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SPECIFICATION FOR HARDWARE PACKAGE FOR INSTALLATION OF METERING TRANSFORMER AND METERING EQUIPMENT AT THE PROVINCIAL BOUNDARIES

1.0 SCOPE

This specification covers the manufacture and testing of Hardware components required for installation of Metering Transformer and Metering Equipment in the CEB distribution system at the provincial boundaries.

2.0 APPLICABLE STANDARDS

The item supplied shall be in accordance with the latest editions of the standards specified below.

- a) B.S. 4360 - 1990 - Weldable structural steel
- b) B.S. 729 - 1971 - Hot dipped galvanizing on iron and steel
- c) B.S. 4848 Parts IV & V - Hot rolled structural steel sections
- d) B.S. 3643 Parts I & II - Tolerances and dimensions etc. (Not applicable to Channel Iron)

3.0 BASIC FEATURES

The hardware components shall be suitable for double pole mounting of the following equipment as indicated in the Drawing No. DS&S/49-2-1/96.

- a) One number Metering Transformer
- b) One number Meter cubicle
- c) Six numbers Expulsion Fuse Switch
- d) Six numbers Surge Arresters
- e) Six numbers Tension Insulator sets

3.1 Quality of Steel

The steel used for fabrication of hardware components shall be sound and free from any internal and external defects or surface flaws which might preclude its use for the propose for which it is intended.

3.2 Grade of Steel

The steel used for fabrication of hardware components shall be of grade 43DD or WR 50B and their chemical composition shall be as given in table 14 or 20 of BS 4360 as applicable.

3.3 Mechanical Properties

The mechanical properties of steel including the minimum Tensile Strength, Yield Strength and Elongation shall be as given in table 15 or 21 of BS 4360 as applicable.

3.4 Construction

3.4.1 Channel Iron

The hardware components shall be fabricated out of Channel Iron sections manufactured in accordance with BS 4360 : 1990 structural steel and the dimension of the hardware components shall be as indicated in the Drawing No. DS&S/49-2-2:96.

The hardware components shall be first cleaned and made rust free by shot blasting, necessary holes drilled, cut in to required sizes, identification marking carried out (as per Clause 5.1), welding and forging completed before galvanizing.

3.4.2 Meter Cubicle

The meter cubicle shall be of the double door type, made of steel sheet of thickness not less than 2mm, and the dimensions shall be as indicated in the drawing No. DS&S / 49-2-2/96. The doors shall be provided with suitable pad locking facility.

A wooden board of 700x650mm and thickness not less than 25mm shall be firmly fixed inside the cubicle for mounting the metering equipment as indicated in the drawing. Suitable asbestos lagging for thermal insulation shall be provided.

Two lifting Hooks shall be provided for lifting purposes and the mounting holes shall be as indicated in the drawing.

The Holes of 38mm diameter with rubber grommets shall be provided at the base of the meter box for entry of metering cables.

3.4.3 Finish

All components shall be smooth, corners rounded and free from sharp edges. All burrs shall be removed after shearing, drilling or punching, forging, welding and bending operations.

3.5 Connections

- (a) All connections shall be in accordance with the drawing No. DS&S/49-2-1/96 attached.
- (b) Position and size of holes on the hardware components to be precisely in accordance with the drawing No. DS&S/49-2-2/96 annexed. All burrs shall be removed after shearing, drilling, punching and bending is completed.

3.6 Design Drawings

The design Drawings showing the arrangements and applications for various purposes are indicated in the following Drawings.

- a) Typical Mounting arrangement of Metering Transformer/Equipment (11kV / 33kV) Dr. No. DS&S/49-2-1/96.
- b) Hard ware components for pole mounted 11kV & 33kV metering equipments at the Provincial Boundaries Dr. No. DS&S/49-2-2/96

3.7 Component Details

All Hardware Components except the meter cubicle shall be hot dip galvanized as per BS 729 and in strict accordance with the Specification, Drawings and as detailed below.

The meter cubicle shall be treated with powder coated type paint.

Item No.	Description	Quantity Nos	Component Dimension mm	
			11KV	33kV
a)	Tension Cross Arm Channel Dr. No. (DS&S 49/2-2/96)	2.0	2525x100x50x6	2750x100x50x6
b)	Lightning Arrester Mounting Bracket (channel Iron) Dr. No. (DS&S 49/2-2/96)	2.0	2525x100x50x6	2750x100x50x6
c)	Expulsion Fuse Switch Mounting Cross-arm (channel Iron) Dr. No. (DS&S 49/2-2/96)	2.0	2525x100x50x6	2750x100x50x6
d)	Metering Transformer Mounting Channel Dr. No. (DS&S 49/2-2/96)	2.0	2675x100x50x6	2950x100x50x6
e)	Metering Transformer Mounting Channel Supports Dr. No. (DS&S 49/2-2/96)	4.0	400x100x50x6	400x100x50x6
f)	Metering Transformer Clamping Channel Dr. No. (DS&S 49/2/2/96)	20	800x100x50x6	800x100x50x6
g)	Steel Meter Cubicle	01	710x760x280	710x760x280
h)	Meter-Cubicle Mounting Channel Dr. No. (DS&S 49/2-2/96)	02	2725x100x50x6	3000x100x50x6
i)	Meter-Cubicle Mounting Channel Supports Dr. No. (DS&S 49/2-2/96)	04	425x100x50x6	425x100x50x6
j)	Meter-Cubicle Clamping Channel Dr. No. (DS&S 49/2-2/96)	02	380x100x50x6	380x100x50x6
k)	Bolts and Nuts 38		50x16	50x16

	06	250x16	250x16
	04	360x16	360x16
	04	430x16	430x16
l)	Washers	52	16

Galvanized Bolts, Nuts and Washers necessary for mounting the hardware components shall be supplied with the package.

3.8 Galvanizing

All hardware Components shall be hot dip galvanized as per BS 729 and treated with Sodium Dichromat or Preton W20 solution immediately after galvanizing to prevent the formation of white rust.

The preparation for galvanizing and the galvanizing itself shall not distort or adversely affect the mechanical properties of the material.

All components shall be effectively galvanized to consist of a coating not less than 610 grams of zinc per square meter of surface and the components shall have a galvanized coating of uniform thickness not less than 0.086mm.

3.8.1 Finish

The galvanizing coating on all items shall be smooth, continuous, uniform and free from flux stains and holes shall be free from nodules of spelter.

4.0 ADDITIONAL REQUIREMENTS

4.1 Marking

Manufacturer's identification marks and the letters "CEB" shall be impressed on all components before galvanizing.

4.2 Packing

The complete Galvanized Steel Hardware components and the copper strips of the Package of each type shall be firmly bundled together using GS wire. The meter cubicle shall be delivered separately.

Each bundle shall carry a label that indicates the name of the package and quantity of and the detail of components of the bundle.

5.0 INFORMATION TO BE SUPPLIED WITH THE OFFER

Following shall be furnished with the offer.

- a) Completed schedule of Particulars.
- b) Complete dimensional drawings of each package.
- c) Test certificates (for the steel to be used for the fabrication of the items offered) conforming to BS 4360.
- d) Test Certificate for galvanizing of the sample cross arm offered conforming to BS 729 from a recognized independent testing authority acceptable to CEB.

Failure to furnish the above particulars will result in the offer being rejected.

6.0 SAMPLE STUDY

One sample (non returnable) of each item shall be provided if required.

7.0 INSPECTION AND TESTING

The selected tenderer shall make necessary arrangements for inspection by an Engineer appointed by the CEB and also to carry out in his presence following tests.

- a) Tensile Strength
- b) Elongation
- c) Galvanizing

and to check the Dimensions, Tolerance, Finish and formation of White Rust

8.0 TECHNICAL LITERATURE AND DRAWINGS

All relevant drawings of the package offered shall be supplied with the items.

9.0 ANNEXURE

- A - Schedule of Particulars
- B - Typical Mounting arrangement of Metering Transformer/Equipment (11kV / 33kV) Dr. No. DS&S/49-2-1/96.

- C - Hard ware components for pole mounted
11kV and 33kV Metering Equipments
at the Provincial Boundaries Dr. No. DS&S/49-2-2/96
- D - Constructional Standard for installation of
Metering Equipment at the Provincial
Boundaries.
- E - Wiring Diagram for MV
Metering Equipments Dr. No. DS&S/51-1/96

Annexure - A**SCHEDULE OF PARTICULARS**

- | | | |
|----|---|---|
| 1. | Name & Country of manufacture of Steel | - |
| 2. | Grade of Steel | - |
| 3. | Mechanical Properties of steel | |
| | a) Minimum Tensile strength | - |
| | b) Minimum Yield strength | - |
| | c) Minimum Elongation | - |
| 4. | Whether the grit blast facilities available for rust freeing the steel sections | - |
| 5. | Galvanizing | |
| | a) Thickness of galvanized coating in any area | - |
| | b) Weight of galvanized coating per square meters | - |
| 6. | Tolerance | |
| | a) Channel Iron | - |
| | b) Flat Iron | - |
| 7. | Name & Country of Manufacture of Galvanized Steel Hardware Components | - |

SEAL AND SIGNATURE OF THE BIDDER/MANUFACTURER

Date -----