



FIJI ELECTRICITY AUTHORITY

BIDDING DOCUMENT

MR 15/2018

**PREFERRED SUPPLIER FOR 33KV
INSULATORS**

Section 1: Instructions to Bidders

- 1. Scope of Bid** The Fiji Electricity Authority (hereinafter referred to as "the purchaser"), wishes to receive bids for Preferred Supplier of 33kV Insulators as specified in these bidding documents (hereinafter referred to as "Insulators").
- 2. Eligible Bidders** This Invitation to Bid is open to bidders who have sound financial background and have previous experience in handling such projects.
- Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer as the Employer shall reasonably request.
- Bidders shall not be under a declaration of ineligibility for corrupt or fraudulent.
- 3. Eligible Materials, Equipment and Services** The Insulators to be supplied under the Contract shall have their origin from reputable companies from various countries. At the Employer's request, bidders may be required to provide evidence of the origin of Insulators.
- 4. Qualification of the Bidder** To be qualified for award of Contract, bidders shall submit proposals regarding work methods, scheduling and resourcing which shall be provided in sufficient detail to confirm the bidder's capability to fulfill the contract.
- 5. Cost of Bidding** The bidder shall bear all costs associated with the preparation and submission of its bid and the Employer will in no case be responsible or liable for those costs.
- 6. Sealing and Marking of Bids** The bidder shall seal the original copy of the technical proposal, the original copy of the price proposal and each copy of the technical proposal and each copy of the price proposal in separate envelopes clearly marking each one as: "ORIGINAL-PROPOSAL", and "COPY PROPOSAL", etc. as appropriate.
- The bidder shall seal the original bids and each copy of the bids in an inner and an outer envelope, duly marking the envelopes as "ORIGINAL" and "COPY".
- The inner and outer envelopes shall be addressed to the Employer at the following address:
- Tuvitu Delairewa
General Manager Corporate Services 2
Marlow Street, Suva, FIJI. Phone: 679 3224
185 Facsimile: 679 331 1882 Email:
TuvituD@fea.com.fj
- And
- bear the following identification:
- Bid for: Preferred supplier for the Insulators
 - Bid Tender Number: **MR 15/2018**
 - DO NOT OPEN BEFORE (**Wednesday 21st March, 2018**)
- 7. Deadline for** Bids must be received by the Employer at the address specified above no later

Submission of Bids	<p>than 1600 hours (Fiji Time i.e. UTC +12:00) (Wednesday 21st March, 2018).</p> <p>The Employer may, at its discretion, extend the deadline for submission of bids by issuing an addendum, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadlines extended.</p>
8. Late Bids	<p>Any bid received by the Employer after the deadline for submission of bids prescribed will be rejected and returned unopened to the bidder.</p>
9. Modification and Withdrawal of Bids	<p>The bidder may modify or withdraw its bid after bid submission, provided that written notice of the modification or withdrawal is received by the Employer prior to the deadline for submission of bids.</p> <p>The bidder's modification or withdrawal notice shall be prepared, sealed, marked and delivered, with the outer and inner envelopes additionally marked "MODIFICATION" or "WITHDRAWAL", as appropriate. A withdrawal notice may also be sent by fax but must be followed by a signed confirmation copy.</p> <p>No bid may be modified by the bidder after the deadline for submission of bids.</p>
10. Employer's Right to Accept any Bid and to Reject any or all Bids	<p>The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the Employer's action.</p>
11. Notification of Award	<p>Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder by fax/email, confirmed by registered letter, that its bid has been accepted. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") shall name the sum which the Employer will pay the Contractor in consideration of the execution, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called "the Contract Price").</p> <p>The notification of award will constitute the formation of the Contract.</p> <p>Upon the furnishing by the successful bidder of a performance security, the Employer will promptly notify the other bidders that their bids have been unsuccessful.</p>
12. Signing of Contract Agreement	<p>At the same time that he notifies the successful bidder that its bid has been accepted, the Employer will send the bidder the Form of Contract Agreement provided in the bidding documents, incorporating all agreements between the parties.</p>

Within 7 days of receipt of the Form of Agreement, the successful bidder shall sign the Form and return it to the Employer.

**13. Corrupt or
Fraudulent
Practices**

The Employer requires that the Contractor observe the highest standard of ethics during the procurement and execution of such contracts. In Pursuance of this policy, the Employer:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) "corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them, or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; and
 - (ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition;
- (b) Will reject a proposal for award if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.

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Section 2: Technical Specification

1 General Description

The Fiji Electricity Authority invites sealed tenders from reputable companies with the relevant experience, for the Supply of 33kV Suspension insulators.

This document specifies the requirements for the design, manufacture, testing and supply of 33,000 Volts – rated Insulators for the installation in the Authority’s 33kV sub-transmission network.

2 Scope

The Suspension Insulators shall be installed on the 33,000 Volts sub-transmission network.

The bidders shall provide pricing, specifications and test procedures of both Polymer Suspension Insulators and Porcelain Suspension insulators for 33kV transmission line as per the technical specifications

Post tender evaluation process, only one of the either two variants of insulators will be selected.

2.1 Estimated quantities

The following table shows the Purchaser's total estimated requirement of Transmission Line Insulators to be purchased each year for the next five (5) years. The Tenderers should note that the total estimated requirement for Transmission Line Insulators to be purchased under this contract is not guaranteed.

	Parts	Brief Description	Quantity	Fitting
A	1	70kN polymer suspension insulator	1000	Tongue and Clevis
	2	33kV Polymer Pin Insulator with Spindle (Complete Set)	1000	Spindle and nuts (Complete Set)
	B	70kN Porcelain Fog Insulator (ball and socket)	1000	Ball and socket

The list below designates the respective insulator types required under this Contract.

Item A

- 1) Supply of 70kN long road composite insulator (tongue and clevis fitting). See Section 5 for characteristics.
- 2) Supply of 33kV Polymer Pin Insulator. See section 5 for characteristics.

Item B

Supply of ball and socket disc insulators, 70 kN minimum failing load, fog type with corrosion intercepting zinc sleeve and split pin type locking device. See Section 6 for characteristics.

2.1.1 Electrical and Mechanical Requirements for Polymer Insulators

PARAMETER	UNIT	Polymer Suspension	Bidders Comments	Polymer Pin	Bidders Comments
PHYSICAL CHARACTERISTICS					
Minimum failing load (Suspension only)	kN	70		10	
Nominal Unit spacing/ shed spacing	mm	50		43	
Pin shank diameter	mm	16			
Maximum outside diameter of disc / shed diameter	mm	100		110	
Min. creepage distance per disc	mm	900		900	
ELECTRICAL CHARACTERISTICS					
Maximum System Voltage	kV	36		36	
50 Hz Withstand Voltage (Dry)	kV	170		95	
50 Hz Withstand Voltage (Wet)	kV	155		75	
Lightning Impulse Withstand Voltage	kV pk	290		170	

2.1.2 Electrical and Mechanical Requirements for Porcelain Insulators

Characteristic	Requirement	Bidders Comments
Type of Coupling	Ball and Clevis	
Minimum Creepage Distance (mm)	320	
Electro-mechanical Failing Load (kN)	70	
Dry lightning impulse withstand voltage (kV) – One Unit	110	
Dry lightning impulse withstand voltage (kV) – Short standard string (5 Units)	420	
Wet Power-Frequency withstand voltage (kV) – One Unit	40	
Wet Power-Frequency withstand voltage (kV) – Short standard string (5 Units)	175	
Power Frequency puncture voltage (kV)	110	

3 Service Conditions

The Insulators shall be capable of satisfactory operation outdoors in a tropical environment, which has high solar radiation and varies from hot dry and dusty to hot and humid and subject to cyclonic wind. The following conditions apply:

1. Air Temperature
 - Extreme maximum 45 °C
 - Average maximum 35 °C
 - Average minimum 18 °C
 - Extreme minimum -5 °C
2. Relative Humidity
 - Maximum 93%
3. Solar Radiation
 - Maximum 1.1kW/m²
4. Wind Loading
 - Wind loading shall be assessed in accordance with AS 1170.2—2011, for Region C (Tropical Cyclone)

4 Manufacturer's Qualification/ Certification

4.1 Certification

Every bidder shall include in his bid the insulator manufacturer's supply experience list of the same or similar types of each offered insulator. The list shall include year of supply, type and quantity of supplied insulator, and full name of user.

Manufacturer shall have sufficient supply and manufacturing experience of polymer and porcelain insulators for at least ten (10) years for the required system voltage and above.

Certificates from customers with satisfactory usage shall be provided with the supply record. Insulators shall be considered, for which a minimum 5 years manufacturing and successful service experience is available, without change of basic design and material.

The qualified manufacturer shall have designed, manufactured, tested and supplied at least 100,000 units of similar insulators for the same system voltage and above. Supplied disc insulators must have same or higher electro-mechanical strength required in this tender document.

- i. Insulator shattering shall not be allowed for the first 5 years after installation.
- ii. Then less than 1/100,000 of annual failure rate shall be guaranteed.
- iii. The bidder shall include with its bid the Certificate of less than 1/100,000pcs of Annual failure rate issued from at least three different foreign utilities outside of manufacturer's country.

Also, at least two certificates out of above three certificates that show the supplied insulators shall be under successful commercial operation for at least five years shall be submitted.

5 Technical Specifications for Polymer Insulators

5.1 Design and Material Requirements

5.1.1 Housing (Sheath and Weather-Sheds)

The fiberglass core of the polymer insulators shall be protected with a rubber housing which shall be made of a silicone elastomeric compound having a minimum 30% silicone (or having a Si-O chemical backbone with fumed silica and tracking control filler, ATH). The housing shall be directly moulded on the core through high temperature vulcanization (HTV) process and shall be seamless, smooth and free of imperfections. Moulding in multiple steps may cause flaws and residual stress in the joining seams and, therefore, shall not be applied. The weather sheds shall provide an open aerodynamic profile without any under ribs.

The housing shall be manufactured of 100 percent silicone rubber before fillers are added. The housing shall be in one-piece without any rubber-to-rubber joint in any part of the housing. The end fittings (electrodes) shall not be covered with the housing to prevent electrical puncture through the housing.

The housing shall be directly bonded to the FRP core. The interface between the housing and FRP rod shall be chemically bonded to prevent contaminants and moisture ingress. The strength of core-to-housing interface shall be greater than the tearing strength of the housing material itself. The thickness of the housing shall be no less than 3.0 mm.

The colour of the housing material shall be grey, and uniform and consistent.

Polymer insulators shall be designed to withstand high-pressure water washing of 3800kPa (570 psi), with a nozzle diameter of 6mm (1/4 inch) at a distance of 3meters (10 feet) from the nozzle to the polymer insulator.

5.1.2 Core

The core shall be a high quality fibre reinforced plastic (FRP) rod. To reduce the risk of brittle fracture, the insulator FRP core shall be made of corrosion-resistant ECR glass.

The insulator core shall be mechanically and electrically sound, free of visible voids, foreign substances, and other manufacturing flaws.

5.1.3 End-fittings

The mechanical load will be transferred to the FRP rod by end fittings attached to the ends of the rod. The end fittings shall be made of forged steel or ductile iron. Ball fittings shall be made of forged steel. The inner seal area must be galvanized in order to prevent any rusting if water were to intrude the interface between hardware and the RTV sealant.

The end fitting configuration and dimension shall conform to the applicable requirements and gauging according to IEC 60471 (Clevis-Tongue).

All ferrous materials (except stainless steel) shall be hot-dip galvanized in accordance with ASTM A153.

5.1.4 Assembly

The end fittings shall be attached to the FRP rod using a controlled compression process. The compression force used shall not be high enough to cause internal rod cracks.

All end fittings shall be attached to FRP rod by an automatic crimping process. The process must be controlled to detect, record, and reject damaged pieces during crimping by acoustic emission or an equivalent method. Prior to award of contract, documentation shall be submitted to completely describe the crimping method used.

The interface of the metal end fitting and the housing shall be permanently sealed to prohibit the access of moisture. This sealing system shall be multi-layered and offer true redundancy.

5.1.5 Marking

Markings shall be legible, durable and permanent to include the following:

- a) Manufacturer's name or trademark
- b) Specified mechanical load
- c) Routine mechanical load
- d) Year of make and series number
- e) FEA Stock Code

5.1.6 Technical Requirements

Dimensional, electrical, and mechanical characteristics will be specified separately for each polymer insulator. Critical criteria to be specified are: section length, arcing distance, leakage distance, low frequency withstand ratings, critical impulse withstand ratings, and weight.

5.2 Testing

5.2.1 Sample Test Reports

A sample record of all factory acceptance tests results shall be submitted with the bid documents. The test reports shall be signed by the testing engineer and the engineer witnessing the tests.

The following tests shall be carried out and results given along with certification as appropriate in the Technical Data Schedule and Test Certificates Schedules of this specifications:

The insulator provider shall be able to demonstrate that the polymer insulators offered can meet the requirements of IEC, IEEE or AS/NZS Standards. Test reports shall be made available to FEA. All polymer suspension insulators shall have completed the following tests procedures described in IEC 61109, unless stipulated otherwise in this specification.

5.2.2 IEC Design tests

- i) Tests on interfaces and connection of end fittings
- ii) Assembled core load-time tests
- iii) Test of housing: tracking and erosion test
- iv) Tests for the core material
- v) Flammability test

- vi) Ageing test under operating voltage simulating weather conditions (5,000hrs)

5.2.3 IEC Type tests

- i) Dry lightning impulse withstand voltage test
- ii) Wet power-frequency test
- iii) Wet switching impulse withstand voltage test (if highest voltage $U_m > 245kV$)
- iv) Mechanical load-time test
- v) Radio interference test (Criteria: ANSI C29.12 Clause 7.2.4)

5.2.4 IEC Sampling tests

- i) Verification of dimensions
- ii) Verification of locking system (if applicable)
- iii) Verification of specified mechanical load
- iv) Galvanizing test

5.2.5 IEC Routine tests

- i) Visual examination
- ii) Mechanical routine test

5.3 Factory Acceptance Tests

The bidder shall include in the costing the Factory Acceptance Testing whereby two (2) Fiji Electricity Authority engineers shall witness the testing being done on the Insulators. The cost shall be inclusive of transportation (Air and road), accommodation and meals. An Inspection Test Plan (ITP) shall be submitted with the bid.

5.4 Standards for 33kV Polymer Insulators

Polymer Suspension insulators shall be designed, manufactured, and tested in accordance with the requirements of the latest published edition of the following IEC and/or equivalent AS/NZS standards unless otherwise noted.

Standard specification for polymer insulators

IEC 61109:	Composite insulators for A.C. overhead lines with a nominal voltage greater than 1000V - Definitions, test method and acceptance criteria.
IEC 60120:	Dimensions of Ball & Socket Couplings in String Insulators
IEC 62217:	Polymeric insulators for indoor and outdoor use with a nominal voltage > 1 000 V – General definitions, test methods and acceptance criteria
ANSI C29.12:	For insulators composite – Suspension Type
AS/NZS 4680—2006	Hot-dip Galvanized (zinc) Coatings on Fabricated Ferrous Articles
AS 1154.1-2009	Insulator and Conductor Fittings for Overhead Power Lines – Performance, material, general requirements and dimensions
Additional Standards	
AS IEC 60437—	Radio Interference test of high voltage Insulators

2005	
IEC CISPR 18-2—1993	Radio interference characteristics of overhead power lines and high voltage equipment. Part 2 – Methods of measurement and procedure for determining limits.
AS 1931.1-1996	High Voltage Testing Techniques – General Definitions and Test Requirements
AS 1931 2—1996	High Voltage Testing Techniques - Measuring Systems
AS/NZS ISO 9001:2008	Quality Management Systems - Requirements

Note: Bidders shall demonstrate / submit proof of ownership and possession of aforementioned standards

6 Technical Requirements of the 33kV Porcelain Suspension insulators

6.1 Construction

The insulator shall be cap and pin type made of high quality aluminous porcelains.

6.1.1 Design and fabrication

The material for the insulator shall be as follows:

Insulator shell : Porcelain only

Cap : Malleable Cast Iron or Ductile Cast Iron

Ball Pin : Steel

Locking Device (Split pin type): Stainless Steel

6.1.2 Insulator body

Porcelain head shall be designed to have straight-headed. Cross-section drawing shall be submitted with the Bid, which shows the straight head design of the insulators. The surface of porcelain shells shall be free from unevenness and rough particles and the entire surface that will be exposed after assembly, shall be brown or light grey glazed, to give a smooth finish or uniform colour.

6.1.3 Socket cap and ball pin

Socket cap shall be made of malleable cast or ductile cast iron and ball pin shall be made of steel and shall be hot dip galvanized, in accordance with IEC Pub. 60383-1.

6.1.4 Cementing

Cementing shall be made so that porcelain should not engage directly with hardware. The quality of cement shall be such that fracture is not caused by expansion or loosening contraction.

6.1.5 Locking device

Insulator units shall be furnished with split-pin type locking devices in accordance with IEC Pub.60372. The split pin shall be made of stainless steel.

6.1.6 Zinc sleeve

The pins of insulator unit shall be equipped with sacrificial zinc sleeves. The purity of the zinc shall not be less than 99.8%. The zinc sleeve shall be fused on to the galvanized pin surface. The total fused area of the interface shall be more than 80% of the total area of the interface between zinc sleeve and pin shank.

6.2 Marking

The following items shall be marked on porcelain.

- a. Manufacture's name or trade mark
- b. Year of manufacture
- c. Electro-Mechanical failing load in kN
- d. FEA's Stock Code

The markings shall be legible and durable.

6.3 Test

Each insulator unit shall be tested as follows;

6.3.1 General

Type tests certification for single unit insulators. The Bidder shall include with its bid the recent type test certificates and test data for the offered insulator units. If changing manufacture place and insulator's head design, certificates of previous manufacture place and insulator design shall not be permitted. The document shall have been issued by an approved internationally acknowledged, reputable, independent testing laboratory.

Three (3) copies each of certified test reports shall be furnished to the inspecting engineer prior to shipment of the material.

6.3.2 Type tests

6.3.2.1 Objective

These tests are intended to verify the main characteristics of an insulator which depend mainly on its design. They are carried out once in order to qualify the insulator.

6.3.2.2 Test items

The following type tests shall be performed on the insulator units:

- a) Verification of the dimensions - clause 17 of IEC 60383-1.
- b) Wet power-frequency withstand voltage test - clause 14 of IEC 60383-1
- c) Dry lightning impulse withstand voltage test - clause 13 of IEC 60383-1
- d) Electro-mechanical failing load test – clause 18 of IEC 60383-1.
- e) Thermal mechanical performance test - IEC 60383-1

6.3.2.3 *Residual strength test*

- g) Steep-front wave flashover test
- h) Power arc test

6.3.2.4 *Test procedures and acceptance criteria*

6.3.2.5 *Steep front of wave flashover test*

This test shall be performed on 10 insulator units selected at random from the first production lot:

- a) The insulator units shall be subjected to five successive positive and negative impulse flashover with a wave having an effective rate of rise of 2,500 kV per microsecond. The insulators shall be tested singly.
- b) Each unit shall then be verified to be electrically intact by applying power-frequency voltage. The rated wet power-frequency withstand voltage shall be applied to each unit and no electrical puncture shall occur.

Failure of any one unit either in the front-of-wave or subsequent power-frequency withstand voltage test shall be caused for testing another 20 units.

Failure of more than one unit from the total so tested shall constitute failure to meet the requirements of this specification.

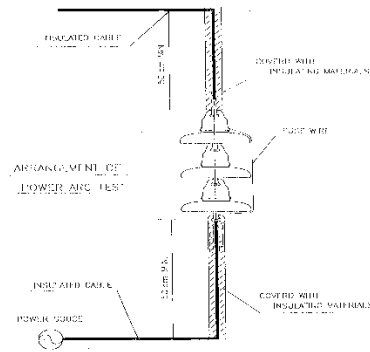
6.3.3 *Power arc test*

Nine (9) insulator units for each type shall be chosen for the power arc test. Test shall be conducted on a string of three (3) units mounted vertically without arcing horns or conductors. The current and duration of power arc shall be 12 kA (symmetrical r.m.s.) and 0.1 sec. or 6 kA (symmetrical r.m.s.) and 0.2 sec.

After a power arc shot, the insulator string shall be changed to a new string of three (3) units and a power arc shot shall be made again. This procedure shall be repeated again on the other string of remaining three (3) units. So in total three (3) insulator string are tested and each insulator string is subjected a power arc shot. The power arc shall be initiated by a fuse wire which connects the cap of the topmost insulator and top end of socket coupling to the bottommost insulator and the fuse wire shall be set on the insulator string away from the power source as shown in Fig. 1.

Acceptance Criteria: No shed breakage shall occur during the power arc test. Peeling-off or burnout of glaze on the insulator surface and partial rib chip shall be permitted. If two or more insulator units break in the power arc test, this insulator design is considered to have failed to meet the specification.

In case on insulator unit fails in the test, re-test on another nine (9) insulator units shall be conducted in the same manner. Failure of any one unit in the re-test means that insulator design has failed to meet the specification.



6.3.4 Sample tests

6.3.4.1 Objective

These tests are intended to verify the other characteristics of an insulator and the quality of the material used. They are made on insulators taken at random from lots which have met the requirements of all the relevant routine test.

Test items and methods

- (1) Verification of dimensions
- (2) Verification of the displacements
- (3) Verification of the locking system
- (4) Temperature cycle test
- (5) Puncture test
- (6) Porosity test
- (7) Galvanizing test

These tests shall be performed in accordance with IEC 60383-1.

The results shall comply with this standard.

- (8) Electro-mechanical failing load test

The test shall be performed in accordance with IEC 60383-1.

- (9) Head design inspection

Three insulators shall be selected at random from each lot of the order and their straight head design shall be checked against the manufacturer's cross-section drawing. Insulators that do not conform to the straight head design shall not be accepted.

6.3.5 Routine test

6.3.5.1 Objective

These tests are for the purpose of eliminating insulators with manufacturing defects. They are made on every insulator offered.

These tests shall be applied to every insulator in the following order in accordance with IEC 60383-1.

- (1) Visual examination
- (2) Mechanical routine test
- (3) Electrical routine test

6.4 Standards for the 33kV Suspension Porcelain Insulators

Porcelain Suspension insulators shall be designed, manufactured, and tested in accordance with the requirements of the latest published edition of the following IEC and/or equivalent AS/NZS standards unless otherwise noted.

Standard Specification for porcelain suspension insulators

IEC 60120 : 1984	Dimensions ball and socket coupling of string insulator units
IEC 60305 : 1995	Characteristics of string insulator units of cap and pin type
IEC 60372 : 1984	Locking devices for ball and socket couplings of string insulator units: Dimensions and test
IEC 60383-1 : 1993	Insulators for overhead lines with a nominal voltage above 1000V Part 1: Ceramic or glass insulator units for a.c. systems- Definitions, test methods and acceptance criteria.
IEC 60383-2 : 1993	Insulators for overhead lines with a nominal voltage above 1000V Part 2: Insulator strings and insulator sets for a.c. systems- Definitions, test methods and acceptance criteria.
IEC 60797 : 1984	Residual strength of string insulator units of glass or ceramic material for overhead lines after mechanical damage of the dielectric
AS/NZS 4680— 2006	Hot-dip Galvanized (zinc) Coatings on Fabricated Ferrous Articles
Additional Standards	
AS 1154.1- 2009	Insulator and Conductor Fittings for Overhead Power Lines – Performance, material, general requirements and dimensions
IEC 61211—2004	Insulators of ceramic material or glass for overhead lines with a nominal voltage greater than 1000 V – Impulse puncture testing in air.
IEC 61467—2008	Insulators for overhead lines – Insulator strings and sets for lines with a nominal voltage greater than 1000 V – AC power arc tests.

7 Warranty

The supplier and/or manufacturer shall provide warranty of a minimum of **3 Years** from the date Fiji Electricity authority receives the equipment.

On the contrary, if the bidder cannot warranty for 10 years than a preferred warranty period shall be given by the bidder

8 Drawings

The bidder shall outline dimension drawings for each component, general arrangement drawing showing component layout and a complete drawing of the Insulator with different drawings of variable components.

9 Quality and Environment Assurance

The quality assurance system of design, manufacture, and inspection shall conform to ISO 9001.

Quality assurance certificate according to ISO 9001 issued by an authorized inspection agency shall be submitted with the bid.

The environment management system of manufacture shall confirm to ISO 14001.

Environment assurance certificate according to ISO 14001 issued by an authorized inspection agency shall be submitted with the bid

Bids will not be considered if the manufacturer's experience or quality assurance system does not meet the above requirements.

10 Inspection

The FEA reserves the right to witness sample and routine tests at the manufacturing. The bidders shall factor in the entire costs (Visa, air fare, Local Transportation, Hotel, Meals, etc) for facilitating one factory visit by two (2) FEA engineers at the manufacturing facility to witness sample and routine tests, as part of the factory acceptance testing of the insulators, prior to shipment.

11 Packing

11.1 Polymer

The insulator shall be securely and effectively packaged in prefabricated packaging that has sufficient strength for normal handling and durability for short-term outdoor storage.

11.2 Porcelain

Insulators shall be packed in strong wooden crates. The method of packing for overseas shipment shall be such as to protect the insulators and metal parts from breakage or vibration injury that might be encountered in transportation and handling.

Section 3: Pricing Schedule

1 Incoterms

All pricing shall be done on **Cost, Insurance and Freight (CIF) basis**, delivered to Suva wharf, Fiji.

2 Currency

All pricing shall be in USD or AUD or NZD or FJD

3 Taxation

The pricing shall be EXCLUSIVE of any type of taxation that needs to be paid in Fiji.

4 Pricing breakdown

The prices quoted will be fixed and NOT variable.

5 Validity

The pricing shall be valid for **90 days**.

6 Price Breakdown

Particulars	Quantity	Unit Price USD CIF	Total Price USD CIF
Item 1			
70kN polymer suspension insulator	1000		
Item 2			
33kV Polymer Pin Insulators with spindle	1000		
Item 3			
70kN Porcelain Fog Insulator (ball and socket)	1000		
Factory Acceptance Test inclusive of Accommodation, Transport (air and road) and meals	2 Engineers		

Section 4: Bid Documentation

The Bidder shall furnish, as part of the bid, documents establishing the Bidder's eligibility to bid and its qualifications to perform the contract if its bid is accepted.

The documentary evidence of the bidder's qualifications to perform the contract of its bid is accepted will establish to the purchaser's satisfaction.

- a) that the Bidder has the financial, technical, and production capability necessary to perform the contract;
- b) that the Bidder meets the qualification criteria listed in Section 2.

1 Documents establishing equipment conformity to Bidding documents

The Bidder shall furnish as part of its bid, documents establishing conformity to the bidding documents of all Insulators and services, which the Bidder proposes to supply under the contract.

The documentary evidence of conformity of the Insulators and the services to bidding documents may be in the form of literature, drawings, and data, and will consist of:

- a) A detailed description of the essential technical and performance characteristics of the Insulators.
- b) The bidder should specifically mention about furnishing the test certificates and a specimen form of test certificate should be furnished along with the bid.
- c) A list giving full particulars, including available sources and current prices of spare parts, special tools etc., necessary for the proper and continuing functioning of the materials/equipment following commencement of the use of the Insulators by the purchaser; and
- d) An item-by-item commentary on the purchaser's Technical specifications demonstrating substantial responsive-ness of the Insulators and services to those specifications, or a statement of deviations and exceptions to the provisions of the technical specifications.

For purpose of the commentary to be furnished pursuant to above, the Bidder shall note that standards for workmanship, material, and equipment, as well as references to brand names or catalogue numbers designated by the Purchaser in its Technical Specifications, are intended to be descriptive only and not restrictive.

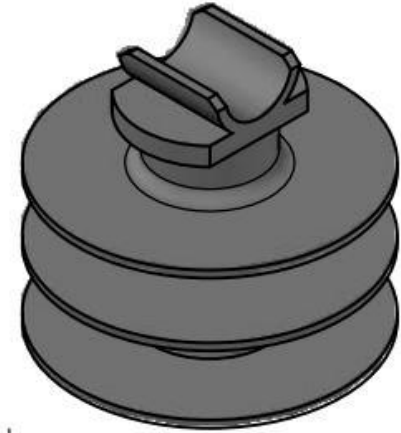
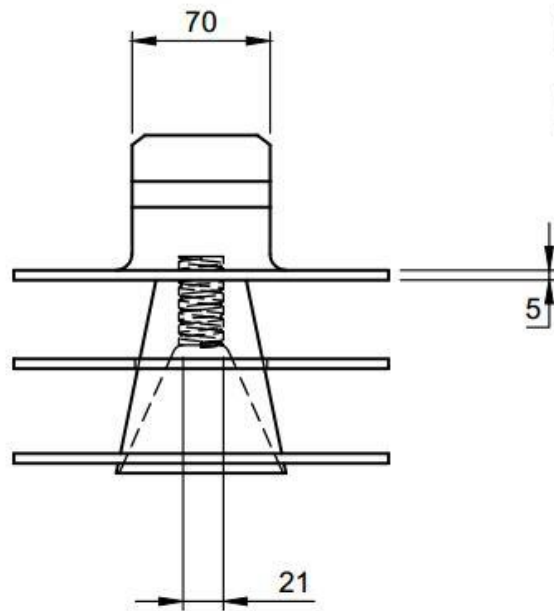
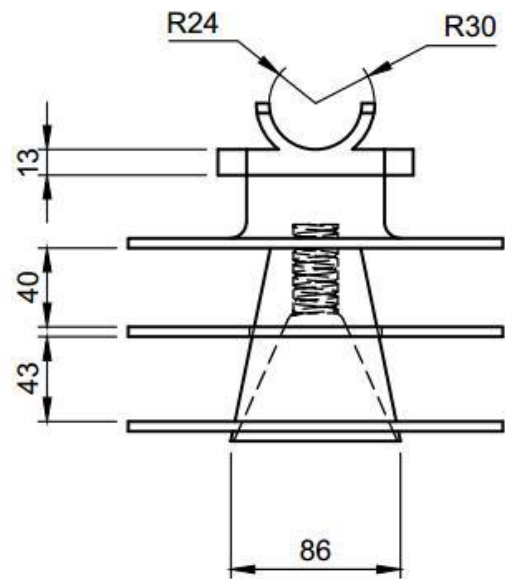
The Bidder may substitute alternative standards, brand names, and/or catalogue numbers in their bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions ensure substantial equivalence to those designated in the Technical Specifications.

2 Submission Checklist

The following shall be provided in the bid submission:

Particulars	Yes	No
1. Item-by-item commentary on the purchaser's Technical specifications		
2. Descriptive literature giving full technical details of equipment offered;		
3. Outline dimension drawing for each component, general arrangement drawing showing component layout;		
4. type test certificates and sample routine test reports;		
5. detailed reference list of customers already using equipment offered during the last 5 years with particular emphasis on units of similar design and rating;		
6. details of manufacturer's quality assurance standards and programme and ISO 9000 series or equivalent national certification;		
7. Supplier experience details		
8. Deviations from this specification (if any).		
9. Certificates of annual failure rate		
10. Standards Compliance and Listing		
11. Factory Acceptance Test Plan and Breakdown		
12. Completed technical data schedule;		
13. Complying and Completed pricing schedule		

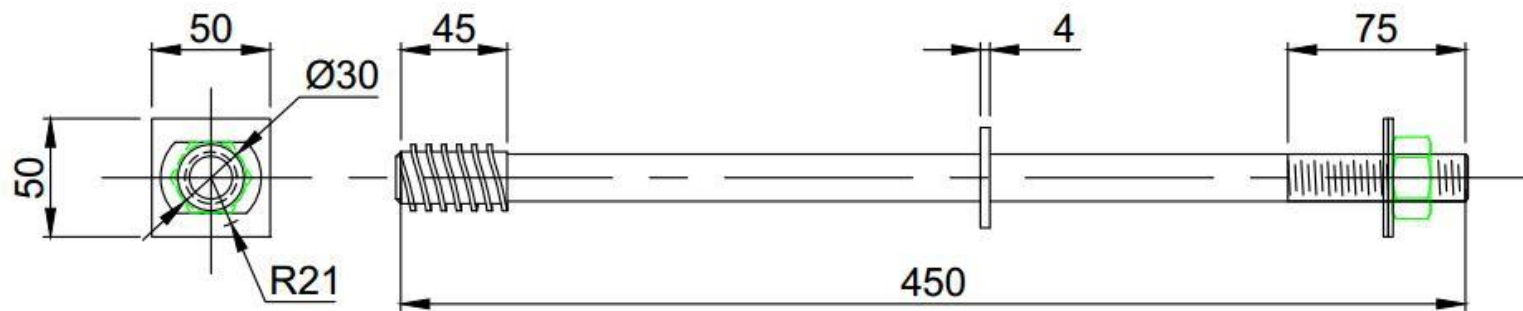
Appendix



TRANSMISSION - NETWORK
DATE: 29:03:17
SHEET 1 OF 1

FIJI ELECTRICITY AUTHORITY
33kV PIN INSULATOR

SIZE: A4
DWG. NO.:
SCALE: 1:3



TRANSMISSION - NETWORK	FIJI ELECTRICITY AUTHORITY INSULATOR SPINDLE	SIZE: A4
DATE: 23:03:17		DWG. NO.:
SHEET 1 OF 1		SCALE: 2:5

A4

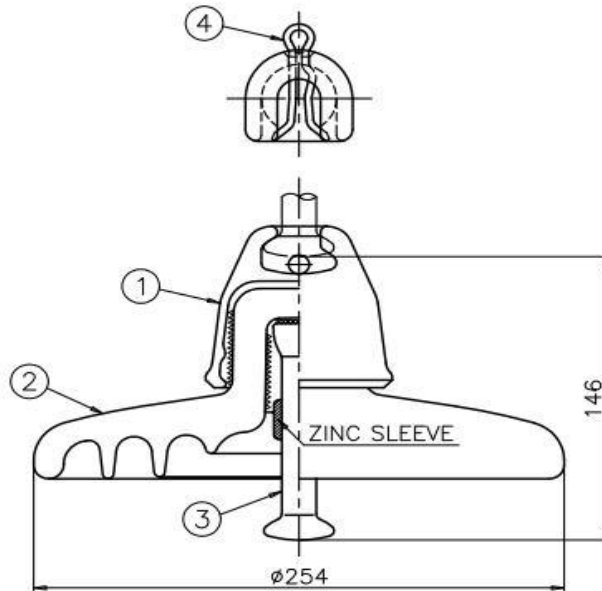
DRG.NO. T126098 REV.

TECHNICAL DATA

Specification Applied : IEC Pub.60383-1:1993

Characteristics	Rating
1. Type of ball and socket coupling	IEC 16mm A
2. Creepage distance , mm	320
3. Electro-mechanical failing load , kN	70
4. Dry lightning impulse withstand voltage , kV	
a. One unit	110
b. Short standard string (5units)	420
5. Wet power-frequency withstand voltage , kV	
a. One unit	40
b. Short standard string (5units)	175
6. Power-frequency puncture voltage , kV	110

Note : 1) Mark on porcelain ; **70KN M-E**
35KN TEST
NGK
Year



BITUMINOUS PAINT COATING ON METAL SURFACES IN CONTACT WITH CEMENT.
PORCELAIN : BROWN OR LIGHT GRAY GLAZED.
FERROUS PARTS : HOT DIP GALVANIZED EXCEPT STAINLESS STEEL.

(4)	STAINLESS STEEL	1	
(3)	STEEL	1	
(2)	PORCELAIN	1	
(1)	MALLEABLE IRON OR DUCTILE IRON	1	MFR'S OPTION
ITEM	MATERIAL	REQD.	REMARKS

NGK INSULATORS, LTD.

CORROSION-PROOF SUSPENSION INSULATOR
IEC DESIG. : U70BL
M & E STRENGTH : 70 kN

SCALE	1/3	DRN.	T.H
UNIT	M.M.	CKD.	S.Y
DATE	RETRACED DEC.19.2002	APPD.	K.T
CAT.NO.		CA-515MZ	

CHANGES

Tender Submission - Instruction to bidders

It is mandatory for Bidders to upload a copy of their bid in the **TENDER LINK** Electronic Tender Box no later than **4:00pm, on Wednesday 21st March, 2018**

To register your interest and tender a response, view 'Current Tenders' at:

<https://www.tenderlink.com/fea>

For further information contact The Secretary Tender Committee, by e-mail

TDelairewa@fea.com.fj

In additional, hard copies of the tender, one original and one copy must be deposited in the tender box located at the FEA Head Office, 2 Marlow Street, Suva, Fiji no later than **4:00pm, on Wednesday 21st March, 2018** - Addressed as

Tender – MR 15/2018 Preferred Supplier for the Supply of 33kV Insulators

**The Secretary Tender Committee
Fiji Electricity Authority
Head Office
Suva
Fiji**

- **Hard copies of the Tender bid will also be accepted after the closing date and time provided a soft copy is uploaded in the e-Tender Box and hard copy is dispatched to courier before the closing date and time. Please note courier submission date should be forwarded to FEA with your bid.**

Tenders received after **4:00pm** on the closing date of **Wednesday 21st March, 2018**

- will not be considered.
- Lowest bid will not necessarily be accepted as successful bid
- **It is the responsibility of the bidder to pay courier chargers and all other cost associated with the delivery of the hard copy of the Tender submission including any Duties/Taxes. Hard copies of the Tender submission via Post Box will not be considered.**