

WATER SUPPLIES DEPARTMENT

STANDARD SPECIFICATION E-00-03

SUPPLY OF ELECTRICAL & INSTRUMENTATION EQUIPMENT

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SUPPLY OF ELECTRICAL & INSTRUMENTATION EQUIPMENT

1. GENERAL

1.1 Extent of Supply

This Specification covers the general requirements for supply and delivery of electrical and instrumentation equipment.

The Contractor shall supply all equipment in accordance with the requirement specified in the tender documents which include Tender Form, Terms of Tender (Supplement) or Notes for Tenderers, Special Conditions of Contract, Particular Specification, other documents and drawings.

1.2 Standards

The equipment supplied shall comply with the standards specified in the Particular Specification and the following packaging standards:

BS 1133	Packaging code
BS 1133-8	Wooden boxes, cases and crates
BS 1133-19	Use of desiccants in packaging

2. WORKS EXECUTION

2.1 Programme of Works

The Contractor shall meet the equipment delivery requirements specified in the Notes for Tenderers or Terms of Tender (Supplement). Within 4 weeks from the date of acceptance of tender, the Contractor shall submit a detailed programme showing the sequence and timing of design, submission of drawings, purchase of components and materials, manufacturing, testing and delivery of the various parts of the equipment, for the Purchaser's approval.

2.2 Equipment for Approval

The make, model and rating of individual equipment for use in the contract, complete with standard catalogue or technical notes issued by the equipment manufacturer shall be submitted prior to the submission of drawings for approval.

2.3 Inspection and Testing

The inspection and testing, where specified in the contract, shall comply with WSD Standard Specification EM-00-01. The qualification and experience of Independent Inspecting Body's representative shall comply with the requirements stipulated in WSD Standard Specification EM-00-01.

3. DRAWING AND INSTRUCTION MANUALS

3.1 Drawings

The submitted drawings shall comply with WSD Standard Specification E-90-01, E-90-11 and E-90-12 whichever applicable and specified in the contract. Within 1 month of award of contract, the Contractor shall submit 2 copies each of the drawings specified in the Particular Specification for approval.

In the event of the approval of any submitted or resubmitted drawings being conditional on any amendments, the Contractor shall, within 3 weeks, resubmit 2 sets of the drawings incorporating the specified amendments to the Purchaser.

Within 3 weeks of receipt of the notice of approval of the drawings, the Contractor shall forward 4 sets of approved drawings to the Purchaser.

Approval of the drawings will not relieve the Contractor of the responsibility of soundness of design and suitability of materials or supply of equipment in accordance with the specification for the intended purpose.

On despatch of equipment, the Contractor shall pack 1 set of drawings with the equipment.

3.2 Instruction Manuals

The submitted manuals shall comply with WSD Standard Specification E-90-02, E-90-21 and E-90-22 whichever applicable and specified in the contract. Within 6 months of placing the order or 2 months prior to the despatch of the equipment, whichever is the earlier, the Contractor shall forward 2 sets of draft manuals to the Purchaser. On approval, 1 copy shall be returned to the Contractor.

Within 3 months of the delivery of the equipment, the Contractor shall supply 5 sets of the final manuals incorporating all necessary amendments.

4. PACKING AND SHIPPING

4.1 Method of Packing

4.1.1 General

Equipment supplied shall be adequately protected and packed so as to arrive at site

intact and undamaged. The method of protection and packing must be suitable for withstanding the humid tropical climatic conditions, which would be experienced in transit and on site. It shall be suitable for withstanding rough handling and storage of up to 3 months outdoors under canvas cover.

Packing shall be suitable for opening up for inspection immediately on receipt and repacked for storage in the same packing without renewal of desiccants.

4.1.2 Equipment Packing

Equipment shall be packed such that each package or case shall contain materials for one location only.

Instruments, relays and any other parts vulnerable to damage shall be separately packed and individually enclosed in sealed polythene package.

Major electrical equipment as pump motors, switchgear or control panels shall be packed in wooden containers regardless of whether these are shipped in freight metal containers or not. For tall or bulky equipment where it cannot be fitted into a freight metal container, the Contractor shall submit for the approval by the Engineer the full details of the proposed alternative method of equipment package or delivery arrangement.

For shipment, each switchboard and control board shall be packed into transport section not exceeding 2600 mm in length in any direction.

Bulk equipment, such as switchgear or control panels shall be suitably packed for manual handling within the premises with nominal door opening dimensions of 1500 x 2400 mm (b x h).

For items such as switchboard, control / instrument panels or motors above 250 kg, lifting eye-bolts shall be provided. For large motors or equipment where the headroom is inadequate for transport by slings, a suitably designed spreader shall be supplied.

For cables weighting more than 3000 kg, steel cable drums shall be used. For smaller cable drums, robust wooden drums may be used. In all cases, cable drums shall be designed for outdoor storage for a period not less than 12 months. All exterior surfaces shall be suitably treated for the humid tropical climate.

4.1.3 Components Packing

Bearings and parts susceptible to damage by vibration shall be fitted with transit guard or clamps.

Parts with grease/oil lubrication elements shall be charged with the correct type and quantity of lubricant for normal operation prior to shipment.

4.2 Packing Containers

4.2.1 General

Packing cases and other materials necessary for the safe package, conveyance and delivery to the Site shall be deemed to have been included in the tender price.

The packing containers shall be lined with waterproof paper and provided with a robust water vapour barrier, polyethylene sheeting of minimum thickness 0.5 mm to provide a desiccated package to BS 1133-19 for 6 months in tropical climate.

Each package or case shall be clearly marked for identification against the relevant advice note. A waterproof packing list containing such details as the package number, identification marks and the weight shall either be enclosed in each package or be attached thereon. A duplicate copy of the packing list shall be despatched to reach the Purchaser prior to arrival of the equipment.

4.2.2 Wooden Containers for Packing

Wooden containers shall comply with BS 1133-8. The following additional requirements shall be applicable for cases or containers exceeding 250 kg in weight or 2 m³ in volume:

- Crush battens shall be used to prevent side crushing and to render additional support to the lid. One crush batten shall be used at each part likely to be handled by lifting-grabs.
- Headers shall be used to distribute the load.
- Corner posts be used in jointing sheathing elements.
- Moisture content of timber used shall not cause moisture condensation when transported in freight containers.
- Skid or sill-type base shall be provided.
- Bottom sheathing shall be run in the shorter direction.
- Blocking methods shall be used to prevent movement of load during mechanical and manual handling.
- Sharp projections shall be padded with wadding fixed in position with adhesive tape.

4.2.3 Desiccated Package for Cases Exceeding 2 m³

The amount of desiccant shall comply with BS 1133-19 with specific data as follows:

- Desiccant shall undergo positive colour change or indicator shall be

provided for excessive moisture content.

- Polyethylene bags shall be of minimum thickness 0.5 mm. Alternatively other material of equal robustness and moisture repelling property shall be used.