Document Title:

Fiber Reinforced Composite Poles (4 items)

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Document History

Date	Revision Comments
January 5, 2023	Preliminary Specification
January 25, 2023	Modification specification and additional pole
January 27, 2023	Add warehouse catalog
August 7, 2023	Modification cover, sections, and drawings

Warehouse Catalog	Item Version	Date
026-84143	2	8/7/2023
026-84034	2	8/7/2023
026-84035	2	8/7/2023
026-84036	2	8/7/2023

Fiber Reinforced Composites Poles (4 items)

1. Introduction

This specification describes the minimum requirements for fiber composite poles for LUMA Energy approval. The document will serve as a basis for the manufacturing of poles to be used in the electrical distribution area with the best intention to improve the electrical system and offer better solutions to the system. The purpose of the document is to establish the basic criteria for the creation of poles and that they are in accordance with the norms, standards, and applied loads established according to Industrial Standards such as ASTM, ANSI, NESC, ASCE, among others. In addition, we will be able to acquire a reliable and fully compliant system. We will provide all the parameters to be established to withstand weather phenomena, including increased hurricane winds, and structural load factors will be considered.

The reference to specifications of organizations such as ASTM, ISO, EN (European Norm) together with drawings and loading specifications shall be considered part of this specification. Referenced specifications shall be the latest edition, unless specially stated otherwise.

2. Special Requirements

Samples shall be furnished as requested by LUMA Energy. Vendors that have supplied this material to LUMA on previous orders, will not have to furnish samples at bid opening. The material will be received at the LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

3. Literature

Descriptive and technical literature must be supplied by vendor at time of bidding. This literature may include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation. Failure to submit documents on time will cause bidder disqualification. For products described in this specification as requiring qualification, awards will be made only for such products that, prior to the time for opening of bids, had been tested and/or approved by LUMA. Evidence of LUMA Energy's approval of the equipment or material shall be supplied by vendor if requested by LUMA Energy.

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4. Markings

4.1. Containers shall be marked outside with LUMA Energy's purchase order and item number.

4.2. Labels and tags shall be waterproof.

5. Compatible with

5.1. These manufacturers are examples of the material(s) described in this document and does not represent a preference. LUMA will evaluate equally any model not listed here during any acquisition event.

a. Creative Composites Group

b. RS Poles

c. DIMEL Ingeniería

d. Trident Industries

6. Packaging

Large pallets in layers with wood dunnage between layers and overlapping straps to stabilize the different layers in the pallet. The pallet should be stable enough to lift and unload with a forklift in one operation. Large pallets shall be made with treated wood conforming with ISPM-15 (International Standard for Phytosanitary Measure. The manufacturer shall provide an ISPM-15 compliance certificate for each shipment if requested.

7. Number of poles per Package (Logistics)

Each manufacturer shall define the number of poles per packages depending on the shipping containers and platforms for delivery according to LUMA requirements.

8. Codes, Norms, and Acceptance Criteria

8.1. The manufacturer shall provide a mill certificate that shows the chemical composition and properties of the fiber composite used to manufacture each batch of poles.

8.2. International Codes and Reference Standards:

ASCE American Society of Civil Engineers

	Manual No. 104, Recommended Practice for Fiber-Reinforced Polymer Products for Overhead Utility Line Structures, Second Edition
ASTM D1036	Standard Test Methods of Static Tests of Wood Poles
ASTM G154	Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials
ASTM D570	Standard Test Method for Water Absorption of Plastics
NESC	National Electrical Safety Code C2-2017
STRI	Swedish Transmission Research Institute 92/1 Hydrophobicity Classification Guide
ACMA	Standard Specification for FRP Composite Utility Poles, First Edition ANSI Approved

8.3. Quality Certifications

International Organization Standardization: ISO-9001:2015 (required), ISO-14001 (recommended).

9. Description

The specifications are divided into two parts: the Technical Specifications and the Special Conditions. The Technical Specifications will include the material, UV and weathering testing, hydrophobicity testing, water absorption, bending/flex tests, nonlinear finite element analysis, design, embedment length, deflection, drawings, final approval before manufacture, hardware connection and pole wall loading tests, hole patterns, id plate and marking, failure to meet the warranty and warranty. The Special Conditions will include special pole requirements, weight limit of the structures, number of sections of the structures, special pole requirements, painted ground line band, grounding connectors, delivery of material, and table of compliance.

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9.1. Technical Specifications

a. Material

1. Only thermoset resin binders shall be used in the manufacture of the composite poles. Polyurethane is the preferred resin. Thermoplastic resin binders are not acceptable for use in the composite poles.
2. Only glass fiber shall be used in the manufacture of the composite poles.
3. Regarding ultraviolet (UV) protection, the composite utility poles shall be manufactured using either of the following two options for UV protection: with three layers of ultraviolet protection:
    a. Preferred option:
        1. The use of UV-stable "aliphatic" polyurethane resins with pigment additives creating a resin-rich surface is the preferred UV protection method.
    b. Alternatively, three layers of UV protection can be used:
        1. The first layer shall contain UV light absolvers that are mixed with the thermoset resin prior to production.
        2. The second layer shall be a 10 mils polyester surfacing veil to protect the glass reinforcement from fiber blooming.
        3. The third layer shall be 3 mils coating of high-performance paint or powder coat.
4. All composite poles shall be manufactured with a surface where the hydrophobic characteristics do not change over the course of the poles.
5. LUMA prefers that the finished color of the product is gray or another similar light color. Other colors may be accepted depending on the availability of the poles.

b. **UV and Weathering Testing**

To confirm the service life claims of the pole, the UV and weathering resistance of the composite poles shall be verified through ongoing accelerated aging tests in accordance with the procedures detailed in ASTM G154 for QUV exposure ("h" and lamp setting of 0.89 W/nm).

1. Coupon samples, representative of the composite poles, shall be exposed continuously to the UV portion of sunlight, moisture, and heat for a minimum of 14,000 hours per ASTM G154
2. At the prescribed hourly intervals indicated in ASTM G154, a visual inspection report shall be completed, and the composite pole coupons shall be visually inspected for chalking, flaking, blistering, cracking, and checking.
3. Upon completion of the visual inspection, the same coupons will be subjected to testing to check for changes in mechanical properties.

c. **Hydrophobicity Testing**

The pole wall's ability to maintain its hydrophobicity over the course of its service life significantly contributes to maintaining the pole's initial non-conductive characteristics, especially in wet conditions.

1. Further to the accelerated UV testing per ASTM G154, the hydrophobicity of the pole wall exterior shall also be tested after 14,000 hours of accelerated QUV weathering exposure.
2. The hydrophobicity testing shall be in accordance with STRI Guide 92/1, Hydrophobicity Classification Guide.
3. Only results that show no change in the hydrophobicity performance of weathered (14,000 hours of QUV exposure) and un-weathered (new) pole wall test coupons shall be acceptable.

d. **Water Absorption**

To protect against water absorption related damage, water absorption shall be less than 0.5% when the pole wall laminate is tested in accordance with ASTM D570.

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e. **Bending/Flex Tests**

1. Full-scale bending/flex tests shall be conducted on representative composite pole samples in accordance with a modified ASTM D1036 test procedure.
2. Each pole shall be tested in either a vertical or a horizontal cantilevered position, with the butt end of the pole secured inside a rigid test frame.

f. **Non-Linear Finite Element Analysis Software**

To ensure reliable predictive modelling, the composite poles will have library files compatible with Power Line Systems software (PLS-POLE® and PLS-CADD®) or SPIDACalc® software.

g. **Design**

The supplier is responsible of the design. The bid proposal shall include one original set and must include and comply with the following:

1. Loading diagrams, calculations, and design parameters.
2. The yield strength of the material used shall be equal or greater than the values in the design calculations. (if applicable)
3. The pole shall be designed to withstand, in addition to all other loads and their appropriate overload factors, the effect of deflection due to the loading specified including the dead load of the pole (p-delta effect).
4. Any calculation information that supports your pole design, which demonstrates that you have taken the design parameters into consideration. Provide program runs for your design, e.g., PLS Pole or equivalent design software.
5. The minimum bending moment of the poles at groundline shall be:

a. **Table 1: Minimum Bending Moment**

Poles Description	Minimum Bending Moment	Minimum Ultimate Force
35-FC3.5	96 ft.-kips	3,500 lbs.
40-FC5.7	182 ft.-kips	5,700 lbs.
50-FC8.5	348 ft.-kips	8,500 lbs.
60-FC13	645 ft.-kips	13,000 lbs.

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h. **Embedment length**

1. The 35-FC3.5 and 40-FC5.7 poles will have a depth at 10% plus 2 feet of their total length.
2. The 50-FC8.5 and 60-FC13 poles will have a depth at 14% of their total length.

i. **Deflection**

1. Deflection under maximum load shall not exceed 10% for 35-FC3.5 and 40-FC5.7.
2. Deflection under maximum load shall not exceed 8% for 50-FC8.5 and 60-FC13.

j. **Drawings**

Drawing for the bid proposal shall include two original sets (11" x 17") with the following information:

1. The assembled pole showing all its components and their location.
2. General dimensions of all the structural components.
3. Weight for each Pole (with all accessories installed).
4. A bill of materials.
5. Pole grounding attachment detail.
6. Details of all accessories including rivnuts ground pads, top cap, bearing plate, other hardware, etc. (if applicable)

k. **Final Approval before Manufacture**

1. Final design calculations shall be submitted before fabrication commences together with the shop drawing for LUMA approval.
2. After approval, one final set of drawings and design calculations in PDF format plus a digital copy of drawings in AutoCAD 3D (.DWG) shall be sent for LUMA's records. All drawings shall include LUMA purchase order number.

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l. **Hardware Connection and Pole Wall Loading Tests**

1. Full-scale testing shall be conducted on representative composite pole samples to simulate the load effects from guying hardware, crossarm attachments, cross brace attachments, transformer attachments and various other types of hardware on the composite pole wall. Hardware connection and associated pole wall loading simulations shall include, but not be limited to:
    a. Bolt bearing due to axial shear loads.
    b. Bolt pull-through
    c. Deformation of the pole wall due to radial compressive loads.

m. **Holes Patterns**

1. Details for the holes can be found on the post diagrams (See Appendices).
2. All holes must be drilled, and the holes must be sealed with a removable plastic cap to prevent water and insects from entering (or as applicable depending on compliance with the pole material).

n. **ID Plate and Markings**

Each pole shall have an identification plate, that legible and waterproof, fabricated from steel. This identification plate shall be welded to the pole at approximately 5'-6" from ground line. The plane shall be 4" x 5" (W x H) in dimension, stamped with letters not less than ¼" in height. The plate shall contain the following minimum information:

1. Owner Name: PREPA
2. Fabrication Date: MM/YY
3. Code Number
4. Ult. Moment Capacity (ft.-k)
5. Weight (lbs.)
6. Pole length (ft.)
7. Type Class
8. Manufacturer

o. **Failure to Meet the Warranty**

Should any piece of equipment fail to meet the requirements of these specifications within the warranty period, it shall be optional for the engineer to accept the pole or reject it and direct the manufacturer to proceed at once to make alterations or furnish such new parts as may be necessary to make it meet the warranty and requirements. All expense of furnishing any replacement parts shall be borne by the manufacturer.

p. **Warranty**

Provided they have been selected, assembled, and installed in strict adherence to the manufacturer's procedures and engineering specifications, including hardware connection selection and validation, the composite poles themselves shall be covered by a minimum 40-year warranty per the initial load case considerations.

9.2. **Special Conditions**

a. **Documents to be evaluate**

The manufacturer shall submit drawings of each individual design for evaluation and approval:

1. Fiber Composite Pole: 35-FC3.5 – **Appendix-1**
2. Fiber Composite Pole: 40-FC5.7 – **Appendix-2**
3. Fiber Composite Pole: 50-FC8.5 – **Appendix-3**
4. Fiber Composite Pole: 60-FC13 – **Appendix-4**

b. **Weight limit for the structures**

Item	Poles Description	Total Weight Approximately (Pounds)
1	35-FC3.5	1,500
2	40-FC5.7	1,800
3	50-FC8.5	2,700
4	60-FC13	4,800

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c. **Number of Sections of the Structures**

1. The distribution poles will be manufactured in composite poles as single or multi-sections as required and complying with the design parameters.
2. They will be evaluated at the moment of being submitted.
3. The section shall be round symmetrical.
4. All pole sections, and any other attachments shall be marked for identification by a code designed by the manufacturer for each item indicated on the purchase order. When it applies, the coding system shall be shown on the manufacturer's drawings.

d. **Special Poles Requirement**

The poles shall be provided with a bearing plate welded or capable of being bolted on the bottom of the pole. (recommended)

e. **Painted Ground Line Band**

1. The pole shall have an additional 3 in. wide yellow band painted around the pole at the ground line to indicate the depth limit to which the pole shall be installed.
2. The paint to be used can be Rust-Oleum #242258 enamel or an equivalent approved by LUMA.

f. **Grounding Connectors**

1. Two ground connectors shall be provided for pole 35-FC3.5 and 40-FC5.7: one for the transformer ground located 8’-7" from the top and the other 1'-0 below the ground line.
2. Grounding connectors for the pole 50-FC8.5 shall be provided at 6'-6", 17’-7" and 24'-6" from the top. In addition, a two-hole NEMA grounding pad shall be provided one foot below the ground line.
3. Grounding connectors for pole 60-FC13 shall be provided at 14”, 18’-1" and 26’-1" from the top. Also, one two-hole NEMA grounding pad shall be provided one foot below the groundline.
4. All grounding connections shall be made on the inside of the pole.

g. **Delivery of Material**

1. The distribution poles will be delivered at the LUMA General Warehouse in Palo Seco (011), Puerto Rico, unless otherwise indicated and coordinated with another area provided by the company.
2. LUMA may take delivery at a designated location with the delivering carrier's equipment. The manufacturer shall coordinate with LUMA to ensure a smooth and efficient delivery of the poles.
3. LUMA shall provide all labor, equipment, and materials for unloading the poles at the project site. A pole is considered delivered when it is lifted from the delivery carrier's trailer or semi-trailer.
4. The Manufacturer shall take all reasonable steps to ensure that the composite poles covered by this specification shall be delivered to the Owner/Purchaser's designated storage facility during the period stated in the Bidder's Proposal, or as previously agreed and detailed in the Purchase Order.

h. **Table of Compliance**

The bid proposals shall include a summary table for each structure as per the template attached to this specification. The table shall be filled out in its entirety and comply with the metrics and conditions established. **BIDDER SHALL BE DECLARED NON-RESPONSIVE IF THIS TABLE IS NOT INCLUDED WITH THE PROPOSALS**. (See Appendices)

10. Inspection

The acceptance of any material or equipment shall in no way relieve the vendor from his responsibility to meet all the requirements of this specification, and it would not prevent subsequent rejection if such materials were found later to be defective. LUMA will reserve the right to inspect the poles production to assure that the process complies with the latest standards and regulations. Every Manufacturer shall provide information of all tests run for quality assurance.

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11. Warehouse and Asset Suite Identification Information

Table #1: Warehouse and Asset Suite Number

Item	Pole Height	Warehouse Number	Asset Suite
1	35-FC3.5	026-84143	84143
2	40-FC5.7	026-84034	84034
3	50-FC8.5	026-84035	84035
4	60-FC13	026-84036	84036

12. Proposal Information

12.1. Submitted proposals must include:

a. Technical information

b. Table of Compliance completed by the bidder with reference. (See Appendices)

— End of Specification —

APPENDICES

Fiber Reinforced Composites Poles (4 items)

Table 1: Table of Compliance: Pole-35-FC3.5

Line	Criteria	Description	Pass/Fail (P/F)	Comments
1	**Specification**	The Proponent complies with the corresponding specification document. (4350.239)		
2	**Industry Standards**	The Proponent complies with the industry standards established in the specification document. (Section 8)		
3	**Test required**	Load Tests as required by LUMA		
4	**Characteristics and Dimensions**	Total Length: 35 ft.		
		Embedment Length: 5 ft.-6 in.		
		Minimum Bending Moment: 96 ft.-kips		
		Horizontally Force: 3,500 pounds		
		Weight no more than: 1,500 pounds		
		Maximum Deflections: 10 %		
		Holes A-A: 18		
		Holes B-B: 12		
		Ground #1: one for the transformer ground located 8’-7" from the top and the other 1'-0 below the ground line.		
5	**Warranty**	Minimum 40-year		
6	**Number of Sections by supplied**			
7	**Material Description by supplied**			
8	**Drawings included by supplied**			

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Table 2: Table of Compliance: Pole-40-FC5.7

Line	Criteria	Description	Pass/Fail (P/F)	Comments
1	**Specification**	The Proponent complies with the corresponding specification document. (4350.239)		
2	**Industry Standards**	The Proponent complies with the industry standards established in the specification document. (Section 8)		
3	**Test required**	Load Tests as required by LUMA		
4	**Characteristics and Dimensions**	Total Length: 40 ft.		
		Embedment Length: 6 ft.-0 in.		
		Minimum Bending Moment: 182 ft.-kips		
		Horizontally Force: 5,700 pounds		
		Weight no more than: 1,800 pounds		
		Maximum Deflections: 10 %		
		Holes A-A: 21		
		Holes B-B: 14		
		Ground #1: one for the transformer ground located 8’-7" from the top and the other 1'-0 below the ground line.		
5	**Warranty**	Minimum 40-year		
6	**Number of Sections by supplied**			
7	**Material Description by supplied**			
8	**Drawings included by supplied**			

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Table 3: Table of Compliance: Pole-50-FC8.5

Line	Criteria	Description	Pass/Fail (P/F)	Comments
1	**Specification**	The Proponent complies with the corresponding specification document. (4350.239)		
2	**Industry Standards**	The Proponent complies with the industry standards established in the specification document. (Section 8)		
3	**Test required**	Load Tests as required by LUMA		
4	**Characteristics and Dimensions**	Total Length: 50 ft.		
		Embedment Length: 7 ft.-0 in.		
		Minimum Bending Moment: 348 ft.-kips		
		Horizontally Force: 8,500 pounds		
		Weight no more than: 2,700 pounds		
		Maximum Deflections: 8 %		
		Holes A-A: 31		
		Holes B-B: 21		
		Ground #1, #2, and #3: shall be provided at 6'-6", 17'-7" and 24'-6" from the top. In addition, a two-hole NEMA grounding pad shall be provided one foot below the ground line.		
5	**Warranty**	Minimum 40-year		
6	**Number of Sections by supplied**			
7	**Material Description by supplied**			
8	**Drawings included by supplied**			

Fiber Reinforced Composites Poles (4 items)

Table 4: Table of Compliance: Pole-60-FC13

Line	Criteria	Description	Pass/Fail (P/F)	Comments
1	**Specification**	The Proponent complies with the corresponding specification document. (4350.239)		
2	**Industry Standards**	The Proponent complies with the industry standards established in the specification document. (Section 8)		
3	**Test required**	Load Tests as required by LUMA		
4	**Characteristics and Dimensions**	Total Length: 60 ft.		
		Embedment Length: 8 ft.-5 in.		
		Minimum Bending Moment: 645 ft.-kips		
		Horizontally Force: 13,000 pounds		
		Weight no more than: 4,800 pounds		
		Maximum Deflections: 8 %		
		Holes A-A: 39		
		Holes B-B: 26		
		Ground #1, #2, and #3: shall be provided at 14”, 18’-1" and 26’-1" from the top. Also, one two-hole NEMA grounding pad shall be provided one foot below the groundline.		
5	**Warranty**	Minimum 40-year		
6	**Number of Sections by supplied**			
7	**Material Description by supplied**			
8	**Drawings included by supplied**			

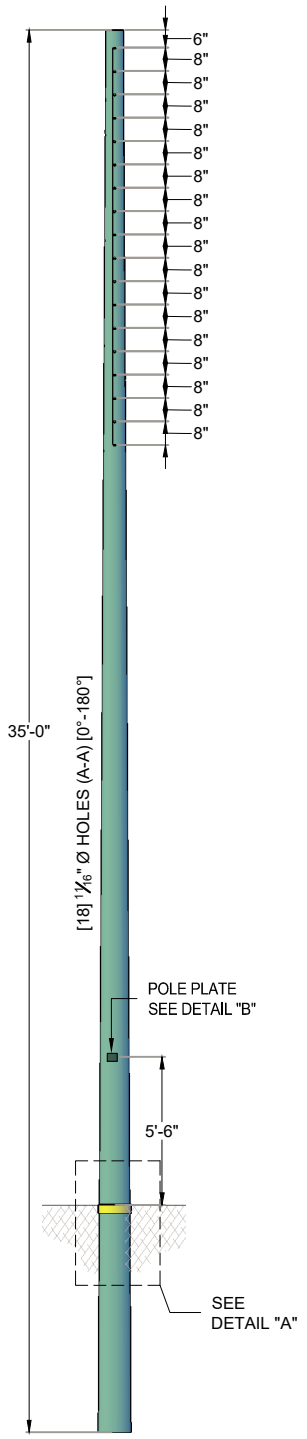
DISTRIBUTION ENGINEERING

DISTRIBUTION SPECIFICATIONS

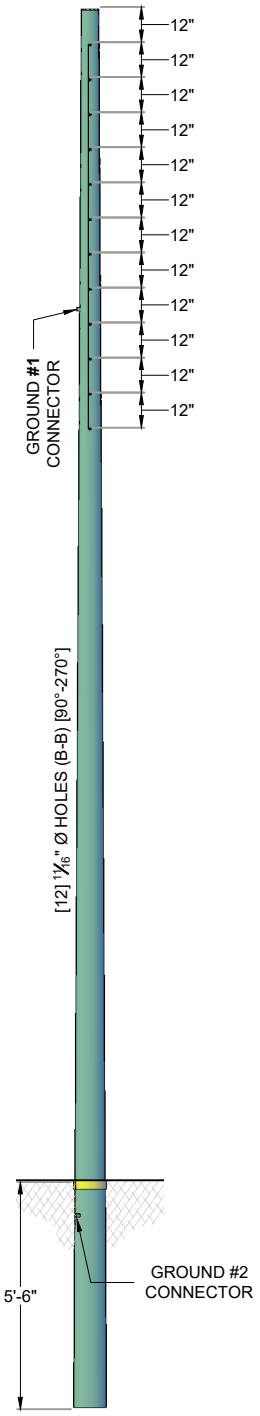
TITLE:

HOLES PATTERN FOR FIBER REINFORCED COMPOSITE POLE STANDARD SPECIFICATIONS 35 - FC3.5

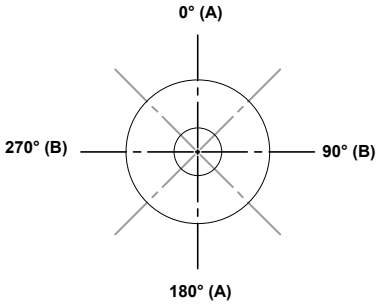
APPENDIX NO. 1
DOCUMENT NO. 4350.239
PAGE 1 OF 1 DATE AUGUST 07, 2023
SUBMITTED ROSALIA ALVERIO GONZALEZ
REVIEWED RAFAEL TORRES LIC 14593
APPROVED RICARDO CASTRO LIC. 12135
DIGITIZED VICTOR R. FEBRES LIC. 3412



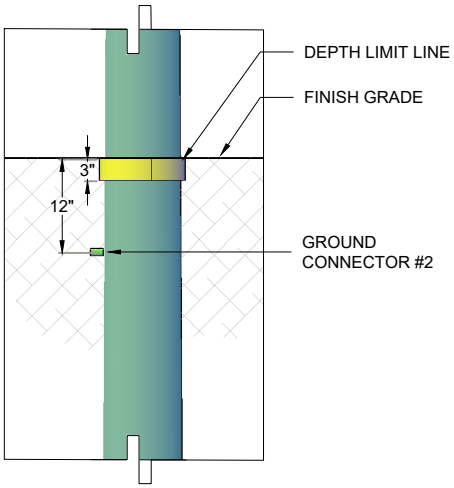
HOLES (A-A)



HOLES (B-B)

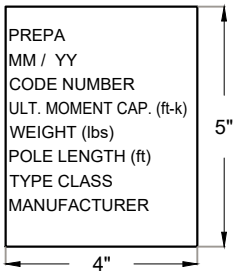


TOP VIEW



DETAIL "A"

(SEE SPECIFICATION FOR MORE DETAILS)



DETAIL "B"

SEE SPECIFICATION

POLES DESCRIPTION				
POLE FT	EMBEDMENT LENGTH	HOLES "A-A"	HOLES "B-B"	GRND #1 FROM THE TOP
35'-0"	5'-6"	18	12	8'-7"

DISTRIBUTION ENGINEERING

DISTRIBUTION SPECIFICATIONS

TITLE:

HOLES PATTERN FOR FIBER REINFORCED COMPOSITE POLE STANDARD SPECIFICATIONS 40 - FC5.7

APPENDIX NO. 2
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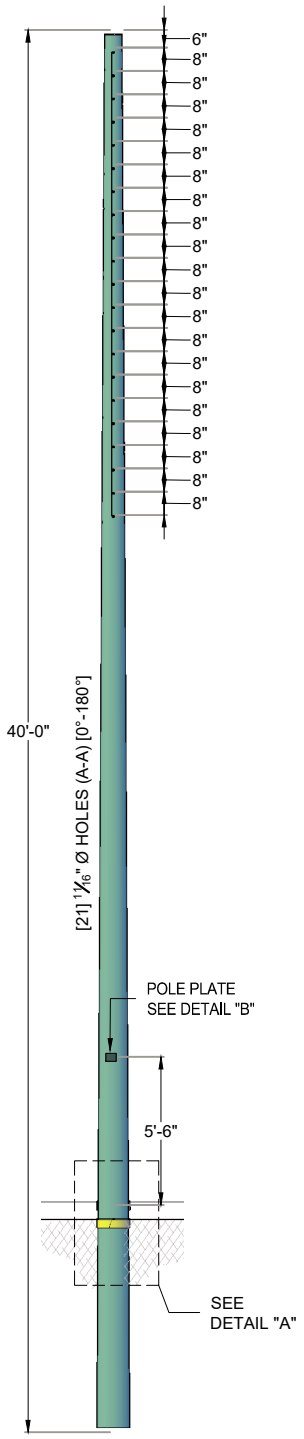
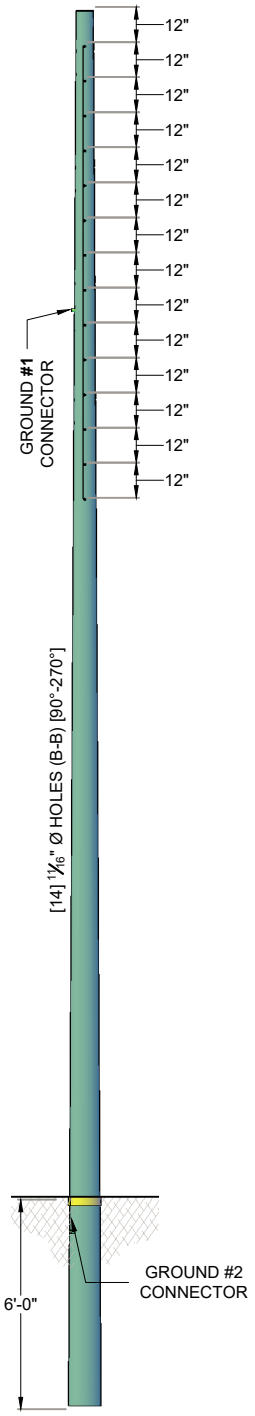
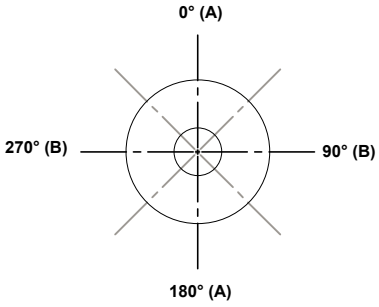
REVIEWED RAFAEL TORRES LIC 14593
APPROVED RICARDO CASTRO LIC. 12135
DIGITIZED VICTOR R. FEBRES LIC. 3412



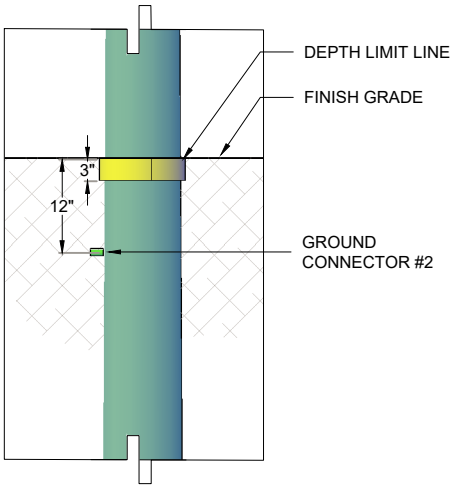
HOLES (A-A)



HOLES (B-B)

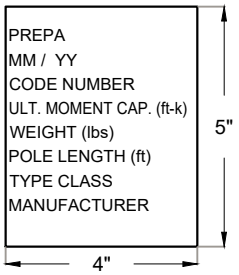


TOP VIEW



DETAIL "A"

(SEE SPECIFICATION FOR MORE DETAILS)



DETAIL "B"

SEE SPECIFICATION

POLES DESCRIPTION				
POLE FT	EMBEDMENT LENGTH	HOLES "A-A"	HOLES "B-B"	GRND #1 FROM THE TOP
40'-0"	6'-0"	21	14	8'-7"

DISTRIBUTION ENGINEERING

DISTRIBUTION SPECIFICATIONS

HOLES PATTERN FOR FIBER REINFORCED COMPOSITE POLE STANDARD SPECIFICATIONS 50 - FC8.5

APPENDIX NO. 3
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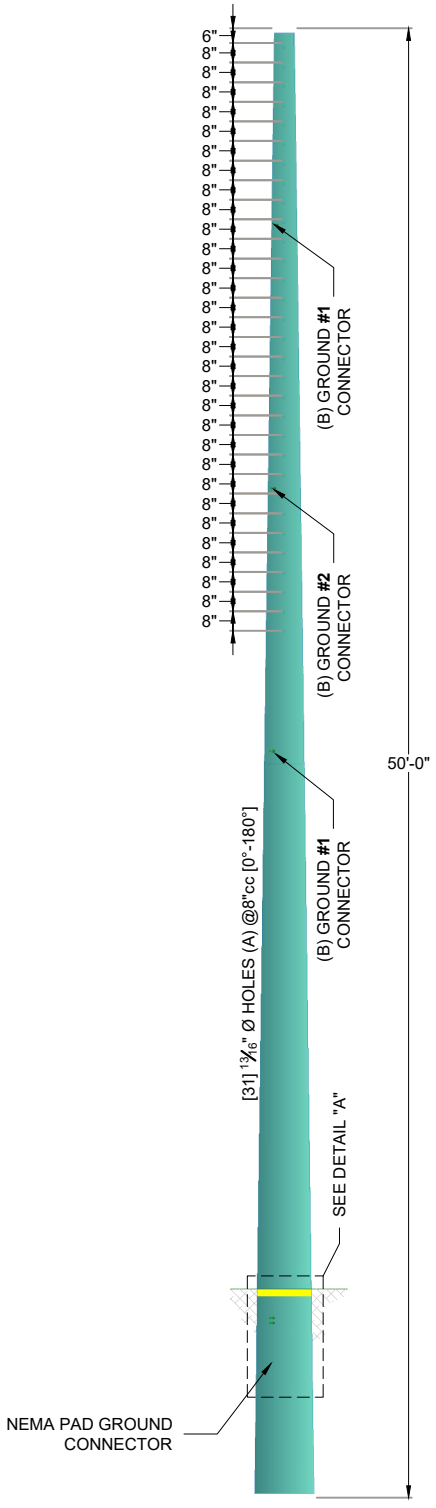
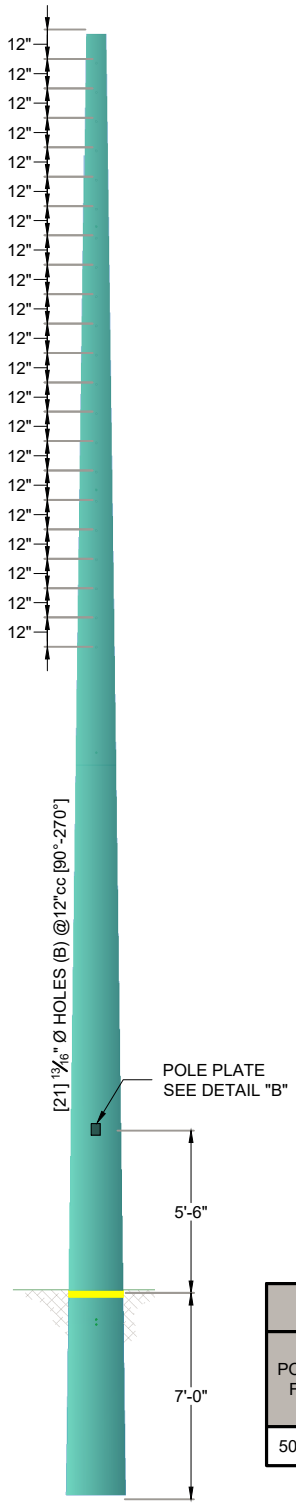
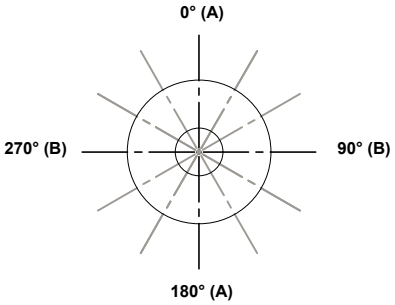
REVIEWED RAFAEL TORRES LIC 14593
APPROVED RICARDO CASTRO LIC. 12135
DIGITIZED VICTOR R. FEBRES LIC. 3412



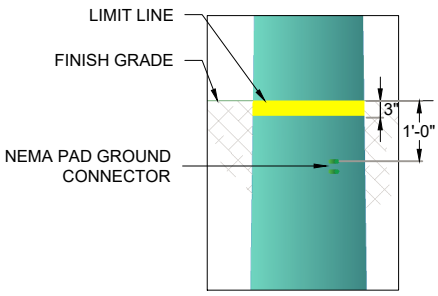
8" HOLES ELEV.
(A-A)



12" HOLES ELEV.
(B-B)

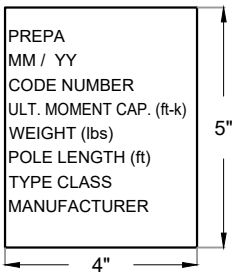


TOP VIEW



DETAIL "A"

(SEE SPECIFICATION FOR MORE DETAILS)



DETAIL "B"

SEE SPECIFICATION

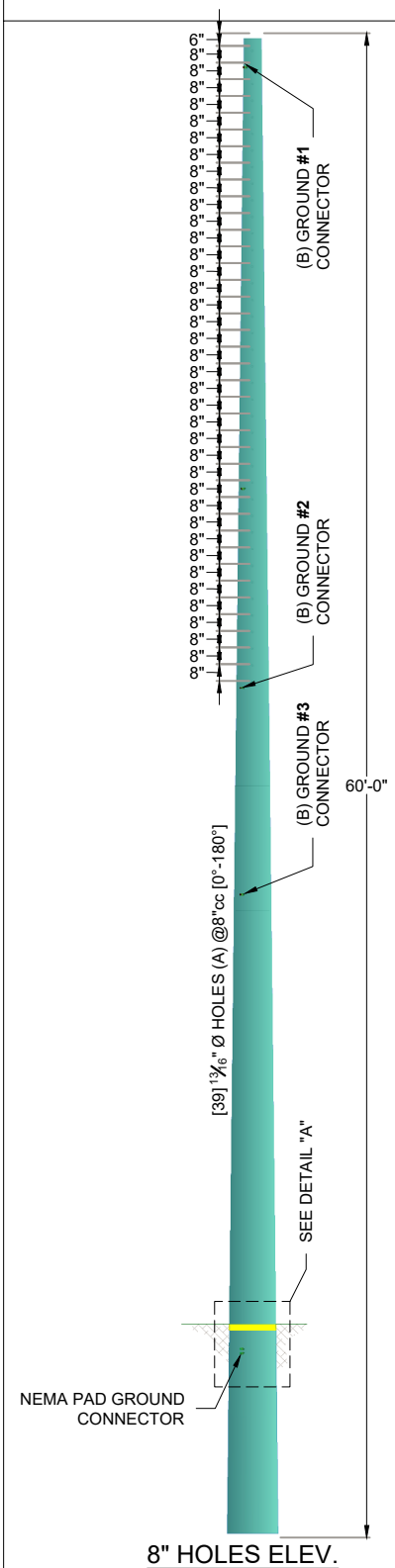
POLE BURIED DESCRIPTION						
POLE FT	EMBEDMENT LENGTH	HOLE "A"	HOLE "B"	GRND #1 FROM TOP	GRND #2 FROM TOP	GRND #3 FROM TOP
50'-0"	7'-0"	31	21	6'-6"	17'-7"	24'-6"

DISTRIBUTION ENGINEERING

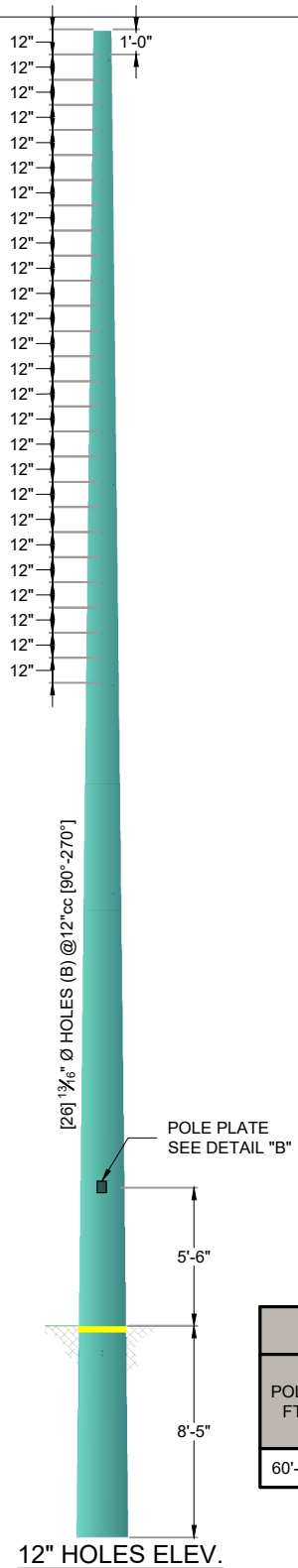
DISTRIBUTION SPECIFICATIONS

HOLES PATTERN FOR FIBER REINFORCED COMPOSITE POLE STANDARD SPECIFICATIONS 60 - FC13

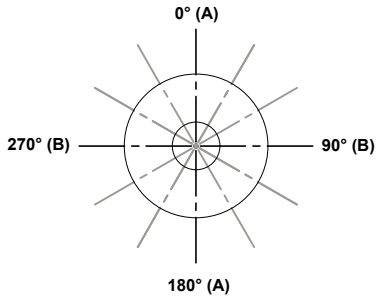
APPENDIX NO. 4
DOCUMENT NO. 4350.239
PAGE 1 OF 1 DATE AUGUST 07, 2023
SUBMITTED ROSALIA ALVERIO GONZALEZ
REVIEWED RAFAEL TORRES LIC 14593
APPROVED RICARDO CASTRO LIC. 12135
DIGITIZED VICTOR R. FEBRES LIC. 3412



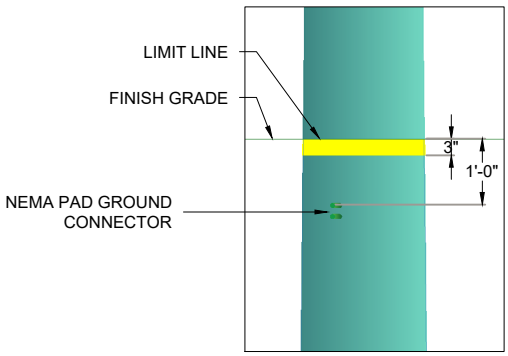
8" HOLES ELEV.
(A-A)



12" HOLES ELEV.
(B-B)

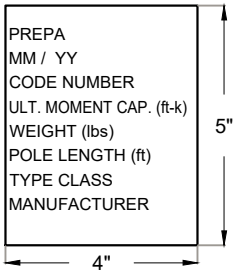


TOP VIEW



DETAIL "A"

(SEE SPECIFICATION FOR MORE DETAILS)



DETAIL "B"

SEE SPECIFICATION

POLE BURIED DESCRIPTION						
POLE FT	EMBEDMENT LENGTH	HOLE "A"	HOLE "B"	GRND #1 FROM TOP	GRND #2 FROM TOP	GRND #3 FROM TOP
60'-0"	8'-5"	39	26	14"	18'-1"	26'-1"

Binder1

Final Audit Report 2023-08-08

Created:	2023-08-08
By:	Rosalia Alverio (rosalia.alverio@lumapr.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA9dL3tFOeQQdZcYiNjNfod8ptQDSFJb32

"Binder1" History

Document created by Rosalia Alverio (rosalia.alverio@lumapr.com)
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Signer ricardo.castro@lumapr.com entered name at signing as Ricardo Castro Gómez
2023-08-08 - 3:23:38 PM GMT

Document e-signed by Ricardo Castro Gómez (ricardo.castro@lumapr.com)
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Agreement completed.
2023-08-08 - 3:23:40 PM GMT