ENGINEERING STANDARD

FOR

VENDOR'S DATA REQUIREMENTS

CONTENTS :

PAGE No.

0. INTRODUCTION

This Standard covers general requirements for vendor's data submitted at proposal stage and after placing the order. Specific vendor's data requirements shall be as indicated in individual equipment standards.

1. SCOPE

This Standard Specification provides detailed general standard for vendor's data requirements concerning machineries and their auxiliary equipment.

2. COMPLIANCE WITH SPECIFICATIONS

2.1 The basic quotation submitted must be completely in accordance with the Request for Quotation Specifications.

2.2 Unless specific exception, accompanied by a description of the proposed substitute, is recorded under the heading "Exceptions" in the Manufacturer's proposal it shall be mutually understood that the proposal, is based on equipment which strictly complies with the requirements issued with the Request for Quotation, and such statement of compliance shall be given.

2.3 Where the Manufacturer feels it is important to point out his interpretation of the Specifications, these should be listed under a separate heading, "Clarifications".

2.4 Alternates proposed by the Manufacturer will only receive secondary consideration and are not desirable unless they improve the basic equipment application, delivery or interchangeability.

3. BID EVALUATION FACTORS

3.1 Compliance with the quotation closing date shown is mandatory for the quotation to be considered.

3.2 Quotations will not be considered unless completed Individual Specification Sheets are forwarded with the quotation.

4. DESIGN

4.1 Experience

4.1.1 The design of all items of equipment which the Manufacturer proposes must have been proven in field operation.

Only equipment and or parts which have proven their reliability in service for a minimum of two years successful operation shall be acceptable.

4.1.2 Installation lists of similar equipment complete with the names of the user's personnel whom purchaser can contact shall be made available, upon purchaser's request.

4.2 Noise Limit

4.2.1 If the equipment is not capable of meeting noise limits specified in appropriate equipment standards without auxiliary noise reduction devices, such devices shall be separately priced in the Manufacturer's proposal.

4.2.2 Manufacturer shall include an estimated noise level for each type or model of equipment being bid.

5. PROPOSAL INFORMATION

Vendor's proposal shall include the information specified in items a through m.

a) An individual price and delivery schedule for each equipment item number.

b) The length of time required for certification of all information, drawings, etc.

c) Copies of the purchaser's data sheet (s) with complete Vendor's information entered thereon.

d) Typical cross sectional drawings and literature to fully described details of the offering (s).

e) Preliminary outline and arrangement drawings and schematic diagrams.

f) Utility requirements such as steam, water, electricity, air, gas, and lube oil including the quantity of lube oil required at the supply pressure and the nominal rating and operating power requirements of auxiliary drivers.

g) Where applicable, complete performance curves, as indicated in individual equipment standards.

h) Maximum operating, shipping and erection weights and the normal maintenance weight with identification of the item. These data shall be entered on the data sheets where applicable.

i) An illustrated list of spare parts recommended for start-up and two years of continuous operation, including prices.

j) An itemized list of special tools included in the offering.

k) An outline of all necessary special weather and winterizing protection required by the equipment and its auxiliaries and accessories, for start-up, operation, and idleness. The Vendor shall list separately the protective items he proposes to furnish.

l) Any start-up, shut down, or operating restrictions required to protect the integrity of the equipment.

m) Any calculations and data specified in appropriate equipment standard or purchase order.

6. DRAWING AND DATA AFTER ORDER

6.1 General

6.1.1 The Vendor shall complete and forward the Vendor Drawing and Data Requirements to the purchaser as specified and noted on the order. This shall detail the schedule for transmission of drawings, curves, and data as agreed to at the time of the order, as well as the number and type of copies required by the purchaser.

6.1.2 The data shall be identified on transmittal/cover letters and in title blocks or pages with the following information:

a) The purchaser's order number.
b) The job/project number.
c) The equipment name and item number.
d) Any other identification specified in the purchase order.
e) The Vendor's identifying shop order number, serial number, or other reference required to identify return correspondence completely.

6.1.3 Approval of drawings shall not relieve Manufacturer of any responsibility in meeting the requirements of specifications nor shall such approval be considered as permitting deviations from specifications or Purchase Order requirements, unless specifically approved in writing by Company.

6.2 Drawings

6.2.1 The number of prints and/or reproducibles required and the times within which they are to be submitted by the Vendor shall be as stated in purchase order.

6.2.2 After the drawings have been reviewed by the purchaser, the Vendor shall furnish certified copies in the quantity specified by the Company.

6.2.3 Prior to certified drawing submittal, the Manufacturer shall add to his drawings notes and data requested by the Company. This is required since these drawings are used by the Company in the field for erection and installation. Also, these drawings are incorporated into the Company bound documents for the ultimate users record.

6.2.4 The following information shall be provided on the drawings (typical drawings are not acceptable):

a) The purchaser's order number (on every drawing).

b) The purchaser's equipment item number (on every drawing).

c) The Vendor's shop order and/or serial number (on every drawing).

d) The net and operating weight of each assembly, of the heaviest piece of equipment that must be handled for erection, and of significant items to be handled for maintenance (on the appropriate drawings).

e) Lift points for the entire assembly.

f) Principal dimensions, including those required for the piping design, maintenance clearances, and dismantling clearances, and complete information to permit adequate foundation design by the purchaser. This shall include but shall not be limited to the following:

(1) Grouting details.
(2) The size, quantity and location of foundation bolts.
(3) The center of gravity for each part of the equipment such as driver, gear, and the complete assembly.

g) When applicable suction and discharge nozzle forces and moments.

h) The direction of rotation.

i) The size, type, rating, location, and identification of all the purchaser's connections, including vents, drains, lubricating oil, conduits, and instruments. (The Vendor's plugged connections shall be identified.)

j) When shaft couplings are furnished, their make, size, and type and the style of the coupling guards.

k) Complete bills of materials covering the vendor's entire scope of supply.

l) If requested by the purchaser, optional locations of main and auxiliary piping connections, accessory equipment, and the like. The drawing that shows these options shall be clearly marked"preliminary."

m) A list of reference drawings.

n) A list of any special weather-protection and climatization features.

o) Cold-alignment setting data for equipment furnished by the Vendor. Data on expected thermal growth, including transient effects, shall be included.

p) The location of the center of gravity and rigging provisions to permit removal of any main parts and any subassemblies that weigh more than 100 kgs.

6.2.5 The Vendor shall supply schematic diagrams of each system in the Vendor's scope of supply, as well as outline drawings and specifications for the components.

6.2.6 The Vendor shall supply cross-sectional or assembly-type drawings for all equipment furnished, showing all parts, design running clearances, and balancing data required for erection and maintenance. (Typical drawings are not acceptable).

6.2.7 All drawings submitted by the supplier shall be packed suitably by plastic covers.

6.3 Curves

The Vendor shall provide complete performance curves. Certified test curves and data shall be submitted within 15 days after testing and shall include any detailed information specified in individual equipment standard or purchase order.

6.4 Data

6.4.1 The Vendor shall provide full information to enable completion of the data sheets, first for "as purchased" and then for "as built." This should be done by the vendor correcting and filling out the data sheets and submitting copies to the purchaser.

6.4.2 When specified, the vendor shall make the following information available to the purchaser:

a) The Vendor's physical and chemical data from mill reports (or certification) of pressure parts, impellers, and shafts.

b) Certified shop logs of the performance and mechanical running tests.

c) A record of shop test data (which the Vendor shall maintain for at least 5 years after the date of shipment). The Vendor shall submit certified copies of the test data to the purchaser before shipment.

d) The required number of lateral critical and torsional analysis reports(which the Vendor shall furnish no later than 3 months after the date of the order). The lateral critical speed analysis shall include but shall not be limited to the following:

(1) A complete description of the method used to determine the critical speeds.
(2) A graphic display of the critical speeds versus the operating speeds.
(3) A graphic display of support stiffness and its effect on the critical speeds.
(4) A graphic display of the rotor response to the unbalance weight.

The torsional analysis shall include but shall not be limited to the following:

(1) A complete description of the method used to determine the critical speed.

(2) A graphic display of the mass elastic system.

(3) A table identifying the mass moment and torsional stiffness of each component identified in the mass elastic system.

(4) A graphic display of exciting sources versus speed and frequency.

(5) A graphic display of torsional critical speeds and deflections(that is, a mode shape diagram).

6.4.3 The Vendor shall provide as-built running clearances and, where applicable, thrust-and radial-bearing clearances.

The Vendor shall furnish an illustrated parts list for all equipment supplied including price list. The list shall include part number, pattern,stock, or production drawing numbers and materials of construction. The list shall completely identify each part so that the purchaser may determine the interchangeability of the part with other equipment furnished by the same manufacturer. Standard purchased items shall be identified by the original manufacturer's name and part number.

6.4.4 The Vendor shall furnish a drawing and materials list showing auxiliary piping furnished by the Vendor. (This information may be included on the outline drawing.)

6.4.5 No more than 15 days after the actual shipment date, the Vendor shall furnish the required number of instruction manuals for the equipment and any auxiliaries and instruments provided by the Vendor. Methods of lifting the assembled machine shall be completely described. The manuals shall include legible drawings of the specific equipment included (typical drawings are not acceptable), a "parts list, completed data sheets, and certified performance curves. They shall also include instructions covering installation, final tests and checks, start-up, shutdown, operating limits, and operating and maintenance procedures. The recommended clearances and maximum and minimum design clearance shall be clearly stated. The required amount, specifications, and supply temperature and pressure ranges for lubricating oils shall be stated.

6.4.6 AT least 6 weeks before shipment, the Vendor shall submit his preservation, packaging, and shipping procedures to the purchaser for his review.

6.5 Progress Reports

When specified, the Vendor shall submit progress reports to the purchaser at the agreed-upon frequency. The report shall include engineering and manufacturing information on all major components.