Revenue Metering Requirements for Customer Facilities Connecting to the PSEG Long Island 13.2kV and 4.16kV Primary Distribution System

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1. PURPOSE

The purpose of this document is to provide the revenue metering requirements for customer facilities connecting to the PSEG Long Island 13.2kV and 4.16kV primary distribution system.

2. GENERAL REQUIREMENTS

Three sets of schematics, physicals, one line, and three line drawings shall be submitted to PSEG Long Island for approval three months prior to construction.

PSEG Long Island revenue metering shall be “hot sequenced,” that is, the revenue metering potential transformers and current transformers shall be installed and connected on the line side of any customer switches, breakers, or isolating devices or equipment. There shall be no provision for any disconnect switch located on the line side of the revenue metering equipment. Any line side disconnect will be owned and operated by PSEG Long Island. Only PSEG Long Island shall have provision for operation of the disconnect equipment.

No equipment other than that owned by PSEG Long Island shall be permitted to be connected within the revenue metering circuits. Splices and/or terminal blocks will not be allowed in the revenue metering circuits.

All equipment and wiring shall be checked for proper connection and proof tested to the satisfaction of PSEG Long Island.

If required for public safety or equipment security, the customer shall provide, install, and maintain a fenced enclosure for the switchgear and revenue meter. The enclosure shall permit full access to PSEG Long Island personnel and maintenance equipment. Clearance distances, as required by PSEG Long Island, to the front and rear of both the switchgear and the revenue meter shall be maintained.

3. EQUIPMENT REQUIREMENTS

3.1 Revenue Metering Instrument Transformer Cubicle

The PSEG Long Island revenue metering potential transformers and current transformers shall be installed in the incoming cubicle of the customer's switchgear. This cubicle shall meet the requirements of PSEG Long Island CS-8735, "Typical 15kV Primary Instrument Transformer Cubicle" for 13.2kV installations or the requirements of PSEG Long Island CS-8736, "Typical 5kV Primary Instrument Transformer Cubicle" for 4.16kV installations. The customer shall submit manufacturer's drawings of this equipment depicting bus clearances and the requirements of the applicable construction standard to PSEG Long Island for review and approval prior to ordering this equipment.

The rear section of the revenue metering transformer cubicle shall provide for complete access to the incoming primary line for termination and testing.

In addition to the requirements identified in the construction standard, a 120VAC receptacle, light, and light switch shall be provided within the front section of the cubicle.

The cubicle shall also be provided with a 120VAC strip heater and thermostat. A terminal block shall be provided for the 120VAC supply.

The revenue metering potential transformers and current transformers shall be provided by PSEG Long Island and installed by the customer. PSEG Long Island will provide equipment installation orientation and polarity information for the metering transformers for the correct primary connections to these devices. The potential transformer primary conductor taps shall be rated 15 kV, #2AWG copper, and installed by the customer. Cable and lug information intended for use shall be included in the documentation submittal to PSEG Long Island. Revenue metering potential transformer and current transformer secondary terminations will be made by PSEG Long Island.

Please refer to Attachment 3 for the primary Form 9 wiring diagram.

3.2 Revenue Meter

The revenue meter location will be site specific and shall include consideration for meter access by PSEG Long Island personnel, communications requirements, and any additional equipment required for the specific metering application. The meter location may, therefore, require a remote meter pan, or equipment installed on a free standing H-frame, or a separate meter enclosure. These installations might, therefore, require the customer to furnish and install power cable and conduit to these locations.

If the customer needs a load control management system, a revenue meter enclosure will be required.

3.3 Revenue Meter Enclosure

If required, the meter enclosure shall be a free standing NEMA 3R construction with drip shield, rated code gauge steel, rigid, self-supporting with minimum dimensions of 36" wide x 36” deep x 84” high. The cubicle shall be painted ANSI gray and maintain a powder coating on all surfaces provided from the manufacturer. The enclosure base shall accommodate the entrance of all instrument transformer secondary wiring, and 120V power through approved conduit.

The enclosure shall contain a full size, depth-adjustable intermediate panel, and a full height right-side panel. The right side panel shall permit the depth of the intermediate panel to be adjusted to 14 inches from the enclosure front door opening. The enclosure front access door shall be full size with stainless steel hinge pins and a full sized lockable three point latching system operated from one handle, and having provision for a PSEG Long Island large shaft padlock shall be provided.

The meter enclosure shall be provided with interior lighting and switch, strip heater with thermostat, and a 120VAC duplex receptacle. The customer shall provide 120VAC power from a reliable source external to the meter enclosure for these devices. The meter enclosure shall not be located greater than 100 running feet of control cable from the revenue instrument transformer enclosure.

Please refer to Attachment 4 and 5 for the primary Form 9 wiring diagram for meter enclosure and a meter enclosure diagram, respectively.

3.4 Wire and Cable

Multi conductor control cable shall be provided for all secondary wiring of instrument transformers. The cable shall be 600V, 10 conductor #9 AWG, Class “C” stranding (19/25), soft drawn annealed copper with an overall 60 mil PVC jacket.

Each conductor shall be insulated with an extruded 20 mil wall of virgin high molecular weight polyethylene, melt index 0.2 to 0.4, 75 degree Celsius. A heat and moisture resistant polyvinyl chloride jacket shall be over the polyethylene insulation.

Individual conductor color-coding shall be as follows: blue, black, red, orange, white with black trace, green, white, red with trace, green with trace, and orange with trace.

The cable shall be flame resistant and comply with IEEE 383 vertical tray flame test.

4. TERMS AND DEFINITIONS

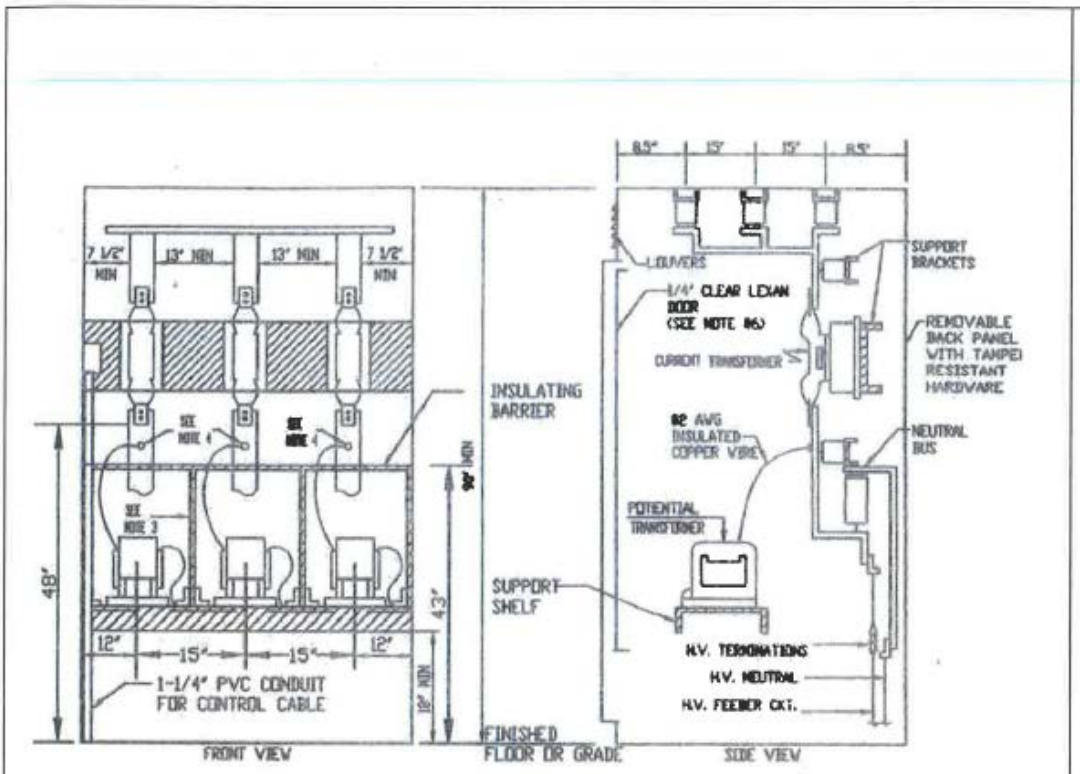
1) ANSI – American National Standards Institute
2) AWG – American Wire Gauge
3) CS – Construction Standard
4) DA – Design and Application
5) CT – Current Transformer
6) IEEE – Institute of Electrical and Electronics Engineers
7) NEMA – National Electrical Manufacturers Association
8) PT – Potential Transformer
9) PVC – Polyvinyl Chloride
10) VAC – Volts Alternating Current

5. ATTACHMENTS

1) CS-8735, “Typical 15kV Primary Instrument Transformer Cubicle”
2) CS-8736, “Typical 5kV Primary Instrument Transformer Cubicle”
3) Primary Form 9 Wiring Diagram
4) Primary Form 9 Wiring Diagram for Meter Enclosure
5) Meter Enclosure Diagram

ATTACHMENT 1

CS-8735, "Typical 15kV Primary Instrument Transformer Cubicle"



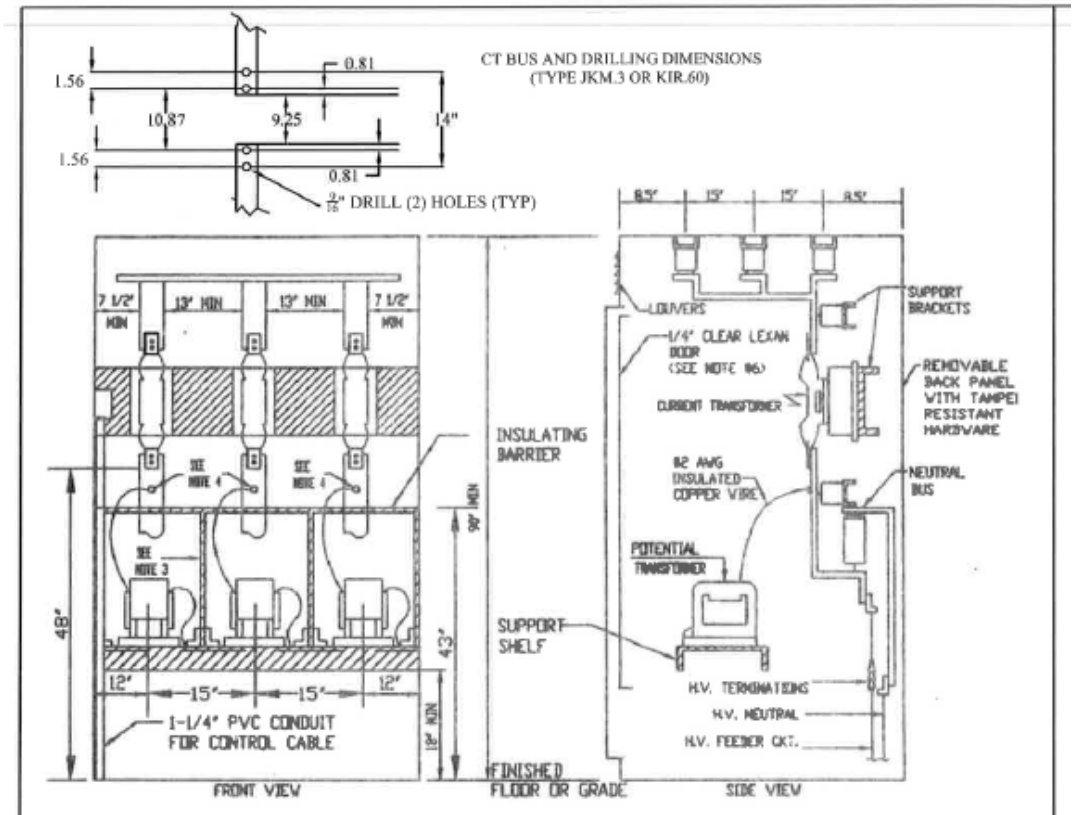
NOTES:

1. BUS BAR WITHIN INSTRUMENT TRANSFORMER CUBICLE SHALL BE MADE OF COPPER AND SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE FOR 1000 AMPERES PER SQUARE INCH. BUS BARS SHALL BE INSULATED. ALL TERMINATION POINTS SHALL BE TIN PLATED AS A MINIMUM.
2. CONSTRUCTION OF INSTRUMENT TRANSFORMER CUBICLE SHALL BE IN ACCORDANCE WITH UL 891.
3. INSULATING BARRIERS SHALL BE INSTALLED ABOVE AND BETWEEN EACH POTENTIAL TRANSFORMER. BARRIER MATERIAL SHALL BE AS SPECIFIED IN SECTION 13 OF UL 891.
4. EACH LINE SIDE PHASE BUS SHALL BE DRILLED **AND TAPPED WITH 1/2-13NC TO ACCOMMODATE** CONNECTION OF THE POTENTIAL TRANSFORMERS.
5. NEUTRAL BUS SHALL BE DRILLED AND TAPPED **WITH TWO 1/4-20 TO ACCOMMODATE CONNECTION** OF THE CURRENT AND POTENTIAL TRANSFORMERS.
6. INSTRUMENT TRANSFORMER CUBICLE SHALL BE EQUIPPED WITH A DOUBLE DOOR. THE OUTER DOOR SHALL BE OF THE SAME CONSTRUCTION AS THE BALANCE OF THE CUBICLE AND SHALL BE EQUIPPED WITH A 3 POINT LATCHING MECHANISM AND PROVISIONS FOR PSEG-LI PADLOCKING. THE INNER DOOR SHALL BE CONSTRUCTED FROM 1/4 INCH CLEAR LEXAN AND SHALL BE FOR THE FULL LENGTH AND WIDTH OF THE CURRENT AND POTENTIAL TRANSFORMERS.
7. MINIMUM BIL RATING SHALL BE 95KV.
8. ALL COMPONENTS USED WITHIN THE INSTRUMENT TRANSFORMER CUBICLE SHALL BE UL LISTED.
9. ALL CABLES USED WITHIN THE TRANSFORMER CUBICLE SHALL BE PROPERLY INSULATED AND PROTECTED.
10. BUS BARS SHALL BE ADEQUATELY BRACED FOR SHORT CIRCUIT WITHSTAND, MINIMUM 25,000 AMPERES SYMMETRICAL.
11. THIS CONSTRUCTION STANDARD IS PROVIDED AS A GUIDE ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES. DRAWINGS OF PROPOSED CUBICLES **MUST BE SUBMITTED TO** PSEG-LI FOR APPROVAL PRIOR TO THE START OF ANY CONSTRUCTION OR FABRICATION.

PSEG LONG ISLAND	REVISION	TRANSFORMER CUBICLE	CONSTRUCTION STANDARD DRAWN BY AN		
APPROVED BY / DATE	5 12/14: REVISED TITLE BLOCK	TYPICAL 15KV PRIMARY INSTRUMENT TRANSFORMER CUBICLE	NUMBER	SHEET No	REV
Aris Marinos 10/13/2017	DO NOT REVISE PRINT BY ANY OTHER METHOD THAN AUTO-CAD PREPARED BY: PSEG LONG ISLAND T&D ENGINEERING		8735	1 of 1	5

ATTACHMENT 2

CS-8736, "Typical 5kV Primary Instrument Transformer Cubicle"



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APPROVED BY: Aria Marinos DATE: 10/13/2017		TYPICAL 5KV PRIMARY INSTRUMENT TRANSFORMER CUBICLE	NUMBER: 8736 SHEET No: 1 of 1 REV: 0
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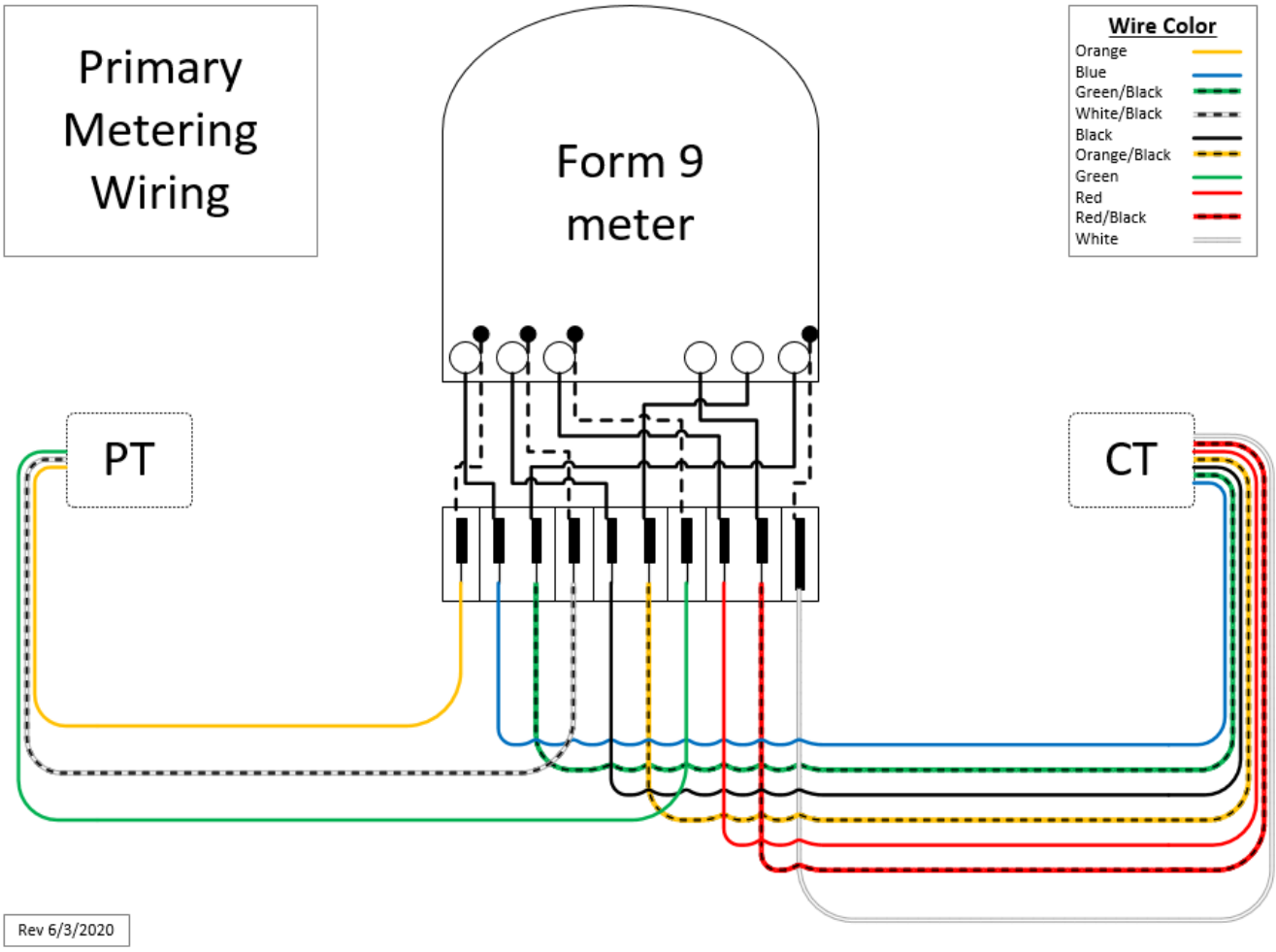
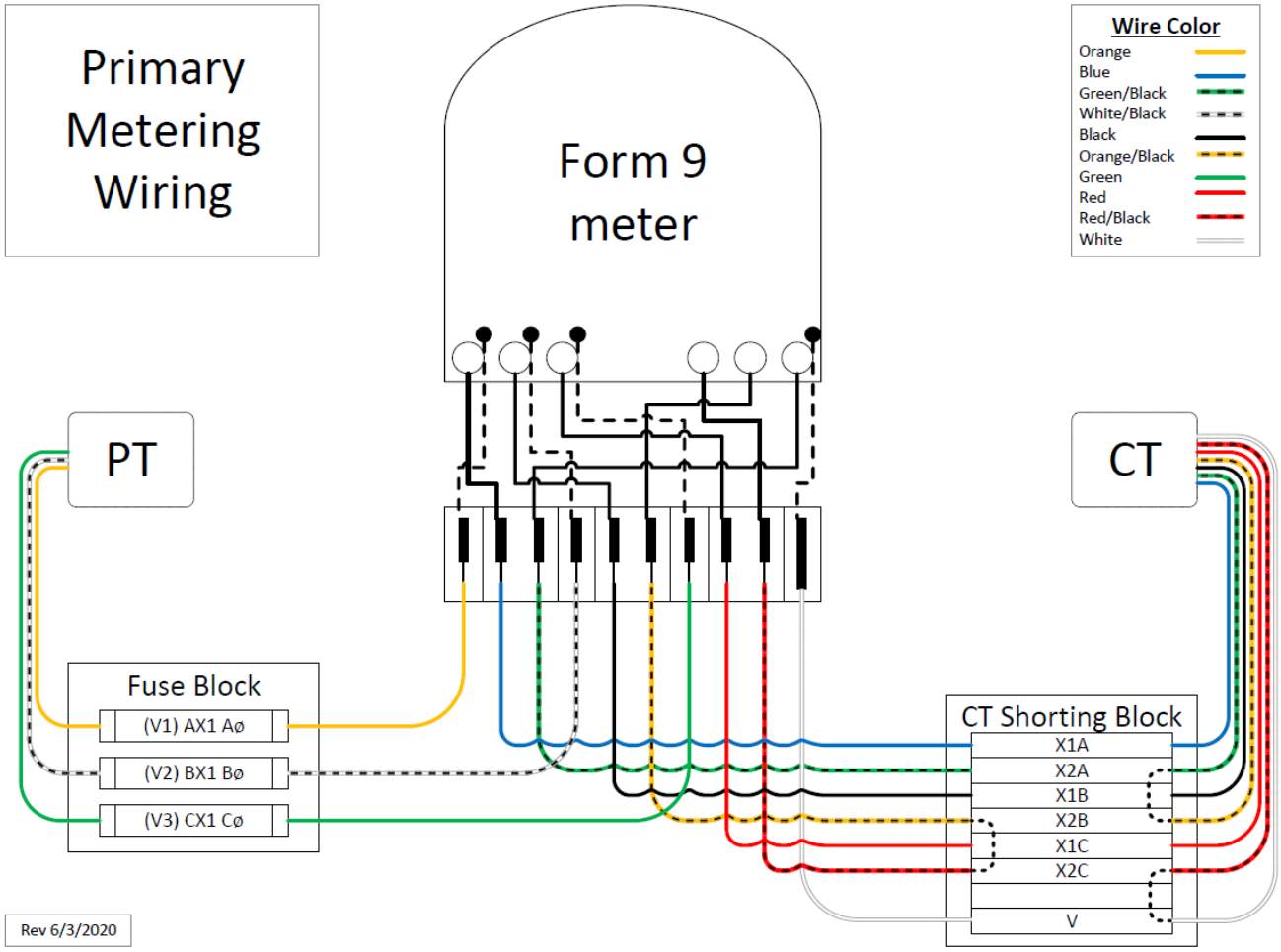
ATTACHMENT 3

Primary Form 9 Wiring Diagram



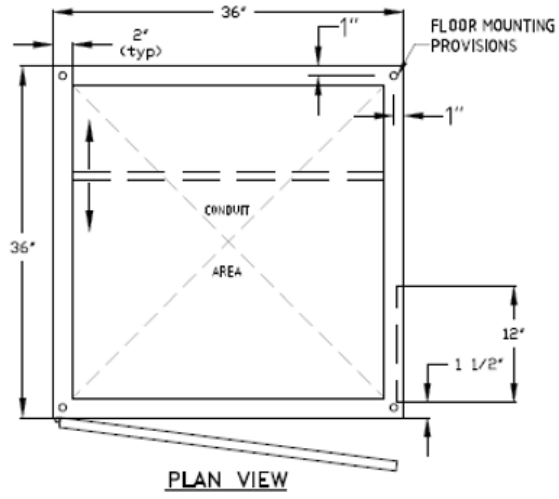
ATTACHMENT 4

Primary Form 9 Wiring Diagram for Meter Enclosure



ATTACHMENT 5

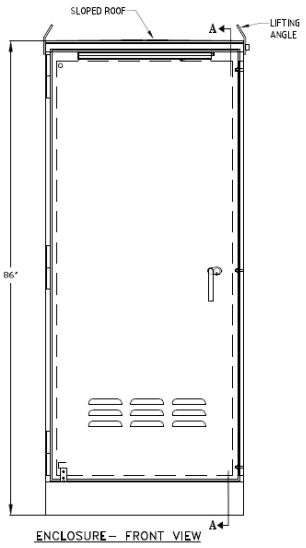
Meter Enclosure Diagram



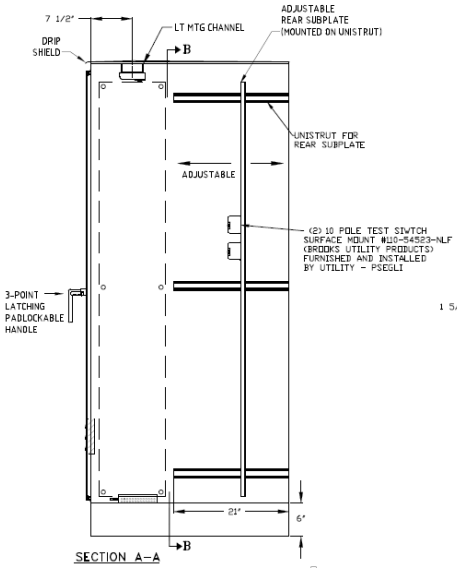
PLAN VIEW

NOTES:

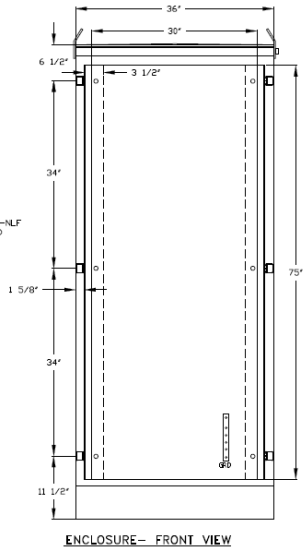
1. METER CABINET (86"H x 36"W x36"D) WITH 6" BASE-PAD MTD
2. ENCLOSURE: NEMA 3R, 12-GAUGE STEEL
3. OPEN BOTTOM WITH PROV. FOR BOLT MTG AT EACH CORNER
4. HEAVY DUTY EYE LIFTING ANGLE
5. EXTENEDED DRIP SHIELD OVER THE DOOR
6. DOOR EQUIPPED WITH 3-POINT LATCHING PADLOCKABLE HANDLE
   - STAINLESS STEEL HINGE / PINS
   - NEOPRENE TYPE OF GASKET AROUND
7. THREADED STUDS WELDED TO THE DOOR AND ENCLOSURE FOR GROUNDING WITH GROUNDING STRAPS.
8. FLUORESCENT FIXTURE LIGHT



ENCLOSURE– FRONT VIEW



SECTION A–A



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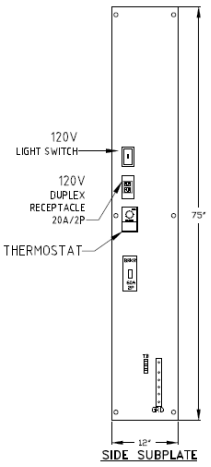

SIDE SUBPLATE