SECTION II
SPECIFICATIONS FOR MATERIAL
BID NUMBER 180802

1. SCOPE

These specifications are intended to cover the details for furnishing fiberglass poles. Quantity, length and class are to be order specific.

2. DELIVERY

All materials shall be shipped F.O.B. destination Port Angeles, Washington. The District will provide equipment for off-loading all material; therefore, advance notice of poles shall be given 14 days prior to delivery in Port Angeles. Delivery shall be between 8:00 a.m. and 4:00 p.m., Monday through Friday, except holidays. Delivery time will be a factor in evaluation of the bids.

3. MATERIAL

a. General

Fiberglass composite poles shall be constructed using a polymer binder containing a minimum of 65% commercial grade “E-CR” or “E” fiberglass by weight. Fiberglass material shall be continuously applied in uni-directional and angular orientations to the longitudinal pole neutral axis. Provide factory-drilled holes of noted sizes at locations shown on attached drawing(s), and other features noted on the drawing(s). Poles shall be manufactured with the best available protection against UV degradation. For polyurethane resins, the use of UV-stable “aliphatic” resins with pigment additives is the preferred protection method. Resins enriched with UV inhibitors and UV stable color pigment additives are also acceptable. Color to be dark bronze. The use of standard paint or coatings for UV protection is not acceptable. For polyester resins, the surface of the shaft shall be smooth and consist of a saturated polyester surfacing veil of 16-20 mils minimum thickness and a 10 mil resin layer. The resin shall be unsaturated polyester resin containing UV inhibitor and pigment throughout. A minimum of 1½ mil urethane coating shall be applied to the surface of the pole shaft. The surfacing veil and structural fibers shall be saturated in a singular process with the same resin, thereby insuring molecular bonding between structural layers and the protective layer. Poles may be produced by filament winding or pultrusion methods as appropriate. Pole shaft shall be fabricated in a manner to ensure that the section is dimensionally accurate with the design drawings and within manufacturing tolerances. Pole length shall be as noted, plus or minus 2 inches. Poles shall be of the height and equivalent to the class indicated on the bid schedule.

The poles shall be chemically resistant, non-conductive and flame-resistant in accordance with ASTM D635.

Poles shall be one-piece construction if possible. Preference will be given to the least amount of pieces required for each pole.

b. Top Cap

A removable cap shall be securely mounted to the top of the pole. The cap must remain in place when subjected to maximum wind loads for which the pole is designed.

c. Butt Plug

The bottom of the pole shall be securely plugged. The plug shall have an opening(s) to permit any water collecting in the pole base to drain.

d. ID Tag

An aluminum ID tag containing the manufacturer's name or trademark, pole class, length, and year and month of manufacture shall be securely attached to the pole 10 feet from the base.

e. Drilling and Step Attachments

Provide pre-drilled holes located as shown on attached drawings, plus or minus 1/16 inch. All holes shall be ¾" diameter, plus or minus 1/32 inch. Provide factory-installed step attachments where noted. Holes other than for steps and ground wires shall be drilled on both sides of pole to accommodate through-bolts. Provide factory-installed pulling tape through pole, exiting at "Ground Wire Holes" with a minimum of 36" exposed tape at each end.

4. PERFORMANCE

The following standards shall apply:

1. ANSI 05.1, American National Standard for Wood Products-Specifications and Dimensions.

2. ASCE, Manual No. 104, Recommended Practice for Fiber-Reinforced Polymer Products for Overhead Utility Line Structures.

3. ASTM D4923, Standard Specifications for Reinforced Thermosetting Plastic Poles

4. NESC C2-2017.

Fiberglass pole classes shall meet equivalent strength requirements of ANSI 05.1 when applied in NESC Class C construction according to NESC Section 261(A)(3). Poles shall be Shakespeare Tuff-Poles®, RStandard composite poles, or equal.

The pole shall be resistant to long-term flexural fatigue failure. There shall be no significant change in visual appearance of mechanical properties after one million cycles of altering force applications, which force produces a deflection amplitude equal to or greater than the deflection produced by peak wind speed of 45 mph. Bidders shall submit testing reports with reference to testing standards. Testing performance will be a part of the bid evaluation. Applicable standards may include but are not limited to ASTM D 4364, G90, G154 and QUV testing.

5. INSTALLATION

a. Setting

The poles shall be designed for direct burial in accordance with typical pole depth requirement of 10% of the pole length plus 2 feet.

b. Drilling

Poles shall be capable of either factory- or field-drilling.

6. PACKAGING

Each pole or pole section shall be placed on a minimum of two (2) wooden 4x4's and blocked with wooden blocks to prevent adjacent poles from contact during transport. Poles or pole sections shall be packaged in a manner that prevents any type of scraping or scratching.

7. DRAWINGS

After acceptance of a Proposal, the successful bidder shall submit to the District three (3) prints of detail drawings for each pole type. All drawings will be 24 inches by 36 inches. Drawings submitted as a file on a CD-ROM can be substituted for two (2) prints. The output to the disk must be AutoCAD (2017 or earlier release) output or a translatable DXF or DXB format.

The drawing shall indicate all hole locations, overall length, assembled length, joint area, if applicable, tip diameter, butt diameter, taper, weight and wall thickness.

Each drawing supplied by the successful bidder shall bear identification showing the District's contract number, the date of the drawing release, and whether the drawing is for approval or approved for construction.

One (1) set of these drawings will be returned to the Contractor with indication of approval or correction. Where a correction is required, three (3) sets of revised prints, plainly marked "Revised" and dated, shall be sent to the District for approval. All design and detail drawings shall be approved by District in writing before fabrication.

The Contractor shall be responsible for the correctness of dimensions and details on the drawings. The approval of such drawings will not relieve the Contractor of this responsibility.

8. DISTRICT INSPECTION

The District reserves the right to inspect any part of the manufacturing process. As such, the Contractor shall keep the District apprised when fabrication will start and also when the fabrication will reach a point which would allow a District Representative to view all the various stages of fabrication. The District will require approximately three (3) weeks notice of these dates.