



ENERGY FIJI LIMITED

TECHNICAL SPECIFICATION FOR PREFERRED SUPPLIER FOR SUPPLY OF COPPER BOLTED LUGS AND NON- TENSION BOLTED ALUMINUM CONNECTORS

MR 192/2024

Revision History & Document Control

Rev no.	Notes	Prepared By	Reviewed By	Date of Issue
1	Prepared	Darrel Lal		30/11/17
2	Reviewed		Rajiv Singh	25/10/18
3	Reviewed		Mohammed Zainal	13/05/24

1.0 Introduction

Energy Fiji Limited [EFL] is responsible for generation, transmission and distribution of electricity in Viti Levu, Vanua Levu, Ovalau and Taveuni in Fiji. By January 2023, the EFL had 215,515 customers. This included residential, commercial and institutional customers.

EFL is requesting proposal for the Preferred Supplier to supply item listed below for EFL's consumption to carryout repair, Construction and maintenance of Power line Network in Fiji.

The preferred Supplier arrangement will be for a period of three (3) years from the date of signing of the contract. The award of this Tender may be split and awarded to more than one successful bidder.

This document outlines the technical requirements for copper bolted lugs for use in EFL's distribution network.

The items covered under this specification are tabulated below.

No.	Stock Code	Item Description
1	I02541	NO 3 CU BOLTED CABLE LUG
2	I02542	NO 4 CU BOLTED CABLE LUG
3	I02543	NO 5 CU BOLTED CABLE LUG
4	I02544	NO 6 CU BOLTED CABLE LUG
5	I02545	NO 7 CU BOLTED CABLE LUG
6	I02546	NO 8 CU BOLTED CABLE LUG

No.	Stock Code	Item Description	Run	Diameter	Tap	Diameter	Number of Bolt
1	I02578	Service Tap Aluminum (AC 58)	7/3.00 to 7/4.75	9mm to 14.3mm	7/1.75 to 7/3.75	5.25mm to 11.3mm	1
2	I02577	PG Aluminum Clamp (LT43-1)	7/1.35 to 7/3.75	4mm to 12mm	7/1.35 to 7/3.75	4mm to 12mm	1
3	I02579	PG Aluminum Clamp (LT75)	7/2.50 to 19/3.75	7mm to 19mm	7/2.50 to 19/3.75	7mm to 19mm	1
No.	Stock Code	Item Description	Run Conductor Range		Service Connector Range		
			Minimum	Maximum			
4	I02586	Service Tee Connector (STC2-1)	7/2.25 Ø 6.75mm	19/3.75 Ø 18.75mm	3 Conductors 7/1.70 each leg		

This Specification covers the general requirements of design, manufacture, testing, supply and delivery of copper bolted lugs for overhead distribution systems.

1. INSTRUCTIONS TO BIDDERS

1.1 Eligible Bidders

This invitation is open to all Bidders who have sound Financial Background, and have previous experience in design, manufacture, testing and supply of such pole-mounted and platform-mounted transformers.

Bidders shall provide such evidence of their continued eligibility satisfactory to EFL as EFL shall reasonably request. Bidders who are not manufacturers of such transformers shall provide evidence of agency.

Bidders shall not be under a declaration of ineligibility for corrupt or fraudulent practice.

1.2 Eligible Materials, Equipment and Services

The materials, equipment, and services to be supplied under the Contract shall have their origin from reputable companies (as specified by EFL where relevant) and from various countries and all expenditures made under the Contract will be limited to such materials, equipment, and services. Upon request, bidders may be required to provide evidence of the origin of materials, equipment, and services.

For purposes of this Contract, "services" means the works and all related services including design services.

For purposes of this Contract, "origin" means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing or substantial or major assembling of components, a commercial recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

The materials, equipment and services to be supplied under the Contract shall not infringe or violate any industrial property or intellectual property rights or claim of any third party.

1.3 One Bid per Bidder

Each bidder shall submit only one bid. A bidder who submits or participates in more than one bid will cause all those bids to be rejected.

1.4 Cost of Bidding

The bidder shall bear all costs associated with the preparation and submission of its bid and EFL will in no case be responsible or liable for those costs.

1.5 Site Visits

Bidders can visit existing EFL networks by making arrangements to visit existing EFL installations. Bidders are required to familiarize themselves with the existing EFL installations so the solutions they offer does not require modification to existing poles and support infrastructure.

1.6 Contents of Bidding Documents

The bidder is expected to examine carefully the contents of this Bidding document. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Bids which are not substantially responsive to the requirements of the bidding documents will be rejected.

1.7 Clarification of Bidding Documents

A prospective bidder requiring any clarification of the bidding documents may notify EFL in writing by email, addressed to:

Jitendra Reddy
Manager Procurement, Inventory & Supply Chain
2 Marlow Street,
Suva, Fiji
Phone: +679 331 3333 Ext 2320 or
Mobile: +679 999 2400
Email: JReddy@efl.com.fj

EFL will respond to any request for clarification which it receives earlier than 10 days prior to the deadline for submission of bids.

1.8 Amendment of Bidding Document

At any time prior to the deadline for submission of bids, EFL may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issuing addenda.

1.9 Language of Bid

The bid, and all correspondence and documents related to the bid, exchanged between the bidder and the EFL shall be written in the English language.

1.10 Bid Prices

Unless specified otherwise, Bidders shall quote for the entire facilities on a "single responsibility" basis such that the total bid price covers all the Supplier's obligations mentioned in or to be reasonably inferred from the bidding documents in respect of the design, manufacture, including procurement and subcontracting (if any), testing and delivery.

Bidders shall give a breakdown of the prices in the manner and detail called for in this bidding document, or any issued addenda.

Bids shall be given on CIF basis. The point of delivery shall be EFL's Navutu Depot in Lautoka. The term CIF shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce, Paris.

EFL has a marine insurance cover for items it is required for purchase for its project and operational works. Bidders are required to comment if the marine insurance component is covered in their bids.

1.11 Bid Currencies

Prices shall be quoted in a single currency only.

1.12 Bid Validity

Bids shall remain valid for a period of **120 days** from the date of Deadline for Submission of Bids specified in Sub-Clause 21.1.

1.13 Format and Signing of Bids

The bidder shall provide one electronic copy of the Technical and Financial proposals on EFL's electronic tender hosting website; <https://www.tenderlink.com/efl>

The bid shall contain no alterations, omissions or additions, except those to comply with instructions issued by EFL, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

1.14 Sealing and Marking of Bids

Due to the Covid19 restrictions on movements, bidders are encouraged to bid via Tender link Portal.

1.15 Deadline for Submission of Bids

Bids must be received by EFL at the address specified above no later than **1600 hours (Fiji Time) 26th June 2024**.

EFL may, at its discretion, extend the deadline for submission of bids by issuing an addendum, in which case all rights and obligations of EFL and the bidders previously subject to the original deadline will thereafter be subject to the deadlines extended.

1.16 Late Bids

Any bid received by EFL after the deadline for submission of bids prescribed above will be rejected.

1.17 Modification and Withdrawal of Bids

The bidder may modify or withdraw its bid after bid submission, provided that written notice of the modification or withdrawal is received by EFL prior to the deadline for submission of bids.

No bid may be modified by the bidder after the deadline for submission of bids.

1.18 Rejection of One or All Bids

EFL 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 rejection.

1.19 Process to be Confidential

- 2.19.1. Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process.
- 2.19.2. Any effort by a bidder to influence EFL's processing of bids or award decisions may result in the rejection of the bidder's bid.
- 2.19.3. Lowest bid will not necessarily be accepted as successful bid.

1.20 Clarification of Bids

To assist in the examination, evaluation and comparison of bids, EFL may, at its discretion, ask any bidder for clarification of its bid. The request for clarification and the response shall be in writing, but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by EFL in the evaluation of the bids.

1.21 Compliance with Specifications

The tender shall be based on the equipment and work specified and shall be in accordance with the Technical Specification. It should be noted that unless departures from specifications are detailed in Schedules of the Technical Specification, the tender would be taken as conforming to the Specification in its entirety. The Bidder shall tender for the whole of the Works included in the Specification.

2.0 References - Copper Bolted Lugs

2.1 Applicable Standards

The item shall be designed, manufactured and tested in accordance with the latest edition of the Standards specified below and all amendments issued prior to the date of closing of tenders except where varied by this specification.

AS 1100	Drawing Practice Scales – Part 7
AS/ NZS 1580	Paints and related materials – method of test
AS 1154	Insulator and conductor fittings for overhead power lines
AST 1154.1	Electrical test requirements
AS/NZS 4325.1	Compression and mechanical connectors for power cables with copper or aluminium conductors
IEC 61238-1	Compression and Mechanical Connectors for Power Cables for Rated Voltages up to 30kV (Um = 36kV) – Part 1: Test methods and Requirements
AS 1275	ISO Metric screw threads for fasteners
AS 1567	Copper and copper alloys – Wrought rods, bars and sections
AS/NZS 9001	Quality System Model for Quality Assurance in Design, Development, Production, Installation and Servicing.

Should inconsistencies be identified between standards and/or this specification, the tenderer shall immediately refer such inconsistencies to EFL for resolution.

2.2 References - Non-Tension Bolted Aluminum Connectors

2.3 Applicable Standards

AS 1110	ISO metric precision hexagon bolts and screws
AS 1111	ISO metric commercial hexagon bolts and screws
AS 1154	Insulator and conductor fittings for overhead power lines
AS 1214	Hot-dip galvanized coatings on threaded fasteners
AS 1275	Metric screw threads for fasteners
AS 1444	Wrought alloy steels - Standard, hardenability (H) series and hardened and tempered to designated mechanical properties
AS 1531	Conductors - Bare overhead - Aluminum and aluminum alloy
AS 4680	Hot-dipped galvanized coatings on ferrous articles
AS 1789	Electroplated coatings - Zinc on iron or steel
AS 2837	Wrought alloy steels - Stainless steel bars and semi-finished products
AS 2848	Aluminum and aluminum alloys - Compositions and designations
AS 3607	Conductors - Bare overhead, aluminum and aluminum alloy - Steel reinforced
AS 4169	Electroplated coatings - Tin and tin alloys
AS/NZS 4325	Compression and mechanical connectors for power cables with copper or aluminum conductors
AS/NZS ISO 9001	Quality management systems -Requirements

Should inconsistencies be identified between standards and/or this specification, the tenderer shall immediately refer such inconsistencies to EFL for resolution.

3.0 System Conditions - Copper Bolted Lugs

3.1 Environmental Conditions

The copper bolted lugs shall be suitable for installation outdoors and shall be designed to withstand the following service conditions.

Description	Conditions
Atmosphere Pollution Level	: Saliferous, Corrosive and Dusty
Ambient Temperature	: Peak: 40°C 24 Hour Average: 30°C Annual Average: 22°C Minimum: 10°C
Relative Humidity (Average)	: 90%
Rainfall	: Annual Average: 2663mm
Isokeraunic (Thunder day) level	: 60 thunder days per year
Seismic	: To a maximum of 7 on the open-ended Richter Scale

Note: Fiji is situated in a region where cyclones are experienced frequently. All plant and equipment shall be designed and constructed to withstand these extreme conditions. All plant and equipment shall be rust proof, vermin proof and weather proof and designed to be suitable for a damp, tropical climate, which may be experienced simultaneously.

3.2 Service Conditions

Nominal Voltage	240V/ 415V	11kV
System Highest Voltage	660V	12kV
System Frequency	50Hz	50Hz
Number of Phases	1 or 3	3
System Earthing	Effectively Earthed	Effectively Earthed
Impulse Withstand Voltage (peak)	-	95kV
Short Duration Power Frequency Withstand Voltage (rms)	15kV	28kV

3.3 System Conditions - Non-Tension Bolted Aluminum Connectors

3.4 Environmental Conditions

The Non-tension bolted connectors shall be suitable for installation outdoors and shall be designed to withstand the following service conditions.

Description	Conditions
Atmosphere Pollution Level	: Saliferous, Corrosive and Dusty
Ambient Temperature	: Peak: 40°C 24 Hour Average: 30°C Annual Average: 22°C Minimum: 10°C
Relative Humidity (Average)	: 90%
Rainfall	: Annual Average: 2663mm
Isokeraunic (Thunder day) level	: 60 thunder days per year
Seismic	: To a maximum of 7 on the open-ended Richter Scale

Note: Fiji is situated in a region where cyclones are experienced frequently. All plant and equipment shall be designed and constructed to withstand these extreme conditions.

3.5 Service Conditions

Nominal Voltage	240V/ 415V	11kV	33kV
System Highest Voltage	660V	12kV	36kV
System Frequency	50Hz	50Hz	50Hz
Number of Phases	1 or 3	3	3
System Earthing	Effectively Earthed	Effectively Earthed	Effectively Earthed
Impulse Withstand Voltage (peak)	-	95kV	200kV
Short Duration Power Frequency	15kV	28kV	70kV
Withstand Voltage (rms)			

4.0 Design and Construction - Copper Bolted Lugs

Equipment offered by the bidders will need to conform to this Specification.

4.1 Design

Energy Fiji Limited, in its distribution network employs Copper (Cu) Bolted Lugs for the use of connecting in transformer terminations, cable connections and isolator connections for its overhead 415V and 11kV network.

The copper bolted lugs shall have the following features:

- The Copper (Cu) bolted lugs shall be used for quick and easy termination and be reusable.
- The Copper (Cu) bolted lugs palms shall be machined flat and parallel for maximum conductivity.
- It shall have a copper alloy and ensure permanent electrical conductivity is maintained.
- The lugs for overhead bare conductors shall satisfy the electrical test requirements of AS 1154.1
- Lug palms of copper lugs where specified in the item description, must be fully sealed to prevent ingress of moisture into the cable after installation.
- Copper lugs and links shall have a tinned finish.

5.0 Quality Assurance

The manufacture shall submit evidence that the design and manufacture of Copper Bolted Lugs is in accordance with AS/NZS ISO 9001 and shall include the Capability Statement associated with the Quality System Certification.

6.0 Performance and Testing

6.1 Type Tests

The Copper bolted lugs supplied shall be type tested in accordance with AS 1145.1 and/or other relevant Australia and New Zealand Standards. Type test certificates are to be submitted with the offer with the following:

- a) Verification of the dimensions
- b) Mechanical failing load test
- c) Tension type test
- d) Tightening Torque

The type test shall clearly indicate the name of the manufacturer and the technical parameters of the lugs and hardware components of the bolted lugs set tested.

6.2 Batch and Routine Tests

Routine test are intended to eliminate defective units and shall be carried out during the manufacture of copper bolted lugs.

Copper bolted lugs shall be routine tested in accordance with AS 1154 and AS/NZS 4325.

6.3 Witnessing of Tests

The EFL reserves the right to witness all testing. The Supplier shall give EFL reasonable notice of when testing will be carried out and one (1) EFL engineer to be invited to witness the testing. The return-air travel,

accommodation, meals and other expense related to test witnessing shall be borne by the Bidder as a value adding service.

6.4 Compliance

The Supplier shall state in writing that their offer complies with the relevant Standards and this specification. If the Supplier is offering equipment manufactured to an equivalent standard, full details of that standard must be given including a copy written in English. Any item showing evidence of failure to comply with the requirements of this specification and/or does not perform as required for its intended purpose will be liable to rejection and may result in cancellation of contract.

7.0 Additional Requirements

7.1 Marking

Identification details as indicated below shall be permanently marked on the lugs and shall be weatherproof. The hardware fitting shall also be marked with the same except for year of manufacture and shall be corrosion proof.

1. Manufacture's Identification.
2. Minimum failing load in kN.
3. Year of manufacture.

7.2 Packaging

The supplied items shall be appropriate packaged to avoid damage during transportations and storage and fit for use. Pre-greased items shall be individually packed in sealed plastic bags. The vendor shall be responsible for nominating standard pack quantities and standard packs shall be clearly marked with the following:

1. Manufacturer's name
2. Purchase Order Number, Contract Number and EFL Stock Number
3. Compliance standards
4. Item description
5. Package weight

7.3 Storage

The equipment shall be capable of being stored without deterioration within the temperature range of 10°C to 40°C for no less than 24 months.

8.0 Technical Information to be supplied

The following information shall be supplied with the offer:

- a) List showing similar item supplied to or on order for other utilities for at least the past 3-5 years
- b) Completed schedule as provided in Appendix
- c) Catalogue describing the items and indicating the model number
- d) Constructional features and material used for components
- e) Electronic drawings of item to be supplied in AutoCAD format
- f) End of service life disposal method
- g) Origin of materials used in manufacture of connectors
- h) Quality assurance certificate as per clause 5.0

- i) Type and routine test certificates as per clauses 6.1 and 6.2

Offers of vendors who fail to furnish above particulars shall be rejected.

9.0 Stock Availability

The bidder is required to indicate the size of consignment stock it will hold and the ability to meet the required demand of the estimated quantity at any given time during the contract period. The movement of non-tension bolted connectors will depend on EFL's project works and for operation and maintenance purposes. An estimate movement of the items are outlined in the table below but the items will not be purchased as a lump sum quantity at once. Hence, the successful bidder will be required to carry a consignment / safety stock at times to meet EFL's demand within the three year contract period.

Bidders must not base their price on EFL to buy the entire quantity mentioned below within the contract period.

No.	Stock Code	Item Description	Approximate 3 Year Stock Movement
1	I02541	NO 3 CU BOLTED CABLE LUG	3056
2	I02542	NO 4 CU BOLTED CABLE LUG	1521
3	I02543	NO 5 CU BOLTED CABLE LUG	204
4	I02544	NO 6 CU BOLTED CABLE LUG	388
5	I02545	NO 7 CU BOLTED CABLE LUG	NA
6	I02546	NO 8 CU BOLTED CABLE LUG	NA

10.0 Design and Construction - Non-Tension Bolted Aluminum Connectors

Equipment offered by the bidders will need to conform to this Specification.

10.1 Design

The connectors shall be of two part design and shall allow the attachment to the largest conductors without total removal of any component of the connector. Belleville washers shall be used to maintain the stability of contact pressure. Keeper bars or thrust plates are **NOT** acceptable.

The connector surfaces in contact with the conductors shall be grooved in a direction transverse to the conductor axis to penetrate the oxide layer on the surface of the conductor.

The connectors shall be supplied with either M8, M10 or M12 bolts with head dimensions in accordance with the relevant Australian Standards

Connectors of a single-bolt type shall be designed so as to prevent the clamp components from rotating out of alignment during installation (for example interlocking claws). The claws will also assist in holding the conductors captive within the clamp body during installation.

Connectors shall be suitable for installation and removal by live line techniques.

10.2 Connector Material

The connectors shall be made of materials which are resistant to corrosion and parts of the connector which are in direct contact with the conductor shall be of the same material in the form of an alloy or of a material which does not cause interface corrosion.

Parts of the connector which must exhibit elastic expansion and contraction to maintain design contact pressure, **MUST** be manufactured by the forging process. Cast or extruded parts are **NOT** acceptable.

The materials used for the construction of the connectors shall be in accordance with part 1 of AS 2848.

10.3 Screws, Nuts and Spring/ Belleville Washers

All nuts, screws and Belleville washers shall be non-corrosive, compatible with the body of the connector

Suitable materials for the screws, nuts and washers include galvanized steel in accordance with AS 1214, stainless steel in accordance with AS 2837. Hexagonal head screws shall be in accordance with AS 1110 and shall have uniform threads throughout, which are free running, and of commercial tolerance 8g in accordance with AS 1275. Hexagonal head nuts shall also have free running threads of tolerance 6H in accordance with AS 1275.

Stainless steel bolts and nuts if provided shall be suitably greased to prevent binding. The connector shall be designed so that the screw head does not bind on the surface of the connector during tightening.

The tenderer shall advise the minimum and maximum recommended tightening torques as well as the specified tightening technique/procedure.

10.4 Surface Finish and Corrosion Protection

Connectors shall be designed, manufactured and finished so as to avoid sharp radii of curvature, ridges and other imperfections which may cause radio interference or harmful corona discharge or employee injury.

Connectors tendered with pre-applied grease and individually packaged shall use a greasing compound with a high stability, high viscosity, water repellent property and a minimum drop point temperature of 130°C. Further, the grease shall NOT contain any conducting material e.g. graphite.

The junction point of the aluminum to copper connectors is to be protected against corrosion by a permanent layer or covering of insulating material applied to the exposed bi-metal interface or by other methods which from tests indicate negligible susceptibility to corrosion. Any protective material must have a service life equivalent to that of other materials used in the connector.

11.0 Quality Assurance

The manufacture shall submit evidence that the design and manufacture of Non-tension Bolted Connectors are in accordance with AS/NZS ISO 9001 and shall include the Capability Statement associated with the Quality System Certification.

12.0 Performance and Testing

12.1 Type Tests

The non-tension bolted connectors supplied shall be type tested in accordance with the following standards:

- a) The electrical type test shall be in accordance with AS 1154, part 1 for non-tension connectors.
- b) The mechanical type test shall be in accordance with AS 1154, part 1 for non-tension connectors.

The type test shall clearly indicate the name of the manufacturer and the technical parameters of the non-tension bolted connector set tested.

In addition, the Ageing/high current test shall be carried out in accordance with AS 4325.1.

The vendors shall supply duly certified copies of the routine test performed on the non-tension bolted connectors.

12.2 Batch and Routine Tests

Routine test are intended to eliminate defective units and shall be carried out during the manufacture of connectors.

12.3 Witnessing of Tests

The EFL reserves the right to witness all testing. The Supplier shall give EFL reasonable notice of when testing will be carried out and one (1) EFL engineer to be invited to witness the testing. The return-air travel, accommodation, meals and other expense related to test witnessing shall be borne by the Bidder as a value adding service.

12.4 Compliance

The Supplier shall state in writing that their offer complies with the relevant Standards and this specification. If the Supplier is offering equipment manufactured to an equivalent standard, full details of that standard must be given including a copy written in English. Any item showing evidence of failure to comply with the requirements of this specification and/or does not perform as required for its intended purpose will be liable to rejection and may result in cancellation of contract.

13.0 Additional Requirements

13.1 Packaging and Marking

The supplied items shall be appropriate packaged to avoid damage during transportations and storage and fit for use. Pre-greased items shall be individually packed in sealed plastic bags. The vendor shall be responsible for nominating standard pack quantities and standard packs shall be clearly marked with the following:

1. Manufacturer's name
2. Purchase Order Number, Contract Number and EFL Stock Number
3. Compliance standards
4. Item description
5. Package weight

13.2 Storage

The equipment shall be capable of being stored without deterioration within the temperature range of 10°C to 40°C for no less than 24 months.

14.0 Technical Information to be supplied

The following information shall be supplied with the offer:

- j) List showing similar equipment supplied to or on order for other utilities for at least the past 3-5 years
- k) Completed schedule as provided in Appendix
- l) Catalogue describing the items and indicating the model number
- m) Constructional features and material used for components
- n) Electronic drawings of item to be supplied in AutoCAD format
- o) End of service life disposal method

- p) Origin of materials used in manufacture of connectors
- q) Quality assurance certificate as per clause 5.0
- r) Type and routine test certificates as per clauses 6.1 and 6.2

Offers of vendors who fail to furnish above particulars shall be rejected.

15.0 Stock Availability

The bidder is required to indicate the size of consignment stock it will hold and the ability to meet the required demand of the estimated quantity at any given time during the contract period. The movement of the non-tension bolted connectors will depend on EFL's project works and for operation and maintenance purposes. An estimate movement of the item are outlined in the table below but it will not be purchase as a lump sum quantity at once. Hence, the successful bidder will be required to carry a consignment / safety stock at times to meet EFL's demand within the three year contract period.

Bidders must not base their price on EFL to buy the entire quantity mentioned below within the contract period.

No.	Stock Code	Item Description	Approximate 3 Year Stock Movement
1	I02578	Service Tap Aluminum (AC 58)	8866
2	I02577	PG Aluminum Clamp (LT43-1)	1644
3	I02579	PG Aluminum Clamp (LT75)	21616
4	I02586	Service Tee Connector (STC2-1)	23875

16.0 Product Warranty Period

The bidder is required to provide the warranty period as part of the proposal. A minimum warranty period of twenty-four (24) months from time of dispatch from factory shall be provided.

17.0 Environmental Considerations

Suppliers are required to comment on the environmental soundness of the design and the materials used in the manufacture of the items tendered. In particular, comments should address such issues as recycling and disposal at the end of service life.

18.0 Reliability

Suppliers are required to comment on the reliability of the equipment and the performance of the materials tendered for a service life of 35 years under the specified system and environmental conditions

19.0 Samples

19.1 Production Samples

One sample of each item offered will be required during the tender assessment period. Bidders are required to provide estimated time of delivery of the samples to EFL in tender submission for evaluation purpose.

19.2 Sample Delivery

Each sample shall be delivered freight free (Delivery Duty Paid (DDP)), suitably packaged and labelled with the following information:

- Name of supplier and the contact number
- Tender number
- Any supporting data on features or characteristics

20.0 Training

Training material in the form of drawings, instructions and/or audio visuals shall be provided for the items accepted under the offer.

This material shall include but is not limited to the following topics:

- Handling
- Storage
- Application
- Installation
- Maintenance
- Environmental performance
- Electrical performance
- Mechanical performance
- Disposal

21.0 Appendix - Copper Bolted Lugs

21.1 Price Schedule

All tenderers are required to complete and submit a copy of the price schedule form with their bid submissions. The bidders shall provide the prices in CIF basis.

No.	Stock Code	Item Description	Price (CIF)
1	I02541	NO 3 CU BOLTED CABLE LUG	
2	I02542	NO 4 CU BOLTED CABLE LUG	
3	I02543	NO 5 CU BOLTED CABLE LUG	
4	I02544	NO 6 CU BOLTED CABLE LUG	
5	I02545	NO 7 CU BOLTED CABLE LUG	
6	I02546	NO 8 CU BOLTED CABLE LUG	

21.2 Technical Data – Non-tension Bolted Connectors

All tenderers are required to complete and submit a copy of this form with their bid submissions.

Particulars	Units	Requirements	Bidders Response					
			NO 3 Lug – I02541	NO 4 Lug – I02542	NO 5 Lug – I02543	NO 6 Lug – I02544	NO 7 Lug – I02545	NO 8 Lug – I02546
1. Name of manufacture		Bidder to state						
2. Address of manufacture		Bidder to state						
3. Place/ country of manufacture		Bidder to state						
4. Origin of materials used for manufacturing		Bidder to state						
5. Manufacturing and testing Standard		Bidder to state						
6. Complete Lugs details								
i. Lug material		Cu Alloy						
ii. Rated Voltage	kV	0.415/11						
iii. Rated Frequency	Hz	50						
iv. Stud Size								
a. NO 3 Lug		M10						
b. NO 4 Lug		M12						
c. NO 5 Lug		M12						
d. NO 6 Lug		M16						
e. NO 7 Lug		M16						
f. NO 8 Lug		M20						
7. Max Area Size								
a. NO 3 Lug	mm ²	25-35						
b. NO 4 Lug	mm ²	50-70						
c. NO 5 Lug	mm ²	95						
d. NO 6 Lug	mm ²	150-185						
e. NO 7 Lug	mm ²	185-300						
f. NO 5 Lug	mm ²	300-400						
8. Non Flexible Conductor Sizes								

a. NO 3 Lug		7/2.14, 19/1.53						
b. NO 4 Lug		19/1.78, 19/2.14						
c. NO 5 Lug		37/1.78						
d. NO 6 Lug		37/2.25, 37/2.52						
e. NO 7 Lug		61/2.25						
f. NO 8 Lug		61/2.52, 61/2.85						
9. Torque Specs								
a. NO 3 Lug		Bidder to state						
b. NO 4 Lug		Bidder to state						
c. NO 5 Lug		Bidder to state						
d. NO 6 Lug		Bidder to state						
e. NO 7 Lug		Bidder to state						
f. NO 8 Lug		Bidder to state						
10. Color of product		Bidder to state						
11. Max. Breaking force	kN	Bidder to state						
12. Total weight	kg	Bidder to state						

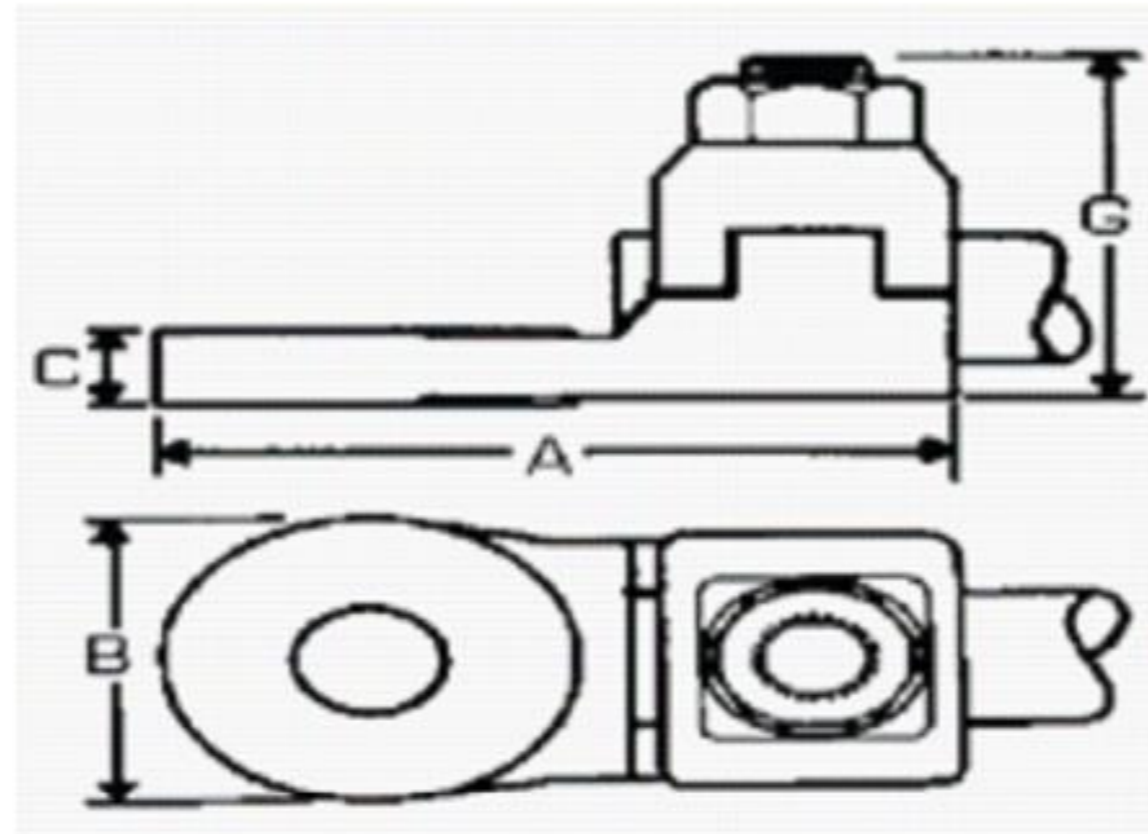
Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

21.3 Typical Drawing – Copper Bolted Lugs

A3 13 E23 006



GENERIC CODE	CONDUCTOR SIZE (mm ²)	STUD SIZE	DIMENSIONS			
			A	B	C	G
No 3	25-35	M10	53	25	5.5	27
No 4	50-70	M12	60	32	6.4	34
No 5	50	M12	65	32	7.9	38
No 6	150-185	M16	76	38	8.7	45
No 7	185-300	M16	BIDDER TO STATE	BIDDER TO STATE	BIDDER TO STATE	BIDDER TO STATE
No 8	300-400	M20	BIDDER TO STATE	BIDDER TO STATE	BIDDER TO STATE	BIDDER TO STATE

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HEAD OF DEPARTMENT		

ENERGY FIJI LIMITED

COPPER BOLTED LUG

DRAWING NUMBER			
A3	13	E23	006
SCALE 1:2000			

21.4 Submission Requirements

All tenderers are required to complete and submit a copy of the submission requirements with their bid submissions.

Requirements	Response from Bidders
Completed technical details (Clause 15.1) (Yes/No)	
Witnessing included as part of bid. (Yes/No)	
Validity of bid (120 days required) (Yes/No)	
Payment conditions.	
Delivery Term. (CIF preferred)	
Delivery Time. (number of weeks)	
Price review period after award of tender. (months)	
Bidders company profile outlining financial, technical and production capabilities.	
Detailed reference list of customers already using equipment offered during the last 5 years with particular emphasis on units of similar design and rating.	
Quality management system used in the production of lugs, attached certificate.	
Minimum warranty period from time of acceptance of item.	
Typical installation manual for lugs.	
Disposal method after service life.	
Complete dimensional drawing.	
List of Type test certificates provided. (As per Clause 6.0)	
Sample routine test certificates.	

Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

22.0 Appendix - Non-Tension Bolted Aluminum Connectors

22.1 Price Schedule

All tenderers are required to complete and submit a copy of the price schedule with their bid submissions.

No.	Stock Code	Item Description	Price
1	I02578	Service Tap Aluminum (AC 58)	
2	I02577	PG Aluminum Clamp (LT43-1)	
3	I02579	PG Aluminum Clamp (LT75)	
4	I02586	Service Tee Connector (STC2-1)	

22.2 Technical Data – Non-tension Bolted Connectors

All tenderers are required to complete and submit a copy of this form with their bid submissions.

Particulars	Units	Bidders Response			
		AC58	LT43-1	LT75	STC2-1
13. Name of Manufacture					
14. Address of Manufacture					
15. Place/country of manufacture					
16. Brand Offered					
17. Origin of materials used for manufacturing					
18. Dimensions					
a. Body length	mm				
b. Body width	mm				
19. Body alloy type & applicable Aust/Int Standard					
20. Screw(s) alloy type & applicable Aust/Int Standard					
21. Nut(s) alloy type & applicable Aust/Int Standard					
22. Washer(s) alloy type & applicable Aust/Int Standard					

23. Screw thread type & tolerance					
24. Nut type & tolerance					
25. Across flat dimension of bolt head	mm				
26. Recommended installation screw torque	Nm				
27. Maximum installation torque	Nm				
28. Galvanizing process & applicable Aust/Int Standard					
29. Type of grease used on threads					
30. Minimum thickness of galvanizing	μm				
31. Conductor Capacity (main)					
a. Minimum conductor OD	mm				
b. Minimum conductor sectional area	mm ²				
c. Maximum conductor OD	mm				
d. Maximum conductor sectional area	mm ²				
32. Conductor Capacity (run)					
a. Minimum conductor OD	mm				
b. Minimum conductor sectional area	mm ²				
c. Maximum conductor OD	mm				
d. Maximum conductor sectional area	mm ²				
33. Grease Type					
34. Grease minimum Drop point Temperature	°C				
35. Package size					
36. Package Weight	kg				

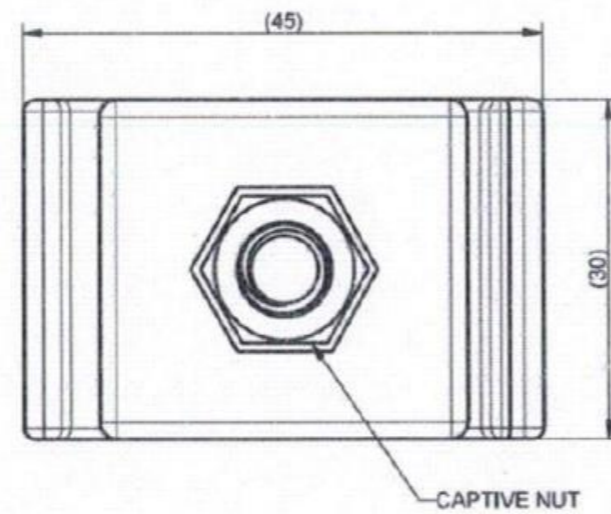
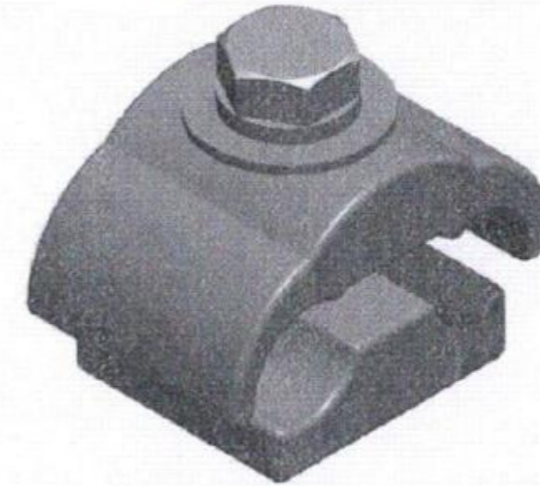
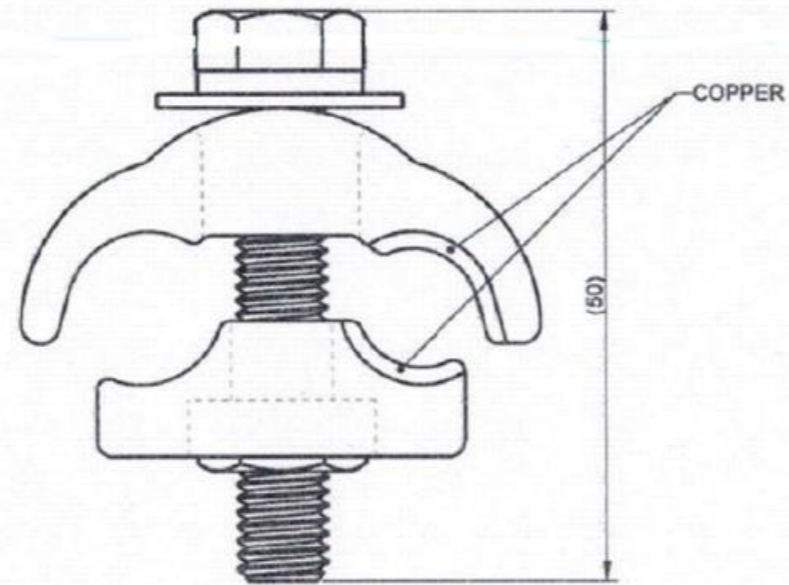
Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

22.3 Typical Drawing – Service Tap Aluminum (AC 58)

A3 13 E23 009



NOTES:

1. ALUMINIUM SIDE RANGE: 25mm² - 150mm²
2. COPPER SIDE RANGE: 10mm² - 95mm²

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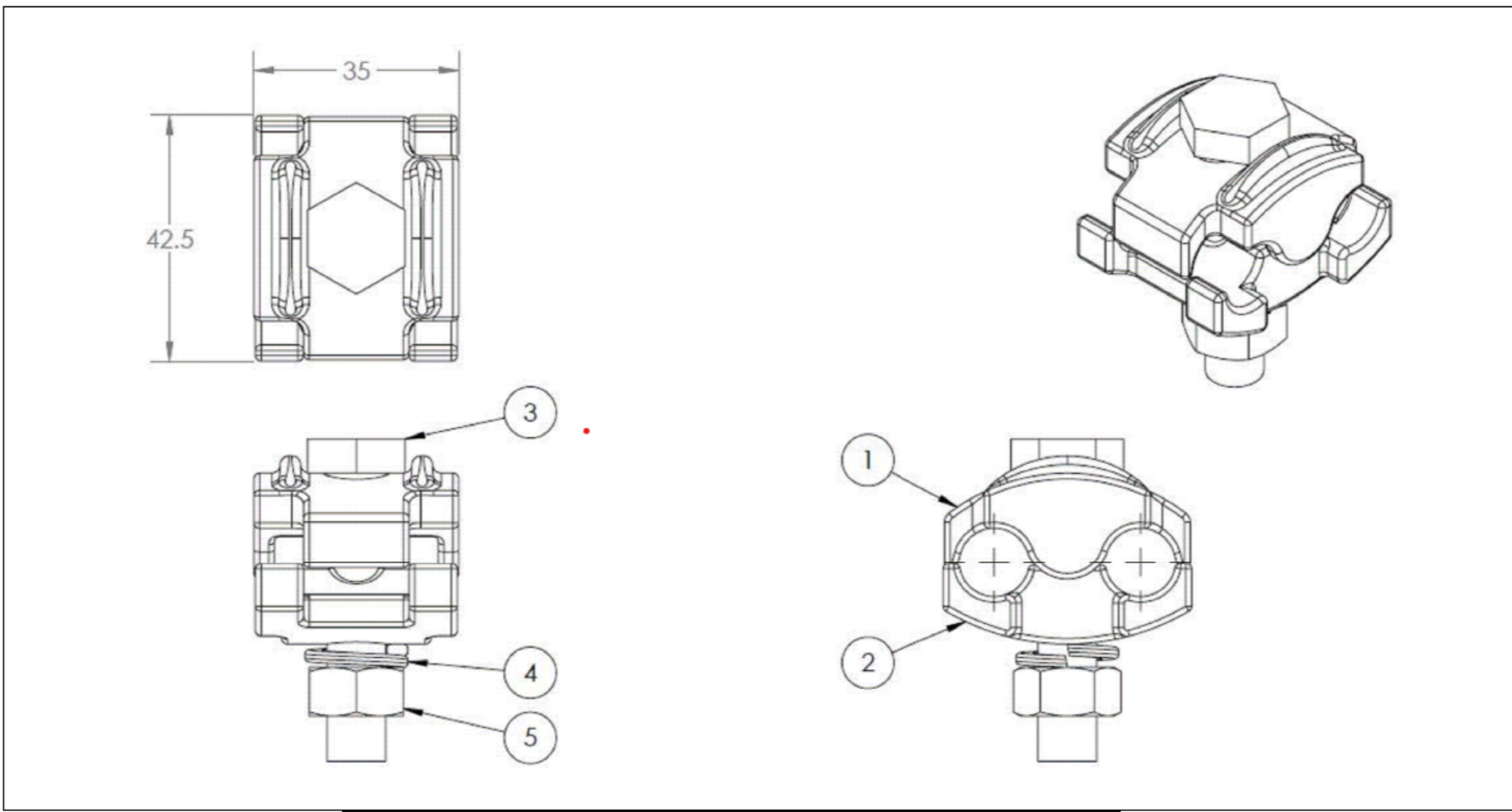
ENERGY FIJI LIMITED

SERVICE TAPS ALUMINUM (AC 58)

DRAWING NUMBER			
A3	13	E23	009
SCALE 1:2000			


22.4 Typical Drawing - PG Aluminum Clamp (LT43-1)

A3 13 E23 010



PG ALU LAMPS		
ITEM No.	DESCRIPTION	QTY
1	TO 4 - 112 TOP	1
2	TO 4 - 12 BOTTOM	1
3	M10 x 50 SS Hx Hd SET SCREW - G304	1
4	M10 ss SPRING WASHER - G304	1
5	M10 ss Hx NUT - G316	1

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 ENGINEER
 HEAD OF DEPARTMENT

ENERGY FIJI LIMITED

PG ALUMINUM CLAMP (LT43-1)

DRAWING NUMBER			
A3	13	E23	010
SCALE 1:2000			

22.6 Typical Drawing – Service Tee Connector (STC2-1)

A3	13	E23	008																																																						
PG ALU LAMPS																																																									
			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">ITEM No.</th> <th style="width: 60%;">DESCRIPTION</th> <th style="width: 25%;">QTY</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">CTC - 2 BODY</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">CTC - 2 TOP</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">M10 x 50 SS Hx Hd SET SCREW - G304</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">M10 SS SPRING WASHER - G304</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">M10 SS Hx NUT - G304</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">6</td> <td style="text-align: center;">B22 EXTENDED SHANK TINNED SPLIT BOLT & NUT</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>												ITEM No.	DESCRIPTION	QTY	1	CTC - 2 BODY	1	2	CTC - 2 TOP	1	3	M10 x 50 SS Hx Hd SET SCREW - G304	1	4	M10 SS SPRING WASHER - G304	1	5	M10 SS Hx NUT - G304	1	6	B22 EXTENDED SHANK TINNED SPLIT BOLT & NUT	2																						
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22.7 Submission Requirements

All tenderers are required to complete and submit a copy of the submission requirements with their bid submissions.

Requirements	Response from Bidders
Completed technical details (Clause 15.1) (Yes/No)	
Witnessing included as part of bid. (Yes/No)	
Validity of bid (120 days required) (Yes/No)	
Payment conditions.	
Delivery Term. (CIF preferred)	
Delivery Time	
Price review period after award of tender. (months)	
Bidders company profile outlining financial, technical and production capabilities.	
Detailed reference list of customers already using equipment offered during the last 5 years with particular emphasis on units of similar design and rating.	
Quality management system used in the production of connectors, attached certificate.	
Health, Safety and Environmental plans.	
Minimum warranty period from time of acceptance of item.	
Typical installation manual for connectors.	
Disposal method after service life.	
Complete dimensional drawing.	
List of Type test certificates provided. (As per Clause 6.1)	
Sample routine test certificates.	

Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

TENDER CHECKLIST

The Bidders must ensure that the details and documentation mention below must be submitted as part of their tender Bid

Tender Number _____

Tender Name _____

1. Full Company / Business Name: _____

(Attach copy of Registration Certificate)

2. Director/Owner(s): _____

3. Postal Address: _____

4. Phone Contact: _____

5. Fax Number: _____

6. Email address: _____

7. Office Location: _____

8. TIN Number: _____

(Attach copy of the VAT/TIN Registration Certificate - Local Bidders Only (Mandatory))

9. FNPF Employer Registration Number: _____ **(For Local Bidders only) (Mandatory)**

10. **Provide a copy of Valid FNPF Compliance Certificate (Mandatory- Local Bidders only)**

11. **Provide a copy of Valid FRCS (Tax) Compliance Certificate (Mandatory Local Bidders only)**

12. **Provide a copy of Valid FNU Compliance Certificate (Mandatory Local Bidders only)**

13. Contact Person: _____

I declare that all the above information is correct.

Name: _____

Position: _____

Sign: _____

Date: _____

Tender submission

Bidders are requested to upload electronic copies via Tender Link by registering their interest at: <https://www.tenderlink.com/efl>

EFL will not accept any hard copy submission to be dropped in the tender box at EFL Head Office in Suva.

This tender closes at 4.00pm (1600hrs) on Wednesday 26th June, 2024.

For further information or clarification please contact our Supply Chain Office on phone **(+679) 3224360** or **(+679) 9992400** or email us on tenders@efl.com.fj

The bidders must ensure that their bid is inclusive of all Taxes payable under Fiji Income Tax Act. Bidders are to clearly state the percentage of VAT that is applicable to the bid prices.

The lowest bid will not necessarily be accepted as the successful bid.

The Tender Bids particularly the “Price” must be typed and not hand written.

Any request for the extension of the closing date must be addressed to EFL in writing three (3) working days prior to the tender closing date.

Tender Submission via email or fax will not be accepted.