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Transmission Screw Anchor Set 100 kips

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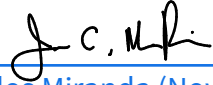
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Related/Referenced Documents

Include the applicable document, section, or reference "[add link here](#)".

Version History

Version	Date	Revision
01	Nov 27, 2024	First Issue.

1. General

1.1. Overview

- 1.1.1. This is a general specification that covers the minimum requirements for the Transmission Screw Anchor Set 100 kips and its components to be used in LUMA transmission systems in Puerto Rico.
- 1.1.2. Further information will be provided by LUMA Energy at the time of order placement and will provide information on site conditions, quantity, and other requirements.
- 1.1.3. This document includes the general electrical and mechanical characteristics of the material.

Warehouse No.	Equipment
002-86705	Lead Section
	Extension Shaft
	Guy Adapter

2. Specific Name

- 2.1. Transmission Screw Anchor Set 100 kips

3. Specific Requirements

- 3.1. Samples shall be furnished to LUMA.
- 3.2. Vendors that have supplied this equipment/material to LUMA on previous orders, will not have to furnish samples at bid opening.
- 3.3. Shipping will include transportation and unloading at the indicated warehouse
- 3.4. LUMA requires One (1) unit properly labeled for testing and analysis.
- 3.5. They shall be required to show evidence of LUMA’s approval of the equipment.
- 3.6. Descriptive and technical literature shall be supplied to LUMA at time of bidding.
- 3.7. This literature must include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation.
- 3.8. The literature must be an official document from and certified by the manufacturer.
- 3.9. Failure to submit documents on time and duly certified by the manufacturer will cause bidder disqualification.

4. Acceptance Criteria

- 4.1. Test required: certified by external laboratories.
- 4.2. Product shall be manufactured in accordance with the latest issue below (section 4.3). When conflicts occur between purchaser’s specifications and the latest issue below, the purchaser’s specification shall prevail.
- 4.3. 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, applies to hardware products such as castings, fasteners, rolled, pressed, and forged products, and miscellaneous threaded objects that will be centrifuged, spun, or otherwise handled to remove the excess zinc.
- d. ASTM A193: Standard Specification for Alloy-Steel and Stainless-Steel Bolting for High Temperature or High-Pressure Service and Other Special Purpose Applications
- e. ASTM F1554: Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
- f. ASTM A29/A29M: Steel Bars, Carbon and Alloy, Hot-Wrought and Cold Finished.
- g. ASTM A36/A36M Structural Steel.
- h. AWS D1.1 Structural Welding Code – Steel
- i. AWS D1.2 Structural Welding Code – Reinforcing Steel.
- j. ASTM D3689 Method of Testing Individual Piles Under Static Axial Tensile Load
- k. ASTM D3966 Standard Test Method for Piles Under Lateral Load
- l. ASTM A53/A53M: for pipe, steel, black and hot-dipped, zinc-coated, welded, and seamless.
- m. ASTM A575 and/or A576: for hot-wrought special quality carbon steel bars.

5. Description

- 5.1. Screw anchors are used in weak soil and where retention in accordance with load capacity is required.
- 5.2. All the pieces shall be designed as high strength for heavy tension loads.
- 5.3. 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.
- 5.4. The extension shaft could be acquired separately.
- 5.5. Lead section, extension shaft, and guy adapters shall be provided with a finish that is smooth, continuous, and thorough.
- 5.6. 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.
- 5.7. All pieces shall include coupling with high-strength bolt and nut for a 1-3/4 in. square shaft.

5.8. The following tables denote the minimum characteristics required for the Lead Section, Extension Shaft and Guy Adapter

5.8.1. **Table 1:** Lead Section Requirements

Parameter	Requirement
Dimensions	124 in. x 1-3/4 in. (314.96 cm x 4.45 cm)
Shaft Type	Square-Shaft
Helix Configuration	10, 12, 14, 14 in. (25.4, 30.5, 35.6, 35.6 cm)
Ultimate Tension Strength	100,000 lbf (444.82 kN)
Torque Rating	10,500 ft-lbf (14,236 N-m)

5.8.2. **Table 2:** Holding Capacity vs Soil Class

Soil Class	Common Soil Type Description	Maximum Tension Force
2	Dense fine sands; very hard silts and clays (may be preloaded).	76,000 lbf (338 kN)
3	Dense sands and gravel; hard silts and clays.	67,000 lbf (298 kN)
4	Medium dense sand and gravel; very stiff to hard silts and clays.	58,000 lbf (258 kN)
5	Medium dense coarse sands and sandy gravels; stiff to very stiff silts and clays.	49,000 lbf (217 kN)
6	Loose to medium dense fine to coarse sands; stiff clays and silts.	40,000 lbf (117 kN)
7	Loose fine sands; Alluvium; loess; medium-stiff and varied clays; fill.	31,000 lbf (137 kN)

5.8.3. **Table 3:** Extension Shaft Requirements

Parameter	Requirement
Length	5 ft (1.5 m)
Width	1-3/4 in. (4.4 cm)
Shaft Type	Square-Shaft
Ultimate Tension Strength	100,000 lbf (444.82 kN)
Torque Rating	10,500 ft-lbf (14,236 N-m)

5.8.4. **Table 4:** Guy Adapter Requirements

Parameter	Requirement
Style	Tripleye
Dimensions	L = 17 in., Overall L = 18 in.
Approximate Weight	10.78 lb
Strand Eye Rating	100,000 lbf (444.82 kN)
Torque Rating	10,500 ft-lbf (14,236 N-m)

5.9. Installation Tools:

5.10. The following are the installation tools utilized for this set of equipment.

5.10.1. Kelly Bar (Torque Motor Drive Shaft) Adapter:

- A coupling device used to connect the drive unit to the screw anchor, ensuring proper torque transmission during installation.

Parameter	Requirement
Shape	Hex
Hex Size	2.5 or 2.625 in. (6.35 or 6.67 cm)
Minimum Torque Rating	15,000 ft-lb (20,337 N-m)
Bolt Circle Diameter	7.625 in. (19.37 cm)
# Bolts	12
Bolt Size	0.625 in. (1.59 cm)

5.10.2. Torque Measuring Device

- A tool for monitoring the applied torque to ensure the screw anchor meets installation specifications and achieves proper soil engagement.

5.10.3. Locking Dog Assembly

- A mechanism used to secure the square shaft during installation, ensuring precise alignment and stability under torque loads.

Parameter	Requirement
Minimum Torque Rating	15,000 ft-lb (20,337 N-m)
Bolt Circle Diameter	7.625 in. (19.37 cm)
# Bolts	12
Bolt Size	0.625 in. (1.59 cm)

5.10.4. Torque Tube Drive Tool

- A specialized tool designed to interface with locking dog assemblies, facilitating the efficient transfer of torque from the drive system to the anchor shaft.
- It is important to ensure that the bolt circle diameters of the Kelly Bar Adapter and the Locking Dog Assembly match and are designed for the same square shaft size and bolt circle diameter.

6. Markings and Packaging

6.1. Containers/pallets or package shall be marked outside with LUMA'S purchase order number and code number.

- 6.2. Vendor shall prepare material and equipment for shipment in such manner as to facilitate handling and protection for damage.
- 6.3. All material should be packaged and marked in such a way that the receiving warehouse can readily identify and send in one (1) complete unit to a field location without opening crates or boxes to sort items and/or parts.
- 7. Compatible with**
- 7.1. This model is an example 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.
- 8. Proposal Information**
- 8.1. Submitted proposals must include:
- a. Technical Information
 - b. Any exceptions taken to this specification.
 - c. Table of Compliance completed by the bidder with reference
- 9. Inspection**
- 9.1. 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 shall not prevent subsequent rejection if such material is found to be defective later
- 10. Drawings**

Figure 1: Lead Section Example



Figure 2: Extension Shaft Example**Figure 3: Guy Adapter Example**

— End of Specification —

Appendix

Appendix 1. Table of Compliance

Line	Criteria	Description	Pass/Fail (P/F)	Comments
1	Specification	<ul style="list-style-type: none"> The Proponent complies with the corresponding specification document (4752.348) 		
2	Industry Standards	<ul style="list-style-type: none"> The Proponent complies with the industry standards established in the specification document (ASTM, AWS) 		
3	Characteristics	<ul style="list-style-type: none"> Items shall comply with Table 1, 2, 3, and 4. 		
4	Requirements	<ul style="list-style-type: none"> Samples shall be furnished to LUMA. LUMA requires One (1) unit properly labeled for testing and analysis. They shall be required to show evidence of LUMA's approval of the equipment. Descriptive and technical literature shall be supplied to LUMA at time of bidding. All the pieces shall be designed as high strength for heavy tension loads. 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. 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. All pieces shall include coupling with high-strength bolt and nut for a 1-3/4 in. square shaft. 		











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Final Audit Report

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