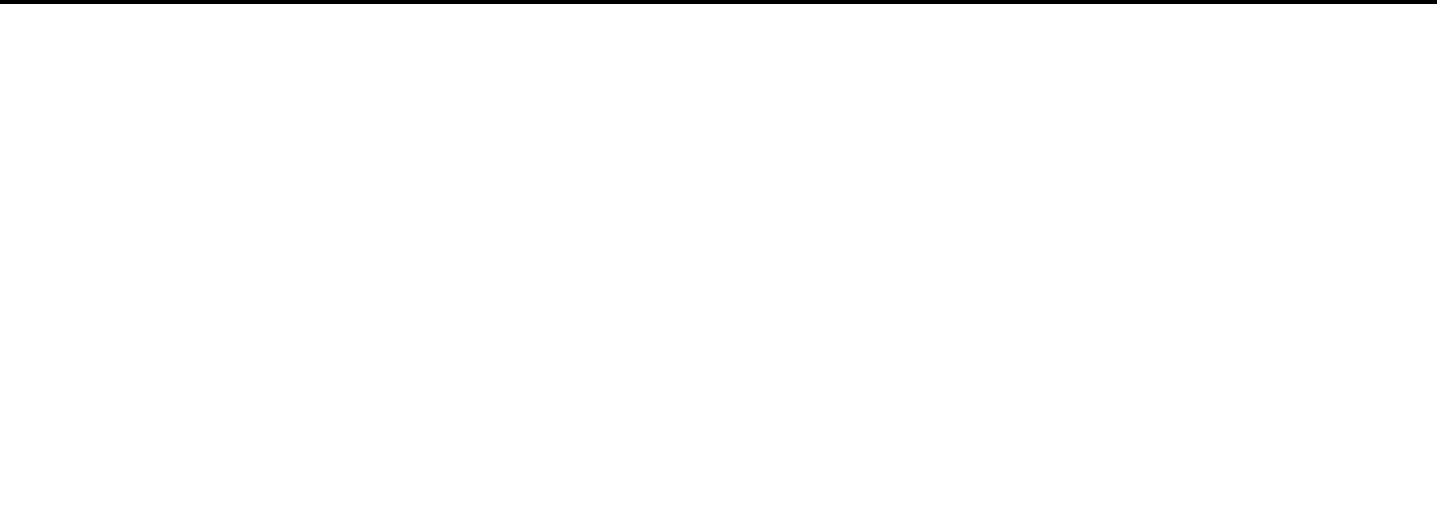


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1 General

1.1 Introduction

“Nominal” and “Design” capacity of the project is equal to 2340 dtph and 2700 dtph fresh ore feed conditions respectively. The plant is “Designed” to accommodate the “Maximum” conditions.

1.2 Scope

This specification defines the minimum requirements for the design, manufacture, inspection, and testing of a Vibrating Feeder and Screen in Copper-Moly concentrate plant project. In addition to the requirements of this criteria, work shall be done in accordance with recognized and accepted theories, methods, codes, standards, and good engineering practices. It should be noted that all Engineering (Detail Design), Procurement, and Construction activities must be done by the Contractor, based on Project Design Criteria, Specifications, and engineering documents approved by the Employer. The contractor should be assured about using the last revision of all documents. All activities must be done based on contract documents by the contractor and should be submitted to the Employer for review and approval.

1.3 Regulations and Reference Documents

The work shall be done in accordance with national and local laws and regulations. For subjects not covered by regulations or specifications, the design and construction shall be based on good engineering and working practice and shall be subject to approval by the EMPLOYER in writing.

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The contractor shall inform the EMPLOYER in case of any deviation from the requirements of this specification, which is considered necessary, in order to comply with national/local regulations.

1.4 Occupational Health and Safety

The Contractor shall adopt safe systems of work which minimize the risk to health and safety. All persons working on the site shall be competent to carry out their tasks and duties safely and in a manner that will not endanger their own health or the health of others. Persons, when first employed on the site, shall be subject to appropriate pre-employment occupational health checks, instructed on the hazards inherent in the site, precautions to be taken, the form of construction, and emergency procedures and fire safety. Such instructions shall be given whenever there is a material change in the working arrangements. The Contractor shall maintain a record of all persons instructed and each person shall be required to sign such record confirming that instruction has been received. No person shall be permitted on site without being inducted as set out above. The Contractor shall prepare a written statement of Safe Systems of Working which shall be issued to all persons at the site.

1.5 Quality Management and Records

- The project shall be administered using an accredited Quality Management System conforming.
- References to the agreement of materials, workmanship, methods, etc. throughout this Specification shall be interpreted as requiring the agreement of the Employer.
- The Contractor shall maintain all records necessary under this Specification, including quality records as appropriate.

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- Copies of all site records shall be available to the Employer.
- The Contractor shall supply the Engineer with all information necessary for the Health and Safety File including as-built drawings and records, maintenance schedules, operation and maintenance manuals, within the time specified in the contract, after substantial completion of the Works. Information shall be provided in the agreed format.

1.6 Reference Codes and Standards

The latest revision and edition of the following codes and standards shall constitute the minimum requirements of this specification, where applicable. In any case of discrepancy between the codes and standards and specifications, the requirements shall be considered according to the EMPLOYER's written approval.

ABMA	Anti-Friction Bearing Manufacturers Association
ANSI	American National Standards Institute (For flange connections, couplings, fasteners, etc.)
ASLE	American Society of Lubrication Engineers
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
AGMA	American Gear Manufacturers Association
ISA	Instrument Society of America
ISO	International Organization for Standardization Including:
ISO 12944	Paints and varnishes — Corrosion protection of steel structures by protective paint

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ISO 2768	General tolerances
HI	Hydraulics Institute
MPTA	Mechanical Power Transmission Association
OSHA	US Occupational Safety and Health Administration
SSPC	Steel Structures Painting Council
UBC	Uniform Building Code
IEC60027	Letters, Symbols to be used in Electrical Technology
IEC60072	Rotating Electrical Machines
IEC60050-411	International Electro technical Vocabulary Rotating Machines
IEC60072	Dimensions and Output Rating for Rotating Electrical Machines
IEC60085	Thermal Evaluation and Classification of Electrical Insulation
	Identification of Equipment Terminals and of Terminations of
IEC60445	System Certain Designated Conductors Including General Rules of an Alphanumeric
IEC60072-1	Frame Size and Dimension
IEC60034-1	Duty & Rating Class
IEC60034-6	Performance
BS EN 13920	Welding — General tolerances for welded constructions — Dimensions for lengths and angles — Shape and position
EN 10204	Metallic Products-Types of Inspection Documents
BS 4999	General Requirement for Rotating Electrical Machines, Winding Termination
BS 5512	Dynamic Load Ratings and Rating Life of Rolling Bearing

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BS 6121 Mechanical Cable Glands
NEMA MG1-1998 Motor and Generators

1.7 Measurement Units

SI units shall be applied to the measuring units.

1.8 Language

All drawing design information, Documentation, Operation, and Maintenance Instructions, and correspondence shall be in English.

2 Design Data

2.1 Working Time

The working time is as follows:

Description	Value
Calendar days per year	365
Production days per year	320
Number of shifts per day	3
Working hours per shift	8
Utilization factor	0.85

2.2 Site Condition

For Site Condition Refer to Document No. 12002-D-PR-DOC-303-GNL-001.

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3 Design Requirements – Work Included

3.1 Vibrating Screen

3.1.1 Functional Description

Screening is the separation of material particles on the basis of size. Particles are presented to the aperture in a screening surface and rejected if larger than the opening or passed through if smaller. The change of a particle passing an opening depends on its size and the number of times it is presented to the opening.

In order to remove the fines from the feed material, a screening machine is used and must be capable of stratifying and transporting the feed material, plus keep the aperture of the screening surface clean and un-obstructed, thus allowing the undersize to pass the aperture.

The principles of screening are basically the same. Material to be screened is delivered to a screen surface at a continuous rate. Dropped onto the feed box, it loses its vertical component of velocity and undergoes a change in direction of travel. The screening process can then be divided into three different stages:

- Stratification of the feed material starts on the feed plane and the very first part of the screening surface, as a result of vibration. Stratification is a process in which larger particles rise to the top of the material bed and smaller particles find their way to the bottom. The process of stratification is essential to the separation or screening process.

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- Undersize particles, less than 70% of the whole size, pass through the screening surface rather easily, based on the probability that small particles easily find a hole. This happens normally, up to half the total screen surface length.
- During the remaining screening length, extraction of critical particle size (near-size particles) takes place. Near size means undersize particles close to the aperture hole size and oversize particles 1-1,3 times the whole size. The critical oversize is the particles, which are mainly responsible for blinding. The amount of near-size particles in the feed is the main factor when selecting a screen size and will have a major influence on the screening accuracy.
- Behind this, other factors related to the screening process are the screen's different parameters, such as the materials transport speed, angle of inclination of the screening deck, operating speed, stroke, angle of inclination of line of motion, and the selection of screening media.

3.2 Vibrating Feeder

3.2.1 Functional Description

A vibrating feeder is used for the accurate feeding of gravel, crushed stone, and ores. It consists of a feeder pan made from steel plate and profiles and attachment brackets for the supporting springs and magnetic exciter. The feeder is equipped with a sloped discharge end, which gives a concentration of material in the center of the feeder and simplifies transfer to a pebble crusher.

The product incorporates design initiatives to facilitate site maintenance and servicing requirements such as the use of bolted parts, replaceable wear liners, selection of

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magnetic exciters to achieve performance and provide acceptable life, and the availability of other optional improvements to suit particular applications and site environments.

3.3 Manufacturing Specification

- All of the used materials should be new and conform to the respective specifications given on the drawings. Any deviation is subject to the purchasers.
- All parts should be manufactured/ procured according to approved drawings. Any deviation is subject to the purchaser's approval.

Welding is a major procedure in manufacturing, The approved W.P.S. (welding procedures specifications) should be according to ASME section IX, AWS codes strictly followed by the supplier.

3.4 I&C and Electrical Specification

The technical specification for I&C and electrical equipment should satisfy the requirements according to the Technical Specification for Package Units

4 Guarantee

- The VENDOR shall guarantee the Package for the duty, emissions, noise levels and utility consumption as specified on Equipment Data Sheets, and for safe and reliable operation.
- The VENDOR shall guarantee the suitability of the materials of construction for the duties required, even if the CONSULTANT has specified the type and grade of material to be used.

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- The VENDOR shall guarantee all equipment and components against design fault, defective or improper materials, poor workmanship and failure during normal usage.

The Guarantee period is according to main contract.

5 Inspection and Testing

5.1 Inspection

Purchaser reserves the right for inspection at any stage of manufacturing, testing, or preparation for shipment. The purchaser's inspection should not relieve the vendor of his commitments under the terms of the purchase documents and this specification.

5.2 ITP Forms

The inspection & test plan (ITP) forms cover the minimum verification, checks, and tests required to comply with codes, specifications, and/or contractual requirements.

The following tests should be performed by the supplier:

- Visual Inspection
- Dimensional Inspection
- Mechanical Running Test
- No load running test
- Motor temperature rise test
- Routine Tests for operation box as per IEC Standard
- Noise level Test
- Vibration Measurement Test

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- Assembly Inspection performed at the shop
- Marking Inspection for Packing
- Final Inspection prior to Packing
- Packing Inspection
- Preparation for shipment

The equipment should be packed seaworthy in accordance with the best modern practices consistent with the method of transport and destination.

All separate components should be suitably tagged prior to dispatch with the item number to facilitate identification on site.

6 Surface Preparation

The painting system should be carried out in accordance with the manufacturer's standards.

The supplier should submit a detailed rust prevention and painting procedure and application list for the equipment package, to be approved by the employer.

Suppliers should propose procedures to prevent rusting of warehouse-stored equipment, during long-term storage installation, and during long-term suspension of operation.

The least painting requirement should be as project PAINTING SPECIFICATION Document No. 12002-D-PI-SPC-303-GNL-004.

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7 Nameplate

Each equipment shall have a nameplate made of stainless-steel material giving at least the following information:

- ▶ Project Title
- ▶ Company
- ▶ Size and Model
- ▶ Total weight (kg)
- ▶ Serial number
- ▶ Rated Capacity
- ▶ Rated speed
- ▶ Maximum casing working pressure (barg) (MAWP)

The nameplate shall be of stainless steel and relevant information shall be punched into the same.

8 Documents

The manufacturer/supplier should submit the following documents for the purchaser's approval in English as a minimum:

- Time schedule for all activities, i.e. engineering, procurement of materials, shop fabrication, testing and inspections, painting, packing and delivery.
- W.P.S.
- Welders' qualification records, according to ASME Code sec. IX.
- Welding procedures qualification records (P.Q.R.).

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- Q.C.T.M. (Quality control & testing manual) including manufacturing, testing, and all parts and assemblies should be prepared by the supplier and to the purchaser's approval.
- Detailed technical specification.
- Storage Procedure.
- Erection, Operation, and maintenance manuals.
- Supplier should propose, procedures to prevent rusting of warehouse stored equipment, during long-term storage after installation and during long-term suspension of operation.
- Pre-commissioning and commissioning manual.
- Relevant catalogues.
- Price list for spare parts.

Assembly drawing, sectional assembly drawing with BOM.

9 Spare Parts

All special tools and spare parts for erection and assembly on-site should be supplied by the vendor.

A spare part list for two years should be submitted by the manufacturer.

NOTE 1: The scope of this document shall be designed based on all "engineering documents" and submitted to the client for review and approval by the contractor.

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NOTE 2: It should be noted that Procurement and Construction activities of this equipment must be done based on approved engineering documents. All equipment shall be supplied based on approved TBE documents.

NOTE 3: Contractor should be assured about using the last revision of all document

10 Packing And Delivery

- Supplier should submit “packing procedure and specifications” and timetable for packing and delivery for employer’s approval.
- All equipment items should be packed as per procedure and delivered the items to the site.
- Packing should be suitable to withstand 2 years of open area storing.
- The documents necessary for final inspection and release for packing will include, but are not limited to, the following:
 - Reports on tests performed
 - Materials certificates and chemical analysis certificates.
 - Air leak test.
 - Results of non-destructive tests, together with the pertinent sketches.
 - Supply list of equipment.