حديد الإمارات
emirates steel
a SENAAT company إحدى شركات صناعات

Integrated Management System

Engineering Standards

ES Engineering Standards Introduction

PRD-GR-GS-002

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1. PURPOSE

The purpose of the ES Engineering Standards is to provide information and guidelines for the design, erection, installation and commissioning of plant and equipment across ES Sites.

2. SCOPE

The standards referenced in this document are issued to all contractors and form an integral part of the contract documentation.

Compliance is mandatory by all Contractors, ES Departments and personnel, whilst designing, erecting, installing and commissioning plant and equipment within ES sites, and any deviations require the explicit written approval of ES.

3. DEFINITIONS / ABBREVIATIONS

ES - Emirates Steel

MOC - Management of Change

4. RESPONSIBILITIES

VP of Marketing & Strategy - Is responsible for approving the Standards, and delegating members of his department to review them on a periodical basis, and / or write new standards when deemed necessary.

Construction Manager Projects - Is responsible for ensuring that all projects undertaken within ES comply with these standards.

Engineering Manager Projects - Is responsible for revising the Standards as requested by the projects and operations departments.

5. DESCRIPTION

5.1 STANDARDS

- Generally, and unless clearly stated otherwise, the latest edition EN (European Norm/Standard), ISO (International Standard Organization) and DIN (Duetsche's Institut fur Normung) Standards shall be applicable.
- Electrical equipment and systems shall be designed, manufactured and installed according to the IEC Recommendations and/or VDE and DIN Standards.
- Other recognized national or international Standards shall also be applicable upon the approval of ES, or where mentioned in this document, including but not limited to:

- **BSI** British Standards Institute
- **JIS** Japanese Institute Standardization
- **ASTM** American Society for Testing Materials
- **ANSI** American National Standards Institute
- **ASME** American Society of Mechanical Engineers
- **NFPA** National Fire Protection Association

- In addition, the Contractor shall comply with all current local design conditions and regulations.
- ES may assist the Contractor in obtaining these regulations upon written request.
- Generally, where conflicts exist, the most severe standard, condition or ruling shall be applicable, although no standard shall be used out of context and the philosophy and unity of a particular set of standards shall be maintained.
- For all work requiring local or national government regulatory approval, the order of document precedence shall be:
  - Regulatory and legislative authority requirements
  - ES Site Conditions and Engineering Standards
  - National and International Standards
- For all other works the order of document precedence shall be:
  - ES Site Conditions and Engineering Standards
  - National and International Standards.

5.2 DRAWINGS AND INFORMATION

5.2.1 SUBMITTALS

- After contract signing, the Contractor shall, in accordance with the contract, submit to ES all general arrangement and sub-assembly drawings for **review**, according to the timescale described in the Contract.
- The Contractor shall also provide facilities for ES to examine all detail drawings at the Contractor's or his Sub-Contractor's works, as the case may be, before commencement of erection and/or manufacture.
- Drawings **submitted to** ES shall not be departed from except as provided in the next sub-clause or so far as may be necessary by virtue of Section 3.2 (Mistakes in Drawings and Other Information).
- If the Contractor should wish to make any alterations to **previously submitted** drawings on account of an improved design, such drawings shall be resubmitted to ES.

All such alterations and changes shall be clearly marked and highlighted on the drawings resubmitted for review, so that the deviations from the original drawings can be clearly recognized.

- For further information regarding drawing and document control refer to ES Engineering Standard 09 – Engineering Documentation.

5.2.2 MISTAKES IN DRAWINGS AND OTHER INFORMATION

- The Contractor shall be responsible for any discrepancies, errors or omissions in the drawings and other particulars supplied by him, whether such drawings and particulars have been approved by ES or not.

5.3 ENGINEERING POLICY

5.3.1 UNIT EXCHANGE

- ES's policy is to reduce plant down time through unit exchanges, wherever practicable, with unit repairs taking place off-plant. The Contractor's equipment design shall reflect that policy and the Contractor shall pay special attention to equipment and services connections as well as to alignment and lifting considerations.
- A unit is defined as the largest practical assembly for changing purposes, whilst maintaining minimal spares requirements.
- All equipment shall be designed so that its alignment can be achieved quickly. Suitable lifting points shall be provided to remove and refit the equipment without having to modify the slinging arrangements. Plant access should also be planned and take consideration of movement of each unit during removal and refitting.
- Oil, air and water connections to a unit shall be fitted with quick release couplings or provided with isolating valves where this is not practicable. Electrical connections shall be done similarly, following the same philosophy.

5.3.2 ACCESS REQUIREMENTS

- All plant shall be designed to allow easy and safe access for its inspection, replacement, repair, cleaning, lubrication and operation. Where necessary, access platforms, stairs, ladders and walkways shall be provided. These shall be in accordance with the relevant specifications taken from the appropriate standards for the area concerned. The use of rung ladders shall be restricted to those areas not requiring frequent access. An unrestricted horizontal clearance of 600 mm shall be maintained

between handrails and the guards or covers on dangerous or moving equipment. Wherever practicable, duplicated safe means of escape shall be provided.

5.3.3 UNIFICATION AND INTERCHANGEABILITY

- All equipment shall be suitable for prolonged use, taking due account of the prevailing local environment (Refer to ES Engineering Standard 02 – Site Information) in general and the severe plant operating conditions in particular.
- Where practicable, the Contractor shall ensure maximum interchangeability of component parts, so as to minimize the number of makes and types and reduce the quantity of spare parts required.
- In addition, the Contractor shall cooperate with ES in the course of his detailed design to maximize the interchangeability with other new or existing plant.

5.3.4 LANGUAGE AND UNITS

- English shall be the official contract language and shall be used in all documents, correspondence and meetings pertaining to the contract. All supervisory staff and key personnel shall be conversant in both oral and written English.
- The International System of Units (SI) shall be used exclusively in all drawings, calculations and reports pertaining to the contract.

5.3.5 LABELS, SIGNS AND IDENTIFICATION OF PLANT

GENERAL

- This sub-section covers the minimum requirements for the labelling and identification of plant items.
- If possible, all equipment and components shall be clearly and permanently marked with the manufacturer's name, part identification, type designation, relevant operating parameters and any limitations of these, test date, calibration details and other information required for the safety of personnel and plant.
- Warning labels, safety signs, emergency instruction signs and the like shall be provided in accordance with the requirements of local regulations and standards.

5.3.6 MECHANICAL EQUIPMENT

- Mechanical plant items shall be clearly and permanently marked (hard stamped – where practical) with all identification numbers and/or letters which appear on the drawings related to the system concerned.

- Pipework shall be identified in accordance with the requirements of local regulations and ES Engineering Standard 08 – Painting and Protection.

5.3.7 IDENTIFICATION FOR DELIVERY AND ASSEMBLY

5.3.7.1 ASSEMBLY

- Whenever possible, each equipment item shall be delivered completely assembled.
- Whenever reasonable, all unassembled equipment items shall be proof-assembled, match marked and dismantled for shipment in the least possible number of subassemblies and parts.
  (a) Match marks on the equipment item shall be permanently visible until Sub-assemblies and parts are assembled or installed.
  (b) All match marks used shall appear on all relevant drawings. Major parts and subassemblies shall be delivered as nearly intact as practicable.
- Subassemblies, parts, special tools and the like shall be tagged as described below, crated and delivered with their corresponding equipment item.

5.3.7.2 MARKING

- **Marking of the Equipment:**
  - Each equipment item and its major parts and subassemblies shall have marking plates conspicuously located and permanently attached. All marking plates shall be constructed of corrosion resistant metal with hard stamped markings heavily embossed or imprinted to prevent removal by abrasion.
- **Standard Plates:**
  - Plates shall bear the manufacturer's standard data.
- **Special Plates:**
  - Plate shall bear the manufacturer's installation, operating, lubricating or other special instructions.
- **Project Plates:**
  - Plates shall bear the following minimum project information:
    (a) Manufacturer's name
    (b) Equipment item or part number according to the plant numbering system

(c) Manufacturers equipment item or part, size and model number

(d) Other equipment number as given in the specification or as may be required

- **Tags:**

  - Small subassemblies, parts, special tools and the like shall have a metal or plastic tag bearing the information required as described above, wired in place. Tags and wires shall be robust, corrosion resistance, durable and suit the environment.

- **Stenciling:**
  - Certain large equipment subassemblies and parts shall be stenciled with the information required as described above.
  - Stenciled letters shall be permanently visible until the equipment is assembled or installed. Marking of the Packages:
  - Each package shall be clearly and properly marked. The marking shall be stenciled on the outside of the package using a paint system agreed with ES for the plant and location.

5.4 PACKING

5.4.1 GENERAL

- All intakes, outlets and openings shall be capped or plugged to prevent entry of foreign materials, or damage to openings. All nozzles, machined surfaces and other finished parts shall be protected against corrosion or damage by the application of a hard, solvent removable coating. Provisions shall be made to prevent condensation damage.
- Oil filled during transportation and prior to installation where necessary.
- All equipment items, subassemblies and parts shall be export crated or packed and loaded to preclude damage or distortion during delivery and storage.
- All packages shall be marked to facilitate identification.

5.4.2 PACKING LIST

- For each package, a detailed packing list is to be issued which shall quote at least the following:
  - quantity and detailed contents
  - drawing number
  - package number
  - type of packing

- measurement of the package in millimeters
- net weight and gross weight of the package in kilograms
- storage requirements
- instruction for special handling

- Dangerous and/or sensitive goods shall be separately packed and clearly labelled.
- The packing list shall be issued for each item. All packed parts shall be accurately specified, and the packing list shall reflect the actual contents of the packages. Across-the-board descriptions (i.e., 'miscellaneous parts') shall not be acceptable.
- One copy of the packing list shall be put into a waterproof envelope and securely fastened under a metal plate with the inscription 'Packing List' to the inside of the package. One further copy of the packing list is to be attached in the same manner to the outside of the package. For unpacked pieces, two separate packing lists shall be securely fastened to each piece, using waterproof envelopes.

5.5 SAFETY

The Contractor shall comply with and adhere to all relevant safety and security regulations of ES. Copies of the current rules are available upon request

6. SUPPORTING DOCUMENTS

NA

REVISION HISTORY

Issue No.	Date	Page/s	Cause of Revision
0	17.11.2019	All	First Issue