



Document Title:

Power-Installed Screw Anchor - (Square Shaft, Multi-Helix)

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Department

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Version History

Version	Date	Revision Comments
01	Aug. 26, 2021	Initial Release
02	Dec. 13, 2021	Sections 8 and 9 edited.
03	Abr. 13, 2022	TOC and Signature format added.
04	Nov. 11, 2022	Cover Page added, Section 9 and TOC edited.
05	Aug. 05, 2024	Format corrections, TOC update, Section 4 modified, and sections order rearranged.
06	Nov. 11, 2024	Document type changed from material specification to equipment specification. Sections 3, 5, 8 and 9 modified. TOC modified. Item 002-86687 created.



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Department: Distribution

Item Version History

Warehouse Catalog #	Asset Suite #	Version	Date
002-82194	82194	6	11/11/2024
002-86687	86687	1	11/11/2024



1. Introduction

This is a general specification that covers the minimum requirements for the screw anchor assembly to be used in the distribution system in Puerto Rico. Further information will be provided by LUMA Energy at the time of order placement and will provide information on site specific conditions, quantity, and other requirements. This document includes the general electrical and mechanical characteristics of the equipment/material.

2. Special Requirements

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

3. Literature

- 3.1. Descriptive and technical literature must be supplied by the vendor at time of bidding. This literature must include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation. **The literature must be an official document from and certified by the manufacturer.** Failure to submit documents on time and duly certified by the manufacturer will cause bidder disqualification.
- 3.2. If required by LUMA, final drawings and documentation shall be submitted by the vendor before the manufacturing and shipping process for approval.

4. Compatible with

For compatible manufacturer and model see Table 1. These models are examples of the equipment/material described in this document and do not represent a preference. LUMA will evaluate equally any model not listed here during any acquisition event.

5. Markings

- 5.1. Containers shall be marked outside with LUMA Energy's purchase order and item number.
- 5.2. Package(s) to be delivered to the warehouse shall be clearly marked with manufacturer and item information (part number, serial number, quantity, etc.).
- 5.3. Packaging labels and tags shall be waterproof.

6. Packaging

All equipment/material shall be packaged and marked in such a way as to facilitate handling and protection from damage and that the receiving warehouse can readily identify it and send it, in one complete unit, to a field location without opening crates or boxes to sort items and/or parts.

7. Number Per Package (Logistics)

One (1) unit per package or as requested by LUMA.

8. Acceptance Criteria

- 8.1. Test required: certified by external qualified laboratories.
- 8.2. Product shall be manufactured in accordance with the latest issue below (section 8.3). When conflicts occur between purchaser's specifications and the latest issue below, the purchaser's specification shall prevail.
- 8.3. Latest applicable codes, standards, and other regulations:
 - a. ASTM A123: for zinc (hot dip galvanized) coatings on iron and steel products, covers individual steel pieces as well as assemblies of various classes of material.
 - b. ASTM A143: for safeguarding against embrittlement of hot dip galvanized structural steel products and procedure.
 - c. ASTM A153: for zinc coating (hot dip galvanized) on iron and hardware.
 - d. ASTM A283/A283M: for low and intermediate tensile strength carbon steel plates.
 - e. ASTM F3125: for high strength structural bolts, steel and alloy steel, heat treated.
- 8.4. If any other standards different from the ones indicated in this document are used, the supplier must provide information showing compatibility with the required ones.

9. Description

- 9.1. Screw anchors are used in weak soil and where retention in accordance with load capacity is required. The addition of extensions will be required to meet the load capacity.
- 9.2. All the pieces shall be designed as high-strength for heavy tension loads.
- 9.3. Shall be furnished as a set including the lead section, extension shaft, and guy adapter from the same manufacturer to ensure correct fitting. It is not necessary to furnish it fully assembled.
- 9.4. The extension shaft could be acquired separately. See Table 1 for the warehouse catalog number for the complete assembly and the extension only.
- 9.5. Each item must be marked with the manufacturer's identification number on the upper portion of the hub.

- 9.6. Lead section, extension shaft, and guy adapters shall be provided with a finish that is smooth, continuous, and thorough.
- 9.7. All the pieces shall be hot dip galvanized as per ASTM A153 and shall include all necessary hardware as required for their intended use and design for heavy loads. Hot dip galvanized as per ASTM A123 shall be evaluated by LUMA as a second option.
- 9.8. The anchor shall be aligned within 5° with the guy load to comply with the specified tensile strength.
- 9.9. Lead Section:



- a. Shall be a 7 ft (2.1 m) X 1-1/2" (3.8 cm) square-shaft with three (3) helices.
- b. Helixes Diameter: 10", 12", and 14" (25.4, 30.5, and 35.6 cm).
- c. Approximate Weight: 96 lbs (43.5 kg).
- d. Max. Installation Torque: 7,000 lbf (31.1 kN) for heavy tension loading.
- e. Min. Ultimate Tension Strength: 70,000 lbf (311.4 kN) for heavy tension loading.
- f. Holding Capacity vs Soil Class:

SOIL CLASS	COMMON SOIL TYPE DESCRIPTION	MAXIMUM TENSION FORCE
2	Dense fine sands: very hard silts and clays (maybe preloaded)	69,000 lbf (307 kN)
3	Dense sands and gravel: hard silt and clays	61,000 lbf (271 kN)
4	Medium dense sands and gravel: very stiff to hard silts and clays	53,000 lbf (236 kN)
5	Medium dense coarse sands and sandy gravels: stiff to very stiff silts and clays	45,000 lbf (200 kN)
6	Loose to medium dense fine to coarse sands to stiff clays and silts	37,000 lbf (165 kN)
7	Loose fine sands: alluvium, loess, medium stiff and varied clays, fill	29,000 lbf (129 kN)

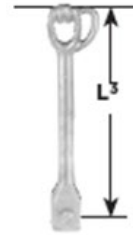
- 9.10. Extension Shaft:



- a. Dimensions: 5 ft (1.5 m) X 1-1/2" (3.8 cm) square shaft.
- b. Approximate weight: 39 lbs (17.7 kg).
- c. Max. Installation Torque: 7,000 lbf (31.1 kN) for heavy tension loading.
- d. Shall include an integral coupling with high-strength bolt and nut for a 1-1/2" square shaft.

9.11. Guy Adapter:

- a. Style: Tripleye
- b. Dimensions: L3 = 17" (43.2 cm) approximate.
- c. Weight: 10.8 lbs (4.9 kg) approximate.
- d. Eye Rating: 70,000 lbs (31,751 kg) for heavy tension loading.
- e. Shall include an integral coupling with high-strength bolt and nut for a 1-1/2" square shaft.



10. Inspection

The acceptance of any equipment/material 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 equipment/materials were found later to be defective.

11. Proposal Information

11.1. Submitted proposals must include:

- a. Technical information, tests, and drawings.
- b. Any exceptions taken to this specification.
- c. Table of Compliance completed by the bidder with reference (see Appendix 1).

12. Table 1: Warehouse and Asset Suite Identification Number

Warehouse Catalog #	Asset Suite #	Equipment	Compatible Manufacturer	Part #
002-82194	82194	Lead Section	Hubbell	C1100838
		Extension Shaft		C1100470
		Guy Adapter		C1020025
		Lead Section	MacLean	D6637-7
		Extension Shaft		D6620U7
		Guy Adapter		D6606US
002-86687	86687	5' Extension Shaft	Hubbell	C1100470
			MacLean	D6620U7

- End of Specification -



Appendix



Appendix 1: Table of Compliance

Line	Description		Pass/Fail (P / F)	Comments
1	Complies with the specification document 4350.014.			
2	Industry Standards: ASTM (A143, A153, A283 & F3125).			
3	Tech. info., tests & drawings provided.			
4	002-82194: As a set of three pieces (Lead, Shaft & Adapter). 002-86687: Shaft only.			
5	High-strength for heavy tension load.			
6	Hot Dip Galvanized Steel as per ASTM A153.			
7	Lead Section	7' X 1-1/2" square shaft		
		Three (3) Helixes: 10", 12", and 14"		
		Max. Installation Torque: 7,000 lbs.		
		Min. Ultimate Tension Strength: 70,000 lbf		
		Approximate Weight: 96 lbs.		
8	Extension Shaft	Dimension: 5' X 1-1/2" square shaft.		
		Approximate Weight: 39 lbs.		
		Max. Installation Torque: 7,000 lbs.		
		With integral coupling with high-strength bolt and nut for a 1-1/2" square shaft.		
9	Guy Adapter	Tripleye		
		17" long approx.		
		Weight: 10.8 lbs approx.		
		Eye Rating: 70,000 lbf		
		With integral coupling with high-strength bolt and nut for a 1-1/2" square shaft.		

NOTE: This table is only a checklist for reference. The compliance must be with the complete document. Filling out the table with "PASS" won't be accepted as a compliance without the technical information required to certify it.











4350.014 Screw Anchor (11-11-24)

Final Audit Report

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