HEXAGON BOLTS & NUTS SPECIFICATION

1.0 SCOPE

This specification describes specific requirements by Fiji Electricity Authority for the Manufacturers to manufacture and supply Galvanized Bolts, Nuts and Washers for use on the power lines construction works.

2.0 REFERENCE DOCUMENTS

The manufacture and testing of the Bolts, Nuts and Washers shall comply with the relevant latest editions of the Australian/New Zealand or British Standards documents or any other relevant equivalent standards mentioned, therein, and as follows:

- AS 1111.1: 2015 - ISO metric hexagon bolts and screws, Product grade C, Part 1: Bolts.
- AS 1112.1: 2015 - ISO metric hexagon nuts, Part 1: Style 1—Product grades A and B.
- AS 1112.3: 2015 - ISO metric hexagon nuts, Part 3: Product grade C.
- AS 1112.4: 2015 - ISO metric hexagon nuts, Part 4: Chamfered thin nuts—Product grades A and B.
- AS 1214: 2016 - Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series).
- AS 1275: 1985 - METRIC SCREW THREADS FOR FASTENERS.
- AS 1393: 1996 - Coach screws—Metric series with ISO hexagon heads.
- AS 4291.1: 2015 - Mechanical properties of fasteners made of carbon steel and alloy steel Part 1: Bolts, screws and studs.
- AS 4291.2: 2016 - Mechanical properties of fasteners made of carbon steel and alloy steel, Part 2: Nuts with specified property classes—Coarse thread and fine pitch thread.
- AS 4291.5: 2015 - Mechanical properties of fasteners made of carbon steel and alloy steel, Part 5: Set screws and similar threaded fasteners not under tensile stresses.
- AS 4291.7: 2000 - Mechanical properties of fasteners made of carbon steel and alloy steel, Part 7: Torsional test and minimum torques for bolts and screws with nominal diameters 1mm to 10 mm.
- AS 4860: 2006 - Hot-dip galvanized (zinc) coatings on fabricated ferrous articles.

3.0 SPECIFIC DESIGN REQUIREMENTS

3.1 Material Requirements

The fasteners are generally made of Carbon Steel and the constituent element of Carbon in the base iron material shall be of concentration 1% or less and shall be in the classification group of **Medium Carbon Steel**.

3.2 Heat Treatment

The **Medium Carbon Steel** have the Carbon content in the range of 0.2 - 0.6 % and to improve the mechanical property of Steel, Heat treatment is necessary. Heat treatment shall the following processes of Austenizing, Quenching and then Tempering.

3.3 Tensile Strength

The bolts and nuts shall be manufactured from steel of Property Class 4.6 with minimum tensile strength of 60,000 - 80,000 PSI [or 400 MPa].

3.4 Hot Dipped Galvanising

The fastener shall be completely Hot Dip Galvanized.

3.5 Bolt & Nuts Thread Forms

Details of the fasteners external and internal thread forms shall be specified with the parameters such as; the Pitch, Pitch diameter (min and max dia.), Crest, Flank angle specified and submitted to the Purchaser's Engineer for verification and approval prior to manufacture and delivery.

All relevant parameters of the bolts and nuts shall be set out in separate tables according to the schedule specified in the table given below:

The bidders shall also provide labeled drawings of the fasteners.

3.6 Test Reports

The recent Test Certificates on bolts, nuts and washers already manufactured and supplied to power utilities shall be provided. The Test Certificates must be in compliance with the appropriate standards. Name and address of Certifying Officer shall be provided with the reports.

In addition to certificate of compliance, the supplier must agree to provide certified test reports to the Authority from each batch of bolts, nuts and washers for approval prior to delivery of that batch. Name and address of Certifying Officer shall be provided with the reports.

Within one month of award the Supplier shall organize a Factory Visit by two (2) FEA Engineers at the cost of the supplier to witness tests to prove compliance to applicable technical and quality standards. This Factory Visit shall be carried out (at the cost of the supplier) annually for the duration of the supply agreement.

4.0 AWARD OF CONTRACT

All tender bids need to comply with the Authority’s Supply Chain Tendering Policy.