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Expanding Rock Anchor

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Related/Referenced Documents

N/A

Version History

| Version | Date | Revision Comments |
|---------|---------------|--|
| 1 | Dic. 10, 2021 | Initial Release |
| 2 | Apr. 12, 2022 | Sections 3, 4, and 7 modified. TOC Added |
| 3 | Jun. 16, 2022 | Signature format modified |
| 4 | Nov. 23, 2022 | Cover Page added and TOC modified. New code assigned. |
| 5 | Jul. 16, 2024 | Format corrections, TOC update, Section 4 modified, and sections order rearranged. |



Item Version History

| Warehouse Catalog # | Asset Suite # | Version | Date |
|---------------------|---------------|---------|-----------|
| 002-71831 | 71831 | 5 | 7/16/2024 |



1. Introduction

This is a general specification that covers the minimum requirements for an expanding rock anchor 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 the LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

3. Literature

For compatible manufacturers and models see Table 1, Table 2, Table 3. 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.

4. Compatible with

- 4.1. Hubbell (R353).
- 4.2. MacLean (J3438).
- 4.3. 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. 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)

7.1. Standard package: 5 units or as requested by LUMA.

7.2. Fifty (50) units per pallet or as requested by LUMA.

8. Acceptance Criteria

8.1. Test required: certified by external 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, 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 A283/A283M: for low and intermediate tensile strength carbon steel plates.

e. ASTM A6/A6M: for the general requirements that apply to rolled structural steel bars, plates, shapes, and sheet piling.

f. ASTM A53/A53M: for pipe, steel, black and hot-dipped, zinc-coated, welded, and seamless.

g. ASTM A575 and/or A576: for hot-wrought special quality carbon steel bars.

8.4. If any other standard 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. Expanding rock anchors are used as an earth tension anchoring to counteract uplift forces acting on foundations and for pole support on rock terrain.

9.2. The rock anchor shall have the following characteristics:

- a. Material: Hot Dip Galvanized according with ASTM A153 preferred. Hot dip galvanized as per ASTM A123 shall be evaluated by LUMA.
- b. Eye-Nut Style: Triple-Eye.
- c. Dimensions:
 - 1. Rod diameter: 3/4" (1.9 cm).
 - 2. Anchor closed: 1-3/4" (4.4 cm) diameter.
 - 3. Anchor fully expanded: 2-3/8" (6.0 cm) diameter.
 - 4. Length: 53" (134.6 cm).
 - 5. Approximate weight: 9.6 lbs (4.4 kg).
- d. Tensile strength: 23,000 lbf (102.3 kN) minimum.

9.3. The anchor shall be aligned within 5° with the guy load and requires a 2" (5.1 cm) diameter hole in competent rock at a minimum depth of 12" (30.5 cm) to comply with the tensile strength specified.

9.4. Rock anchor shall be provided with a finish that is smooth, continuous, and thorough.

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. 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 # | Compatible Manufacturer | Model |
|---------------------|---------------|-------------------------|-------|
| 002-71831 | 71831 | Hubbell | R353 |
| | | MacLean | J3438 |

— End of Specification —



Appendix



Appendix 1

| Line | Criteria | Description | Pass/Fail (P / F) | Comments |
|------|----------------------|--|----------------------|----------|
| 1 | Specification | The Proponent complies with the corresponding specification document (4350.008) | | |
| 2 | Industry Standards | The Proponent complies with the industry standards established in the specification document. (ASTM) | | |
| 3 | Material | <ul style="list-style-type: none">• Hot dip galvanized as per ASTM A153 | | |
| 4 | Product Requirements | <ul style="list-style-type: none">• Eye-Nut Style: Triple-Eye. | | |
| 5 | Dimensions | <ul style="list-style-type: none">• Length: 53"• Rod diameter: 3/4"• Anchor closed: 1-3/4" diameter• Anchor fully expanded: 2-3/8" diameter | | |
| 6 | Approximate Weight | 9.6 lbs (4.4 kg) | | |
| 7 | Tensile Strength | 23,000 lbf (102.3 kN) minimum | | |

NOTE: This table is only a check list for reference. The compliance shall be with the complete document. Marking a PASS in the table won't be accepted as a compliance without the technical information required to certify it.











4350.008 Rock Anchor (7-16-24)

Final Audit Report

2024-07-22

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