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## **VI Quality Assurance Management Requirement**

### **1. General**

The Contractor shall carry out the Contract Works in accordance with sound quality management principles, which shall include such controls as are necessary to ensure full compliance with all requirements of the Specifications. The Contractor's activities will be monitored by the Engineer to ensure that they are being implemented correctly.

### **2. Scope**

These quality management requirements shall apply to all activities during design, procurement, manufacturing, inspection, testing, packaging, shipping, inland transportation, storage, site erection and commissioning.

The Contractor shall have sole responsibility for ensuring compliance with each of these requirements as applied to the whole of the Contract Works, and shall ensure that subcontractors implement those quality control activities that are appropriate to the extent of their supply.

### **3. Documentation Required with the Bid**

The Contractor shall submit quality manuals; typical standard QC plans for main items of equipment, installation procedures, and other such documents, sufficient to indicate the Contractor's ability and intention of controlling the quality of the whole of the Contract Works in accordance with these requirements.

PLEASE NOTE: Failure to submit the above documents with the bid shall be taken to indicate that control of the Contract would not be satisfactory and may result in disqualification of the Bid.

### **4. Documentation required within one month of Award of contract**

Documents shall be supplied to indicate the following:-

- (a) Identification of main items to be supplied, with names of Contractor and manufacturer (if different from Contractor) and location of place of manufacture.
- (b) Manufacturing programs for each major item of equipment, showing main stages of design, procurement, manufacture, inspection and testing.
- (c) The Contractor shall prepare a quality plan for the complete Contract

Works, and shall require individual manufacturers to prepare detailed quality plans for all main items of equipment.

Quality plans shall identify all inspections and tests, which are to be carried out, including those necessary to verify compliance with particularly specified requirements.

**5. Particular Requirement**

These particular requirements identify the elements of quality control considered necessary to ensure compliance with specified Contract requirements and it is these elements that the Engineer will examine to verify that compliance has been achieved.

Details of the structure and methods used for establishing and implementing these control elements are not stated, since there are many acceptable ways of achieving a satisfactory system of control. Contractor's established structure and methods shall be used whenever these are capable of complying with the particular requirements stated in the following clauses: -

**6. Organization**

The Contractor shall establish an organization for the control of quality, and appointed personnel so designated shall have defined responsibilities and the authority to identify and evaluate quality problems, and to ensure that adequate remedial actions are implemented.

The Contractor shall ensure that responsibilities are assigned for advising the Contract requirements to subcontractors and manufacturers, and the monitoring of compliance with those requirements.

**7. Planning**

The Contractor, immediately after award of Contract, shall perform a complete review of the Contract and take timely action to ensure that the necessary quality control procedures and provisions are established in accordance with this Specification, purchase order, applicable codes and standards, or other Contract documents.

Particular care shall be taken to identify any specified requirements that are different from or additional to a contractor's normal design or quality control practice, and to initiate the necessary measures to ensure that such additional requirements are implemented satisfactorily.

**8. Design control**

The Contractor shall be responsible for the control of all design functions for the Contract Works. When design responsibility is shared by subcontractors, the Contractor shall establish interface control measures which co-ordinate the control of the whole design process.

The Contractor shall provide controls to ensure that specified design requirements, codes and standards are correctly incorporated into specifications, drawings, procedures, and instructions. All designs and drawings, including those produced by subcontractors, shall be checked and approved by Contractor's personnel, other than the originator.

PLEASE NOTE: Drawings and design submitted for the Engineer's approval will not be accepted if there is no evidence of checking by the Contractor, or if the quality of the document's contents clearly indicates that any checking carried out was not competent.

**9. Procurement document control**

The Contractor is responsible for ensuring that all procurement documents issued to subcontractors contain or refer to all applicable requirements specified in the Specifications which are necessary to enable the Contractor to fulfil those requirements. The Contractor shall also verify that all sub contractor's purchase orders onto manufacturers or other contractors similarly identify all applicable requirements.

**10. Documentation and change control**

The Contractor shall establish measures to control all documentation that relates to the quality requirements specified in the Specifications. The measures shall ensure that only current issues of documents are used at all manufacturing and control points.

**11. Control of purchased material, equipment and services**

The Contractor shall be responsible for ensuring that all purchased material, equipment and services conform to Contract requirements.

All purchased material or equipment shall be subjected to inspection control by the Contractor, either on receipt or before dispatch from the manufacturer's works.

The Contractor or his subcontractors shall obtain no material or component from any source, which has not been previously audited by a responsible party and designated as an approved contractor. The Engineer may, at his discretion, require evidence that such audits have been satisfactorily made and/or evidence of the competence of the designated contractor to meet the necessary quality requirements.

**12. Control of inspections and tests**

The Contractor shall ensure that all manufacturer's inspections and tests are satisfactorily carried out, in accordance with the planned program and that the data recorded are correct.

The Engineer shall be entitled during manufacture to inspect, examine and test, on the manufacturer's premises, all plant to be supplied under the Contract

**13. Handling storage and delivery**

The Contractor shall ensure that adequate and controlled measures are established for cleaning, protection, preservation, packing, handling, storage and shipping, to protect items from damage, deterioration or loss. When the nature of the item dictates the need for special handling equipment, this shall be specified and verified by the Contractor.

The identification marking and labeling of items for shipping shall comply with contractual requirements, and shall be applied in a manner that will ensure no loss of identity and permit permanent and easy recognition of special handling and storage requirements.

#### **14. Environment**

The Contractor shall adhere to the recommendation of the Environmental Impact Assessment (EIA) the Environmental Mitigation Plan (EMP) and the requirements of Section IX – Environment.

Permanent re-settlement has already been dealt with and compensation paid. However if any matter arises during the contract with regard to re-settlement and associated compensation, this will be a matter to be dealt with by EEPCo and EdD and the Engineer should be informed.

#### **15. Implementation**

In order to achieve the Quality Management Requirements specified above, the Contractor should designate two senior engineers with sufficient authority who will be solely responsible for Quality Management of the Project. These engineers shall be independent of any other design, manufacturing, inspection, testing and site erection activities associated with this Contract.

One engineer will be responsible for all activities associated with design, procurement, manufacture, inspection, testing, packing and shipping whether undertaken by the Contractor, or by his designated subcontractor or supplier and will normally be resident at the Contractor's Head Office or principal place of work. The other engineer will be responsible for all activities associated with site erection and will be resident at the Contractor's Site Office.

The main responsibilities of the Quality Management engineers are given below:-

##### Head Office

1. Production and implementation of all Quality Manuals, Quality Standards and test and inspection programs for all materials ordered. All Quality Manuals and Quality Standards and programs shall be submitted for approval to the Engineer prior to implementation.
2. Verifying/Certification that all design and drawings prior to submission to the Engineer are in accordance with the Specifications and all relevant Standards/Codes of Practice.

3. Verifying that all orders placed for materials are in accordance with (1) above and that only the latest revision of approved drawings are used in the course of manufacturer.
4. Verifying that all manufacturers/suppliers have acceptable Quality Control procedures and that these have implemented throughout the execution of the Works. All Quality Controls shall be submitted for approval to the Engineer prior to their implementation.
5. Verifying that all tests and inspections are undertaken to agreed Standards and Codes of practice.

#### Site Office

1. Production and implementation of all Quality Manuals, Quality Standards and test and inspection programs for all materials ordered. All Quality Manuals and Quality Standards and programs shall be submitted for approval to the Engineer prior to implementation.
2. Verifying that only the latest revision of approved drawings are used during the execution of the work and that no drawings stamped “Not Approved” or “Approved with comments” is available for use at Site.
3. Verifying that all orders placed for local materials are in accordance with paragraph (1).
4. Verifying that all work is executed in accordance with the requirements of the Specifications and all relevant Standards/Codes of Practice.

Verifying that all tests and inspections are undertaken to agreed Standards/Codes of Practice