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Pad-Mounted Switching Unit Interrupters, Stainless-Steel

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Related/Referenced Documents

N/A

Version History

Version	Date	Revision Comments
1	Feb. 15, 2022	PREPA to LUMA Format for Items 038-02007 & 038-02023. (Rev. 2/2)
2	May. 10, 2022	General Format and Description Section Modified, and TOC added. (Rev. 3/3)
3	Dec. 15, 2022	Cover Page and Item 038-83912 added (Section 9.8.f.2.f). (Rev. 4/4/1)
4	Jan. 03, 2023	Section 5.5 modified (S&C model), related to item 038-83912. (Rev. 4/4/2)
5	Oct. 25, 2023	General format modifications. Hubbell and S&C models for Item 038-83912 modified. (Rev. 5/5/3).



Item Version History

Warehouse Catalog #	Asset Suite #	Version	Date
038-02007	58496	5	10/25/2023
038-02023	58498	5	10/25/2023
038-83912	83912	3	10/25/2023



1. Introduction

This is a general specification that covers the minimum requirements for a pad-mounted stainless-steel switching unit with two gang 3Ø interrupters or six 1Ø manual operated interrupters 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

- 2.1. Samples shall be furnished as requested by LUMA Energy. All documented testing required by applicable specifications and standards shall be submitted with product samples, including mechanical and electrical drawings, prior to approval. Vendors that have supplied this material to PREPA/LUMA on previous orders will not have to furnish samples at bid opening. With the exception if any material or design changes were made to an approved product, it must be re-submitted to the material specification engineer for approval before shipping. 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.
- 2.2. Product shall be manufactured in accordance with the latest issue ASTM, NEMA, IEEE and ANSI specification. When conflicts occur between purchaser's specifications and the ASTM, NEMA, IEEE, or ANSI specifications, the purchaser's specification shall prevail. The product shall be furnished as described here in this specification or as amended by the purchase order. If any changes or updates to the supplier's procedures, quality routines, and/or inspection layout are made, the supplier shall be liable for all costs incurred for a product that is refused or rejected.
- 2.3. Upon inspection of incoming equipment/material, the purchaser reserves the right to refuse product shipments and to determine the acceptability or rejection of product received. The supplier shall be liable for all costs incurred for a product that is refused/rejected.
- 2.4. Any changes or updates to the supplier's approved designs, procedures, quality routines and/or inspection layout shall be communicated to LUMA Energy's material specification engineer in writing.

3. Literature

Descriptive and technical literature must be supplied by the 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. Evidence of PREPA's and/or LUMA Energy's approval of the equipment/material shall be supplied by vendor if requested by LUMA Energy.

4. Markings

- 4.1. Containers shall be marked outside with LUMA Energy's purchase order and item number, manufacturer's details such as model name and number, lot number, and the warehouse ID number where it will be received at.
- 4.2. Packaging labels and tags shall be waterproof.

5. Compatible with

- 5.1. Load break power fuses: S&C (SML-20).
- 5.2. Enclosure paint:
 - a. ICI Paints - Glidden (S/C green, base 4308-0900, Blk 4P13, Yox 5P58, Tbl 3P5, Wht 51)
 - b. Mobile Paints (014204004 RUS-KIL match general green)
 - c. Sherwin-Williams Paints (B54T104, S/C olive green)
- 5.3. Fiberglass for inter-phase and end-barrier: Glastic UTR (1494)
- 5.4. Lightning arrester: Cooper Power system (UltraSil VariSTAR UHS10050B1A1A1A)
- 5.5. Replacement 1Ø Switch (600 A): Hubbell (M3D66BCL), S&C (4942R10-E-J)
- 5.6. 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.

6. Packaging

- 6.1. The pad-mounted switching unit shall be shipped on a pallet and comply with ANSI/IEEE Standard C37.20.3.
- 6.2. 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.
- 6.3. Warning label shall be placed on the equipment/material for special handling and storage requirements.
- 6.4. Any additional materials shall be packed in weatherproof boxes and identified with weatherproof labels.

- 6.5. All materials, elements, parts, and hardware crates shall be shipped on flatbed trailers and stored in such a way so that they can be unloaded by finger lifts. Deliveries in containers or closed platforms where finger lifts cannot be used will not be accepted.
- 6.6. A copy of each detailed packing list must be sent to LUMA Energy's personnel in charge of the requisition, prior to the delivery.

7. Number Per Package (Logistics)

Standard package: One unit per pallet or as requested by LUMA.

8. Acceptance Criteria

- 8.1. Test required: certified by external qualified laboratories.
- 8.2. Latest applicable codes, standards, and other regulations: IEEE, NEMA, ANSI, ASTM, NEC, and OSHA standards and the herein included requirements. The following standards shall form a part of this specification unless otherwise stated:
 - a. ASTM (A480) for flat-rolled stainless and heat-resisting steel plate, sheet, and strip.
 - b. NEMA (A20) for switch & bus Insulators on outdoor and enclosed applications, from 5 kV through 46 kV.
 - c. ANSI/IEEE (37.20.3) for metal-enclosed interrupter switchgear (1 kV–38 kV).
 - d. ANSI/IEEE C37.32: For schedules of preferred ratings and construction specifications for high voltage disconnect, interrupter, fault initiating, and grounding switches rated above 1000 volts.
 - e. ANSI/IEEE C37.34: Design test requirements for all high voltage enclosed indoor and outdoor and non-enclosed indoor and outdoor air switches rated above 1000 V are specified.
 - f. ANSI/IEEE (C57.12-28) for pad-mounted equipment, enclosure Integrity.
 - g. ANSI/IEEE (C57.12.29) for pad-mounted equipment, enclosure integrity for coastal environments.
 - h. ANSI/IEEE (C62.11) for Metal-Oxide Surge Arresters for AC Power Circuits (>1 kV).
 - i. ANSI Z535 for safety signs and colors.
 - j. ANSI/ASTM A153 standard specification for zinc coating (hot dip) on iron and steel hardware.

9. Description

- 9.1. The pad-mounted switching unit is used for tapping off branches from the main distribution feeder in a 60 Hz electrical system. Hereafter, the pad-mounted switching unit will be called "the unit".

- 9.2. The unit shall consist of a single self-supporting enclosure, containing a main bus, interrupter switches, power fuses, insulators, grounding bus, and all necessary accessories for sectionalizing of a distribution feeder.
- 9.3. The manufacturer of the unit is responsible for the functional integration of all these parts and accessories and shall guarantee the performance of this integration including the performance of the interrupter switches and power fuses, although other companies, approved by LUMA, have supplied these parts.
- 9.4. The unit, including its enclosure, main bus, grounding bus, interrupter switches, power fuses, insulators, and accessories, shall be designed, rated, manufactured, and tested in accordance with the latest applicable IEEE, NEMA, ANSI, ASTM, NEC, and OSHA standards.
- 9.5. The unit shall be designed and constructed in accordance with the attached LUMA standards URD-11 and URD-11-A latest revision.
- 9.6. The unit shall be assembled and tested for satisfactory operation by the factory.
- 9.7. The manufacturer shall guarantee the unit against corrosion for at least five years. This guarantee is additional to LUMA's standard warranty terms.
- 9.8. General design and construction:
 - a. For the connection to the main distribution feeder, the unit shall have two (2) sets of one (1) three-pole gang interrupter switch for three-phase (3 \emptyset) operation (see URD-11-A) or three (3) sets of two (2) single-pole manual operated interrupter switches for one-phase (1 \emptyset) operation (see URD-11).
 - b. All interrupter switches mechanism must be stainless-steel, at least 304-grade.
 - c. The unit shall have two (2) sets of three (3) load break power fuses (3 \emptyset model) or three (3) sets of two (2) load break power fuses (1 \emptyset model) for the branches from the main distribution feeder.
 - d. The interrupter switches and power fuses shall be connected to the main bus.
 - e. Electrical Requirements:
 1. Maximum design voltage (RMS): 15.0 kV.
 2. Basic Impulse Insulator Level: 95.0 kV BIL.
 3. Main bus rated continuous current (RMS): 600 A.
 4. Three-pole interrupter switches
rated continuous current (RMS): 600 A.
 5. Single-pole load-break interrupter
rated continuous current (RMS): 600 A.

6. Two-time duty cycle fault closing
current (asymmetrical RMS): 22,500 A.
 7. Power fuses continuous current (RMS): 200 A.
 8. Power fuses cutout close and open
current capacity (RMS): 200 A.
 9. Rated momentary current
(asymmetrical RMS): 20,000 A.
 10. Rated short circuit current
(symmetrical RMS): 12,500 A.
- f. Physical Requirements:
1. Minimum clearances:
 - a. Phase to phase, metal to metal: 7.50" (19.05 cm).
 - b. Phase to phase, non-metal to metal: 2.25" (5.72 cm).
 - c. Phase to ground, metal to metal: 6.00" (15.24 cm).
 - d. Phase to ground, non-metal to metal: 2.00" (5.08 cm).
 - e. Lower part of cable connection to
ground level: 22.50" (57.15 cm).
 2. Interrupter Switches:
 - a. The interrupter switches and power fuses mounting insulators shall be made of porcelain, polymer, or cycloaliphatic epoxy resin (CYPOXY). The replacement switch (038-83912) shall be made of polymer or (CYPOXY), not porcelain.
 - b. The installation of these insulators in the unit shall not exceed the mechanical stress established by the test performed by the insulator's manufacturer.
 - c. The insulators shall conform with the following:
 1. Operating experience of at least ten years.
 2. Non-tracking properties.
 3. Minimum leakage distance of 16" (40.64 cm).
 4. Adequate strength for the short circuit rating herein specified.
 5. Shall comply with NEMA class A-20.

- d. The replacement switch used in the 1Ø model (URD 11) shall comply with the following:
 1. The insulator shall be manufactured 2.25" (5.72 cm) bolt circle.
 2. Shall be provided with an appropriate removable stop pin to adjust maximum blade travel to 160° open position (pivot shall open downwards). Luma shall evaluate other similar mechanisms.
 3. The current-carrying contacts shall be silver-plated copper. The blade material shall be copper.
 4. NEMA two-hole terminal pads shall be included on both ends. Shall be silver-plated copper or tin-plated copper.
 5. Two 1/2"-13 (1.27 cm) captive bolts shall be included for each terminal pad. Each bolt must include a nut, flat washer, and lock washer. Bolts length shall be 1-3/4" (4.44 cm) approximate. All hardware on stainless steel 304 or 316. Nut could be accepted on bronze.
 6. The switch base shall be hot dip galvanized as per ASTM A153.
 7. Approximate Dimensions:
 - a. Blade = 11" (27.9 cm) long
 - b. Channel = 24" (61.0 cm) long
 - c. Insulator = 7" (17.8 cm) long
 - e. For the 3Ø model (URD 11-A), each switch shall have an arc chute. Shall have main silvered copper blades and an arcing blade with copper tungsten tip to provide separate path for current and arcing. During the opening operation, the main blades shall completely disconnect and transfer the current to the arcing path forcing it to travel through the arc chute, where it will be extinguished. As mentioned in section 9.8.a. each gang shall consist of three switches that shall be operated at the same time with one permanently attached direct acting (chainless) handle with padlocking in open and close positions. The entire switch assembly shall be supported on a one-piece frame. The complete operating mechanism must be stainless-steel 304 grade as mentioned in section 9.8.b.
3. The main bus must be made of copper and must be designed and constructed to comply with the current rating specified in section 9.8.e. of this document.
 4. The unit shall provide six terminals for the lightning arresters' connection. These terminals must be constructed in a way that allows the cable to be connected without removing the terminal holding bolts and independent from the arrester connection.
 5. The manufacturer shall install the terminals on the unit's primary side.

6. The terminals' installation shall comply with the minimum clearance required.
7. Lightning Arresters:
 - a. The lightning arrester's expulsion shall be downwards.
 - b. Shall be made with Metal Oxide Varistors (MOV) in series with a non-linear gap structure to improve the protective characteristics and 60 Hz temporary overvoltage (TOV) withstand.
 - c. Shall be rated at 10 kV (rms) with a minimum leakage distance of 13" (33.02 cm).
 - d. Shall be insulated in such a way to provide high-dielectric strength.
 - e. The housing shall be silicone rubber.
 - f. Line and ground terminals shall be stainless-steel 304 grade.
 - g. Shall have an isolator ground lead disconnecter.
 - h. Hardware shall include silicone bronze nut and stainless-steel wire clamp on both terminals. A bronze nut with stainless-steel lock washer shall be accepted instead of the silicone bronze nut.
 - i. Shall comply with standard IEEE C62.11.
8. The unit shall have a grounding bus suitable for the main feeder and branches neutral conductors' connection.
9. The neutral conductors' material must be copper with insulation for 600 V and gauge range from 2 AWG to 4/0 AWG.
10. The grounding bus shall have provision for a grounding conductor connection, which is the connection to the grounding electrode of the grounding rod, and for the arresters' grounding conductors to be installed at the normally open point of the unit.
11. The grounding conductor's connector must be copper with a gauge range from 4/0 AWG to 500 kcmil.
12. In addition to the grounding bus, a grounding pad shall be provided in each compartment of the unit for the connection of the enclosure to ground.
13. This pad shall be suitable for the 4/0 AWG to 500 kcmil copper conductors' connection.
14. The grounding pad shall be a tinplated bronze pad-mounted on a stainless-steel pad with a minimum dimension of 1/2" X 2" X 3" (1.27 X 5.08 X 7.62 cm) and shall be installed at the bottom of the enclosure.

9.9. Enclosure's design and construction:

- a. Shall be self-supporting, tamper proof, and suitable for a concrete pad installation.
- b. The enclosure and its doors shall be made in stainless-steel, 304-grade, 14-gauge (0.0747" (1.9 mm)) thickness, and with non-magnetic properties, as per ASTM A-480.
- c. Provision for a 5/8" diameter hole on the right side, top right corner of the enclosure for the installation of a fault detector remote indication led. It shall be sealed with a tamper proof plug.
- d. The supports for the fuses and interrupters shall be "double U" channels made of stainless-steel, 14 gauge.
- e. The fuses and interrupter shall be fixed to these supports by two 3/8" (0.95 cm) diameter stainless-steel, 304 grade, bolts on each side.
- f. All the structural joints and butt joints shall be welded or bolted, and the external seams shall be smooth. If bolted, all bolts, washers, nuts, etc. shall be stainless-steel, 304 grade.
- g. Each door shall have a minimum of two stainless-steel, 304 grade, heavy-duty, and pin-type hinges.
- h. The enclosure shall have two hasps per door side, each one made of stainless-steel, 304 grade, 14 gauge, and suitable for a 7/16" (1.11 cm) shackle.
- i. A protective trunk is required to be attached to the padlock carrier of each door to prevent outsiders from picking the padlock and gaining access to the interior of these units. It must be of the same material and gauge used for the construction of the equipment (see SUVP-1 and SUVP-2 for standards and dimensions on the Appendix Section), and the edges must be smooth with no sharpness at all.
- j. The enclosure doors shall provide wide opening to allow unrestricted access for the interrupters and fuses operation, including the use of load breaking tools.
- k. The door opening shall have a 90° flange, facing outward, that shall provide strength and rigidity as well as deep over-lapping between the doors and guard against water entry.
- l. Each door or double doors set shall be provided with a surface aluminum handle.
- m. Each door shall be provided with a stainless-steel holder, 304-grade, that does not swing inside the enclosure.
- n. The enclosure top shall be rain-tight and undercoated with an insulating "no drip" compound. The top shall be designed to not accumulate water.
- o. The enclosure top shall be designed and constructed so it allows free-flow ventilation to keep the interior of the unit dry. This venting shall be rain-tight and tamper-proof.

- p. The enclosure shall have rain-resistant louvers along its bottom, at the enclosure's doors sides. Each louver shall have an inside baffle to protect the unit against tampering.
- q. The manufacturer shall smooth and clean any weld made on the enclosure before painting the unit.
- r. The paint applied on the enclosure shall be exclusively used for metal surfaces.
- s. This paint shall be barium free and LUMA approved.
- t. The color of this paint shall be green as per latest ANSI/IEEE C57.12.28 (section 5.2.4).
- u. In case the manufacturer uses a primer to paint the enclosure, the primer shall be barium free and LUMA approved.
- v. The enclosure shall have an internal compartment located on one of the doors at the fuse side to store three spare fuse units.
- w. The enclosure shall have two visible identifications, an exterior label and an interior plaque, containing the following information:
 - 1. Manufacturer's name, address, and telephone number.
 - 2. Date of manufacture.
 - 3. Serial number.
 - 4. Model number.

9.10. Barriers' design and construction:

In addition to the enclosure doors, the unit shall have an internal safety door or barrier, which shall comply with the following requirements:

- a. The safety door shall be made of stainless-steel, Lexan, or other LUMA approved material.
- b. Shall permit visibility for the internal parts.
- c. Shall have hinges with the necessary attachments to keep the door open during maintenance work.
- d. Shall have provision for an adequate closure that uses captive screws or captive bolts. This hardware shall be stainless-steel, 304 grade.
- e. Shall have a danger sign (in spanish and english), which shall not interfere with the visibility of the internal parts.
- f. This sign shall have a dimension of 12" X 6" (30.48 X 15.24 cm), with red letters over a white background, reading as follows:

"PELIGRO: EL DESCONECTIVO PUEDE ESTAR ENERGIZADO, AUNQUE ESTÉ EN LA POSICIÓN DE ABIERTO"

“DANGER: THE DISCONNECTIVE MAY BE ENERGIZED EVEN IF IT IS IN THE OPEN POSITION”

- g. On the unit’s power fuses side, the safety door shall have a warning sign (in spanish and english) on its interior side that shall not interfere with the visibility of the internal parts.
- h. This sign shall have a dimension of 12” X 6” (30.48 X 15.24 cm), with red letters over a white background, reading as follows:
 - “ADVERTENCIA: ES NECESARIO CERRAR O REMOVER LOS FUSIBLES ANTES DE CERRAR ESTA PUERTA”
 - “WARNING: IT IS NECESSARY TO CLOSE OR REMOVE THE FUSES BEFORE CLOSING THIS DOOR”
- i. The safety door shall be installed in a location which complies with the minimum clearances required in this specification.
- j. The unit shall have inter-phase barriers to be placed between each phase interrupter and between each phase fuses.
- k. The unit shall include end-barriers to be placed between the interrupters and the enclosure and between the phase fuses and the enclosure.
- l. The inter-phase and end-barriers shall be made of fiberglass reinforced thermoset polyester material, electrical grade, asbestos-free, and NEMA GPO-3 compliance.
- m. These barriers shall be supported at the bottom-end with a piece made of the same material as the barriers.
- n. The support shall be 2” (5.08 cm) wide and shall be adjusted to the barriers with L-shaped brackets and stainless-steel, 304 grade, bolts.

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/material were found later to be defective.

11. Warranty

- 11.1. Replacement costs associated with enclosure or parts failure due to inadequate design, faulty manufacturing, or packaging are to be the responsibility of the supplier.
- 11.2. In reply to purchaser’s request for quotation, supplier shall include the terms and conditions of the warranty period and coverage.
- 11.3. The supplier shall warrant the product against failure while operating under normal conditions.



12. Proposal Information

12.1. Submitted proposals must include:

- a. Technical information
- b. Table of Compliance completed by the bidder with reference (see Appendix 1 & 2).

13. Table 1: Warehouse and Asset Suite Identification Number

Item		Warehouse Catalog #	Asset Suite #	Mechanism
1	Single Phase (1 ϕ)	038-02007	58496	Two Sets of Three Interrupters, 1 ϕ Manual Operated
2	Three Phase (3 ϕ)	038-02023	58498	Two Sets of Three Interrupters, 3 ϕ 2 Gang Operated
3	Replacement 1 ϕ Switch (600 A)	038-83912	83912	Manual Operated

— End of Specification —



Appendix

Appendix 1: Table of Compliance for Switching Units

Line	Criteria	Description	Pass/Fail (P / F)	Comments
1	Specification	The Proponent complies with the corresponding specification document 4350.161, including the URD's.		
2	Industry Standards	The Proponent complies with the industry standards established in the specification document. (ASTM, ANSI/IEEE & NEMA)		
3	Cabinet & Mechanism Material	Stainless Steel 304		
4	Electrical Requirements	<ul style="list-style-type: none"> • Rated Voltage: 15 kV • Rated Current (Main Bus & Switches): 600 A • Fault Closing Current (Asym.): 22,500 A • Insulating Level: 95 kVBIL • Power Fuses: 200 A • Momentary Current (Asym.): 20,000 A • Short Circuit Current (Sym.): 12,500 A 		
5	Product Requirement	<ul style="list-style-type: none"> • Assembled and tested in factory • Self-supporting enclosure • Must include a main bus, interrupter switches, power fuses, insulators, grounding bus, and all necessary accessories for sectionalizing of a distribution feeder. • Structural joints and butt joints shall be welded or bolted, and the external seams shall be smooth. • Protective trunk attached to the padlock carrier of each door as per SUVP-1 & SUVP-2. • Green Barium free painted • Two ID's (an exterior plaque and an interior label) • Internal safety doors (stainless steel) and barriers (fiberglass reinforced thermoset polyester material). • Danger sign in the front and Warning sign In the power fuses side. 		
6	Interrupter Switches Arrangement	<ul style="list-style-type: none"> • 038-02007: Three (3) sets of two (2) single-pole manual operated as per URD 11. • 038-02023: Two (2) sets of one (1) three-pole gang as per URD 11-A. 		



7	Lightning Arresters	<ul style="list-style-type: none"> • Metal Oxide Varistor (MOV) • Rated at 10 kV rms • Silicone Rubber Housing • Line & Ground Terminals in Stainless Steel 304 • Silicone bronze nut or bronze nut with stainless-steel lock washer, and stainless-steel wire clamp on both terminals. 		
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Appendix 2: Table of Compliance for Replacement 1Ø Switch

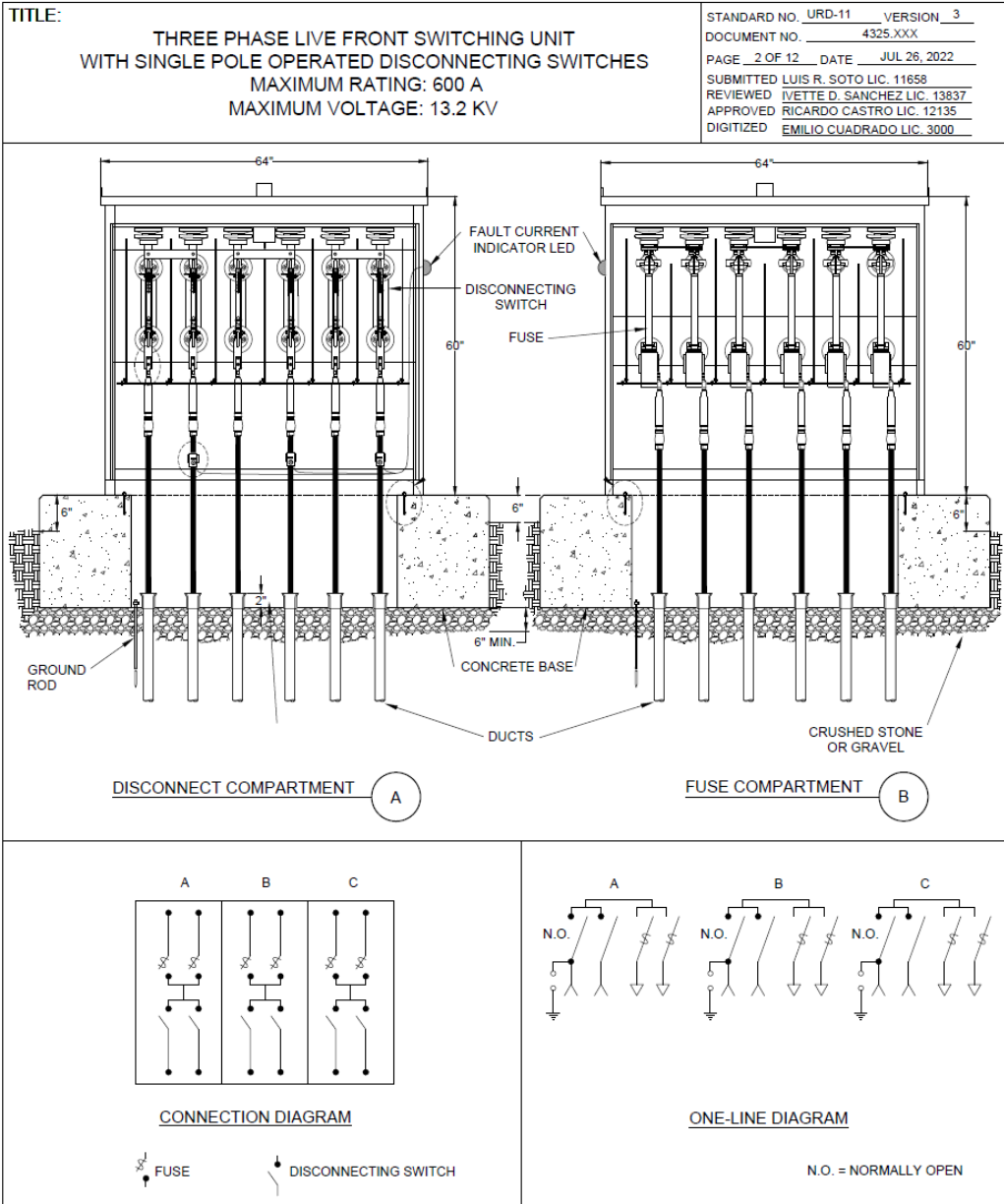
Line	Criteria	Description	Pass/Fail (P / F)	Comments
1	Approximate Dimensions	<ul style="list-style-type: none"> • Blade: 11" long • Channel: 24" long • Insulator: 7" long, 2.25" bolt circle 		
2	Material	<ul style="list-style-type: none"> • Current carrying parts silver plated copper. • Blade: Copper • Insulator: Polymer with fiberglass rod. • Base: hot dip galvanized as per ASTM A153 • Hardware: Stainless Steel 		
3	Electrical Requirements	<ul style="list-style-type: none"> • Voltage: 15 kV • Insulating Level: 110 kVBIL • Rating Current: 600 A • Momentary Current: 40,000 A • Leakage Distance: 16.0" 		
4	Terminal Pads	<ul style="list-style-type: none"> • One NEMA Two-Hole at each end. • Two 1/2" x 1-3/4" SS captive bolts with flat washers, lock washers, and nuts for each terminal pad. 		
5	Blade Stop	At 160° with pin.		
6	Name Plate	Shall have a stainless-steel name plate fastened to the device showing all electrical characteristics.		

URD 11 (1Ø Model)



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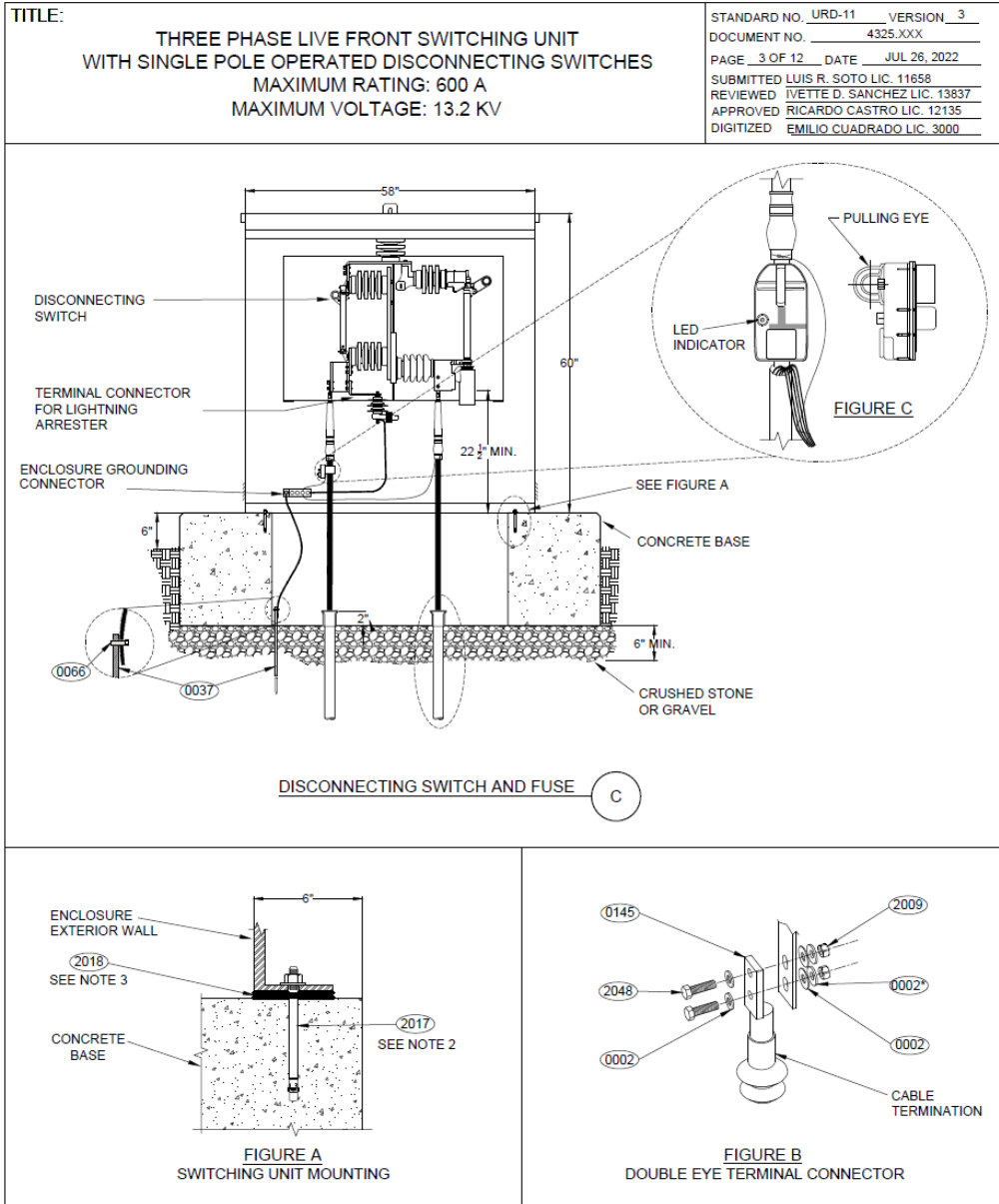
UNDERGROUND DISTRIBUTION STANDARDS



URD 11 (1Ø Model)



DISTRIBUTION ENGINEERING UNDERGROUND DISTRIBUTION STANDARDS



URD 11-A (3Ø Model)



DISTRIBUTION ENGINEERING

UNDERGROUND DISTRIBUTION STANDARDS

TITLE: THREE PHASE LIVE FRONT SWITCHING UNIT WITH LOAD BREAK GANG OPERATED DISCONNECTING SWITCHES MAXIMUM RATING: 600 AMP MAXIMUM VOLTAGE: 13.2 KV	STANDARD NO. <u>URD-11-A</u> VERSION <u>3</u>
	DOCUMENT NO. <u>4325.***</u>
	PAGE <u>2</u> OF <u>18</u> DATE <u>JUL 12, 2022</u>
	SUBMITTED <u>LUIS R. SOTO LIC. 11658</u>
	REVIEWED <u>IVETTE D. SANCHEZ LIC. 13837</u>
APPROVED <u>RICARDO CASTRO LIC. 12135</u>	
DIGITIZED <u>EMILIO CUADRADO LIC. 3000</u>	

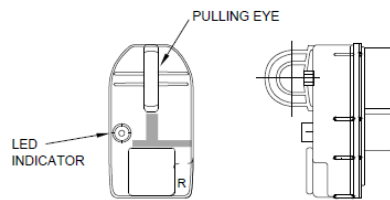
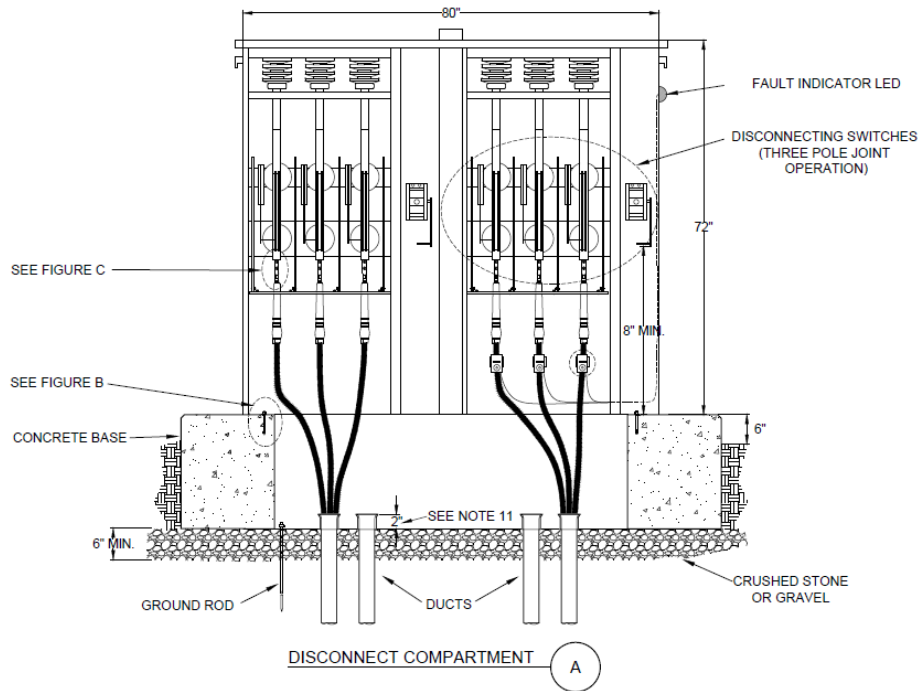


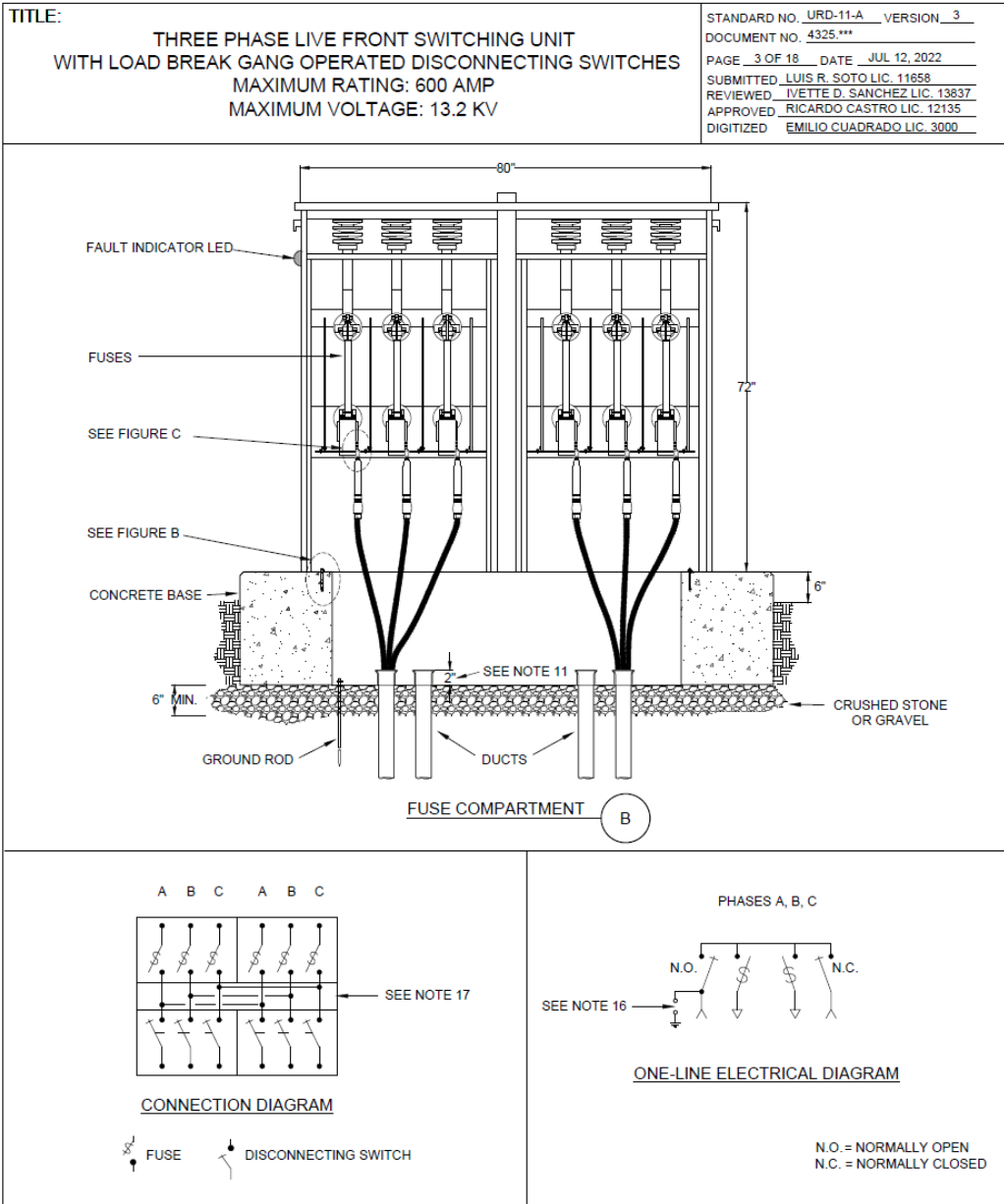
FIGURE A
 FAULT CURRENT INDICATOR

URD 11-A (3Ø Model)



DISTRIBUTION ENGINEERING

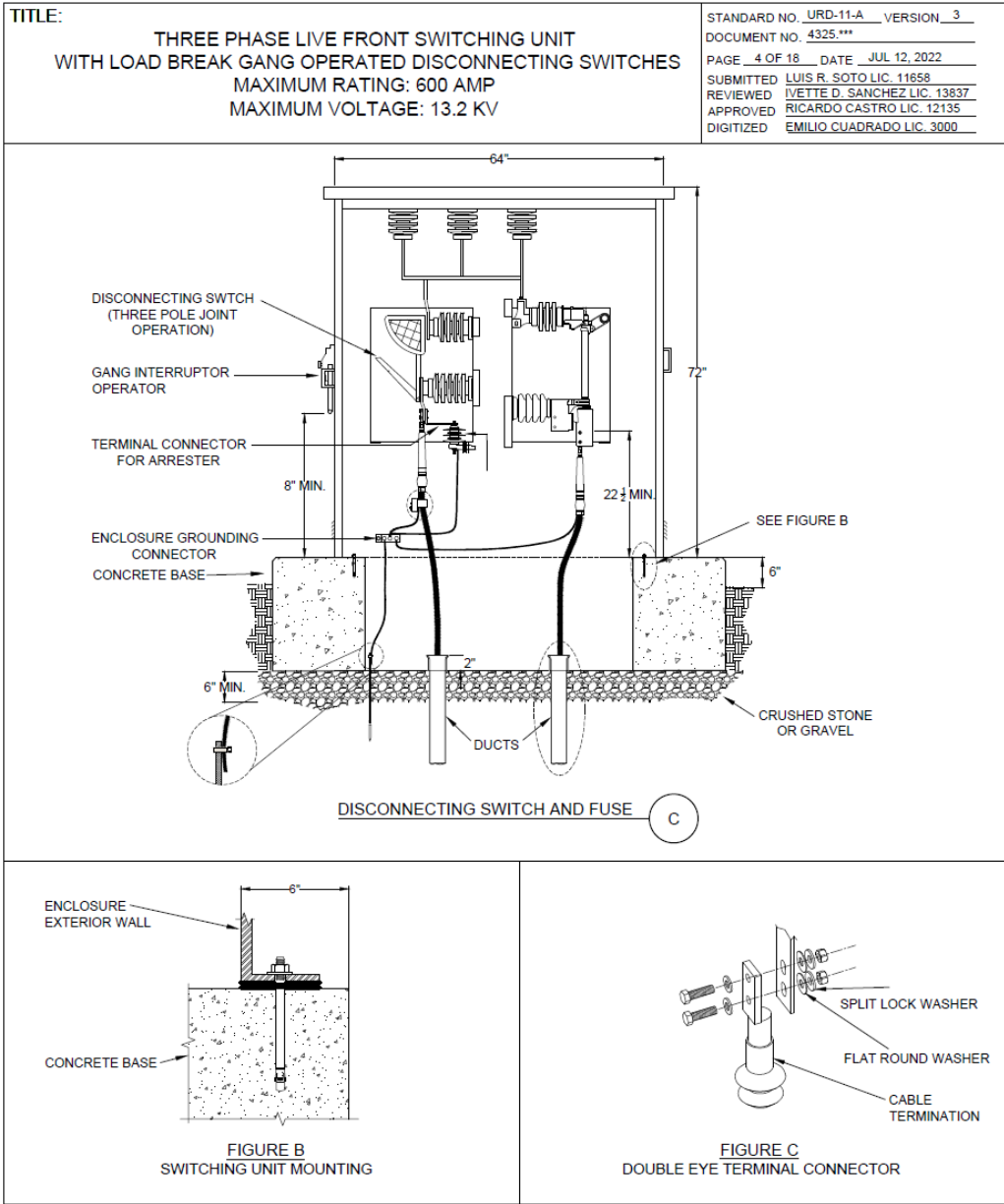
UNDERGROUND DISTRIBUTION STANDARDS



URD 11-A (3Ø Model)

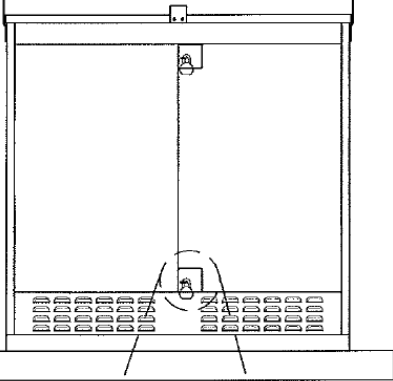


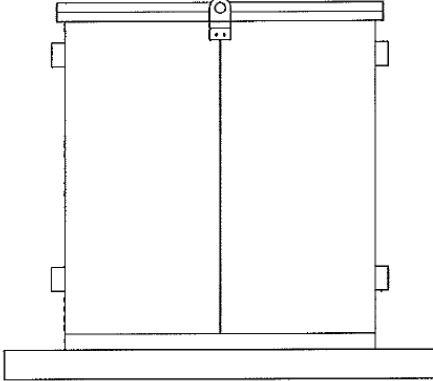
DISTRIBUTION ENGINEERING
 UNDERGROUND DISTRIBUTION STANDARDS

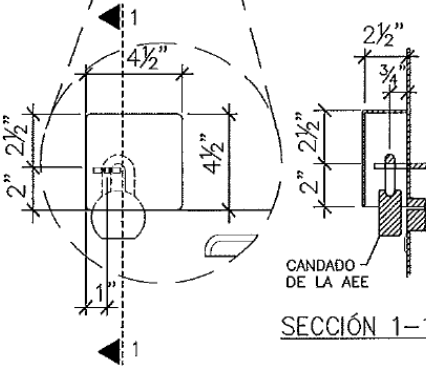


SUVP-1

<p>TÍTULO : PROTECCIÓN EXTERIOR PARA UNIDAD SECCIONADORA DE 600 AMPERIOS (URD-11)</p>	<p>PATRÓN NÚM. SUVP-1 REVISIÓN 0</p> <p>PÁGINA 1 FECHA</p> <p>REVISADO JESÚS D. PERA OTERO <i>[Signature]</i></p> <p>SOMETIDO LUIS R. SOTO VEGA <i>[Signature]</i></p> <p>RECOMENDADO RAÚL BURGOS SANTIAGO <i>[Signature]</i></p> <p>APROBADO JOSUÉ A. COLÓN ORTIZ <i>[Signature]</i></p> <p>DIGITALIZADO RENÉ TORRES / SAMUEL CAMACHO</p>
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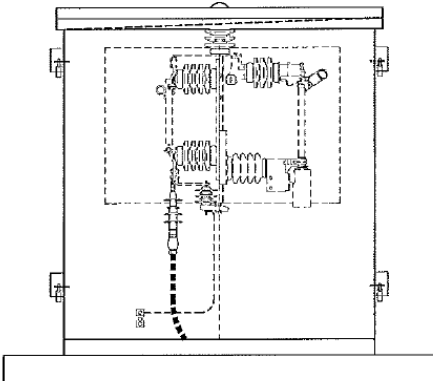






CANDADO DE LA AEE

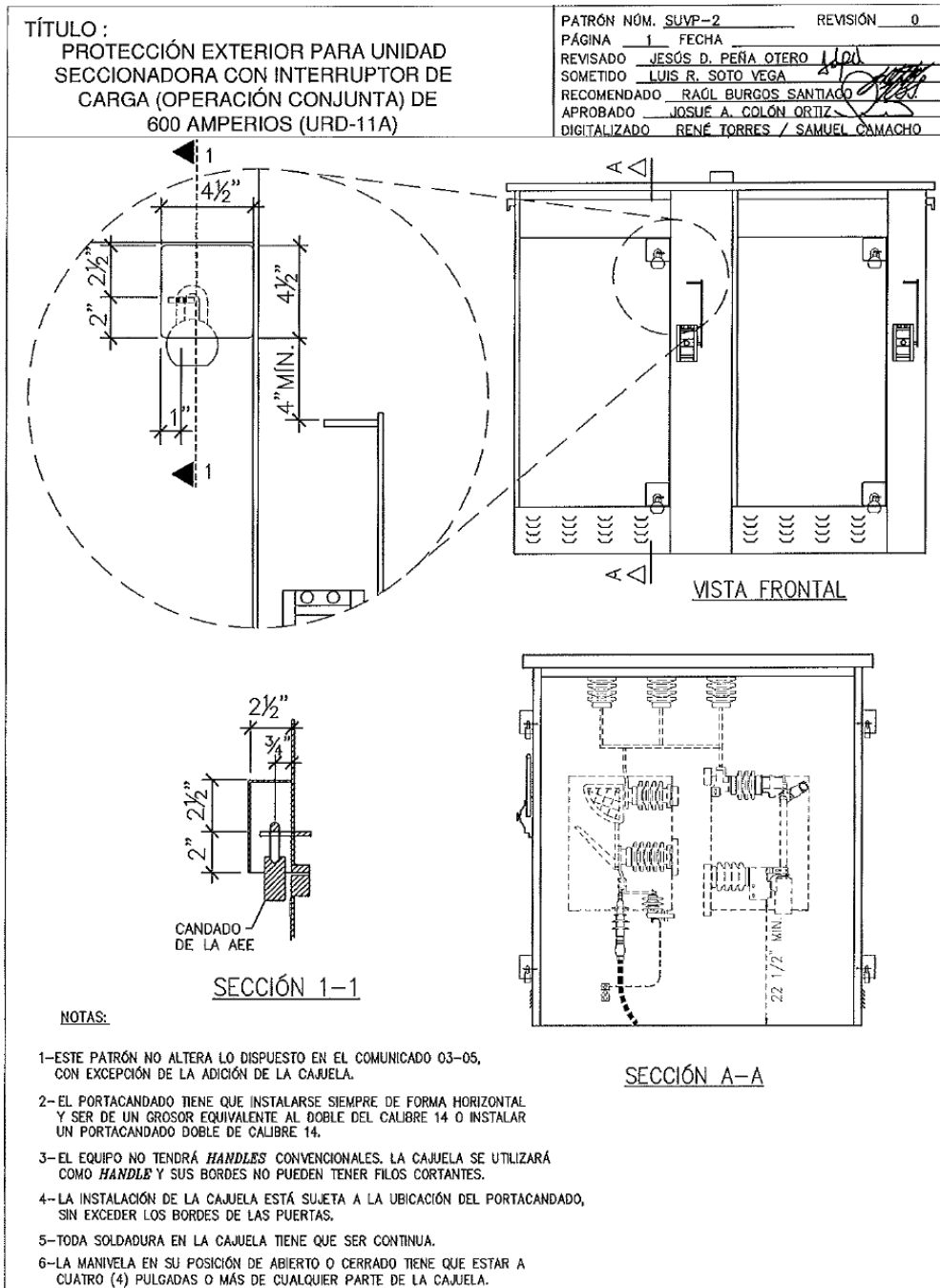
SECCIÓN 1-1



NOTAS:

- 1-ESTE PATRÓN NO ALTERA LO DISPUESTO EN EL COMUNICADO 03-05, CON EXCEPCIÓN DE LA ADICIÓN DE LA CAJUELA.
- 2-EL PORTACANDADO TIENE QUE INSTALARSE SIEMPRE DE FORMA HORIZONTAL Y SER DE UN GROSOR EQUIVALENTE AL DOBLE DEL CALIBRE 14 O INSTALAR UN PORTACANDADO DOBLE DE CALIBRE 14.
- 3-EL EQUIPO NO TENDRÁ *HANDLES* CONVENCIONALES. LA CAJUELA SE UTILIZARÁ COMO *HANDLE* Y SUS BORDES NO PUEDEN TENER FILOS CORTANTES.
- 4-LA INSTALACIÓN DE LA CAJUELA ESTÁ SUJETA A LA UBICACIÓN DEL PORTACANDADO, SIN EXCEDER LOS BORDES DE LAS PUERTAS.
- 5-TODA SOLDADURA EN LA CAJUELA TIENE QUE SER CONTINUA.

SUVP-2













4350.161 Switching Unit SS 3ph 2 Gang or 1ph (10-25-23)

Final Audit Report

2023-10-26

Created:	2023-10-26
By:	Miguel Rios (miguel.rioslopez@lumapr.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAASX21KoaduKvRajl_eUHSJm3jQEYJcNap

"4350.161 Switching Unit SS 3ph 2 Gang or 1ph (10-25-23)" History

-  Document created by Miguel Rios (miguel.rioslopez@lumapr.com)
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Signature Date: 2023-10-26 - 7:02:26 PM GMT - Time Source: server
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-  Signer ricardo.castro@lumapr.com entered name at signing as Ricardo Castro Gómez
2023-10-26 - 7:20:26 PM GMT
-  Document e-signed by Ricardo Castro Gómez (ricardo.castro@lumapr.com)
Signature Date: 2023-10-26 - 7:20:28 PM GMT - Time Source: server
-  Agreement completed.
2023-10-26 - 7:20:28 PM GMT