
# Technical Specifications of
# Bolts and Nuts for Overhead Distribution Network

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# 1. Purpose and Scope

This specification sets out the guideline requirements for the supply of materials used on Totally Exposed Distribution Network.

# 2. Standards

All items/materials and equipment manufactured shall conform under these specifications with latest applicable standards of AS/NZS, ANSI, IEC, NFC, IEEE, BS except otherwise specified in this document.

| Applicable Standards | Description |
|---|---|
| **AS/NZS 1214:2016** | Hot-Dip Galvanized Coatings on Threaded Fasteners (ISO metric coarse thread series) |
| **AS/NZS 1393:1996** | Coach Screws – Metric with ISO hexagon heads |
| **AS 1111:2000** | ISO Metric Hexagon Bolts and Screws – Product Grade C |
| **AS 1112:2000** | ISO Metric Hexagon Nuts |
| **ISO 9001** | Quality Systems |

# 3. Material List and Quantity

| Material | Specification | Reference | Quantity |
|---|---|---|---|
| **Bolts and Nuts**<br>**M16 x 130**<br>**M16 x 150**<br>**M16 x 180**<br>**M16 x 325**<br>**M16 x 400**<br>**M16 x 425**<br>**M20 x 400** | Material: Steel (Class 4.6 minimum)<br>Nut must be Steel Class 8<br>• Finish: Hot Dip Galvanized Galvanizing to comply with AS/NZS 1214:2016<br>Minimum Average Coating Mass: 375g/m2<br>• Bolt Dimensions to Comply with AS 1111:2000<br>• Nut Dimensions to Comply with AS 1112:2000<br>• Coach Screws to Comply with AS/NZS 1393:1996 | **AS/NZS 1214:2006**<br>**AS/NZS 1393: 1996**<br>**AS 1111:2000**<br>**AS 1112:2000** | 3000<br>3000<br>3000<br>2000<br>3000<br>300<br>300 |
| **Square Washer**<br>**M20 – 50 x 50 x 3**<br>**M18 – 50 x 50 x 3** | | | 1500<br>5000 |

**Type Test required for all items above and a type test Report shall also be provided. Signed and Certified**

# 4. Drawings

The tenderer to supply with the tender detailed drawings and pictures of the items tendered.

# 5. Local Environment Conditions

The items/materials as listed are exposed to the following environmental conditions.

| Factors | Conditions |
|---|---|
| Temperatures | Ranges from $20^0$C - $45^0$C |
| Solar Radiation | 1000 W/$m^2$ |
| Humidity | Relative humidity in excess of 90% |
| Precipitation | Range of 3000 mm to 6000 mm rainfall annually<br>Exposure to winds in excess of 250km/hr. |
| Pollution | Salt spray and salt deposit densities on coastal areas and pollution ranging from 3.0g/$m^2$ to 4.50g/$m^2$ |

# 6. Design and Construction

All items shall be **hot-dip galvanized** in accordance with **AS 4680 or AS 1214**.

**Prior to galvanizing**, the **heads** of bolts and coach screws must be **permanently labelled** with the **Manufacturers trade identification** and **property class** in accordance with the standard **AS/NZS 4291**. The **Nuts** shall be also marked similarly on one of its **hexagon flats**.

**All BOLTS to be supplied with NUTS fitted.**

# 7. Performance and Testing

## 7.1. Type Tests

The following items are to be provided **Type Tests Report** to be supplied with the **Offer.**

**Bolts – Tensile Strength Test as per requirement in Standard AS 4291**

**Nuts – Proof Load Test according to Clause 8.1 and Table 6 of Standard AS/NZS 4291**

**Coach Screws – Hardness Test as per Class 6 of AS 1393**

# 8. Quality Assurance

The **manufacturer** shall possess **certified certificate of Quality Assurance** under the **ISO 9001:2015**, **ISO 9001:2008** is also acceptable for the factory where the materials were manufactured. The bidders must **provide** with the bid a **copy of the ISO Certificate certified** as a true copy of the original by the manufacturer.