



**Tender for Design, Manufacturing,
Supply, Installation, Testing and Commissioning of
80/20 Ton Capacity Double Girder EOT Crane at
New Workshop CMTI, Bengaluru
In Two Bid system (Technical bid and Price Bid)**

By
Central Manufacturing Technology Institute
Tumkur Road, Bangalore-560022

सेन्ट्रल मैन्युफेक्चरिंग टेक्नोलॉजि इंस्टिट्यूट 

**CENTRAL MANUFACTURING
TECHNOLOGY INSTITUTE**

| SL.NO. | Contents | Page No. |
|---------------|---|-----------------|
| | INVITATION FOR BIDS | 2-3 |
| 1. | INSTRUCTIONS TO BIDDER | 4-17 |
| 2. | GENERAL CONDITION OF CONTRACT (GCC) | 18-36 |
| 3. | SCHEDULE OF REQUIREMENTS | 37 |
| | PART-B | |
| 4. | SPECIFICATIONS AND ALLIED TECHNICAL DETAILS | 38-54 |
| 5. | QUALIFYING CRITERIA | 55-72 |
| 6. | TECHNICAL BID | 73-93 |
| 7. | LIST OF MAKES | 94 |
| 8. | EXISTING CRANE LAYOUT | 95-96 |
| 9. | CONTRACT FORM | 97-98 |
| 10. | OTHER STANDARD FORM | 99-110 |
| 11. | TENTATIVE BILL OF QUANTITIES COMPLY LIST | 111-112 |

CMTI - CENTRAL MANUFACTURING TECHNOLOGY INSTITUTE
Tumkur Road, Bengaluru - 560022, Karnataka, INDIA

INVITATION FOR BIDS

No. CMTI/0302/BS/21-22/PUR/VM10T

Date: 18.11.2021

1. CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India, Invites sealed Bids from Manufacturers and their Distributors / Indian Agents, if any, for purchase of items listed below.

| SI. No. | Tender No. | Description of items | Qty | Two Bid | Bid Security (EMD) (in Rs.) |
|---------|------------------------------|---|---------|---|-----------------------------|
| 1 | CMTI/0302/BS/21-22/PUR/VM10T | Design, Manufacturing, Supply, Installation, Testing and Commissioning of 80/20 Ton Capacity double girder EOT crane at New Workshop CMTI | One No. | Two Bid System [Technical &- Price bid] | 4,00,000 |

2. Interested Bidders may obtain further information from the office of the Group Head, Purchase & Stores, CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India, mail: purchase@cmti.res.in
3. The Bidding Documents can be downloaded at www.tenderwizard.com/CMTI.
4. The Director, CMTI- Bengaluru, reserves the right to accept any or all tenders either in part or in full or to split the order without assigning any reasons there for.

**DESIGN,MANUFACTURING,SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF 80/20
Ton Capacity double girder EOT crane at New Workshop CMTI**

| | |
|---|--|
| BID REFERENCE | CMTI/0302/BS/21-22/PUR/VM10T |
| DATE OF PRE- BID CONFERENCE | 06.12.2021 11:00hrs |
| <u>PRE -BID CONFERENCE WAS HELD ON</u> | |
| DEADLINE FOR RECEIPT OF BIDS | Will be Intimated after the Pre-bid Conference. |
| DATE AND TIME OF OPENING OF BIDS (TECHNO- COMMERCIAL BID ONLY) | Will be Intimated after the Pre-bid Conference. |
| DATE AND TIME OF OPENING OF PRICE BIDS | Will be Intimated after the Pre-bid Conference. |
| VENUE FOR BID OPENING | E-Tender online opening |
| ADDRESS FOR COMMUNICATION | Group Head, (Purchase & Stores) Central Manufacturing Technology institute, Tumkur Road, Bengaluru - 560022, Karnataka, India Email ID: purchase@cmti.res.in |

N.B.:

1. All the pages of the Bidding Document should be signed, stamped and submitted with the offer.
2. This Bidding Document is non-transferable.
3. Bidding Document can be downloaded free of cost from our website www.cmti-india.net

CHAPTER 1
INSTRUCTIONS TO BIDDER

Table of Contents

| Sl. No. | Contents |
|---------|---|
| 1.1 | Eligible Bidders |
| 1.2 | Cost of Bidding |
| 1.3 | Fraud and Corruption |
| 1.4 | Cost of Bidding Documents |
| 1.5 | Content of Bidding Documents |
| 1.6 | Clarification of Bidding Documents |
| 1.7 | Amendment of Bidding Documents |
| 1.8 | Language of Bid |
| 1.9 | Documents Comprising the Bid |
| 1.10 | Bid form and price schedule |
| 1.11 | Bid Prices |
| 1.12 | Bid Currencies |
| 1.13 | Documents establishing Bidder's eligibility and qualifications. |
| 1.14 | Documents establishing Goods' eligibility and Conformity to bidding documents. |
| 1.15 | Bid Security [BS] / Earnest Money Deposit [EMD] |
| 1.16 | Period of Validity of Bids |
| 1.17 | Format and Signing of Bid |
| 1.18 | Submission, Sealing and Marking of Bids |
| 1.19 | Opening of Bids by the Purchaser |
| 1.20 | Confidentiality |
| 1.21 | Clarification of Bids |
| 1.22 | Preliminary Examination |
| 1.23 | Responsiveness of Bids |
| 1.24 | Non- Conformity, Error and Omission |
| 1.25 | Examination of Terms & Conditions, Technical Evaluation |
| 1.26 | Conversion to Single Currency |
| 1.27 | Evaluation and Comparison of Bids |
| 1.28 | Comparison of Bids |
| 1.29 | Contacting the Purchaser |
| 1.30 | Post qualification |
| 1.31 | Negotiations |
| 1.32 | Award Criteria |
| 1.33 | Purchaser's right to Vary Quantities at Time of award |
| 1.34 | Purchaser's right to accept any Bid and to reject any or all Bids |
| 1.35 | Notification of Award |
| 1.36 | Signing of Contract |
| 1.37 | Order Acknowledgement |
| 1.38 | Performance Security |

A-Introduction

Eligible Bidders

1.1.1 This Invitation for Bids [IFB] is open to all Suppliers.

1.1.2 In a tender, either the Indian agent on behalf of the Principal / OEM or Principal / OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender.

If an agent submits bid on behalf of Principal / OEM, The same agent shall not submit a bid on behalf of another principal /OEM in the same tender for the same item / product.

1.1.3 Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Purchaser to provide consulting Services for the preparation of the design, specifications, and other documents to be used for the procurement of the Goods to be purchased under this Invitation For Bids.

Only Crane and its allied units manufactured in India to be supplied and installed.

1.2 Cost of Bidding

1.2.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Purchaser, will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

1.3 Fraud and corruption

1.3.1 The Purchaser requires that the Bidders, Suppliers and Contractors observe the highest standard of Ethics during the procurement process and execution of such contracts. In pursuit of this policy, the following are defined:

“Corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;

“Fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;

“collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of the Purchaser, designed to establish bid prices at artificial, non- competitive levels; and

“Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract;

1.3.2 The Purchaser will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question.

B - The Bidding Documents

1.4 Cost of Bidding Documents

1.4.1 The Bidding Documents can be downloaded from Purchaser's website as indicate in the Invitation for Bids [IFB] free of cost.

1.5 Content of Bidding Documents

1.5.1 The Goods required, bidding procedures and contract terms are prescribed in the Bidding Documents which should be read in conjunction. The Bidding Documents, apart from the Invitation For Bids have been divided into 8 chapters as under:

| | |
|------------|---|
| Chapter 1: | Instructions to Bidder (ITB) |
| Chapter 2: | General Conditions of Contract (GCC) and Special Conditions of Contract (SCC) |
| Chapter 3: | Schedule of Requirements |
| Chapter 4: | Specifications and Allied Technical Details PART A: Qualifying Criteria PART B: Detail Specifications |
| Chapter 5 | Price Schedule Forms |
| Chapter 6 | Contract Form |
| Chapter 7: | Other Standard Forms comprising: (a) Bidder Information Form; (b) Manufacturer's Authorization Form(MAF) (c) Bid Security Form; (d) Performance Statement Form; (e) Deviation Statement Form; (f) Service Support details; (g) Bid Form; (h) Performance Security Form; (i) Acceptance Certificate Form; (j) Eligibility Certificate Form (k) Non Black-Listed Self Certification Form |

1.5.2 The Bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Documents. Failure to furnish all information required by the Bidding Documents or submission of a bid not substantially responsive to the Bidding Documents in every respect will be at the Bidder's risk and may result in rejection of its bid.

1.6 Clarification of Bidding Documents

1.6.1 A prospective Bidder requiring any clarification of the Bidding Documents shall contact the Purchaser in writing at the Purchaser's address specified in the Special Conditions of Contract (SCC). The Purchaser will respond in writing to request for clarification, provided that such request is received not later than ten (10) days prior to the deadline for submission of Bids. The Purchaser shall forward copies of its response to all those who have acquired the Bidding Documents directly from it, including a description of the inquiry but without identifying its source. Should the Purchaser deem it necessary to amend the Bidding Documents as a result of a clarification, it shall do so following the procedure under clause relating to amendment of Bidding Documents and Clause relating to Deadline for Submission of Bids. The clarifications and amendments issued would also be hosted on the website of the Purchaser for the benefit of the other prospective Bidders.

1.7 Amendment of Bidding Documents

1.7.1 At any time prior to the deadline for submission of Bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by an amendment.

1.7.2 All prospective Bidders who have received the Bidding Documents will be notified of the amendment in writing or by cable or by fax, or by e mail and the said amendment will be binding on them. The same would also be hosted on the website of the Purchaser and all prospective Bidders are expected to surf the website before submitting their Bids to take cognizance of the amendments.

1.7.3 In order to allow prospective Bidders reasonable time to take the amendment into account, while preparing their Bids, the Purchaser, at its discretion, may extend the deadline for the submission of Bids and host the changes on the website of the Purchaser.

C - Preparation of Bids

1.8 Language of Bid

1.8.1 The Bidder shall bear all costs of translation, if any, to the English language and all risks of the accuracy of such translation, for documents provided by the Bidder.

1.9 Documents Comprising the Bid

1.9.1 The Offer is to be submitted in two parts. One part will be the Un-Priced Techno-Commercial Bid and the other shall be the Priced Bid in the manner described at ITB Clause 1.18.

1.9.2 The Un-Priced Techno-Commercial Bid prepared by the Bidder shall include, among other Documents [like Technical Literature, brochures, drawings, all relevant commercial terms, data sheets etc.] the following:

- (a) Bidder Information Form;
- (b) Bid Security as specified in the Invitation For Bids;
- (c) Service support details form;
- (d) Deviation Statement Form;
- (e) Performance Statement Form;
- (f) Manufacturer's Authorization Form (MAF);
- (g) Documentary evidence establishing that the Bidder is eligible to bid and is qualified to perform the contract if its bid is accepted;
- (h) Documents establishing Good eligibility and conformity to Bidding Documents;
- (i) Current solvency certificate
- (j) Eligibility Certificate
- (k) Non-Blacklisted self-certificate

1.9.3 The Price Bid prepared by the Bidder shall include, among other Documents the following:

- (a) Bid form.
- (b) Applicable Price Schedule Form (this forms shall be mandatorily be uploaded in the price bid)

1.10 Bid Form and Price Schedule Form

1.10.1 The Bidder shall complete the Bid Form and the appropriate Price Schedule Form furnished in the Bidding Documents. These forms must be completed without any alterations to its format and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

1.11 Bid Prices

1.11.1 The Bidder shall indicate on the appropriate Price Schedule Form, the unit prices and total bid prices of the Goods it proposes to supply under the contract.

1.11.2 Prices indicated on the Price Schedule Form shall be entered separately in the following manner:

(a) For Goods manufactured within India

- (i) The price of the Goods quoted ex - works including taxes already paid.
- (ii) GST and other taxes & duties which will be payable on the Goods if the contract is awarded.
- (iii) The charges for inland transportation, insurance and other local Services required for delivering the Goods at the desired destination.
- (iv) The installation, commissioning and training charges including any incidental Services, if any.

(b) For Goods manufactured abroad

- (i) The price of the Goods, quoted on EXW/ FCA (named place of delivery abroad) or FOB (named port of shipment), as specified in the Price Schedule Form.
- (ii) The charges for insurance and transportation of the Goods to the port/place of destination. The agency commission charges, if any.
- (iii) The installation, commissioning and training charges including any incidental Services, if any

1.11.3 The terms FOB, FCA, CIF, CIP etc. shall be governed by the rules prescribed in the current edition of the INCOTERMS published-by the International Chambers of Commerce, Paris.

1.11.5 The price quoted shall remain fixed during the contract period and shall not vary on any account.

1.11.6 All lots and items must be listed and priced separately in the Price Schedules. If a Price Schedule shows items listed but not priced, their prices shall be assumed to be included in the prices of other items. Lots or items not listed in the Price Schedule shall be assumed to be not included in the bid.

1.11.7 The purchases made by the Purchaser for scientific purpose are exempt from GST [Government of India Notification No. 45/2017 – Central Tax (Rate) dated 14/11/2017] and Customs Duty at a concessional rate is livable [Government of India Notification No. 51/96 - Customs dated 22/07/1996].

1.11.8 The Purchaser shall not issue Exemption Certificates [Customs Duty Exemption Certificates /GST Exemption Certificate] for any raw materials / intermediary products that go into the manufacture of the Goods offered by Bidder.

1.12 Bid Currencies

1.12.1 Prices shall be quoted in Indian Rupees for offers received for supply within India and in freely convertible foreign currency in case of offers received for supply from foreign countries.

1.13 Documents Establishing Bidder's Eligibility and Qualifications

1.13.1 The Bidder shall furnish as part of its bid, documents establishing the Bidder's eligibility to bid and its qualification to perform the contract if its bid is accepted.

1.13.2 The documentary evidence of the Bidder's qualification to perform the contract if the bid is accepted shall establish to the Purchaser's satisfaction that;

- (a) Bidder meets the qualification Criteria listed in Bidding Documents, if any.
- (b) Bidder that doesn't manufacture the Goods it offers to supply shall submit the Manufacturer's Authorization Form (MAF)/ OEM authorization form using the form specified in the Bidding Documents to demonstrate that it has been duly authorized by the Manufacturer of the Goods to quote and / or supply the Goods.
- (c) In case of a Bidder not doing business with in India, it shall furnish the certificate to the effect that the Bidder is or will be represented by an agent in India equipped and able to carry out the supply, maintenance, repair obligations etc. during the warranty and post-warranty period or ensure a mechanism at place for carrying out the supply, maintenance, repair obligations etc. during the warranty and post - warranty period.

1.13.3 Conditional tenders shall not be accepted.

1.14 Documents Establishing Goods Eligibility and Conformity to Bidding

Documents

1.14.1 To establish the Goods eligibility, the documentary evidence of the Goods and Services eligibility shall consist of a statement on the country of origin of the Goods and Services offered which shall be confirmed by a certificate of origin issued by a local chamber of commerce at the time of shipment.

1.14.2 To establish the conformity of the Goods and Services to the specifications and schedule of requirements of the Bidding Documents, the documentary evidence of conformity of the Goods and Services to the Bidding Documents may be in the form of literature, drawings and data, and shall consist of:

- (a) A detailed description of the essential technical and performance characteristics of the Goods;
- (b) A list giving full particulars, including available sources and current prices, of spare parts, special tools, etc., necessary for the proper and continuing functioning of the Goods following commencement of the use of the Goods by the Purchaser in the Priced - bid ; and
- (c) An item-by - item commentary on the Purchaser's Technical Specifications demonstrating substantial responsiveness of the Goods and Services to those specifications or a statement of deviations and exceptions to the provisions of the Technical Specifications.

1.14.3 For purposes of the commentary to be furnished pursuant to above, the Bidder shall note that standard workmanship, material and equipment, designated by the Purchaser in its Technical

Specifications are intended to be descriptive only not restrictive The Bidder may substitute these in its bid, provided that it demonstrates to the Purchaser's satisfaction that the Substitutions ensure substantial equivalence to those designated in the Technical Specifications.

1.15 Bid Security / Earnest Money Deposit (EMD)

1.15.1 The Bidder shall furnish, as part of its bid, a Bid Security (BS) / Earnest Money Deposit [EMD] for an amount as specified in the Invitation for Bids. In the case of foreign Bidders, the BS shall be submitted either by the Principal or by the Indian agent and in the case of indigenous Bidders; the BS shall be submitted by the Manufacturer or their specifically authorized dealer / Bidder.

1.15.2 The Bid Security is required to protect the Purchaser against the risk of Bidder's conduct, which would warrant the security's forfeiture.

1.15.3 The Bid Security shall be in Indian Rupees for offers received for supply within India and denominated in the currency of the bid or in any freely convertible foreign exchange in the case of offers received for supplies from foreign countries in equivalent Indian Rupees. The Bid Security shall be in one of the following forms at the Bidder's option:

- (a) A Bank Guarantee [BG] issued by a Nationalized/Scheduled bank in the form provided in the Bidding Documents and valid for 45 days beyond the validity of the bid. In case a Bidder desires to submit a BG issued from a foreign bank, then the same should be confirmed by a Nationalized/Scheduled Indian bank, with all confirmation charges to Bidder's account. Purchaser reserves the right to verify the authenticity of the Bank Guarantees from the issuing/confirming/controlling bank; or
- (b) Fixed Deposit Receipt pledged in favour of the Purchaser ; or
- (c) Online payment in favour of the Purchaser.

1.15.4 The Bid Security shall be payable promptly upon written demand by the Purchaser in case the conditions listed in the ITB Sub-Clause 1.15.8 are invoked.

1.15.5 The Bid Security should be submitted in its original form. Copies shall not be accepted.

1.15.6 The Bid Security of unsuccessful Bidder will be discharged / returned as promptly as possible positively within a period of 30 days after the expiration of the period of bid validity or placement of order whichever is later, without any interest.

1.15.7 The successful Bidder's Bid Security will be discharged upon the Bidder furnishing the Performance Security, without any interest. Alternatively, the BS could also be adjusted against PS, if it is paid through DD/BC.

1.15.8 The Bid Security may be forfeited:

- (a) If a Bidder withdraws or amends or impairs or derogates its bid during the period of bid validity specified by the Bidder on the Bid Form; or
- (b) In case of a successful Bidder, if the Bidder fails to furnish Order Acknowledgement within 15 days of the order or fails to sign the contract and/or fails to furnish Performance Security within 21 days from the date of contract/ order.

1.16 Period of Validity of Bids

1.16.1 Bids shall remain valid for a minimum period of 120 days after the date of bid opening

prescribed by the Purchaser. A bid valid for a shorter period shall be rejected by the Purchaser as non-responsive.

1.16.2 In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing (or by cable, telex, fax or e-mail). The Bid Security provided shall also be suitably extended. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request will not be required nor permitted to modify its bid.

1.16.3 Bid evaluation will be based on the bid prices without taking into consideration the above corrections.

1.16.4 Pre-bid meeting

A Pre bid meeting shall be held with the interested bidders at Central Manufacturing Technology Institute, Tumkur road, Bangalore-560022 at 11:00 hrs on 06/12/2021 to clear the doubt of intending bidders, if any. Vendors should send by email, all their queries, before pre-bid conference, latest by 13.00 hrs of 02/12/2021 to the Group Head (Purchase and stores), CMTI Email id: purchase@cmti.res.in As a result of pre-bid conference, certain modifications may be issued to all eligible bidders, if felt necessary as corrigendum. The vendor should get acquainted with themselves the conditions under which the work need to be executed and no claims against site familiarization will be entertained. All interested bidders are requested to visit the site prior to submission of quotes. The outcome of the pre-bid conference will become part of contract document.

1.17 Format and Signing of Bid

1.17.1 Bids are invited on two-bid system, the Bidder shall submit the Bids in two separate parts. One part will be the Un-Priced Techno - Commercial Bid and the other shall be the Price Bid.

D – Submission of Bids

1.18 Submission of Bids

1.18.1 The Bidders may submit their Bids in Tender Wizard portal as two separate cover bids.

E - Opening and Evaluation of Bids

1.19 Opening of Bids by the Purchaser

1.19.1 The Purchaser will open all Bids at a time in Tender portal. The Price Bid shall be opened only after technical evaluation.

Confidentiality

1.20.1 Information relating to the examination, evaluation, comparison, and post qualification of Bids, and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until publication of the Contract Award.

1.20.2 Any effort by a Bidder to influence the Purchaser in the examination, evaluation, comparison, and post qualification of the Bids or contract award decisions may result in the rejection of its Bid.

1.21 Clarification of Bids

1.21.1 To assist in the examination, evaluation, comparison and post qualification of the Bids, the Purchaser may, at its discretion, ask the bidder for a clarification of its bid. The request for clarification and the response shall be in writing and no change in prices or substance of the bid shall be sought, offered or permitted. However, no negotiation shall be held except with the lowest Bidder, at the discretion of the Purchaser. Any clarification submitted by a Bidder in respect to its bid which is not in response to a request by the Purchaser shall not be considered.

1.22 Preliminary Examination

1.21.1 The Purchaser shall examine the Bids to confirm that all documents and technical documentation requested in ITB Clause 1.9 have been provided, and to determine the completeness of each document submitted.

1.21.2 The Purchaser shall confirm that the following documents and information have been provided in the Bid. If any of these documents or information is missing, the offer shall be rejected.

- (a) Bid Form and Price Schedule Form, in accordance with ITB Clause 1.10. This condition pertains to opening of Price Bid only;
- (b) All the Bids received will first be scrutinized to see whether the Bids meet the basic requirements as incorporated in the Invitation For Bids [IFB]. The Bids, which do not meet the basic requirements, are to be treated as unresponsive and ignored. The following are some of the important points, for which a tender may be declared as unresponsive and to be ignored, during the initial scrutiny:
 - (i) The Bid is unsigned.
 - (ii) Bid Security/ Earnest Money Deposit has not been furnished
 - (iii) The Bidder is not eligible.
 - (iv) The Bid validity is shorter than the required period.
 - (v) The Bidder has quoted for Goods manufactured by a different firm without the required authority letter from the proposed Manufacturer.
 - (vi) Bidder has not agreed to give the required Performance Security.
 - (vii) The Goods quoted are sub - standard, not meeting the required specification etc.
 - (viii) Against the schedule of Requirement (incorporated in the tender enquiry), the Bidder has not quoted for the entire requirement as specified in that schedule.
 - (ix) The Bidder has not agreed to some essential condition(s) incorporated in the tender enquiry.
 - (x) Bidder has not mentioned charges related to packing, forwarding, freight, insurance charges, taxes etc. [as required under Instructions to Bidders Clause 1.11 thus rendering such offers as incomplete.

1.23 Responsiveness of Bids

1.23.1 Prior to the detailed evaluation, the Purchaser will determine the substantial responsiveness of each bid to the Bidding Documents. For purposes of this clause, a substantive responsive bid is one, which conforms to all terms and condition of the Bidding Documents without material deviations, reservations or omissions. A material deviation, reservation or omission is one that:

- (a) Affects in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or

- (b) Limits in any substantial way, inconsistent with the bidding documents, the purchase's rights or the bidder's obligations under the contract; or
- (c) If rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

1.23.2 The purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.

1.23.3 If a bid is not substantially responsive, it will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation or omission.

1.24 Non-Conformity, Error and Omission

1.24.1 Provided that a Bid is substantially responsive, the Purchaser may waive any non-conformities or omissions in the Bid that do not constitute a material deviation.

1.24.2 Provided that a bid is substantially responsive, the Purchaser may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

1.24.3 Provided that the Bid is substantially responsive, the Purchaser shall correct arithmetical errors on the following basis:

- (a) If there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;
- (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- (c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

1.24.4 Provided that a bid is substantially responsive, the Purchaser may request that a Bidder may confirm the correctness of arithmetic errors as done by the Purchaser within a target date. In case, no reply is received then the bid submitted shall be ignored and its Bid Security may be forfeited.

1.25 Examination of Terms & Conditions, Technical Evaluation

1.25.1 The Purchaser shall examine the Bid to confirm that all terms and conditions specified in the GCC and the SCC have been accepted by the Bidder without any material deviation or reservation.

1.25.2 The Purchaser shall evaluate the technical aspects of the Bid submitted in accordance with ITB Clause 1.14, to confirm that all requirements specified in Schedule of Requirements of the Bidding Documents have been met without any material deviation or reservation.

1.25.3 If, after the examination of the terms and conditions and the technical evaluation, the Purchaser determines that the Bid is not substantially responsive in accordance with ITB Clause 1.23, it shall reject the Bid.

1.26 Conversion to Single Currency

1.26.1 To facilitate evaluation and comparison, the Purchaser will convert all bid prices expressed in the amounts in various currencies in which the bid prices are payable to Indian Rupees at the selling exchange rate established by any bank in India as notified in the Newspapers on the date of bid opening in the case of single part bidding and the rates prevalent on the date of opening of the Price Bids in the case of two - part bidding. For this purpose, exchange rate notified in www.xe.com or www.rbi.orq or any other website could also be used by the purchaser.

1.27 Evaluation and comparison of Bids

1.27.1 The Purchaser shall evaluate each bid that has been determined, up to this stage of the evaluation, to be substantially responsive.

1.27.2 To evaluate a Bid, the Purchaser shall only use all the factors, methodologies and criteria defined below. No other criteria or methodology shall be permitted.

1.27.3 The Bids shall be evaluated on the basis of final landing cost which shall be arrived as under:

For Goods manufactured in India.

- a. The price of the Goods quoted ex -works including all taxes already paid.
- b. GST and other taxes & duties like excise duty etc. which will be payable on the Goods if the contract is awarded.
- c. Charges for inland transportation, insurance and other local Services required for delivering the Goods the desired destination.
- d. The installation, commissioning and training charges including incidental Services, if any.

For Goods manufactured abroad

- a. The price of the Goods, quoted on EXW [duly packed] / FCA (named place of delivery abroad) or FOB (named port of shipment), as specified in the Bidding Documents.
- b. The charges for insurance and transportation of the Goods to the port/place of destination.
- c. The agency commission etc., if any.
- d. The installation, commissioning and training charges including incidental Services, if any.

1.27.4 The comparison between the indigenous and the foreign offers shall be made on FOR destination basis and CIF/ CIP basis respectively. However, the CIF/CIP prices quoted by any foreign Bidder shall be loaded further as under:

- a. Towards customs duty and other statutory levies as per applicable rates.
- b. Towards custom clearance, inland transportation etc.

1.27.5 In the case of Purchase of many items against one tender, which are not inter-dependent or, where compatibility is not a problem, normally the comparison would be made on ex works, (in case of indigenous items) and on FOB / FCA (in the case of imports) prices quoted by the firms for identifying the lowest quoting firm for each item.

1.27.6 Orders for imported stores need not necessarily be on FOB/FCA basis. Rather it can be on the basis of any of the INCOTERMS specified in ICC INCOTERMS 2010 as may be

amended from time to time by the ICC

1.27.7 Wherever the price quoted on FOB/FCA and CIF/CIP basis are the same, the Contract would be made on CIF / CIP basis only.

1.27.8 The GCC and the SCC shall specify the mode of transport i.e. whether by air/road /rail.

1.27.9 In case optional items are specified in the tendered specifications, the Purchaser reserves the right to buy or not to buy the optional items. In case the option is exercised to buy the optional items after Bid opening, then the cost of optional items would be included to ascertain the Lowest Evaluated Responsive Bid. In case, the option is exercised not to buy the optional items, then the cost of the optional items would not be included in ascertaining the Lowest Evaluated Responsive Bid.

1.28 Comparison of Bids

The Purchaser shall compare all substantially responsive Bids to determine the lowest-evaluated responsive bid, in accordance with ITB Clause 1.27.

1.29 Contacting the Purchaser

Subject to ITB Clause 1.21, no Bidder shall contact the Purchaser on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded.

Any effort by a Bidder to influence the Purchaser in its decisions on bid evaluation, bid comparison or contract award may result in rejection of the Bidder's bid.

1.30 Post qualification

1.30.1 In the absence of pre - qualification, the Purchaser will determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated responsive bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in ITB Clause 1.13.

1.30.2 The determination will take into account the eligibility criteria listed in the Bidding Documents and will be based up on Examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, as well as such other information as the Purchaser deems necessary and appropriate.

1.30.3 An affirmative determination will be a prerequisite for award of the contract to the Bidder. A negative determination will result in rejection of the bidder's bid.

F- Award of Contract

1.31 Negotiations

1.31.1 There shall not be any negotiation normally. Negotiations, if at all, shall be an exception and only in the case of items with limited source of supply. Negotiations shall be held with the lowest evaluated responsive Bidder. Counter offers tantamount to negotiations and shall be treated at par with negotiations in the case of one time purchases.

1.32 Award Criteria

1.32.1 Subject to ITB Clause 1.34 the Purchaser will award the contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined

to be the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the contract satisfactorily.

1.33 Purchaser's right to vary Quantities at Time of Award

1.33.1 The Purchaser reserves the right at the time of Contract award to increase or decrease the quantity of Goods and Services originally specified in the Schedule of Requirements without any change in unit price or other terms and conditions. Further, at the discretion of the Purchaser, the quantities in the contract may be enhanced by 30% within the delivery period.

1.34 Purchaser's right to accept any Bid and to reject any or All Bids

1.34.1 The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders.

1.35 Notification of Award

1.35.1 Prior to the expiration of the period of bid validity, the Purchaser will notify the successful Bidder in writing by registered letter or by cable or telex or fax or e-mail that the bid has been accepted and a separate Purchase Order shall follow through post.

1.35.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding contract.

1.35.3 Upon the successful bidder's furnishing of the signed contract form and performance security pursuant to ITB clause 1.38, the purchaser will promptly notify each unsuccessful bidder and will discharge its bid security

1.36 Signing of Contract

1.36.1 Promptly after notification, the Purchaser shall send the successful Bidder the Agreement/Purchase Order.

1.36.2 Within Fifteen (15) days of date of the Agreement / Purchase Order, the successful Bidder shall sign, date, and return it to the Purchaser.

1.37 Order Acknowledgement

1.37.1 The successful Bidder should submit Order Acknowledgement within 15 days from the date of issue of the Purchase Order, failing which it shall be presumed that the Supplier is not interested and his Bid Security is liable to be forfeited pursuant to clause 1.15.11 of ITB.

1.37.2 The Order Acknowledgement must be received within 15 days. However, the Purchaser has the powers to extend the time frame for submission of Order Acknowledgement and submission of Performance Security (PS). Even after extension of time, if the Order Acknowledgement /PS are not received, the contract shall be cancelled and limited tenders irrespective of the value shall be invited from the responding firms after forfeiting the Bid Security of the defaulting firm, where applicable, provided there is no change in specifications. In such cases the defaulting firm shall not be considered again for re-tendering in the particular case.

1.38 Performance Security

1.38.1 Within 21 days of receipt of the notification of award/PO, the Supplier shall furnish Performance Security in the amount specified in SCC, valid till 60 days after the warranty

period. Alternatively, the PS may also be submitted at the time of release of final payment in cases where part payment is made against delivery & part on installation. The PS ,where applicable, shall be submitted in advance for orders where full payment is to be made on Letter of Credit (LC) or on delivery. In this case, submission of PS at the time of negotiation of documents through Bank would be stipulated as a condition in the LC and the BS should be kept valid till such time the PS is submitted.

1.38.2 The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

1.38.3 The Performance Security shall be denominated in Indian Rupees for the offers received for supplies within India and denominated in the currency of the contract in the case of offers received for supply from foreign countries.

1.38.4 In the case of imports, the PS may be submitted either by the Principal or by the Indian agent and, in the case of purchases from indigenous sources, the PS may be submitted by either the Manufacturer or their authorized dealer/Bidder.

1.38.5 The Performance Security shall be in one of the following forms:

- a. A Bank Guarantee [BG] or Stand- by Letter of Credit [SLC] issued by a Nationalized/Scheduled bank located in India or a Foreign bank [i.e. a bank located outside India] with preferably its operating branch in India. The BG shall be issued in the form provided with the Bidding Documents. In case of Performance Security being furnished in the shape of Bank Guarantee or Stand - by Letter of Credit issued by any foreign bank, the said BG/SLC shall have to be confirmed. All confirmation and other bank charges in this respect shall be borne by the Supplier. Purchaser shall independently verify the authenticity of the BGs from the issuing / confirming / controlling banks. Or;
- b. Online payment in favour of the purchaser, or;
- c. A Fixed Deposit Receipt pledged in favour of the Purchaser.

1.38.6 The Performance Security will be discharged by the Purchaser and returned to the Supplier not later than 60 days following the date of completion of the Supplier's performance obligations, including any warranty obligations, unless specified otherwise in SCC, without levy of any interest.

1.38.7 In the event of any contract amendment, the Supplier shall, within 21 days of receipt of such amendment, furnish the amendment to the Performance Security, rendering the same valid for the duration of the contract, as amended for further period of 60 days thereafter.

1.38.8 The Order Acknowledgement should be received within 15 days from the date of notification of award. However, the Purchaser has the powers to extend the time frame for submission of Order Acknowledgement and submission of Performance Security (PS). Even after extension of time, if the Order Acknowledgement /PS are not received, the contract shall be cancelled and limited tenders irrespective of the value would be invited from the responding firms after forfeiting the Bid Security of the defaulting firm, where applicable provided there is no change in specifications. In such cases the defaulting firm would not be considered again for re- tendering in the particular case.

CHAPTER-2
CONDITIONS OF CONTRACT
A. GENERAL CONDITIONS OF CONTRACT (GCC)

Table of Contents

| Sl. No. | Clause |
|---------|---|
| 2.1. | Definitions |
| 2.2. | Contract Documents |
| 2.3. | Fraud and Corruption |
| 2.4. | Joint Venture, Consortium or Association |
| 2.5. | Scope of Supply |
| 2.6. | Supplier's Responsibilities |
| 2.7. | Contract price |
| 2.8. | Copy Right |
| 2.9. | Application |
| 2.10. | Standards |
| 2.11. | Use of Contract Documents and Information |
| 2.12. | Patent Indemnity |
| 2.13. | Performance Security |
| 2.14. | Inspections and Tests |
| 2.15. | Packing |
| 2.16. | Delivery and Documents |
| 2.17. | Insurance |
| 2.18. | Transportation |
| 2.19. | Incidental Services |
| 2.20. | Spare Parts |
| 2.21. | Warranty |
| 2.22. | Terms of Payment |
| 2.23. | Change Orders and Contract Amendments |
| 2.24. | Assignment |
| 2.25. | Subcontracts |
| 2.26. | Extension of time |
| 2.27. | Penalty Clause |
| 2.28. | Termination for default |
| 2.29. | Force Majeure |
| 2.30. | Termination for insolvency |
| 2.31. | Termination for Convenience |
| 2.32. | Settlements of Disputes |
| 2.33. | Governing language |
| 2.34. | Applicable law |
| 2.35. | Notice |
| 2.36. | Taxes and Duties |
| 2.37. | Right to use Defective Goods |
| 2.38. | Protection against Damage |
| 2.39. | Site preparation and installation |

2.1 Definitions

2.1.1 The following words and expressions shall have the meanings hereby assigned to them:

- (a) "Contract" means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein.
- (b) "Contract Documents" means the documents listed in the Contract Agreement, including any amendments thereto.
- (c) "Contract Price" means the price payable to the Supplier as specified in the Contract Agreement, subject to such additions and adjustments
- (d) "Day Means" calendar day
- (e) "Completion" means the fulfillment of the related services by the Supplier in accordance with the terms and conditions set forth in the Contract.
- (f) "GCC" means the General Conditions of Contract
- (g) "Goods" means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.
- (h) "Related Service", means the services incidental to the supply of the Goods, such as transportation, insurance, installation, training and initial maintenance and other such obligations of the Supplier under the Contract.
- (i) "SCC" means the Special Conditions of Contract.
- (j) "Subcontractor" means any natural person, private or government entity, or a combination of the above, to whom any part of the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier.
- (k) "Supplier" means the natural person, private or government entity, or a combination of the above, whose bid to perform the Contract has been accepted by the Purchaser and is named as such in the Contract Agreement.
- (l) The "Institute" means CMTI, Central Manufacturing Technology Institute registered under the Societies Registration Act, 1860 of Govt. Of India having its registered office at Tumkur Road, Bangalore - 560022, Karnataka, India and the "Purchaser" also means the above Institute situated at the above address in India as specified in SCC.
- (m) "Final Destination", where applicable, means the place named in the SCC.

2.2. Contract Documents

Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The Contract Agreement shall be read as a whole.

2.3 Fraud and Corruption

2.3.1 The Purchaser requires that Bidders, Suppliers, contractors and consultants, if any, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy,

- (a) The terms set forth below are defined as follows:
 - (i) "**Corrupt practice**" means the offering, giving, receiving, or soliciting,

- directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;
- (ii) **“Fraudulent practice”** means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;
 - (iii) **“Collusive practice”** Means a scheme or arrangement between two or more Bidders, with or without the knowledge of the Borrower, designed to establish bid prices at artificial, noncompetitive levels; and
 - (iv) **“Coercive practice”** means harming or threatening to harm, directly or indirectly, persons or their Property to influence their participation in the procurement process or affect the execution of a contract;
- (b) The Purchaser will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question;

2.4 Joint Venture, Consortium or Association

2.4.1 If the Supplier is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to the Purchaser for the fulfillment of the provisions of the Contract and shall designate one party to act as a leader with authority to bind the joint venture, consortium, or association. The composition or the constitution of the joint venture, consortium, or association shall not be altered without the prior consent of the Purchaser.

2.5 Scope of Supply

2.5.1 The Goods and Related Services to be supplied shall be as specified in the Schedule of Requirements.

2.6. Suppliers’ Responsibility

2.6.1 The Supplier shall supply all the Goods and Related Services included in the Scope of Supply in accordance with Scope of Supply Clause of the GCC, and the Delivery and Completion Schedule, as per GCC Clause relating to delivery and document.

2.7 Contract price

2.7.1 Prices charged by the Supplier for the Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid.

2.8 Copvright

2.8.1 The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including Suppliers of materials, the copyright in such materials shall remain vested in such third party

2.9 Application

2.9.1 These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

2.10Standards

2.10.1The Goods supplied and Services rendered under this Contract shall conform to

the standards mentioned in the Technical Specifications and Schedule of Requirements, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods' country of origin and such standards shall be the latest issued by the concerned institution.

2.11 Use of Contract Documents and Information

2.11.1 The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far, as may be necessary for purposes of such performance.

2.11.2 The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information enumerated above except for purposes of performing the Contract.

2.11.3 Any document, other than the Contract itself, enumerated above shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Supplier's performance under the Contract if so required by the Purchaser.

2.12 Patent Indemnity

2.12.1 The Supplier shall, subject to the Purchaser's compliance with GCC Sub-Clause 2.12.2, indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of:

- (a) The installation of the Goods by the Supplier or the use of the Goods in India; and
- (b) The sale in any country of the products produced by the Goods.

2.12.2 If any proceedings are brought or any claim is made against the Purchaser, the Purchaser shall promptly give the Supplier a notice thereof, and the Supplier may as its own expense and in the Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claims.

2.13 Performance Security

2.13.1 Within 21 days of receipt of the notification of award / PO, the Supplier shall furnish Performance Security in the amount specified in SCC, valid till 60 days after the warranty period. Alternatively, the PS may also be submitted at the time of release of final payment in cases where part payment is made against delivery & part on installation. The PS, where applicable, shall be submitted in advance for orders where full payment is to be made on Letter of Credit (LC) or on delivery. In this case, submission of PS at the time of negotiation of documents through Bank would be

stipulated as a condition in the LC and the BS should be kept valid till such time the PS is submitted.

2.13.2 The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

2.13.3 The Performance Security shall be denominated in Indian Rupees for the offers received for supplies within India and denominated in the currency of the contract in the case of offers received for supply from foreign countries.

2.13.4 In the case of imports, the PS may be submitted either by the principal or by the Indian agent and, in the case of purchases from indigenous sources, the PS may be submitted by either the Manufacturer or their authorized dealer/Bidder.

2.13.5 The Performance Security shall be in one of the following forms:

- (a) A Bank Guarantee [BG] or Stand - by Letter of Credit [SLC] issued by a Nationalized/Scheduled bank located in India or a Foreign bank with preferably its operating branch in India. The BG shall be issued in the form provided with the Bidding Documents. In case of Performance Security being furnished in the shape of Bank Guarantee or Stand - by Letter of Credit issued by any foreign bank, the said BG/SLC shall have to be confirmed by any nationalized bank of India. All confirmation and other bank charges in this respect shall be borne by the Supplier. Purchaser shall independently verify the authenticity of the BGs from the issuing / confirming / controlling banks. Or;
- (b) Online payment in favour of the Purchaser. Or;
- (c) A Fixed Deposit Receipt pledged in favour of the Purchaser.

2.13.6 The Performance Security will be discharged by the Purchaser and returned to the Supplier not later than 60 days following the date of completion of the Supplier's performance obligations, including any warranty obligations, unless specified otherwise in SCC, without levy of any interest.

2.13.7 In the event of any contract amendment, the Supplier shall, within 21 days of receipt of such amendment, furnish the amendment to the Performance Security, rendering the same valid for the duration of the contract, as amended for further period of 60 days thereafter.

2.13.8 The order confirmation should be received within 15 days from the date of notification of award. However, the Purchaser has the powers to extend the time frame for submission of order confirmation and submission of Performance Security (PS). Even after extension of time, if the order confirmation /PS are not received, the contract shall be cancelled and limited tenders irrespective of the value would be invited from the responding firms after forfeiting the Bid Security of the defaulting firm, where applicable provided there is no change in specifications. In such cases the defaulting firm would not be considered again for re- tendering in the particular case.

2.14 Inspections and Tests

2.14.1 The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are specified in the SCC or as discussed and agreed to during the course of finalization of contract.

2.14.2 The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Purchaser. The Technical Specifications and SCC shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing in a timely manner of the identity of any representatives retained for these purposes.

2.14.3 The inspections and tests may be conducted on the premises of the Supplier or its subcontract or(s), at the point of delivery and/or at the Goods final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data - shall be furnished to the inspectors at no charge to the Purchaser.

2.14.4 Whenever the Supplier is ready to carry out any such test and inspection, it shall give reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or Manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.

2.14.5 Should any inspected or tested Goods fail to conform to the specifications, the Purchase or may reject the Goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

2.14.6 The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at final destination shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment.

2.14.7 The Supplier shall provide the Purchaser with a report of the results of any such test and/or inspection.

2.18.8 With a view to ensure that claims on insurance companies, if any, are lodged in time, the Bidders and /or the Indian agent shall be responsible for follow up with their principals for ascertaining the dispatch details and informing the same to the Purchaser and he shall also liaise with the Purchaser to ascertain the arrival of the consignment after clearance so that immediately thereafter in his presence the consignment could be opened and the insurance claim be lodged, if required, without any loss of time. Any delay on the part of the Bidder/ Indian Agent would be viewed seriously and he shall be directly responsible for any loss sustained by the Purchaser on the event of the delay.

2.15 Packing

2.15.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

2.15.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements, if any, specified in SCC and in any subsequent

instruction ordered by the Purchaser.

2.16 Delivery and Documents

2.16.1 Delivery of the Goods and completion and related Services shall be made by the Supplier in accordance with the terms specified by the Purchaser in the contract. The details of shipping and/ or other documents to be furnished by the Supplier are specified in SCC.

2.16.2 The terms FOB, FCA, CIF, CIP etc. shall be governed by the rules prescribed in the current edition of the INCOTERMS published by the International Chambers of Commerce, Paris.

2.16.3 The mode of transportation shall be as specified in SCC.

2.17 Insurance

2.17.1 Should the Purchaser elect to buy on CIF/CIP basis, the Goods supplied under the Contract shall be fully insured in Indian Rupees against any loss or damage incidental to manufacture or acquisition, transportation, Storage and delivery in the manner specified in SCC.

2.17.2 Where delivery of the Goods is required by the Purchaser on CIF or CIP basis the Supplier shall arrange and pay for Cargo Insurance, naming the Purchaser as beneficiary and initiate & pursue claims till settlement, on the event of any loss or damage.

2.17.3 Where delivery is on FOB or FCA basis, insurance would be the responsibility of the Purchaser.

2.17.4 With a view to ensure that claims on insurance companies, if any, are lodged in time, the Bidders and /or the Indian agent shall be responsible for follow up with their principals for ascertaining the dispatch details and informing the same to the Purchaser and he shall also liaise with the Purchaser to ascertain the arrival of the consignment after clearance so that immediately thereafter in his presence the consignment could be opened and the insurance claim be lodged, if required, without any loss of time. Any delay on the part of the Bidder/Indian Agent would be viewed seriously and he shall be directly responsible for any loss sustained by the Purchaser on the event of the delay.

2.18 Transportation

2.18.1 Where the Supplier is required under the Contract to deliver the Goods FOB, transport of the Goods, up to and including the point of putting the Goods on board the vessel at the specified port of loading, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract price. Where the Supplier is required under the Contract to deliver the Goods FCA, transport of the Goods and delivery into the custody of the carrier at the place named by the Purchaser or other agreed point shall be arranged and paid for by the supplier, and the cost thereof shall be included in the Contract price.

2.18.2 Where the Supplier is required under the Contract to deliver the Goods CIF or CIP, transport of the Goods to the port of destination or such other named place of destination in the Purchaser's country, as shall be specified in the Contract shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.

2.18.3 In the case of supplies from within India, where the Supplier is required under the

Contract to transport the Goods to a specified destination in India, defined as the Final Destination, transport to such destination, including insurance and storage, as specified in the Contract, shall be arranged by the Supplier, and the related costs shall be included in the Contract Price.

2.19 Incidental Services

2.19.1 The Supplier may be required to provide any or all of the Services, if any, specified in SCC.

2.20 Spare Parts

2.20.1 The Supplier shall be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

- (a) Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
- (b) In the event of termination of production of the spare parts:
 - (i) Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and
 - (ii) Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.
- (c) In case of OEM Supplier companies merges, amalgamation, take over or bifurcation etc., it is the responsibility of the Original Supplier to maintain the spare parts requirements for 10 years with the new Entity. Failing which Performance Security will be forfeited.

2.21 Warranty

2.21.1 The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

2.21.2 The Supplier further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in India.

2.12.3 Unless otherwise specified in the SCC or technical specifications, the warranty shall remain valid as specified in the contract.

2.12.4 The Purchaser shall give notice to the Supplier stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect such defects.

2.21.5 Upon receipt of such notice, the Supplier shall, within a reasonable period of time, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Purchaser.

2.21.6 If having been notified, the Supplier fails to remedy the defect within the reasonable period of time, the Purchaser expense and without prejudice to any other

rights which the Purchaser may have against the Supplier under the Contract.

2.21.7 Goods requiring warranty replacements must be replaced on free of cost basis to the Purchaser at Purchaser site.

2.22 Terms of Payment

2.22.1 The method and conditions of payment to be made to the Supplier under this Contract shall be as specified in the SCC.

2.22.2 The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and the Services performed, and by documents, submitted pursuant to Delivery and document Clause of the GCC and upon fulfillment of other obligations stipulated in the contract.

2.22.3 Payments shall be made promptly by the Purchaser within a reasonable time after submission of the invoice or claim by the Supplier.

2.22.4 Payment shall be made in currency as indicated in the contract.

2.22.5 No advance payment will be permitted at any stage

2.23 Change Orders and Contract Amendments.

2.23.1 The Purchaser may at any time, by written order given to the Supplier pursuant to Clause on Notices of the GCC make changes within the general scope of the Contract in any one or more of the following:

- (a) Drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
- (b) The method of shipping or packing;
- (c) The place of delivery; and/or
- (d) The Services to be provided by the Supplier.
- (e) The delivery schedule.

2.23.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within fifteen (15) days from the date of the Supplier's receipt of the Purchaser's change order.

2.23.3 No variation or modification in the terms of the contract shall be made except by written amendment signed by the parties.

2.24 Assignment

2.24.1 The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

2.25 Sub contracts

2.25.1 The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this Contract if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the Supplier from any liability or duties or obligation under the Contract.

2.26 Extension of time

2.26.1 Delivery of the Goods and performance of the Services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser.

2.26.2 If at any time during performance of the Contract, the Supplier or its sub-contractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may, at its discretion, extend the suppliers time for performance with or without penalty, in which case the extension shall be ratified by the parties by amendment of the Contract.

2.26.3 Except as provided under the Force Majeure clause of the GCC, a delay by the Supplier in the performance of its delivery Obligations shall render the Supplier liable to the imposition of penalty pursuant to Penalty Clause of the GCC unless an extension of time is agreed upon pursuant to above clause without the application of penalty clause.

2.27 Penalty clause

2.27.1 Subject to GCC Clause on Force Majeure, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as penalty, a sum equivalent to the percentage specified in SCC of the delivered price of the delayed Goods or unperformed Services or contract value for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the Percentage specified in SCC. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to GCC Clause on Termination for Default. The SCC shall also indicate the basis for ascertaining the value on which the penalty shall be applicable.

2.28 Termination for Default

2.28.1 The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part

- (a) If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause on Extension of Time; or
- (b) If the Supplier fails to perform any other obligation(s) under the Contract; or
- (c) If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent or collusive or coercive practices as defined in GCC Clause on Fraud or Corrupt ion in competing for or in executing the Contract.

2.28.2 In the event the Purchaser terminates the contract in whole or in part, he may take recourse to any one or more of the following action:

- (a) The Performance Security is to be forfeited;
- (b) The Purchaser may procure, upon such terms and in such manner as it deems appropriate, stores similar to those undelivered, and the Supplier shall be liable for all available actions against it in terms of the contract.
- (c) However, the Supplier shall continue to perform the contract to the extent not terminated

2.29 Force Majeure

2.29.1 Notwithstanding the provisions of GCC Clauses relating to extension of time, penalty and Termination for Default the Supplier shall not be liable for forfeiture of its Performance Security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

2.29.2 For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Supplier that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

2.29.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof within 21 days of its occurrence. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

2.29.4 If the performance in whole or in part or any obligations under the contract is prevented or delayed by any reason of force majeure for a period exceeding 60 days, either party may at its option terminate the contract without any financial repercussions on either side.

2.30 Termination for Insolvency

2.30.1 The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the Purchaser.

2.31 Termination for Convenience

2.31.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

2.31.2 The Goods that are complete and ready for shipment within 30 days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect:

- (a) To have any portion completed and delivered at the Contract terms and prices
- (b) To cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and for materials and parts previously procured by the Supplier.

2.32 Settlement of Disputes

The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

2.32.2 If, after twenty - one (21) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.

2.32.3 The dispute settlement mechanism/arbitration proceedings shall be concluded as under:

- (a) In case of Dispute or difference arising between the Purchaser and a domestic Supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re - enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director, Central Manufacturing Technology Institute and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.
- (b) In the case of a dispute between the Purchaser and a Foreign Supplier, the dispute shall be settled by arbitration In accordance with provision of sub - clause (a) above. But if this is not acceptable to the Supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

2.32.4 The venue of the arbitration shall be the place from where the purchase order or contract is issued.

2.32.5 Notwithstanding any reference to arbitration herein,

- (a) The parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
- (b) The Purchaser shall pay the Supplier any monies due the Supplier.

2.33 Governing Language

2.33.1 The contract shall be written in English language which shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the English language only.

2.34 Applicable Law

2.34.1 The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction as specified in SCC.

2.35 Notices

2.35.1 Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by cable, telex, FAX, e-mail or and confirmed in writing to the other party's address specified in the SCC.

2.35.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

2.36 Taxes and Duties

2.36.1 For Goods manufactured outside India, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside India.

2.36.2 For Goods Manufactured within India, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred till its final manufacture/production.

2.36.3 If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in India, the Purchaser shall make its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.

2.37 Right to use Defective Goods

2.37.1 If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the Goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such Goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the purchaser's operation.

2.38 Protection against Damage

2.38.1 The system shall not be prone to damage during power failures and trip outs. The normal voltage and frequency conditions available at site as under:

- a) Voltage 230 -V Single phase/ 415 V Three phase (+ 10%)
- b) Frequency 50 Hz.

2.39 Site preparation and installation

The Purchaser is solely responsible for the construction of the equipment sites in compliance with the technical and environmental specifications defined by the Supplier. The Purchaser will designate the installation sites before the scheduled installation date to allow the Supplier to perform a site inspection to verify the appropriateness of the sites before the installation of the Equipment, if required. The Supplier shall inform the Purchaser about the site preparation, if any, needed for installation, of the Goods at the Purchasers site immediately after notification of award/contract.

B.SPECIAL CONDITIONS OF CONTRACT (SCC)

The following Special Conditions of Contract (SCC) shall supplement and / or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

| | |
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| GCC 2.1(l) | The <i>Purchaser</i> is: CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India |
| GCC 2.1 (m) | The <i>Final Destination</i> is: CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India, |
| GCC 2.13.1 | <i>Performance Security/ Performance Bank Guarantee</i> The amount of the Performance Security shall be 5% (Five percent) of the contract value. |
| GCC 2.14.1 | <p><i>Inspection and Acceptance Tests at Final Destination:</i></p> <p>The Inspection and Tests prior to shipment of Goods and at final acceptance are as follows:</p> <p>After the Goods are manufactured and assembled, Pre- Dispatch Inspection and testing of the Goods shall be carried out at the Supplier’s plant by the Supplier, prior to shipment to check whether the goods are in conformity with the technical specifications. Manufacturer’s Test Certificate with data sheet shall be issued to this effect and submitted along with the delivery documents. The purchaser reserves the options to be present at the Supplier’s premises during such inspection and testing. The Technical Specifications shall specify whether any Pre- Dispatch inspection is required and the nature of such inspection.</p> <p>The Inspection and Acceptance Tests at Buyer’s site (Final Destination) are as follows:</p> <p>The acceptance test will be conducted by the Purchaser, their consultant or other such person nominated by the Purchaser at its option after the equipment is installed at Purchaser’s site in the presence of Supplier’s representatives. The acceptance will involve trouble free operation. There shall not be any additional charges for carrying out acceptance test. No malfunction, partial or complete failure of any part of the equipment is expected to occur. The Supplier shall maintain necessary log in respect of the result of the test to establish to the entire satisfaction of the Purchaser, the successful completion of the test specified. In the event of the ordered item failing to pass the acceptance test, a period not exceeding two weeks will be given to rectify the defects and clear the acceptance test, failing which, the Purchaser reserves the right to get the equipment replaced by the Supplier at no extra cost to the Purchaser. Successful conduct and conclusion of the acceptance test for the installed Goods and equipments shall also be the responsibility and at the cost of the Supplier. Before the Goods and equipments are taken over by the Purchaser, the Supplier shall supply operation and maintenance Manuals together with Drawings of the Goods and equipments built. These shall be in such details as will enable the Purchase to operate, maintain, adjust and repair all parts of the works as stated in the specifications. The Manuals and Drawings shall be in the ruling language (English) and in such form and numbers as stated in the Contract. Unless and otherwise agreed, the Goods and equipment shall not be considered to be completed for the purposes of taking over until such Manuals and Drawing have been supplied to the Purchaser. On successful completion of acceptability test, receipt of deliverables, etc. and after the Purchaser is satisfied with the working of the equipment, the acceptance certificate signed by the Supplier and the representative of the Purchaser will be issued. The date on which such certificate is signed shall be deemed to be the date of successful commissioning of the equipment.</p> |

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| GCC 2.15.2 | <p>Packing</p> <p>The marking and documentation within and outside the packages shall be:</p> <p>Each package should have a packing list within it detailing the part No.(s), description, quantity etc.</p> <p>Outside each package, the contract No., the name and address of the Purchaser and the final destination should be indicated on all sides and top.</p> <p>Each package should be marked as 1/x, 2/x, 3/xx/x, where “x” is the total no of packages contained in the consignment.</p> <p>All the sides and top of each package should carry an appropriate indication / label / stickers indicating the precautions to be taken while handling / storage</p> |
| GCC 2.16.1 | <p>Shipping/Dispatch documents</p> <p>Details of Shipping and other Documents to be furnished by the Supplier are</p> <p><u>A. For Goods manufactured within India</u></p> <p>Within 24 hours of dispatch, the Supplier shall notify the Purchaser the complete details of dispatch and also supply following documents by registered post / speed post and copies thereof by FAX/E-mail.</p> <p>(a) Two copies of Supplier’s Invoice indicating, inter - alia description and specification of the Goods, quantity, unit price, total value;</p> <p>(b) Packing list;</p> <p>(c) Certificate of country of origin;</p> <p>(d) Insurance certificate, if required under the contract;</p> <p>(e) Railway receipt/Consignment note;</p> <p>(f) Manufacturer’s guarantee certificate and in- house inspection certificate;</p> <p>(g) Inspection Certificate issued by Purchaser’s inspector, if any and</p> <p>(h) Any other document(s) as and when required in terms of the contract.</p> <p>Note: 1. The nomenclature used for the item description in the invoices(s), packing list(s) and the delivery note(s) etc. Should be identical to that used in the contract. The dispatch particulars including the name of the transporter should also be mentioned in the Invoice(s)</p> <p>Note: 2. The above documents should be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses</p> <p><u>B1 For Goods manufactured abroad</u></p> <p>Within 24 hours of dispatch, the Supplier shall notify the Purchaser the complete details of dispatch and also supply following documents by Registered Post/courier and copies thereof by FAX.</p> <p>(a) Two copies of Supplier’s Invoice giving full details of the Goods including quantity, value, etc.;</p> <p>(b) Packing list;</p> <p>(c) Certificate of country of origin issued by a local chamber of commerce;</p> <p>(d) Manufacturer’s guarantee and Inspection Certificate;</p> <p>(e) Inspection certificate issued by the Purchaser’s Inspector, if any;</p> <p>(f) Insurance Certificate, if required under the contract;</p> <p>(g) Name of the Vessel/Carrier</p> <p>(h) Port of Loading;</p> |

| | |
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| | <p>(i) Date of Shipment;</p> <p>(j) Port of Discharge & expected date of arrival of Goods and</p> <p>(k) Any other document(s) as and when required in terms of the contract.</p> <p>Note: 1. The nomenclature used for the item description in the invoices(s), packing list(s) and the delivery note(s) etc. should be identical to that used in the contract. The dispatch particulars including the name of the transporter should also be mentioned in the Invoice(s)</p> <p>Note: 2. The above documents should be received by the Purchaser before arrival of the Goods and, if not received, the Supplier will be responsible for any consequent expenses</p> <p>Note: For this order the crane should be Made in India only.</p> |
| GCC 2.16.3 | <p>Transportation/ Dispatch</p> <p>In case of supplies from within India, the mode of transportation shall be by Air/Rail/Road. In case of supplies from abroad, the mode of transportation shall be by Air. For supplies from abroad, Supplier shall ensure that the Goods are transported through the authorized freight forwarder of Purchaser, whose name and other contact details shall be made available to Supplier.</p> <p>Purchaser shall not accept dispatch / transportation of Goods through any other forwarder.</p> <p>Payment by L/C shall only be released against presentation of the House Air Way Bill issued by the authorized freight forwarder of Purchaser.</p> |
| GCC 2.17.1 | <p>Insurance</p> <p>The Insurance shall be for an amount equal to the 110% of the CIF or CIP value of the contract from within "warehouse to warehouse (final destination)" on "ALL- RISKS basis including strikes, riots and civil commotion</p> |
| GCC 2.19.1 | <p>Incidental Services</p> <p>The Incidental Services to be provided are:</p> <ol style="list-style-type: none"> 1. Pre- Dispatch Inspection. 2. Installation and Commissioning of Goods / Equipment. 3. Training on use/application. 4. Warranty Support [to be effective from the date of final acceptance at site , CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru, Karnataka, India-560022] <p>The Cost of the above incidental services shall be included in the Contract Price and a Price Break-up shall also be given</p> |
| GCC 2.21.3 | <p>Warranty</p> <p>The period of validity of Warranty shall be effective from the date of acceptance of the Goods to the entire satisfaction of the Purchaser. The Warranty shall be Comprehensive in nature. The warranty period shall be for the period as stipulated in the Technical Specifications.</p> |
| GCC 2.22.1 | <p>Payment</p> <p>The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:</p> <p>Payment:</p> <p>Payment for Goods and Services supplied shall be made in Indian Rupees, as follows:</p> <ol style="list-style-type: none"> 1. 80% payment for crane (Part A- SI No.1) will be made after successful supply of Crane at CMTI. 2. 80% payment (Part A SI No.2 to 5) will be made after completion of installation of all items. 3. Balance 20% total P O value will be made after completion of commissioning, testing, validation and certification from statutory bodies. |

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| GCC 2.27.1 | <p>Liquidated Damages</p> <p>(i) The penalty shall be: [0.5%] Percent per week or part of a week towards late delivery and towards delay in installation and commissioning.</p> <p>(ii) The maximum amount of liquidated damages shall be: [10 %] TEN Percent. The liquidated damages shall be levied on the delivered price of the delayed Goods or unperformed Services or contract value.</p> |
| GCC 2.34.1 | The place of jurisdiction is BENGALURU [KARNATAKA] |
| GCC 2.35.1 | <p>For notices, the Purchaser's address is:</p> <p>Attention: GH(Purchase & Stores)</p> <p>CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India</p> <p>Email : purchase@cmti.res.in</p> |

Additional conditions

1. The Tender is strictly on Item Rate basis.
2. Bidders are advised to visit the site at their cost, conduct survey of existing conditions so as to familiarize themselves with the site conditions, nature of works etc. and get all clarifications as may be necessary from CMTI before quoting the rates.
3. Quantities mentioned in the schedule of quantities may vary to any extent or may be deleted without assigning any reasons and as such, the rates quoted should be firm, workable, reasonable and should include all kinds of Taxes, Duties, Work Contract Tax, Octroi, GST etc. as applicable, overheads and profit etc. No separate charges for carriage or labour would be made. There is no question of extra payment above the quoted rate under any circumstance. In case of any variation in quantity or value, the same will not be made as a subject matter for dispute by the bidder.
4. No escalation shall be allowed on the rates of this contract.
5. The BIS / CPWD specifications shall be followed as applicable and in the absence of the same the decision of CMTI shall be final. The work has to be carried out only by OEMs or principles who are possessing valid authorization from the OEMs.
6. The contractor shall at the instructions of the CMTI within such time as notified, open up for inspection any work and should the contractor refuse or neglect to comply with such instructions, the CMTI may employ other workman to open of the same. Such work if it is found not in accordance with approved specifications, or the instructions, expenses of opening up and redoing if required shall be borne by and recoverable from the Contractor from any money due or which may become due to the contractor.
7. The successful tenderer is bound to carry out any or all items of work necessary for the completion of the job even though such items are not included in the quantities and rates
8. The Contractor shall make necessary arrangement for watch and ward.
9. The bidders should quote their rates strictly adhering to Terms and Conditions stipulated in the Tender Document. Unsolicited correspondence after opening of the Tender shall not be entertained.
10. No bidder will be allowed to withdraw his Tender during the validity period.
11. Rates should be filled in the Bidders Schedule of Quantity in the Price –Bid neatly and no correction shall be made. Corrections, if any should be duly authenticated by the signing authority. The rates quoted should be

written legibly in words and figures. If on check, differences are observed between the rates given by the Contractor in words and figures or in the amount worked out by him, the following procedure shall be followed.

a. When there is a difference between the rates in figures and in words, the rates, which corresponds to the amounts worked out by the Contractor shall be taken as correct.

b. When the amount of an item is not worked out by the Contractor or it does not correspond with the rate written either in figures or in words, then the rate quoted by the Contractor in words shall be taken as correct.

c. When the rates quoted by the Contractor in figures and in words tallies, but the amount is not worked out correctly, the rate quoted by the Contractor shall be taken as correct and not the amount.

12. No advance shall be paid towards mobilization and cost of materials.

13. No compensation shall be admissible for any loss suffered by the Contractor during the execution of the work. It shall be the Contractor's sole responsibility to protect CMTI's staff, his employees and property against accidents from any cause and he shall indemnify CMTI against any claims for damage for injury to person or property, resulting from any such accidents with necessary Insurance cover.

14. Any damages caused to the building / premises during the execution of the work shall be made good by the Contractor at his risk and cost and if necessary, through suitable Insurance cover.

15. The work is to be undertaken only during working days and during the office timings. The work cannot be undertaken on Saturday, Sunday and any declared holidays except with the written approval of the CMTI.

16. The contractor has to make his own arrangement of stay for his employees outside the CMTI premises.

17. The Contractor shall use necessary safety equipment and maintain all safety measures during the execution of works and ensure compliance of Safety Code as per Rules and Regulations in force.

18. The Contractor shall engage necessary qualified and experienced supervisory staff at his cost during the execution of the work for attending to day to day affairs.

19. The Contractor shall submit the bills along with the accepted and jointly recorded measurement sheets duly certified by CMTI's Engineer.

20. The Contractor should have necessary Contract License and comply with the Labour Laws as applicable.

21. Notwithstanding anything stated above, CMTI reserves the right to assess the bidder's capability and capacity to perform the contract, should the circumstances warrant such assessment in the overall interest of CMTI.

22. The decision of CMTI in awarding the work shall be final and cannot be subjected to arbitration.

23. CMTI reserves the right to accept / negotiate / reject any Quotation either in whole or in part without assigning any reasons therefore whatsoever and without entering into any further correspondence and hence, CMTI shall be under no obligation to accept the lowest or any other Quotations received in response to this Quotation. The decision of CMTI in this regard shall be final and indisputable.

24. CMTI reserves the right of supersession of any of the conditions stipulated in the Quotation Document.

25. The contractor shall require shifting some of the furniture, electrical items, etc., to some other places within the office premises during the time of work and may also be required to place them in the appropriate place after completing the work. This may be factored while quoting the bid, no extra payment shall be made for those works, beyond bid price.

26. There will be other works being carried out by various contractors in the said office premises. Hence Care should be taken not to damage any other works and also to coordinate with the other work contractors.

27. The payment for all works done and for all materials supplied shall be made on the basis of detailed measurements recorded by CMTI.

28. Testing of Materials: The contractors are required to submit samples of various materials, items, fittings, etc for the approval of the CMTI. The materials of brand names, if any, given in the contract shall only be selected.

29. Final bill: The final bill has to be submitted by the contractors as early as possible after the completion of the work along with completion of recording the final measurements.

30. Co-ordination and Monitoring: The contractor's site supervisor/ engineer will be coordinating and monitoring the project and report the progress to CMTI on weekly basis.

31. Idle Labour Clause:

I. In case the proposed work is held up for any site conditions not attributable to the contractor or for any decisions/ instructions/ want of details from CMTI or for any of the untoward situation, the contractor shall be allowed reasonable extension of time by the CMTI but any additional/ extra claim for payment to idle labour/ tools/ establishment/ plant etc, during this period shall not be the liability of the CMTI. The quoted rates should include for all such contingencies.

II. Whatever the reasons be, no claim for idle labour, additional establishment, cost of labour charges of tools and plants would be entertained under any circumstances.

CHAPTER-3

SCHEDULE OF REQUIREMENTS

TO BE FILLED BY BIDDER AND ENCLOSED WITH THE TECHNO- COMMERCIAL BID

| Brief Description of Goods and Services | Quantity |
|---|--|
| Design, Manufacturing, Supply, Installation, Testing and Commissioning of 80/20 Ton Capacity double girder EOT crane at New Workshop CMTI [Technical Specifications and Other Details as per Chapter 4 of this Bidding Documents] | As per Bill of quantity |
| Final Destination | CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru - 560022, Karnataka, India |
| Period of Delivery shall count from | < TO BE FILLED BY BIDDER> |
| Time period by which the goods shall be ready at manufacturer's site for pre-dispatch inspection | < TO BE FILLED BY BIDDER> |
| Delivery Period [Goods to be delivered in one lot at final destination CMTI - Central Manufacturing Technology Institute, Tumkur Road, Bengaluru, Karnataka, India-560022] | < TO BE FILLED BY BIDDER> |
| Time frame required for conducting installation, commissioning of the Goods etc. after arrival of the Goods atFinal destination | < TO BE FILLED BY BIDDER> |

NOTE: The party has to offer the product/equipment strictly based on the specifications asked in the Bidding Documents.

PART-B

CHAPTER- 4

SPECIFICATIONS AND ALLIED TECHNICAL DETAILS

FOR DESIGN, MANUFACTURING, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 80/20 TON CAPACITY DOUBLE GIRDER EOT CRANE AT NEW WORKSHOP CMTI

Note 1. These specifications are not meant to be exhaustive and prescribe the minimum acceptable standards. Where these do not cover certain items and aspects, the best engineering practice/CMTI engineer's instructions shall be followed.

Note 2. All codes and standards means the latest. Necessary I.S. Codes are mentioned along with these specifications and all relevant codes with divisions published on date shall be applicable.

1. GENERAL

1.1 The entire electrical installation work shall be carried out in accordance with approved Drawings and in general conformity with the requirements of the the Indian Electricity rules, 2003, the relevant I.S. codes of practice, as amended to date, wherever applicable and the regulations of the local licensing bodies, CEA, CPB, Electrical safety inspector etc., and where such installations are subject to inspection and approval of fire insurance, the installation shall be planned and executed also confirming to their regulations/rules.

1.2 All the supply & work shall be in accordance with the relevant IS Specifications, recognized standards, modern approved practice and shall meet the requirements of the latest issue of applicable codes, factory rules and regulations, supply codes.

1.3 All the materials & accessories provided by Contractor under terms of this contract shall confirm to relevant IS Specifications samples of all equipment's, materials and accessories to be supplied by Contractor shall be submitted for the approval of CMTI Engineer before the use.

1.4 Contractor shall provide all necessary labour, tools, scaffolding and requisite work like drilling, cutting, welding at his cost. CMTI shall provide free water and electricity for execution of the said work.

1.5 Good workmanship is the essence of this contract and shall be complied with at all times. The Contractor shall have the works supervised by qualified & experienced Engineer. All the defects pointed out by the Engineer shall be rectified immediately by the contractor free of cost.

1.6 No alteration which may affect the structures and architecture of building shall be done without the prior approval From CMTI engineer. All work shall be carried out in such a manner that it should not cause any inconvenience to other works which are under progress. The Contractor shall cooperate with other agencies in the area for the smooth execution of all works.

1.7 Accidental damage to any property shall be reported immediately to site engineers and letter confirmed in writing.

**1. GENERAL SPECIFICATION FOR 80/20 TON DOUBLE GIRDER
EOT CRANE UNIT INSTALLATIONWORK**

GENERAL SPECIFICATION

The crane shall be as per latest (As per IS:3177-1999) and of **class-M4 duty (In-door service)** double girder type, rigid and shall have adequate margins to give excellent performance, safety arrangements for preventing overloading, over stressing on motors and shafts. The crane shall be provided with easy maintenance facilities like platform with checkered plates and with suitable walk ways and hand railings for easy approach of the crane components. All efforts shall be made to make the crane as compact as possible. The compactness of the crane and availability of various crane reaches is one of the very important criteria for selection of the crane.

1. DESIGN

The cranes shall be designed, manufactured, erected and tested in accordance with the following or their latest versions of IS Codes:

- a. IS: 3177-1999 - Indian Standard Code of Practice for electric overhead travelling cranes.
- b. IS: 807- 2006 - Indian Standard Code of Practice for design, manufacture, erection and testing (structural portion) of cranes and hoists.
- c. IS 2266 Specification for Steel Wire Ropes for General Engineering Purposes.
- d. IS 13834 (Part 1) Cranes: General
- e. IS 13834 (Part 5) Overhead Travelling and Portal Bridge Cranes
- f. IS 325 Specification for Three Phase Induction Motors
- g. IS 5749 Specification for Forged Ramshorn Hooks
- h. IS: 3815(latest) and IS: 8610 (latest) Specifications for Auxiliary hook shall be shank hook conform to the relevant Indian Standard Latest.
- i. ISO 12488-1, Cranes-Tolerance for wheels and travel and traversing tracks.
- j. IS 800-2007, Design of steel structures.

The EOT crane to be primarily designed for the parameters indicated in the table below.

| Sl. No. | Item | Parameter | |
|---------|--------------------------------------|---|---|
| 1) | Hoisting Capacity | 80 Ton main Hoist and 20 Ton Auxiliary Hoist | |
| 2) | Crane Span | 17 meters (approx.) actual to measured by vendor | |
| 3) | Longitudinal Travel of crane | 38 meters (approx.) actual to be measured by vendor | |
| 4) | Lifting Range | 9.5 meters (Hook Height) | By pendant control & also through wireless remote control |
| 5) | Main Hoist Speed | 3.0 m / min (Max.) | |
| 6) | Inching Speed (Micro for main hoist) | 0.15 meters/minute | |
| 7) | Auxiliary Hoist | 5 meters/minute | |
| 8) | Inching Speed (Auxiliary hoist) | 0.25 meters/minute | |
| 9) | Long Travel Speed | 10.0 m / min (Max.) | |
| 10) | Long Travel (Micro) | 0.5 meter/minute | |

| | | | |
|-----|--|---------------------------------------|--|
| 11) | Cross travel | 6 meters/minute | |
| 12) | Cross Travel (Micro) | 0.3 meter/minute | |
| 13) | Creep speed | Preset able min. 5 % to 100% in steps | |
| 14) | Duty class of crane (As per IS:3177-1999) | M4 | |

2. CAPABILITY OF THE CRANE

The crane shall be capable of:

- a. Hoisting
- b. Longitudinal travelling
- c. Cross traversing at specified speeds in both loaded and unloaded conditions

3. RIGIDITY, CONTROL & SAFETY

- a. The crane shall be rigid, robust and of sturdy construction
- b. Crane controls shall be conveniently located. Various controls shall be suitably interlocked to prevent accidental movement of the crane.
- c. Suitable limit switches, one each for long and cross travel and two for main hoists, shall be provided to stop the crane and prevent over-travel of various moving parts of the crane.
- d. Suitable buffers shall be provided to prevent over travel of the crane mechanism in both longitudinal and cross traverse directions.
- e. Suitable guards or enclosures shall be provided on the crane to prevent inadvertent contact with down shop leads (DSL) or any other exposed electrical conductors and cables.
- f. Suitable isolation switches and stop buttons shall be provided to isolate the electric supply for maintenance or in the event of an emergency.
- g. A safety hand railing of tubular construction shall be provided on bridge footwalls, end carriages, trolley and any other places where access has been provided. Railings shall not be less than 1000 mm high with an intermediate members at a height of around 300mm.
- h. All sheaves shall be provided with rigid guards to retain the ropes in the grooves. Guard shall fit close to the flange and shall have a clearance between the sheaves and inside the guard of not more than 3 mm or 1/4th the diameter of rope, whichever is less.
- i. The crane shall comply with the relevant safety regulations under the Factories Act, Indian Electricity Rules and other statutory regulations as applicable.

4. MAINTAINABILITY

- a. Safe accesses for maintenance and removal of all mechanical, electrical and structural components must be ensured. All parts requiring replacement, inspection and lubrication shall easily be accessible without the need of dismantling other equipment or components. Arrangements for access to important components must **include a cradle for inspection and maintenance of DSL**, such cradle being conveniently accessible.
- b. All electrical cables shall be so laid that they are not liable to damage and can be easily inspected and maintained. **Access walkways** (wherever required) of minimum 1000mm clear inside width with hand railings **on both sides of girders for the full span length** for inspection and maintenance of the crane shall be provided. Walkways shall be of chequered plate or non-slip steel surface of minimum 6mm thick. Walkways shall be of

rigid construction and designed to sustain a distributed live load of not less than 3 kN/m² (0.3 kg/cm²).

- c. Materials used for equipment and structural shall be free from cracks, blow holes, laminations, pitting etc. Except for areas where a superior grade of materials is required, steel class shall be as per IS: 2062(latest).
- d. A **tool box** containing all tools required for the **maintenance** of the crane shall be supplied with the crane.
- e. Fasteners for pedestal blocks, gear boxes, etc., shall be easily removable from the top of the platform.

5. STRUCTURAL DETAILS

- a. The crane bridge shall comprise of double girders of plate box type. Camber in the box girder shall be as per the relevant IS code.
- b. All welded subassemblies of box girder shall be stress relieved before final welding of the box girder.
- c. Position of the Weld joints in top plate, side plate and bottom plate of the box girder assembly shall be specified with respect to the maximum deflection plane (i.e. plane passing through the centre point of the box girder).
- d. In the main bridge girders, in addition to the required full length diaphragms, short diaphragms shall be inserted wherever required to transmit the trolley wheel load to the web plates and to limit the maximum stress in the trolley rail to safe permissible limits. All diaphragms must bear against the top flange. Steel plates used for bridge girders and diaphragms shall be as per IS:2062 (latest).
- e. All fasteners shall be hot dip galvanized. All load bearing fasteners shall be of high tensile grade, and it shall be of reputed make (Unbrako or equivalent). Manufacturer shall submit a test report for mechanical testing for the same.
- f. The bridge girders shall be connected to the end carriages by large gusset plates. Ground tight fit bolts in reamed holes shall be used for bolted connections.
- g. The calculated strength of joints made by High Strength Friction Grip (HSFG) bolts shall not be less than calculated net strength of the member. The calculated strength of other bolted joints in structural members shall not be less than the net strength of the member plus 25%.
- h. All butt welds on structural members of bridge girders subjected to tension shall be radiographically tested. All other welds shall be subjected to Magnaflux or Dye penetration Test.
- i. The box girders shall be so constructed as to eliminate any possibility of accumulation of water or oil inside them.

6. END CARRIAGES

- a. Crane bridge shall be carried on end trolleys with solid forged wheels. The minimum end clearance on each side of the long travel wheels shall be 10mm. The wheels shall be mounted on fixed axle or suitable anti-friction spherical roller bearings which can be conveniently removed for maintenance.
- b. End carriages shall be designed to be strong enough to resist all stresses likely to be imposed upon them under varied service conditions, including collision with stops. The length of the end carriages shall be such that no other part of the crane is damaged in the event of a collision.

- c. Suitable **jacking pads** shall be provided on each end carriage for jacking up the crane while changing track wheels. These jacking pads shall not interfere with replacement of track wheels.
- d. The end carriages shall be fitted with suitable **safety stops** to prevent the crane from **falling more than 25mm** in the event of breakage of track wheel, bogie or axle. These safety stops shall not interfere with the removal of track wheels.
- e. End carriages shall be fabricated from rolled steel sections or plates, welded together to form a box. Suitable stiffening diaphragms shall be provided wherever required. The material used shall be steel as per IS:2062(latest).

7. CRANE RAILS

Design, Supply, Erection and installation of suitable crane rails as per IS 3443 for long travel (length of travel 38 meters) Material type is primary material for longitudinal crane travel and Suitable rail for cross travel shall be supplied, installed and tested by the supplier.

8. TROLLEY FRAME

- a. The trolley frame shall be welded rolled steel box section, designed to transmit the load to the bridge rails without undue deflection. It shall be made rigid by providing suitable diaphragms. The material used shall be steel as per IS: 2062 (latest).
- b. The drum bearings and supports for upper sheaves shall be located so as to equalize the load on the trolley wheels as nearly as possible.
- c. The trolley wheels shall be suitable to the crane rails. The **axle bearings** shall be of **Anti Friction Type**. The bearing housing shall be designed for easy removal of wheels and bearings for maintenance. The wheel assembly shall be fitted in **L- type housing**, for easy removal of wheel assembly.
- d. All the mechanical and electrical equipment shall be placed above the trolley top plate as far as practicable. For any parts placed below the trolley top plate, access for maintenance, repairs and replacement shall be provided. Where the clearance between bottom member of trolley frame and the CT rail is over 25mm, the **trolley shall be fitted with substantial safety stops to prevent the trolley from falling more than 25 mm** in the event of breakage of track wheel, bogie or axle. These safety stops shall not interfere with the removal of wheel. Details of the arrangement shall be explained in the offer.

9. RAILWHEELS

- a. The rail wheels shall be suitable to the crane rails mentioned at sr. no.6.8.
- b. The wheels shall be manufactured from C 55 Mn 75 / forged steel, and shall be solid forged and heat treated to have minimum hardness of 300-350 BHN on the tread and flanges to a depth of not less than 10mm.
- c. The wheels shall be shrink-fit on the axles. Hardness of the machined rail wheel (for both CT and LT) shall be checked with portable hardness tester and value to be verified with the test reports during factory acceptance test.

10.ROPEDRUMS

- a. The rope drum shall be designed to withstand the compressive stresses caused by the rope wound on it and the bending stress due to beam action of the drum.
- b. The steel used shall be conforming to IS: 2062 -1984 (or latest) quality. The rope drum shall be stress relieved after fabrication. T- joints shall be radio graphically checked.
- c. The drum shall be designed to take the entire length of the rope in a single layer. Free extra turns as specified in IS: 3177 shall also be provided. The drum shall be flanged at both ends.
- d. Cranes shall be designed with number of ropes for Main Hoist having minimum 16 falls or higher and for Auxiliary Hoist having minimum 4 falls or higher.
- e. Weld joint of the web with rope drum shaft and inner diameter of the rope drum shall be radio graphed. This shall be applicable seamless rope drum.

11.WIRE ROPES

Wire rope in the crane shall be of ungalvanized type and of reputed make. Preferably “Hyflex” type wire ropes shall be used. If it is conventional type; then it shall be **6 x 36 or 6x37 construction** and made as per IS : 3815

Preferred Make: Usha Martin/ equivalent

12. GEARING

Only **helical gears** shall be used. Gearing in all motions shall be of suitable case carburizing low carbon alloy steels and shall conform to relevant Indian/ International standards. They shall generally be in accordance with IS: 4460-1967(or latest) and DIN 8 Class accuracy. **All gears shall be hardened and profile ground for longer life and silent operation.** Minimum surface hardness of pinions and gears shall be in the range of 30 HRC. The hardness of gears shall be at least 2 - 3 HRC less than that of pinions.

13.GEAR BOXES

- a. All gear boxes shall be of completely enclosed splash lubricated type. All gear boxes shall be oil tight and sealed with neoprene ‘O’ rings of suitable section. All gear shafts shall be supported in bearings mounted in the gear boxes. Gear boxes shall be made of graded C.I./ M.S. fabricated. All gear boxes shall be stress relieved and the method of doing so shall be explained in detail in the offer. Gear boxes shall be provided with breather vents, easily accessible drain plugs, and a suitable oil level indicator such as a dip stick. Adequate radial clearances between the gear box inner surface and outside diameter of the gears shall be ensured and clearance proposed to be provided shall be indicated in the offer. The facial clearance between the inner surface of the gear box and the face of the nearest gear/pinions shall be at least 10mm. All gears and pinions shall be of ground type so as to reduce noise levels to the minimum.
- b. All gear boxes shall have drip pans to avoid oil falling on shop floor.
- c. **LT/ CT gear boxes-- These shall be of a modular or semi modular design.** Motors

may be either flange-mounted or foot mounted, or a combination of the two.

14.MOTORS

Three phase squirrel cage crane duty TEFC induction motor

- a. **For Long Travel:** The wheels of each end carriage shall be driven by independent synchronized drive motors mounted near each end carriage. 60% CDF, S4 duty Class-F insulation, 300 starts/ stops per hour.
- b. **For Cross Travel:** A separate cross traverse motor shall be used for cross traverse drive through a suitable gearbox. 60% CDF, S4 duty Class-F insulation, 300 starts/ stops per hour.
- c. **For Hoist:** A separate hoist motor shall be used for Hoist drive through a suitable gear box. 60% CDF, S4 duty Class-F insulation, 300 starts/ stops per hour.

15.AC VARIABLE FREQUENCY CONTROLDRIVES

Independent AC variable frequency control drives of adequate capacity for main hoist, CT & LT shall be used by using independent variable voltage variable frequency drives suitable for crane application. However common controller for both the motors of LT may be used.

16.BRAKES:

- a. **For L T & C T motions;** The maximum braking torque to arrest long travel and cross traverse motions shall not less than 100% of full load torque for each brake. The L T & C T motions brake shall be provided with
 - 1) **Fail safe DC disc type brakes – 01 no. (for each)**
- b. For hoist motion, two brakes shall be used and the braking torque for each brake shall not be less than 125% of full load torque. One of the two hoist brakes shall be applied with a time lag of 3 seconds in relation to the first. The hoisting motion shall be provided with
 - 1) **Fail safe DC double disc type brake – 01 no.**
 - 2) **Electro Hydraulic Thruster brake – 01 no.**

Note: Brake release shall be dependent on motor torque. The brake shall be released only if 100% torque is developed in the motor.

17. ROPE SHEAVES:

All sheaves shall be of cast/ forged steel. They shall be identical, with the exception of the equalizer sheave. The equalizer sheave shall be mounted above the trolley floor and shall be easily accessible and removable from the trolley floor level. Sheave grooves shall be smooth finished for getting increased rope life. The supplier shall further ensure that wire ropes are parallel with each other.

18. BEARINGS:

The bearings (ball/roller) to be of “Anti Friction Type” use shielded bearing wherever applicable. **Bush Bearings to be strictly avoided**
USE REPUTED MAKE OF BEARINGS

19. LIFTING HOOK:

Standard plain shank type trapezoidal section hooks shall be used. The main hook should be Ramshorn hook type conform to the relevant Indian Standard Specifications IS: 5749(latest) and The Auxiliary hook shall be shank hook conform to the relevant Indian Standard Specifications IS: 3815(latest) and IS: 8610 (latest). **Certificate of test and examination to be submitted by the bidder.** Certificate shall indicate sr. no. and date of testing.

20. BUFFERS:

Spring loaded or other suitable buffers shall be fitted on the four corners of the crane also at the four ends of the bridge girders. Buffers shall be rigidly bolted in place, preferably along the centre line of the crane rail or trolley rail as the case may be. All buffers shall have sufficient energy absorbing capacity to stop the bridge or trolley in either direction when traveling at a speed of least 40% full load rated speed. Bridge buffers shall have a contact surface of not less than 125mmdiameter.

21. LUBRICATION:

- a. All gears and bearings enclosed inside gear boxes shall be splash lubricated. Bottom blocks and pedestal bearings shall have independent greasing points.
- b. A lubricating chart shall be provided in the manual, indicating all lubrication points, the type of lubricants required and the recommended frequency of lubrication. These details shall be repeated, and amplified if necessary, in the Maintenance Manual to be supplied along with the crane minimum two nos. of hard copies.

22. POWER SUPPLY CONDITIONS

Power shall be available at $415 \pm 10\%$ volts, 3 phase, $50 \pm 3\%$ Hz

23. SPECIFICATION FOR SHROUDED BUS BAR CONDUCTOR

Shrouded Bus Bar Conductor shall be of M/s. Siemens, ABB, Allen Bradley, Group Schneider make and shall conform to the following:

- a. The conductor system shall be finger safe to IP-21 with necessary supporting technical evidence of same and the conductor and material shall be of copperinsulated by a high impact gloss finish VR 935/2 PVC compound which shall have a step/groove shrouded all along its length for effective molding of the conductor system.
- b. The conductor shall be in minimum 4 mtrs. length, to be jointed with molded joint of the same material as the conductor.
- c. Conductors shall be supported by way of a single piece molding, four pole hangers with single bolt fixing.
- d. The current collector arm shall be copper die cast totally insulated and the connection cable shall be fully enclosed and double insulated within the collector arm with a proven performance. Two sets of current collectors shall be used, one in forward and another on rear, on DSL.

24. CRANE CONTROL

- a. **Crane operation should be controlled by a current Model of PLC with at least 20% I/O's kept as spare.**
- b. **Monochrome HMI to be used for fault diagnostics display. Make as per annexure attached. Over Weight alarm should be displayed on HMI.**
- c. **Pendant push button control and wireless remote control for long travel, cross travel and hoist motions.** For switching ON and OFF the motor of a particular motion, the supply voltage to the pendant control shall be 24V AC/DC which shall be obtained through a suitable transformer. Necessary flexible multi core cable with sufficient length shall be supplied to enable the crane to be operated from floor level. Pendant shall be moving type and the **movement of pendant will be independent of trolley via a separate track along girder length.** On all the motions the circuit shall be so designed that brakes come into operation immediately in the event of tripping of motor main circuit breaker.
- d. The pendant control shall be capable of withstanding rough handling without being damaged. The cover shall be firmly secured.
- e. The mass of the pendant shall be supported independently of the electric cable by means of wire rope/ chain. The pendant shall be **Schneider/ Telemecanique** make and the push buttons shall be double step type.
- f. On all pendant cranes safety means shall be provided to prevent inadvertent operation from floor while maintenance work is being carried out on the crane.
- g. Adequate guards shall be provided to prevent accidental contact of pendant ropes or holding wire rope/ chain with cross traverse.
- h. Along with the push button pendant; a wireless remote control of a reputed make shall also be offered for operation of LT, CT, hoist motion and luminaries under the crane.
- i. Wireless remote control shall have two transmitters and one receiver. The wireless remote control transmitter shall be impact resistant.

Preferred Make: Stromag / Siemens/ ABB

j. Selector switch on pendant for pendant operation or remote control operation.

g. **AC VARIABLE FREQUENCY VARIABLE VOLTAGE CONTROLDRIVES:**

Independent AC variable frequency control drives of adequate capacity for main hoist, CT & LT shall be used by using independent variable voltage variable frequency drives suitable for crane application. However common controller for both the motors of LT may be used.

h. **CONTACTORS**

- a. All contactors shall be of AC 4 Class of duty with rating sufficiently higher than the full load current of the respective motors at the specified duty cycle. The directional contactors of all motions shall be suitably interlocked for correct sequence of operation.
- b. The contactors shall have high contact reliability.

i. **CIRCUIT PROTECTIVE SWITCHGEAR :**

- a. Each control circuit branch to every contactor panel shall be provided with facility for isolation and protection against short circuits and sustained high overloads by means of appropriately rated miniature circuit breaker.
- b. MPCB (Motor protection circuit breaker) shall be used for each drive motor.

j. **LIMIT SWITCHES &LOCKS:**

- a. End limit switches to be provided for all the traverses motions.
- b. Limit Switches for Main & Auxiliary hoists- One series limit switch with counter weight type and one rotary shunt limit switches for each hoist.
- c. Main Hoist VVVF drive ON command is to be interlocked with the Rotary limit switches i.e. hoist and lower, Gravity limit switch. Auxiliary Hoist operation, Thruster Brakes' MPCB condition and Provision shall be made for two extra interlocks for future usage.
- d. Auxiliary Hoist VVVF drive ON command is to be interlocked with the Rotary limit switches i.e. hoist and lower, Gravity limit switch. Auxiliary Hoist operation, Thruster Brakes' MPCB condition and Provision shall be made for two extra interlocks for future usage.
- e. Cross Travel VVVF drive ON command is to be interlocked with Right and Left limit switches for respective motion of the drive, Brakes' MPCB condition and Provision shall be made for two extra interlocks for future usage.
- f. Long Travel VVVF drive ON command is to be interlocked with the Forward / Reverse limit switches for respective motion of the drive, Brakes' MPCB condition and Provision shall be made for two extra interlocks for future usage.

- g. Limit Switches for Main Hoist and auxiliary hoist is to be interlocked with Rotary Limit Switches To be linked with the hoist motors and linked to the control circuit according to the operational requirement) (For hoist and lower limit). And Gravity Limit Switches.
- h. Limit Switches for CT & LT is to be interlocked with Lever type limit switches.
- i. Audio & Visual Alarm for all the limit switches shall be provided.
- j. Safety latch and swiveling lock shall be provided for hook.

k. EMERGENCY STOP PUSHBUTTONS

Safety switches of sustained contact type shall be provided at each end of Crane Bridge so that under any emergency conditions, by operating anyone of the switches, the incoming circuit breaker is tripped thus cutting power to all motions. One number of emergency stop push button shall also be provided on pendant.

l. CONTROL PANEL (IP 55 class protection)

- a. All power and aux contactors shall be mounted in sheet steel cubical with lockable hinged doors. Door hinges shall be of such type that during the repair works inside the panel the entire door can be lifted out and placed away enabling better access inside the panel. Each motion shall have its individual Panel.
However, common panel with separate compartment for each motion shall be acceptable. Interiors of panel shall be **dust and vermin proof**.
- b. Panels shall be front wired with readily accessible terminal blocks for making connections in the external equipment. Panels shall be pre wired into terminal strip. **Single core, copper conductor shall be used for control circuit wiring in the panel.**
- c. All contactors etc. shall be mounted securely in a vertical arrangement with the consideration of the vibrations encountered in the operation of cranes. The bottom most row of the equipment mounted inside the panel except terminals strips shall be at least 150 mm above the panel bottom cover to facilitate inspection and repairs.
- d. All the equipments shall be so mounted in panel as to enable its easy removal/ replacement from the front.
- e. The terminal strips shall be fixed inside the panel preferably in a horizontal manner leaving enough space underneath the strip for termination of cables in a convenient manner. Power and control terminals shall be segregated. Power terminals blocks shall be separated from each other by means of replaceable insulated spacers. Terminal block shall have adequate clearance to avoid tracking. A minimum of 20% spare terminals block shall be provided in terminals strips.
- f. All equipments inside the panel shall have permanent identification labels in accordance with circuit diagram as also the power and control terminals. Terminal blocks shall be of robust and of such construction as to preclude possibility of cable connections getting loose during vibration oncrane.
- g. CRCA used for fabrication of panels shall have a minimum thickness of 2.0 mm. Panels shall be mounted such that bottom of panel is at least 150mm above the floor.
- h. Contactor panels shall be well braced to the crane structure and each panel shall be

provided with adequate number of lifting lugs.

- i. All the panels and cabinets shall also be provided with LED luminaires for interior illumination.

Panel enclosure **Preferred Make:-** Rittal/ Equivalent

m. CABLING

- a. All wiring for power control circuit shall be carried out with **1.1 KV grade Flame Retardant Low Smoke (FRLS) PVC insulated copper cables** as per IS 694 and IS 1554 Pt. I with smoke index and typical index corresponding to ASTM-2843 & IEC332-I.
- b. Minimum size of cables for control circuits shall be 2.5 sq mm and minimum size for power cables shall be 4 sq mm copper.
- c. **All cables shall be systematically laid on G.I. trays or in cable drags of suitable type.**
- d. **CT cables of the crane shall run on cable drag chain.**

n. IDENTIFICATION OF CIRCUIT, CABLESETC.

Labels of permanent nature shall be provided on supports of all switches, fuses, contactors, relays etc, to facilitate identification of circuits and replacement. All panels, controllers etc. shall be properly marked for each motion. All power control cable and other cables shall be ferruled at both ends as per cables numbers indicated in the supplier's drawing. All equipment terminals shall also to be marked likewise.

o. CLIMATICCONDITIONS.

The ambient temperature will be + 50° C(max), RH 75% (max)

p. EARTHING

Earthing to the crane shall be effected through track rails crane structure. As such, all the electrical equipments mounted on crane shall be connected to the crane structure by means of earthing links complying with Indian Electricity Rules (IS 3043). Equipments fed by flexible cables shall be earthed by means of spare core provided in the flexible cable.

q. TESTING AND QUALIFICATION OF THE SPECIFICATION:

Tolerances of crane rail installation and operation like span of crane, horizontal and vertical straightness of travelling track, height of traversing track (lateral slope) shall be as per International standard ISO 12488-1. Tooling required for qualification of the crane shall be arranged by the supplier. **The crane shall be designed for a minimum life of 30 years.**

The crane manufacturer must submit a detailed quality assurance programme indicating quality assurance plan (**QAP**) applicable at various stages of crane fabrication starting from raw material to final crane testing. Manufacturer shall use reputed make welding rods like L&T/D&H/Advani or Philips for all weld joints. Manufacturer shall also submit detailed test reports for radiography and mechanical testing for all the batches of welding rods used.

A detailed QAP with necessary drawings documentation and calculation for obtaining necessary approval shall be submitted to the purchaser before taking up crane fabrication.

r. PRE DISPATCH INSPECTION:

Pre dispatch Inspection as per latest version IS:3177-1999 codes: The crane will be inspected and tested during different stages of its manufacture, starting from raw-materials till the completion of the crane, by the Purchaser or his authorized representative at the supplier's or his sub-supplier's works. However, the purchaser or authorized representative is free to inspect any further checks at any stage of the work.

s. ERECTION, COMMISSIONING AND PROVING TESTS:

- a. The contractor shall arrange erection and commissioning of the cranes. Adequate number of teams of technical experts shall be made available so that erection and commissioning delays are eliminated. Such personnel will be required to be present immediately as soon as we call upon for erection after receipt of crane at our site and site preparedness. All material handling equipments and any other equipment required for the installation and commissioning shall be arranged. Safety norms shall be followed during commissioning and testing at site as per Industry standard safety norms.
- b. The contractor or his agent shall commission the crane within 60 days from the date of intimation by the consignee in respect of readiness of site/ gantry Girders etc.
- c. Following items of work shall be performed by the Contractor
 - (i) **Checking of alignment of gantry rail at site. Any rectification required, however, will be done by the purchaser.**
 - (ii) **Installing of the crane structure and associated machinery in position.**
 - (iii) **Complete fitting and wiring of all electrical items**
 - (iv) **Fixing of down shop leads.**
 - (v) **Commissioning of the equipment. The crane performance shall be demonstrated after successful commissioning.**
 - (vi) **Deflection and Load Test to be carried out in CMTI during commissioning as per relevant IS standards i.e. Min. 1.25 times SWL**
 - (vii) **To be inspected and certified by "Competent Authority" and submit same documents to CMTI.**

d. Consignee's obligation with regard to erection & commissioning will be limited to the following:

- (i) storing until taken over by the supplier for erection.
- (ii) Supplying following free of cost at the site of work.
 - a. Electricity required for the purpose of erection/lighting.
 - b. Ladder for going up the gantry rails.
- e. In the interest of early commissioning, the supplier shall ensure minimum amount of assembly is necessary at site. **The supplier, before proceeding with design details, shall check (at site) the span of gantry rails and its details from the purchaser.**

- f. All electrical and mechanical equipment shall be tested in accordance with the appropriate Indian Standard at either the crane maker's or equipment manufacturer's works and test certificates shall be provided by the Purchaser or his representative.
- g. Test of the crane at Purchaser's Premises.
- h. Start up and trial Operations Test of the crane (Commissioning Test)
- i. The contractor shall carry out the start up and trial operation tests (commissioning test) on receipt of authorization from the Purchaser. In addition to tests indicated in IS: 3177(latest), the following tests shall also be carried.
 - (i) The earthing of the crane and control equipment, to be tested as per Indian Electricity Rules.
 - (ii) The operation of brakes on long travel, cross traverse and hoisting motions.
 - (iii) Inching control and speed as per technical specification.
 - (iv) Operation of the crane with no skewness in crane during long travel and cross travel motions, presence of vibrations and unusual noise in operation.
 - (v) The trials shall be carried out initially under no load conditions and on satisfactory completion of above, trials shall be repeated for various loads until the full rated load and operating range are covered.
 - (vi) During the trial operation, all necessary adjustments shall be made so as to ensure compliance with the operating characteristics for the complete equipment as stipulated in the technical specification.

j. Important Note : The maximum clear height available from top of existing crane rail and truss girder is 2050mm. So the new crane with rails and wheels to be designed to fit into the 2050mm. Only vendor who are willing to supply the crane and rail system which will work in this limited clearance will be considered for financial evaluation. Vendors have to give a separate undertaking that the crane supplied will fit into the above limitation.

k. The vendor has to make an assessment of the installation clearance inside the workshop and if required the vendor has to make arrangement for lifting the existing roof sheets for installation of the crane and refixing back the sheets. The rate quoted for installation should be inclusive of this work also. No separate payment will be made of removing and refixing of the roofing sheet for crane installation nor CMTI will make arrangement for the removal of roof sheet .

t. TRAINING

Technical experts of the manufacturer during erection & commissioning of cranes will fully and adequately train operators/ maintenance staff nominated by the consignees.

u. PAINTING & COLOUR

The crane shall be **epoxy painted (golden yellow colour)** after obtaining surface finish better than or equal to SA 2½. All motors, brakes and panels shall also be epoxy painted.

- (i) All parts of the crane shall be thoroughly cleaned of all loose mill scales, rust or foreign matter.
- (ii) All parts inaccessible after assembly shall be painted before assembly.
- (iii) The interior of all gear box housing shall be painted with two coats of oil resistant enamel paint.

- (iv) Surface finish of all the surfaces which are to be painted, shall be measured before painting.
- (v) All structural parts of crane including girder, carriage etc shall be painted with at least two coats.
- (vi) Final coating thickness of the painted surface shall be 120 to 150 µm and same will be checked with DFT meter after final painting during factory acceptance test.
- (vii) Bidder shall do final painting at site before handing over to CMTI, Bengaluru.

v. WARRANTY

Supplier shall guarantee for the EOT crane for the period of **24** months from the date of commissioning at CMTI. Supplier has to submit performance bank guarantee (PBG) of 5% of the ordered value valid for full warranty period.

w. IMPORTANT NOTES TO THE BIDDERS:

- a. General Arrangement (GA) drawing to scale (showing elevation, cross-section and plan of the crane) indicating clearances, hook approaches, lift, location & direction of view of operator, wheel base, and wheel loads etc. of the crane being offered along with the quotation. Offer with generalized details is liable to be rejected.
- b. Submission of duly filled 'Guaranteed Technical Particulars' (technical comply sheet)
- c. Deviations from this specification, if any, with a comparative statement.
- d. The offer shall include all the transportation expenses of crane.
- e. Successful bidder shall furnish and get approval the following prior to manufacture of the crane for Purchaser's approval
 - (i) Assembly drawing -inclusive of gearbox details, individual drives like hoists, long travel and cross travel.
 - (ii) Pendant controls with functional details.
 - (iii) PLC and HMI controls with functional details.
 - (iv) Circuit diagrams showing the wiring for the complete crane.
 - (v) Final design calculations of the crane components/parts and selection (with rating and make etc) of bought out items shall be submitted at the time of approval of GA drawings.
 - (vi) Submission of a detailed quality assurance programme (QAP) indicating QAP applicable at various stages of crane fabrication starting from raw material to final crane testing. The essential elements of QAP are given in Annexure –I
 - (vii) All the certificates related to guarantee/warranty of the bought out items shall be transferred to the purchaser.
- f. The successful bidder can inspect the site prior commencement of work.
- g. Incomplete offers shall be rejected.
- h. Pre-bid meeting will be arranged for technical clarification.
- i. Packing and transport: Packaging shall provide adequate protection against shocks, vibrations, corrosion and handling forces during transport. The Vendor will be responsible for replacement of transit damage and loss.
- j. Documentation: The vendor shall provide the quality control records, test certificates, operating manuals and maintenance manuals for the Double Girder EOT Crane, operation and maintenance manual of VVVF drives, Electrical and Mechanical drawings (Each 3 sets Hard copy) along with the supply.
- k. Acceptance: CMTI will accept the item on the basis of test certificates, QC records, in-situ tests for qualifying its rated load capacity and functionality as per the provisions of the relevant IS codes and vendor's compliance certificate that establishes conformance to the relevant IS codes.

x. WORKSCHEDULE

| | |
|---|--------|
| Submission of Drawings after release of PO: | 15Days |
| Review and clearance by CMTI : | 10Days |
| Delivery of materials at site from the date of clearance: | 90Days |
| Erection / Installation after site clearance | 45Days |
| Testing, Commissioning and Acceptance: | 15Days |
| Submission of all documentation: | 15Days |

y. LIST OF SPARES

| Sl. No | Item Description | Capacity | Quantity |
|--------|--------------------------------|----------|----------|
| 1 | Main Hoist EHT Brake Thruster | 80t | 1 |
| 2 | (Imported Thruster) | 20t | 1 |
| 3 | LT EHT Brake Thruster | 80t | 1 |
| 4 | CT EHT Brake Thruster | 80t | 1 |
| 5 | Rotary Limit Switch | 80t | 1 |
| 6 | Over Load Relay for Main Hoist | 80t | 1 |
| 7 | Over Load Relay for LT | 80t | 1 |
| 8 | Over Load Relay for CT | 80t | 1 |

z. SUBMISSION OF DOCUMENTS:

THE PARTY SHALL SUBMIT THE FOLLOWING

TEST CERTIFICATES, INSPECTION REPORTS & MAINTANACE CATALOGUES

1. Raw Material Test Reports
2. Welding Procedure Specifications(WPS)
3. Welding Procedure qualification/Procedure qualification Records(PQR)
4. Girder and End Carriage Inspection Reports
5. DP Test Reports of fillet weld joints of girders
6. Rope Drum SR Charts
7. Rope Drum fillet joint DP/UT Test report
8. Gear Box Reports & lubrication charts.
9. Dimensional Reports including tolerances of Key & Key ways of Gear Box, MH, LT, CT & Wheels and shafts.

10. Key material Test certificates
11. CT/LT Wheel Physical /Chemical Reports
12. Wheel Hardness Test Reports
13. Wheel UT Report
14. Wheel Dimensional Report
15. Hook Test Report with twice its SWL at govt approval test house/dock labour board.
16. Coupling Test Certificates
17. Dimensional Reports of Couplings
18. Brake Drum Dynamic Balancing Reports
19. Wire rope Test Certificates
20. VFD panel test report for HV & Dielectric strength test.
21. Motor Routine Test Certificate & Inverter suitability.
22. Brake Test Certificate
23. Electrical wiring diagrams, control drawings.
24. Cable routing diagrams showing cross sectional details of clamping/fixing arrangement of cable etc.,
25. Maintenance Catalogues of motors, Brakes, Gear Boxes and VVVF Drive systems.
26. Inspection Release Note & Inspection Report
27. Load test report
28. Drive back up data in CD/DVD

CHAPTER-5 **QUALIFYING CRITERIA**

BID QUALIFICATION CRITERIA FOR SUPPLY OF 80T/20T EOT CRANE

Bidders who are qualifying/meeting following Technical and Financial capabilities are eligible to participate in the bid for supply of 80T/20T EOT crane. Bidder shall furnish all the requirements asked in these criteria with documentary proof and submit along with quotation. Bids of the parties which are not meeting the following criteria will not be considered for evaluation and will be rejected without seeking any further clarifications.

I. Technical Qualification Requirements:

The bidder should meet the following technical qualifying requirements and shall submit relevant certificates to establish his credentials.

1. The Bidder should be an organization with experience in having executed contracts for design, engineering, manufacture, supply, erection, testing and commissioning of **Double girder EOT cranes & Hoists Package** for last **10years** in India.
2. The quotations are invited and accepted only from crane manufacturers with ISO- 9001- 2008 or equivalent QA management program certification.
3. The firm should have successfully completed Design, Manufacture, Installation, Testing and Commissioning of **at least 2nos.** of double girder EOT cranes of capacity **80T and above and Span equal to 16m and above** during last 5 years. Bidders have to provide details of installations with contact details.
4. The firm should have successfully completed Design, Manufacture, and commissioning of EOT cranes with **VVVF (VFD) drive & control systems** at least 2 nos. of cranes and at least one crane of capacity not less than 80t **in last 5 years.**
5. The firm should have successfully completed Design, manufacture and establishment of **fail safe mechanisms & controls** like Emergency disc brake on rope drum (actuated in case of failure in power transmission line).
6. The firm should have successfully completed Design, manufacture, and establishment of at least 05 nos. of EOT cranes (not less than 80T capacity) with **Helical gearbox system** for Hoist mechanism for last 10years.
7. The firm should have facility to full load test and over load testing of 80T EOT crane (hoist and cross travel) at the installation site.
8. The firm should have successfully completed Design, manufacture and establishment of high capacity EOT cranes (80T and above) to the satisfaction of reputed third party inspection.
9. Bidder shall furnish the details of their factory like manpower, machinery, quality system etc., to assess their capability. Bidder shall submit above information in the format given in **“Questionnaire”** attached as Annexure to this BQR.
10. The maximum clear height available from top of existing crane rail and truss girder is 2050mm. So the new crane with rails and wheels to be designed to fit within the 2050mm. Only vendor who are willing to supply the crane and rail system which will work in this limited clearance will be considered for financial evaluation. Vendors have to give a separate undertaking that the crane supplied will fit into the above limitation

II. Financial Qualification Requirements:

The bidder should also meet the following financial qualification requirements:

1. The Bidder should have annual turnover of not less than a value of Rs. 10 crores per year last **three** financial years.
2. Bidder shall submit audited balance sheet and financial status for last 03years.

III. The following documents shall be submitted along with the application for prequalification of Bid:

1. Firm establishment certificate and nature of work (for Slno.1).
2. Detail of work of similar type completed during the last 5 years.
3. Satisfactory work Completion certificates from the clients.
4. Performance Report of EOT cranes established (with years of service) from End users, with addresses and contact person with phone numbers.
5. List EOT crane projects (for capacity 80T and above / Span 16m and above) completed for **last 05 years** with Client details.
6. Duly filled "Questionnaire" with signature, name, phone no and company seal.
7. Structure and Organizational Chart
8. List of Machinery & Equipments available

IV. Bid Selection Procedure and Process of BID Qualification

Step - 1: Short listing based on documents submitted, satisfying the all eligibility criteria given above by the firm or individual along with their Bid / application. (Non- submission of any document as given in above list within stipulated time leads to rejection of Bid)

Step - 2: Subsequently Bidder's competency, their technical achievements and financial status will be evaluated suitable for his project. Feedbacks from Bidder's clients will be verified.

Step - 3: If required, Visit will be made to their factory/ firm by technical team (CMTI or third party) for accessing the capability of manufacturer.

Step - 4: Mean while technical Bids will be opened and scrutinized for meeting all technical specification and supply conditions.

CMTI reserves right to verify the information / data furnished by Bidder. If the same is found as fault or with any deviation the bid will be rejected.

Only those Bidders who are found suitable & meeting all the above qualification Criteria/requirements will qualify for opening the Price Bids for evaluation.

IMPORTANT NOTE

| | Requirements | Supplier Comments |
|----|---|--------------------------|
| 1. | Weighing Scale(Digital) of 80T capacity of modular construction need to be quoted in bid (optional) | Agreed : Yes / No |
| 2. | Supplier has to mandatorily visit the installation site before Quoting. | |
| 3. | Supplier should duly submit the layout proposal drawings, | |

| | | |
|----|--|--|
| | technical specifications and other relevant documents along with the bid | |
| 4. | ISO Certified Vendors should only participate in bid with relevant documents | |
| 5. | Delivery Schedule: 3 months from date of clearance of design drawings by CMTI . | |
| 6. | Bidder shall furnish all the above details fully and explicitly. | |
| 7. | Please note that the "BID" without above mentioned the documents/information in support of the eligibility criteria will be summarily rejected | |
| 8. | Vendor may clarify any technical doubts or issues before quote | |

Annexure: I

Quality Assurance: The essential elements of quality assurance plan are suggested in the following table. The Bidder shall submit a complete quality assurance plan along with the offer.

Quality Assurance Plan

| A | B | C | D | E | F | G | H | I | Agency | | | K |
|-------|--|--|----------|---|--------------------------------------|------------------------------------|-------------------------------------|---------------------------------------|-----------|-----------|----------|--|
| | | | | | | | | | Performed | Witnessed | Verified | |
| 1 | BRIDGE GIRDER, END CARRIAGE, CRAB, FRAME ETC. | | | | | | | | | | | |
| 1.1 | Materials - Plates | Chemical / Physical | Major | T.C. Correlation if not available then check test | One per heat | Component drawing/ Specs./ IS 2062 | Component drawing / Specs./ IS 2062 | Material TC or Supplier's Test Report | 3 | 2 | 1 | For plate of thickness >=25mm, UT Reports / TC review. |
| | | Lamination / Internal | Major | UT | 100% | ASTM A-435 | ASTM A-435 | IR | 2 | - | 1 | |
| 1.2 | Welding | Welding procedure & Welders qualification. | Critical | Test piece visual & physical test. | One for each position | ASME Sec.IX | ASME Sec.IX | Supplier's Format | 2 | 1 | 1 | |
| 1.2.1 | Load Bearing Butt welds | a) Welding quality & Surface defects | Critical | D.P.Test | 100% | IS:3658 | IS:3658 | Supplier's IR | 2 | - | 1 | Use weld gauges |
| 1.2.2 | Other than load Bearing Butt welds & fillet welds | Surface defects & Size | Major | Visual & DPT | 100% Visual check DP test 10% random | | | | 2 | - | 1 | Use weld gauges |

| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
|-------|---|--|----------|--------------------------------|-------------------------------|---------------------------|---------------------------|-------------------------|-----------|-----------|----------|---|
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | | J | | K |
| 1.2.3 | Final Welding Inspection | Visual Inspection | Major | Inspection of Welding quality | 100% | Visual | Visual | Supplier's IR | 2 | 1 | - | Visual final stage. |
| 1.2.4 | Bridge Girder(inside) & End Carriage inspection | Visual, Welding Measurement | Major | Visual & welding quality | Visual 100% DPT-random of 10% | Component drawing | Component drawing | Supplier's IR | 2 | 1 | - | |
| 1.2.5 | Final Inspection of fabricated components | Dimensional conformity | Major | Measurement | 100% | Component drawing | Component drawing | Supplier's IR | 2 | - | 1 | Review of reports at final stage |
| 2 | OTHER FABRICATED COMPONENTS | | | | | | | | | | | |
| 2.1 | MH, LT & CT Gear box, Housings | Stress relieving | Major | Verification | 100% | Mfg's std. | Stress relieving chart | Supplier's IR | 2 | - | 1 | SR chart will be reviewed by I.A. |
| | | Surface defects & dimensional check | Major | Visual/DP Test/ Measurement | DPT 10% random & 100% visual | IS:3658/Component drawing | IS:3658/Component drawing | Supplier's IR | 2 | - | 1 | |
| 2.2 | ROPE DRUM | Welding Joint quality & Weldment defects | Critical | Visual/DP Test/RT/ Measurement | 100% | Component drawing | ASME Sec.VIII Div I | Supplier's IR | 3/2 | 2 | 1 | Examination of RT films by I.A. |
| | ROPE DRUM | Stress relieving | Major | Verification | 100% | Mfg's std. | Stress relieving chart | Supplier's IR | 3/2 | 2 | 1 | |
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| A | B | C | D | E | F | G | H | I | Performed | Witnessed | Verified | |
| 2.2.1 | RT of rope drum joints | Sub surface defect | Critical | Radiography | As per component drawing | ASME Sec.VIII Div I | ASME Sec.VIII Div I | Supplier's IR/Vendor TC | 2 | - | 1 | Examination of RT films by I.A. For seamless pipes no RT. |

| 2.3 | a) Platform b) LT Frame c) Hand Rails | Dimensional Conformity | Minor | Measurement | Critical dimensions 100% others at random | Component drawing | Component drawing | Supplier's IR | 2 | | 1 | |
|-------|--|---|----------|-------------------------------|--|---|--|-------------------------|-----------|-----------|----------|--|
| 3 | MECHANICAL COMPONENTS | | | | | | | | | | | |
| 3.1 | MH, CT & LT Gear box Gears , Pinions and axles | Mfr's TC with chemical composition & physical properties Dimensional conformity Checks & Inspection of Key way milling | Major | Correlation with TC | 100% | Component drawing/ Specification IS:1570 / BS 970 | Component drawing/ Specification IS:1570 / BS 970 | Mfr's TC/ Supplier's IR | 2 | - | 1 | All the keys & keyways shall be checked by TPIA before assembly. Reports shall be furnished with tolerances & dimensions |
| 3.1.1 | LT & CT Shafts | Straightness & Dimensional conformity Checks & Inspection of Key way milling | Major | Correlation with TC | 100% | Component drawing/ Specification IS:1570 / BS 970 | Component drawing/ Specification IS:1570 / BS 970 | Mfr's TC/ Supplier's IR | 2 | + | 1 | All the keys & keyways shall be checked by TPIA before assembly. Reports shall be furnished with tolerances & dimensions |
| 3.2 | Machined components for MH, CT & LT Gear box | Hardness Dimensional conformity. | Major | Measurement | 100% | Component drawing IS:2048 | Component drawing | Supplier's IR | 2 | | 1 | |
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | | J | | K |
| 3.2.1 | Gear box | Dimensional conformity/ Inspection of machine surface of gearbox base. | Major | Measurement | 100% | Component drawing IS:2048 | Component Drawing. | Supplier's IR | 2 | | 1 | |
| 3.3 | Gear box assembly (no load run test & load test) | Hardness of gear teeth and grinding of Contact surfaces Backlash, Number of bearings. Oil seals, key way and keys. Noise level & Bearing temperature. | Major | Measurement & no load running | 100% | Component drawing / Specification | Component drawing / Specification Noise level of gear box < 80db | Supplier's IR | 2 | 1 | - | Review of reports/ Load Test witnessed by I.A. |

| 3.4 | Pulleys, Couplings, Buffers, Plummer blocks & other components | | | | | | | | | | | |
|-----|--|---|----------|--|-----------------|---|---|------------------------------|-----------|-----------|----------|--|
| | a) Material (Cast Steel and Steel) | Chemical & Physical as applicable | Major | Correlation with TC / Check test | 100% | Component drawing / Specification | Component drawing / Specification Noise level of gear box < 80db | Mfr's TC | 3 | - | 1,2 | Review of Test certificates of all bought out components. by I.A. and issue Compliance certificate |
| | b) Dimensional Inspection | Visual Inspection / Dimensional Inspection | Major | Visual Inspection / Measurement | 100% | Component drawing | Component drawing | Supplier's IR | 3 | - | 1,2 | |
| 3.5 | LT & CT Wheel | | | | | | | | | | | |
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | J | | | K |
| | a) Matl. Forged | Mfr's TC with chemical composition & Tensile strength | Major | TC correlation if not available then check test for chemical | one per heat | Component drawing / Spec. IS:1578 /BS 970 | Component drawing / Spec. IS:1578 / BS 970 | Mfr's TC / Supplier's Report | 3/2 | | 1 | |
| | | UT | Major | UT checking | 100% | ASTM A-388 | ASM A-388 | Supplier's IR | 2 | - | 1 | Reports/TC will review by I.A. |
| | b) Machined | Dimensional Conformity | Major | Measurement | 100% | Component drawing | Component drawing | Supplier's IR | 2 | - | 1 | |
| | c) Material | Hardness | Major | Measurement | 100% | Component drawing | Component drawing | Supplier's IR | 3 | 2 | 1 | |
| 3.6 | Snatch block assembly | Dimensional Conformity | Major | Measurement | 100% | Assembly Drawing | Assembly Drawing | Supplier's IR | 2 | - | 1 | Review of reports by I.A. |
| 3.7 | Hook | Physical & Chemical Composition and UT | Major | Witnessing / Correlation with Test Certificate. | 100% | Component drawing / IS - 1875 | Component drawing / IS - 1875 | Mfr's TC | 3 | - | 1 | Proof load test from Govt. approved laboratory. |
| | | Proof Load Test | Major | Testing | 100% | Component drawing | Component drawing | Mfr's TC | 3 | - | 1 | |

| | | Stress relieving | Major | Verification | 100% | Component drawing | Component drawing | Vendor TC | 3 | - | 2/1 | |
|-------|-------------------------|---|----------|----------------------------------|-----------------|-----------------------------------|-----------------------------------|---------------------|-----------|-----------|----------|--|
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | J | | | K |
| 3.8 | Brake drums | Chemical & Physical as applicable and Dynamic balancing. Key way and key. | Major | Correlation with TC / Check test | 100% | Component drawing / Specification | Component drawing / Specification | Mfr's TC | 3 | - | 1,2 | All the keys & keyways shall be checked by TPIA before assembly. Reports shall be furnished with tolerances & dimensions |
| 4 | BOUGHT OUT ITEMS | | | | | | | | | | | |
| 4.1 | Wire Rope | Dimensional, Lay, core and stands. | Major | Mfr's TC | 100% | Component drawing / BOOM | Component drawing / BOOM | Mfr's TC | 3 | - | 1 | Review of Mfr's TC by I.A. |
| | | Breaking Load | Major | Mfr's TC | 100% | IS:1364 IS:1367 | IS:1364 IS:1367 | Mfr's TC | 3 | - | 1 | |
| 4.1.1 | Bearings | Specific brand conformity. | | Mfr's TC | | | | | 3 | | 1 | |
| 4.1.2 | Machined Bolts & Nuts | Dimensional, visual, chemical/ physical | Major | Mfg TC | Random | Drawing | Drawing | Supplier IR, MFG TC | 3 | | 1 | Use No black bolts and taper washers |
| 5 | ELECTRICAL ITEMS | | | | | | | | | | | |
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | J | | | K |

| | | | | | | | | | | | | |
|-----|---|---|----------|--|-----------------|--|---|------------------|-----------|-----------|----------|---|
| 5.1 | Electrical Control Panel | Dimensional, Visual Sequence / Functional and high voltage Test | Major | Electrical test | 100% | Electrical Circuit diagram/ Approved drawing/ Specifications | Approved drawing/ Specification. | Supplier's IR | 3 | 1 | | Review of test certificates of all bought out items by IA |
| 5.2 | Motor | Visual | Major | Name Plate details | 100% | IS 325 | IS 325 | Mfr's TC | 3 | - | 1 | Review of TC by I.A. |
| | | Routine No load test, Insulation resistance values, winding resistance values | Major | Elec. test | 100% | IS 325 | IS 325 | Mfr's TC | 3 | - | 1 | |
| 5.3 | Brakes and Brake coil | Visual Accessibility of parts. | Major | Name plate details verification of TC | 100% | BOOM/Spec | BOOM/Spec | Mfr's TC | 3 | - | 1 | Review of TC by I.A. |
| 5.4 | Resistance box | Megger test, Resistance value | Major | Electrical test | 100% | BOOM/ drawing / Specifications. | BOOM/ drawing / Specifications. | Mfr's TC | 3 | - | 1 | Review of I.A. |
| 5.5 | Master controller Limit switch/Circuit breakers | Sequence, Number of cams, Idle operational test | Major | Visual | 100% | BOM/ drawing / Specifications. | BOM/ drawing / Specifications. | Mfr's TC | 3 | - | 1 | Review of TC by I.A. |
| 5.6 | Cables | Routine test | Major | Test | One per size | BOM/spec. | BOM/spec. | Mfr's TC | 3 | - | 1 | Review of TC by I.A. |
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | | J | | K |
| 6 | ASSEMBLY OF CRANE | | | | | | | | | | | |
| 6.1 | Bridge Girder & End carriage assembly. | Overall Dimension s Structural Alignment & LT Wheel alignment. Span measurement Diagonal Checks | Major | Measurement | 100% | Approved General Arrangement drawing / Specifications | Approved General Arrangement drawing / Specifications | Supplier's IR | 2 | 1 | - | |

| 6.2 | Crab assembly with Main Hoist & CT machinery | Dimensional & CT Wheel alignment | Major | Measurement | 100% | Approved drawing / Specifications | Approved drawing / Specifications | Supplier's IR | 2 | 1 | - | |
|-----|---|--|----------|--|-----------------|---|---|------------------|-----------|-----------|----------|---|
| 7 | NO LOAD TEST | | | | | | | | | | | |
| 7.1 | Main Hoist and | No Load test | Major | No Load test | 100% | Approved drawing / Specifications & IPSS | IS 3177 | Supplier's IR | 2 | 1 | - | Measure Gear Box Noise. (Noise Level should be <80db) Follow format annexed for parameters to be measured etc., |
| 7.1 | CT Mechanism | No Load test | Major | No Load test | 100% | Approved drawing / Specifications & IPSS | IS 3177 | Supplier's IR | 2 | 1 | - | Measure Gear Box Noise. (Noise Level should be <80db) |
| 7.2 | LT Mechanism | No Load test | Major | No Load test | 100% | Approved drawing / Specifications | IS 3177 | Supplier's IR | 2 | 1 | - | Measure Gear Box Noise. (Noise Level should be <80db) |
| 8 | TESTING | | | | | | | | | | | |
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | | J | | K |
| 8.1 | DEFLECTION TEST With Safe Working Load | Load test | Major | Measurement | 100% | Approved drawing / Specification / IS 3177 as applicable. | Approved drawing / Specification / IS 3177 as applicable. | Supplier's IR | 2 | 1 | - | Record Test procedure followed. |
| 8.2 | FULL LOAD TEST SAFE WORKING LOAD (MH & CT) | Load test | Major | Measurement of speed, voltage & Current Measurement | 100% | Approved drawing / Specification / IS 3177 as applicable. | Approved drawing / Specification / IS 3177 as applicable. | Supplier's IR | 2 | 1 | - | |
| 8.3 | OVER LOAD TEST (MH & CT) | Load test | Major | Observation and manoeuvre ability of CT & Hoist motion | 100% | Approved drawing / Specification / IS 3177 as applicable. | Approved drawing / Specification / IS 3177 as applicable. | Supplier's IR | 2 | 1 | - | |
| 9 | GANTRY GIRDER AND RAIL ALIGNMENT | Span, Level, Joints and Anchoring of girders | Major | Measurement | 100% | Approved drawing / Specification / IS 3177 as applicable | Approved drawing / Specification / IS 3177 as applicable | | 2 | 1 | | |

| 10 | LOAD TESTING AFTER ERECTION AT SITE. | | | | | | | | | | | |
|------|---|--|----------|---|-----------------|---|---|------------------|-----------|-----------|----------|---------|
| 10.1 | No Load Test | Functional checks of all motions, limit switches and Safety Inter locks | Major | | | | | | 3/2 | 1 | | |
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | | J | | K |
| 10.2 | Deflection test with full load | Load test | Major | Measurement | 100% | Approved drawing / Specification / IS 3177 as applicable. | Approved drawing / Specification / IS 3177 as applicable. | Supplier's IR | 3/2 | 1 | - | |
| 10.3 | Full load test (MH, CT & LT) & Safety Mechanisms. | Load test | Major | Measurement of speed, voltage & current measurement | 100% | Approved drawing / Specification / IS 3177 as applicable. | Approved drawing / Specification / IS 3177 as applicable. | Supplier's IR | 3/2 | 1 | - | |
| 10.4 | Brake Test | Brake holding Test Brake path test, Brake current, winding resistance values, electrical test (IR with respect to body) | | | | | | | 3 | 1 | | |
| 10.5 | Hoist operation without encoder | In SLVC mode capability to be checked | | | | | | | | 1 | | |
| # | Components / Operations | Characteristic to be checked | Category | Type / Method of check | Extent of check | Ref. Document | Acceptance Norm | Format of record | Agency | | | Remarks |
| | | | | | | | | | Performed | Witnessed | Verified | |
| A | B | C | D | E | F | G | H | I | | J | | K |

| | | | | | | | | | | | | |
|------|--|--|-------|--|------|---|---|---------------|-----|---|---|-------------------------------|
| 10.6 | VVVF Drives | output voltage, current, Torque curves (Graphs), Brake resistance during load test, Braking resistor resistance value & IR, Braking resistor max temperature during load test | | | | | | | 3 | 1 | | |
| 10.7 | Over Load test 125% of Full Load (MH, CT & LT) | Load test | Major | Observation and manoeuvre ability of CT & Hoist motion | 100% | Approved drawing / Specification / IS 3177 as applicable. | Approved drawing / Specification / IS 3177 as applicable. | Supplier's IR | 3/2 | 1 | - | Examine for weld cracks etc., |
| 11 | Painting | | | | | | | | 3/2 | 1 | | |
| 12 | Safety features | | | | | | | | 3/2 | 1 | | |
| 13 | Special requirements | | | | | | | | | | | |

QUESTIONNAIRE FOR DESIGN, MANUFACTURE, TESTING AND ERECTION & COMMISSIONING OF HIGH CAPACITY EOT CRANES

(INFORMATION TO BE PROVIDED BY BIDDERS)

Name & Address of EOT Crane supplier:

Phone:

Mobile:

Fax : Email:

| Sl. No. | Items/ Information | Specification/ details of items | Remarks |
|----------------|--|--|----------------|
| 1. | Type of Industry (SSU, Medium, Govt, etc.,) | | |
| 2. | Year of Establishment | | |
| 3. | Annual Turnover (in Rs. lakhs) for last three years year ending up to 31-03-20 | | |
| 3.1 | Turn over – 2019-20 | | |
| 3.2 | Turn over – 2018-19 | | |
| 3.3 | Turn over – 2017-18 | | |
| 4. | Quality Certification of company (ISO, TUV, etc.,) | | |

| | | | |
|-----|---|--|--|
| 5. | Nos. of EOT Cranes of capacity 80T and above and Span 16m and above manufactured during last 05 years | | |
| 6. | No of EOT Cranes of capacity not less than 80T with VVVF (VFD) drive & control systems produced in last 05 years. | | |
| 7. | No. of EOT Cranes of capacity not less than 80T supplied with Emergency Rope drum caliper brake. | | |
| 8. | Shop floor Area Covered | | |
| 9. | No of Employees (Supplier shall mention contract personnel separately) <ul style="list-style-type: none"> a. Engineers b. Supervisors c. Technicians d. Quality control engineers Administrative staff | | |
| 10. | Raw Material Sourcing: <ul style="list-style-type: none"> a. Steel Plates b. Rolled sections, Flats c. Forged Rods, Blanks d. Round bars (for Axles) e. Seamless pipes | | |

| | | | |
|-----|---|--|--|
| 11. | <p>Sources of Bought out components:</p> <ul style="list-style-type: none"> a. Electric Motors b. Brakes c. Gearboxes d. Couplings e. Limit switches f. Wire ropes | | |
| 12. | Details regarding out sourcing, if any, of manufacturing and fabrication works. | | |
| 13. | <p>Handling facility available:</p> <ul style="list-style-type: none"> a. Over head /Gantry crane details (capacity, span,lift). b. Mobile cranes | | |
| 14. | <p>Load testing Facility Available:</p> <ul style="list-style-type: none"> a. Maximum weight available. b. No. of weights c. Total test load available. | | |
| 15. | <p>Welding/Fabrication Workshop (Type/Capacity/Quantity of machines shall be provided)</p> <ul style="list-style-type: none"> a. MMAW Machines b. GMAW Machines c. Gas Cutting M/Cs d. Plasma Cutting M/Cs e. Welding Fixtures | | |
| 16. | Fixtures available for Welding of Girders of Span more than 16m | | |

| | | | |
|-----|--|--|--|
| 17. | <p>Welding Professionals:</p> <ul style="list-style-type: none"> d. No. of welders (MMAW) Qualification details Qualifiedby e. No. of welders (GMAW) Qualification details Qualifiedby f. No. of welders(TIG) Qualification details Qualified by | | |
| 18. | <p>Details of Welding Inspection Equipment & welding inspector available with supplier (LPT, UT, MPT, X-ray,etc) Any out sourcing can be mentioned.</p> | | |
| 19. | <p>Forming Facilities available (with brief specification of each machine)</p> <ul style="list-style-type: none"> a. Shearing Machine b. Cutting machine c. Bending machine | | |
| 20. | <p>Machining Facilities available (with brief specification of each machine)</p> <ul style="list-style-type: none"> a. Turning Lathe (Conventional/CNC) b. Milling Machine (Conventional/CNC) c. Gear Cutting/hobbing machines d. Gear Grinding machines e. Drilling Machine (Conventional/CNC) f. Cylindrical Grinding Machine g. Any other machines | | |

| | | | |
|-----|---|--|--|
| 21. | Details of Inspection facilities / Instruments available (Brief description & specifications shall be provided) | | |
| 22. | If third party inspection services are taken for manufacturing of EOT Cranes give details. | | |
| 23. | Maximum capacity of EOT Crane manufactured with dimensions, capacity, Span, quantity, customer, and purpose of EOT Crane. | | |
| 24. | Special purpose EOT Cranes manufactured, if any, capacity, dimensions, and customer | | |
| 25. | Design facility available: a. Drafting & Modeling software packages b. FEM software c. Other Softwares d. Design engineers (with qualification &experience) | | |
| 26. | Painting facility available a. Sand/ Abrasive blasting facility. b. Painting equipment c. Make of paints generally used. | | |
| 27. | General stock level of Raw materials/brought out items in the factory: 1. Structural steel plates etc., 2. Alloy steel round bars 3. Bought out items 4. Paints,etc., | | |
| 28. | Any awards or recognitions obtained through product excellence | | |

| | | | |
|-----|--|--|--|
| 29. | Collaborations with other reputed manufactures and OEMs with product details and Name of Principal supplier, country of origin etc., | | |
| 30. | Any other relevant information in design, manufacture and testing of EOT Cranes | | |
| 31. | List of documents enclosed with this questionnaire | | |
| 32. | Any other information like to add (separate sheet can be attached) | | |

Signature of competent person Name :
Designation :

Date: Company seal:

1. SCOPE OF WORK:

The scope of supply of **80/20 Ton EOT crane** will include its design, manufacturing, assembly, testing & inspection at manufacturer's works, packing, dispatch, transportation, safe delivery at site, required fabrication at site, installation, testing & commissioning, performance testing, final painting at site and handing over to CMTI. The Scope of supply shall also include but not be limited to the following, along with necessary fittings, fixtures and accessories.

- (a) Bridge structure with platform and hand railing
- (b) Traveling mechanism for long travel and cross travel
- (c) Track wheels for long and cross travel
- (d) Trolley
- (e) Hoisting mechanism
- (f) Service Platform on both sides of crab girder
- (g) Brake Mechanism separately for long travel, cross travel and hoisting
- (h) Pendant Control and wireless remote operation for all movements
- (i) Electrical motors, control gear and equipment
- (j) AC variable frequency controls for all motions of the crane.
- (k) Rails.
- (l) PLC and HMI Interface
- (m) Supply of spare as per List.
- (n) Complete Dismantling, loading and unloading of Existing 40/10 ton EOT crane Located at New workshop CMTI, Bangalore Including DSL and Rails within the CMTI Premises as per in charge Engineer.

Exclusions:

- 1) Long travel supporting girder structure.

2.FOLLOWING ITEMS ARE ALSO INCLUDED IN BIDDER'SSCOPE.

- i) Consumables like first fill of lubricating oils etc. for the initial operation of the Equipment till handing over.
- ii) Commissioning spares and start-up spare parts.
- iii) Special tools & tackles, if any required.
- iv) All drawings / documents along with operation and maintenance manuals as per requirement mentioned elsewhere in the tender document.
- v) Getting approval of design/drawings and design calculation related to the equipment (crane), from CMTI. After the approval of design/drawing the work can be started.

- vi) Trailing/Flexible Cables as required for the crane shall be in bidder's scope
- vii) 3 Ph, 415V, 50 Hz power supply at Isolator shall be provided at one point for EOT Crane. Further distribution including supply, laying & termination of cables up to existing panel shall be in Bidder's scope.

3.SCOPE OF SUPPLY FOR ELECTRICALCOMPONENTS:

All accessories and auxiliary electrical equipment including drive motors, electrically operated brakes, controllers, AC variable frequency controls, conductors, protective devices, operating devices, cables, conduits etc. necessary for the safe and satisfactory operation and maintenance of the crane shall be included in the Vendor's scope of supply. **Electrical equipment shall be adequately rated to permit simultaneous operation of any combination of motions of the crane for its duty service.**

The scope of supply relating to electrical portion shall cover:-

- (a) **Indicating lamp and sound alarms:** All indicating lamps shall be LED type with appropriate protection. Sound alarm shall have sufficient dB level such as it would be audible in the crane operating area.
 - 1. **Preferred Make** Siemens, Technik, BCH
- (b) Shrouded down shop leads with LED lamps for three phase power indication.
- (c) Main current Collectors (one in forward and another in rear)
- (d) Power disconnecting switch on the crane bridge walk way, to be provided, immediately after the main current collection gears.
- (e) Protective Switchgears
- (f) Motor control panels.
- (g) Socket outlets
- (h) Power and control cables for CT motion cables shall run in cable drag chain.
- (i) IGUS Drag link cable system.
- (j) **PLC control system with at least 20% I/O's kept as spare.**
- (k) **Monochrome HMI to be used for fault diagnostics display. Make as per annexure attached. Over Weight alarm should be displayed on HMI**
- (l) Pendant & Wireless remote: Double step push buttons of Telemecanique, Siemens, Group Schneider, L & T, Bhartia Cutler Hammer, ABB, Allen Bradley, make pendant and two numbers of wireless remote control having 100 meters range of operation shall be either of

Stromag, Siemens, ABB make. There shall be override provision on the pendant for the remote. A master key control on the pendant shall be provided. An emergency PUSH BUTTON to complete shutdown shall be provided. The control pendant shall have separate movement in CT direction independently from trolley.

(m) MCBs shall only be used in the crane in lieu of HRCf uses.

(n) Earth wire on crane portion as per relevant IS and IE rules.

(o) Shrouded bus bar copper conductor along with Isolator switch at the ground level. Cabling from the Isolator to the shrouded bus bar shall be in vendor's scope.

(p) 4 Nos. of 400W glass enclosed lights(LED Light type) shall be provided (source should be taken from transformer) under the crane, operable from pendant as well as from the wireless remote control.

Preferred Make – PHILIPS, Osram, Wipro, Syska

- **A load cell conforming to IS 3177 shall be provided in the crane for the online measurement of the weight of the load hoisted.**

All sundry erection material required for installation and connecting up of electrical equipment with cable laying and fixing accessories shall be included in the price of the crane.

TECHNICAL BID COMPLY SHEET

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|----------|--------------------------|--|--|---------------------|
| A | MAIN PARAMETERS | | | |
| 1.0 | Type of Crane | Double girder EOT as per IS 3177-1999 for Indoor use | | |
| 1.1 | Class & duty | M4 as per IS 3177-1999 | | |
| 1.2 | Main Hoist capacity | 80 Tonnes | | |
| 1.3 | Auxiliary Hoist capacity | 20 Tonnes | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|--|---|--|---------------------|
| 1.4 | Span | 16 meters- approximate | | |
| 1.5 | Bay Length | 38 meters- approximate | | |
| 1.6 | Operation Speeds (maximum) | | | |
| 1.6.1 | Main Hoist | 3 meters/minute | | |
| 1.6.2 | Inching Speed (Micro for main hoist) | 0.15 meters/minute | | |
| 1.6.3 | Auxiliary Hoist | 5 meters/minute | | |
| 1.6.4 | Inching Speed (Auxiliary hoist) | 0.25 meters/minute | | |
| 1.6.5 | Long travel | 10 meters/minute | | |
| 1.6.6 | Long Travel (Micro) | 0.5 meter/minute | | |
| 1.6.7 | Cross travel | 6 meters/minute | | |
| 1.6.8 | Cross Travel (Micro) | 0.3 meter/minute | | |
| 1.7 | Working clearance (distance) from centre of gantry rail to nearest obstruction | Supplier to indicate | | |
| 1.8 | Vertical distance from top of gantry rail to lowest overhead obstruction | 2.0 meters maximum | | |
| 1.9 | Distance from floor to top of gantry rail | 11.0 meters (Refer Fig. 1) | | |
| 2.0 | Lift Height (minimum) | | | |
| 2.1 | Main Hoist (above ground) | 9.5 meters min. | | |
| 2.2 | Auxiliary Hoist (above ground) | 10 meters | | |
| 3.0 | Hook Approach | | | |
| 3.01 | Main Hoist | Distance between DSL side Bidder to specify, Distance between Opposite side Bidder to specify | | |
| 3.02 | Auxiliary Hoist | Distance between DSL side Bidder to specify, Distance between Opposite side Bidder to specify | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|----------------|---|---|---|----------------------------|
| 3.1 | Size of gantry rail (Long Travel) - | Supplier to indicate actual value | | |
| 3.2 | Size of CT Rail | Supplier to indicate actual value | | |
| 3.3 | LT wheel load in Tonnes | Supplier to indicate actual value | | |
| 3.4 | Number of Trolleys | One | | |
| 3.5 | Width of Crane in meters | 6 mts max Supplier to indicate actual value | | |
| 3.6 | Distance between Hook to Structural Column for CT | 2 mts. Max (Refer Fig. 2) | | |
| 3.7 | Distance between Hook to Structural Column for LT | 3 mts. Max (Refer Fig. 1) | | |
| 4 | CONSTRUCTION / STRUCTURAL DETAILS | | | |
| 4.1 | Main Hoist hook type | Ramshorn Hook as per IS: 5749 | | |
| 4.2 | Auxiliary Hoist hook type | Shank Hook as per IS: 3815 | | |
| 4.3 | Hook latches for Main & Aux hoists | Required | | |
| 4.4 | Hoist wire ropes | 6/36 or 6/37 construction as per IS:2266-1989 | | |
| 4.5 | Number of falls Main Hoist | 16 falls or higher | | |
| 4.6 | Number of falls Auxiliary Hoist | 4 falls or higher | | |
| 4.7 | LT Drive | Twin corner drive with horizontal type gear box | | |
| 4.8 | Number of wheels for LT drive | 8 | | |
| 4.9 | Diameter of wheels for LT drive | Supplier to specify | | |
| 4.10 | Number of driven wheels for LT drive | Supplier to specify | | |
| 4.11 | CT Drive | Supplier to specify type of drive | | |
| 4.12 | Platform for approach for maintenance of CT gearbox | Minimum 1 meter platform width required | | |
| 4.13 | Number of wheels for CT drive | Supplier to specify | | |
| 4.14 | Diameter of wheels for CT drive | Supplier to specify | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|--|--|--|---------------------|
| 4.15 | Type of bearings for LT/CT wheels | Anti-friction bearings | | |
| 4.16 | Type of mounting of LT/CT wheels | "L" type brackets | | |
| 4.17 | Variable speed control | | | |
| 4.17.1 | LT Drive | Through VVVF drive | | |
| 4.17.2 | CT Drive | Through VVVF drive | | |
| 4.17.3 | AH Drive | Through VVVF drive | | |
| 4.17.4 | MH Drive | Through VVVF drive with Bypass option required | | |
| 4.17.5 | MH/AH Drive micro speed | Through VVVF drive | | |
| 4.18 | Operations required through | | | |
| 4.18.1 | Pendant | MH, AH, LT & CT and micro speeds for MH, AH, LT & CT | | |
| 4.18.2 | Radio Remote Control | MH, AH, LT & CT and micro speeds for MH & AH | | |
| 4.19 | Radio Remote Control | The unit should work with rechargeable batteries. Battery charger to be provided along with the unit. | | |
| 4.20 | Pendent | Shall be movable type | | |
| 4.21 | Duty cycle | 25% CDF all motions | | |
| 4.22 | Brakes | Electro Hydraulic operated thruster drum brakes are to be provided for all motions and hoists.(Totally enclosed) conforming to IP:54 | | |
| 4.23 | Gear Boxes for LT, CT and Hoists | Supplier to specify type of drive – Semimodular /modular type (Horizontal helical gearbox or equivalent) | | |
| 4.25 | Couplings between motor and gearbox | <u>Geared couplings</u> | | |
| 4.26 | Couplings between gearbox and rope drum for hoists | <u>Geared couplings</u> | | |
| 4.27 | Mounting | All the gearboxes, motors, brakes, bearing pedestals, etc. shall be mounted on machined surfaces | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|----------------|------------------------------|--|---|----------------------------|
| 4.28 | Lubrication system for Crane | To be Specified by the supplier | | |
| 4.29 | Toe guards | Toe guards shall be provided for all openings including for trolley | | |
| 4.30 | Railings | Safety hand railings of tubular construction shall be provided across full length of the bridges and end carriages, staircases and in any other places where openings have been provided. | | |
| 4.31 | Jacking pads | Suitable jacking pads should be provided on end carriages and crab for jacking up the crane and crab for changing track wheels | | |
| 4.32 | Safety Pads | Suitable reinforced safety pads should be provided under the end carriages and crab to prevent the crane from falling more than 25mm in the event of breakage of a track wheel/bogie/axle. These safety stops shall not interfere with the removal of wheels | | |
| 4.33 | End buffers | Spring-loaded buffers are to be provided for long travel and cross travel. | | |
| 4.34 | Measurements | All components including fasteners should be in metric system only | | |
| 4.35 | Locking of Parts | Bolts and screws in rotating parts shall be locked. | | |
| 4.36 | Painting | The cranes should be painted with two coats of deep orange paint (epoxy based) after giving primary coat. Girders and trolley frame shall be shot blasted before painting. | | |
| 4.37 | Plates used for fabrication | To be of rolled steel as per IS 2062 plates. Test certificates to be furnished | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|----------|---|---|--|---------------------|
| 4.38 | End carriages | To be of bogey type construction | | |
| 4.30 | Butt joints | All butt joints to be duly Inspected with suitable NDT technique | | |
| 4.40 | Girder | No splice joint – to be of single piece only. Number of weldable joints along the total length of the girder should not exceed three | | |
| 4.41 | Platform | Full length chequered plate platform shall be provided on both bridges and wherever access is necessary for operation and maintenance. The platforms shall be bolt jointed. | | |
| 4.43 | DSL | Supplier scope. | | |
| 4.44 | DSL guard | To be provided | | |
| 5 | ELECTRICAL EQUIPMENT | | | |
| 5.1 | Power Supply at DSL(Copper) –Vendor Scope | 415 volts \pm 10 %, 3 phase, 50, \pm 2 Hz, 4 wires, one conductor earthed. Isolator switch should be provided for isolating the supply to the crane All the cables for LT and CT are to be routed through IGUS chain (Plastic) with cable tray only. | | |
| 5.2 | Control voltage | 110 Volts AC and 24V DC(through use of transformer and SMPS) | | |
| 5.3 | Auxiliary voltage | 230 Volts AC (through use of transformer) | | |
| 5.4 | Under slung LED Light | 4 Nos. of 400W glass enclosed lights shall be provided (source should be taken from transformer) | | |
| 5.5 | Sockets | The following sockets are to be provided in the protective panel 1) 230 V AC work socket with on/off | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|-------------------------------|---|--|---------------------|
| | | switch | | |
| 5.6 | Power distribution to trolley | Trailing cable supported on anti-friction wheel cable | | |
| 5.7 | Connection to pendent | Trailing cable supported on anti-friction wheel cable | | |
| 5.8 | Switch gear Panels | <ol style="list-style-type: none"> 1. Individual panels to be provided as follows. <ol style="list-style-type: none"> a. Protective panel –one b. MH panel –one c. AH Panel –one d. CT & LT Panel –one 2. Ferrules to be provided for cable connections as per circuit diagram. 3. Mains isolating switch to be provided. 4. Input contactor should be provided in the panel for each drive 5. Panels shall be of IP55 grade 6. Necessary cooling to be provided for the panels. | | |
| 5.9 | Colour of panels | The panels should be powder coated. The colour of coating shall be light grey confirming to IS:2932:2003 (as per IS 5) | | |
| 5.10 | PLC | Crane operation should be controlled by a latest Model of PLC with at least 20% I/O's kept as spare. | | |
| | HMI | Monochrome HMI to be used for fault diagnostics display. Make as per annexure attached. Over Weight alarm | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|-------------------------------|--|--|---------------------|
| | | should be displayed on HMI. | | |
| 5.11 | VVVF Drives for MH,AH,LT & CT | <ol style="list-style-type: none"> 1. The power rating of VVVF drives shall be one step higher than the selected rating of motor, to cater to the maximum short term torque value of the motor. 2. VVVF Drives should have profinet communication facility 3. Drive shall have configurable DI / DO's. 4. For Hoist motions, Control shall sense sufficient motor torque (or current) before releasing holding brakes (i.e., torque proving). 5. The Control circuit shall be so designed as to ensure that brakes for all motions are applied near about zero speed of rotation. 6. "S" curve acceleration / deceleration pattern should be provided, to ensure jerk free movement. | | |
| 5.12 | Input and output chokes | 1. Suitable input and output chokes are to be provided for minimizing the harmonics from VVVF drive to the supply source, for all VVVF drives. | | |
| 5.13 | Weighing scale display | Suitable for 80T Capacity (Optional Quoted separately without compromising Main Hoist Stroke of 9.5 mts) | | |
| 5.14 | Transformer | <ol style="list-style-type: none"> 1. Both control and lighting transformers can be located outside the panel with suitable enclosure for ventilation. 2. Transformer terminals are to be | | |

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|---------|----------------------------|---|--|---------------------|
| | | covered with "Hylam" sheet or acrylic sheet to prevent from inadvertent / accidental contact. | | |
| 5.15 | Dynamic Braking unit (DBU) | Suitable size and rating of DBU for all the above drives. | | |
| 5.16 | Dynamic braking resistors | <ol style="list-style-type: none"> 1. Dynamic braking resistors of suitable capacity/rating shall be provided to all VVVF drives. For Hoist motions DBRs shall be sized for a minimum of 150% of motor full load torque and it shall not be less than the torque limit setting of the VFD in the hoisting direction. 2. Necessary forced cooling needs to be planned. Controlling of the cooling fans needs to be linked with control supply ON. 3. The DBR panels shall be designed such that during maintenance activities the entire door has to be disassembled for enabling better access to components inside the panel. | | |
| 5.17 | Electrical Motors | <ol style="list-style-type: none"> 1. Crane duty Motors suitable for Inverter Operations shall be as per IS3177. 2. Squirrel cage induction motors kW rating as per IS3177 3. Class of insulation - Class F 4. For accepting the input from VVVF drives, 60% CDF, min of 300 starts per hour, IP55. 5. All the motors shall be provided with inbuilt thermistor and linked with | | |

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|---------|--|--|--|---------------------|
| | | VVVF drive for necessary protection like switch OFF the motor in case of increase in winding temperature. | | |
| 5.19 | Details to be provided related to motor selection and calculations | Bidder shall provide following details 1. Power of motor (detailed calculations pertaining to selection criteria considered should be provided) | | |
| 5.20 | Current drawn by motors | Maximum Current drawn by all motors with rated load and maximum traverse rate should not exceed 80% of the full load rated current. | | |
| 5.21 | Torque Rating of motors | Motor full load torque rating shall be min. 120% of calculated rating on full load. | | |
| 5.22 | Fail safe Brakes | Frequency of operation shall be mentioned. | | |
| 5.23 | Contactors | 1) Individual Power Contactors Suitably Rated to be provided for each motion Make as per Annexure | | |
| 5.24 | MCCB's | Suitable MCCB's Should be provided For all VVVF Drives. | | |
| 5.25 | Motor protection circuit breaker (MPCB) | 1. To be provided for the motor which is not powered viz. VVVF drive. (ie., all thruster brakes). | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|--|---|--|---------------------|
| | | 2. MPCB to be selected with 2 nos. of NO and NC points as auxiliary contacts and preferably one no. of alarm contact. | | |
| 5.26 | SMPS | Input voltage –Three phase 415 Volts AC Output voltage – 24 V DC Current rating – as per the circuit load | | |
| 5.27 | Terminal blocks and labels | Terminal blocks shall be of <u>750 Volts grade</u> of the stud type and shrouded. | | |
| 5.28 | Limit Switches | End limit switches to be provided for all the traverses motions. | | |
| 5.29 | Limit Switches for Main & Auxiliary hoists | One series limit switch with counter weight type and one rotary shunt limit switches for each hoist | | |
| 5.30 | Earthing | The crane rails, structures, motor/brake frames, metal enclosures of all electrical equipment, conduit and trays shall be effectively grounded with double earthing and shall be connected to building earth through gantry rails. | | |
| 5.31 | Panel Lighting | LED lamps only. | | |
| 5.32 | Pendant Push button station | 1. Floor operated pendant (Push Button Station) shall be provided. 2. PBS shall be provided with push buttons for controlling crane motions: a. Main Hoist motion UP / DOWN - Main speed & Creep speed b. Aux. Hoist motion UP / DOWN - Main speed & Creep speed | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|-------------------|--|--|---------------------|
| | | c. Cross Travel motion Right / Left - Main speed & Creep speed d. Long Travel motion Fwd / Rev - Main speed & Creep speed e. Pendant Shall be provided with Key way switch Lockable at OFF (for Control ON command), f. Emergency OFF (Lockable) (One more emergency OFF shall be planned in Bridge platform). g. Crane ON indication Lamp h. PBS shall also provide with 2-way Switch for Under Bridge Lights. i. At least 20 % Spare Core shall be provided in PBS. j. Lockable Selection for crane operation from pendant or RRC Should be provided. | | |
| 5.33 | Selector switches | 1. Selector switches shall be of semi flush mounted type. 2. Only the front plate and operating handle projecting. | | |
| 5.34 | Interlocks | Interlocking is to be carried out for selection of command for all the motions. 1. Pendant level: Hard wired interlocks are to be provided at push button station. For example when Main Hoist UP motion push button is pressed Hoist Creep / Hoist Down (Main and Creep) motions should not be activated even if pressed and Vice versa. 2. Auxiliary contactor level: Hard wired interlocks are to be provided such that | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|--|---|--|---------------------|
| | | <p>when Aux.contactor operates with respect to the motion selected, remaining Aux. contactors with respect to other Aux. hoist motions should not be operated.</p> <p>3. In the VVVF Drive: It is to be programmed such a way only one hoist motion has to be selected for operation at a time in the VVVF drive.</p> | | |
| 5.35 | Main Hoist VVVF drive ON command is to be interlocked with the following. | <ol style="list-style-type: none"> 1. Rotary limit switches i.e. hoist and lower 2. Gravity limit switch. 3. Auxiliary Hoist operation 4. Thruster Brakes' MPCB condition. 5. Provision shall be made for two extra interlocks for future usage. | | |
| 5.36 | Auxiliary Hoist VVVF drive ON command is to be interlocked with the following. | <ol style="list-style-type: none"> 1. Rotary limit switches i.e. Aux hoist and lower operation limit. 2. Gravity limit switch 3. Main Hoist operation 4. Thruster Brakes' MPCB condition. 5. Provision shall be made for two extra interlocks for future usage. | | |
| 5.37 | Cross Travel VVVF drive ON command is to be interlocked with the following. | <ol style="list-style-type: none"> 1. Right and Left limit switches for respective motion of the drive. 2. Brakes' MPCB condition. 3. Provision shall be made for two extra interlocks for future usage. | | |
| 5.38 | Long Travel VVVF drive ON command is to be interlocked with the following. | <ol style="list-style-type: none"> 1. Forward / Reverse limit switches for respective motion of the drive 2. Brakes' MPCB condition. 3. Provision shall be made for two extra interlocks for future usage. | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|--------------------------|---|--|---------------------|
| 5.39 | Indication lamps | <p>1. Indication lamps shall be provided for all 3 phases for the protective switch gear panel, LED module shall be suitable for direct operation on 415Volts, 50 Hz AC</p> <p>2. Control ON / OFF (based on the pendent illuminated push button control) indication lamps shall be provided on the protective panel.</p> <p>3. Indicating lamps shall be of LED type only, provided with translucent lamp covers.</p> <p>4. Lamps and lenses shall be easily replaceable from the front.</p> | | |
| 5.40 | Power and Control Cables | <p>1. All wiring for power, control, lighting etc., (which is running in the IGUS cable drag chain) shall be carried out with 1.1.K.V grade flexible copper conductor cables.</p> <p>2. Minimum size 2.5 mm sq. in power circuit and 1.5 mm sq in control circuit.</p> <p>3. All wiring to be done neatly through perforated trays from the protective panel / VVVF panel to the top junction boxes fixed in suitable places.</p> <p>4. Wiring shall be neatly bunched, adequately supported and properly routed to allow easy access and maintenance.</p> <p>5. Wires shall be identified by number ferrules at each end.</p> <p>6. The lugs shall be of the ring type and of non- deteriorating material.</p> | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|----------|---|---|--|---------------------|
| | | 7. Cable tags to be provided for cable connections as per circuit diagram. | | |
| 5.41 | Limit Switches for Main Hoist and auxiliary hoist | 1. Rotary Limit Switches To be linked with the hoist motors and linked to the control circuit according to the operational requirement) (For hoist and lower limit). 2. Gravity Limit Switches | | |
| 5.42 | Limit Switches for CT & LT | Lever type limit switches | | |
| 5.43 | Buzzer | Audible Alarm for LT and CT while moving as well as on sensing end limits. With switch ON/OFF option | | |
| 5.44 | Safety | 1) Rubber Mats to be provided before the Panels for maintenance purpose 2) All the power terminal and live parts are to be covered with proper terminal cover 3) Minimum clearance Phases, phase to neutral and phase to earth to be maintained as Per IS 60947-1 4) All the live parts to be covered properly in order to avoid possibility of inadvertent contact. | | |
| 5.45 | Training on Drives | Training shall be provided to our engineers about operation, maintenance and trouble shooting of VVVF drives during commissioning of Crane | | |
| 6 | MATERIALS | | | |
| 6.1 | Gears | DIN 8 Class accuracy | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|----------|---------------------------------|--|--|---------------------|
| 6.2 | Hardness of Gears | 28 – 32 HRc | | |
| 6.3 | Pinions | Vendor to specify the details | | |
| 6.4 | Hardness of Pinion | 28 – 32 HRc, maintain 2-3 HRc higher than Gear | | |
| 6.5 | Heat treatment of gears/pinions | Toughened | | |
| 6.6 | Pulleys | Vendor to specify the details | | |
| 6.7 | Gear Box | Vendor to specify the details – To be of Modular/Semi-modular type | | |
| 6.8 | Wheels | C 55 Mn 75 / forged steel with hardness of 300-350 BHN | | |
| 6.9 | Rope Drum | Rolled steel plate fabricated (IS-2062) duly stress-relieved with flanges at both ends. Rope drum to be machine grooved in hoisting direction. Dia of drum/rope ratio to be specified by the supplier. | | |
| 6.10 | Makes of bought out components | As per Annexure | | |
| E | GENERAL | | | |
| 7.1 | Environment | Operating environment is Indoor, with ambient temperature of 50°C and with relative humidity of 85%. | | |
| 7.2 | Guarantee | Supplier shall guarantee all equipment for a period of 24 months from the date of commissioning at CMTI. | | |
| 7.3 | Oils & grease | First filling of oils and grease are in supplier's scope | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|----------|---|--|--|---------------------|
| 7.4 | Manufacturer's reference list | The manufacturer should have manufactured, at least 5 cranes of 80 tons or higher capacity and with span ≥ 16 meters (of Class M5 or higher as per IS 3177/1999 or equivalent), in the last 5 years as on date of enquiry. List of these cranes to be furnished with names of contact persons, telephone and FAX nos. and e-mail IDs. | | |
| 7.5 | Noise Level of Crane | Should be within 75dB to 80dB | | |
| 7.6 | Welding Inspection | All major welds must be tested by NDT and certified by Approved/Authorized third party inspection | | |
| 8 | DOCUMENTATION | | | |
| 8.1 | List of documents to be submitted with offer (offer will be rejected unless these are submitted) | Point-wise clarifications to all points of this specification including deviations, if any | | |
| 8.2 | | Sketches showing full details of cranes with dimensions / end clearances (between centre of LT rails to column face of building), overhead clearance from LT rails, hook approach limits, lift height, etc. | | |
| 8.3 | Total weight of crane in Tonnes | To be Indicated by supplier | | |
| 8.4 | Weight of assembled trolley in Tonnes | To be Indicated by supplier | | |
| 8.5 | Weight of crane girder in Tonnes | To be Indicated by supplier | | |
| 8.6 | List of drawings/documents for approval | General Arrangement (GA) drawing of crane | | |
| 8.7 | | GA Drawing of Trolley | | |
| 8.8 | | GA Drawing of individual mechanism | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|-----------|--|---|--|---------------------|
| 8.9 | before manufacture of crane. Note: It is the responsibility of the supplier to get the drawings/documents approved. No extension of delivery will be accepted in case of any delay in submission/approval of drawings | Drawings of bridges, end carriage, and their connections | | |
| 8.10 | | Sub-assembly drawings for wheels, hook blocks, gearboxes, and rope drums | | |
| 8.11 | | Calculation for selection of motor, gearbox and brake | | |
| 8.12 | | Calculation for bridge girder, end carriage and selection of wheels | | |
| 8.13 | | Total weight of structural, mechanical and electrical equipment separately | | |
| 8.14 | | Quality Plan | | |
| 8.15 | | Electrical/electronic circuit diagrams, including soft copy of the PLC program and necessary software's with licenses has to be provided. | | |
| 8.16 | | GA drawing of electrical panels and layout of components within the panels | | |
| 8.17 | List of drawings/documents to be submitted at the time of inspection of crane at supplier's works and at CMTI | Test certificates of all major bought out items like hooks, brakes, wire ropes, safety limit switches. | | |
| 8.18 | | 4 Nos. Cranes operation and maintenance manuals. | | |
| 8.19 | | 1 No. spare parts manual | | |
| 8.20 | | One set of drive manuals including software for each drive installed is to be provided | | |
| 9 | INSPECTION | | | |
| 9.1 | Crane span | Check of Crane span | | |
| 10 | ERECTION & COMMISSIONING | | | |
| 10.1 | At CMTI works | Part of supplier's scope. | | |

| Sr. No. | DESCRIPTION | SPECIFICATION | SUPPLIER COMPLY (YES or NO) If No please comment | DEVIATIONS/COMMENTS |
|---------|---|--|--|---------------------|
| 10.2 | Material (lifting equipment, lifting tackles, etc) required during erection and commissioning | Part of supplier's scope. | | |
| 10.3 | Load test | <ul style="list-style-type: none"> ▪ Load Test to be carried out in CMTI during commissioning as per relevant IS standards i.e. Min. 1.25 times SWL ▪ Load has to be arranged by Vendor ▪ Deflection under load to be checked | | |
| 10.4 | Test certificate for crane | Part of supplier's scope. To be inspected and certified by "Competent Authority". | | |
| 10.5 | Terms and Conditions during installation | During installation, the terms and conditions to be followed by the contractor are per tender document. | | |
| 11. | Supply of Spares (Included in the your offer) | As per our list | | |
| 12. | Supply of required tools for general maintenance | To be submit List of tools during technical bid. | | |

CHAPTER-7

LIST OF MAKES

| Sl. No. | Details of Materials/ Equipment | Approved Makes | Offered by Bidder |
|----------------|--|--|--------------------------|
| 1. | Electrical switch gear elements ,(MCB's , MPCB's , fuse/HRC Fuse, contactors, OLR's ,timers, Relays, Push buttons etc. | Siemens /ABB / Schneider electric | |
| 2. | VVVF Drives | Siemens/AB/ Schneider electric/ Yokogawa | |
| 3. | PLC and HMI | Siemens | |
| 4. | Motors (Hoist) | Siemens/ABB | |
| 5. | Control panels (Enclosure) | Rittel | |
| 6. | SMPS | Siemens | |
| 7. | Power and control cables | Poly cab / Lapp / finolex | |
| 8. | Isolating switches for cabinets | Siemens/Eaton /L&T | |
| 9. | Plug and Socket (Receptacles) | GM/Siemens/Schneider /Havells | |
| 10. | Terminal blocks | Elmex | |
| 11. | Lugs and insulated end sleeves | Dowels/3D/Lapp | |
| 12. | Cable glands | Lapp/Dowell/ connectwell | |
| 13. | Pendant station | Schneider/ tele mecanique | |
| 14. | Wire rope | Usha martin | |
| 15. | Rails(Prime materials) | TATA/ Jindal /SAIL | |
| 16. | Gearbox modular or semi modular type for CT and LT | Elemech geared motors/Stall/Abuse/Kone/Demag/Bonfiglioli | |
| 17. | DSL(Copper material) | Siemens, ABB, Allen Bradley, Group Schneider | |

CHAPTER-8

EXISTING CRANE LAYOUT

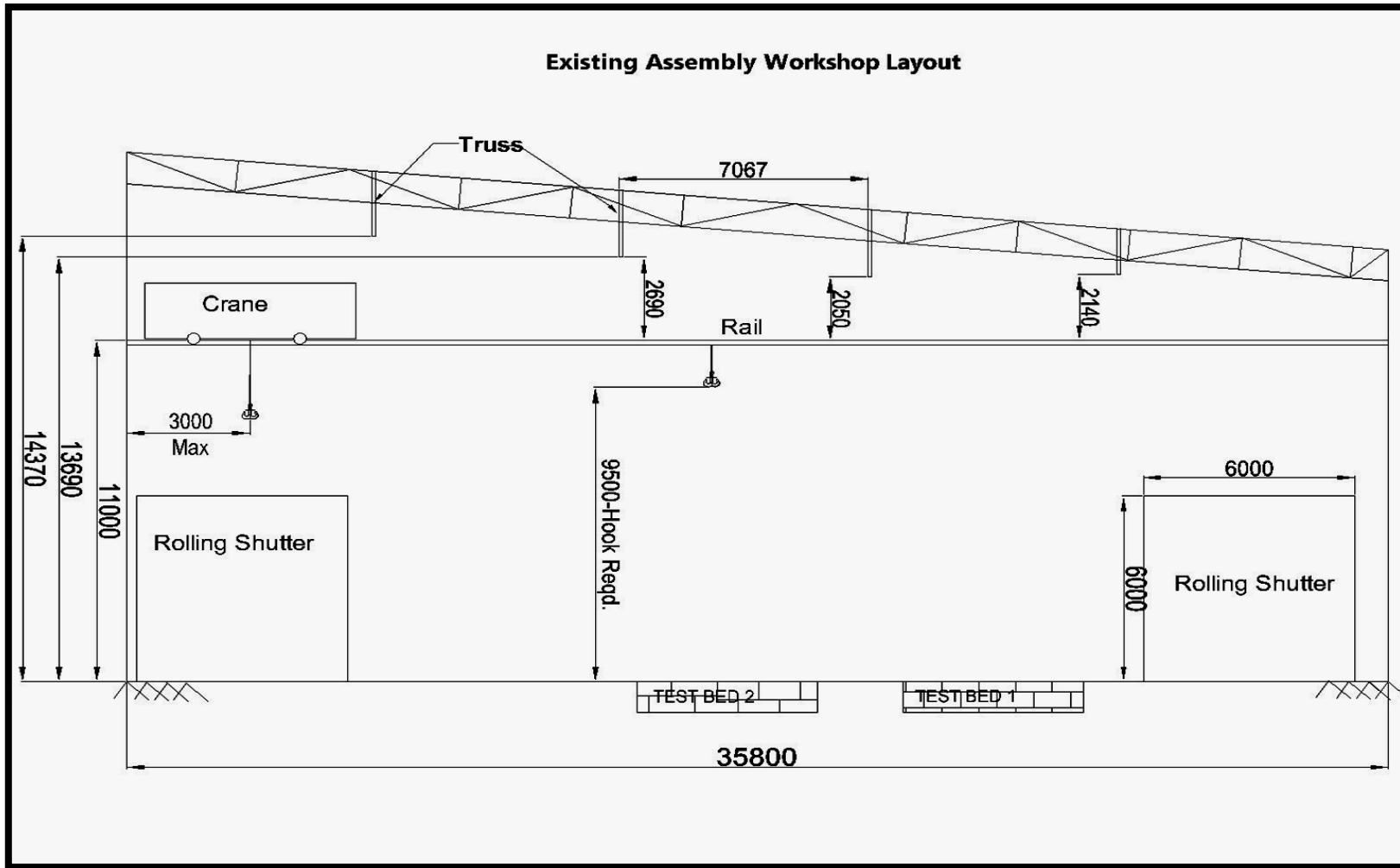


Figure: 1

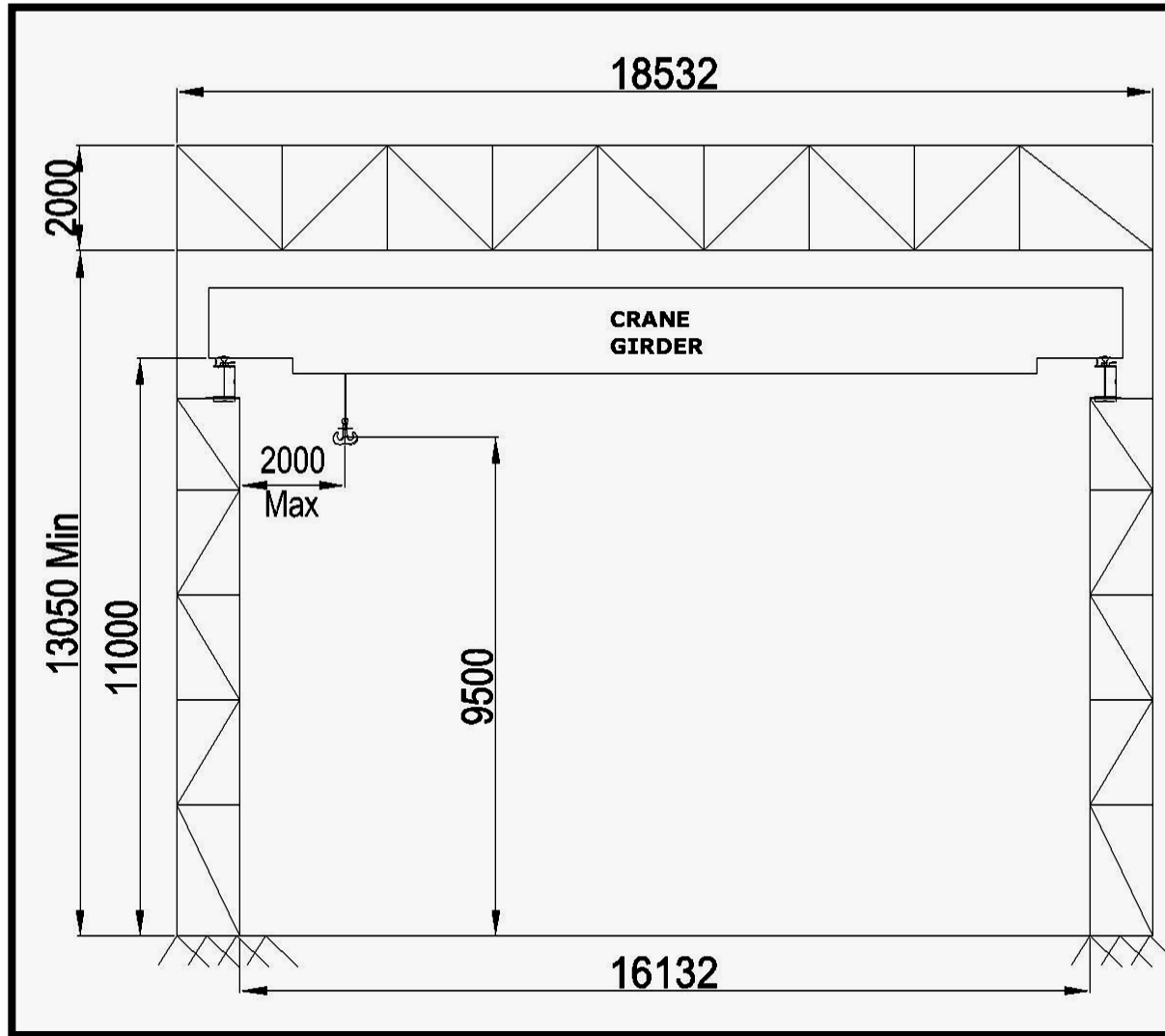


Figure-2

CHAPTER-9
CONTRACT FORM

ContractNo. _____ Date: _____

THIS CONTRACT AGREEMENT is made
the [] day of [] month of, [] year

BETWEEN

The Central Manufacturing Technology Institute (CMTI), a registered Government of India Society under the administrative control of the Ministry of Heavy Industry and Public Enterprises, Government of India having its registered office at Tumkur Road, Bengaluru - 560022, Karnataka, India represented by _____ [Insert complete name and address of Purchaser (hereinafter called “the Purchaser”), and

[Insert name of Supplier], a corporation incorporated under the laws of [insert: country of Supplier] and having its principal place of business at [insert: address of Supplier] (hereinafter called “the Supplier”).

WHEREAS the Purchaser invited Bids for certain Goods and ancillary Services, viz., [insert brief description of Goods and Services] and has accepted a Bid by the Supplier for the supply of those Goods and Services in the sum of [insert Contract Price in words and figures, expressed in the Contract currency(ies)] (herein after called “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall constitute the Contract between the Purchaser and the Supplier, and each shall be read and construed as an integral part of the Contract:
 - (a) This Contract Agreement
 - (b) Special Conditions of Contract
 - (c) General Conditions of Contract
 - (d) Technical Requirements (including Schedule of Requirements and Technical specifications)
 - (e) The Supplier’s Bid and original Price Schedules
 - (f) The Purchaser’s Notification of Award
 - (g) [Add here any other document(s)]
3. This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.
4. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

5 The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner

prescribed by the Contract.

IN WITNESS where of the parties here to have caused this Agreement to be executed in accordance with the laws of Union of India on the day, month and year indicated above.

For and on behalf of the Central Manufacturing Technology
Institute Signed: [insert signature]

In the capacity of [insert title or other appropriate designation] in the
presence of [insert identification of official witness]

Signed: [insert signature]

in the capacity of [insert title or other appropriate designation] in
the presence of [insert identification of official witness]

For and on behalf of the Supplier

Signed: [insert signature of authorized representative(s) of the Supplier] in the capacity of [insert title or
other appropriate designation] in the presence of [insert identification of official witness]

CHAPTER -10

OTHER STANDARD FORM

Table of Contents

| SL. No. | Name |
|----------------|--|
| 1. | Bidder Information form |
| 2. | Manufacturing Authorisation form |
| 3. | Bid Security Form |
| 4. | Performance Statement Form |
| 5. | Indemnity bond |
| 6. | Service support detail form |
| 7. | Bid form |
| 8. | Performance Security Form |
| 9. | Acceptance certificate form |
| 10. | Eligibility certificate form |
| 11. | Non Black-listed Self certificate form |

BIDDER'S INFORMATION FORM

a) [The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted. This should be done of the letter head of the firm]

Date:[insertdate(asday,monthandyear)ofBidSubmission]TenderNo.: [insertnumberfromInvitation forBids]

Page 1 of _____ pages

| |
|--|
| 1. Bidder's Legal Name [insert Bidder's legal name] |
| 2. In case of JV, legal name of each party: [insert legal name of each party in JV] |
| 3. Bidder's actual or intended Country of Registration: [insert actual or intended Country of Registration] |
| 4. Bidder's Year of Registration: [insert Bidder's year of registration] |
| 5. Bidder's Legal Address in Country of Registration: [insert Bidder's legal address in country of registration] |
| 6. Bidder's Authorized Representative Information Name: [insert Authorized Representative's name] Address: [insert Authorized Representative's Address] Telephone/Fax numbers: [insert Authorized Representative's telephone/fax numbers] Email Address: [insert Authorized Representative's email address] |
| 7. Attached are copies of original documents of: [check the box(es) of the attached original documents] Articles of Incorporation or Registration of firm named in 1, above. |

Signature of Bidder _____ Name
_____ Business Address

MANUFACTURERS' AUTHORIZATION FORM

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer.

Date: [insert date (as day, month and year) of Bid Submission] Tender No.: [insert number from Invitation for Bids]

To: [insert complete name and address of Purchaser]

WHEREAS

We [insert complete name of Manufacturer], who are official Manufacturers of [insert type of Goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Bidder] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 2.21 of the General conditions of Contract, with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer]

Title: [insert title]

Duly authorized to sign this Authorization on behalf of: [insert complete name of Bidder]

Dated on _____ day of _____, _____ [insert date of signing]

BID SECURITY FORM

Whereas.....(hereinafter called the tenderer")
has submitted their offer dated_____for the supply
of _____
(Hereinafter called the tender")

Against the Purchaser's tender enquiry no. _____ Know all men by these
Presents that we _____ of _____ having our registered office
at _____ are bound unto _____ (hereinafter called the "Purchaser")

In the sum of _____
For which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors
and assigns by these presents. Sealed with the Common Seal of the said Bank this _____ day of
.....20.....

THE CONDITIONS OF THIS OBLIGATION ARE:

- (1) If the tenderer withdraws or amends, impairs or derogates from the Tender in any respect within the period of validity of this tender.
- (2) If the tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:
 - (a) If the tenderer fails to furnish the Performance Security for the due Performance of the contract.
 - (b) Fails or refuses to accept/execute the contract.

WE undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including 45 days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date. _____

(Signature of the authorized officer of the Bank)

Name and designation of the officer Seal, name & address of the Bank and address of the Branch

PERFORMANCE STATEMENT FORM (For a Period of last 3 years)

Name of the Firm: _____

| Order placed by (full address of purchaser) | Order No and date | Description and quantity of ordered equipment | Value of order | Date of completion of delivery as per contract | Date of actual completion of delivery | Remarks indicating reasons for late delivery, if any | Has the equipment been installed Satisfactory? (Attach a certificate from the purchaser/consignee) | Contact person along with telephone No: Fax No: And e-mail address |
|---|-------------------|---|----------------|--|---------------------------------------|--|--|--|
| | | | | | | | | |

Signature and Seal of the Manufacturer/Bidder _____

Place:

Date

INDEMNITY BOND

(On Rs. 100/- Stamp Paper)

KNOW all men by these presents that I,.....of
Shri.....execute

M/s..... do hereby

Indemnity Bond in favour of Central Manufacturing Technology Institute, having their
Registered Office at Tumkur Road, Bengaluru-560022 on this.....day..... of 2020.

Whereas CMTI have appointed M/s.....as the Contractor for their work
relating to “Design, Manufacturing, Supply, Installation, Testing and Commissioning of 80/20 Ton
Capacity double girder EOT crane at New Workshop CMTI”

THIS DEED WITNESSETH AS FOLLOWS:-

I/We M/s.....hereby do Indemnify, and same

harmless CMTI against and from

1. any third party claims, civil or criminal complaints liabilities, site mishaps and other accidents or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed works by me/us,
2. any damages, loss or expenses due to or resulting from negligence or breach of duty on the part of me/us or any sub-contractor/s if any, servants or agents.
3. any claim by an employee of mine/ours or of sub-contractor/s, if any, under the Workmen Compensation Act and Liability Act, 1939 or any other law, rules and regulations in force for the time being and any Acts replacing and/or amend the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of the execution of the contract work and/or arising out of and in the course of employment of any workmen/employee.
4. Any act or omission of mine/ours of sub-contractor/s if any, our/their servants or agents which may involve any loss, damage liability, civil or criminal action.

IN WITNESS WHEREOF THE M/s..... has set

his/their hands on thisday of 2021.

SIGNED AND DELIVERED BY THE AFORESAID

M/s IN THE PRESENCE OF WITNESS :

(1)

(2)

SERVICE SUPPORT DETAIL FORM

| Sl. No. | Nature of training imparted | List of similar type of equipments serviced in the past 3 years | Address, Telephone Nos , Fax Nos, and Email address |
|----------------|------------------------------------|--|--|
| | | | |

Signature and seal of the Manufacturer/Bidder: _____

Place:

Date:

BID FORM

[The Bidder shall fill in this Form in accordance with the instructions indicated No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

Invitation for Bid No.: [insert No of IFB]

To: [insert complete name of Purchaser]

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda No.: [insert the number and issuing date of each Addenda];
- (b) We offer to supply in conformity with the Bidding Documents and in accordance with the Delivery Schedules Specified in the Schedule of requirements the following Goods and Related Services [insert a brief description of the Goods and Related Services];
- (c) The total price of our Bid, excluding any discounts offered in item (d) below, is: [insert the total bid price in words and figures, indicating the various amounts and the respective currencies];
- (d) The discounts offered and the methodologies for their application are:
Discounts. If our bid is accepted, the following discounts shall apply. [Specify in detail each discount offered and the specific item of the Schedule of Requirements to which it applies.]
- (e) Our bid shall be valid for the period of time specified in ITB Sub-Clause 1.16.1, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our bid is accepted, we commit to obtain a Performance Security in accordance with ITB Clause 1.38 and GCC Clause 2.13 for the due performance of the Contract;
- (g) The following commissions, gratuities, or fees have been paid or are to be paid with respect to the bidding process or execution of the Contract: [insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]

| Name of Recipient | Address | Reason | Amount |
|-------------------|---------|--------|--------|
| _____ | _____ | _____ | _____ |

(If none has been paid or is to be paid, indicate "none.")

- (h) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.
- (i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Signed: [insert signature of person whose name and capacity are shown]

In the capacity of [insert legal capacity of person signing the Bid Submission Form]

Name: [insert complete name of person signing the Bid Submission Form]

Duly authorized to sign the bid for and on behalf of: [insert complete name of Bidder]

Dated on _____ day of _____

_____ [Insert date of signing]

PERFORMANCE SECURITY FORM

To: _____ (Name of Purchaser)

WHEREAS _____ (Name of Supplier) hereinafter called "the Supplier" has undertaken, in pursuance of Contract No. _____ dated, 20____ to supply (Description of Goods and Services) hereinafter called "the order".

AND WHEREAS it has been stipulated by you in the said order that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the order

AND WHEREAS we have agreed to give the Supplier a Guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of (Amount of the Guarantee in Words and Figures and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the order and without cavil or argument, any sum or sums within the limit of (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until theday of.....20.

Signature and Seal of Guarantors

.....
.....
.....

Date20

Address:

.....
.....

All correspondence with reference to this guarantee shall be made at the following address:

(Name & address of the Purchaser)

ACCEPTANCE CERTIFICATE FORM

No.

Dated:

M/s

Sub: Certificate of commissioning of equipment

1. This is to certify that the equipment as detailed below has/have been received in good condition along with all the Standard and special accessories (subject to remarks in Para 2). The same has been installed and commissioned.

(a) Contract No. _____ Date _____

(b) Description of the equipment _____

(c) Name of the consignee _____

(d) Scheduled date of delivery of the consignment to the Institute _____

(e) Actual date of receipt of consignment by the Institute _____

(f) _____ Scheduled date for completion of installation/commissioning _____

(g) Actual date of completion of installation/commissioning _____

(h) Penalty for late delivery Rs. _____

(i) Penalty for late installation at Institute Rs. _____

2. Details of accessories/items not yet supplied and recoveries to be made on that account: SI. No. Description Amount to berecovered

3. The acceptance test has been done to our entire satisfaction. The Supplier has fulfilled his contractual obligations satisfactorily or The Supplier has failed to fulfill his contractual obligations with regard to the following:

(a) _____

(b) _____

(c) _____

(d) _____

The amount of recovery on account of failure of the Supplier to meet his contractual obligations is as indicated above.

For supplier signature _____ Name _____ Designation _____ Name of Firm _____ Date _____

For purchase signature _____ Name _____ Designation _____ Name of the Institute _____ Date _____

ELIGIBILITY CERTIFICATE FORM

[To be provided on the letterhead of the Bidder and should be signed by a person with the proper authority to sign documents that are binding on the Bidder]

This is to certify that we are not associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Purchaser to provide consulting Services for the preparation of the design, specifications, and other documents to be used for the procurement of the Goods to be purchased under this Invitation of Bids /Tender No.

_____ Dated _____

Authorized Signatory

Name: _____

Designation: _____

NON-BLACK LISTED SELF CERTIFICATION FORM

[To be provided on the letterhead of the Bidder and should be signed by a person with the proper authority to sign documents that are binding on the Bidder]

This is to certify that M/s. _____ [Name of Bidder] has not been blacklisted by any Indian Central / State Government Department / any other Purchasing authority /organization in last 3 years.

Authorized Signatory

Name: _____

Designation: _____

CHAPTER-11
TENTATIVE BILL OF QUANTITIES COMPLY LIST

TENTATIVE BILL OF QUANTITIES COMPLY LIST

Name of Work : Design , Manufacturing , Supply, installation Testing and commissioning of 80Ton main Hoist with 20Ton Auxiliary Hoist Capacity M4 Duty class Double Girder Box type EOT Crane.

| SI No. | Description | Quantities | Unit | Vendor's quote response in (YES/NO) |
|---------------|---|------------|----------|-------------------------------------|
| PART-A | | | | |
| 1 | Design , Manufacturing , Fabrication , Supply , Erection installation, Testing and commissioning of 80/20 Ton capacity M4 Duty class Double Girder Box type EOT crane with PLC and HMI Interface : Main Hoist -80 Ton Auxiliary Hoist- 20 Ton Span- 17 Meters Approx. Lift Hieght-9.5 Meters Travel length-38 Meters and others requirement completely as per tender document. | 1 | No. | |
| 2 | Design, Supply, Erection and installation of suitable crane rails as per IS 3443 for long travel(length of travel 38 meters)Material type is prime material. Make : TATA/JINDAL/SAIL | 76 | Meter | |
| 3 | Supply, Fixing, Erection and connection of suitable rated shrouded Copper bus bar system with double copper current collector unit. and necessary wiring and other connections to give power supply to crane. MAKE : Siemens/ABB/Allen Bradley/Schneider | 38 | Meter | |
| 4 | Statutory certification and Load testing (Including arrangement of Loads to test the 80/20 Ton crane). | 1 | Lump sum | |
| 5 | Complete Dismantling, loading and unloading of Existing 40/10 ton EOT crane Located at New workshop CMTI, Bengaluru Including DSL and Rails with in the CMTI Premises complete as per direction of the Engineer in - charge of CMTI. | 1 | Lump sum | |

PART-B (OPTIONAL)

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| 6 | Providing Digital Weighing scale display unit Suitable for 80T Capacity without compromising Main Hoist Stroke of 9.5 mts. with all electrical cabling and accessories to complete. (Location should be at visible level from ground) | 1 | No. | |
| | | | GST % to be mentioned | |
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