacture of electrical poles and standards of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Installer's Qualifications: Firm with at least 3 years of successful installation experience with projects utilizing electrical pole and standard work similar to that required for this project.

1.3 DELIVERY, STORAGE AND HANDLING:

- A. Store poles on decay-resistant treated skids at least 1 foot above grade and vegetation. Support pole to prevent distortion and arrange to provide free air circulation.
 - 1. Fiber Glass Poles: Retain factory-applied pole wrappings until just before pole installation. Handle poles with web fabric straps.
 - 2. Metal Poles: Retain factory-applied pole wrappings until just before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's data on electrical poles, standards and hardware; include certified dimension drawings for fabricated poles, standards and mast arms, if any.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Manufacturers: Subject to compliance with requirements, provide products of one of the following (for each type of pole or standard).
 - 1. Wood Poles:
 - a. Georgia-Pacific Corp.
 - 2. Standards:

- a. Appleton Electric Co.
 - b. General Electric Co.
 - c. Kirlin Company.
 - d. Lexington Standard Corp.
 - e. Lighting Div; Harvey Hubbell, Inc.
 - f. Spring City Electrical Mfg Co.
 - g. Union Metal Mfg Co.
3. Metal Poles:
- a. Anchor Metals, Inc.
 - b. Marathon Steel Co.
 - c. Meyer Industries Div; ITT Corp.
 - d. Union Metal Mfg Co.
 - e. Valmont Industries, Inc.
4. Reinforced Concrete Poles:
- a. Ameron Pole Products Co.
 - b. Centrecon, Inc.
 - c. Dura-Stress Inc.
 - d. Raymond International Inc.
 - e. Union Metal Mfg Co.
 - f. Utility Vault Co.
5. Pole Hardware:
- a. A.B. Chance Co.
 - b. Dixie Electrical Mfg Co.
 - c. Stanley G. Flagg and Co., Inc.
 - d. Hercules, Inc.
 - e. Joslyn Mfg and Supply Co.
 - f. McGraw-Edison Co.
 - g. Preform Line Products Co.
 - h. Reliable Electric Co.
 - i. Utilities Service Co.

2.2 POLES AND STANDARDS:

- A. Laminated Wood Lighting Standards: Provide laminated wood, raceway-type, lighting standards, of types, sizes, materials and finishes indicated, pressure-treat with pentachlorophenol preservative; design to sustain wind velocities up to 100 mph; equip with hand access hole above and cable entrance hole below ground level, locate as indicated or, if not indicated, at mfg'r's standard locations to facilitate wiring, with matching plate to cover above-ground access hole. Provide standards with solid wood mast arms, where indicated.
- B. Utility-Type Wood Lighting Poles: Provide utility-type tapered solid wood lighting poles, with single crossarms, of sizes and type materials indicated; pressure-treat with creosote solution preservative.
 - 1. Wood Pole Accessories: Provide galvanized ferrous metal wood pole accessories including spool insulators, bolts, nuts, washers, crossarm gains, guy clamps and strain plates, insulator clevises, pole-top insulator pins, strand-eye anchor rods, lag screws, eye bolts, pole eye plates of sizes and types indicated which comply with ANSI and NEMA standards, and meet erection and loading application requirements.

- C. Prestressed Concrete Lighting Standards: Provide prestressed concrete, raceway-type, lighting poles and standards, of sizes and types indicated, comprised of shafts and brackets; construct with the following construction features:
1. Configuration: Embedded type base and reinforcing sleeve with hand and cable entrance holes where indicated.
 2. Configuration: Anchor base type with hand hole and cover where indicated.
 3. Configuration: Transformer base type with access door and cover.
 4. Prestressed Concrete Lighting Standard Accessories: Provide accessories for prestressed concrete lighting standards, including anchor bolts, as recommended by lighting standard manufacturer, of sizes and materials needed to meet erection and loading application requirements.
- D. Metal Lighting Standards: Provide metal, raceway-type, lighting poles and standards, of sizes and types indicated, comprised of shaft and bracket; equip with grounding connection readily accessible from handhole or transformer base access door; and construct of the following materials and additional construction features:
1. Material: Stainless steel.
 2. Material: Galvanized steel.
 3. Material: Spun aluminum.
 4. Material: Extruded aluminum.
 5. Material: Bronze.
 6. Material: Cast iron.
 7. Configuration: Embedded type base and reinforcing sleeve with hand and cable entrance holes where indicated.
 8. Configuration: Anchor base type with hand hole and cover where indicated.
 9. Configuration: Transformer base type with access door and cover.
 10. Metal Lighting Standard Accessories: Provide accessories for metal lighting standards, including anchor bolts, as recommended by lighting standard manufacturer, of sizes and materials needed to meet erection and loading application requirements.
- E. Metal Poles: Provide galvanized steel, tapered tubular seamless shaft poles, of sizes and types indicated, with 1/4inch bearing plates and ground sleeves for direct embedment. Provide removable step bolts 3/4 inch diameter and 6inches long with threaded steel lugs welded to pole beginning 12 inches above finish grade. Space step bolts at 15 inches intervals on alternative sides of pole continuing to the top. Provide pole with adequately sized reinforced handhole complete with matching cover and located on climbing side of pole, 18 inches above grade level. Weld 1/2 inch grounding nut on shaft with accessibility from handhole. Design poles to withstand loads developed by 100 MPH wind pressure, as adjusted for height above ground level, structural shapes and cable/wire loading. Construct poles whose total length is over 40 feet in two sections for shipping purposes.
1. Metal Pole Accessories: Provide accessories for metal poles, including crossarms, bolts, lifting eyes, and nuts as recommended by pole manufacturer, of sizes and materials needed to meet erection and loading application requirements.
- F. Reinforced Concrete Poles: Provide reinforced raceway-type concrete poles of sizes and types indicated. Design poles to withstand loads developed by 100 MPH wind pressure, as adjusted for height above ground level, structural shapes and cable/wire loading. Centrifugally spin concrete to attain a 28 day strength of 7000 psi. Fasten galvanized steel base plates to pole by using both the prestressing and reinforcing steel to transfer load on pole to anchor bolts. Embed base plate in concrete and cast as integral part of pole. Provide adequately

sized cable entrance holes and handholes, where indicated, and with matching plate to cover above-ground access hole.

1. Reinforced Concrete Pole Accessories: Provide accessories for reinforced concrete poles, including anchor bolts and nuts, crossarms, climbing rungs, and pole tops as recommended by pole manufacturer, of sizes and materials needed to meet erection and loading application requirements.
- G. Lighting Brackets: Provide corrosion-resistant, metal brackets, cantilevered without underbrace, of sizes and styles indicated; with straight tubular end section with external dimensions of 1-1/4 inch male NPS by 7-1/2 inch maximum length to accommodate slipfitter luminaire attachments; with attaching hardware; constructed in compliance with NEMA Pub No. SH 5, and of the following construction:
1. Material: Wrought aluminum.
 2. Material: Cast aluminum.
 3. Material: Galvanized steel.
- H. Provide wood lighting brackets, of sizes, types, and styles indicated; capable of accommodating types of luminaires indicated (end-compatible with luminaire attachment); equip with attaching hardware; materials and finishes matched to laminated wood standards.

PART 3 EXECUTION

3.1 INSTALLATION OF LIGHTING POLES AND STANDARDS:

- A. Install lighting poles and standards as indicated, in accordance with manufacturer's written instructions, in compliance with National Electrical Safety Code and NECA's "Standard of Installation" to ensure that poles and standards comply with requirements.
- B. To protect finishes, use belt slings or rope (not chain or cable) to raise and set finished poles and standards.
- C. Where poles/standards are indicated to be embedded in soil, set poles approximately 1/6 of pole length, but not less than 5 feet 6 inches depth below finish grade.
- D. Set poles and standards plumb. Support adequately during back-filling, or when anchoring to foundations.
- E. Provide sufficient space encompassing hand access and cable entrance holes for installation of cables from underground where indicated.

3.2 GROUNDING:

- A. Provide equipment bonding and grounding connections, sufficiently tight to assure permanent and effective grounds, where indicated, for installed poles and standards.
 1. Install 10 foot driven ground rod at each pole.
 2. Non-metallic Poles: Ground metallic components of lighting unit and foundations. Connect lighting to ground system with No. 6 AWG conductor.

END OF SECTION 16503