



**ENERGY DELIVERY ENGINEERING**

**SPECIFICATION  
EDEN-521**

**SPECIFICATION FOR  
GALVANIZED STEEL  
DISTRIBUTION AND TRANSMISSION POLES**

LAKELAND ELECTRIC  
ENERGY DELIVERY ENGINEERING  
LAKELAND, FL

REVISED DATE: 7/27/2016

## 1.0 GENERAL REQUIREMENTS

### 1.1. GENERAL DESCRIPTION

- 1.1.1. This specification covers the design, materials, and fabrication for furnishing galvanized steel Distribution and Transmission poles as indicated in the attachments.
- 1.1.2. Poles shall have a neat and pleasing appearance. The shafts of poles shall be tapered one-piece or multi piece sections having a circular or 12 sided shape. Shafts shall be provided with holes for attaching accessories consisting of horizontal post insulators, miscellaneous attachment brackets, and bolting materials. The drilling and structural information for each type of pole will be provided on the attachments for each pole type. Arms shall be furnished if shown on the attachments.
- 1.1.3. Poles shall be furnished with top cap and a bottom plate. The bottom plate shall be furnished with a 4 inch minimum opening. The top and bottom plate shall be clearly stamped with the Pole Height, Pole Strength Class, Drilling Pattern letter and the City Stock Number. For example, 70 T2 L 14-28-413.
- 1.1.4. Climbing provisions (steps, ladders) are not required.
- 1.1.5. Poles will be direct embedded.

### 1.2. DRAWINGS, CALCULATIONS, AND DESIGN

- 1.2.1. Drawings for shop fabrication and field erection of all materials shall be prepared, checked, and submitted to Lakeland Electric Delivery Engineering department electronically.
- 1.2.2. Drawing shall indicate details and dimensions as required to enable the Owner to coordinate hardware attachment and electrical clearances. Design data shall be submitted which shall include calculations indicating the adequacy of each structure and its appurtenances regarding strength and deflections. The calculations shall include ground line shears, moments and axial loads required for the Engineer's foundation design. The accuracy of the design of the structures and their components, based on the loads indicated on the Owners drawings, is the sole responsibility of the Contractor.
- 1.2.3. Moment capacities through out the pole length shall be furnished for all classes and heights for use with PLS-Cadd design software.
- 1.2.4. Each detail drawing shall include, as a minimum, the following information:
  - A) Dimensions, length, plate thickness, and embedment.
  - B) Size, description, quantity, and location of all holes and hardware that are a part of the structure.
  - C) Weight and location of center of gravity of the structure.
  - D) The Ultimate Strength Moment (calculated) of the pole at the ground line and the Ultimate Strength Shear (Class) as furnished by the Owner.
- 1.2.5. The shafts shall be designed to limit the shaft top deflection to 10 percent of the above ground height under the ultimate load condition except as otherwise

indicated on the drawing. The Manufacturer shall include the effects of the deflection in the calculations of final deflected pole stresses.

- 1.2.6. Field erection data shall include instructions for proper assembly, erection, and inspection. Erection data shall include instructions for installation, tightening, and inspection of connection bolts.

### **1.3. CODES AND STANDARDS**

- 1.3.1. Materials and construction furnished shall conform to ASCE Manual No 72, Design of Steel Transmission Pole Structures.

### **1.4. CORROSION PROTECTION**

- 1.4.1. Unless otherwise specified, all materials shall be hot-dip galvanized after fabrication. Galvanizing shall be performed in accordance with the AGA "Quality Control Manual", and shall meet the requirements of ASTM A123 for poles and A153 for hardware. SSPC SP8 surface preparation will precede galvanizing. Exposed welds shall be mechanically cleaned. Repair of damaged hot dip galvanized surfaces shall be in accordance with ASTM A780. Both the inside and outside surfaces shall be galvanized.
- 1.4.2. Additional corrosion protection shall begin one foot above ground and extend to the butt. Additional corrosion protection shall consist of "Corrocote" or approved equal. The coating thickness shall be a minimum of 14 mils.

### **1.5. MANUFACTURE**

- 1.5.1. The poles shall be manufactured by a manufacturer having not less than 18 months satisfactory experience in similar work.
- 1.5.2. All poles furnished under these specifications shall be new, undamaged members which have not been previously rejected for any reason and shall be manufactured per these specifications. Members which are damaged or which do not meet the requirements of these specifications may be rejected.
- 1.5.3. Poles shall be designed for the loading indicated on the drawings or attachments.
- 1.5.4. Holes and voids shall be accurately located and sized. Holes shall be straight and of uniform diameter and shall be perpendicular to the pole axis unless otherwise indicated.
- 1.5.5. The pole design shall provide for both multiple points and one point lifting. Lifting points shall be clearly indicated on the poles and shall be identified as multiple points and one point lifting points.

### **1.6. QUALITY CONTROL**

- 1.7.1 Quality control is the sole responsibility of the manufacturer. All materials and procedures are to be inspected before, during, and after fabrication to ensure compliance with design requirements and these specifications.

## **1.7. WELDING**

- 1.7.1. Fusion welding shall be performed using procedures and materials in accordance with AWS D1.1 of the American Welding Society Structural Welding Code. All welding shall be done by AWS certified welding operators in accordance with Section Five, AWS D1.1.
- 1.7.2. Welding materials are to be compatible with the parent material. Welding electrodes shall meet the Charpy impact requirements as the parent material.
- 1.7.3. Non-destructive testing shall be performed in accordance with the requirements of AWS D1.1.

## **1.8. DIMENSIONAL TOLERANCES**

- 1.8.1. Dimensional tolerances not indicated on the drawings shall be in accordance with the following.
  - A) Pole length (+ or -2 inches)
  - B) Width and depth or diameter (+ or -0.25 inch)
  - C) Straightness of pole (0.25 inch for each 10 feet in length, in one plane and one direction only.) unless cambered.
  - D) Bolt hole or insert spacing (+ or - 0.5 inch)
  - E) Bolt hole or insert spacing within a related group (+ or - 0.125 inch)
  - F) Bolt hole or insert orientation (0.75 degrees or 0.125 inch, whichever is greater.)
  - G) Bolt hole diameter (+ 0.063 inch, - 0 inches)

## **1.9. GROUNDING**

- 1.9.1. NEMA 2 Hole grounding pads with tapped, holes shall be welded to the pole in the locations indicated on the drawings.

## **1.10. MATERIAL AND WORKMANSHIP**

- 1.10.1. All material and workmanship shall be subject to inspection, examination, and testing by the Owner at any time and at all places including material procurement, during manufacturing and storage, while in transit, and at the structure destination.

## **1.11. IDENTIFICATION PLATE**

- 1.11.1. Manufacturer shall stamp structure identification data on a metal plate installed approximately 5 feet above the ground line. The plate shall be approximately 4 inches by 4 inches by 1/4 inch thick with the following information stamped into the plate with letters not less than 1/2 inch high:
  - A) The Pole Strength Class and Drilling Pattern designation.
  - B) Structure number (if required by Lakeland).
  - C) The year of manufacture.
  - D) The structure length/embedment.
  - E) The vendor's name.
  - F) The pole weight.

**1.12. CENTER OF GRAVITY**

1.12.1. The manufacturer shall mark the center of gravity on each pole.

**1.13. MINIMUM GROUNDLINE DIAMETERS**

1.13.1 The minimum ground line diameter for all class T1 poles shall be twenty-four inches (24"). The minimum ground line diameter for all class T2 poles shall be twenty-six and a half inches (26.5"). Unless noted differently elsewhere.