GUAM POWER AUTHORITY
P.O. Box 2977
AGANA, GUAM 96910

TRANSMISSION & DISTRIBUTION SPECIFICATION

SPECIFICATION No. E-008

FOR

INSULATORS; SUSPENSION, VERTICAL TYPE, AND POST TYPE, SPOOL, AND GUY-STRAIN

INSULATORS; SUSPENSION, PIN TYPE, AND POST TYPE SPOOL, AND GUY-STRAIN

TABLE OF CONTENTS

1.0 SCOPE:

To describe the design and technical features for porcelain type insulators.

2.0 DEVIATION:

2.1 Deviations from this specification or changes in the material or design after the purchase order has been placed must be approved by the GPA Engineering Department and acknowledged by an appendix to the specification which shall be issued by a Purchase Order Change Notice.

2.2 Units received with deviations or non-conformances which are not acknowledged as specified in subparagraph 2.1 are subject to rejection. The Supplier of units rejected in this paragraph is responsible for any corrective action including but not limited to materials, labor and transportation necessary to dispose of, or make the units conform to the specification.

2.3 Notification of defective units discovered before or after installation that are believed to be inherent to manufacturing problems or workmanship shall be made and forwarded to the Supplier. The description of the item, documentation of the problem and the described information, disposition and/or follow-up (as appropriate) that GPA expects from the Supplier will be specified. The Supplier's response shall be made within thirty (30) days unless an extension is acknowledged and approved in writing by the GPA Manager of Engineering

3.0 INSULATOR MATERIAL:

The insulators shall be made of good commercial grade wet process porcelain. The porcelain shall be uniform, high density with high dielectric and mechanical strength properties.

4.0 GLAZE:

The entire surface that will be exposed after assembly shall be glazed and free from imperfections. The standard color of the glaze shall be brown. The glaze shall be in compression form to substantially increase the strength of the insulator body, resist adherence of contaminating substances, and facilitate washing action of rain.

5.0 SAND BAND:

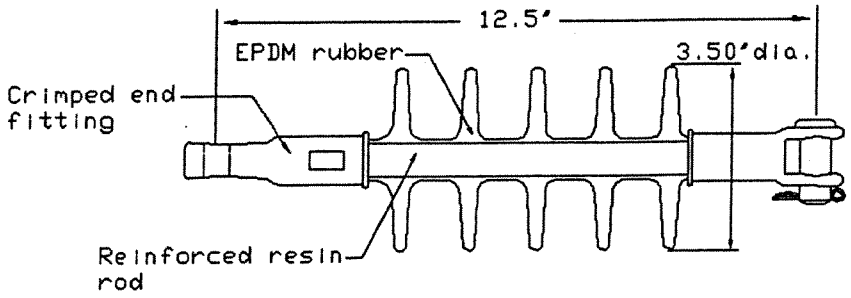
The sand band grip shall be bonded to the porcelain by glaze to provide a rough surface for permanently attaching the hardware and distributing load evenly through the porcelain from one part to the other. This high strength, compression sand shall be manufactured to match the characteristics of the porcelain body.

6.0 RESILIENT COMPOUND:

A resilient compound shall be applied between different components to serve as an elastic cushion to compensate for the different thermal coefficients.

7.0 TESTS:

The porcelain shall receive a severe electrical test before assembly to assure the soundness and a final electrical and mechanical test on the completely assembled unit before shipment.



DEADEND INSULATOR

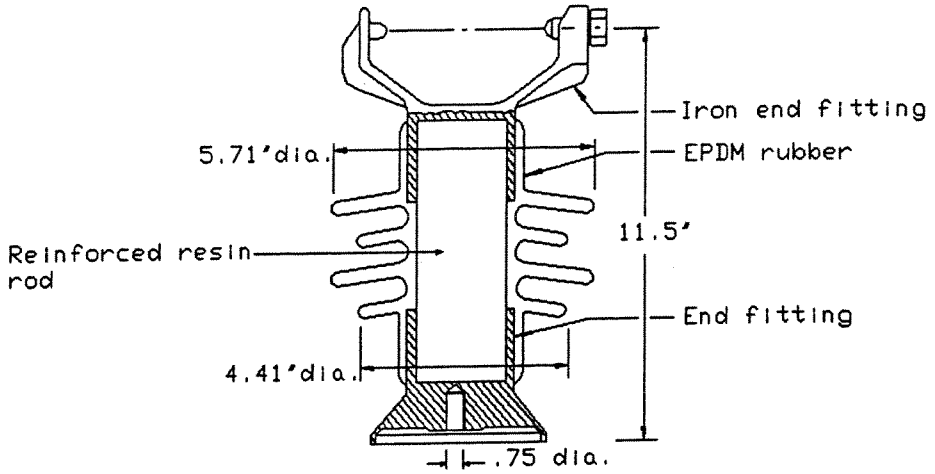
INDEX NO. SSDI 0776

8.0. DEADEND INSULATOR

1. The insulator shall be made with polymer EPDM.
2. The end fittings shall be made of forged steel hot dip galvanized for rugged dependability and strength.
3. The chemical bond between rod and weathersheds shall be developed under heat and pressure to give superior dielectric integrity.
4. The insulator shall have a solid 5/8 inch epoxy fiberglass rod with a 100,000 psi tensile strength.
5. The surface area shall be of controlled weathering to produce a self-cleaning action to reduce surface contamination and avoid tracking.

TECHNICAL FEATURES

1.	Kv Rating Phase To Phase	15	
2.	Ultimate Tensile Strength Lbs.	15,000	
3.	Maximum Design Load Lbs.	7500	
4.	Leakage Distance-Ins.	16.5	
5.	60 Hz Flashover Dry-Kv	90	
6.	60 Hz Flashover Wet-Kv	65	
7.	Impulse Flashover Pos.-Kv	140	
8.	Impulse Flashover Neg.-Kv	170	



VERTICAL LINE POST

INDEX NO. SSOI0783

9.0. VERTICAL LINE POST INSULATOR

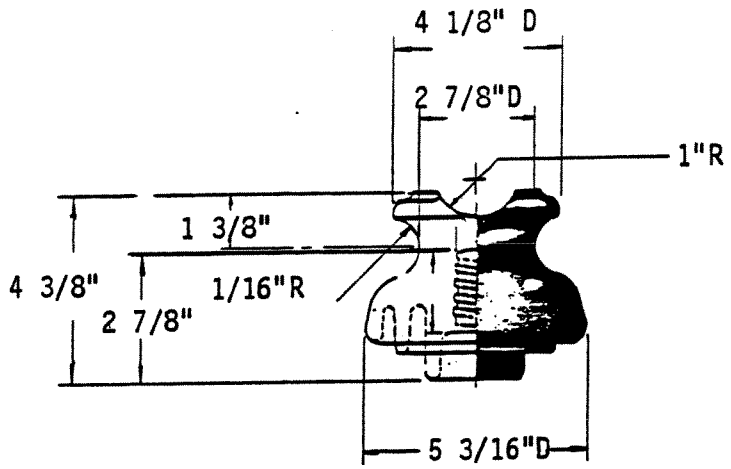
1. The insulator shall be made of non-tracking EDPM rubber applied by injection molding.

2. The end fittings shall be made of cast iron and hot dip galvanized for corrosion protection. The fittings shall be joined to the rod by compression process. The pole end fitting shall be for direct mounting. The conductor end fittings shall be of the clamp-top type.

3. The rod shall be of fiberglass reinforced resin.

TECHNICAL FEATURES

1.	Maximum Design Cantilever, Lbs.	1200
2.	Maximum Design Tension, Lbs.	2500
3.	Leakage Distance, Ins.	16.1
4.	Dry Arcing Distance, Ins.	8.3
5.	Number Of Sheds	4
6.	Low Frequency Test Volt, Kv.	10
7.	Maximum Riv. At 1000 Hz Uv Less Than	50
8.	Low Frequency Flashover Dry, Kv	100
1.	Low Frequency Flashover Wet, Kv	55
10.	Critical Impulse Flashover Positive, Kv	180
11.	Critical Impulse Flashover Negative, Kv	215



PIN TYPE INSULATOR

INDEX NO.NSOI0705

10.0 PIN TYPE INSULATOR FOR NEUTRAL:

1. Thimble shall be made of zinc and made to be sure-fit for high voltage application.

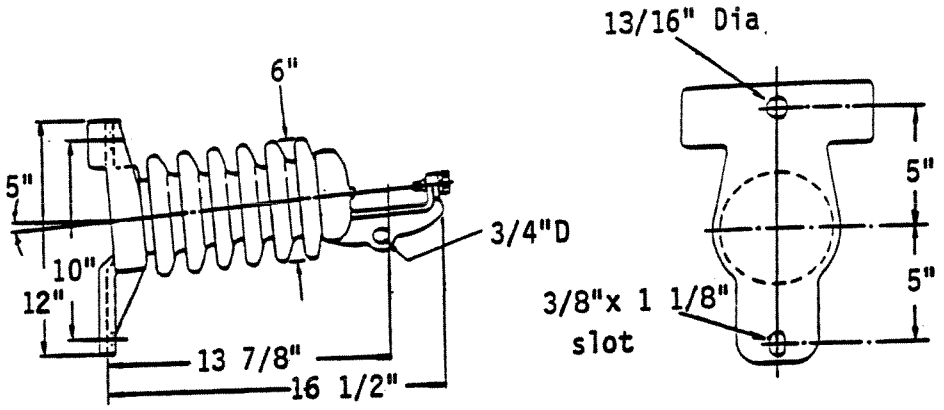
2. A cork washer shall be installed to serve as a buffer between the top of the thimble and pin, and as a protection from shock for the porcelain.

3. The groove for the wire shall be symmetrically-rounded to prevent conductor abrasion and concentration of mechanical load.

4. Ample space shall be provided for ease in applying tie wires.

TECHNICAL FEATURES

1.	Porcelain Thread Size-Inches	1 3/8 ✓	9.	Low-Frequency Test Voltage RMS to Ground-KV	10
2.	Minimum Pin Height-Inches	5 ✓			
3.	Cantilever Strength-Lbs	2,500 ✓	10.	Max. RIV Microvolts at 1000 KC, Plain	5,500
4.	Low-Frequency Flashover, Dry-KV	70 ✓			
5.	Low-Frequency Flashover, Wet-KV	40 ✓	11.	Max. RIV Microvolts at 1000 KC, Radio-Free	50
6.	Impulse Flashover, Positive-KV	110			
7.	Impulse Flashover, Negative-KV	140	12.	Leakage Distance-Inches	9 ✓
8.	Low-Frequency Puncture Voltage-KV	95	13.	Dry Arcing Distance-Inches	5 ✓



LINE POST INSULATOR CLAMP TOP

INDEX NO.SSOI0715

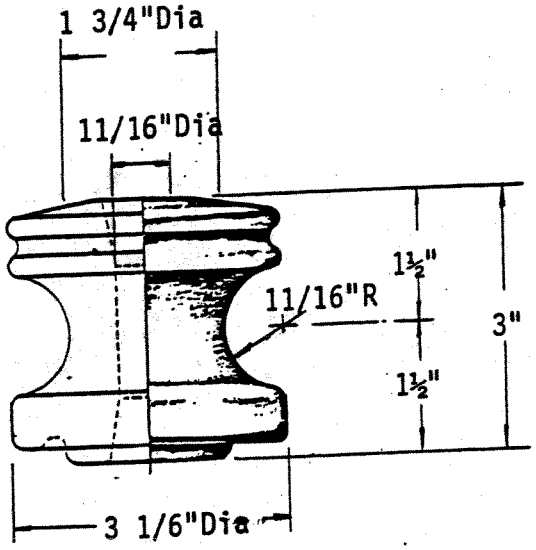
11.0 POST TYPE INSULATOR:

1. The metal parts, except for the cotter pins, shall be made of good commercial grade of malleable iron, or open hearth, or electric furnace steel, galvanized in accordance with ASTM Specifications for Zinc Coating (Hot Dip) on Iron and Steel Hardware, Publication No. A153-49, or latest revision thereof. Cotter pins shall be made of a suitable corrosion resistant and tempered material.

2. Caps shall be of corrosion resistant and heavy duty galvanized malleable material.

TECHNICAL FEATURES

DIMENSIONS	
Leakage Distance, Inches	22
Dry Arcing Distance, Inches	9.5
MECHANICAL VALUES (ULTIMATE)	
Cantilever Strength, Pounds	2800
Tension Strength, Pounds	5000
ELECTRICAL VALUES	
Usual Line Voltage, KV	35
Low Frequency Dry Flashover, KV	110
Low Frequency Wet Flashover, KV	100
Impulse Flashover-Positive, KV	180
Impulse Flashover-Negative, KV	205
RADIO INFLUENCE VOLTAGE DATA	
Test Voltage-RMS to Ground, KV	22
Maximum RIV-Microvolts at 1000 KV	100



SPOOL INSULATOR

INDEX NO.SSOI0745

12.0 SPOOL TYPE INSULATOR

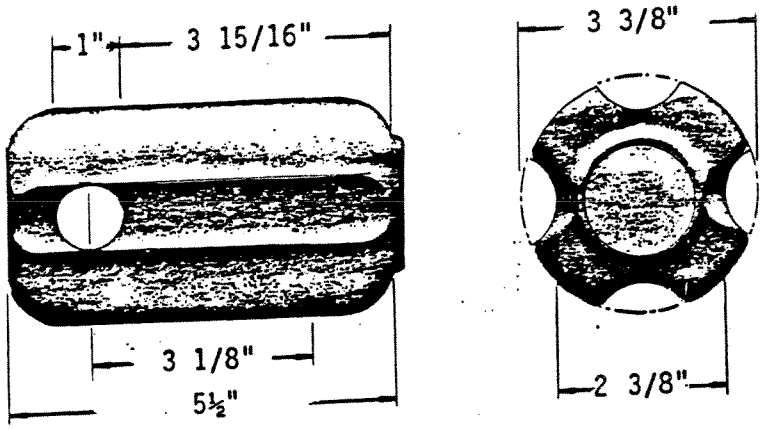
1. Insulators shall fit standard secondary racks, insulated clevis, insulator fork and bracket bolts commonly used for distribution service.

2. Insulators shall be symmetrical for even load distribution, and have rounded, heavy sections to protect against breakage.

3. Insulators shall have tapered ends and holes to safe guard against mechanical failure.

TECHNICAL FEATURES

1.	Ultimate Strength, Lbs	3,000
2.	Low-Frequency Flashover, Dry-KV	20
3.	Low-Frequency Flashover, Vertical Wet-KV	10
4.	Low-Frequency Flashover, Horizontal Wet-KV	12



GUY-STRAIN INSULATOR

INDEX NO.SS0I0771

13.0 GUY-STRAIN INSULATOR

1. Insulator shall be symmetrical for even load distribution, and have rounded, heavy sections to protect against breakage.

TECHNICAL FEATURES

1.	Tensile Strength, Lbs.	20,000
2.	Low-Frequency Flashover, Dry-KV.	35
3.	Low-Frequency Flashover, Wet-KV.	18
4.	Leakage Distance, Inches	2.25
5.	Maximum Cable Diameter, Inches	5/8