

TENDER ENQUIRY

Dear Sirs,

SEALED TENDERS IN DUPLICATE, SUPER SCRIBING THE ENQUIRY NUMBER AND LAST DATE FOR RECEIPT OF QUOTATIONS ON THE ENVELOPE are invited for the supply of following materials so as to reach the undersigned on or before the last date and time shown. Tender should be addressed to the **DEPUTY GENERAL MANAGER (MATERIALS), COCHIN SHIPYARD LTD., P.B. NO.1653, COCHIN-682 015, KERALA, INDIA.** Tenders will be considered subject to the Tender Documents attached.

Enquiry No:	LAST DATE FOR RECEIPT OF TENDER	TENDER OPENING DATE
MAT/PRM/1873/18 R2		
Enquiry date: 07 Dec 2021	06 Jan 2022	06 Jan 2022
Dept. : Materials/Purchase	TIME: 14.00 HRS. IST	TIME: 14.30 HRS. IST.

Sl. No	Description	Unit	Qty	Required Date
1.	LEVEL LUFFING JIB CRANE- 75 T	EA	1	As per Technical
2.	LEVEL LUFFING JIB CRANE- 40 T	EA	1	Specification

(Scope of Supply as per the attached Tender Documents Vol.I, Vol.II & Vol.III)

Indent No. 1050004339 Dtd. 18.02.2019 MAT/ PRM/1873/18 R2

Gem Availability Report ID's: GEM/GARPTS/03122021/A9AB77C47IRS & GEM/GARPTS/03122021/2O9ZATT43UCL

Tender Documents:

- a. Vol.I - Instruction to Tenderers & Eligibility Criteria
- b. Vol.II - Technical Specification
- c. Vol.III - Drawings

Yours faithfully,
For COCHIN SHIPYARD LIMITED

Vidhun
7/12/2021
Vidhun Vijayan
Project Officer (ENS)

For Clarification Please Contact:

E-mail: vidhun.vijayan@cochinshipyard.in

Phone: 0484 2501972, +91 9744143943



MAT/PRM/1873/18 R2

**TURNKEY SUPPLY, INSTALLATION, TESTING &
COMMISSIONING OF 75T & 40T LEVEL LUFFING JIB
CRANES FOR NEW DRY DOCK PROJECT**

VOLUME- I

INSTRUCTION TO TENDERERS



Contents of Tender Documents

Volume I Instructions to Tenderers

1. Special terms & conditions To Tenderers
2. Eligibility Criteria
3. Formats (Annexure 1 to 27)

Volume II Technical Specification

Volume III Drawings

1. Special terms & conditions To Tenderers

(To be duly filled and submitted along with offer- Part I)

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
1.	Tenderers are to carefully go through the terms and conditions and the technical specification of the items for which offers are called for. Tenderers have to adhere to above and supply full technical scope of items along with compliance of commercial conditions. CSL has full right upon deviations, if any, including rejecting the partial scope/ complied offers.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
2.	<p>Scope of the tender enquiry is Turnkey Design, Manufacture, Supply, Transport, delivery of units, on site assembly, erection, testing and commissioning of two nos (1 no. 75T and 1 no. 40T) of Level Luffing Single Jib cranes at new dry dock of CSL.</p> <p>MODE OF SUBMISSION OF TENDERS</p> <p>a. Tenders should be submitted in two separate sealed covers super scribed in capital letters as PART-I “TECHNO-COMMERCIAL” & PART-II “PRICE” indicating the tender number, due date and name & address of the tenderer. Offers submitted not as above shall not be considered</p> <p>b. Only hard copies of offers are entertained. Hard copy of techno commercial offer should be submitted in duplicate. Price bids of techno commercially acceptable bidders only will be opened.</p> <p>c. Part I “Techno-Commercial”: 1 Original + 1 Copy Part II “Price”: 1 Original + 1 Copy.</p> <p>d. All pages of tender document including corrigendums, if any shall be duly signed by the bidder and submitted along with the bid.</p>	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
3.	PREFERENCE TO MAKE IN INDIA			
3.1	Purchase preference in accordance with Public procurement (Preference to Make in India Order - 2017) Order from Department of Promotion of Industry and Internal Trade P - 45021 /2/2017/-B.E -II dt ,16.09.2020 and as amended from time to time shall be applicable as per below. Please go through the below link for downloading order copy of Department of Promotion of Industry and Internal Trade. https://dipp.gov.in	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
3.2	<p>Definitions:</p> <p>a) Local Content: Local content means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.</p> <p>b) Class I Local Supplier: It means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum 50% local content.</p> <p>c) Class II Local Supplier: It means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum 20% local content.</p> <p>d) Non-Local Supplier: It means a supplier or service provider, whose goods, services or works offered for procurement, has less than that prescribed for class II local supplier.</p>	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
3.3	In case of sufficient local capacity and local competition, only Class I local supplier shall be eligible to bid. In all other cases, Class-I and Class-II (more than 20% local content and less than 50%) shall be eligible to bid.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
3.4	This tender is not a Global tender enquiry and only Class I and Class II local suppliers as defined above shall be eligible to bid in this tender.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
3.5	The bidders offering imported products will fall under the category of Non-local suppliers. They can't claim themselves as Class-I local suppliers/ Class II local suppliers by claiming the services such as transportation, insurance, installation, commissioning, trials and after sales service support like AMC/CMC etc. as local value addition. (refer office order no. P-45021/102/2019-BE-II Part (1) (E-50310) dtd 04.03.2021)	<table border="1"> <tr> <td data-bbox="1268 289 1357 348">YES</td> <td data-bbox="1357 289 1446 348">NO</td> </tr> </table>	YES	NO
YES	NO			
3.6	Among all qualified bids, the lowest bid will be termed as L 1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.	<table border="1"> <tr> <td data-bbox="1268 470 1357 495">YES</td> <td data-bbox="1357 470 1446 495">NO</td> </tr> </table>	YES	NO
YES	NO			
3.7	If L 1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L 1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L 1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference (20%), and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L 1 price, In case such lowest eligible 'Class-I local supplier' fails to match the L 1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L 1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L 1 bidder.	<table border="1"> <tr> <td data-bbox="1268 613 1357 672">YES</td> <td data-bbox="1357 613 1446 672">NO</td> </tr> </table>	YES	NO
YES	NO			
4.	DECLARATION OF LOCAL CONTENT			
4.1	In case of procurement for a value in excess of Rs 10.0 Crores Class I/Class II local supplier is to provide a certificate from statutory auditor/cost auditor (for companies) /practicing cost accountant/Chartered accountant (suppliers other than companies) indicating % of local content.	<table border="1"> <tr> <td data-bbox="1268 953 1357 1012">YES</td> <td data-bbox="1357 953 1446 1012">NO</td> </tr> </table>	YES	NO
YES	NO			
4.2	False declarations will be in breach of the code of integrity under rule 175(1)(i)(h) of the GFR for which a bidder or its successors can be debarred for up to two years as per rule 151 (iii) of the GFR along with such other actions as may be permissible under law.	<table border="1"> <tr> <td data-bbox="1268 1058 1357 1096">YES</td> <td data-bbox="1357 1058 1446 1096">NO</td> </tr> </table>	YES	NO
YES	NO			
4.3	A supplier who has been debarred by any procuring entity for violation of above order shall not be eligible for preference under this order for procurement by any other procuring entity for the duration of the debarment.	<table border="1"> <tr> <td data-bbox="1268 1176 1357 1213">YES</td> <td data-bbox="1357 1176 1446 1213">NO</td> </tr> </table>	YES	NO
YES	NO			
5.	GENERAL PRE-QUALIFICATION CRITERIA			
5.1	The Bidder shall be a Single firm or licensee (having valid license agreement/ collaboration agreement) or Consortium/Joint Venture (JV) of maximum three members. Single/ Lead partner shall be an Indian firm. Role of each of the partners are also to be defined.	<table border="1"> <tr> <td data-bbox="1268 1339 1357 1398">YES</td> <td data-bbox="1357 1339 1446 1398">NO</td> </tr> </table>	YES	NO
YES	NO			
5.2	Single bidder/ members of consortium/ members of JV/Licensee/ Licensor should be in the business of crane manufacturing or heavy engineering for the last Ten (10) years as on the date of publishing of this tender. Certificate of Incorporation of the company along with copy of purchase/work orders received in this regard shall be submitted. The certificate should be notary vetted or embassy attested. Heavy engineering company shall be registered in India and should have steel fabrication capacity of 1500T per annum. A certificate from statutory auditor with supporting documents shall be submitted in this regard. In case of subsidiary companies set up in India, their parent company (Indian or Foreign) shall meet the above criteria of doing business of crane manufacturing for last 10 years. The tender shall be accompanied by a legally binding document signed by Parent company and subsidiary stating that the firms are jointly and severally liable to CSL and responsible in full for the performance	<table border="1"> <tr> <td data-bbox="1268 1491 1357 1549">YES</td> <td data-bbox="1357 1491 1446 1549">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
	<p>of the contract. In this regard, Letter from parent company and Agreement between parent company and subsidiary company are to be submitted as per formats placed at Annexure 25(a) and 25(b).</p> <p>In case of licensee, license agreement shall be valid for a period of atleast 10 years from the date of submission of bid. Indian firm having license agreement with foreign partner shall indemnify CSL against all cost, damages which may occur in the event of license agreement becoming invalid before the expiry of the guarantee period of crane or due to failure of the licensor in discharging his role or responsibilities or obligations as stated in this tender document. The licensor shall supervise manufacture, installation, testing and commissioning of crane.</p>			
5.3	Single bidder/ members of consortium/ members of JV/ Licensee /Licensor shall not be under a declaration of ineligibility issued by Govt. of India / State Govt. / Public Sector Undertakings etc. An undertaking shall be submitted in this regard.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
5.4	The Single bidder/ members of consortium/ members of JV/ Licensee/ Licensor should not be vendor subsidiaries / affiliates of the Consultant (M/s HaskoningDHV Consulting Private limited) appointed for the dry dock project of CSL. A self-declaration shall be submitted in this regard.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
5.5	<p>The Single bidder should meet both the technical and financial criteria in full. The members of JV/consortium must collectively meet the technical criteria. Members of JV/consortium shall meet the financial criteria as mentioned in Para 2.1.D of eligibility criteria</p> <p>The licensee and licensor must collectively meet the technical criteria. Licensor and Licensor shall meet the financial criteria as mentioned in Para 2.1.D of eligibility criteria.</p> <p>In case of subsidiary companies set up in India, technical experience and financial criteria shall be collectively met by subsidiary and parent company (Indian or Overseas) .</p>	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
6.	<p><u>CONDITIONS FOR CONSORTIUM</u> In accordance with clause no. 2.2 of eligibility criteria</p>	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
7.	<p><u>CONDITIONS AND REQUIREMENTS FOR JOINT VENTURE</u> In accordance with clause no. 2.3 of eligibility criteria</p>	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
8.	<p><u>TECHNO-COMMERCIAL PART SHOULD CONTAIN THE FOLLOWING DETAILS</u></p> <p>a. Technical details of offer.</p> <p>b. Requirements for meeting Pre qualification criteria as per Volume II.</p> <p>c. Documentation required as per Volume I & II of enquiry (Eligibility criteria, Consortium conditions, checklist submissions, etc).</p> <p>d. Bid Security Declaration Form as per Annexure 18.</p> <p>e. Integrity pact document duly signed and sealed as per Annexure 19 of Volume I.</p> <p>f. Duly filled and signed copy of Vol I : Special terms & conditions.</p> <p>g. Signed copy of CSL tender specifications and corrigendums if any .</p> <p>h. Deviations/Exclusions, if any from any of the tender terms, failing which it will be considered that all terms & conditions are accepted.</p> <p>i. Outline Quality Assurance plan.</p> <p>j. Unpriced format (without Price) of price as per format at Annexure 17a, 17b, 17c & 17d of Volume I of tender document.</p> <p>k. All required information and supporting documents including forms/ declarations/ undertakings required as per tender to be submitted.</p>	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			

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	<p>CLARITY OF OFFER Offers should be clear and unambiguous. Incomplete/ ambiguous offers are likely to be rejected. Offer should be free from overwriting. Corrections and additions, if any, must be duly attested.</p>			
9.	<p>PRICE PART SHOULD CONSIDER THE FOLLOWING AS APPLICABLE</p> <ol style="list-style-type: none"> Price of Materials/equipment supply – from indigenous location. Price of Materials/equipment supply – from Overseas location Design and manufacture . Customs Duty Freight costs upto CSL stores, Cochin. Insurance. Clearance charges , local transport up to CSL, Loading and unloading at CSL site. Transport within CSL stores upto erection site . Commissioning , testing and hand over. Training by service engineer. Positioning of supporting equipment for erection and commissioning. Labour requirements including habitat . Cost and arrangement of Mobilisation of plant, equipment and it's maintenance. Cost and arrangements of Consumables , material handling equipments, gas , water, electricity, compressed air . Special tools for testing purpose (refer clause no. 80 of Vol II). Cost of spares as per tender document. Statutory approvals Local support necessitated at site. Manpower related issues . All other requirements as per tender document which has a price implication. Other costs applicable as per Clause no. 5 of Vol II Any other details as applicable. 	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO			
10.	<p>PRE BID MEETING</p> <ol style="list-style-type: none"> The bidder or his official representative is advised to attend a Pre-bid meeting which will be convened at CSL through video conference (MS teams). The meeting shall be attended online by techno-commercially competent senior representative(s) of the bidder duly authorized. Date of the pre-bid meeting is 21 December 2021 at 10:45 hrs IST (through MS Teams (online)) All bidders are advised to study the bid document thoroughly and prepared for the meeting. The purpose of the meeting will be to clarify or address doubts / suggestions, modifications, if any on the bid document and to address queries on any issues that may be raised at that stage. Any bidder requiring a clarification of the proposal document must notify CSL in writing, at least four (4) days in advance to the pre-bid date in the pre-bid questionnaire format placed at Annexure 12 of Volume I. Any request for clarification in writing must be addressed to vidhun.vijayan@cochinshipyard.in and m.gazel@cochinshipyard.in <u>The bidders shall forward their request to above email ID's for getting link for attending online prebid meeting.</u> The compilation of all clarifications sought / queries raised during the pre-bid meeting and its replies shall be published on the website only . Any modification of the tender documents which may become necessary as a 			

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	<p>result of the pre-bid meeting shall be made by CSL exclusively through the issuance of an addendum or corrigendum.</p> <p>h) At any time before the submission of proposals, CSL may, for any reasons, whether at its own initiative or in response to a clarification requested by a bidder, modify the documents by amendment.</p> <p>i) The amendment will be notified only on CSL/Govt websites and no separate paper advertisements will be issued.</p> <p>Any clarification in the price format, if required, shall be discussed and finalised during the prebid meeting.</p>			
11.	<p><u>MSEs, Startups and Make in India</u> Local Suppliers (Make In India), MSME firms and Startups will be eligible for various Relaxations in pre-qualification criteria and other Benefits as per the orders promulgated by Government of India. Bidders are advised to refer the details of various Benefits and Relaxation in pre-qualification criteria as published at CSL website (www.cochinshipyard.com) under the Tenders tab for further reference.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			
12.	<p><u>Bid Security (EMD) Decalartion</u></p> <p>a) In place of a Earnest Money Deposit (Bid Security), the Bidders shall sign a Bid securing declaration accepting that if they withdraw or modify their Bids during the period of validity, or if they are awarded the contract and they fail to sign the contract, or to submit a performance security before the deadline defined in the request for bids document, they will be suspended/ disqualified for any contract for a period as per CSL procedures.</p> <p>b) The format of Bid securing declaration form is at Annexure 18</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			
13.	<p>Notwithstanding anything contained in this tender document, CSL reserves the right to accept or reject any offer and to annul the bidding process and reject all Proposals, at any time without any liability or any obligation for such acceptance, rejection or annulment, without assigning any reasons. CSL reserves the right to invite revised Technical bids and /or revised price bids from Bidders with or without amendment of the tender at any stage, without liability or any obligation for such invitation and without assigning anyreason.CSL reserves the right to reject any offer if:</p> <p>(a) At any time, an offer misrepresentation is made or uncovered, or</p> <p>(b) The Bidder does not respond promptly and thoroughly, to requests for supplemental information required for the evaluation of the offer.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			
14.	<p>Validity of offer has to be for a period of 180 days from the due date of tender submission. In the event, on CSL request, validity of the tender is extended.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			
15.	<p>Schedule of activities on placement of order is as per Volume II – Technical Specification Clause 17. Mutually agreed material delivery schedule is to be confirmed at the time of placement of order.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
16.	<p><u>ORDER PLACEMENT DETAILS</u></p> <p>a) Bidder shall specify incase, separate orders expected to be placed against the tender. In general, there will be a separate order for material supply and another one for testing, erection and commissioning.</p> <p>b) Details of firms on whom the order shall be placed shall be specified into the offer. In case of consortium , the entire responsibility shall be in accordance with conditions of consortium as per volume II- eligiblity criteria of the tender.</p> <p>c) For material supply from within India and for work done by Indian contractor,orders shall be placed only in INR on Indian firms. Foreign payments shall be strictly for material imported and for work done by Service technicians from overseas.</p> <p>d) Number of Purchase orders and bidder details for placement of order shall be mentioned into the offer submitted. The same shall be finalised latest before opening of price bids. In any case, placement of orders shall be limited to only consortium members .</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			
17.	<p><u>LIQUIDATED DAMAGES</u></p> <p>a) In case of delay beyond the stipulated period of total completion and handing over, the contractor is to pay Liquidated Damages (and not by the way of penalty) a sum equivalent to ½% (half percent) per week or part of the week of the contract value subject to a maximum of 10% of the contract value. The contract value referred above is the cumulative of purchase order value (supply part) and work order value (Installation & commissioning part), excluding freight, taxes, other charges etc. Further GST will be applicable upon LD and the same also will be deducted along with LD.</p> <p>b) If, for any reasons, supplier has a justification towards delay in supply / work execution and would intend to consider applicability/ non applicability of LD, the same shall be intimated to CSL by way of a letter, failing which it will be deemed that delay is attributable to the supplier.</p> <p>c) Delay in supply/Interruption of the work for reasons not attributable to supplier shall entitle extension of the order execution period for proportionate period.</p> <p>d) In the case of a consortium, the liquidated damage would be deducted from the lead partner at the time of release of the payment both for supply and commissioning part of the contract. The LD so deducted from lead partner includes the LD applicable to the other consortium partner also.</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			
18.	After submission of quotation no unsolicited correspondence will be entertained.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			
19.	No enhancement of rate for whatever cause will be allowed once the offer is accepted and an order is placed. Withdrawal of the quotation after it is accepted or failure to make the supply within the stipulated delivery period will entail cancellation of the order and forfeiture of Security deposit, if any and/ or risk purchase as per clause 33 , without prejudice to other penal actions, including tender holiday after serving show cause notices, as deemed fit.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			
20.	Clarifications, either technical or commercial, should be submitted to points specifically asked for only. The opportunity so given should not be used for correcting/changing/amending the data/ conditions already submitted with the tender.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">YES</td> <td style="padding: 5px;">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
21.	<u>INSPECTION AND TESTING</u> In accordance with Vol.II-Technical Specification	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
22.	<u>GUARANTEE</u> As per clause 83 of Vol.II-Technical Specification	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
23.	<u>WEIGHT , VOLUME OF PACKAGES FOR CONSTRUCTION</u> Supplier shall ensure safe and appropriate transport of the material from origin port to CSL and further movement from CSL stores to erection site. Weight, volume of the consignments in transit to/from port to CSL and for movement within CSL premises to be informed to CSL team in advance. All local and statutory permissions for cargo movement, permissions from police/ transport/tax authorities to be ensured. CSL shall not be responsible for hold up of any consignment for whatsoever reason. The same also applies to material/erection equipment, if any positioned from within India.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
24.	<u>INSURANCE</u> Insurance for all the items from origin warehouse to CSL warehouse basis, movement of goods from CSL stores including local items/fabricated items, insurance coverage for all operations including loading/unloading, storage, erection, testing and commissioning, insurance for erection equipment, Insurance for Persons at work, to supplier scope. The value of insurance shall not be less than 110 % of the respective Purchase Order values. The beneficiary of the insurance policy shall be CSL and the policy should be in the name of the CSL.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
25.	<u>DETAILED BILL OF MATERIAL</u> For the purpose of identification and for records, a detailed bill of material is to be prepared and submitted against each consignment of Material supply.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
26.	Tenderers are to carefully go through the terms and conditions and the technical specification of the items for which offers are called for. Deviations, if any, shall be specifically brought out in the offer.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			
27.	<u>IMPORT OF MATERIALS</u> 1) Import shall be on DDP basis for delivery at CSL stores. Importer/Consignee name shall be Cochin Shipyard Limited. However the rights with regards to ownership of material to be transferred to CSL at the time of shipment by way of a legal agreement for practical purposes. Custom clearance shall be undertaken by supplier with a licensed CHA at the port. Requisite documentation for import to be ensured. 2) As per ICE gate guidelines, the customs duty and IGST shall be paid by the Importer/Consignee, i.e by CSL. Therefore the expenditure towards customs duty shall be paid by the supplier to CSL in advance at the time of import of goods (Bidders shall consider the customs duty amount during preparation of quote and same shall be included in the cost of item) 3) IGST Payments at the time of import clearance at destination port will be borne by CSL. 4) Customs duty means Customs duty in India, applicable at any discharge port in India. Customs duty shall not be reimbursed by CSL. 5) Any change in rate of tax (any upward/downward/exemption etc) by Govt. of India subsequent to submission of price bid would be admissible subject to proof of such change of rate of tax provided by supplier/CSL and payment of the same.	<table border="1"> <tr> <td>YES</td> <td>NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	<i>DESCRIPTION</i>	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
	6) Bill of entries for import material, Post custom clearance shall be submitted to CSL failing which cost towards material cannot be paid. 7) Post customs clearance, goods shall be transported to CSL Stores. 8) Also refer clause 28 (below) for details of Taxes and duties. 9) Tools/returnable items to be sent separately to enable return after completion of the project.			
28.	<p><u>DUTIES AND TAXES</u></p> 1) The rates of taxes and duties applicable if any, payable extra are to be indicated in the techno commercial and price parts. In addition to the amount of tax and duties should be separately shown in the price part. 2) Any change in rate of tax (any upward/downward/exemption etc.) by Govt. of India subsequent to submission of price bid would be admissible subject to proof of such change of rate of tax provided by supplier/csl and payment of the same . 3) <u>Tax implications on installation and commissioning orders as applicable</u> a) Indian firms- Income tax will be deducted from payments. GST shall be paid extra as applicable. b) Overseas firms- With Holding Tax (WHT) will be deducted from payments as per the DTAA/ Income Tax Laws of India and WHT certificate will be provided by CSL. c) Double Taxation Avoidance Agreement (DTAA) if any shall be applicable as agreed by both Governments. 4) The non resident vendor/service provider shall provide such documents that are necessitated by the Indian income tax laws so as to enable CSL to comply with the provisions of Indian statute and for payments of income tax in India. Following documents shall be sought by CSL in this regard i. Certificate under 10 (F) ii. Tax residency certificate iii. The certification regarding the existence / non existence of business connection or permanent establishment in India. (The above is only an indicative list) 5) IGST/GST shall not be considered for Price comparison purposes for arriving L1.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO			
29.	Exchange variation shall not be applicable and the prices shall be fixed till completion of entire project.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.																			
30.	<p><u>PAYMENT TERMS</u></p> <table border="1"> <thead> <tr> <th data-bbox="289 327 581 390"><u>Payment Milestones</u></th> <th data-bbox="581 327 932 390"><u>Supply Part</u></th> <th data-bbox="932 327 1218 390"><u>Installation Part</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="289 390 581 846"> Stage 1:On issuance of order for the material supply </td> <td data-bbox="581 390 932 846"> 10 % of the supply order value excluding taxes and duties against submission of bank guarantee towards performance of the contract/PO, valid till completion of material supply and Bank Guarantee towards 10% advance payment of the order value excluding taxes and duties, as per CSL format. </td> <td data-bbox="932 390 1218 846"> </td> </tr> <tr> <td data-bbox="289 846 581 1182"> Stage 2: Shipment/Delivery of items(FOB on import items and on receipt at CSL for indigenous items) </td> <td data-bbox="581 846 932 1182"> 60% of the supply order value (on mutually agreed billing schedule) after certification by Third Party Inspection Agency & CSL (Prior to dispatch for import items). </td> <td data-bbox="932 846 1218 1182"> </td> </tr> <tr> <td data-bbox="289 1182 581 1648"> Stage 3: On receipt of all structural items of crane (bogies, portal, post, jib, swing lever, slewing frame, machinery house including machineries, electrical and control system items) and positioning of crane erection equipment at the site. </td> <td data-bbox="581 1182 932 1648"> </td> <td data-bbox="932 1182 1218 1648"> 20% of installation and commissioning order value after certification by Third Party Inspection Agency/CSL on receipt of item </td> </tr> <tr> <td data-bbox="289 1648 581 1850"> Stage 4 : Completion up to machinery frame erection. </td> <td data-bbox="581 1648 932 1850"> 10% of the supply order value after certification by Third Party Inspection Agency/CSL. </td> <td data-bbox="932 1648 1218 1850"> 20% of installation and commissioning order value after certification by Third Party Inspection Agency </td> </tr> </tbody> </table>	<u>Payment Milestones</u>	<u>Supply Part</u>	<u>Installation Part</u>	Stage 1: On issuance of order for the material supply	10 % of the supply order value excluding taxes and duties against submission of bank guarantee towards performance of the contract/PO, valid till completion of material supply and Bank Guarantee towards 10% advance payment of the order value excluding taxes and duties, as per CSL format.	Stage 2: Shipment/Delivery of items(FOB on import items and on receipt at CSL for indigenous items)	60% of the supply order value (on mutually agreed billing schedule) after certification by Third Party Inspection Agency & CSL (Prior to dispatch for import items).	Stage 3: On receipt of all structural items of crane (bogies, portal, post, jib, swing lever, slewing frame, machinery house including machineries, electrical and control system items) and positioning of crane erection equipment at the site.	20% of installation and commissioning order value after certification by Third Party Inspection Agency/CSL on receipt of item	Stage 4 : Completion up to machinery frame erection.	10% of the supply order value after certification by Third Party Inspection Agency/CSL.	20% of installation and commissioning order value after certification by Third Party Inspection Agency	<table border="1"> <tr> <td data-bbox="1268 443 1360 506">YES</td> <td data-bbox="1360 443 1453 506">NO</td> </tr> <tr> <td data-bbox="1268 1430 1360 1493">YES</td> <td data-bbox="1360 1430 1453 1493">NO</td> </tr> </table>	YES	NO	YES	NO
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YES	NO																				
YES	NO																				

Sl. No	DESCRIPTION			Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
	<p>Stage 5: Completion of erection of all structural's of the crane including machineries, electrical and control system components.</p>	<p>10% of the supply order value after certification by Third Party Inspection Agency/CSL.</p>	<p>30% of installation and commissioning order value after certification by Third Party Inspection Agency/CSL</p>			
<p>Stage 6: After successful Commissioning and receipt of Bank Guarantee towards Performance contract/PO, to cover the guarantee period mutually agreed plus 90 Days.</p>	<p>10 % of the supply order value and all taxes applicable after certification by Third Party Inspection Agency/CSL.</p>	<p>30% of installation and commissioning order value after certification by Third Party Inspection Agency/CSL.</p>				
<p>31.</p>	<p>PAYMENT TERMS; NOTE:</p> <ul style="list-style-type: none"> i. All payments shall be released after endorsement from Lead partner , in cases where consortium exists. In any case, placement of orders shall be limited to only consortium members as per prequalification criteria of the tender. ii. Payment mode shall be ElectronicClearingSystem(ECS)/cheque/NEFT/ /LC/CAD/TT-as mutually agreed in line with above standard payment terms. Variations from standard terms, if any, shall be appropriately loaded for tender comparison purposes for arriving the lowest bid. Bank charges (including LC charges, if any) inside India will be to CSL account and outside India to supplier's account (In the case of import shipments). The charges for LC amendment, if any, shall be born by the parties by whom the same is attributed/ necessitated. iii. For deviation in Payments terms from CSL standard terms, if any, aforesaid interest will be loaded on quoted item prices, for tender comparison purposes for arriving lowest bid. iv. Part payment shall be considered only if specifically agreed against partial supplies. v. All payments shall be released on receipt of Bank guarantee towards Security deposit/Warranty Guarranty as per the terms and conditions of the purchase order. 			<table border="1" style="width: 100px; height: 40px; margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center; width: 50px;">YES</td> <td style="text-align: center; width: 50px;">NO</td> </tr> </table>	YES	NO
YES	NO					

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
35.	<p><u>INTEGRITY PACT:</u> As per Government of India (Central Vigilance Department), CSL and the SUPPLIER have to sign an Integrity Pact for the high value contracts, for ensuring transparency, equity and competitiveness in public procurement. The Tenderer has to sign Pre-Contract Integrity Pact as per format enclosed at Annexure 19 and to submit along with your offer. The above is applicable when the total basic price is above Rs. 100.0 lakhs. (present limit)</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">YES</td> <td style="width: 50%;">NO</td> </tr> </table>	YES	NO
YES	NO			
36.	<p><u>SECRECY & RESTRICTION ON INFORMATION TO MEDIA</u> a. The information contained in the enquiry as such shall NOT be communicated to any third party without prior approval of CSL b. Information in respect of contracts/orders shall NOT be released to the national or international media or anyone not directly involved in its execution without the written approval of CSL</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">YES</td> <td style="width: 50%;">NO</td> </tr> </table>	YES	NO
YES	NO			
37.	<p><u>SUB CONTRACTING AND ASSIGNMENT</u> Supplier shall not contract with any subcontractor and/or vendor without the prior written consent of CSL. Such consent shall not relieve the Supplier from any of his responsibilities and liabilities under the Purchase Order. In addition, Supplier shall ensure that the terms and conditions of any such contract shall comply with and correspond to the terms and conditions of the Purchase Order</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">YES</td> <td style="width: 50%;">NO</td> </tr> </table>	YES	NO
YES	NO			
38.	<p><u>ARBITRATION & JURISDICTION:</u> a. Any disputes arising during the period of the contract shall, in the first instance be settled by mutual discussions and negotiations. The results of such resolution of dispute shall be incorporated as an amendment to the contract, failing which supplier shall approach the CSL Grievance Redressal Committee as per relevant clause of the Contract. b. If any dispute, disagreement or question arising out of or relating to or in consequence of the contract, or to its fulfillment, or the validity of enforcement thereof, cannot be settled mutually or the settlement of which is not herein specifically provided for, then the dispute shall within thirty days from the date either party informs the other in writing that such disputes, disagreement exists, be referred to arbitration. The arbitrators shall be appointed and the arbitration proceedings shall be conducted in accordance with and subject to the Arbitration and Conciliation Act, 1996 (No. 26 of 1996) as amended from time to time and the decision of the Arbitrators shall be final and binding on the parties hereto. The arbitration will be done by a Board comprising one arbitrators nominated by each party, and a mutually agreed Umpire. Each party shall bear its own cost of preparing and presenting its case. The cost of arbitration shall be shared equally by the parties unless the award provides otherwise. Performance under this Contract shall however, continue during arbitration proceedings and no payment due or payable by the parties hereto shall be withheld unless any such payment is or forms a part of the subject matter of arbitration proceedings. c. Seat & Venue of Arbitration: The seat & venue of arbitration shall be at Cochin. d. Language of Arbitration: The Language of arbitration shall be English. e. Governing Law: The contract shall be governed by Indian Law f. In case of disputes, the same will be subjected to the jurisdiction of courts at Cochin.</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 50%;">YES</td> <td style="width: 50%;">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
39.	Conditional discounts, if any will not be reckoned for tender evaluation/comparison purposes.	<table border="1"> <tr> <td data-bbox="1268 296 1357 354">YES</td> <td data-bbox="1357 296 1446 354">NO</td> </tr> </table>	YES	NO
YES	NO			
40.	<p><u>TERMINATION & LIMITATION OF LIABILITY</u></p> <p>i. This contract may be terminated upon the occurrence of any of the following events</p> <p>a) By agreement in writing of the parties hereto;</p> <p>b) By the non-defaulting party, upon default by the other party, if not remedied within thirty (30) days, or such longer time as may be agreed upon by the parties, after receipt of notice thereof in writing from the non-defaulting party;</p> <p>c) By the other party, upon either parties;</p> <ul style="list-style-type: none"> • Making the assignment for the benefit of creditors, being adjudged a bankrupt or becoming insolvent; or • Having a reasonable petition filed seeking its' dissolution or liquidation, not stayed or dismissed within sixty (60) days; or • Ceasing to do business for any reason. <p>d) In cases where maximum limit of LD is reached and still the items are not delivered</p> <p>e) For fraud and corruption or other unacceptable practises. Upon expiry or termination of this Contract, neither party shall be discharged from any antecedent obligations or liabilities to the other party under this Contract unless otherwise agreed in writing.</p> <p>CSL may by notice in writing to supplier terminate the order after issuing due notice i.e 15 days notice period. CSL shall be entitled to compensation for the loss limited to the the order value.</p> <p>ii. Liability maximum that can be claimed by the supplier shall be limited to what is due to be and has been paid by CSL for the material delivered/work done as per the payment milestones.</p>	<table border="1"> <tr> <td data-bbox="1268 653 1357 711">YES</td> <td data-bbox="1357 653 1446 711">NO</td> </tr> </table>	YES	NO
YES	NO			
41.	<p><u>GRIEVANCE REDRESSAL:</u></p> <p>As an alternate dispute redressal or reconciliation mechanism (other than arbitration clause), Cochin Shipyard has constituted Grievance Redressal Committee. Currently following executives of the committee may be contacted for the settlement of disputes, if any, arising out of all contracts.</p> <p>a) Smt. Angana K R General Manager (Design)</p> <p>b) Mr Shibu John, Deputy General Manager (Finance) i/C</p> <p>c) Smt. Bindu Krishna, Assistant General Manager (Legal)</p>	<table border="1"> <tr> <td data-bbox="1268 1430 1357 1488">YES</td> <td data-bbox="1357 1430 1446 1488">NO</td> </tr> </table>	YES	NO
YES	NO			
42.	<p><u>FORCE MAJEURE</u></p> <p>Should failure in performance of the contract or part thereof arise from war insurrection, restraint imposed by Government, Act of Legislature or other Statutory Authority or illegal strike, riot, legal lock-out, flood, fire, explosion, act of God or any inevitable or unforeseen event beyond human control which may be construed as reasonable ground for an extension of time, CSL/Crane supplier may allow such additional time as is mutually agreed, to be justified by the circumstances of the case.</p> <p>The occurrence/ cessation of force majeure situation is to be informed by CSL/Crane supplier, with documentary evidence within 15 days from the date of occurrence/ cessation.</p>	<table border="1"> <tr> <td data-bbox="1268 1713 1357 1772">YES</td> <td data-bbox="1357 1713 1446 1772">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
43.	<p>POWER OF ATTORNEY</p> <p>The tenderers shall have to sign in each page of the tender documents with official stamp as a token of his acceptance of the conditions stated therein. Person or persons signing the tender shall state in what capacity he/she or they is/are signing the tender, eg., as Sole Proprietor of the Firm concerned or as Managing Director or Director or Secretary or Manager of a Limited Company. In the case of partnership firm, the names of all the partners should be recorded and the tender shall be signed by all the partners or their duly constituted attorney, having authority to bind all the partners in all matters pertaining to the contract as accorded in the deed of Power of Attorney or in the partnership deed. In such a case, a registered copy of the "Partnership Deed" should be furnished along with the tender. It shall be obligatory on the part of every partner of the firm, which enters into agreement, to fulfill the conditions of agreement during the currency thereof, notwithstanding the dissolution of the partnership in the meantime. In the case of a Limited Company, the tender shall be signed by a person mentioned supra empowered to do so by the company. A copy of the Memorandum of Association and Articles of Association of the Company and the letter empowering the person mentioned supra shall be attached to the tender.</p> <p>The person signing the tender form on behalf of another or on behalf of a firm, shall enclose to the tender, a Power of Attorney or the said deed duly executed in his favour or the partnership deed giving him such power showing that, he has the authority to bind such other persons or the firm, as the case may be, in all matters pertaining to the contracts. If the Person so signing the tender, fails to enclose the said Power of Attorney, his tender shall be liable for being summarily rejected. The Power of Attorney shall be signed by all partners in the case of partnership concern, by the Proprietor in the case of a proprietary concern, and by the person who by his signature can bind the company in the case of a Limited Company.</p> <p>Format in accordance with Annexure 8</p>	<table border="1" data-bbox="1268 682 1446 747"> <tr> <td data-bbox="1268 682 1357 747">YES</td> <td data-bbox="1357 682 1446 747">NO</td> </tr> </table>	YES	NO
YES	NO			
44.	<p>a) Risk/responsibility of items being loaded/unloaded (at port/CSL stores/erection site) and during transit (to CSL/from CSL stores to site /at erection site) shall be to supplier account.</p> <p>b) CSL reserve the right to inspect the goods after receipt at CSL store / prior to dispatch (by CSL or CSL authorized agency at yard cost). Short supply / Mismatch/ Replacement of Defective items / those not meeting agreed / contractual specification/ Items failing during commissioning shall be sent on freight prepaid/delivered at CSL store.</p> <p>c) Replacements during guarantee period to be sent on freight paid basis to location as required by yard with all expenses to supplier account.</p> <p>d) Defective items, if any, after receipt shall be sent back to supplier and same to be arranged by supplier at their own cost and risk. Defective items shall be returned after receipt of replacement item. The supplier, shall replace all/ part of items as applicable , in case of rejection, within 4 weeks of reporting the defect, without any additional cost to CSL.</p> <p>e) In case the defective materials are not taken back within the said period, CSL reserves the right to dispose the same without further intimation.</p> <p>f) The supplier shall compensate CSL for loss on account of shortage in quantity and number of pieces received than that indicated in the packing list/Invoices provided the CSL's claim is rejected by the insurance due to any fault of supplier. Such claims, if any, shall be supported by recognized surveyors report. The supplier shall also compensate for losses, if any sustained by the CSL due to defective packing and/or marking of the goods</p>	<table border="1" data-bbox="1268 1488 1446 1554"> <tr> <td data-bbox="1268 1488 1357 1554">YES</td> <td data-bbox="1357 1488 1446 1554">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
	not in accordance with the terms of contract. The time limits for filing claims under clauses above shall be generally 180 days from the date of complete discharge of goods.			
45.	In addition to preservation instructions in the tender, preservation/upkeep of equipments post issuance from CSL stores till commissioning is to supplier account	<table border="1"> <tr> <td data-bbox="1268 411 1357 478">YES</td> <td data-bbox="1357 411 1446 478">NO</td> </tr> </table>	YES	NO
YES	NO			
46.	<p><u>INDEMNITY</u></p> <p>Supplier shall indemnify CSL against any claim of infringement of letters, patent or registered design/the use or sale of any article of materials supplied to us by you and against all costs and damages, which we may incur in any action for such infringement or for which we become liable in any such action.</p>	<table border="1"> <tr> <td data-bbox="1268 554 1357 621">YES</td> <td data-bbox="1357 554 1446 621">NO</td> </tr> </table>	YES	NO
YES	NO			
47.	<p><u>INTELLECTUAL PROPERTY RIGHTS</u></p> <p>On order, supplier shall grant CSL a right to use ownership of design/material, to the extent they are incorporated in the order terms.</p>	<table border="1"> <tr> <td data-bbox="1268 735 1357 802">YES</td> <td data-bbox="1357 735 1446 802">NO</td> </tr> </table>	YES	NO
YES	NO			
48.	<p><u>FALL CLAUSE</u></p> <p>The firm/bidder winning the contract shall sign an agreement with Cochin Shipyard Ltd for "Fall clause" which means during the contract period the firm/bidder cannot offer the item/s to anyone else at rates lower than the rates quoted, otherwise the same lowest rate shall be applicable to the contract with CSL also</p>	<table border="1"> <tr> <td data-bbox="1268 861 1357 928">YES</td> <td data-bbox="1357 861 1446 928">NO</td> </tr> </table>	YES	NO
YES	NO			
49.	<p><u>PRICE BID</u></p> <p>The price bid shall be submitted as per the 'Price formats detailed below. Format of price shall be in accordance with following annexures of Volume I of tender document</p> <p>For Indigenous Content : Annexure 17 a& b For Import Content : Annexure 17 c & d</p>	<table border="1"> <tr> <td data-bbox="1268 1050 1357 1117">YES</td> <td data-bbox="1357 1050 1446 1117">NO</td> </tr> </table>	YES	NO
YES	NO			
50.	<p><u>UNPRICED BID:</u></p> <p>Un-Priced bid (price bid without price) duly signed is to be submitted alongwith techno-commercial offer in the price format,if provided. Price should be quoted separately for each item shown in the format. In the event price bid is different from the unpriced format already submitted, yard reserves the right to reject the offer at our discretion without any further discussions. Details of optional items, if any, should be indicated under separate heading in the Techno commercial bid and the respective price details should also be given in the price bid. Combining of figures against more than one item and ambiguous clauses will lead to rejection of the bid.</p>	<table border="1"> <tr> <td data-bbox="1268 1243 1357 1310">YES</td> <td data-bbox="1357 1243 1446 1310">NO</td> </tr> </table>	YES	NO
YES	NO			
51.	<p>If, in the price structure quoted for the required material/ item, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly. 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. If there is a discrepancy between words and figures, amount in words of respective figures shall prevail. If the bidder does not agree to the observation of the CSL, the tender is liable to be rejected and the same shall be intimated.</p>	<table border="1"> <tr> <td data-bbox="1268 1537 1357 1604">YES</td> <td data-bbox="1357 1537 1446 1604">NO</td> </tr> </table>	YES	NO
YES	NO			
52.	<p>The techno-commercial part alone will be opened initially on the due date of tender. The price part will be opened only after evaluation of the Techno commercial part. Date of opening of the price part will be intimated to those firms whose Techno-commercial bids would be acceptable after the evaluation. Suppliers are allowed to depute their authorized representative to be present at the time of opening of Price Bid of their tender only.</p>	<table border="1"> <tr> <td data-bbox="1268 1801 1357 1869">YES</td> <td data-bbox="1357 1801 1446 1869">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	DESCRIPTION	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
53.	Prior to price bid opening, CSL is at liberty to take the credit rating of bidders at our cost on case to case basis, and same shall be considered for evaluating/qualification of the offers.	<table border="1"> <tr> <td data-bbox="1268 289 1357 352">YES</td> <td data-bbox="1357 289 1446 352">NO</td> </tr> </table>	YES	NO
YES	NO			
54.	PLACEMENT OF ORDER CSL reserves the right to place order to the techno-commercially qualified lowest bidder in full or individual cranes to the respective lowest bidders in the tender.	<table border="1"> <tr> <td data-bbox="1268 390 1357 453">YES</td> <td data-bbox="1357 390 1446 453">NO</td> </tr> </table>	YES	NO
YES	NO			
55.	PURCHASE ORDER PLACEMENT ADDRESS: a) For Supply (Indigenous/Import):..... b) For Installation, Testing & Commissioning:.....			
56.	RESTRICTIONS UNDER RULE 144 (XI) OF THE GENERAL FINANCIAL RULES (GFRS), 2017			
56.1	Certificate shall be submitted by the bidders as per the format enclosed at Annexure 27 along with their offer, stating compliance with office order OM No. 6/18/2019-PPD dated 23 rd July 2020 & F.18/37/2020-PPD (as amended from time to time shall be applicable) regarding restrictions under rule 144 (ix) of the General Financial Rules (GFRs).	<table border="1"> <tr> <td data-bbox="1268 772 1357 835">YES</td> <td data-bbox="1357 772 1446 835">NO</td> </tr> </table>	YES	NO
YES	NO			
56.2	Any bidder from a country, which shares a land border with India, will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. In works contracts, including turkey contracts, contractors shall not be allowed to sub contract works to any contractor from a country which shares a land border with India unless such contractor is registered with Competent authority. Relevant certificate to be submitted by bidder from a country which shares land border with India except for bidders to which Govt. of India has extended lines of Credit or in which Govt. of India has development projects, along with the offer as proof of registration with competent authority , failing which the offer will not be considered. A certificate is to be submitted by the bidder for compliance with the order referred above long with tender documents for consideration of offer(Wordings are as per Clause below) .If such certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law	<table border="1"> <tr> <td data-bbox="1268 1054 1357 1117">YES</td> <td data-bbox="1357 1054 1446 1117">NO</td> </tr> </table>	YES	NO
YES	NO			
56.3	Registration should be valid at the time of submission of bids and at the time of acceptance of bids. In respect of supply otherwise than by tender, registration should be valid at the time of placement of order. If the bidder is validly registered at the time of acceptance /order placement, registration shall not be a relevant consideration during contract execution.	<table border="1"> <tr> <td data-bbox="1268 1369 1357 1432">YES</td> <td data-bbox="1357 1369 1446 1432">NO</td> </tr> </table>	YES	NO
YES	NO			
56.4	The competent authority for the purpose of registration under the order shall be Registration committee constituted by the Department of Promotion of Industry and Internal Trade (DPIIT) . Details of the committee and procedure for registration and restrictions shall be as per Ann I of the Order -Public Procurement no 1 dt 23.7.2020 issued by Ministry of Finance , department of Expenditure.	<table border="1"> <tr> <td data-bbox="1268 1537 1357 1600">YES</td> <td data-bbox="1357 1537 1446 1600">NO</td> </tr> </table>	YES	NO
YES	NO			
56.5	“Bidder” (including the term ‘tenderers’, ‘consultant’ or ‘Service provider’ in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.	<table border="1"> <tr> <td data-bbox="1268 1722 1357 1785">YES</td> <td data-bbox="1357 1722 1446 1785">NO</td> </tr> </table>	YES	NO
YES	NO			
56.6	“Bidder from a country which shares a land border with India” for the purpose of this Order means:- a) An entity incorporated, established or registered in such a country; or	<table border="1"> <tr> <td data-bbox="1268 1860 1357 1923">YES</td> <td data-bbox="1357 1860 1446 1923">NO</td> </tr> </table>	YES	NO
YES	NO			

Sl. No	<i>DESCRIPTION</i>	Compliance by the supplier (Yes/No). In case of 'No', reasons to be provided.		
	b) A subsidiary of an entity incorporated, established or registered in such a country; or c) An entity substantially controlled through entities incorporated, established or registered in such a country; or d) An entity whose beneficial owner is situated in such a country; or e) An Indian (or other) agent of such an entity; or f) A natural person who is a citizen of such a country; or g) A consortium or joint venture where any member of the consortium or joint venture falls under any of the above			
56.7	<p>The beneficial owner for the purpose of 56.4 above will be as under:</p> <ol style="list-style-type: none"> 1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means. Explanation- <ol style="list-style-type: none"> a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of shares or capital or profits of the company. b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements. 2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more judicial person has ownership of entitlement to more than fifteen percent of capital or profits of the partnership. 3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals, 4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official; 5. In case of trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership. 	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO			
56.8	An Agent is a person employed to do any act for another, or to represent another in dealings with third person.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO			
57.	The successful bidder shall not be allowed to sub-contract works to any contractor from a country, which shares a land border with India unless such contractor is registered with the Competent Authority.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO			
58.	Cochin Shipyard Limited does not bind itself to accept the lowest or any tender but reserves to itself the right to reject any or all or a part of any tender at its discretion.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO			
59.	The above agreed CSL commercial terms and conditions will be incorporated in the Purchase order and no deviations are acceptable after price bid opening/ order placement.	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">YES</td> <td style="text-align: center;">NO</td> </tr> </table>	YES	NO
YES	NO			



MAT/PRM/1873/18 R2

**TURNKEY SUPPLY, INSTALLATION, TESTING &
COMMISSIONING OF 75T & 40T LEVEL LUFFING JIB
CRANES FOR NEW DRY DOCK PROJECT**

**VOLUME- I
ELIGIBILITY CRITERIA**



2. ELIGIBILITY CRITERIA

Rail Mounted level luffing single jib cranes depicted in this tender document are critical cranes for shipbuilding and ship repair process. Ruggedness and reliability are the most two elements to be considered alongwith other parameters like smooth and safe operation based on optimized and flawless logics. The cranes shall be precisely designed for smooth operation for ship building activities.

Pursuant to the above, criteria mentioned below are very critical for successful commissioning of the cranes with the given specifications and well within the time frame. Though the tender is an open one, tenders meeting the criteria stipulated below are only eligible and those tenders only shall be considered even for technical evaluation. Offers received without complying the below requirements will summarily be rejected without any further communication from CSL side.

2.1 GENERAL, TECHNICAL AND FINANCIAL EXPERIENCE

A. General

- a. The Bidder shall be a Single firm or licensee (having valid license agreement/ collaboration agreement) or Consortium/Joint Venture (JV) of maximum three members.
Single bidder/ Lead partner shall be an Indian firm. Role of each partners are also to be defined.
- b. Single bidder/ Consortium members/ members of JV/Licensee/ Licensor should be in the business of crane manufacturing or heavy engineering for the last Ten (10) years as on the date of publishing of this tender. Certificate of Incorporation of the company along with copy of purchase/work orders received in this regard shall be submitted. The certificates should be notary vetted or embassy attested.

Heavy engineering company shall be registered in India and should have steel fabrication capacity of 1500T per annum. A certificate from statutory auditor with supporting documents shall be submitted in this regard.

In case of subsidiary companies set up in India, their parent company (Indian or Foreign) shall meet the above criteria of doing business of crane manufacturing for last 10 years. The tender shall be accompanied by a legally binding document signed by Parent company and Subsidiary stating that the firms are jointly and severally liable to CSL and responsible in full for the performance of the contract. In this regard, letter from parent company and Agreement between parent company and subsidiary company are to be submitted as per formats placed at Annexure 25(a) and 25(b).

In case of licensee, License Agreement shall be valid for a period of at least 10 years from the date of submission of bid. Indian firm having license agreement

with foreign partner shall indemnify CSL against all cost, damages which may occur in the event of license agreement becoming invalid before the expiry of the guarantee period of crane or due to failure of the licensor in discharging his role or responsibilities or obligations as stated in this tender document. The licensor shall supervise manufacture, installation, testing and commissioning of crane.

- c. Single bidder/ members of consortium/ members of JV/ Licensee /Licensor shall not be under a declaration of ineligibility issued by Govt. of India / State Govt. / Public Sector Undertakings etc. An undertaking shall be submitted in this regard.
- d. The Single bidder/ members of consortium/ members of JV/ Licensee/ Licensor should not be vendor subsidiaries / affiliates of the Consultant (M/s HaskoningDHV Consulting Private limited) appointed for the dry dock project of CSL. A self-declaration shall be submitted in this regard.
- e. The Single bidder should meet both the technical and financial criteria in full. The members of JV/consortium must collectively meet the technical criteria. Members of JV/consortium shall meet the financial criteria as mentioned in para 2.1.D
The licensee and licensor must collectively meet the technical criteria. Licensee and Licensor shall meet the financial criteria as mentioned in para 2.1.D.
In case of subsidiary companies set up in India, technical experience and financial criteria shall be collectively met by subsidiary and parent company (Indian or Overseas) .

B. TECHNICAL EXPERIENCE

The bidder should have manufactured, installed and commissioned cranes as mentioned below in the last 15 years as on the date of publishing of this tender.

- a) One number level luffing single/double jib crane of minimum capacity 75T at a jib radius of 40M or more .
Or
- b) Two (2) numbers level luffing single/double jib cranes of minimum capacity 50T at a jib radius of 40M or more .
Or
- c) Three (3) numbers level luffing single/double jib cranes of minimum capacity 40T at a jib radius of 30 M or more

Notes:

- (i) The projects that have been undertaken and executed within 15 years immediately prior to publishing date of this tender shall only be considered eligible for evaluation.

- (ii) In line with this experience criteria, crane manufacturer shall submit Notary vetted or Embassy attested copy of the following
 - (a) Relevant pages of Purchase Order (PO) /Work Order(WO)
 - (b) Crane Commissioning Report issued by the Class Surveyors/ Third Party Inspection Agency or Completion Certificate issued by the client as relevant stating the above.
- (iii) CSL reserves the right to obtain clarifications or confirmations from the clients listed by the Tenderer in their previous experience record. CSL reserves the right to visit the crane installations done by the Tenderer in order to have firsthand information regarding the performance of the cranes and after sales support provided by the supplier. The Tenderer shall co-ordinate for obtaining approval/ consent for the above mentioned visit whereas travelling and all other expenses of CSL team for the same shall be borne by CSL.
- (iv) A certificate from statutory auditor stating that the bidder meets the criteria regarding technical experience shall be submitted. The contract/purchase order details of the crane projects meeting the criteria shall be mentioned in the certificate.

C. DESIGNER'S EXPERIENCE

Bidder has to declare the designer (Basic Design) for the project who meets the criteria mentioned below. Single bidder or consortium member or member of joint venture or Licensor or third party designer can be the designer.

Designer for the crane should have designed (Basic Design) cranes as mentioned below which are successfully commissioned in the last 15 years as on the date of publishing of this tender.

a) One number level luffing single/ double jib crane of minimum capacity 75T at a jib radius of 40M or more

Or

b) Two (2) numbers level luffing single/double jib cranes of minimum capacity 50T at a jib radius of 40M or more

Or

c) Three (3) numbers level luffing single/double jib cranes of minimum capacity 40T at a jib radius of 30M or more.

Notes:

- i. The projects that have been undertaken and executed within 15 years immediately prior to the date of publishing of this tender shall only be considered eligible for evaluation.
- ii. In case of bidder is availing design from a third party, an agreement between the bidder and designer to be submitted.
- iii. In case of consortium partner acting as designer, this role is to be defined in the consortium agreement.

- iv. Relevant document copies vetted by notary or embassy shall be submitted as proof for design experience.
- v. A certificate from statutory auditor stating that the designer meets criteria regarding design experience shall be submitted. The contract/purchase order details of the crane projects meeting the criteria shall be mentioned in the certificate.

D. FINANCIAL CAPABILITY

- a) The single bidder/lead partner of JV/ lead partner of consortium/ licensee shall have average annual turnover equivalent to Rs. 33.0 crores (INR) for the preceding three fiscal years from the current fiscal year. Other members of JV/Consortium each shall meet 50% of above mentioned annual turnover in the preceding three fiscal years.

In case of subsidiary companies set up in India, financials of subsidiary and parent company (Indian or Overseas) shall collectively be considered.

- b) The single bidder/ members of JV/ members of consortium/ licensee/ licensor/ parent company shall have positive net worth during the last three preceding financial years.
- c) The single bidder/ lead partner of JV/ lead partner of consortium/ licensee/ parent company or subsidiary company shall furnish solvency certificate issued by a nationalized/ scheduled bank to the tune of Rs 33.0 Crores

Notes:

- i. The bidder shall enclose a certificate issued by its Statutory Auditors with their seal and signature, stating its net worth & revenues for the preceding three fiscal years from the current fiscal year along with the bid. Certificate shall be as per the format enclosed at **Annexure-2**. Or else, the firm shall submit Audit report for the last three financial years duly certified and signed by statutory Auditor. Exchange rate as on financial closing date of the respective country will be considered for conversion to INR.
- ii. Tenderers shall seriously take notice that each of the aforesaid report is very critical for this tender and any wrong submission or submission with inadequate supporting documents or any mismatch in the documents will result in summarily rejection /disqualification of the submitted offer or even at any point of time prior to placement of PO whatever may be the status of the process.

- iii. Solvency certificate shall be as per the format placed at **Annexure 26**. Bidder shall submit the solvency certificate not older than 3 (three) months prior to last date of submission of offer
- iv. In case of international bidders, solvency certificate shall be issued by any international reputed bank.

E. OTHER FINANCIAL REQUIREMENTS

- a) CSL shall at our own discretion and costs opt for obtaining credit information report on your financial credentials through credit rating firms like M/s. Dun & Bradstreet, M/s MNS etc. The same shall also be considered as a factor for prequalification criteria along with other criteria mentioned.
- b) Present Order Book position of the bidder or lead consortium partner shall be submitted as per **Annexure 6**.

2.2 CONDITIONS FOR CONSORTIUM

- a) In case of consortium, member from India shall be nominated as lead partner.
- b) The lead partner shall be authorized by a power of attorney signed by legally authorized signatories of all the partners.
- c) Same consortium members should not be part of two or more separate bids.
- d) Subsidiaries/ members of same group should not be part of two or more separate bids.
- e) The Power of Attorney shall be submitted exactly in the format attached herein this tender documents. **Annexure-9**
- f) A change in consortium partners is not permitted at any stage of the contract.
- g) The Tender may be signed by all consortium members. Alternatively, only the lead partner may sign the Tender. In such a case, the Power of Attorney from each member authorizing the lead partner for signing and submission of the Tender on behalf of each individual member must accompany the Tender in the form attached.
- h) The lead partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the association.
- i) All partners of the consortium shall be liable jointly and severally for the execution of the contract in accordance with the contract terms.
- j) Lead partner shall be liable and responsible to CSL for performance of all obligations of their consortium partners including terms and conditions of orders placed on consortium partners, if any.
- k) Lead partner is solely responsible for the guarantee of the cranes in full. Each defect comes under the purview of guarantee clause shall be attended by the lead partner or other partner or their representative complying to the scope of guarantee mentioned in this tender. Lead partner shall ensure all possible steps to clear the defects under guarantee clause within a short span of time.

- l) The Tender shall be accompanied by a certified copy of legally binding Consortium Agreement (exactly in the form attached- **Annexure-9**) signed by the Consortium members confirming the following:
 - i. Date and place of signing.
 - ii. Purpose of Consortium.
 - iii. A clear and definite manner including the proposed administrative arrangements for management and execution of contract works.
 - iv. Description of duties / responsibilities and scope of work to be undertaken by each firm. Duties, responsibilities and power of lead partner shall be specifically included.
 - v. Lead partner is responsible for resolving disputes / misunderstanding / undefined activities, if any, amongst the consortium members.
 - vi. Any correspondence exchanged with lead partner of consortium shall be binding for all consortium members.
 - vii. Authorized representative of consortium.
 - viii. Stating that the firms are jointly and severally liable to CSL for the performance of the contract.

- m) Validity of the consortium shall firmly be valid until the Guarantee Period is completed. Once the order is finalized, Lead partner has no right to terminate the consortium agreement or assigning agreement with another partner.

2.3 Conditions and requirements for JV

- a) In case of JV, member from India shall be nominated as lead partner and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the partners.
- b) The bid and, in case of a successful bid, the Agreement, shall be signed so as to be legally binding on all partners.
- c) The lead partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture and the entire execution of the contract.
- d) All partners of the joint venture shall be liable jointly and severally for the execution of the contract in accordance with the contract terms, and a statement to this effect shall be included in the authorization mentioned under 'c' above, as well as in the bid and in the Agreement (in case of a successful bid).
- e) The joint venture agreement should indicate precisely the role of all members of JV in respect of planning, design, construction equipment, key personnel, work execution, and financing of the project. All members of JV should have active participation in execution during the currency of the contract. This should not be varied / modified subsequently without prior approval of the employer.
- f) The joint venture agreement should be registered, so as to be legally valid and binding on all partners.
- g) A copy of the Joint Venture Agreement entered into by the partners shall be submitted with the bid.

h) Lead partner is solely responsible for the guarantee of the cranes in full. Each defect comes under the purview of guarantee clause shall be attended by the lead partner or other partner or their representative complying to the scope of guarantee mentioned in this tender. Lead partner shall ensure all possible steps to clear the defects under guarantee clause within a short span of time

3. DELIVERY TERMS AND CONDITIONS

Supplier may take notice of clause no 17 of volume II – technical specification

APPLICATION LETTER

(On Applicant's letter head)

(Date and Reference)

To
General Manager (Materials)
Cochin Shipyard Limited
Perumanoor PO
Kochi 682015

Subject:Tender for "Turnkey Supply, Installation, Testing & Commissioning of Level Luffing Single Jib Cranes" for the new dry dock in Cochin Shipyard Limited

Ref: RFQ No. MAT/PRM/1873/18 R2

Dear Sir,

With reference to your tender referred above, We, _____ *(name of the applicant or consortium)* having examined all relevant documents and understood their contents, hereby submit our Tender. It is confirmed and truly declared that:

1. All information provided in the Tender and in the Appendices is true and correct.
2. We shall make duly available to CSL any additional information it may find necessary or require to supplement or authenticate the Tender.
3. We or our subsidiaries or affiliated are not under a declaration of ineligibility issued by Govt. of India / Any State Govt. of India / Public Sector Undertakings.
4. We also confirm that our vendor subsidiaries/affiliates are not involved as consultant for the Dry Dock project of CSL. The Single bidder or consortium members should not be vendor subsidiaries / affiliates of the Consultant appointed for the Drydock project of CSL ([HaskoningDHV Consulting Private Limited](#)). A self-declaration shall be submitted in this regard.
5. We also confirm that our vendor subsidiaries/affiliates are not involved as consultant for the new drydock project at CSL.
6. We also confirm that subcontracting of works other than mentioned in bid would not be carried out without approval of CSL
7. We agree and undertake to abide by all the terms and conditions of the tender.
8. We confirm that no counter conditions or remarks are made in the Financial Part of this Bid.
9. The proposal validity is 180 days from the date of opening of technical part.

Thanking you,

Yours faithfully,

(Signature of the Authorized Representative)

(Name and designation of the Authorized Representative)

(Name of the Consortium leader)

Place:

Date:

(Company Seal)

FINANCIAL CAPABILITY

Sr. No.	Financial Year	Annual Revenue/ Turnover	Net worth as at the end of the financial year
1			
2			
3			

Signature of the authorized representative of Tenderer/ Consortium Member

Date:

(Company seal)

Certificate from the Statutory Auditors

This is to certify that _____ (*name of the Tenderer*) has received the payments shown above in the respective years and that the net worth is ascomputed.

Name of StatutoryAuditors:

Designation:

Name of the Audit firm:

(Signature of the Authorised Signatory Auditors)

(Seal of Audit Firm)

STRUCTURE AND ORGANIZATION

1. Name of company:

Address:

Phone:

Fax:

Email:

Authorized representative:

Registered office address:

2. Description of company (for example, Crane supplier):

3. Number of years' experience :

- in own country:

- internationally:

4. Names and addresses of associated companies to be involved in the project – and whether parent/subsidiary/other:

5. Please indicate here or attach an organization chart showing the company structure including the positions of directors and key personnel, if relevant.

6. Details of the designer (company details) for the project:

We hereby solemnly certify that the above information is furnished as per our article of association and audited records.

Signature:

Name:

Designation

(Company Seal)

Annexure 4

RESOURCES: CONTRACTOR'S EQUIPMENT AND FACILITIES

Name of company:

On the basis of the information provided in the tender document, please indicate the equipment and facilities considered by the company to be necessary for undertaking the project and whether this is already in the company's ownership or will be purchase or hired:

We hereby solemnly confirm and certify that the above information is true as per audited records of our organization and liable to furnish any additional information if CSL demands.

Signature:

Name:

Designation

(Company Seal)



Annexure 5A

TECHNICAL EXPERIENCE: RELEVANT CRANE PROJECTS COMPLETED

Please fill in information about the relevant projects completed over the past fifteen years from date of publishing the tender which meets the prequalification criteria

Name of the Company:

SL No	Name of the Client	Project Description	Capital Cost of the Project at the time of award of the contract	Completion period of the project as per the contract	Start Date & Commissioning Date of the project	Design by (firm details)	Remarks including reason for delay in completing the project, if so
1							
2							
3							

We hereby solemnly confirm and certify that the above information is true as per audited records of our organization and liable to furnish any additional information if CSL demands

Signature:

Name:

Designation

(Company Seal)



Annexure 5B

DESIGNER'S EXPERIENCE: RELEVANT CRANE PROJECTS COMPLETED

Please fill in information about the relevant projects completed over the past fifteen years from date of publishing the tender which meets the prequalification criteria

Name of the Company:

SL No	Name of the Client	Project Description	Capital Cost of the Project at the time of award of the contract	Completion period of the project as per the contract	Start Date & Commissioning Date of the project	Remarks including reason for delay in completing the project, if so
1						
2						
3						

We hereby solemnly confirm and certify that the above information is true as per audited records of our organization and liable to furnish any additional information if CSL demands

Signature:

Name:

Designation

(Company Seal)



Annexure 6

PRESENT ORDER BOOK POSITION

Name of company:

Give information about all projects in progress, including those where the company has received a letter of intent, but a formal contract has not been awarded.

The below details would not be considered for PQ evaluation. This is for information only

Sr. No.	Client	Crane Details & location	Contract value	Scheduled date of completion of work
1				
2				
3				
4				

We hereby solemnly confirm and certify that the above information is true as per audited records of our organization and liable to furnish any additional information if CSL demands

Signature of Statutory Auditor:

Name & Address

(Company Seal)



Annexure 7

CONSORTIUM DETAILS

Name of company:

If the company intends to enter into a consortium for the project, please give the following information, otherwise state “*not applicable*”:

1. Names and addresses of consortium partners:

2. Name of company leading the consortium:

3. Name and address of bankers to the consortium

Signature:

Name:

Designation

(Company Seal)



Annexure 8

POWER OF ATTORNEY

(On Applicant's letter head)

(Date and Reference)

To
General Manager (Materials)
Cochin Shipyard Limited
Perumanoor PO
Kochi 682015

Subject: Power of Attorney

Mr. / Mrs. / Ms. (Name of the Person(s)), domiciled at
..... (Address),
acting as..... (Designation and name of the company),
and whose signature is attested below, is hereby appointed as the Authorized Representative and
authorized on behalf of (Name of the company)
to provide information and respond to enquiries etc. as may be required by the Employer for the
project of (Project title) and is hereby further authorized to sign
and file relevant documents in respect of the above.

(Attested signature of Mr.)

For.....
(Name & designation of the member of Consortium)

(Company Seal)

In case of a Consortium this Power of Attorney has to be signed by all representatives of the Consortium according to the Consortium Agreement.



CONSORTIUM AGREEMENT

This Consortium Agreement is made at on ... day of 2020 between M/s. (Please indicate the status viz. Proprietor, Firm, Company) represented through its authorized representative (hereinafter referred to as "First Party") and M/s. (Please indicate the status viz. Proprietor, Firm, Company) represented through its authorized representative, (hereinafter referred to as "Second Party").

WHEREAS the First Party is engaged in the business of

AND WHEREAS THE Second Party is engaged in the business of

AND WHEREAS both the parties are desirous of entering into a Consortium Agreement for carrying on the work of Cochin Shipyard Limited (The Employer) inconnection with the work of (Project title) herein referred to as the "subject works".

AND WHEREAS the First Party and Second Party have agreed to form of Consortium Agreement for execution of subject works.

NOW THIS DEED WITNESSED AS UNDER:

- 1. That under this Consortium Agreement the work will be done jointly by the first party and second party.
2. It is further agreed by the Consortium Partners that M/s. who meets CSL pre-qualification criteria, has been nominated as Lead Partner for the execution of the works.
3. That all the parties shall be liable jointly and severally for the satisfactory execution of the contract in all respects in accordance with terms and conditions of the contract and the lead partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all the partners and parties of the Consortium and the entire execution of the contract including payments shall be done exclusively with the lead partner.
4. THE PROPOSED PARTICIPATION SCOPE OF ACTIVITIES TO BE PERFORMED AND RESPONSIBILITIES OF EACH:

The proposed administrative arrangement, participation, scope of activities to be performed and responsibilities for the execution of the work of the each party shall be as under:

First Party:
Second Party:

- 5. The Registered office of the parties are as under:
First Party:
Second Party:
6. In the event of default by any partner in the execution of the part of the contract, the Lead Partner will have the authority to assign the work to any other party acceptable to the Employer (CSL) to ensure the satisfactory execution of that part of the contract.
7. The law of the country where the project is implemented / realized will govern this agreement.
8. The validity of this agreement is 180 days from the date of signing of agreement or otherwise till the end of the project in all respects, in case selected as the L1 bidder for providing required services under the contract.
9. Neither party shall discuss, disclose or otherwise divulge any information related to the contents of this agreement, the projects and business to any third party without prior written consent of the other party. Disclosure of the information is a liable action.

IN WITNESS WHEREOF the Parties here to have signed hereunder at on ... day of 2020.

Party of First Part Witness:
Party of Second Part 1)
2)



Annexure 10

METHOD OF PERFORMING THE WORKS

The Tenderer is required to submit a narrative outlining the method of performing the Works. The narrative should indicate in detail and include but not be limited to:

- Preliminary technical proposal (design) showing that the technical requirements according to the Employer's Requirements for the cranes
- The sequence and methods in which he proposes to carry out the Works
- A list of all major items of cranes, tools and vehicles proposed to be used in carrying out the Works at Site, including number of each kind, make, type, capacity of all equipment, working condition, which shall be deployed by him. Erection, Testing and Commissioning of the Works, in sufficient detail to demonstrate fully that the equipment will meet all the requirements of the Employer's Requirements.
- The procedure for installation/erection of equipment and transportation of equipment and materials to the site. Especially the method of manufacturing and installation of the level luffing single jib crane has to be described.
- Details regarding mobilization in India, the type of facilities including personnel accommodation, office accommodation, provision for maintenance and for storage, communications, security and other services to be used.
- Construction Equipment Assembly and Preparation (detailed plans for carrying out this activity).
- Other Items Proposed (Security services, etc.).

Initials of Signatory to Bid:.....

Name:

Designation

Company

(Company Seal)



Annexure 11

PROPOSED PROGRAMME OF WORKS

Tenderer shall provide a programme in a bar-chart form showing the sequence of work items by which he proposes to complete the Work of the entire Contract. The programme should indicate the sequences of work items and the period of time during which he proposes to complete the Works including the activities like designing, schedule of submittal of drawings, ordering/procurement of materials, manufacturing, delivering, installation/erection, testing and commissioning of Works to be executed under the Contract.

SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF LEVEL LUFFING SINGLE JIB CRANE FOR NEW DRY DOCK PROJECT																									
Sl. No.	Activity	Months																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Design stage																								
2	Submission of Drawings																								
3	Inspection of major items at Supplier's works																								
4	Supply of major items																								
4.a																									
4.b																									
4.c																									
5	Crane Installation																								
6	Testing and Commissioning																								

Initials of Signatory to Bid:.....

(Company Seal)



Annexure 12

PRE-BID QUESTIONNAIRE

SI no.	Reference Clause	Page no.	Description	Tenderer Suggestion / Query	CSL Reply
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Signature:

Name:

Designation:

Company:

(Company Seal)



COMPLIANCE STATEMENT-COMMERCIAL AND TECHNICAL	PAGE 1 OF 1
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**PROJECT NAME: Level Luffing Single JibCranes for New Dry Dock
Project of CSL**

TENDER NO: -----

DATE :-----

We hereby confirm and truly declare that our Offer / Bid No.dated
.....is in full compliance with the documents issued against the Tender No. -----
dated -----, except for the deviations listed below:

LIST OF DEVIATIONS(CSL reserves the right to reject offers with deviations)

Sl. No.	Description / Tender Reference	Reasons for Deviation

Name of tenderer:

Date:

Name & Designation

Seal & Signature

(Company Seal)



Annexure 14

KEY PERSONNEL

A writeup regarding key personnel having adequate experience in design, construction and quality assurance for the project



Annexure 15

CHECKLIST- TECHNICAL

We, M/shereby solemnly confirm and declare that we have gone through the tender specifications, terms and conditions and all other documents attached to the Tenderof M/s Cochin Shipyard Ltd, in detail and full. Entire specifications , terms and conditions are noted and understood and get clarified with M/s Cochin Shipyard Ltd. and submitting the offer herewith. We reconfirm the compliances of major technical points of technical specifications in the below format voluntarily and truly.

SI No	ITEM	Compliance (Please confirm with YES or reject with NO)	Remarks if any
1	It is confirmed that scope of works in detail is noted and accepted. Deviations are mentioned in the deviation chart enclosed (Annexure 13).		
2	It is confirmed that various standards / rules / regulations mentioned in the technical specifications are noted and confirmed that the prevailing rules will be complied in full . Any changes in such rules /standards/ regulations made by the authorities during the tendering time or execution time or even during the commissioning time will be implemented as part of the contract signed.		
3	It is confirmed that entire welding works will be carried out with certified welders only. Inspection of welding joints will be carried out as per the details given in the relevant specifications of this tender and as per QAP approved by third party inspection agency appointed by CSL.		
4	It is confirmed that welding consumables will be certified one and from well reputed manufacturers and authentic type approval certificate will be provided.		
5	It is confirmed and certified that steel will be provided from reputed mills with authentic marking and traceable certificate from classification societies or third party surveyors. Selection of steel as per standards for handling SWL and span on the crane and the same will be ensured with applicable safety factors mentioned in the relevant standards.		



6	It is confirmed that paint scheme will be as per the list mentioned in the technical specification. It is confirmed that surface preparation will be carried in approved methods complying to the finishing mentioned.		
7	It is confirmed that all fasteners use in the crane shall be of certified one from well reputed make .		
8	Make list of major components shall be submitted along with technical bid as per clause 82 of tender. In case any component used in crane is found other than approved makes during any stage including guarantee period, such items will be replaced by the crane manufacturer without any sort of claims or dispute.		
10	All required documents will duly be provided as per the schedule given in tender / work order.		
11	It is confirmed that only qualified and experienced Personnel will be deployed for this project. Authentic documents including police verification documents will be provided for the personnel for permitting them inside premises of CSL.		
12	It is confirmed that entire responsibility of personnel or machineries deployed by the crane manufacturer lies with themselves and CSL do not realise any responsibility on the same.		
13	It is confirmed that CSL has right to terminate the service of any personnel deployed by the crane manufacturer or their sub contractors, at any point of time, from CSL premises by giving the reasons in a letter.		
14	It is confirmed that safety rules/ guidelines mentioned in the tender are noted and will be complied fully. It is confirmed that CSL has the right to impart and implement any remedial steps as per its rules on noting of any violations in this regard at any point of time as and when required.		
15	It is confirmed that Guarantee Clause mentioned in the technical specifications are noted and accepted and the same will be complied fully. Hereby confirms and accepted that any slip or delay in attending and clearing guarantee clause from the side of crane manufacturer or their sub contractors or the OEM participated in this project, CSL can take the specified actions from CSL side.		



16	It is confirmed that only brand new items will be used in the cranes and best practices in industry will only be implemented in the project.		
17	Inspection / certification and documentation scheme of the project is noted and accepted fully.		
18	It is confirmed that drives, PLC, field devices, cabling, earthing, DSL, low voltage, medium voltage and high voltage requirements, transformers, earthing, lighting, etc would be done as per the technical specification		
19	It is confirmed and declares that any minor works, especially a statutory requirement, which are not mentioned in the tender specifications or missed out, will be carried out or implanted in this project by assuming it as the part of tender specification.		
20	It is confirmed that Spare availability for all components for the next 10 years will be ensured.		

We , M/ssolemnly reconfirm and declare that the above checklist points elicited are fully known to us and we hereby confirm its compliances in full for the entire project period including its guarantee period. It is also confirms that we will consider and implement the detailed specification in the RFQ and points in this check list are considered as reaffirmation of those points in concise form. I the undersigned hereby truly confirm that I am authorised to sign on this document as per articles of association of M/s where I am employed as per the details given along with my signature below.

Signature. :
 Name :
 Designation :
 Department :
 Company :

Company seal



Annexure-16

Billing Schedule for Supply of Items

SL No	Item Description	Unit	Qty	Percentage of total Basic price
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Signature:

Name:

Designation:

Company:

(Company Seal)

<u>FOR INDIGENOUS CONTENT</u>

PRICE BID FORMAT (JC1- 75T X 85 M LEVEL LUFFING SINGLE JIB CRANE)

Sl No.	Category	Total Price (INR)
1	Cost of crane (JC1- 75T X 85 M) and all accessories (Includes cost of delivery at CSL stores, Cochin all inclusive, Transport from CSL stores to erection site, handling, loading/unloading etc.)	
2	GST on Sl No.1 above (.....%), HSN code.....	
3	Cost of Spares as per Clause 81 of tender document volume II, Technical specification.(INR)	
4	GST on Sl No.3 above (.....%), HSN code.....	
5	Erection ,Installation and commissioning ,testing and handover including service assistance (INR)	
6	GST on Sl No 5 above (.....%)	
	Total Cost (In Figures)	
	Total Cost (In Words)	

Note:

- In case there is a discrepancy between words and figures, those written in words shall prevail over figures and same shall be considered for price. If, in the price structure quoted for the required material/item/taxes/duties, there is discrepancy between the total price against each item and the total cost, (Sum total of total prices.), total of total price against each item shall be considered.
- Cost of spares (as per Clause 81 of tender document volume II) to be supplied along with Crane shall be considered for computation of lowest bidder .
- Please refer relevant clauses of volume I Special terms and conditions of tender for details on taxes /duties.
- Unpriced Bid: Price bid without price & with percentage of taxes & duties and details like quoted/Nil/Included, shall be submitted along with the technical bid (Part I).**

FOR INDIGENOUS CONTENT**PRICE BID FORMAT (JC2- 40 T X 75M LEVEL LUFFING SINGLE JIB CRANE)**

Sl No.	Category	Total Price (INR)
1	Cost of crane (JC2- 40 T X 75M) and all accessories (Includes cost of delivery at CSL stores, Cochin all inclusive, Transport from CSL stores to erection site, handling, loading/unloading etc.)	
2	GST on SI No.1 above (.....%), HSN code.....	
3	Cost of Spares as per Clause 81 of tender document volume II, Technical specification.(INR)	
4	GST on SI No.3 above (.....%), HSN code.....	
5	Erection ,Installation and commissioning ,testing and handover including service assistance (INR)	
6	GST on SI No 5 above (.....%)	
	Total Cost (In Figures)	
	Total Cost (In Words)	

Note:

- In case there is a discrepancy between words and figures, those written in words shall prevail over figures and same shall be considered for price. If, in the price structure quoted for the required material/item/taxes/duties, there is discrepancy between the total price against each item and the total cost, (Sum total of total prices.), total of total price against each item shall be considered.
- Cost of spares (as per Clause 81 of tender document volume II) to be supplied along with Crane shall be considered for computation of lowest bidder.
- Please relevant clauses of volume I Special terms and conditions of tender for details on taxes /duties.
- Unpriced Bid: Price bid without price & with percentage of taxes & duties and details like quoted/Nil/Included, shall be submitted along with the technical bid (Part I).**

FOR IMPORT CONTENT**PRICE BID FORMAT (JC1- 75T X 85 M LEVEL LUFFING SINGLE JIB CRANE)**

Sl No.	Category	Total Price
1	Cost of crane (JC1- 75T X 85 M) and all accessories (Includes cost of DDP CSL stores delivery after Custom Clearance, Local Transport from port to CSL, Transport from CSL to erection site, handling, loading/unloading,..etc.) USD/EUR Customs Duty percentage applicable for import on the cost of materials considered in the pricing is..... (%) & HSN code is	
2	IGST on Sl No.1 (.....%)	UNDER CSL SCOPE
3	Cost of Spares as per Clause 81 of tender document volume II- Technical specification. (Includes cost of DDP CSL stores delivery after Custom Clearance, Local Transport from port to CSL, Transport from CSL to erection site, handling, loading/unloading,..etc) USD/EUR Customs Duty percentage applicable for import on the cost of materials considered in the pricing is..... (%) & HSN code is	
4	IGST on Sl No.3 (.....%)	UNDER CSL SCOPE
5	Erection ,Installation and commissioning ,testing and handover including service assistance (if done by foreign supplier) USD/EUR	
6	GST on Sl No 5 (.....%)	For overseas suppliers applicable GST will be to CSL account.
	Total Cost (In Figures)	
	Total Cost (In Words)	

Note:

- In case there is a discrepancy between words and figures, those written in words shall prevail over figures and same shall be considered for price. If, in the price structure quoted for the required material/item/taxes/duties, there is discrepancy between the total price against each item and the total cost, (Sum total of total prices.), total of total price against each item shall be considered.
- Cost of spares (as per Clause 81 of tender document volume II) to be supplied along with Crane shall be considered for computation of lowest bidder .
- Comparison of prices will be in INR only. All currencies will be converted to INR for comparison and Exchange rate of State Bank of India as on date of price bid opening shall be considered for price evaluation.
- Please refer relevant clauses of volume I Special terms and conditions of tender for details on taxes /duties.
- The local activities under SL.No. 1&3 of Annexure 17(c) shall be under the scope of supplier.
- Unpriced Bid:** Price bid without price & with percentage of taxes & duties and details like quoted/Nil/Included, shall be submitted along with the technical bid (Part I).

FOR IMPORT CONTENT**PRICE BID FORMAT (JC2- 40 T X 75M LEVEL LUFFING SINGLE JIB CRANE)**

Sl No.	Catogory	Total Price
1	Cost of crane (JC2- 40 T X 75M) and all accessories (Includes cost of DDP CSL stores delivery after Custom Clearance, Local Transport from port to CSL, Transport from CSL to erection site, handling, loading/unloading,..etc) USD/EUR Customs Duty percentage applicable for import on the cost of materials considered in the pricing is..... (%) & HSN code is	
2	IGST on Sl No.1 (.....%)	UNDER CSL SCOPE
3	Cost of Spares as per Clause 81 of tender document volume II- Technical specification. (Includes cost of DDP CSL stores delivery after Custom Clearance, Local Transport from port to CSL, Transport from CSL to erection site, handling, loading/unloading,..etc) USD/EUR Customs Duty percentage applicable for import on the cost of materials considered in the pricing is..... (%) & HSN code is	
4	IGST on Sl No.3 (.....%)	UNDER CSL SCOPE
5	Erection ,Installation and commissioning ,testing and handover including service assistance (if done by foreign supplier) USD/EUR	
6	GST on Sl No 5 (.....%)	For overseas suppliers applicable GST will be to CSL account.
	Total Cost (In Figures)	
	Total Cost (In Words)	

Note:

- In case there is a discrepancy between words and figures, those written in words shall prevail over figures and same shall be considered for price. If, in the price structure quoted for the required material/item/taxes/duties, there is discrepancy between the total price against each item and the total cost, (Sum total of total prices.), total of total price against each item shall be considered.
- Cost of spares (as per Clause 81 of tender document volume II) to be supplied along with Crane shall be considered for computation of lowest bidder .
- Comparison of prices will be in INR only. All currencies will be converted to INR for comparison and Exchange rate of State Bank of India as on date of price bid opening shall be considered for price evaluation.
- Please refer relevant clauses of volume I Special terms and conditions of tender for details on taxes /duties.
- The local activities under SL.No. 1&3 of Annexure 17(d) shall be under the scope of supplier.
- Unpriced Bid:** Price bid without price & with percentage of taxes & duties and details like quoted/Nil/Included, shall be submitted along with the technical bid (Part I).

Bid Security Declaration Form

Date: _____ Tender No: _____

To (insert complete name and address of the purchaser)

I/We, The undersigned, declare that:

I/We understand that, according to your conditions, bids must be supported by a Bid Security Declaration.

I/We accept that I/We may be disqualified from bidding for any contract with you for a period as per CSL (Cochin Shipyard Limited) procedures, if I am / We are in a breach of any obligation under the bid conditions, because I/We

- a) have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid during the period of bid validity specified in the form of Bid; or
- b) having been notified of the acceptance of our Bid by the purchase during the period of bid validity
 - i. fail or reuse to execute the contract, if required, or
 - ii. fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid Securing Declaration shall cease to be valid if I am/we are not the successful Bidder, upon the earlier of

- i. the receipt of your notification of the name of the successful Bidder; or
- ii. thirty days after the expiration of the validity of my/our Bid.

Signed: (insert signature of person whose name and capacity are shown)

In the capacity of (insert legal capacity of person signing the Bid Securing Declaration)

Name: (insert complete name of person signing the Bid Securing Declaration)

Duly authorized to sign the bid for an on behalf of (insert complete name of Bidder) Type text here

Dated on _____ day of _____ (insert date of signing)

Corporate Seal (where appropriate)

(Note: In case of a Joint Venture, the Bid Securing Declaration must be in the name of all partners to the Joint Venture that submits the bid)

PRE CONTRACT INTEGRITY PACT

COCHIN SHIPYARD LIMITED

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on day of the month of, between, on one hand, the President of India acting through Deputy General Manager, Cochin Shipyard Ltd (CSL) having its registered office at Cochin, Kerala India (hereinafter called the “PRINCIPAL”, which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First part and M/s..... represented by Shri....., Chief Executive Officer (hereinafter called the “BIDDER/Seller” which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the second part.

WHEREAS the PRINCIPAL proposes to procure and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company / public company / Government undertaking / partnership/registered export agency, constituted in accordance with the relevant law in the matter and the PRINCIPAL is a Government of India PSU performing its functions on behalf of The President of India.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:-

Enabling the PRINCIPAL to obtain the desired said stores/equipment/item at a competition price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the PRINCIPAL will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:-

Commitments of the PRINCIPAL

- 1.1 The PRINCIPAL undertakes that no official of the PRINCIPAL, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting on implementation process related to the contract.

- 1.2 The PRINCIPAL will, during the pre-contract stage, treat all BIDDERS alike and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERS.
 - 1.3 The officials of the PRINCIPAL will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
- 2 In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the PRINCIPAL with full and verifiable facts and the same is prima facie found to be correct by the PRINCIPAL, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the PRINCIPAL and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the PRINCIPAL the proceedings under the contract would not be stalled.

3. Commitments of BIDDERS

The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract

or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:-

- 3.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the PRINCIPAL, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.
- 3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the PRINCIPAL or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract of any other contract with the government for showing or forbearing to show favour or disfavor to any person in relation to the contract of any other contract with the Government.
- 3.3 BIDDERS of foreign origin shall disclose the name and address of their Indian agents and representatives, if any and Indian BIDDERS shall disclose their foreign principals or associates, if any.
- 3.4 BIDDERS shall disclose the payments to be made by them to their Indian agents/brokers or any other intermediary, in connection with this bid/contract and the payments have to be in Indian Rupees only.

- 3.5** The BIDDER further confirms and declares to the PRINCIPAL that the BIDDER is the original manufacturer/ integrator/authorized agent of the stores/equipment/items and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the PRINCIPAL or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
- 3.6** The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the PRINCIPAL or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.
- 3.7** The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.8** The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.9** The BIDDER shall not use improperly, for purposes of competition or personal gain, pass on to others, any information provided by the PRINCIPAL as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.10** The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11** The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.12** If the BIDDER or any employee of the BIDDER or any person acting on behalf of the BIDDER, either directly or indirectly, is a relative of any of the officers of the PRINCIPAL, or alternatively, if any relative of an officer of the PRINCIPAL has financial interest/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filing of tender.

The term 'relative' for this purpose would be as defined in section 6 of the Companies Act 1956.

- 3.13** The BIDDER shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee or the PRINCIPAL.

4. Previous Transgression

- 4.1 The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify; BIDDER's exclusion from the tender process.
- 4.2 The BIDDER agrees that if it makes incorrect statement on this subject, BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Earnest Money (Security Deposit)

- 5.1 While submitting commercial bid, the BIDDER shall deposit an amount **NIL** (to be specified in RFP) as Earnest Money as applicable/Security Deposit, with the PRINCIPAL through any of the following instruments:
- (i) Bank Draft of Pay Order in favor of CSL.
 - (ii) A confirmed guarantee by an Indian Nationalized Bank, promising payment of the guaranteed sum to the PRINCIPAL on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever. The demand for payment by the PRINCIPAL shall be treated as conclusive proof of payment.
 - (iii) Any other mode or through any other instrument (to be specified in the RFP).
- 5.2 The Earnest Money if applicable/Security Deposit shall be valid upto the complete conclusion of the contractual obligations to the complete satisfaction of both the BIDDER and the PRINCIPAL, including warranty period.
- 5.3 In case of the successful BIDDER a clause would also be incorporated in the Article pertaining to Performance Bond in the Purchase Contract that the provisions of sanctions for Violation shall be applicable for forfeiture of Performance Bond in case of a decision by the PRINCIPAL to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.
- 5.4 No interest shall be payable by the PRINCIPAL to the BIDDER on Earnest Money/Security Deposit for the period of its currency.

6 Sanctions for Violations

- 6.1 Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle the PRINCIPAL to take all or any one of the following actions, wherever required:-

- (i) To immediately call off the pre contract negotiations without assigning any reason or giving any; compensation to the BIDDER. However, the proceedings with the other BIDDER(s) would continue.
- (ii) The Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/ Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the PRINCIPAL and the PRINCIPAL shall not be required to assign any reason therefore.
- (iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
- (iv) To recover all sums already paid by the PRINCIPAL, and in the case of an Indian BIDDER with interest thereon at 2% above the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% above the LIBOR (London Inter Bank Offer Rate). If any outstanding payment is due to the BIDDER from the PRINCIPAL in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.
- (v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the PRINCIPAL, along with interest.
- (vi) To cancel all or any other contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the PRINCIPAL resulting from such cancellation/recession and the PRINCIPAL shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.
- (vii) To debar the BIDDER from participating in the future bidding processes of CSL for a minimum period as deemed appropriate, which any be further extended at the discretion of the PRINCIPAL.
- (viii) To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.
- (ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the PRINCIPAL with the BIDDER, the same shall not be opened.
- (x) Forfeiture of Performance Bond in case of a decision by the PRINCIPAL to forfeit the same without assigning any reason for imposing sanction for violation of this pact.

- 6.2** The PRINCIPAL will be entitled to take all or any of the actions mentioned at para 6.1(i) to (x) of this pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.
- 6.3** The decision of the PRINCIPAL to the effect that a breach of the provisions of this pact has been committed by the BIDDER shall be binding on the BIDDER. However, the BIDDER can approach the Independent Monitor(s) appointed for the purposes this Pact.

7 Fall Clause

- 7.1** The BIDDER undertakes that it has not supplied/is not supplying similar product/systems/items or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India or PSU and if it is found at any stage that similar product/systems or sub systems/items was supplied by the BIDDER to any other Ministry/Department of the Government of India or PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the BIDDER to the PRINCIPAL, if the contract has already been concluded.

8 Independent Monitor

- 8.1** The PRINCIPAL has appointed Independent Monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission.

- (i) Shri. Om Prakash Singh, IPS (Retd.),
Flat No. D-801, Prateek Stylome,
Sector-45, Noida,
Uttar Pradesh – 201301
Mob: 9818564455
Email: Ops2020@rediffmail.com
- (ii) Shri. Jagadip Narayan Singh, IAS (Retd.),
C-54, Bharatendu Harischandra Marg,
Anand Vihar, Delhi – 110092.
Mobile: 9978405930
Email: jagadipsingh@yahoo.com

- 8.2** The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.
- 8.3** The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.

- 8.4** Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.
- 8.5** As soon as the Monitors notices, or has reason to believe, a violation of this pact, he will so inform the Authority designated by the PRINCIPAL.
- 8.6** The PRINCIPAL accepts that the Monitors have the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the Monitors, upon his request and demonstration of a valid interest, unlimited access to his project documentation. The same is applicable to Subcontractors. The Monitors shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.
- 8.7** The PRINCIPAL will provide to the Monitors sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitors the option to participate in such meetings.
- 8.8** The Monitors will submit a written report to the designated Authority of PRINCIPAL /Secretary in the Department/ within 8 to 10 weeks from the date of reference or intimation to him by the PRINCIPAL /BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

9 Facilitation of Investigation

In case of any allegation of violation of any provisions of this pact or payment of commission, the PRINCIPAL or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER. The BIDDER shall provide necessary information and documents in English and shall extend all possible help of the purpose of such examination/inspection.

10 Law and Place of Jurisdiction

- 10.1** This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the PRINCIPAL.
- 10.2** A person signing Integrity Pact shall not approach the Courts while representing the matters to Independent External Monitors and shall await their decision in the matter.

11 Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extent law in force relating to any civil or criminal proceedings.

12 Validity

12.1 The validity of this Integrity Pact shall be from date of its signing and extend upto 5 years or the complete execution of the contract to the satisfaction of both the PRINCIPAL and the BIDDER/Seller, including warranty period, whichever is later. In case BIDDER is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.

12.2 Should one or several provisions of this Pact turn out to be invalid; the remainder of this pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

13 The parties hereby sign this Integrity Pact at.....on.....

PRINCIPAL

Name of the Officer
Designation
Dept./MINISTRY/PSU

BIDDER

CHIEF EXECUTIVE OFFICER

Witness

1.....
2.....

Witness

1.....
2.....

* Provisions of these clauses would need to be amended/deleted in line with the policy of the BUYER in regard to involvement of Indian agents of foreign suppliers.

BANK GUARANTEE FOR ADVANCE PAYMENT

To
 COCHIN SHIPYARD LTD
 (GOVT. OF INDIA ENTERPRISE,)
 PO BAG No. 1653 , PERUMANOOR PO, COCHIN 682 015.

In accordance with the Conditions of Contract No. dated(hereinafter called the Contract) for the supply/work of (Name of the item), M/s.(Name and address of Contractor)(hereinafter called the Contractor) shall deposit with COCHIN SHIPYARD LTD, COCHIN, a bank guarantee to guarantee his advance payment under the Contract for an amount of (amount of Guarantee) (in words).

AND WHEREAS, we have agreed to give the contractor such a Bank Guarantee.
 It is a condition for any claim and payment to be made under this guarantee that the advance payment referred to above must have been received by the Contractor on his account number _____ [account number in IBAN-format] at _____ [name and SWIFT address of account-holding bank].

NOW THEREFORE we (Name of the Bank) having its Head Office at (Address of Head Office) and acting through its branch office at (Address of the executing branch) (hereinafter called "the Bank") as instructed by the Contractor, agree irrevocably to guarantee the payment to COCHIN SHIPYARD LTD, COCHIN, in the amount not exceeding..... (Amount of Guarantee)..... only (in words).

We, the bank, hereby irrevocably undertake to pay you any amount not exceeding in total the Guarantee Amount upon receipt by us of your demand in writing accompanied by the following documents:

1. Your signed statement certifying that the Contractor is in breach of his obligation(s) under the Contract and the respect in which the Contractor is in breach.
2. Your signed statement certifying that the Contractor has been given a prior written notice by email from you to make good the aforesaid breach and that the Contractor still failed to fulfill the Contract within 30 days of such notice and the amount claimed is still to be received from the Contractor. A copy of such notice given by email to the Contractor shall be attached to the demand for payment.

Any demand for payment should contain your authorized signatures which must be authorized by your bankers or by a notary public.

We, the Bank, further agree that no change or addition to or other modification of the terms of the Contract or of Works to be performed thereunder or of any of the Contract documents which may be made between COCHIN SHIPYARD LTD, COCHIN and the contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification. We, the Bank, further agree that any change in the constitution of the said contractor or the said bank shall not discharge our liability hereunder.

The guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until the fulfillment of the contractual obligations in respect of which this BG is issued by the contractor.

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed -----only).
2. This Bank Guarantee shall be valid up to (date) and
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if you serve upon us a written claim or demand on or before(validity date).

Any demand for payment under this Guarantee must be received by us at this office during working hours on or before the validity date. Should we receive no claim from you by the validity Date, our liability to you will cease and the guarantee will definitely become null and void whether returned to us or not.

Yours truly,
Signature and seal of the
guarantor:.....

Name of
Bank:.....

Address:
Date:.....

[1] An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract and denominated in respective Dollars / Indian Rupees/Other Currency.

**BANK GUARANTEE IN LIEU OF SECURITY DEPOSIT/
WARRANTY GUARANTEE**

To
COCHIN SHIPYARD LTD
(GOVT. OF INDIA ENTERPRISE,)
PO BAG No. 1653 , PERUMANOOR PO, COCHIN 682 015.

WHEREAS(Name & Address of Supplier) (hereinafter called "**the Supplier**")
has undertaken, in pursuance of Contract..... No.....
Dated: to execute (Name of Contract and brief
description of works) (hereinafter called "**the Contract**").

AND WHEREAS it has been stipulated by **COCHIN SHIPYARD LTD** (The Buyer - hereinafter
called "**CSL**") in the said contract that the Supplier shall furnish **CSL** with a Bank Guarantee for
the sum specified therein as security for compliance with the Supplier's obligations in accordance
with the Contract.

AND WHEREAS we have agreed to give the Supplier such a Bank Guarantee.

NOW THEREFORE we (Name of the Bank) having its Head Office at
.....(Address of Head Office) and acting through its branch office at
..... (Address of the executing branch) (hereinafter called "**the Bank**") hereby
affirm that we are the Guarantor and responsible to **CSL**, on behalf of the Supplier up to a total of
..... (amount of Guarantee)in words).

We, the bank, hereby irrevocably undertake to pay you any amount not exceeding in total the
Guarantee Amount upon receipt by us of your demand in writing accompanied by the following
documents:

1. Your signed statement certifying that the Supplier is in breach of his obligation(s) under
the Contract and the respect in which the Supplier is in breach.
2. Your signed statement certifying that the Supplier has been given a prior written notice by
email from you to make good the aforesaid breach and that the Supplier still failed to fulfill
the Contract within 30 days of such notice. A copy of such notice given by email to the
Supplier shall be attached to the demand for payment.

Any demand for payment should contain your authorized signatures which must be authorized by
your bankers or by a notary public.

We, the Bank, further agree that no change or addition to or other modification of the terms of the
Contract or of the Works to be performed there under or of any of the Contract documents which
may be made between **CSL** and the Supplier shall in any way release us from any liability under
this guarantee, and we hereby waive notice of any such change, addition or modification. We, the
Bank, further agree that any change in the constitution of the said contractor or the said bank shall
not discharge our liability hereunder.

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed
(..... only).
2. This Bank Guarantee shall be valid up to (date) and
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if CSL serve upon us a written claim or demand on or before(validity date) .

Any demand for payment under this guarantee must be received by us at this office during working hours on or before the validity date. Should we receive no claim from you by the validity date, our liability to you will cease and the guarantee will definitely become null and void whether returned to us or not.

Yours truly,
Signature and seal of the
guarantor:.....

Name of
Bank:.....

Address:
Date:.....

[1] An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract and denominated in respective Dollars / Indian Rupees/Other Currency.



ANNEXURE-21

FORMAT FOR REFERRING CASES TO GRIEVANCES REDRESSAL COMMITTEE

Name of Contract	
Value of Contract	
Name and Designation of the applicant	
Address of applicant	
Contact no of applicant (a) Mobile (b) Landline	
Name of Company/Firm represented by the applicant	
Address and contact no of the company /firm	
Copy of board resolution duly attested and notarized authorizing the applicant to represent the company/firm in the grievance redressal procedure, negotiate and to accept any settlement/theron or Copy of Duly attested power of attorney authorizing the applicant to represent the company/firm in the grievance redressal procedure, negotiate and to accept any settlement thereon.	
Details of ID proof of the applicant(Attested copy of the id proof to be enclosed)	
Brief details of the contract	
Name of the department of CSL overseeing the contract	
Name of the CSL officer dealing with the contract	
Gist of the Grievance	



Annexure-24

Make list of Major Components

SL NO.	ITEM	MAKES
1	MOTORS	
2	DSL SYSTEM AND CURRENT COLLECTORS	
3	ACB,MCB,MCCB,EARTH LEAKAGE DEVICES, SWITCHES	
4	HT< POWER AND CONTROL CABLE	
5	CONTROL/SIGNAL/COMMUNICATION CABLES FOR CONTROL SYSTEM, INSTRUMENTATION, TELEPHONE, FIRE DETECTION SYSTEM, CAMERA SYSTEM	
6	POWER CONTACTORS, RELAYS, TIMERS, LAMPS, BUTTONS	
7	LIGHTS	
8	VVVF DRIVES & PLC	
9	LIMITSWITCHES	
10	ENCODER	
11	HMI	
12	LOAD CELLS	
13	GEAR BOX	
14	BRAKES & BRAKE DRUM	
15	WIRE ROPE	
16	INDUSTRIAL AIR CONDITIONER	
17	PAINT	
18	BUFFER	
19	CAMERA	
20	FIRE DETECTION SYSTEM	
21	ANEMOMETER	
22	BEARINGS (OF MECHANICAL COMPONENTS)	
23	SLEW BEARING	
24	OIL PUMP	
25	HT BOLTS & FASTNERS	



ANNEXURE- 25 a

General Manager (Materials)
Cochin Shipyard Limited
Perumanoor P O
Kochi – 682015

Date: _____

Subject: Tender Enquiry No. _____

We, _____(Name of the Parent Company) hereby authorize
_____(Name of Subsidiary Company) to prepare and submit the
proposal in response to the CSL Tender Enquiry No. _____.

If _____ (Name of Subsidiary Company) successful in becoming
the L1 bidder, the order has to be issued to _____
(Name of Subsidiary Company) and, _____
(Name of the Parent Company) will also provide full technical and financial assistance to
_____ (Name of Subsidiary Company) in order to perform the
contractual obligations with Cochin Shipyard Ltd.

(Signature of the Authorised Representatives)

Name:

Designation:

Name of Subsidiary Company:

Name:

Designation:

Name of Parent Company:



Agreement between Parent & Subsidiary Company

Date: _____

To whomsoever it may concern

Subject: Tender Enquiry No. _____

_____ (Name of Subsidiary Company) having its registered office at

AND

_____ (Name of the Parent Company) having its registered office at

hereby agree to jointly submit an offer for Tender Enquiry No _____ and all parties shall be jointly and severally liable for the same.

It is agreed as follows:

1. _____(Name of Subsidiary Company) shall be the leader of the Consortium to coordinate with the OWNER or with other specified agencies during the period the bid is under evaluation as well as during the execution of Work in the event Work is awarded. The leader shall also be responsible for resolving disputes / misunderstanding / undefined activities, if any, amongst all the parties to this agreement.
 2. All the Consortium members _____(Name of Subsidiary Company), _____(Name of the Parent Company) are jointly and severally responsible for discharging all obligations under the contract.
 3. Any correspondence exchanged with the leader of consortium shall be binding on all the parties to this agreement.
 4. _____ as the leader of the consortium is authorized to sign all correspondences, signing bid documents, submission of this proposal, providing clarifications also during contract period, if awarded on behalf of the consortium.
-



5. Governing law for the Consortium shall be law of the Republic of India and the language will be English.

6. All disputes arising in connection with this Agreement shall be finally settled in India under the Rules of Arbitration & Conciliation Act, 1996 by three arbitrators appointed in accordance with the said Rules. The arbitration procedure shall be carried out in the English language.

7. This agreement will cease if
 - a) The bid of the Consortium is not accepted by the OWNER
 - b) The OWNER cancels the bid process (or) postpones submission of bid beyond _____.

FOR & ON BEHALF OF

_____ (Name of Subsidiary Company)

Name:

Designation:

_____ (Name of Parent Company)

Name:

Designation:



SOLVENCY CERTIFICATE

This is to certify that M/s. has/have been maintaining a Savings Bank / current account with our bank since years. From his / her bank transactions with us we have found his/her as follows:

To the best of our knowledge and information belief, he/she is solvent to the extent of Rs. Rs. (in words.....)

This Solvency Certificate is issued without any responsibility on the part of the bank of any of its officers.

Seal

(Signature & Name)
Branch Manager

(Letter Head)

Compliance with office order OM No. 6/18/2019- PPD dated 23rd July 2020 (as amended from time to time shall be applicable) regarding restrictions under rule 144 (ix) of the General Financial Rules (GFRS).

“I have read the clause regarding restrictions on procurement from as bidder of a country which shares a land border with India and on sub- contracting to contractors from such countries;

I certify that M/s is not from such a country or, if from such a country, has been registered with the competent authority and will not sub contract any work to a contractor from such countries unless such contractor is registered with competent authority.

I hereby certify that M/s fulfills all requirement in this regard and is eligible to be considered”

**TURNKEY SUPPLY, INSTALLATION,
TESTING & COMMISSIONING OF
LEVEL LEVELLING JIB CRANES
FOR
NEW DRY DOCK PROJECT**

**VOLUME- II
TECHNICAL SPECIFICATION**

INDEX		
Sl. No.	TITLE	Page No.
PART A. PARTICULAR SITE CONDITIONS AND REQUIREMENTS		
1.	Site Location and Layout	6
2.	Environmental and Climatic Considerations	6
3.	Access to the Site	7
4.	Instructions for Contractors Working In Cochin Shipyard Ltd.	7
5.	Crane Supplier's Plant, Equipment, Labour, Personnel, Fuel and Consumables	8
6.	Safety, Health and Welfare; Protection, Life-Saving Etc.	8
7.	Fire-Fighting Equipment and Storage of Dangerous Materials	9
8.	Advance Notification of All Operations	9
9.	Regulations of Statutory Authorities and Customs	9
10.	Crane Supplier's Working Area	10
11.	Works Not To Interfere With Employer's Normal Business	10
12.	Site Clearance, Make Good Etc. On Completion	10
13.	Relationships with Other Contractors	11
14.	Progress Meetings	11
PART B: TECHNICAL REQUIREMENTS		
15.	Scope of Supply	12
16.	Crane Location	13
17.	Schedule	13
18.	Drawing Approval Procedure	14
19.	Minimum Drawing Requirements	14
20.	Health and Safety	16
21.	Crane Design Classification and Construction Standards	16
22.	Operator Training	18
23.	Operational and Maintenance Manuals	18
24.	Crane Rails and Crane Wheels	19
25.	Crane Wheel Loads	19
26.	Materials and Workmanship	19
27.	Crane Details	20
28.	Power Supply	22

29.	Operating Conditions	23
30.	Out Of Service Securing and Storm Anchors.	23
31.	Structure	24
32.	Welding	24
33.	Mechanical Connections	25
34.	Coating System	25
35.	Other Protective Requirements	26
36.	Machinery	26
37.	Gearboxes	26
38.	Bearings	26
39.	Rope Drums	27
40.	Wire Ropes	27
41.	Rope Sheaves	27
42.	Blocks& Hooks	27
PART C: MAIN CRANE MOTIONS		
43.	General	28
44.	Long Travel	28
45.	Luffing Motion	29
46.	Slewing Motion	30
47.	Hoists	31
PART D: ELECTRICAL EQUIPMENT		
48.	General	32
49.	Power Supply	32
50.	Fire detection and fire fighting equipments	32
51.	Digital Closed circuit television(CCTV):	33
52.	Electric Motors	33
53.	Limit Switches and External Interlocks	33
54.	Control Equipment	33
55.	Programmable Logic Controllers,HMI and VVVF Drives	34
56.	Main Switchboards, Motor Controls and Distribution Boards	35
57.	Wiring	36
58.	Crane Management System	36
59.	Communications	36
60.	Lighting	36
61.	Socket Outlets	37
62.	Shore Power Supply and Other Power Supplies	37

PART E: HYDRAULIC EQUIPMENT AND LUBRICATION REQUIREMENTS		
63.	Hydraulic Equipment	38
64.	Lubrication	38
65.	Piping of Hydraulic and Lubrication Systems	38
PART F: MISCELLANEOUS REQUIREMENTS		
66.	Machinery House	39
67.	Operator's Cabin	39
68.	Safe Load Indicator	40
69.	Emergency Stops	40
70.	Access Preferences	40
71.	Wind Speed Monitoring	40
72.	Notices and Labels	41
PART G: TESTING		
73.	Tests at Works	42
74.	Commissioning	43
75.	Performance Tests	43
76.	Durability	44
77.	Setting To Work	44
78.	Certification	44
PART H: MAINTENANCE		
79.	General	44
80.	Specialist Tooling	44
81.	Spares	45
82.	Makelist of Major components	46
83.	Guarantee	47
84.	General Safety Rules of CSL	47

PART A. PARTICULAR SITE CONDITIONS AND REQUIREMENTS

1 Site Location and Layout

- 1.1 The Level Luffing Single Jib Cranes are to be erected, installed and operated within the Cochin Shipyard Ltd, at Cochin, in India. The cranes shall be located at the new dry dock which is being constructed at the northern end of CSL yard. The crane erection work is to be executed in coordination with civil works of the drydock. Contractors wishing to tender for the supply of the crane shall visit the shipyard to fully familiarise themselves with the intended location, the prevailing site conditions and any possible constraints in advance of submitting their offer.
- 1.2 The following drawings are provided to the Crane Supplier:

CSL-RH-XX-ZZ-DR-C-0200 - SITE PLAN AND LOCATION PLAN
CSL-RH-XX-ZZ-DR-C-0203 - DOCK GENERAL ARRANGEMENT PLAN
CSL-RH-XX-ZZ-DR-C-0204 - DOCK CROSS SECTIONS
CSL-RH-XX-ZZ-DR-C-0206 - NORTH WALL COPE PLAN
CSL-RH-XX-ZZ-DR-C-0212 - GRAND ASSEMBLY AREA PLAN
CSL-RH-XX-ZZ-DR-C-0213 - GRAND ASSEMBLY AREA SECTIONS
CSL-RH-XX-ZZ-DR-C-0214 - DRY DOCK TYPICAL DETAILS
CSL-RH-SS-3A-DR- E-0431 - SUBSTATION DD3A -SINGLE LINE DIAGRAM
CSL-RH-SS-3C-DR- E-0451 - SUBSTATION DD3C- SINGLE LINE DIAGRAM
RA1158-RH-XX-ZZ-DR-C-5501- DRY DOCK JIB CRANE RAIL (A100) DETAILS
CSL PROJECT AREA-LAYOUT
CRANE BEAM DETAILS
TYPICAL ARRANGEMENT OF COPPER PLATE ELECTRODE TYPE EARTH PIT

2 Environmental and Climatic Considerations

- 2.1 All elements and components of supply shall be suited to perform reliably and to specification within the environmental and climatic conditions that prevail in the shipyard as summarized below.
- 2.2 Climate: Marine /Tropical
- 2.3 Air temperature:
Mean daily min. = 16° C
Mean daily max. = 33° C
Highest recorded = 38° C
- 2.4 Rainfall:

Average monthly rainfall	
January	10mm
February	34mm
March	50mm
April	145mm
May	364mm
June	756mm
July	572mm
August	386mm
September	235mm
October	333mm
November	184mm
December	37mm

Maximum rainfall intensity used for surface water drainage design 209mm / 24hrs

- 2.5 Humidity:
Average daily relative humidity Max = 95%
Average daily relative humidity Min = 75%

2.6 Wind:

The basic wind speed as applicable to 10 m height above mean ground level is 39 m/s for the Cochin area as per the fig-1 in the IS 875-Part 3-1987 (Clause 5.2). From this, the resultant design wind speed considering all the risk, topographic, type of structure and terrain factors can be determined for 50 years design life.

The maximum design wind speed shall be 43.4 m/sec for a 3 second gust for the total height of the crane.

The design wind speed to be used during operation of crane shall be 20m/sec for a 3 second gust.

2.7 Seismic Consideration:

The crane shall be able to resist the lateral acceleration forces generated by earthquakes of the severity and frequency defined for Cochin in IS 1893 - 1984 (Fourth Revision).

2.8 Tide/Water Levels :

Present day tide levels are shown below, all to Chart Datum (CD):

Highest High Water Level (HHWL)	+1.40m CD
High Water Level (HWL)	+1.07m CD
Low Water Level (LWL)	+0.30m CD
Lowest Low Water Level (LLWL)	+0.20m CD

2.9 Ground Level

The finished ground level for the site shall be +3.0m CD.

2.10 Dredge Level

The existing quay will be dredged to a depth of -8.5m CD . The dredge depth at the dry dock entrance shall be -10.0m CD.

2.11 Cope Level

Finished cope levels shall be +3.0m CD.

2.12 Design Considerations:

The temperature in case of design purpose shall be considered as 45° C and 98% in case of humidity. The atmosphere is highly saline in nature

3 Access to the Site

3.1 The Crane Supplier shall at all times make use only of the Crane Supplier’s site entrance as instructed by the Engineer/CSL for access to the site. Vehicles and persons will be restricted to the Contractor’s working area only. Except for making deliveries, Crane Supplier’s vehicles shall be parked outside the yard.

3.2 The Crane Supplier shall duly make arrangements to obtain all necessary passes from CSL for vehicles and persons entering the shipyard site for the purposes of carrying out the Works.

3.3 The extent of the site will vary as the work progresses to suit the construction of the Works.

4 Instructions for Contractors Working In Cochin Shipyard Ltd.

All Contractors and his employees working within Cochin Shipyard Ltd. shall comply with the following rules and instructions:

4.1 While employing workers in the project site of Cochin Shipyard Ltd., the Contractor and subcontractor engaged by him shall take note that it is a critical installation and required gates passes for the employees of the contractor shall duly be arranged by the contractor.

4.2 The Contractor shall be responsible to produce a Police Verification Report regarding checking of antecedents and verification of character of his employees. The employees shall attend the training class related to safety aspects at CSL.

4.3 The Contractor shall ensure that all employees associated with this work remain at the place of work assigned to them and do not loiter around any other ship or working area. If any such infringement is observed, the employee is liable to be barred from further entry to Cochin Shipyard Ltd.

4.4 In case the Contractor finds any difficulty in compliance of Security instructions, he may call on the PFSO/Chief Security Officer / Assistant Commandant, CISF/ or any other authority as indicated CSL for the necessary guidance.

- 4.5 The contractor shall obtain written permission from CSL before taking drawings outside CSL premises.
- 4.6 All documentation under Contract Labour & Regulations Act should be properly maintained at site and put up for scrutiny/ checking by P & A department / visiting Labour Enforcement Officers when called for. Details of documents to be maintained and statutory deductions, if any, shall be discussed with P&A Department of CSL.
- 4.7 The Contractor shall comply with any other point which may be conveyed from time to time on the legislations/ directions received from the appropriate government authorities on the subject.
- 4.8 All items relating to this order shall be entered at south gate vide a material declaration pass and other documents and shall be delivered at General Stores or as per the instruction from Materials Department of CSL.
- 4.9 Granting permission to project site of CSL is fully under the descretion of CSL. All required documents shall duly be submitted to CSL for granting permission. However CSL holds the right to suspend or revoke the pass to any employee or worker of contractor by issuing a letter disclosing the reason to do so.

5 Crane Supplier's Plant, Equipment, Labour, Personnel, Fuel and Consumables

- 5.1 The Crane Supplier shall provide and mobilize all necessary plant, equipment and labour for the completion of the works. He shall provide all necessary maintenance facilities for the plant and equipment which shall not be demobilized and removed from site before the completion of the Works without the written permission of the Engineer / CSL.
- 5.2 All counter weights filling works are under the scope of the Crane Supplier.
- 5.3 The Crane Supplier shall ensure that all work is undertaken by trained and competent personnel under the supervision of responsible persons, experienced in the particular aspect of the works being undertaken. Site engineers and supervisors shall be deputed as per regulations.
- 5.4 The Crane Supplier shall arrange for required supervisory staff on Site as and when required.
- 5.5 Material handling equipments, Gas, Water, electricity and Compressed air shall be arranged by the crane supplier and necessary approvals shall be obtained from local statutory authorities and CSL as applicable. Space for providing site office, assembly, erection shall be provided by CSL, free of cost.
- 5.6 CSL facilities like Transporters 100T & 150, Groove 150 T may be allotted on paid rental basis but subject to availability of the same. For this, prevailing rates at the time of execution will be applicable. However non availability of these equipments should not be construed as a reason for delay in erection, and CSL is no way responsible for such actions/delays.

6. Safety, Health and Welfare; Protection, Life-Saving Etc.

- 6.1 The Contractor shall fully comply with all relevant Indian health and safety legislation in force at the date of tender submission.
- 6.2 The Contractor shall fully comply with the regulations of the Statutory Authorities including Factories & Boilers Department, Central Electricity Authority, etc. in respect of safety, health and welfare requirements.
- 6.3 The Contractor shall fully comply with the General HSE guidelines promulgated by CSL .
- 6.4 All precautions and permits not limited to the following shall be complied with in connection with the erection, testing and commissioning of the crane.
- i. Hot work permit
 - ii. Permit for work at height
 - iii. Permit for Scaffolding
 - iv. Electrical shut down permit
- 6.5 The Contractor shall adhere to the requirements of General Safety Rules promulgated by CSL.
- 6.6 The Contractor shall adhere to safe construction practices and guard against hazardous and unsafe working conditions.
- 6.7 The Contractor shall give prompt and due consideration to any matters to which the Engineer may find it necessary to call attention, for the purpose of ensuring compliance with the foregoing requirements.
- 6.8 The Contractor shall provide handrails, scaffolding, and take such other safety precautions as are consistent with normal good safety practice. Warning signs shall be displayed at relevant locations in English and Hindi.
- 6.9 Site operatives shall be fully conversant with the use of safety equipment.

- 6.10 The Contractor shall provide all necessary personal protective equipment (PPE) to his workforce and that of his sub-contractors. This shall include, but shall not be limited to; safety boots, hard hats, gloves, lifejackets, eye protection, ear defenders, high visibility vests, harnesses etc.
- 6.11 All safety rules to be observed while working on live electrical system or installation as stipulated in the Factories & Boilers Act, Indian Electricity Rules, Central Electricity Authority Rules & Regulations and as per CSL standards. Any approvals required from CSL and statutory authorities shall be obtained in this regard. Work permits/ electrical power shutdown permits shall be obtained from CSL wherever required.
- 6.12 The Contractor shall not, otherwise than in accordance with the Statutes, Ordinances and Government Regulations or Orders for the time being in force, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by his personnel.
- 6.13 All personnel employed by the Contractor and any of his sub-contractors' shall carry an identity card which shall be clearly visible at all times on the Site.
- 6.14 The Contractor shall maintain at his own cost to the satisfaction of the Engineer/CSL, first-aid facilities on site sufficient to deal with minor injuries, cuts and abrasions. Such facilities shall be available for use during the entire working hours. Where injuries are more serious the contractor shall liaise with the Local Authorities to provide hospital or other medical attention. The safety of the employees engaged by the contractor within CSL premises and project area rests with the contractor including their insurance coverage and associated claims like accidents, etc and CSL shall not be responsible in any manner for such claims.
- 6.15 In the event of any casualty or accident occurring on the site during the execution of the Works the Contractor shall comply with all existing legal obligations requiring him to give notice of the casualty or accident to any person or persons and shall notify as soon as possible both the Employer's safety and medical departments and the Engineer/CSL of any such occurrence.
- 6.16 Contractors shall ensure release of payments to all personnel deployed by them for the project as per government rules and CSL Guidelines.
- 6.17 Crane supplier shall submit the detailed erection procedure before commencing the erection activities at site. The procedure shall include details regarding the sequence of erection, capacity of cranes used for erection activities, etc

7. Fire-Fighting Equipment and Storage of Dangerous Materials

- 7.1 Suitable fire-fighting equipment shall be provided and maintained on the site to the satisfaction of Chief Safety Officer of CSL as per standard rules to deal with any outbreaks of fire on the site of the Works.
- 7.2 All possible precautions shall be taken to provide for the safe storage of petroleum, gas bottles, or other dangerous materials, if any. Permits shall be obtained for the storage of such materials wherever this is required by the regulations of the relevant authorities and for providing the level of security required for storage and for arranging for the safe delivery to site of such materials and the Crane Supplier will be deemed to have included for all costs arising from such regulations within his contract prices and for providing the level of security required for storage and for arranging for the safe delivery to site of such materials.
- 7.3 The Crane Supplier shall observe and abide by all fire and safety regulations of CSL before starting and during execution of work. The Crane Supplier shall consult with Employer's Safety Engineers or Engineer and must make good to the satisfaction of the Employer any loss or damage to any portion of the work done or to be done under this Contract or to any of the Employer's existing property.

8. Advance Notification of All Operations

- 8.1 In addition to his general obligations under the Contract, full and complete notice shall be given by the Crane Supplier of all operations to be carried out on the site. Such notice shall be provided in sufficient time for CSL/ TPIA/Engineer to make all necessary arrangements for inspection and checking. Such inspection and checking shall not relieve in any way the obligations of the Crane Supplier under the Contract.
- 8.2 Work on holidays/ Sundays/off-working hours planned by Crane Supplier is to be intimated to CSL / Engineer at least one day in advance.

9. Regulations of Statutory Authorities and Customs

- 9.1 Without limiting his obligations under the general conditions of the contract, the Crane Supplier shall be responsible for meeting obligations of all statutory authorities, including but not limited to, local representatives, the Indian Electricity rules and Act, Central Electricity Authority rules and regulations, Fire Insurance Regulations, Kerala State Electricity Board, Cochin Port Trust.

- 9.2 Should any of the statutory authorities request an inspection of the installation, equipment or the final works, the Crane Supplier shall co-ordinate with CSL/ TPIA/Engineer in carrying out such inspection. Any modification suggested by the authorities shall be carried out by the Crane Supplier, on the advice of CSL / TPIA / Engineer at no additional cost.
- 9.3 The Crane Supplier shall comply with all regulations imposed by the Customs authorities in respect of the passage of all imported Contractor's Equipment, Plant, Materials and vehicles and personnel through Customs barriers (Land and Water).
- 9.4 Crane Supplier shall understand and comply the following Indian Acts/ Rules scrupulously and CSL hereby firmly and solemnly informs and declare that any noncompliance or issue comes in this connection or as a dispute on these Acts / Rules is fully under the risk and cost of Crane Supplier during the entire period of this project either at Crane Supplier's works or at CSL site or during transportation and CSL is no way responsible or at risk. Relevant Act /Rules are:
- a) Contract Labour (Regulation and Abolition Act)
 - b) Employees Compensation Act.
 - c) ESI Act
 - d) EPF Act
 - e) Minimum Wages Act
 - f) Payment of Gratuity act.
 - g) Any other acts/rules/norms stipulated by Govt. Authority during the period of contract

10. Crane Supplier's Working Area

- 10.1 The crane supplier shall undertake fabrication of the structures at supplier's works or elsewhere (in view of constraints of space for the same within CSL premises) complying to all terms and conditions stipulated herein with this RFQ including all annexures, transporting and delivering the same at CSL, assembling, erection and commissioning at site.
- 10.2 Fabrication of units is not allowed at CSL site and only assembling is allowed. In this regard, Crane Supplier has to study the CSL layout and methodology for transportation and installation shall be developed by the crane supplier. Drawing showing the road access is attached. Bidder to note that Roll on-Roll off will not be possible for the cranes. Bidder to plan the transportation and movement of the cranes from Quay 1 to both north and south side of the dry dock.
- 10.3 The Crane Supplier is responsible in ensuring that any equipment used on site for the final assembly work, such as mobile cranes, is compatible with the underlying civil structure.
- 10.4 Before work is allowed to commence on site the Crane Supplier is required to demonstrate adequate provision has been made to prevent permanent damage to the site. The Crane Supplier is required to make good any damage caused during the assembly, commissioning and testing phases of the equipment on site.
- 10.5 The Crane Supplier shall be provided an approximate area of 1500 m² (between rails) for each crane for a period of 4 months for storage and final assembly of crane and associated equipment, if required. Crane Supplier shall ensure the methods and procedures in line with the available resources. Bidder to furnish the erection methodology with necessary drawings. Area required and duration shall be mentioned. Necessary additional area shall be allotted by CSL as per the availability.
- 10.6 The Crane Supplier is responsible for all costs involved in movement of the crane across site and onto their working rails. All temporary works in connection with installation of crane shall be under the scope of crane supplier.
- 10.7 Hot work shall only be carried out on site with the permission of the Engineer/CSL.
- 10.8 The Employer shall provide a track section length equivalent to the distance between buffers' end faces longitudinally for crane assembly. The section will be provided clear from all other parallel works to allow commissioning and testing of the crane. The Crane Supplier shall provide the drawings showing the required track section length.

11. Works Not To Interfere With Employer's Normal Business

- 11.1 The Crane Supplier shall not interfere in any respect with the normal business of CSL and shall co-operate with CSL if and when special measures become necessary as a direct consequence on the progress of the Works.
- 11.2 The Crane Supplier shall co-operate, by temporarily removing any of his equipment, obstructions, etc. which may cause hindrance to other activities of CSL/other contractors as per direction of the Engineer/ CSL.

12. Site Clearance, Make Good Etc. On Completion

- 12.1 The Crane Supplier shall on completion of the works at his own expense restore, reinstate or make good the surfaces of all ground disturbed by his operations; remove any rubbish, surplus materials etc, and leave the site clean and tidy to the satisfaction of the Engineer/ CSL.

- 12.2 The Crane Supplier shall have the right to take back all excess steel/steel scrap after completion of the job on certification by CSL. Any tax/duties applicable in this regard has to be borne by the crane supplier.
- 12.3 Work area and specific site shall be cleared daily or regularly so as to avoid any sort of dangerous conditions. A proper waste disposal scheme shall be ensured in concurrence with Engineer, as per IMS guidelines.
- 12.4 A hindrance register shall be meticulously maintained by contractor duly signed by engineer as a reason of hindrance to site clearance.

13. Relationships with Other Contractors

- 13.1 The Crane Supplier shall afford all reasonable co-operation to other Contractors carrying out other works for CSL in the shipyard. This will include allowing other Contractors all reasonable access required to perform their work and conferring with them regarding connections and interfaces (if any).
- 13.2 Work being undertaken by other contractors identified above includes but not limited to:
- (a) Construction of dry dock and associated works
 - (b) Fabrication, erection and commissioning of Gantry crane
 - (c) Other related works for new dry dock project

14. Progress Meetings

- 14.1 During site work, the Crane Supplier shall appraise the work duly to Engineer/CSL and have to attend progress meetings on site, weekly unless otherwise approved by the Engineer/CSL, to report on progress and to discuss any issues with the Engineer/CSL. Meetings will be held at a location to be nominated by the Engineer/CSL. The Contractor shall arrange for the attendance of any of his staff members as required by the Engineer/CSL. A designated officer who is in charge of the project and authorized to take decision shall attend the meeting. Suggestion of improvements/instructions of the Engineer within the scope of project shall be implemented by the crane supplier duly.
- 14.2 The Crane Supplier may be required by the Engineer/CSL to attend other meetings, as necessary.

PART B: TECHNICAL REQUIREMENTS

Technical requirements for the Level Luffing single Jib cranes required by the Employer are broadly given below. The Contractor is requested to submit detail specifications of the crane offered in line with technical requirements, which should include the type, make, capacity, rating, material specifications etc. of major components. The Cranes and its accessories shall be inspected either by CSL/ authorized representative/ Third Party Inspection Agency (TPIA) during various stages/steps to confirm whether structural strength capacities, load test, dimensions, accuracy, operating requirement, working of safety devices such as limit switches and functioning of control system assigned with positive logics, brakes etc. meet with the approved specifications, drawings and crane design code as applicable. CSL reserve the right to inspect and or to depute any external inspection agency to inspect at supplier's works and also at his sub-contractors works. Necessary facilities shall be provided by the supplier for the above. Moreover the supplier shall extend all sort of support to explain and demonstrate the functions in a reasonable level. Travelling, boarding and lodging costs of CSL officials or CSL inspection agency would be borne by CSL. It is the responsibility of the contractor to inform one month in advance before shipment in order to carry the witnessing and factory acceptance test by the employer. All required facilities, test equipments/units shall be arranged by crane supplier at their cost. The design, manufacture, supply, erection, testing and commissioning shall be covered under inspection by a TPIA, viz. IRS/LRS/BV/ABS/TUV/DNV. CSL reserves the right and power to choose and finalize the TPIA and the supplier have no rights to question or disobey the same. Cost for TPIA for the third party inspection shall be borne by CSL. The supplier has to comply with various requirements of TPIA meeting QAP, inspection, testing of crane subassemblies as per International Standards.

15. Scope of Supply

The scope of supply shall include:

- 15.1 One no. of Level Luffing Single Jib Crane-Unique reference **JC-1**
and
One no. of Level Luffing Single Jib crane –Unique reference **JC-2**.
- 15.2 The design & manufacture (as per this technical specification, codes & standards mentioned and as applicable), transportation of units, delivery & off load at CSL Store/Site, transportation of units/blocks/ components from storage area to erection site, on-site assembly, erection, testing, setting to work, commissioning, statutory approvals, insurance coverage from material dispatch till commissioning of the crane and all necessary peripherals inclusive of all necessary temporary works required. Work considered is fully turnkey in nature. The crane is to be designed for handling large ship sections & machinery parts weighing up to 75 Tonnes (JC-1)/ 40 Tonnes (JC-2) and supporting grand assembly of ship blocks.
- 15.3 Crane rails shall be supplied and laid by the Civil Construction Works Contractor as part of a separate contract already issued by CSL or and hence not covered within the purview of this contract.
- 15.4 The input power supply to the DSL system is 415V ($\pm 10\%$), 50Hz ($\pm 5\%$). The cable of required capacity would be laid by the civil construction contractor (3 phase+ earth) till copper headed DSL. Four point feeding is envisaged to DSL presently. Voltage drop calculation shall be submitted by the crane supplier for DSL to maintain a voltage drop of $<3\%$. All other works related to DSL installation are to be done by crane supplier. It is the responsibility of the crane manufacturer to ensure that the supplied electrical pickup rails systems are complying with all the safety consideration and within the jurisdiction of Indian Electricity Act Rules, Central Electricity Authority Regulations 2010, The Electricity Act, 2003 and relevant IS Codes. DSL system and its accessories including mounting arrangement shall be supplied and installed by crane supplier. Embedments which are to be casted inside concrete shall be supplied by crane supplier and casting will be done by CSL. Embedment details shall be provided to CSL well in advance to incorporate the details in design of DSL trench. Please note that cables to DSL system from substation shall be laid by CSL however, termination to DSL system is in the scope of crane supplier. All items mentioned under Clause 28 including pick up system shall be supplied and installed by crane supplier.
- 15.5 The supply of an initial stock of operating spare parts as listed in this specification shall be provided within the price quoted.
- 15.6 Recommendations for spare parts necessary to maintain the cranes in service for 5 years of operation shall be enclosed while submitting the bid.
- 15.7 Comprehensive operating, maintenance and spare parts manuals for the crane shall be supplied.
- 15.8 All necessary operating and maintenance training at site for Employer's nominated personnel shall be provided.
- 15.9 Guarantee against damage or failure due to defects in design, material and/or workmanship for twenty four (24) months from the date of final acceptance of crane at CSL site.
Buffer end stops, storm anchors including sockets, all embedments (including foundation bolts) etc. which are to be casted in concrete shall be designed and supplied by crane supplier. Necessary details in this regard shall be intimated by crane supplier in advance. Crane supplier to ensure the design of embedments to suit the crane beam (drawing attached). The civil work of DSL trolley duct, long travel end stoppers, Crane storm anchor, Crane jack-up point shall be done by CSL. Bidder to indicate in the technical bid the requirement of any permanent civil works in addition to above requirements. Any temporary civil works required for crane erection has to be done by crane supplier at own cost.
- 15.10 The electrical pick up rail (DSL) and all associated fixtures including embedment and fittings required to install the pickup rail

inside the DSL trench shall be supplied by the crane supplier. Any fixing bolts required to be cast into the concrete shall be supplied by the Crane supplier and will be installed by the Civil Construction Works Contractor.

- 15.11 The crane shall be handed over to CSL after erection, satisfactory trials, testing and commissioning at CSL site. The entire responsibility regarding handling of material, manpower, compliances of statutory and safety regulations, rules or act for the above actions rest with the supplier of the crane. Supplier of crane may take notice that CSL is no way responsible for any actions, failures, non-compliances of statutory and safety rules/ regulations/ act as applicable in India and especially inside CSL during the transportation of materials inside yard or during erection process of crane or during trails/ tests/ statutory tests or evaluations or any regulations or rules as stipulated by Government of India time to time during the period of contract and supplier of the crane solely be responsible for all such actions and has to be dealt with at their risk and cost.

16. Crane Location

- 16.1 The cranes are be delivered to, installed and operated within the Cochin Shipyard Ltd, at Cochin, in India.

JC1 - Southern side of Grand Assembly area.

JC2 - Northern side of dry dock

The locations are marked in the attached site plan and location plan (CSL-RH-XX-ZZ-DR-C-0200)

- 16.2 It should be noted that access to the site will be subject to limitations and restrictions. In addition, the availability of working areas will be reduced due to other contractors of the shipyard area generally. Companies wishing to tender are to ensure that they are fully conversant with any limitations and restrictions on access and the work being undertaken by other contractors.

17. Schedule

- 17.1 Crane Supplier may take notice that the cranes are required for CSL holistically along with the new dry-dock. It is the responsibility and risk of crane supplier to imbibe and coordinate with CSL and main civil construction contractor executing new dry-dock works of CSL. The crane supplier shall understand the requirement of completion and shall duly intimate CSL regarding the progress of proceedings on a reasonable timeframe. The supplier shall choose reliable sub-suppliers meticulously to match the schedule of 24 months. Supplier shall ensure compliances of all applicable procedures, rules, regulations for ensuring the safety and protection of man and materials in all respect and ensure seamless safe working procedures at CSL site. The split up of the schedule is stipulated below.

Sl. No.	Activity	Time lines
1	Submission of drawings related to Civil works (DSL trench requirements, end buffers, anchors, embedments..etc) to CSL for progression of civil work by the civil construction contractor.	Within 2 months after issue of PO
2	Supply of all embedments (including foundation bolts) like storm anchor, jacking base, end buffers, embedments to be casted to DSL trench etc. which are to be installed along with civil works.	Within 04 months after issue of PO
3	Submission of the design and quality assurance documentation to CSL for approval by TPIA.	Within 05 months after issue of PO
4	Approval of the design and quality assurance documentation by TPIA	Within 07months after issue of PO
5	Shipment of materials/items as per mutually agreed material delivery schedule.	Within 18 months after issue of PO
6	Completion of Erection/Testing, Commissioning, Approvals and handing over to CSL	24 months after issue of PO or 04 months from completion of minimum 100 m rail alignment work by civil contractor, whichever is later. The entire works will be undertaken dovetailing with civil works.

Notes:

- The installation of the crane on the site is dependent on the completion of Civil, Mechanical and Electrical works by the civil construction contractor.
- Shipment of material is extendable (up to 06 months without any cost implication to CSL) on request by CSL to match the readiness of site. In case of extension of delivery of material, CSL shall intimate the same latest by 15 months from date of issue of purchase order. In case of delayed delivery on request by CSL, LD for the subject period shall not be applicable. Additional reasonable cost for any further delay from CSL side beyond extended 06 months period may be discussed and settled between CSL and crane supplier. Payment, if any, shall be made based on review of supporting documents and mutual agreement with CSL. This is applicable only for balance payment against those portions of supply/work that is incomplete.
- It is assumed that subsequent to the approval of design documentation and general arrangement by TPIA, crane supplier shall progressively submit the remaining drawings and receive approval dovetailing with fabrication sequence of crane components in order to comply with the total project schedule of 24 months.

18. Drawing Approval Procedure

- 18.1 One (1) electronic copy (in a PC compatible AutoCAD/MS Windows format/pdf), of all design drawings, specifications, calculations, technical literature, erection, testing, commissioning and setting to work programmes are to be supplied to CSL/TPIA/Engineer for approval purposes. AutoCAD format shall be submitted if requested by TPIA/CSL. All Drawings and Calculations required by TPIA for review and approval shall be supplied by crane supplier. CSL/TPIA/Engineer will respond within four (4) weeks of receipt of such information advising of each item approved or those being returned for amendment. Supplier to furnish the revised drawing/documents incorporating comments from CSL/ TPIA/Engineer for approval within two weeks from the date of issue of CSL/ TPIA/Engineer Comments. However, comments/approval of the drawings by the CSL/TPIA/Engineer will not relieve the Crane Supplier of his responsibility for the correctness, adequacy of design and completeness of his work as per the Contract. The approval procedure for amended items will be the same as for the original submission. Final approved drawings shall be submitted in paper.
- 18.2 The Crane Supplier shall submit, on request from CSL/TPIA/Engineer, additional calculations required to substantiate aspects of the design. With respect to items of proprietary supply, the manufacturers own selection chart or certificate of approval may be submitted as appropriate.
- 18.3 The Contractor shall maintain a complete record of all and any changes made to the crane design or construction and supply to the Employer at delivery five sets of "as built" prints together with five sets drawings, each on a CD-R disc in a PC compatible AutoCAD/MS Windows format.

19. Minimum Drawing Requirements

- 19.1 The drawings and documentation supplied shall, as a minimum, include the following:
- (a) General arrangement drawings showing all principal dimensions and clearances.
 - (b) Machinery assembly drawings with itemized parts lists and component ratings as appropriate.
 - (c) Structural arrangement drawings with materials and quantities.
 - (d) Layout drawings of machinery control room(s).
 - (e) Control cabin layout and arrangement showing operators seat, windows, limiting sight lines, location of operating controls and all other significant features.
 - (f) Schematic diagrams of rope reeving systems for all rope motions.
 - (g) Structural erection drawings.
 - (h) Machinery/mechanical erection drawings.
- 19.2 In addition the Contractor shall supply full documentation for the installed electrical power and control systems as below:
- (a) List of all equipment and devices complete with ratings as appropriate.
 - (b) Line diagrams of power distribution system.
 - (c) Simple schematic diagrams depicting each control circuit shall be developed by crane supplier. Control and power circuit drawings shall be provided separately.
 - (d) PLC logic diagrams.
 - (e) Power supply termination details and dimensional requirements for the power connection pit and termination box.
 - (f) Block diagram showing all conduits, trunking and cable trays with their associated sizes together with all cable sizes identifying insulation and conductor types.
 - (g) Scale wiring layout diagram indicating the location of each item of equipment, any junction boxes and the routing of each conduit, trunk and cable tray.
 - (h) Connection diagrams for all electrical equipment showing all terminal strips in their correct orientation with each wire and conduit identified.
 - (i) Connection detail of the power supply cable within the end connection pit to the yard power.
HMI screen design with mimic diagrams
- 19.3 Documents to be submitted within 02 month from the date of PO:
- (a) Crane storm anchor loads and positions.
 - (b) Storm anchoring arrangement and required civil works.
 - (c) Crane temporary jack up point loads and positions.
 - (d) Details of End Stoppers.
 - (e) Details of embedments (including foundation bolts) to be casted into concrete DSL trench

19.4 Documents to be submitted within 05 months from the date of PO

- (a) Quality Assurance Plan (QAP). Necessary comments as directed by CSL, TPIA, Engineer to be included in the final document.
- (b) Detailed delivery schedule indicating all the important activities.
- (c) Makes of items covered under contract.
- (d) Installation and commissioning details (preliminary info) with schedule of site assembly & erection.
- (e) Arrangement and detailed drawing containing, among others, the following information :
 - i. General arrangement drawings showing all principal dimensions and clearances.
 - ii. Design calculation sheets showing the structural strength calculations and maximum wheel loads.
 - iii. Crane and/or equipment drawings giving dimensions, and clearance for maintenance and withdrawal.
 - iv. Cable selection (sizing) calculation, voltage grade, type of cable selected.
 - v. Arrangement drawings of main electrical items.
 - vi. Calculation details of motor HP, brakes cable sizes etc.
 - vii. Earthing schedule and drawing including sizing.
 - viii. Make of all major components.
 - ix. Calculations and drawings related to DSL system.
 - x. Machinery assembly drawings with itemized parts lists and component ratings as appropriate.
 - xi. Structural arrangement drawings with materials and quantities.
 - xii. Layout drawings of machinery control room(s).
 - xiii. Control cabin layout and arrangement showing operators seat, windows, limiting sight lines, location of operating controls and all other significant features.
 - xiv. Schematic diagrams of rope reeving systems for all rope motions.
 - xv. Preliminary Structural erection drawings.
 - xvi. Machinery/mechanical erection drawings.
 - xvii. Single and three line diagrams of power distribution system.
 - xviii. Simple schematic diagrams depicting each control circuit, Control and power circuit drawings PLC logic diagrams / concept.
 - xix. HMI screen design with mimic diagrams as specified herewith.

Documents to be submitted within 07 months from the date of PO

- i. Block diagram showing all conduits, trunking and cable trays with their associated sizes together with all cable sizes identifying insulation and conductor types.
- ii. Scale wiring layout diagram indicating the location of each item of equipment, any junction boxes and the routing of each conduit, trunk and cable tray.
- iii. Connection diagrams (preliminary) for all electrical equipment showing all terminal strips in their correct orientation with each wire and conduit identified.

19.5 DOCUMENTS WITH EACH CONSIGNMENT:

- (a) Test certificate (in triplicate with original).
- (b) Test and Inspection reports with approval of TPIA as applicable as per approved QAP
- (c) Packing list (with reference to each item of Bill of Material).
- (d) Instruction and maintenance manuals along with spare parts' catalogues and literature and one soft copy. (Crane supplier shall submit all manuals one month prior to the testing of cranes.)
- (e) Necessary instructions and drawings for site assembly, erection, testing and commissioning of the crane.
- (f) Manufacturer's test certificate for structural steel (used for the construction of load bearing members) certified by Classification society (IACS member) at the cost and responsibility of bidder.
- (g) Certificate for fasteners with required strength.
- (h) Authentic Test certificates for Cable, rope, load cell, Gear box, Motor, brakes, and other machineries.
- (i) All other certificates required as per tender.

19.6 The Crane Supplier shall be entirely responsible for any errors, calculation mistakes, and/or omissions from the drawings etc. and the sufficiency and efficiency of the crane in all respects, notwithstanding any approval, which the CSL /TPIA/Engineer may have given to the drawings prepared by the supplier. If such situation occurs, the crane supplier shall ensure the remedial actions at their cost and CSL would not be responsible for the same. In spite of all the above, the entire responsibility for satisfactory functioning rests with the supplier.

20. Health and Safety

- 20.1 Permanent safe access must be provided for all operating and routine maintenance functions on the crane. Safe access means stairways, ladders, safety hoops, platforms, guard rails and all doors, hatches and other openings having safe means of securing in both the open and shut positions all to a standard appropriate to best Indian/European practice.
- 20.2 Stairways, ladders, platforms shall be made from steel and tread areas are to be provided with a non-slip finish or be constructed from galvanized expanded metal sections of approved design. All guard rails and toe boards shall similarly be of steel construction.
- 20.3 Alternative exit routes of walkways, platforms, stairways and ladders, shall be available to enable the driver and any maintenance personnel escape from the crane cab and machinery house areas in an emergency. Alternative exit route can be arranged by emergency escape rope ladder and lowering harness also if code permits.
- 20.4 The maximum permitted noise levels that may be generated by crane operation shall be as per the design code followed.
- 20.5 The crane structure and each individual hook shall be prominently marked with their respective safe working load.
- 20.6 The Contractor must fully comply with all relevant Indian health and safety legislation in force at the date of tender submission.
- 20.7 The crane shall have a programmable anti-collision device to avoid collision with future cranes moving on same track.
- 20.8 All required warning signs shall be displayed in English.
- 20.9 Crane shall be designed considering the free movement of the proposed Gantry Crane. A tentative general arrangement drawing is enclosed. Clear space shall also be maintained on both side and within the legs of LLTT crane

21. Crane Design Classification and Construction Standards

- 21.1 Design, manufacturing, testing of all the elements of crane structure, machinery together with all equipment & components shall comply with requirements of FEM 1.001 or Indian Standard codes (latest version from Bureau of Indian Standards) applicable.
 - IS 4594:1968 (Reaffirmed 2006)- Code of practices for design of portal and semi portal wharf cranes
 - IS 807:2006 – Design, Erection and Testing (Structural Portion) of Cranes and Hoists- Code of Practice
 - IS13834 (part 1):1994 (Reaffirmed 2003)- Cranes- Classification –Part1 General
 - IS14470:1997 (Reaffirmed 2003)- Cranes- Test Code and procedures
 - Other IS codes as applicable for CranesRegarding electrical design and installation requirements, IS/IEC shall be followed. In addition, requirements mentioned in FEM, CEA Regulation and Indian Electricity Act shall also be followed.
- 21.2 A complete schedule of standards and codes that are intended to employ shall be submitted with Techno-commercial Bid for consideration and approval. Changes to approved standards following acceptance of the bid will not be permitted. Approved standards to be employed shall be provided in English language, before commencement of design and procurement activities.
- 21.3 The International System of measurement units (SI) shall apply throughout.
- 21.4 The crane design shall satisfy all applicable statutory requirements and any other regulations applicable locally. ie. Factories Act, Central Electricity Authority Rules and Regulations, Indian Electricity Act and other statutory regulations pertaining to design, manufacture, installation, operation and maintenance of such machinery for service at Cochin, India.
- 21.5 In case of practices not specifically mentioned in the standards, the normal practice of the industry or the contractor shall be applied with prior permission from the CSL.
- 21.6 Electrical equipment, materials and workmanship shall conform to the current standards of IS (Indian Standard) amended up to date. The electrical installations shall be carried out complying with Central Electrical Authority Rules and Regulations amended up to date. Requirements mentioned in design codes and standards shall also be complied. All electrical and control system components shall be suitable for operation and corrosion prevention under humidity and temperature mentioned elsewhere and in a salt laden atmosphere. As the electrical installation of the crane is to be approved by Central Electricity Authority (CEA), all documents shall be submitted only through Grade "A" licensed electrical contractor. The license in respect of electrical contractor shall be issued by Kerala State Electrical Licensing Board, Kerala, India and valid

for the entire period of project including installation, testing, commissioning and handing over of the crane to CSL. As per rules, electrical works are to be carried out under the licensed contractor's guidance. Any prior approvals from CEA required shall also be obtained by crane supplier. Supervisors and Workers of Grade A contractor shall also be included during the work to comply with statutory requirements.

The procedure for approval from Central Electricity Authority is as below.

Crane supplier shall submit the documents through licensed grade A electrical contractor to CSL. CSL will upload the document to CEA website. Liaisoning work with CEA shall be done by licensed contractor. Rectifications suggested by CEA shall be done and a compliance statement to be forwarded to CEA through CSL. CEA will issue energisation certificate. Licensed grade A electrical contractor shall supervise the work. The license of the electrical contractor shall be issued by Kerala State Electrical Licensing Board, Kerala, India

Note: Wherever Indian Standards and regulations are specifically mentioned in the following technical specification, the same shall be followed as the approvals from statutory authorities of the crane are to be obtained from India.

21.7 **CLASSIFICATIONS** as per IS13834 (part 1):1994 (Reaffirmed 2003)

(a)	Structure and complete crane	
	Classification of Utilisation	U5
	State of Loading	Q2
	Group Classification	A5
	Duty Factor	0.95
	Impact Factor	1.15
(b)	Main Hoist : Group Classification	M6
	Classification of Utilisation	T6
	State of Loading	L2
(c)	Auxiliary Hoist : Group Classification	M6
	Classification of Utilisation	T6
	State of Loading	L2
(d)	Slewing : Group Classification	M5
	Classification of Utilisation	T5
	Loading Spectrum	L2
(e)	Luffing : Group Classification	M5
	Classification of Utilisation	T5
	Loading Spectrum	L2
(f)	Travel : Group Classification	M6
	Classification of Utilisation	T6
	Loading Spectrum	L2

22. Operator Training

- 22.1 Full training at the site in the safe operation and maintenance of the crane and all equipment shall be provided to the CSL nominated personnel by a suitably qualified person, or persons, employed by the Crane Supplier and approved by CSL. If interpreters are required to assist the exchange of information and instructions from the trainer to the operators, these are to be provided by the Contractor at his own cost.
- 22.2 The necessary training programme shall be developed jointly with CSL to ensure that the specific operational and maintenance requirements of the yard and workforce are adequately addressed.
- 22.3 Training at site will commence during the site assembly stage for the maintenance personnel and continue through testing and commissioning and into the setting to work phase for the crane operators.
- 22.4 Maintenance training, for up to 15 (fifteen) maintenance staffs not less than one week shall include, inter alia:
- a) Routine examination and maintenance.
 - b) Fault diagnosis.
 - c) Removal, dismantling and replacement of parts and components.
 - d) Basic electrical checks, safety routines and component replacement.
 - e) Approach to hydraulic systems overhaul.
 - f) Procedures /instructions for corrections or modifications in PLC /VVFD.
 - g) Details regarding the logical integration implemented.
 - h) Swapping of components on emergency.
 - i) Bypassing of PLC elements safely.
 - j) Training on crane management system if any.
 - k) Uploading and downloading procedures in relevant concepts.
 - l) Rectification on fiber optic cables-procedures.
 - m) Training for reading electrical and hydraulic system drawings.
 - n) Maintenance planning records and procedures.
 - o) Instruction and familiarisation regarding the overall operation and maintenance of the crane including Health and safety provisions incorporated (including the operation etc. of items such as load weighing and limit switches etc).
 - p) Uploading and downloading of programs to PLC and HMI
- 22.5 Operational training for up to six crane operators not less than one week shall include, inter alia:
- (a) Safety procedures.
 - (b) Practice at the control and synchronization of the main crane motions such as long travel, luffing, slewing and hoisting.
 - (c) Start up and shut down procedures including use of the storm anchors and any supplementary securing equipment.
 - (d) Application of the daily check list.
 - (e) Instruction and familiarization regarding the overall operation and maintenance of the crane including Health and Safety provisions incorporated (including the operation etc. of items such as load weighing and limit switches etc).
 - (f) Instruction in use of the slewing / long travel anti-collision device over-ride feature.
 - (g) Explaining the power and control circuit.

23. Operational and Maintenance Manuals

- 23.1 Separate illustrated manuals shall be provided by the supplier covering the operation, maintenance and parts identification for the crane and associated equipment and components. Proprietary equipment supplier's manuals may be provided where they comply with the requirements of this specification. Where possible the manuals shall be presented in A4 format and be protected from damage by employing durable covers and plastic encapsulated pages.
- 23.2 The operator's manuals contain advice and instructions on all aspects of the safe operation and use of the crane including actions to be taken in the event of emergency or breakdown. A start up and hand over check list for the operators shall also be included.
- 23.3 Manuals of PLC, HMI, VVFDs, encoders, etc. shall be given along with relevant instructions or programs. Detailed interconnection diagrams shall be provided. Programming manuals of each unit shall be provided. System software, application software, programs, laptop with system software and application software loaded, interfacing units including cables to Laptop from PLC and HMI shall be provided. As fitted and commissioned drawing shall be provided without any error or mistake is a compulsory requirement as per this tender. Fault diagnosis procedures and supporting codes shall be provided.

- 23.4 The maintenance manual set shall include illustrated instructions on what tasks need to be undertaken on a regular basis and how to perform all routine and scheduled maintenance. Additionally a separate document, or set of documents, with exploded isometrics where possible identifying all components and their associated spare part numbers for all items and components of the crane, both of the Crane supplier's manufacture and of all sub-contractors and suppliers manufacture, shall be provided.
- 23.5 Copies of all manuals and illustrations etc. shall also be provided on CD-R discs and USB sticks compatible with a PC system running Microsoft Windows. In total five sets of paper based and two sets of CD-R disc based copies of all manuals shall be provided. . All as built drawings (electrical, mechanical, control system) shall be handed over to CSL upon successful commissioning of the crane.
- 23.6 The covers of each paper copy of the operating manuals and the boxes for the CD-R discs and USB sticks of the operating manual shall carry the following clear title:
"OPERATING INSTRUCTIONS FOR LEVEL LUFFING JIB CRANE"
- 23.7 The comparable sets of manuals, CD-R discs and USB sticks for the maintenance instructions shall be marked using the same format.
- 23.8 All such manuals shall be in English.

24. Crane Rails and Crane Wheels

- 24.1 The rails shall be A100 to suit double flanged forged steel wheels
- 24.2 There is no height difference between the rails. The crane rail tolerances are maintained according to Indian Standards. The crane is to be so designed so that it can safely move on the crane track of rail type A100. The Crane Supplier is responsible for ensuring the suitability of the wheel size and wheel loads of the crane as per A100 rails.
- 24.3 Supply and laying of crane rails and rail fixtures is not in scope of supply of the Crane Contractor.
- 24.5 All track wheels shall have straight tread and shall be double flanged type of forged steel. All the wheels shall be machined accurately to obtain the correct diameter. The wheel tread shall have hardness not less than 250 BHN or as per design codes selected, whichever is higher. The crane wheel specification shall be based on selection as per design code.

25. Crane Wheel Loads

- 25.1 The maximum wheel loads under any loading condition (operational, storm) shall be such that the ratio of wheel load / wheel spacing shall not exceed 50 Tonnes/m. (ie. 50 tonne wheel loads at 1m spacing).
- 25.2 The maximum permissible horizontal loads are 5% of vertical load in transverse direction and 10% of vertical load in longitudinal direction.

26. Materials and Workmanship

- 26.1 All major items of equipment and major materials used in the manufacture of the crane shall have been specified and procured specifically for this contract. No pre used or substandard materials or equipment shall be employed.
- 26.2 The country of origin and manufacture for all major materials, equipment and systems shall be identified by the Crane Supplier for approval by the CSL / TPIA/Engineer.
- 26.3 The Contractor shall provide complete details of the Quality Assurance system followed by them during manufacturing / fabrication and the relevant certifications. The QA systems and certifications must cover all aspects of in house design and manufacture as well as covering the monitoring of quality from external suppliers of sub-assemblies and components. The QA plan shall be approved by the Employer/TPIA/Engineer.

27. Crane Details

27.1 The cranes will be rail mounted, of the portal level luffing slewing type with a single boom jib with two hooks. The specified minimum required performances are as given in Table 2, below.

Table 2. Crane Performance Requirements

Crane performance requirement for JC-1	
Function	CSL requirement
Quantity	1 (one)
Initial location	South side of Grand Assembly area
Main hoist capacity	75 T @ at all radii (Under hook)
Auxiliary hoist capacity	10 T @ at all radius (Under hook)
Working radius	30 m to 85 m
Crane rail span (Centre to centre)	12 metres
Lifting height-(measured above the crane rail level)	60 m @ all radius
Lowering depth(measured below the crane rail level)	-15 M @ all radius
Height of bottom of machinery room above track level	Not less than 26 m
Height of the jib pivot point	26 m from the cope level (minimum)
Tail radius	Not more than 15 m
Maximum height limitation	110 m above MSL (ie. 107.582 m above cope level) between operational radius 50 M to 85 M. There shall be a software lock to limit the operation when jib reaches to minimum radius of 50M (ie. reaching maximum height limitation). However there shall be provision to bypass this limit to bring the jib up to 30 m minimum radius .
Clear space under portal	9 m wide x 7m high
Maximum machinery envelope at rail level and over a minimum height of 3m above rail level, in order to provide safe clearances to surrounding items	850 mm either side of rail center line on dock side leg and inner face of other leg. 1500 mm on outside of leg furthest from dry dock. The final clearances shall be finalised during detailed design of LLTT crane based of 600T crane procurement by CSL and based on spacing of dock cope equipments without any additional price implication to CSL
Overall length of crane rail	300 m(approx)
Operational length of rail	<300m
Power supply to crane	DSL system
Electrical pickup system Drawing Ref: CSL-RH-XX-ZZ-DR-C-0203 – DockGeneral Arrangement Plan CSL-RH-XX-ZZ-DR-C-0204 – DockCross Sections CSL-RH-XX-ZZ-DR-C-0206 – NorthWall Cope Plan	415V, 50Hz 3ph+Earth Copper conductor pickup rails within underground trench. Power supply to electrical pick up rail from Substation DD3A (drawing ref. CSL-RH-SS-3A-DR- E-0431 – SUBSTATION DD3A 415V, 50HZ LT SWITCHBOARD SINGLE LINE DIAGRAM). Potential future additional, similarly rated, crane to be installed on same crane rails and using same Electrical pickup rail: DSL system shall be capable to operate one additional crane of 75T x 85M capacity on same rail. DSL capacity shall be calculated for operation of 2nos of 75T x 85M cranes.
Main hoist speed	0-15 m/min. at 75 Tonnes 0-30 m/min at 35 Tonnes Joystick shall be used for speed control
Aux. hoist speed	0-20 m/min. at 10 Tonnes 0-40 m/min. at 05 Tonnes Joystick shall be used for speed control
Luffing speed - full load	0-25 m/min. Joystick shall be used for speed control
Slewing speed – full load	0-1/3 r.p.m. Joystick shall be used for speed control
Slewing angle	360° continuous using copper slip rings
Long travel speed	0-40 m/min. at 75 Tonnes Joystick shall be used for speed control
Crane storm anchor loads and positions. Storm anchoring arrangement Crane temporary jack-up point loads and positions.	To be provided by the Crane Contractor at two locations for each.
Indicative electrical load	750kVA @ 415V, 3 Phase + E, 50Hz (Contractor to notify any departures from this while submitting the offer)
Maximum Operational Wind Speed	20m/s
Maximum Wind Speed	To be based on location of Shipyard in accordance with Indian Standard for 50 year design life

Crane performance requirement for JC-2	
Function	CSL requirement
Quantity	1 (one)
Initial location	North side of dry dock
Main hoist capacity	40 T @ at all radii (Under hook)
Auxiliary hoist capacity	10 T @ at all radius (Under hook)
Working radius	25 m to 75 m
Crane rail span (Centre to centre)	12 metres
Lifting height-(measured above the crane rail level)	60 m @ all radius
Lowering depth(measured below the crane rail level)	-15 M @ all radius
Height of bottom of machinery room above track level	Not less than 26 m
Height of the jib pivot point	26 m from the cope level (minimum)
Tail radius	Not more than 15 m
Maximum height limitation	110 m above MSL (ie. 107.582 m above cope level) between operational radius 30 M to 75 M. There shall be a software lock to limit the operation when jib reaches to minimum radius of 30M (ie. reaching maximum height limitation). However there shall be provision to bypass this limit to bring the jib up to 25 m minimum radius
Clear space under portal	9 m wide x 7m high
Maximum machinery envelope at rail level and over a minimum height of 3m above rail level, in order to provide safe clearance to surrounding items	--850 mm either side of rail center line on dock side leg and inner face of other leg. --1500 mm on outside of leg furthest from dry dock. The final clearances shall be finalised during detailed design of LLTT crane based of 600T crane procurement by CSL and based on spacing of dock cope equipments without any additional price implication to CSL
Overall length of crane rail	325 m(approx)
Operational length of rail	<325m
Power supply to crane	DSL system
Electrical pickup system	415V, 50Hz 3ph+Earth Copper conductor pickup rails within underground trench. Power supply to electrical pick up rail from Substation DD3A (drawing ref. CSL-RH-SS-3C-DR- E-0451 – SUBSTATION DD3C 415V, 50HZ LT SWITCHBOARD SINGLE LINE DIAGRAM). Potential future additional, similarly rated, crane to be installed on same crane rails and using same Electrical pickup rail: DSL system shall be capable to operate one additional crane of 75Tx85M capacity on same rail. DSL capacity shall be calculated for operation of 1no 40Tx75M crane and 1no 75Tx85m crane.
Drawing Ref: CSL-RH-XX-ZZ-DR-C-0203 – Dock General Arrangement Plan CSL-RH-XX-ZZ-DR-C-0204 – Dock Cross Sections CSL-RH-XX-ZZ-DR-C-0206 – North Wall Cope Plan	
Main hoist speed	0-15 m/min. at 40 Tonnes 0-30 m/min at 20 Tonnes Joystick shall be used for speed control
Aux. hoist speed	0-20 m/min. at 10 Tonnes 0-40 m/min. at 05 Tonnes Joystick shall be used for speed control
Luffing speed - full load	0-25 m/min. Joystick shall be used for speed control
Slewing speed – full load	0-1/3 r.p.m. Joystick shall be used for speed control
Slewing angle	360° continuous using copper slip rings. However, there shall be an interlocking mechanism at two positions to restrict the operation of jib outside the boundary wall (north side) as per drawing No. CSL-RH-XX-ZZ-DR-C-0200. This shall be discussed and finalised with CSL during detailed design stage of the crane. The supplier shall choose any of the suitable electronic interlocking system in this regard.
Long travel speed	0-40 m/min. at 40 Tonnes Joystick shall be used for speed control
Crane storm anchor loads and positions.	To be provided by the Crane Contractor at two locations for each.
Storm anchoring arrangement	
Crane temporary jack-up point loads and positions.	
Indicative electrical load	750kVA @ 415V, 3 Phase + E, 50Hz (Contractor to notify any departures from this while submitting the offer)
Maximum Operational Wind Speed	20m/s
Maximum Wind Speed	To be based on location of Shipyard in accordance with Indian Standard for 50 year design life

27.2 Operating Speeds

- (a) All motions shall offer variable speed control from zero. A creep speed function is to be provided for all the drives providing only 5% of the maximum rated speed whilst delivering 100% of the rated torque. Encoder based Joystick of reputed make shall be considered. Make shall be approved by CSL/CSL Representative.
- (b) The crane control system shall be such as to coordinate the slewing speed with the luffing motion to ensure that excessive load traverse speeds cannot be attained.

28. Power Supply

28.1 Power to the crane is to be supplied from the outgoing 415 V 50Hz feeders in the substation C (DD3A). The cable of required capacity would be laid by the civil construction contractor (3 phase+ earth) till copper headed DSL.

The 415V power distribution network of the yard is based on 3 phase earthed system.

Supply: -	3 phase and Earth
Frequency: -	50 Hz±5%
Voltage: -	415 V±10%

Total electrical power requirement of the crane shall be given by the Crane Supplier. All electronic and electrical equipment shall be adequately protected from the effects of multiple transient voltages. The crane electrical systems shall be provided with an agreed level of radio frequency immunity and all installed electrical equipment and machinery shall be suppressed against radio frequency generation. The Crane Supplier shall liaise with the Civil Construction Works Contractor regarding confirmation of sizes of cables fed to DSL as well as protection device coordination to suit final equipment selections. Cable will be supplied and laid from substation to DSL by civil contractor; however the termination of cable at DSL side shall be done by crane supplier.

28.2 The electrical pick up trench for the crane is provided at the extreme south of the south side rail of the level luffing crane. Please refer to the Drawings for the location details. The Crane Supplier shall supply the pick-up rail assembly and all necessary fixings and all accessories including current collectors, metallic supports and DSL indication lamps on both ends. Fixings to be cast into the concrete collector trench (together with any installation templates required) shall be provided by the Crane Supplier for installation by the Civil Construction Works Contractor. Only casting work of embedments inside the concrete inside the DSL trench will be done by civil contractor, however embedments has to be supplied by crane supplier. The installation of the pick-up rail assembly shall be by the Crane Supplier. Collector rollers or shoes shall be so designed as to avoid sparking and shall be easily replaceable. Collector assembly shall be mounted on a rigid structure on the crane bridge. Necessary safe and convenient access shall be provided for maintenance or replacement of the collectors. The design symmetrical fault current of the incoming voltage supply is anticipated to be a minimum of 50 kA for 1sec. Supply, installation and commissioning of following power supply arrangement to the crane is also under the scope of the crane supplier, which includes.

- (a) Open copper headed DSL system, insulators, hardwares with all accessories including metallic supports and its painting (Horizontal mounting is preferred). Any change of mounting arrangement suggested by CSL to suit the site requirements shall be incorporated without additional cost. CSL decision would be final in this regard.
- (b) Dual pantograph current collectors of the crane.
- (c) Earthing of DSL support brackets by laying two runs of Minimum 50x6mm copper throughout the entire length of trolley duct touching the metallic supports and connecting the same to earth pits (1 Each) located at both ends of DSL trolley duct. The copper plate earth pits of size 600x600x3.15mm shall be supplied and installed by the crane supplier. Minor civil works of these earth pits shall be done by the crane supplier.
- (d) Termination 415V cables to DSL with necessary accessories sockets, etc.
- (e) Additional junction boxes as per site requirement.
- (f) Continuous tensioned MS strip/DSL tie cover plate (6mm), MS bar welded to strip, split end lugs as detailed in "Detail A"
- (g) Anchor tensioning mechanism of DSL tie cover plate
- (h) Mounting metallic frame of DSL insulators and its embedments
- (i) Metallic items for mounting of current collectors, its moving guides, rollers

Dimensions of DSL trench has been indicated in the drawing. However, the top opening of the DSL trench shall be considered as 100mm. As one more crane of same capacity is planned on the same track, in future, hence total DSL capacity shall be suitable for 2 nos of same capacity cranes. The DSL system shall have the capacity maximum to supply the maximum current, considering all motions when both cranes are operating together and also considering operation of all auxiliary devices of the crane. The factors like power factor, efficiency, CDF, safety factor considered shall be indicated in the DSL sizing calculations. The calculations shall be submitted to CSL and third party inspection agency for approval and modifications suggested by CSL and third party inspection agency shall be accepted by the crane supplier without any additional cost implication to CSL.

Arc flash should also be considered for having minimum distance between each phase of DSL. The current collector system

of crane shall be suitable for the underground trolley conductor (DSL) arrangement. Collector assembly shall be mounted on a rigid structure. All DSL accessories including supports are to be supplied and installed by the crane supplier.

The crane supplier shall supply the embedments which are to be casted in concrete by the civil contractor. All other works related to DSL including supply of materials are to be done by the crane supplier. Exact dimensions of embedments, spacing, drawings shall also be provided. The crane supplier shall refer the attached typical drawing of DSL trench and associated drawings of the proposed crane. Dimension of DSL trench is 1150mm (Width) x 1000 mm (height). Slot opening width is 150mm. Particular site conditions and requirements shall be considered while designing the system. The detailed drawing of DSL arrangement indicating spacing, current collector positions shall be submitted within 3 months from the date of placement of purchase order.

Adequate protection shall be provided on the entire crane structure against any accidental electric shock to the personnel and materials.

- 28.3 The crane drive system shall also be equipped to handle the reverse energy generated in the crane to feedback on to the electrical network and also ensure that the harmonics are not transferred into the source.

The crane shall be provided with transformer(s) to convert the supply voltage into lower voltages (lighting, control) as required within the crane. Transformers shall be Dry Type AN transformer with cast resin insulation of class F and their specification shall be suitable for the high humidity and marine environment prevalent at the site and should provide trouble free operation for its life span.

29. Operating Conditions

- 29.1 The crane shall be stable under all operational and out of service conditions.
- 29.2 The maximum permissible linear rail loading specified shall not be exceeded for any possible load, outreach and operating or out of service combinations including, inter alia, dead loads, live loads, inertia forces and wind and storm loadings. The highest loading for any condition shall always remain within the permitted rail load.
- 29.3 Stability calculation and load testing of cranes shall be as per FEM 1.0001 or IS Code followed.

30. Out Of Service Securing and Storm Anchors.

- 30.1 Hydraulically operated Rail Clamps shall be provided on each legs of the crane to clamp the crane to the rails. The rail clamps shall be remotely operated from the operator's cabin, to secure the crane when not in service. Also, it shall be possible to lock the rail clamps manually from the ground. The clamps shall be capable of safely holding the crane against movement by wind with 50% of the wheel brakes inoperative. Electric interlocks shall be provided such that the travelling machinery cannot be energized until the clamps have been released. It should be noted that the top of the rails are flush with the surface of the concrete and that the sides/undersides of the rail will be surrounded with concrete and will therefore not be available for clamping. The clamps should have sufficient tangential holding force to safely hold the crane in locking position during non-operating wind conditions. The rail clamps are to be quick acting mechanically operated hydraulically released type. The clamp jaws should grip the rail from top. The jaws should have replaceable hardened steel teeth. When released, the clamps should not drag on the rails.
- 30.2 The crane shall also be equipped with mechanical locking devices, by stowage pins for example, on each leg of the crane locating into special reinforced anchor location (to be supplied in advance of the crane for incorporation into the civil works) or similar to secure against movement during storm conditions. Pins arrangement is to be designed to hold the crane from moving under stowed conditions with the gantry brakes inoperative. The device(s) shall be fitted to the crane portal structure on each side of the crane, not to the long travel bogies. Ideally the pins/arrangements and anchor locations shall provide the resistance to overturning rather than having to resort to separate tie down provisions where the design rules adopted allow for the existence of net overturning moments. Electric interlocks shall be provided such that the travelling machinery cannot be energized until the storm anchors automatic clamps have been released. There shall be indicators in the cabin for operator about anchors and rail clamps in HMI.
- 30.3 Only the side portion of the head of the rail is available for clamping. Below the head of the rail, the rail will be fully encased in concrete. Crane supplier shall design storm anchors with horizontal and vertical locking. It must be entirely surface mounted without any recesses/pits in the concrete. Bidder shall submit the details of arrangement for out of service securing and storm anchor as part of technical bid.
- 30.4 If it is required that the crane jib shall be parked in a certain configuration to avoid allowable wheel loads being exceeded, necessary devices shall be provided to ensure that the crane cannot be parked until the jib is in the required alignment.
- 30.5 Quantities of Rail clamps, storm anchors, and tie downs shall be as per the design of Crane supplier. Bidder to provide the arrangement details of the locking devices along with bid submission.

31. Structure

- 31.1 The main structural elements of the crane are considered to comprise, inter alia, the portal, crane column, slewing frame, machinery house, 'A'-frame, Jib and counterbalance arrangement, operator's cabin etc. The crane portal is to have a minimum clear height of 7m to permit vehicle access to the quay.
- 31.2 All structural elements shall be made from low carbon weldable steel in accordance with IS 2068:2011/ EN10025 or as dictated otherwise by the crane design code adopted. Steel plates to be selected so that the loading on structures remains within the limits as specified by standard. Supplier shall be solely responsible for the design of the crane in all respect.
- 31.3 The structural members of the crane shall be of rolled steel plates and sections and shall be constructed using electric arc welding.
- 31.4 The ballast designed as a counter balance shall be sufficient for all working and test condition. It shall be of cement concrete, cast iron or cast steel and not of loose material like scrap etc. The crane supplier shall state the required weight of ballast together with necessary drawings showing the arrangement and disposition of ballast. The counter balance weight for ballast would be under the scope of supplier.
- 31.5 All enclosed volumes within the structure that are not 100% sealed shall be fitted with weatherproof covers or similar to facilitate inspection. Fully enclosed volumes shall be treated with corrosion inhibitor (wax type or VCI powder) immediately prior to final closure. Other methodologies/products used for corrosion protection for enclosed volumes are also acceptable subject to the approval from CSL during design approval stage.
- 31.6 Construction joints, such as splice plates in the portal and jib, employing clench bolts or similar high strength friction fastenings shall be assembled with clean metal to metal surfaces or shall be blast and prime only at the joint area prior to assembling. Such joints shall then to be fully coated after completion.
- 31.7 Platforms, walkways and stairs shall be designed to accommodate a live load of 3.5 kN/m² and a concentrated load of 100 kg at any point. All such components shall be hot dip galvanized to IS 2629/ISO 1461.
- 31.8 Where electric cables, hydraulic lines or similar vulnerable items are run through the crane structure access panels shall be provided for inspection and maintenance purposes. All exterior surface runs shall be adequately protected from accidental damage.
- 31.9 Steel mill cast or batch properties certificates relating to all major structural steel shall be provided to CSL /TPIA/Engineer by the Supplier. The unique steel batch identities shall be traceable throughout all stages of manufacture up to and including site erection. All such certification information shall be retained within the Contractors QA and internal documentation storage system. This information shall be available for inspection by the Employer on request at any time throughout the operating life of the crane.
- 31.10 Computations for stresses shall take into account all dead and live loads, including allowance for impact, wind loads, acceleration and overloads.
- 31.11 All shop fabrication shall be done by welding and only assembling and erection shall be done at site.
- 31.12 Revolving structure: The revolving frame shall be constructed of structural shapes and rolled steel plates with bolted and welded connections. The jib shall be constructed of high-tension steel pipes with welded connections, and shall be jointed to the revolving frame at the level of the operator's cabin. These structures shall be designed to resist lateral and vertical stresses.
- 31.13 Portal frame and tower: Portal frame shall be box type construction and shall be so designed as to avoid accumulation of water and oil inside and outside the box. The weight of the crane and loads shall be distributed on braced legs, each leg being connected by pin joints to welded bogies. The tower shall be constructed of high tension steel pipes or rolled steel plates with welded connections. Care shall be taken in the design of portal frame and tower to provide ample strength to resist not only the vertical stresses but also lateral stresses set up by the wind and acceleration. The crane portal is to have a minimum clear height of 7 M to permit vehicle access.

32. Welding

- 32.1 All welding shall be undertaken using the carbon arc or metal arc process. All welding consumable shall be stored and used in strict accordance with the manufacturer's recommendations and the electrodes selected shall provide weld metal properties as close as possible those of the parent materials. The Contractor shall hold copies of the manufacturer's tests on representative samples of electrodes.
- 32.2 Welding shall be as per the Welding Procedure Specification approved by Third Party Inspection Agency. Makes of weld consumables to be used in fabrication shall be mentioned in the technical bid.

- 32.3 Structural welding shall only be undertaken at the Supplier's works or within the premises of appointed sub-contractors.
- 32.4 All weld spatters shall be removed and welding scars from stray arcs and temporary attachments etc. shall be made good. All free edges of steel work shall be ground or similarly dressed to provide a corner radius of not less than 2 mm to prevent premature failure of the coating system applied.
- 32.5 Only adequately qualified welders able to demonstrate their competence through recognized examination or work record shall be employed on the fabrication of the crane.
- 32.6 All welds shall be subject to 100% visual inspection for defects such as undercutting, surface porosity, acceptable weld bead, fillet shape and size. All structural full penetration butt welds shall be subject to 100% NDT inspection by ultrasonic testing. Other structural welds shall be subject to 25% NDT inspection by ultrasonic testing on a random selection basis or as per Designer's QAP and approved by the Engineer in charge /TPIA. Non-destructive testing of welds includes radiographic testing as per the code requirement. NDT inspection of weld joints shall meet the design code adopted. In case radiography not allowed by authorities, other suitable tests like PAUT shall be adopted. Any significant weld defects identified shall be rectified by the most appropriate means.
Any change in methodology mentioned above is subject to approval by TPIA/CSL during finalisation of Inspection and Testing Protocol (ITP) .
- 32.7 Testing will be witnessed by TPIA/CSL Representative. Copies of test certificates shall be provided within 7 days of testing.

33. Mechanical Connections

- 33.1 All high tensile bolts and fastenings shall be supplied with identifying marks and, where employed for structural joints all such fastenings shall be supplied with a recognized corrosion resistant surface finish. All fastenings shall be supplied in metric sizes. Where high strength threaded fastenings are employed a schedule of fastening torques is to be supplied.
- 33.2 All structural fastenings shall be 12 mm diameter or larger and no connection transmitting a design load shall employ less than two fastenings.
- 33.3 Any fixing bolts required to be cast into the concrete shall be supplied by the crane supplier in advance and installed by the Civil Construction Works Contractor.

34. Coating System

- 34.1 The paint coating system shall be mostly applied within the Crane Supplier's works in a controlled environment with only damage repair, construction joint painting being permitted on site prior to the application of the top coat. Each paint coat shall be of a different colour to the preceding one to help ensure proper coverage is achieved. All coatings are to be applied in conformance with the paint manufacturer's published requirements. Such requirements are considered to form an integral part of this specification.
- 34.2 The paint system shall comply with ISO 12944. Steel materials of all structural parts shall be sand blasted or shot blasted to SA 21/2 finish to remove rust, mill scale and grease prior to fabrication and painted as follows:
- i. After sand blasting or shot blasting – One (1) coat of epoxy or equivalent paint (primer) of 40 micros thick (minimum)
 - ii. Two (2) coats of modified epoxy paint each coat of 70 micros thick (minimum).
 - iii. One coat (1) of modified epoxy paint of 60 micros thick (minimum).

Final touch up after erection, as necessary, shall be undertaken by crane supplier at own cost.

Total dry film thickness of 240 microns (nominal) shall be maintained. Each coat shall be clearly different in colour and shall completely cover the surface over which it is painted.

- 34.3 Alternatively, a paint system shall be proposed by the crane supplier that is High durability (more than 10years) for atmospheric corrosion category C5-M, which is to be approved by TPIA/Employer Representative.
- 34.4 Wherever possible paint shall be applied by airless spray. Where this process is impracticable roller or brush application may be employed although the number of applied coats may need to be adjusted to achieve the desired DFT at each nominal coat stage.
- 34.5 The crane supplier shall provide suitable colour swatches to enable the precise paint colours shall be identified in advance and approved by the Employer.
- 34.6 Coated surfaces will only be inspected when the paint is fully dry. Inspection criteria will include achieved DFT, consistency of application and the physical appearance of the paint coat. The Employer may reject unsatisfactory paint work which shall then be rectified at the supplier's expense, to the Employer's satisfaction.
- 34.7 Any repairs necessary to the coating system should be undertaken at the earliest possible opportunity to reinstate the relevant stage and DFT. The coating system in way of the bare steel construction joints shall stepped back, coat by coat, to

allow the overall coating system integrity shall be achieved on site. The same acceptance criteria as used for the workshops will apply.

- 34.8 The external finish top coat shall be Admiralty Grey or as designated by CSL. Orange and white stripes or as instructed by aviation rules shall be used for crane jib and swing lever. The interior of the machinery house and other areas man accessed shall be gloss white.
- 34.9 Interiors of the gear casings shall be painted with one coat of oil resisting paint or as per manufacturer's standard.
- 34.10 The painting system for the components shall be as per manufacturer's standard..

35. Other Protective Requirements

- 35.1 All machined surfaces of machinery or components for assembly and spares shall be protected against corrosion during transit and storage generally in accordance with BS 1133/ IS standard applicable or as per suppliers' standards for the marine environment.
- 35.2 All spare parts forming part of the contract supply shall also be protected from corrosion by packaging or similar means to prevent deterioration during transit and storage. All spare parts shall be adequately identified by name and/or part number as appropriate.

36. Machinery

- 36.1 The machinery design and selection shall be in accordance with those standards identified in Clause 21 and embrace logical equipment layouts that will deliver safe and reliable operation and ready access to all elements for inspection and maintenance including ready removal and replacement.
- 36.2 All critical items of machinery demanding precise alignment one with another shall be located by means of dowels or fitted bolts.

37. Gearboxes

- 37.1 All gearboxes shall be procured from the recommended makers list.
- 37.2 The gearboxes shall be sized to withstand all normal service loads likely to be imposed and to have a predicted life equal to that of the crane. Gear boxes shall be provided with Catalogue rating and Selection chart of the manufacturer and basis of selection. The criteria and supporting calculations used in selecting the individual gearboxes shall be submitted.
- 37.3 The gearbox casings shall all be readily opened for inspection and maintenance of the internals and shall be completely oil tight during operation. Lubrication shall be by oil bath and splash rather than pump circulation. Shaft sealing shall be by spring pressurized lip seal.
- 37.4 Easily visible external oil level shall be provided on each gearbox.
- 37.5 All gearboxes shall be equipped with oil drainage valve with blank. Any drainage valve(s) shall be protected from accidental damage
- 37.6 The gear boxes shall be of oil tight welded, forged, cast iron or cast steel construction. Enclosures shall be split horizontally or vertical to match with the maker standard. In case of gearboxes for travelling, vertical split enclosure or mono block enclosure shall be applicable to match with the maker standard. The gear box mating faces shall be sealed with sealing compound. Each reduction gear shall be equipped with an oil level gauge.
- 37.7 Machine gears shall be chosen spur gears of 20° pressure angle, helical gears, double helical gears, bevel gears and worm gears surface-hardened and ground. The gears shall be enclosed in a gearbox and shall be closed oil, bath type. Gear reducers shall be provided with anti-friction bearings. Final stage pinion and internal gear of slewing turntable shall be of open gear type and lubricated by open-gear-grease. The open gears shall be greased manually by brush.

38. Bearings

- 38.1 Anti-friction bearings shall be provided for the primary stage of hoisting, luffing, slewing and travelling gear reducers, the driven shaft of luffing motor, sheaves of the jib top and hook. Other bearings may be of sleeves type removable bronze linings.
- 38.2 All rotating bearings shall be of the low friction type of a reputable make and have a service life compatible with that of the

equipment on which installed.

- 38.3 All exposed bearings (not in gearboxes etc) shall incorporate bearing manufacturer's standard sealing and lubrication recommendation."
- 38.4 Pre lubricated sealed for life bearings shall not be used on any of the major crane components. Grease nipples shall be provided as defined in Clause 64.

39. Rope Drums

- 39.1 All drums shall be fabricated from weldable carbon steel and be machined after fabrication and stress relieving. The drum shall carry helical grooves to suit the diameter of wire rope shall be used and as specified in the design standard employed..
- 39.2 There shall be a minimum of 3 (three) dead turns remaining on the drums when the hooks are at their lowest point. The last wrap of the rope shall be fixed firmly and safely to the drum.
- 39.3 No more than one layers of rope shall be permitted on the drums for hoist system. At least one spare full wrap of the drums shall be available when the hooks are in the fully raised position.
- 39.4 A full width and depth drip tray shall be provided beneath each rope drum to catch and contain any rope lubricant spill.
- 39.5 All drums shall be mounted in roller bearings and fitted with fail-safe electro hydraulic or electro mechanical thrustors operating on a full wrap lined band brake/disc brake. The brakes shall be able to securely hold the design maximum test overload load of the individual winches. Provision shall be made to safely control the progressive release of such brakes to effect the lowering of any load.
- 39.6 The brake disc shall be integrated part of the drum.
- 39.7 The crushing stress on drums shall be limited to 0.6 fy.

40. Wire Ropes

- 40.1 Wire ropes shall be of the pre-formed non galvanised non-rotating type, 36,steel core (Seale Warrington type) of approved construction. The ropes should conform to IS standards applicable or international standards (ISO 2408 and ISO 4308) and be supplied in the pre-lubricated condition. FOS as per the classification/code shall be followed.
- 40.2 Wire ropes that are operated in pairs from left and right grooved drums shall be constructed to opposite hands. The rope ends shall be secured on each of the drums by means of bolted clamps, possibly located on the outside of one of the drum end plates/ on the drum in accordance with applicable standards. Each rope shall be made in one piece.

41. Rope Sheaves

- 41.1 The minimum pitch diameter of the sheaves and the groove radius and form shall be in accordance with the requirements of the crane design standard being employed. All sheaves (cast steel / Forged & welded) within a particular hoist system shall be standardized and fully interchangeable one with another. All individual sheaves shall be statically balanced. Bearing diameters for the sheaves shall be equal to or greater than specified within the design standard employed. Sheave bearings shall be mounted on sleeves as in IPSS -1-08-002-09/ FEM/ other relevant international codes.
- 41.2 The blocks and trolley sheaves assemblies shall permit easy and ready removal and replacement of individual sheaves, bearings and associated shafts with adequate and safe working space available in all cases. The individual sheaves shall be designed to allow ease of handling.
- 41.3 The sheaves shall be fitted with suitable covers and collectors to contain, as far as is reasonable, contamination of the surrounding structure and area beneath the crane from excess rope lubricant. The covers are to be fitted with inspection doors and be designed so as to offer minimum obstruction to the maintenance of the sheaves.

42. Blocks& Hooks

- 42.1 The main hoist hook is to be manufactured from high tensile steel and be of the Swiveling Ram's horn type to BS 3017 mounted on roller bearings and fitted with gravity type safety catches generally to BS 2903. Other international standards also acceptable. The hooks shall be manufactured from steel forgings. A protective skirt shall be provided to enclose the bearings. Necessary locking arrangement shall be provided in the hook to prevent slings slipping off the hook.

PART C: MAIN CRANE MOTIONS

43. General

- 43.1 The crane shall be provided with independent machinery units for Hoisting, Luffing, Slewing and Long Travelling, each operated by their independent motor(s) with PLC and VVVF drives. The crane shall be capable of performing all operations at a time.

44. Long Travel

- 44.1 When developing their designs for this element of the crane Contractor shall read this section in conjunction with details of crane rail and its loading.
- 44.2 The long travel machinery shall consist of a number of identical bogie mounted drive units installed at the corners of the portal leg structures. Typically the drive units will be powered by intermittently rated totally enclosed AC squirrel cage induction motor driving at least one crane wheel through a geared reduction drive. The total installed power shall be capable of moving the crane at 75% of rated speed into the maximum in-service wind. Reputed make Geared motor with Integral electromagnetic disc brake arrangement for maintenance free and compact design shall be used. DCEM brake shall be mounted on motor end
- 44.3 The drive units shall be provided with stepped VVVF control over the full torque/speed range available using joystick. Regenerative braking is to be provided for speed control under normal dynamic operation.
- 44.4 The motors of long travel shall be controlled jointly and synchronized. The travelling machineries shall be equipped with VVVF speed control system with closed loop speed control with encoder. The synchronous speed shall be obtained by input reference from joystick in the operation desk in the operator's cabin.
- 44.5 Each drive unit shall be equipped with an electro-magnetically released brake (DCEM disc brake) at the motor end capable of holding the crane in the stopped condition and providing emergency braking capabilities sufficient to stop the crane with the maximum in-service following wind and shall be rated 50% higher.
- 44.6 All brakes and motors shall be installed within weather proof covers provided.
- 44.7 A minimum of 50% of the rail wheels shall be driven and braked. Any open gearing shall be either contained within the bogie frames or enclosed within robust guards. Generous ground clearances shall apply in both cases. The drive and braking arrangement selected must allow movement of the crane by external means (in exceptional circumstances) without inducing any consequential damage. Clear spaces for movement both inside and outside of gantry legs shall be ensured while designing the system.
- 44.7 All crane wheels shall be of the double flange type. The wheels and gears shall run in low-friction bearings. Pinned connections on the crane bogie frames and any load equalizing structures can be mounted in plain, nonferrous bushes or as per supplier's standard arrangement. The loading on each group of wheels shall, as far as can be realized, be made equal.
- 44.8 Jacking hard points to the concrete surfacing of the crane track will be provided by the civil construction contractor to permit the safe jacking of the crane to allow bogie maintenance shall be performed. Jack plates/ Embedments, if required, shall be supplied by crane supplier. The crane supplier shall provide details of the jacking system being provided with in two month from issue of PO including.
- (a) The area of the base plate of the jack.
 - (b) The maximum anticipated vertical load on each jack (including for all potential wind loads).
 - (c) The "in plan" position of the jacking pedestals on the crane bogie and of the jack baseplate when jacking is undertaken.
- 44.9 Buffer blocks shall be provided at both ends of long travel tracks.
- 44.10 Audio & Visual (LED) alarms shall be fitted at eye height on the four ground corners of the crane shall be initiated whenever the long travel drive is selected. The crane movement itself shall be delayed by some seconds from the alarms to allow personnel and machinery to move out of danger. The audio & visual alarms shall operate continuously while the crane is in motion.
- 44.11 Crane supplier shall provide digital angle indication of the slew and the display shall be available in the operator cabin. When the jib is exactly parallel to the track facing west side, the angle shall be Zero Degree. When the jib is exactly parallel to the track facing east side, the angle shall be 180 Degree. 0- 360 Degree indications shall be made available. This requirement helps the operator to identify the position of the jib during parking.
- 44.12 The following interlocks and limit devices shall be fitted.
- (a) Following shall be provided for long travel

- (i) one operational limit switch (rotating cross-shaped or similar) for 2 positions (deceleration and stop on one side) and one emergency lever-type limit switch on each side of the crane long travel
 - (ii) one operational limit switch (rotating cross-shaped or similar) for 2 positions (deceleration and stop on one side) and one emergency lever-type limit switch towards opposite side of the crane long travel
 - (iii) one emergency lever-type limit switch on each side of the crane long travel
 - (iv) Additional interlocks can be considered by crane supplier if required.
- (b) Anti-collision device with laser technology shall be provided on both sides considering future cranes installed on same track
 - (c) Crane long travel motion shall be inhibited if the storm anchor pins are deployed, if the bogies maintenance jacking points and rail clamps are being used.
 - (d) Trip bars, trip plates or optical sensors are to be provided covering from near rail level to a height of 2 metre, positioned at each corner of the crane to cover the full width of the bogies in the direction of travel. They shall interrupt the long travel drive and apply the brakes if contacted or triggered by personnel or objects.
- 44.14 Four (04) sets of rubber type shock absorbing buffers shall be provided at the extreme ends of the bogies or rocker beams. Details of civil drawings of end stoppers for gantry trucks shall be furnished by crane supplier to facilitate the civil work from the side of construction contractor. Buffers shall be heavy duty hydraulic/rubber/oleo type as applicable. All materials in this regard shall be supplied by the crane supplier..
- 44.15 Rail sweepers shall be fitted to the leading edges of each outer bogie to clear the rails of minor debris.

45. Luffing Motion

- 45.1 The luffing motion of the jib may be operated either by luff screw or a multi sheaved rope system, and shall be powered by an intermittently rated AC squirrel cage induction motor.
- 45.2 In case of luff screw system, the luffing connecting rod shall be driven by the luffing motor through a friction or elastic couplings, reducing gear and screw.
- 45.3 The luffing motion control system shall be provided with a variable voltage variable frequency controlled drives over the full motor speed/torque range using joystick..
- 45.4 In case of rope luffing crane, the jib must be capable of being lowered to the ground for rope changing and maintenance.
- 45.5 As a minimum, the luffing system employed shall be duplicated for safety, such that in the event of one element of the system failing the remaining element(s) will be able to securely retain the maximum possible load/outrreach combination.
- 45.6 Two sets of failsafe brake assemblies shall be installed on the drive each provided with a positive mechanical link between the applied load and the brake components. (Two spring operated disc brakes with electro hydraulic thruster).
- 45.7 Lowering shall be automatically stopped if a slack rope condition is encountered.
- 45.8 Normal braking shall be regenerative, regulated by the control system, VVVF drives to provide smooth, 6 steps operation and mechanical brakes shall be applied further. An over-speed sensing system shall be provided that will automatically shut down the motion and apply the brakes if activated. The luffing machineries shall be equipped with VVVF speed control system with closed loop speed control with encoder. The synchronous speed shall be obtained by input reference from joystick in the operation desk in the operator's cabin.
- 45.9 The limits of luff travel in both directions shall be regulated by means of two sets of limit switches. This is for initially reducing the long travel speed to preferably 10% of maximum and further switching off of the drive and the brakes applied. As a safeguard against possible failure of the normal limit switches extra ultimate travel switch shall be installed and wired directly such that power supply gets tripped. After actuation of either of end limit switches, the luffing control system shall only allow movement of the jib in the opposite direction.
- 45.10 Mechanical stoppers shall be provided at both ends in the case of a luffing screw mechanism in addition to limit switches and structural buffers. Tonne-radius monitoring for both hooks, alarm and tripping shall be provided. Apart from the safety items mentioned any other safety requirements for the crane as per design code and crane classification shall be ensured by the supplier without any additional cost.
- 45.11 Emergency braking should be sufficient to quickly stop the luff motion with minimum shock in the event of over-travel interlock actuation, reaching the tonne-metre limit of the crane, mains power failure or the application of and Emergency Stop button.
- 45.12 The luff position of the crane is to be continuously monitored and factored with the hooks load information from the main

and auxiliary hoist to provide actual tonne-metre loading information. If the design value is reached at any radius the control system shall inhibit any further luff out and only allow the jib to be luffed in.

- 45.13 Tail portion of luffing connecting rod shall be protected. Luffing motor and brake shall be protected by steel cover case as applicable. Luffing screw rod and screw nut shall be suitably lubricated and front portion of screw shall be covered with oil tight telescopic steel cover. Luffing motor shall be inter-locked with forced lubricating system, to prevent from failure of lubrication as applicable.
- 45.14 In case of multi sheaved rope system, level luffing machinery shall be provided with the following main machinery components;
- One (1) AC motor, protection class IP 55
 - Two (2) spring operated disc brakes with electro-hydraulic thruster
 - One (1) gear reducer with hollow shaft mounted on the shaft of rope drum
 - One (1) rope drum with grooves for two wire ropes
 - For drum a round bar with limit switch to stop the machinery in the event that the ropes spring out from the drum grooves
 - Two (2) ropes
 - Bumpers at the A-frame to positively limit the inner boom position
 - Max. and min. outreach limit switches including slow down and additional over limit switches
- 45.15 Working radius indicator:
Luff radius indicator shall be provided and shall be of digital display type with sensor fitted in suitable place for easy maintenance. This shall be interconnected with loading of the crane for main and auxiliary hooks. Suitable warning and shut down facility shall be provided to prevent overloading and exceeding limits of radius of the crane. Luff-indicating system shall be reliable and of rugged construction.
- 45.16 Mechanical working radius indicator shall also be provided at a proper place on the revolving structure so that it is visible both from the cabin and the ground. The supplier can provide more than one mechanical working radius indicator also to meet the requirement of visibility from cabin and ground.
- 45.17 The Contractor shall identify the means adopted to comply with all the luffing operating and safety aspects as defined in this section.
- 45.18 Level of the hook shall remain unchanged (Level luffing within +/- 300mm) during luffing operation and when the hoisting is not operating.

46. Slewing Motion

- 46.1 The slewing equipment shall be arranged on the revolving frame. The crane slewing system shall consist of multiple, intermittently rated AC squirrel cage induction motors operating through reduction gear sets to rotate the superstructure assembly through 360 degrees relative to the portal base. The motor capacities shall be such as to enable the crane to be safely slewed in the event of the failure of one of the drive units.
- 46.2 The top revolving portion of the crane is to be supported on a large diameter slew ring bearing. The bottom half of this bearing is to be securely fixed to the top of the crane carriage and the top half is to be fixed to the underside of the revolving structure. The operation is to be with integral gear engaged pinions for obtaining necessary slew motion. The bearing is to be capable of dealing with all axial loads and overturning moments
- 46.3 Normal braking shall be regenerative, regulated by the control system, VVVF drives to provide smooth, 6 steps operation. The drive motors, or first stage gearboxes input shafts, shall each be fitted with electro hydraulic thruster brake. This brake shall be normally applied when the motor is de-energised (fail safe).
- 46.4 The slewing motion control system shall provide stepped VVVF control over the full torque/speed range available using joystick. The motor speed is to be co-ordinated with the jib luff position to ensure excessive load travel speeds and centrifugal forces are avoided.
- 46.5 The slewing machineries shall be equipped with VVVF speed control system with closed loop speed control with encoder. The synchronous speed shall be obtained by input reference from joystick in the operation desk in the operator's cabin.
- 46.6 Apart from the safety items mentioned any other safety requirements for the crane as per design code and crane classification shall be ensured by the supplier without any additional cost.
- 46.7 The crane shall be designed such that it is stable in all wind conditions including storm condition with the slew brake applied or slew locked with pin without the requirement of bringing the jib to ground level.

- 46.8 Crane supplier shall provide digital angle indication of the slew and the display shall be available in the operator cabin. When the jib is exactly parallel to the track facing west side, the angle shall be Zero Degree. When the jib is exactly parallel to the track facing east side, the angle shall be 180 Degree. 0-360 Degree indications shall be made available.

47. Hoists

- 47.1 The hoisting equipment shall be arranged in the machinery room. Separate drum systems shall be applied as mechanism for main and auxiliary hooks.
- 47.2 The main hoist machinery shall consist of a winch driven by an AC squirrel cage induction motors through an enclosed reduction gearbox driving the rope drum. Normal braking shall be regenerative and regulated by the electrical control system, VVVF drives to produce smooth stepless electrical braking.
- 47.3 A rope tension or drum torque measuring devices shall be provided on all winches to provide continuous load indication readout to the operator's cab. The hoists shall automatically apply load matching counter torque to the drums immediately prior to brake release, whether for further hoisting or lowering, to prevent load snatch. Lowering shall be automatically stopped if a slack rope condition is encountered.
- 47.4 Normal lowering operations shall be by means of regenerative braking so as to provide continuously variable speed control. In addition the hoists shall be equipped with two (02) nos spring operated disc brakes with electro-hydraulic thrustors with hand release arrangement able to bring a lowering load, up to and including the test load, to a complete and smooth halt in the event of mains supply power failure or the application of an Emergency Stop button and safely hold the load at any position of the lift during normal operations.
- 47.5 The winches shall each be fitted with an over-speed monitoring and prevention system able to apply the brakes to control the load if necessary. Additionally, the driver's cab shall be provided with readouts depicting either the rope or the hook speed for each winch. Suitable over speed sensor on rope drum to stop when hook speed exceeds 10-15% of the rated speed to be provided.
The brake systems (all primary brakes together) shall/be designed for at least 3 times the hoist load. Safety for emergency brake (at rope drum) shall be 2 times the hoist load. The rating of brakes shall also meet the codal requirements. There shall be a positive mechanical link between the winch component that generates the braking effect and the supported load.
- 47.6 The winch barrel shall be fabricated in steel and flanged at the ends. The ropes shall be accommodated in one layer and have at least three unclamped wraps remaining on the drum when the rope for normal operations is passed out. The drum shall have one full wrap available when for normal operations the rope is fully wound in. An over-speed switch shall be fitted to the drum that, in an over-speed condition, will shut down the motion drive and apply the brakes.
- Operation of the hoist motion shall be regulated by the following limits and interlocks:
- (i) The upper and lower limits of the hoist motion shall have normal slow down and stop limit switches. The switches shall be wired into the control circuit. To safeguard against failure of the normal limits an over hoist and lower limit shall be provided at a short distance beyond the normal stop limit and be wired into the main hoist contactor for tripping.
 - (ii) There shall be fitted a limit switch to stop the machinery if the rope has come out of the rope grooves on the rope drum;
 - (iii) There shall be fitted a limit switch to stop the machinery if, with the hook on the ground, there is less than 2 turns of rope remaining on the drum.
 - (iv) Apart from the safety items mentioned any other safety requirements for the crane as per design code and crane classification shall be ensured by the supplier without any additional cost.
- 47.7 The operation of the crane shall be so designed that a stepped variable speed with variable voltage variable frequency control over the full torque / speed range using joystick with micro positioning of the loads are possible. A drum speed indicator calibrated in m/min shall be fitted in the view of the driver. The control system is to include a full range of safety functions that, when activated, will cause the machinery to be switched off and the mechanical brake to be applied.
- 47.8 The control system shall sense the load and controls speed of the motors. The hoisting machineries shall be equipped with VVVF control system with closed loop speed control with encoder. The synchronous speed shall be obtained by input reference from joystick of the operation desk in the operator's cabin. At heavy loadings the full speed shall be determined by the AC squirrel cage motor torque-speed curve. Independent operation is required for main and auxiliary hoists. Speed changing shall be interlocked with the load limiter and achieved by inverter control unit. When the load is more than half the rated load, hoisting speed shall be controlled at low speed.
- 47.9 The Contractor shall identify the means adopted to comply with all the luffing operating and safety aspects as defined in this section.

PART D: ELECTRICAL EQUIPMENT

48. General

Regarding electrical design and installation requirements IS/IEC shall be followed. In addition, requirements mentioned in FEM, CEA Regulation and Indian Electricity Act shall also be followed. The electrical equipment (motors, PLC, VVVF drives, HMI, Encoders, controls, switches, safety devices, panels, etc.) shall be designed for safe and satisfactory operation under conditions of temperature and moisture as indicated in the main particulars.

All electrical equipment shall be located for ready accessibility for maintenance, repair and removal. All electrical equipment shall be protected, by means of installing them in closed casings when needed, so as to exclude accidental contact.

49. Power Supply

- 49.1 An isolation device (MCCB or ACB) with IP protection Class IP 56 shall be provided at ground level in crane to allow isolation of the crane from the incoming supply. It shall be possible to lock off this isolation facility. Additionally all motion drives and all auxiliary circuits shall similarly be equipped with MCCBs to be located on the crane.
- 49.2 All electronic and electrical equipment shall be adequately protected from the effects of multiple transient voltages, either in the power supply itself or from lightning strikes etc. Screen and armoured cable, lightning arrestor, surge protectors, isolation of signal and power cables, separate power and signal earthing system, etc. to be used. The Crane Supplier shall provide full details of the protection system(s) to be installed during detailed design stage.
- 49.3 Lightning arrestors shall be provided at the upper extremities of the crane and the crane structure shall be electrically bonded to the rail. Use of the long travel bogies and wheels as the conduction path is not permitted. Contractor shall provide full details of the system.
- 49.4 All power distribution cables employed on the crane shall be of adequate size as per calculations and grade with approved insulation and sheathing.
- 49.5 All cables used shall be copper and minimum size of power cable shall be 2.5 sqmm. All fixed cables, power and control cables, operating at > 110V shall be armoured type. All fixed control cables operating at < 110V shall be armoured/shielded type. Signaling cables shall screened type or as recommended by OEM of field signaling Device. Multicore cables shall be used in all cases. Fire retardant low smoke low halogen cables shall be used in the case of power cables. In the case of 415V fixed power and control cables, voltage grade shall be 1.1KV. The conductors shall be made from high conductivity copper complying to applicable IS. Flexible cables shall not be used. Flexible cable shall be used only in those specific locations where armoured or shielded cables could not be used and the same shall be with the prior approval of the third party inspection agency. The decision of CSL would be final in this regard. In fixed installation, the cables shall be fastened on galvanized cable ladders and trays. Cable ducts are also permitted for laying cables. Cable selection (sizing) calculation, voltage grade, type of cable selected along with standards considered shall be submitted for approval during detailed design stage. The clamping of cables in cable trays and ladders shall be done with suitably sized PVC or rubber insulated stainless steel bands and clamps. In cable ducts, cables shall be suitably supported/clamped. GI pipes or other mechanical protective methods shall be provided where there is a risk of mechanical damage to the cable. All cable terminations shall be made through suitable watertight glands. PVC glands shall be avoided to the maximum possible extent. Design provisions shall be made to minimize the probability of condensation occurring at any point in the electrical installation whether in conduits, junction boxes, control cabinets etc. Crane supplier shall ensure that the cable used outside shall be suitable for external use without any damage to insulation. In the case of electronic circuits, suitable voltage graded cables shall be used. In the case of connections between central units and I/O units, shielded twisted pairs, coaxial cable or optical fibre cables shall be used. Care shall be taken to avoid interference resulting due to power cables with communication cables. CCTV and Fire Detection and Alarm System cables shall be suitable for its indented application.
- 49.6 Earthing: Earthing of the crane shall be done with copper only in view of saline conditions prevailing at site. Grid earthing using suitably rated earth strips shall be provided for the entire structure of the crane as per design standards and codes followed. Earthing of electrics shall be done using suitably rated copper strip/bare copper/copper cable. Double earthing shall be provided for all electrics including panels, motors, safety devices, brakes, junction boxes, limit switches etc. All metallic glands used shall be earthed. Details of earthing with sizes shall be submitted for approval during detailed design stage. Copper strips used for earthing shall have purity >99% (Test certificate shall be produced in this regard)
- 49.7 Small wiring in control cabinets and consoles shall be made up into replaceable harnesses.
- 49.8 All electrical cables and all wiring shall be clearly marked to coincide with the wiring diagrams to be supplied for all systems by the Contractor.

50. Fire detection and fire fighting equipments

- 50.1 The supplier shall provide a smoke detection and alarm system in VVVF control panel rooms and operator cabin. The system shall be connected to PLC to enable isolation of power supply in case of fire.

- 50.2 A bracket mounted 10 kg CO₂ portable fire extinguisher shall be provided within easy reach inside each entrance and electrical room. A 3.0 kg portable CO₂ fire extinguisher shall be mounted in the cab within easy reach of the driver.
- 50.3 VVVF control panel rooms temperature shall be displayed in the Operator's cabin HMI through a temperature transmitter separately. As a part of the civil contract, a fire & gas detection and alarm system is planned for the new dry-dock area and the same would be announced in the Safety and Fire Department. The civil contractor will provide the F&G panel either in pump house control room or in the corresponding underground substations (Substation A or C). The crane supplier shall supply and install wireless transmitter and receiver along with potential free contact and its power supplies in consultation with the civil contractor. Civil contractor will provide wiring from potential free contact to their module.

51. Digital Closed Circuit Television (CCTV):

For watching and observing any obstacles, the crane is to be provided with CCTV system. The CCTV system has following features and components;

- (i) 5 nos. of camera suitably located as below
 - 1 no bullet camera 2MP to see rails, its inside and outside area in forward direction.
 - 1 no bullet camera 2MP to see rails, its inside and outside area in reverse direction.
 - 1 no PTZ camera 2MP at jib to see the load handled
 - 1 no PTZ camera 2MP to see movement of Goliath crane preferably located outside machinery house of the crane
 - 1 no bullet camera 2MP to see the area between long travel boggies
- (ii) CCTV system rack
- (iii) CCTV control board
- (iv) 15 inches color monitor installed inside of operator's cabin
- (v) Single and multi-displaying
- (vi) Cabling
- (vii) Recording facility is required for 2 weeks

52. Electric Motors

- 52.1 All motors shall be AC squirrel cage, 415V, 50/60Hz, copper wound induction motors suitable for speed control by variable voltage variable frequency drive. The electric motors fitted to all the crane motion drives shall comply with relevant Indian standards. All motion motors shall be suitable for operating with VVVF drives and frequency shall be 50Hz/60Hz. All motors for motion shall be IP55, Class F. CDF and duty shall be as per Codes and classification requirements followed for the crane. The supporting documents pertaining to CDF and duty as per Codes and classification shall be provided during document submission stage after award of contract. Necessary approvals shall be obtained from CSL/CSL Representative(TPIA) in this regard. Irrespective of IP grading, all motors located outside shall have protective covers. Winding temperature detector & over temperature protection and anti-condensation heater shall be provided for main motors. Main motor means that the motors used for main motion such as all hoisting, luffing, slewing and travelling. Over current and earth fault protection shall be ensured for all motors.
- 52.2 The hoist motors shall be capable of withstanding an over speed of 15%.
- 52.3 All motors shall have their windings suitably impregnated to withstand tropical duties and to insulation Class F suitable for variable frequency variable voltage drives.
- 52.4 Type of motors – AC squirrel cage induction motor suitable for speed control by VVVF drives.

53. Limit Switches and External Interlocks

- 53.1 All limit switches shall be of robust construction and totally weather proof. The crane shall be provided with the limit switches (heavy duty/ crane duty) and interlocking needed for safe operation and maintenance of the crane. Proper logical safety interlocks shall be provided as per the rule requirements, design codes, safety standards and classification of the crane and as specified elsewhere for Level Luffing Single Jib Crane. Such interlocks shall ensure 100 % failsafe mechanisms and safe and smooth operations of the crane and its machineries.
- 53.2 All motions of the crane shall be protected from over travel by means of limit switches as specified elsewhere. All the field elements associated with the control shall be of minimum IP 56 grading. Additional canopy shall also be provided for field devices installed outdoor.

54. Control Equipment

- 54.1 The main machinery house shall be suitably ventilated. The Operator Cabin and electrical rooms where PLC & drive panels are installed(E-house) shall be air conditioned. E-house shall have air conditioner with ducting system with inbuilt temperature sensor in E-House which shall control the On/Off of compressors kept outside of E-house. In the Operator cabin split air conditioner shall be used. The temperature shall be adjustable between 18°C to 26 °C. The cooling capacity shall be based on full load conditions and for an outside maximum ambient temperature of 45 °C under full sun radiation and an outside maximum humidity of 95%.Heat load calculations shall be submitted for approval during detailed design stage. The crane heating, ventilation and air-conditioning systems shall be part of the lighting and auxiliary circuits, and thus

independent of the main machineries.

55. Programmable Logic Controllers,HMI and VVVF Drives

55.1 The PLC shall handle all crane control functions except the emergency stop and utility circuits. PLC shall be capable to handle Digital I/Os and Analog I/Os. There shall be a minimum of 25% spare I/Os (digital and analog) available on the system itself after successful commissioning of the crane. Make and model of the PLC shall be mentioned in the technical bid. The PLC system configuration shall be also designed for drives controls and special functions for synchronized common drives. Modern and efficient Programmable Logic Controllers (PLC's) shall be employed for all drive sequencing and system interlock functions interconnected and networked with each other with a formally organized and structured standardized communication system. CPU shall be the higher end one of the respective OEM. All components of the PLC's shall be suitable for extended industrial use within the particular operating and climatic environment applicable to this crane. Power failure protection shall be provided to ensure continued safe operation. UPS (Minimum 1 Hr rating) shall also be provided for PLC, drive control unit and HMI. Redundant PLC with automatic change over or hot swapping facility shall be provided. In case crane supplier is providing hot swapping facility PLC with final program shall be handed over to CSL. The memory capacity shall be sufficient to contain control algorithms for more than one function and space shall be available to extend the memory to support future developments. The PLC I/O ports shall have provision for adding additional I/O in the future. In this regard, spare I/O slots shall be available in the system. The PLC's shall be provided with programming and monitoring facilities for maintenance and fault logging. Self-diagnostic capability shall be incorporated in PLC both on line during operation and when powered up. All faults shall be visually displayed and signaled by the sounding of an audible alarm, with mute facility, within the driver's cab. There shall be provision for data storage facility, data transfer facility with open protocol to the laptop(crane supplier's scope) from PLC room and Operator's cabin. The PLC program shall be based on standard programming language preferably ladder logic. Crane supplier can use latest language also. Crane Supplier shall provide suitable training/support to CSL Engineers during/after commissioning to diagnose the fault & troubleshoot the fault, modify to add interlocks, etc. Only authorized users shall be permitted access for program amendments. The parameters shall be viewable without password. The PLC shall have internal hardware and software supervision checking. When a fault is detected, all outputs shall be set to zero and the program execution shall be stopped having an emergency stop as the result. All critical communication links shall have time out supervision. If the time between two acceptable incoming messages is too long an emergency stop shall result. The PLC system shall receive all operator's control signals, limit switch signals and the protection and status signals from the drive and field controls. It shall perform the logical control functions and transmits the control signals. Analogue inputs shall include load measuring device, temperature transmitter in control room, wind speed monitor, etc. The central unit of the PLC shall be located in an enclosure in the electrical control room. Programs and logic incorporated shall be disclosed and discussed with CSL during the commissioning and required changes as per the job specific applications shall be incorporated in the program during commissioning. Unless it is critical for the safety of crane, no other parts of program shall be locked. Password used for locking, if any, shall be shared to CSL. PLC programming shall be ensured for entire safe operations of the crane including avoidance of possible man made mistakes. Critical interlockings shall be double ensured in various levels. All the analogue signals connected to the PLC shall be converted and displayed in the HMIs. Separate load cum radius indicators display units are required in Operator's cabin. Required media converters, interfacing cables and media shall be considered open protocol scheme.

55.2 Operator's control device:

Operator's desk shall be provided with crane motion controllers, buttons, indication lamps, fault reset, HMI, rail clamp operation switches, lighting switches, emergency stop, control on/off, meters, etc. The arrangement/ positioning of joystick shall be similar to the existing LLTT cranes in the yard. All windows shall be accessible from inside cabin for cleaning. Dust and water tight seal shall be provided for windows and door of operator cabin. Toughened glass shall be provided for operator cabin.

55.3 HMI:

Size of the HMI shall be minimum of 15 inches and shall be provided separately as a touch screen system in Operator's cabin in addition to Crane Management System. HMI shall be capable to communicate with the PLC processor in open protocol and capable to handle all I/Os including analogue ones. Mimic panel of the crane shall be considered in the master display and subsequent screens shall be linked to the same for intuitive operation of the operator ergonomically from the seat. HMI shall be positioned suitably for the same. Alarms and fault history, operational status of machineries, all interlocks including limit switches, temperature of drive and PLC room, Operator room, anemometer speed, drive status-eg. Current, speed, voltage and failure etc. shall be displayed in HMI. Prior to the testing of the crane, screen details shall be shared to CSL for suggestions and any such suggestions from CSL shall be incorporated on the system without any omission and without any price implication. Finalization of screen presentation and list of items for display are the sole right of CSL and shall be complied in full by the crane manufacturer.

55.4 Drives and Controls:

The drive system shall comprise of separate converter and inverter system for each of the motions. The converter system shall comprise of AFEs. The regenerative power shall be fed back to CSL power system. The crane supplier shall design the system such that the regenerative power shall be fed back to CSL power system smoothly. All inverters shall be heavy duty, vector type catered for crane application with suitable firmware. The heavy duty current rating of the drives shall be 1.25 times of the motor rated name plate current or as per calculations and standards, whichever is higher considering ambient temperature of 45Deg C. 150% overload for 60 seconds and 200% overload for 3 seconds shall be ensured. The electrical drive controls shall provide power for the rapid and precise handling of lifting hooks by use of variable speed

control system for hoisting, luffing, slewing and travelling motions. The AFEs shall maintain TDH <5% at input power side. AFEs shall be selected considering negative supply voltage tolerance also. Each motion drive shall be provided with HMI for reading parameters like I, V, load, speed, etc and suitable communication modules for communication with control system. HMI system shall be capable to uploading and downloading parameters, hot swapping, etc. The drive units shall be located in the electrical control room in enclosures. All motions shall be controlled with speed feedback encoder as closed loop vector inverter control. The joystick shall generate a signal, which shall be led to the control unit. The control unit shall feed the motor with a frequency controlled by the signal from the joystick and with a voltage, which is dependent on the frequency.

55.5 Safety functions of the AC motor VVVF control:

The control system of VVFDs shall include detection of drive own faults. Each of the faults when detected shall cause the mechanical brake to be closed and the movement to be stopped. The faults shall be indicated on the inverter fault indicator such as LCD/LED keypad. The faults detected shall include the following as applicable:

- Speed supervision, over-speed, stall
- Supervision of currents in motor circuits, over current, earth fault
- Voltage failure, overvoltage, under-voltage, one phase missing
- Inverter and communication failures
- Reference value failure, failures in speed reference circuit
- Temperature failure, motor over-temperature, inverter over-temperature
- Interference and component failures

Any additional requirements as per design codes, standards, classification, rules shall also be provided

55.6 Tuning of drives:

Drives shall be tuned for maximum parameterization in order to obtain smooth and safe operations. Commissioning Engineer shall have in depth knowledge or well conversant service engineers shall handle the tuning the drives by considering the firmware for crane applications. Curves of acceleration and deceleration shall be considered for optimal tuning and perfect smoothness in the operation shall be obtained.

56. Main Switchboards, Motor Controls and Distribution Boards

56.1 All cabinets shall be considered and designed in line with industrial standards with good quality sheet metals, powder coated, quality workmanship and complying with the rules and guidelines. Statutory clearances as per CEA regulations shall be maintained around the panels.

56.2 As a minimum the following instruments shall be provided in a readily visible location(s) within the main control panel(s):

- a) A non-re-settable "hours run" meter for each of the main crane drive systems.
- b) Voltage and ampere meters monitoring the incoming supply shall be provided. KVAR and Kilowatt-hour meters for the complete crane shall be provided.
- c) Harmonic filters to be provided.

All power, control and communication cables shall be labelled as per standards. Rubber mats as per latest IS shall be provided in front of all panel boards.

56.3 Low voltage distribution centers and drive panels

General: The low voltage distribution panels shall include the switching and protecting devices needed to divide and feed the power coming to the drives, control circuits and servicing appliances of the crane. Isolation arrangement (MCCBs) to all drives and individual drives shall be based on design codes, standards, safety and operational requirements. Additional semiconductor fuses, as required, shall be provided based on the design. Where multiple motors are connected from single inverter, isolation facility and thermal overload relays shall be provided before feeding power to individual motors from inverter. The essential services shall remain operational when the powers to drives are disconnected.

- Air Conditioned Room: IP22 shall be provided for drive and PLC panels.
- Indoor switchgear panels: IP52
- Outdoor panels: IP56

56.4 It is the responsibility of the crane supplier to keep temperature rise of all equipments within limits.

56.5 Chances of direct contact with electrical and control systems components including drives shall be fully avoided. The IP of control system field elements located outside shall be minimum IP56 or above. In the case of distribution boards of very low power and fault level, MCB shall be used.

56.6 All cabinets shall be designed with heaters, air circulating fans and/or air conditioning as required and specified to ensure that the possibility of condensation occurring within them when in or out of service is avoided and that the maximum operating temperature of installed components and equipment is not exceeded.

56.7 The electrical room shall be enclosed and positively pressured to preclude dust and dirt entry.

- 56.8 Control gear for the main crane motions shall include “hours run” meters, circuit testing capabilities and fault indication equipment keeping in view the requirement that fault can be easily isolated and pin pointed. Any such faults arising shall be relayed to a conveniently located central fault indication panel able to identify the motion in which the fault has occurred. A general fault signal shall also be provided in the drivers cab. HMI requirements mentioned shall also be followed.
- 56.9 The enclosing cabinets shall be fitted with automatic-on internal lights activated when the door is opened. All openings and glands shall be adequately sealed against the ingress of dust.
- 56.10 A wiring diagram of the specific cabinet components shall be provided on the inside of the cabinet doors.

57. Wiring

- 57.1 Where the control system wiring or similar vulnerable means of transmitting electrical or electronic signals are run through the crane structure, access panels shall be provided for the inspection and maintenance purposes.

58. Crane Management System

- 58.1 A Crane Management system shall be proposed by the Contractor. This system shall at a minimum comprise the following elements:
- (a) Crane Operations Monitoring & Management.
 - (b) Crane Fault Monitoring, Diagnosis and Rectification.

Crane Operations Monitoring & Management

For the first level each drive includes a LCD/LED display indicating the state of the drive. All drives shall be provided with diagnostic functions of the drive controller with LCD/LED keypad. The second level shall be executed in the PLC and displayed in the operator's cabin in HMI. The information shall be presented through different screens. The system shall monitor & record all movement and lifting operations undertaken by the crane. In particular it shall record problems caused by all operations errors e.g. excess loads being presented to any hoist, driver error - e.g. indicating the wrong height of lift when assessing whether winds are within in-service limits; moving controllers from rest to maximum instantaneously and relying on the ramp functions to control hoist speeds.

The Management element of this system shall permit fine tuning of control systems to improve performance or economy of operation. Access to this element of the system shall be security coded such that major changes must be authorized by an Engineer keying in his \ her personal code.

Crane Fault Monitoring, Diagnosis and Rectification

Circuit Diagnostic Facility - A comprehensive installation of circuit monitoring shall be provided as an integral part of the control equipment. This shall be designed to provide circuit testing and rapid fault finding. This Facility shall give full details on a test board in the PLC room and a fault indication in the operator's cabin. It shall cause the crane to stop, if the condition so warrants. It shall in any case warn an operator that either a serious fault that needs urgent attention or a lesser fault, that can be attended to later is present. All alarms and faults shall be displayed. All events eg..operation of limit switch and all other safety devices including anemometer shall be displayed. Fault and diagnose messages shall involve drive control internal, motor, interlocking and communication problems. The fault and diagnose messages shall be stored in a memory and are displayed in the order of occurrence.

59. Communications

- 59.1 Telephones shall be provided within the drivers cab, electrical rooms, within the machinery house and at the portal base adjacent to the access stairs.
- 59.2 The driver's cab shall be provided with amplifier, microphone/loudspeaker and microphone/transceiver system so that he can communicate readily with people on the ground and on board ships alongside the basin wall. Foot switch with siren shall also be provided.

60 Lighting

- 60.1 All lights shall be LED type and suitable for crane duty application. All main light fittings shall be provided with anti-vibration mountings. All lights and lamps shall be readily and safely accessible for replacement. The floodlights shall be positioned to allow such replacement be undertaken during normal crane operations safely, without the use of temporary platforms or scaffolding. Walkways and floodlights shall have provision to control from the driver's cab and from selected access locations on the crane depending on the movement of man and material. All main lighting circuits shall operate on 240 V, 50 Hz supply. UPS system with battery backup (for 2Hrs) and independent emergency lighting circuit shall be provided to

enable personnel to safely exit the crane in the event of a total mains power failure. This emergency lighting shall give sufficient illumination in accessible areas of the crane including stairways, Operator cabin, electrical control room and machinery room.

60.2 Red dual LED aircraft warning lights (IP67) shall be fitted at the jib top and swing lever top at the highest point in accordance with the FAA Regulations applicable to the site. These aircraft warning lights shall be provided with continuously charged standby batteries, or other approved power source whereby the lights shall remain fully illuminated for a minimum period of 36 hours in the event of failure in the mains power supply to the crane. The mountings shall be of the anti-vibration type to give an overall lamp life expectancy of more than 20,000 hours.

60.3 Sufficient illumination shall be provided on all ladders, stairs, walkways and platforms. They shall be rough service, anti-vibration type. Lighting in the electrical control room and operator cabin and for maintenance activities shall maintain an illumination of 300 lux. 6nos 400W (minimum) light fittings shall be provided in the fixed portion of slewing frame and 12nos of 400W (minimum) light fittings shall be provided for jib. 6nos of 400W (minimum) spot lights shall be fixed on slewing part focusing to working area and jib tip shall be provided with 4nos of 400W (minimum) spot lights. Stainless steel chain locking arrangement shall be provided for spot lights. Gantry lighting shall be provided with Four (04) numbers of minimum 250 W LED floodlights on each corner of gantry to illuminate the travel rail. IP grading of light fittings open to weather shall be minimum IP 66.

Note: Higher wattage based on availability can also be used without changing quantities of light fittings.

61. Socket Outlets

61.1 A range of socket outlets with plug tops are to be provided within the machinery house and driver's cab and at suitable locations inside and outside the crane structure as follows:

(a) 240 V, single phase, Min 20A, 50 Hz supply:

- 2 nos - inside driver's cab
- 2 nos - inside electrical control room
- 2 nos - inside machinery room
- 2 nos - in crane tower/post

(b) 24V DC:

- 1 Nos - inside Operator's cab
- 1 No - inside machinery house
- 1 No- inside each electrical control room

(d) 415 V, 3 phase, 50 Hz, 63A- Welding Set Supply:

- 2 Nos- inside machinery house

All power outlets shall be protected with circuit breakers. Proper earthing shall be provided for power outlets.

62. Shore Power Supply and Other Power Supplies

The crane shall be equipped with 415V, 50Hz, 4 wires with earth system plug/socket arrangement to enable the alternate supply of shore power able to sustain all essential power such as for anti-condensation heaters, aircraft warning lights, access lighting and driver's cab control functions. . Necessary interlocks to avoid back feeding shall be arranged for this alternate power supply. This supply is intended in case of power failures over a long period. Other voltages shall be as below.

Aux. appliances - 415V (3ph) or 240VAC, 50 Hz

Lighting-240VAC, 50 Hz

Control voltage -110V/24V AC/24 V DC. If design standards/code/rules/regulations/classification demands a particular voltage, the same shall be followed. Hand lamps shall be 24 V AC, 50 Hz

PART E: HYDRAULIC EQUIPMENT AND LUBRICATION REQUIREMENTS

63 Hydraulic Equipment

- 63.1 Where fitted, hydraulic systems shall be designed and installed in accordance with applicable Indian Standard or DIN 19705 or similar to provide smooth, controlled operation. Pipe diameters shall be generous and pressure relief valves are to be fitted at all necessary locations to avoid over pressure situations. Pressure gauges shall be installed on all systems as required. All piping shall be amply supported to prevent vibration and all radiuses and bends proportioned to minimize the likelihood of cavitation. Bleeding points shall be provided at high points in each system and the necessary bleeding sequence instructions provided in the maintenance manual.
- 63.2 Oil reservoirs shall be of generous capacity, baffled internally to minimize surge and fitted with magnetic drain plugs. They shall be vented to atmosphere through filtered breathers with desiccants and water drains shall also be provided.
- 63.3 The reservoirs shall have clear identification label showing fluid specification.
- 63.4 The maximum permitted oil hot spot temperature within any reservoir shall be 60°C.
- 63.5 Pump flow and return lines are to be fitted with full flow filters of 10 microns filter capability or better to suit the components employed. Filters shall be fitted with pressure drop blockage indicators and integral bypass as elements of the control/alarm system.
- 63.6 The Contractor shall provide catch trays or similar such that wherever hydraulic fluids are to be bled or drained from the system, the resultant releases of hydraulic fluid can be captured and removed from the crane without spillage occurring such that they can be disposed of in a controlled manner.
- 63.7 Where possible hydraulic cylinders shall be parked in the retracted position and fitted with both pressure and wiper seals for the exclusion of dirt. If possible short stroke cylinders shall be fitted with gaiters.
- 63.8 All design use of hydraulic components must comply with manufacturer's recommendations.

64 Lubrication

- 64.1 Wherever possible all regular, routine lubrication requirements shall be automatic. Interlocks of lubrication system shall be connected to PLC and HMI. All individual grease lines shall be labelled indicating the item being lubricated.
- 64.2 Ideally the lubrication sequence should be initiated either at crane start up or immediately following crane shut down. In the event of continuous crane operation without clearly defined shut down and start up activities, lubrication shall be triggered by a timer system.
- 64.3 Where manual lubrication is retained all grease nipples etc. shall be brought to convenient and accessible central locations.
- 64.4 Lubrication and oil fill points shall be clearly and permanently labelled with the type of lubricant to be used. A list of all recommended lubricants and oils required for the crane shall be submitted to the CSL/ TPIA/Engineer approval that these lubricants and oils are all readily available from stock within India. The Contractor shall be responsible for the first fill of all lubricants and for ensuring that the crane is correctly lubricated in all areas before commencement of testing and commissioning activities.
- 64.5 All pressure lubricated machinery shall be provided with renewable oil filters equipped with pressure drop blockage indicators.
- 64.6 To the extent practicable, the supplier shall provide catch trays or similar such that wherever Lubricants including greases and oils are ejected or otherwise removed from the system concerned, the resultant releases of the greases and oils can be captured and removed from the crane without spillage occurring such that they can be disposed of in a controlled manner.

65. Piping of Hydraulic and Lubrication Systems

- 65.1 Where pipe systems carrying hydraulic fluid or lubricants are run through the crane structure, access panels shall be provided for the inspection and maintenance purposes. All surface runs, whether exterior or interior, shall be adequately protected from accidental damage.
- 65.2 Each isolating valve shall be lockable.
- 65.3 Each pipe and hose shall indicate direction of flow and fluid identification.

PART F: MISCELLANEOUS REQUIREMENTS

66. Machinery House

- 66.1 The machinery room with sufficient area shall be located on the revolving frame in which hoisting mechanism and each electrical device shall be equipped in order. The machinery room shall be closed and of all steel construction with steel or aluminum framed windows and doors. Ventilation fans shall also be provided as applicable.
- 66.2 The main hoist and luffing machinery, together with the main electrical control panels shall all be housed in weatherproof steel framed and steel clad machinery house mounted on the slewing superstructure. Care shall be taken to ensure that where the ropes pass through the wall or roof of the enclosure they are protected from damage and the aperture shall be weatherproof. The electrical control panels are to be contained in one or more room with the mechanical equipment in a separate room. Access between the two rooms shall be through a lockable door. The machinery house in which hoisting mechanism and electrical device are located shall have provision for easy handling of parts/components by monorail with hoist of suitable capacity, to enable inspection and repair of each machinery.
- 66.3 The machinery house shall have two personnel entrances. Both doors shall be half glazed with wired glass and fitted with locks. Two 10 kg CO2 portable fire extinguishers shall be provided on permanent brackets close to floor level, one at each entrance
- 66.4 The machinery house shall be force ventilated through a filtered intake if such a measure is necessary to maintain ambient temperature within permissible limits. The ventilation system shall be designed to ensure low noise level and for comforts of the technician during maintenance works or while the crane is in operation. Air filters shall be easily accessible and readily replaceable.
- 66.5 A fenced double trap door shall be provided in the floor for maintenance purposes. An alternative to this could be suitable arrangements for the removing and replacing of machinery items (excluding drum) through the hatch at roof of the machinery house. The aperture shall be large enough to pass the largest individual item of machinery to cope level.

67. Operator's Cabin

- 67.1 The operator's cabin shall be located in front of the revolving frame at a level to ensure clear view of the load and handling area. Access shall be from weather and waterproof naturally and artificially lit platform. or staircase, not a near vertical ladder. Ladders can be provided when passing the slewing bearing area. Access to the operator's cabin shall be provided without the need to enter the rooms housing the electrical control panels or the machinery room.
- 67.2 The cabin shall be closed and weatherproof of all steel construction and provided with steel/aluminium framed windows and a door. Windows shall provide unobstructed view. The cabin roof shall be provided with necessary ceilings to reduce temperature. The minimum clear unobstructed height within the cabin shall be 2.2 m above floor level. The minimum clear unobstructed height of the door shall be 2.0 m over any sill provided. The floor shall be covered with a suitable non-slip finish capable of easy cleaning out.
- 67.3 The operator's cabin shall be air conditioned as specified. The front window and the windows on both sides shall have ultraviolet sheltering glass, sliding/ opening and fixed with protection bars. All glazing shall preferably be capable of being opened adequately or fully turned for ease of cleaning from the inside of the cab and should be tinted as necessary to minimize solar gain and provide ultra violet filtering. Any glazing not accessible for cleaning from the inside of the cab shall be provided with secure external access platforms, walkways and ladders as appropriate.
- 67.4 The operations of hoisting, luffing, slewing and travelling shall be controlled from the cabin and shall be provided HMI indicating operation status including status of safety devices, fault status and resetting provision All the controllers and other equipment necessary for operating the crane shall be arranged so that the operator can control accurately and quickly without leaving his seat. Regarding master controller, encoder based Joystick of reputed makes shall be considered. Joystick of luff and slew shall be positioned at right hand side and Joystick of hoist and long travel shall be positioned at left hand side of Operator console. Make of joystick shall be approved by CSL/CSL representative.
- 67.5 The cabin shall be furnished with an electric fan and a fire extinguisher, electrically operated wiper.
- 67.6 The driver's seat shall be comfortable, ergonomically designed and upholstered in a material suited to the climate. It shall be fully adjustable, fore & aft, up & down and 270 degree rotation.
- 67.7 The main crane functions shall be operated by means of joystick, switches, buttons etc. situated on or in close proximity of the chair arms.
- 67.8 The inside of the cab shall be shaded from direct sun as far as is operationally reasonable and a separate, false, overhanging canopy roof shall be provided.

67.9 All electrical contactors, relays etc. within the cab shall be collectively mounted within a single sheet steel enclosure fitted with a locking door.

67.10 A 3.0 kg portable CO2 fire extinguisher shall be mounted in the cab within easy reach of the operator.

68. Safe Load Indicator

68.1 Safe load indicators for the both hoists shall be fitted in the operator's cab providing information on the loads on each hoist. A visual indicator and audible alarm shall be provided to advise once 95% of the designed working load for any hoist has been reached. The operation shall be inhibited in the case of overloads and only lowering shall be possible. Load indicator shall be digital display type with adequate size, fitted in the operator's cabin. It may have facilities like programming, data logging and print out. Load indicator shall work in synchronization with radius indicator.

68.2 The safe load indicators shall include function test display that can verify the integrity of the indicators before loading.

68.3 Load cell, indicator shall be reliable and of rugged construction.

69. Emergency Stops

69.1 Any one of the emergency stops shall be capable of tripping all control circuits. The Emergency Stops shall be of robust construction and have red mushroom heads. When depressed, the red mushroom head shall not be released automatically. Implementation of Emergency stop shall be provided by using safety relay. The crane shall be provided with emergency stop buttons on the following locations:

- Operator's cabin(1no)
- Electrical control room/rooms(1no each)
- Machinery house(1no)
- 16 nos on two legs-inside and outside

70. Access Preferences

70.1 Stairs, ladders, platforms and walkways shall be provided to make accessible all parts of the crane requiring service, maintenance or inspection. All platforms and decks shall be of structural steel and shall be braced rigidly to the crane. The floor of the decks shall be made of steel checkered plates. Safety hand rails shall be provided on the platforms and shall be of steel round bars and pipes. Necessary drain holes shall be provided on the platforms to prevent collection of rain water.

70.2 Wherever possible foot access to the crane shall be by stairs rather than ladders. Landings shall be provided to all stairways at not more than 9 m intervals. Staircases shall not exceed 50 degrees from the horizontal or as per the standards followed.

70.3 All staircases and platforms shall have continuous toe boards (minimum height of 150mm), intermediate and upper handrails provided. The height of the handrail shall be minimum 1000 mm with intermediate hand rail of 500 mm. Spacing between verticals shall be 1000mm.

70.4 The provision of access holes in platforms, walkways and staircases is not permitted for any purpose.

70.5 Ladders shall not be used unless there is no realistic alternative and the Purchaser's prior agreement is obtained. This requirement applies to both access and emergency escape routes. Where ladders are approved, safety hoops commencing at 2.2m above the foot of the ladder and continuing to a height of 2.2 m above the top landing shall be provided. Ladders shall be of the single rung type with rungs spaced not more than 230 mm apart. Additionally, a swing up safety bar shall be provided at the height of the upper handrail on the adjacent platform. The angle through which a swing up safety bar shall travel shall not exceed 85 degrees.

70.6 Alternative exit routes of walkways, platforms, stairways and ladders, shall be available to enable the driver and any maintenance personnel escape from the crane cab and machinery house areas in an emergency. Stair case type inclined ladders with hand rails and platforms shall be provided up to swing lever for convenience of operation and maintenance personnel.

70.7 Crane access design shall comply with EN13586 / ISO 11660 and design code followed.

71. Wind Speed Monitoring

71.1 An anemometer of marine quality shall be provided to indicate wind velocities. The anemometer shall be able to monitor wind velocity between 0-75 m/s with high accuracy of the full range. The anemometer shall indicate wind speed in HMI fitted in operator's cabin. For this, anemometer shall have suitable output transmitters and media converters to input information

to PLC and then output of PLC in the HMI. The anemometer shall be suitable for rugged crane service. It shall be insensitive to crane vibration and a salt laden environment. The anemometer shall be reliable. Periodic maintenance shall not be required more than once per year. The anemometer shall provide a wind speed input to the PLC system of the crane and shall control the wind warning, stopping the crane travelling motions and operation of safety devices.

72. Notices and Labels

- 72.1 The name plate(s) and caution plate(s) shall be written in English and indicated in metric unit, and shall be covered with cellophane tape for the temporary protection.
- 72.2 Safe working load notices shall be prominently displayed on the structure of the crane in English.
- 72.3 All major machinery, electrics and equipment shall be provided with identification name plates made from stainless steel/brass plates and label plates indicating equipment type, capacity, electric rating, etc shall be fitted as per supplier's standard. This marking or description shall be linkable with the drawings or technical manuals furnished. Instrumentation shall also be indicated in metric unit.
- 72.4 All notices and labels within the driver's cab shall be in English.
- 72.5 Filling points for water, lubricating oils and greases, tank capacities and other similar maintenance instructions shall be in English.
- 72.6 All equipment manufacturers rating and identification plates shall be in English.
- 72.7 The crane supplier must submit the locations, styles and sizes proposed for all significant notices for approval by CSL. Notices and labels shall be manufactured from steel, brass or durable plastic. External notices shall be painted and manufacturer's rating plates stamped. General labels shall be engraved from white/black/white sandwich plastic or similar to provide black lettering on a white background. Emergency labels etc. shall be engraved to provide red lettering on a white background. All labels shall be mechanically secured by screws, rivets or similar. Adhesive labels are not permitted
- 72.8 Both side walls of the crane machinery house shall be painted with the CSL logo and name in large blue lettering. The precise colour blue to be applied will be selected from a selection of colour swatches provided by the supplier.
- 72.9 Before dispatch to site for assembly and erection all connecting items, whether mechanical, electrical or structural shall be suitably identified and, where appropriate, also carry orientation marks to prevent miss-assembly. Identification marks shall be positioned such that they will remain visible throughout the assembly or erection process. Small loose items shall either be securely wired to associated parts or bagged. All such items shall be clearly identified. Nuts, bolts and washers shall be bagged and identified by size and material specification.
- 72.10 The crane is to be marked by day marking and night marking during and on completion of construction as per ICAO standard Annexure 14, Chapter 6.

PART G: TESTING

73. Tests at Works

- 73.1 Crane components/sub-assembly shall be tested and inspected at various stages during fabrication/manufacturing (prior to erection) by a Third Party Inspection Agency (TPIA) appointed by CSL. Inspection and witnessing of all test during erection and final test also shall be done by TPIA appointed by the employer.
- 73.2 The employer will deploy representative/TPIA for all major sub-assemblies ready to shipment. It is the responsibility of the crane supplier to inform in advance before shipment in-order to carry the witnessing and factory acceptance test by the employer. The factory acceptance test is mainly carried out to ensure the compliance of the sub-assemblies and witness their readiness to ship to the site. This is not a replacement for any other testing requirements.
- 73.3 The following minimum tests/inspections shall be undertaken at the Crane Supplier's works or have been undertaken by main materials and equipment suppliers to the crane supplier. Suitable certification shall be provided in all cases.
- a) Examination of material, its identification and issue of test certificates for compliance with the employer's requirement,
 - b) Checking the dimensions of the component/sub-assemblies/assemblies as per the manufacturers drawings and testing thereof
 - c) Physical properties tests in accordance with standards for:
 - i. Main structural and high tensile steel plates and sections.
 - ii. Shafts.
 - iii. Wire ropes - sample test to destruction.
 - d) Visual Inspection.
 - e) Non-destructive testing of hoisting hooks, welded structural members, castings and forgings. Non-destructive testing of welds includes radiographic testing also. Examination of radiographs including radiographic techniques, supervisions of other non-destructive test as required by the codes and specifications.
 - f) Magnetic particle inspection on:
 - i. All major castings.
 - ii. All major forgings.
 - g) Weld Tests and Inspections:
 - i. For requirements refer Clause 32 Welding above.
 - ii. During fabrication.
 - iii. All records with respect to welding inspections, tests, defects and the rectification thereof shall be handed over to employer on commissioning of the crane.
 - h) Functional tests to demonstrate the correct operation of all control and alarm equipment shall be conducted.
 - i) The major crane structural components shall, where size permits, be trial assembled within the Contractor's works or, where this is not possible the erection interfaces shall be demonstrated to be compatible, one with another, by use of photogrammetry or similar techniques. Trial assembly is not applicable in case of delivery in complete assembled condition.
 - j) Insulation resistance test
 - k) Electrical and control system tests.
 - l) Ensuring that the relevant weld procedures and welder qualifications are in accordance with the stipulated code requirements.
 - m) Inspection of Electric motors for hoisting, slewing, luffing and long travel devices, all brakes, control panels, distribution boards, cables, safety devices etc.
 - n) Any other inspection that is required to be carried out as per the relevant standards, codes and as required by TPIA.
 - o) All machinery elements shall be assembled sufficiently to be capable of being tested under no load for proper operation and control of all speeds and directions and that feedback information and interlock functions are also correct.
- 73.4 Following successful testing all components requiring dismantling for transport and shipment shall have all their mating faces etc. marked to assist reassembly and where necessary, realignments ensured by use of doweled locations.

73.5 The Employer and/or his representative may wish to witness certain of the works/equipment tests. The Crane supplier shall provide a schedule of all the proposed inspection stages during the manufacture of the crane. The Crane supplier shall provide ample advance notification of all impending tests to the Employer.

74. Commissioning

74.1 The commissioning tests shall be conducted by the Crane supplier's personnel and demonstrate the overall suitability of the crane for the shipbuilding function intended together with proof of specified performance as required in Clause 75 below and amply demonstrating operational reliability.

74.2 Any breakages or component or equipment failures that arise during commissioning shall be rectified or replaced at the Crane Supplier's cost and without penalty to the overall crane guarantee. All tests associated with the breakage or failure shall be repeated.

75. Performance Tests

75.1 The Crane supplier shall perform fitness tests of the crane to include functional, load tests, endurance and trial operations type work.

75.2 Upon receipt of the intimation the CSL representatives/TPIA will be available to witness the test. The contractor with his own engineers and operators will perform the performance tests under the supervision of the employer. The performance tests to include, inter alia:

- (a) Long travel, luff, slew and hoist speed and function tests.
- (b) Rated load tests.
- (c) Over load test in accordance with design standard requirements.
- (d) Noise level checks.
- (e) Emulate satisfactory working of the wind speed monitoring and alarm system.
- (f) Visual inspection
- (g) Non Destructive Testing of welds.
- (h) No load test of the crane for each motion in each direction.
- (i) Full load test with 100% SWL of the crane for each motion in each direction.
- (j) During full load test, operation of each equipment and controls shall be normal and operation speed of each equipment shall be within +/- 10 % of the design speed.
- (k) Dynamic testing at 100% load.
- (l) Over load test 125% static.
- (m) Insulation resistance and electrical tests.
- (n) Insulation resistance tests on cables, transformers and motors.
- (o) All safety devices operation test.
- (p) Operation of all emergency stops, interlocks and safety equipment.
- (q) Current measurement of individual components at no load and full load.
- (r) Speed measurement at no load and full load.
- (s) Operation of DSL system, control system and HMI
- (t) Any other requirement of a Competent Authority under the Factory Act. Load testing shall be witnessed by Factories & Boilers department or their authorized representative.

75.3 The Crane Supplier shall provide details of all proposed procedures and methods for each discrete test for discussion with and approval by the Employer, TPIA and other statutory agencies. Testing will be undertaken in accordance with the agreed finalized procedures and methods and to the satisfaction of the Employer that the results are in accord with the Contract Specification.

75.4 Approvals:

All defects pointed out by CSL and TPIA shall be rectified.

The following statutory approvals are covered in the scope of crane supplier

- (i) Approval from Central Electricity Authority
- (ii) Certification from Authorized Load Testing Authority of Factories and Boilers Department appointed by CSL
- (iii) Certification from CSL Safety and Fire Department
- (iv) Approval from the TPIA appointed by CSL.

The rectification of any defects and modifications pointed out by any of the above agencies shall be carried out without any additional cost to CSL and approval shall be obtained. Comments/approval of the drawings by the CSL/TPIA/Engineer will not relieve the supplier of his responsibility with respect to the rectification works suggested by statutory authorities.

76. Durability

76.1 The crane will be subjected to a durability test after successfully completing all performance tests. Durability shall be proved by subjecting the crane to a period of continuous simulated operation at its maximum designed load. The test shall include representative deployment of the luff and slew motions and portal long travel drive.

77. Setting To Work

77.1 Once the crane has successfully completed all formal testing it will be handed over to the Employer so that shipbuilding and operations can begin.

77.2 It must be recognized that the Employer's workforce and crane operators have no prior experience of cranes with the size, complexity and operational capability.

77.3 The Contractor is therefore required to provide a three months period of extended on-site support and on the job training for the operators, over and above that defined in Clause 22, during which time the crane is set to work and the driver's acquire adequate levels of competence.

78. Certification

The Contractor shall supply to the Employer test certificates in accordance with the relevant statutory requirements following completion of all necessary tests.

PART H: MAINTENANCE

79. General

79.1 The Contractor should have a service network available in India to attend the crane breakdowns and repairs during and after the defect liability period. Details are to be included in the tender document. The service Engineer shall be present at site within 48 hours after a notification of a defect.

79.2 To simplify the spares holding and procurement aspects, materials, equipment and components shall be standardized as far as is reasonable within the design of the crane. All spare parts are to be fully interchangeable with the original parts and be manufactured to the same quality and standards.

79.4 All spare parts and any associated special tools shall be suitably boxed and/or preserved to prevent deterioration whilst in storage. All such packaged items shall be clearly labeled in English for ease of identification.

80. Specialist Tooling

80.1 Special tools for testing purpose required for installation shall be arranged by the supplier. All the special tools required for maintenance activities of crane shall be handed over to CSL and will be CSL's property. Other tools can be taken back by supplier on completion of the installation. Special tools to be taken back shall be declared prior to material entry to CSL site

80.2 Loads for the load testing shall be arranged by the CSL. However required slings and shackles shall be provided by crane supplier, which has to handed over to CSL later.

80.3 The Contractor shall supply to the Employer one complete set of special tools and fixtures necessary for maintenance and subsequent replacement of all assemblies, components and for replacement of spare parts. (one set for each crane)

80.4 All special tools and fixtures shall be permanently marked as to their function and specific use. Size permitting, they shall all be stowed in secure portable metal tool chests or, if large, wall mounted on shadow boards within a suitably located compartment within the crane structure.

80.5 All necessary lifting equipment comprising slings, shackles, eyebolts etc. necessary for the safe and effective handling of crane components on arrival to site and during erection or to facilitate maintenance during erection and commissioning shall be provided by the Contractor. These items can be taken back by crane supplier at their own cost.

81. SPARES:

Following spares shall be supplied along with each crane.

(i) Travelling Machinery:

Brake lining – 8 nos

Driving wheel assembly including wheels and bearing-2 set

(ii) Hoist Machinery:

Brake lining - 8 nos

Rope pulley with bearing-4nos

(iii) Slewing Machinery:

Brake lining - 1 no

(iv) Luffing Machinery:

Brake lining - 1 no

(v) LT motor and brake-2 nos

(vi) Rectifier for magnet disc brake-2nos

(vii) Solenoid valve for rail clamp-2 nos

(viii) Encoder -1no for each motion

(ix) Control contactors of each motion- 2 nos each for each motion

(x) Emergency stop-4nos

(xi) Long travel, luff, hoist limit switch-2nos each for luff & hoist and 3nos for long travel

(xii) Aviation light-2 nos

(xiii) Jiblight fitting-5nos

(xiv) Slew frame light fitting-2nos

(xv) Insulators of DSL-50 nos

(xvi) Conductor rail phase- 10 nos of standard length

(xvii) Conductor rail earth- 5 nos of standard length

(xviii) Joints of DSL with nut and bolt-20 sets

(xix) DSL brush/Current Collectors-25 nos

(xx) Long travel warning horn-1no

(xxi) Long travel warning light-1 no

(xxii) PLC :

a. Power supply module-2 nos

b. PLC D/I module-2 nos

c. PLC D/O module-2 nos

d. PLC analog input module -1 nos.

e. PLC Analog output module -1 nos.

f. PLC communication module-1no

g. Fiber optic converter-1no as applicable

(xxiii) VVVF drive

a. Common power module – 1 set (for same chasis)

b. Common Control module – 1 set(for same chasis)

c. Interfacing cards for Digital Inputs-2nos for each drive

(xxiv) Sensors Optical or Proximity:2 each.

Note:

1. Spares listed above shall be supplied along with each crane and the cost of the same shall be included in the price.
2. In addition to this, Bidder to submit a separate list of recommended spares for 5 years operation along with Price which should hold for next 5 years.
3. Spare availability for next 10 years to be ensured by Supplier

82. MAKE LIST OF MAJOR COMPONENTS

Bidder shall submit the proposed list of makes for the components listed below.

SL NO.	ITEM	MAKES
1	MOTORS	
2	DSL SYSTEM AND CURRENT COLLECTORS	
3	ACB,MCB,MCCB,EARTH LEAKAGE DEVICES, SWITCHES	
4	HT< POWER AND CONTROL CABLE	
5	CONTROL/SIGNAL/COMMUNICATION CABLES FOR CONTROL SYSTEM, INSTRUMENTATION, TELEPHONE, FIRE DETECTION SYSTEM, CAMERA SYSTEM	
6	POWER CONTACTORS, RELAYS, TIMERS, LAMPS, BUTTONS	
7	LIGHTS	
8	VVVF DRIVES & PLC	
9	LIMITSWITCHES	
10	ENCODER	
11	HMI	
12	LOAD CELLS	
13	GEAR BOX	
14	BRAKES & BRAKE DRUM	
15	WIRE ROPE	
16	INDUSTRIAL AIR CONDITIONER	
17	PAINT	
18	BUFFER	
19	CAMERA	
20	FIRE DETECTION SYSTEM	
21	ANEMOMETER	
22	BEARINGS (OF MECHANICAL COMPONENTS)	
23	SLEW BEARING	
24	OIL PUMP	
25	HT BOLTS & FASTNERS	

83. GUARANTEE

The Crane Supplier shall guarantee the cranes and/or accessories against damage or failure due to defects in design, material and/or workmanship for twenty four (24) months from the date of final acceptance of crane at CSL site. Should such damage or failure occur within that period, the crane supplier shall replace or repair the defective parts at his cost. All such rectification actions shall be taken up by the crane supplier immediately on receipt of official intimation from CSL side either directly, telephonically or by email / FAX. Supplier shall take note that Level Luffing Jib cranes are critical for CSL in shipbuilding process and ship repair activities. Deployment of service engineers shall be done within 48 Hrs of intimation from CSL and further course of rectification or remedial actions shall duly be intimated to CSL by the crane supplier immediately. Default in providing after sales support during guarantee period shall be considered as non performance of contract. CSL reserve the right to get the work done through alternate sources at the risk and cost of crane supplier. Crane supplier has to deploy a competent service engineer at CSL site for three (03) months from date of commissioning at supplier's cost.

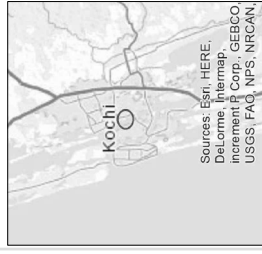
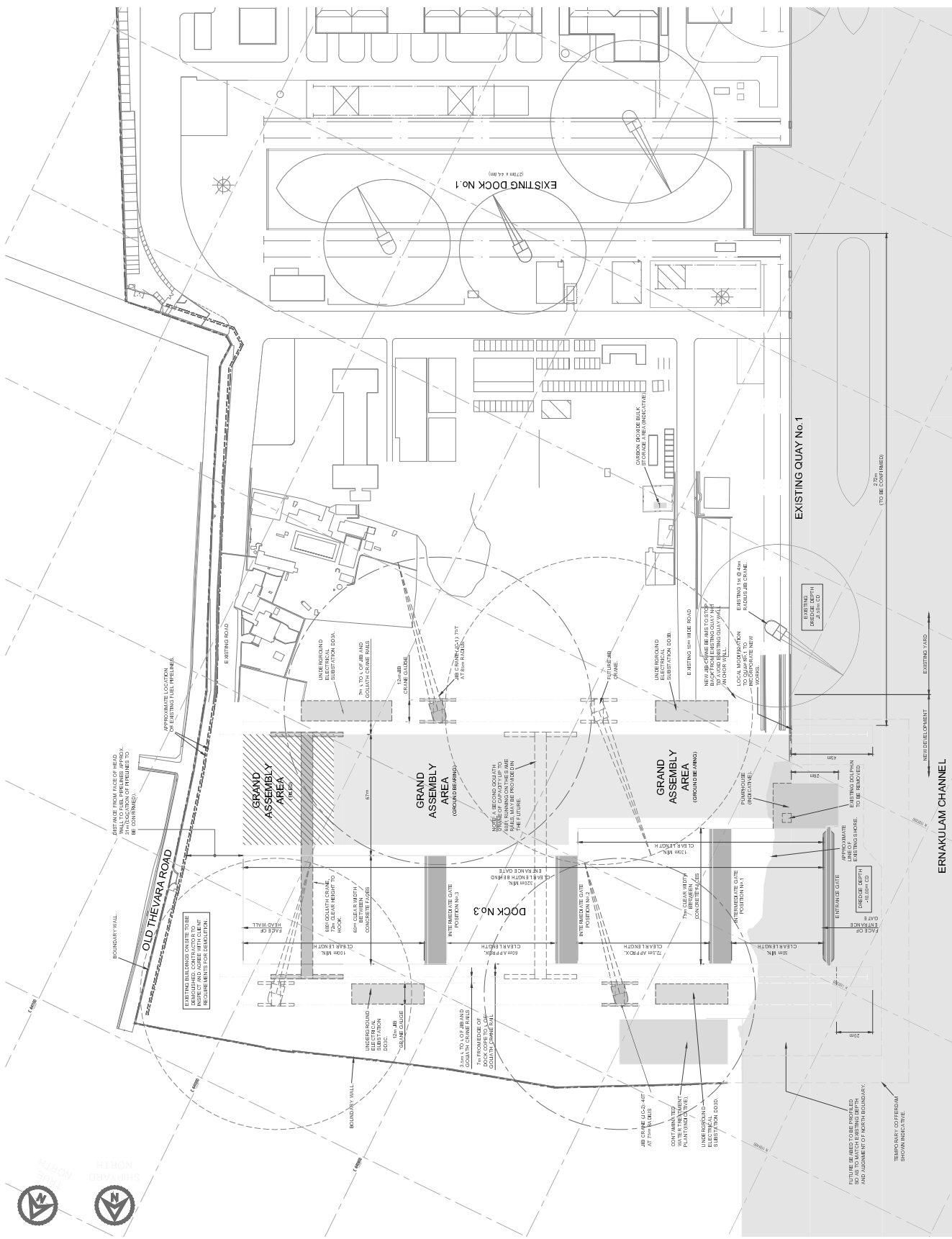
Note: It is the sole responsibility and duty of crane supplier that they shall consider, comply and implement all applicable statutory rules and guidelines scrupulously to the relevant class of certification as well as to all relevant agencies or departments of Government of India in line with crane design, manufacture, transportation, erection, testing and commissioning. Moreover, the supplier shall take note on each applicable rule and procedure prevailing in M/s Cochin Shipyard Ltd (CSL), an IMS (ISO + OSHAS +HSE) certified company, in full while discharging duties or executing works as per the purchase /work order issued from CSL.

84. GENERAL SAFETY RULES OF CSL

- 1) No person above 60 years shall be permitted entry into the yard for any work except otherwise specially permitted by the occupier of CSL.
- 2) Smoking is strictly prohibited.
- 3) Unauthorized use of cameras and mobile phones in CSL is forbidden.
- 4) Parking of vehicle is only in approved parking locations. Priority is for Material Movement and private vehicles shall make way for material movement.
- 5) The use or possession or influence of non-prescription drugs, alcohol and the abuse of substances is strictly prohibited in CSL.
- 6) Speed Limit of vehicle in the yard is 20 km/hr.
- 7) Ensure walking on the roads to be near to the line marked on the road.
- 8) Fishing is not permitted in the yard.
- 9) Everyone should observe and obey regulatory signs.
- 10) Use of mobile phones is strictly prohibited while at work and driving including while cycling.
- 11) Usage of Safety Helmet with chin strap, safety shoe and cotton working dress are compulsory at CSL work site. Suitable PPEs (Personal Protective Equipments) are to be used.
- 12) Risk assessment of non-routine works to be done and control measures identified before commencement of work. This shall be approved by CSL officer In-charge and confirm by CSL Safety & Fire Dept. These control measures are to be communicated to the workers.
- 13) Workers and supervisors engaged in the works shall be competent.
- 14) Briefing of HSE points related to the day activities is to be carried out by the supervisor in-charge.
- 15) People to be engaged in activities preferable in group only. In case a person has to work alone, the same shall be known to at least two persons who are working nearby.
- 16) Using Paint tin, CO2 welding cable bobbin and oil drums as working platform is strictly prohibited.
- 17) Don't store thinners in beverage bottles.
- 18) Adequate precautions should be taken during welding or gas cutting against situations such as electric shocks, burns, fumes, explosion and arc eyes.
- 19) When welding or gas cutting in elevated positions, precautions should be taken to prevent sparks of hot metal slag falling out to the people or to the flammable material below / nearby and suitable barricade to be done at the ground.
- 20) Never use Oxygen for ventilation purpose.
- 21) It is to be ensured that fuel gas (Oxygen, Acetylene, LPG), CO2, Compressed air, Mixed gas, Nitrogen, argon etc. manifold coke valves must be closed before leaving the work space. It is ensured that main valve to manifold must be closed during break time.
- 22) Fuel gas (Oxygen, Acetylene) lines to be taken out from the confined space when you are leaving for break.
- 23) Ensure that no hot work should be carried out in the presence of hydrocarbon fumes.
- 24) Arc welding equipments should be properly earthed.
- 25) Ensure that ELCB is fitted on all Welding Machines or the same to be tapped from switchboards with ELCB protection.
- 26) Ensure cables used for all electrical equipments/tools with sufficient current carrying capacity.
- 27) Electrical hand tools used in CSL is of double insulated type.
- 28) Voltage Reducing Devices (VRD) (Safety relay) must be fitted on AC welding Machines.
- 29) Never Bypass Safety Relay on AC welding machines.
- 30) Electrical extension switch boards are in metallic construction with ELCB & MCB. Only industrial type plug and socket to be used.
- 31) Only authorized persons are allowed to operate any machine/equipment/ Switch boards. Unauthorized operation of any

- switch gear is strictly prohibited.
- 32) Never tamper with machine guards.
 - 33) Ensured that all portable equipments, welding transformers/rectifiers must be switched off after use.
 - 34) Good quality welding cables, cutting hoses and hand tools must be used in the yard.
 - 35) For getting temporary electrical connections (welding sets, power plug boards), a Load Centre (LC) number shall be obtained through licensed electrical contractor and submitted to CSL Resident Electrical Engineer (REE).
 - 36) Works to be performed only on certified scaffolding (Hand rails, planks without gap, access to working platform). All working platform having 2.0 m and above shall be certified by CSL safety personal.
 - 37) Always wear full body harness while working at height (eg. While working on scaffolding). The anchor points of harness should be strong enough.
 - 38) While it is liable to fall into water bodies, floating vest are to be worn.
 - 39) Height of handrail should be of 90 cm with intermediate railing of 45 cm, wherever protective hand rails are provided for fall protection.
 - 40) Excavated materials should be put away from the edge of the excavated trench to avoid slopping of the excavated materials into the trench.
 - 41) Open manholes and places where it is liable to fall, those areas must be protected by strong barricade with intermediate railings. Manhole covers should be replaced promptly when work is suspended.
 - 42) All lifting tools and & tackles, pressure vessels including blasting hoppers to be tested every year by competent person and obtained valid test certificate. Ensured that items that are defect free and in good condition are used.
 - 43) Any situation affecting the safety of an employee or his fellow employees shall be immediately brought to the notice of site supervisor or reported to CSL Chief Safety Officer.
 - 44) Only authorized employees should be allowed to operate the mobile cranes and other hoisting equipment & Rigging/Signalling.
 - 45) Standing under suspended loads is dangerous and is avoided.
 - 46) Compressed air should not be used to clean the clothing. When not using the compressed air, the valve must be shut off.
 - 47) Any kind of Gas cylinders (empty/full) should be secured in upright position and away from direct sunlight.
 - 48) Air hoses, welding cables, fuel hoses, electric cables should not be allowed to lie across walkways etc. and they should be suspended from overhead.
 - 49) Inflammable liquids must be handled in safe cans or containers approved by CSL and shall be stored in space having good ventilation and acceptable to CSL. All such containers must be clearly labeled and warnings exhibited visibly.
 - 50) Rescue operations done only by authorized person. If there is life threat observed, anybody can clear the threat and wait for authorized rescue persons for further actions.
 - 51) Everybody should be responsible for housekeeping at their work site.
 - 52) Avoid activity/action that leads to air/water/soil pollution.
 - 53) The Contractor before starting any work in the CSL premises will be issued with these CSL HSE guidelines and firm is expected to give a declaration that he receives one copy of the CSL HSE guidelines and will comply with laid therein.
 - 54) A responsible safety In-charge is to be designated by the firm for the activities. The details of the safety In-charge shall be communicated to CSL Safety & Fire dept. He shall take a lead to ensure safe work environment for their work sites.
 - 55) CSL reserves its right to suspend work in the event of the contractor not complying with the HSE guide lines with regarding to HSE practices for which no claim of any kind will be entertained.
 - 56) To ensure the safe conduct of safety operation, a representative of the contractor should maintain appropriate contact with the CSL officer-in-charge of the work as may be necessary to acquaint himself with any changed conditions of other matters relating to the HSE performance.
 - 57) Any kind of emergency (Fire/ Rescue/ Personal Injury/ Property damage) to be reported to CSL fire control room which is manned 24 hrs (Control room contact numbers are 1300/ 9895705101).

DO NOT SCALE



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, ...

LOCATION PLAN

TENDER		AMT	SRK	PK
PK-1	RECEIVED TENDER/BIDDING	25	MB	AK
PK-2	RECEIVED TENDER/BIDDING	25	MB	AK
PK-3	RECEIVED TENDER/BIDDING	25	MB	AK



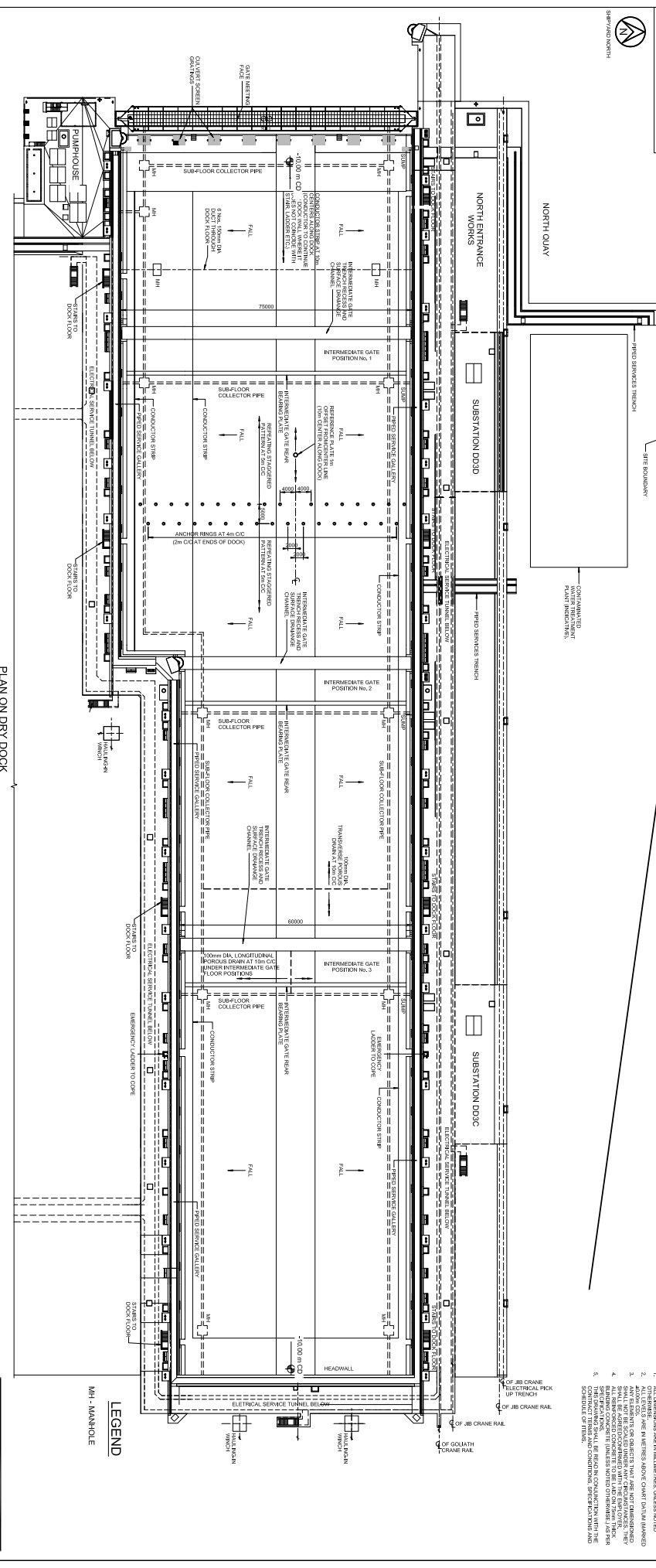
Ocean Shipyard Limited

NEW DRY DOCK PROJECT

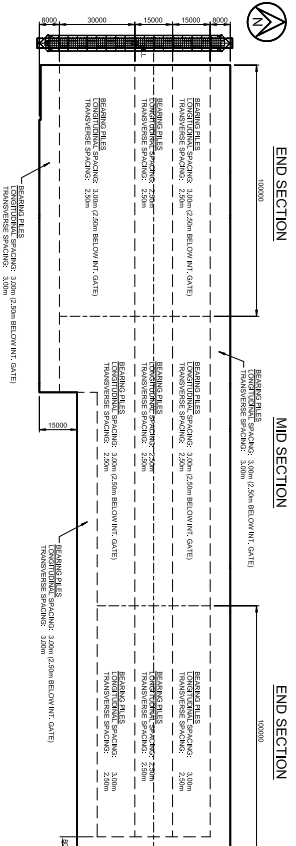
SITE PLAN AND LOCATION PLAN



NOV. 2015
JRC
11/00
DR. MANOJ K. S. N. / J.S.



PLAN ON DRY DOCK
1:1000



DOCK PILING PLAN
1:1000

- NOTES**
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE.
 2. ALL DIMENSIONS ARE IN METERS ABOVE CHART DATUM UNLESS NOTED OTHERWISE.
 3. SMALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
 4. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
 5. DIMENSIONS TO FACE UNLESS NOTED OTHERWISE.
 6. DIMENSIONS TO FACE UNLESS NOTED OTHERWISE.
 7. DIMENSIONS TO FACE UNLESS NOTED OTHERWISE.
 8. DIMENSIONS TO FACE UNLESS NOTED OTHERWISE.
 9. DIMENSIONS TO FACE UNLESS NOTED OTHERWISE.

LEGEND

MS - MANHOLE	MS	MS	MS
MS - MANHOLE	MS	MS	MS
MS - MANHOLE	MS	MS	MS
MS - MANHOLE	MS	MS	MS

TENDER

NO	REV	DATE	DESCRIPTION	BY	CHK
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Coastal Shipyard Limited

NEW DRY DOCK PROJECT

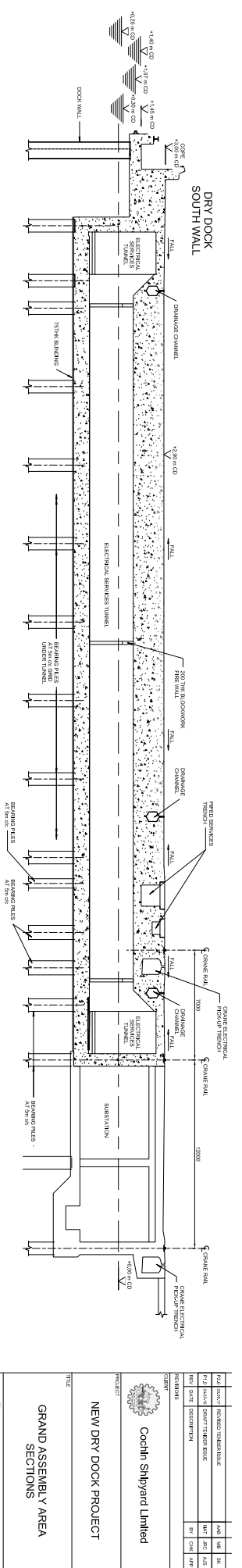
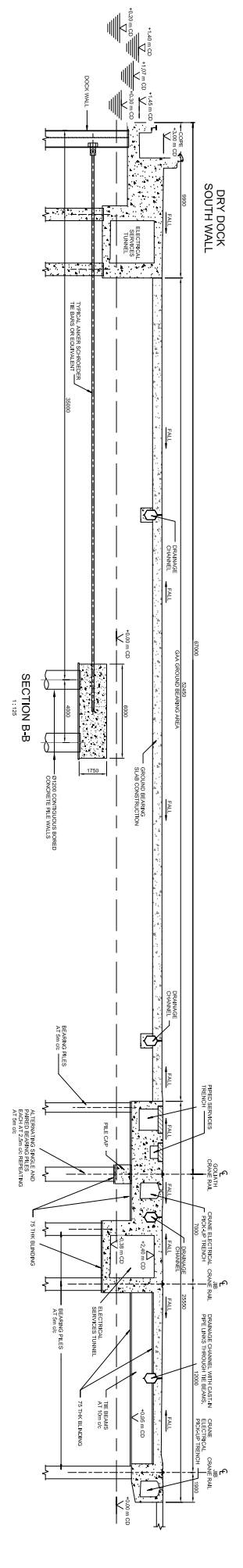
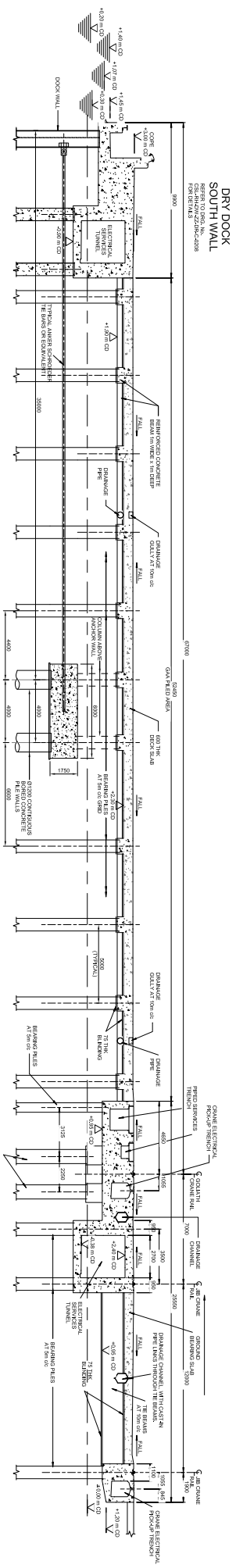
DRY DOCK GENERAL ARRANGEMENT PLAN

Royal HaskoningDHV
Engineering Society Together

10000 15000 20000 25000 30000 35000 40000 45000 50000 55000 60000 65000 70000 75000 80000 85000 90000 95000 100000

PROJECT	NO	REV	DATE	DESCRIPTION	BY	CHK
CSL-RH-XX-ZZ-DR-C-2023	D2	P20				

- NOTES**
1. DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
 2. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO FACE UNLESS SPECIFIED OTHERWISE.
 3. ALL DIMENSIONS ARE TO FACE UNLESS SPECIFIED OTHERWISE. THIS INCLUDES DIMENSIONS TO THE CENTERLINE OF WALLS AND TO THE CENTERLINE OF BEAMS UNLESS SPECIFIED OTHERWISE.
 4. ALL REINFORCED CONCRETE SHALL BE CAST IN PLACE UNLESS OTHERWISE SPECIFIED.



TENDER

NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	REINFORCED CONCRETE	1000	M ³	150	150000
2	STEEL REINFORCEMENT	500	KG	10	5000
3	FORMWORK	1000	M ²	20	20000
4	CONCRETE PUMP	1	HR	1000	1000
5	LABOR	1000	HR	10	10000
6	CONCRETE CURE	1000	M ³	5	5000
7	CONCRETE TESTING	1	TEST	500	500
8	CONCRETE FINISHING	1000	M ²	10	10000
9	CONCRETE CURING	1000	M ³	5	5000
10	CONCRETE PROTECTION	1000	M ²	10	10000

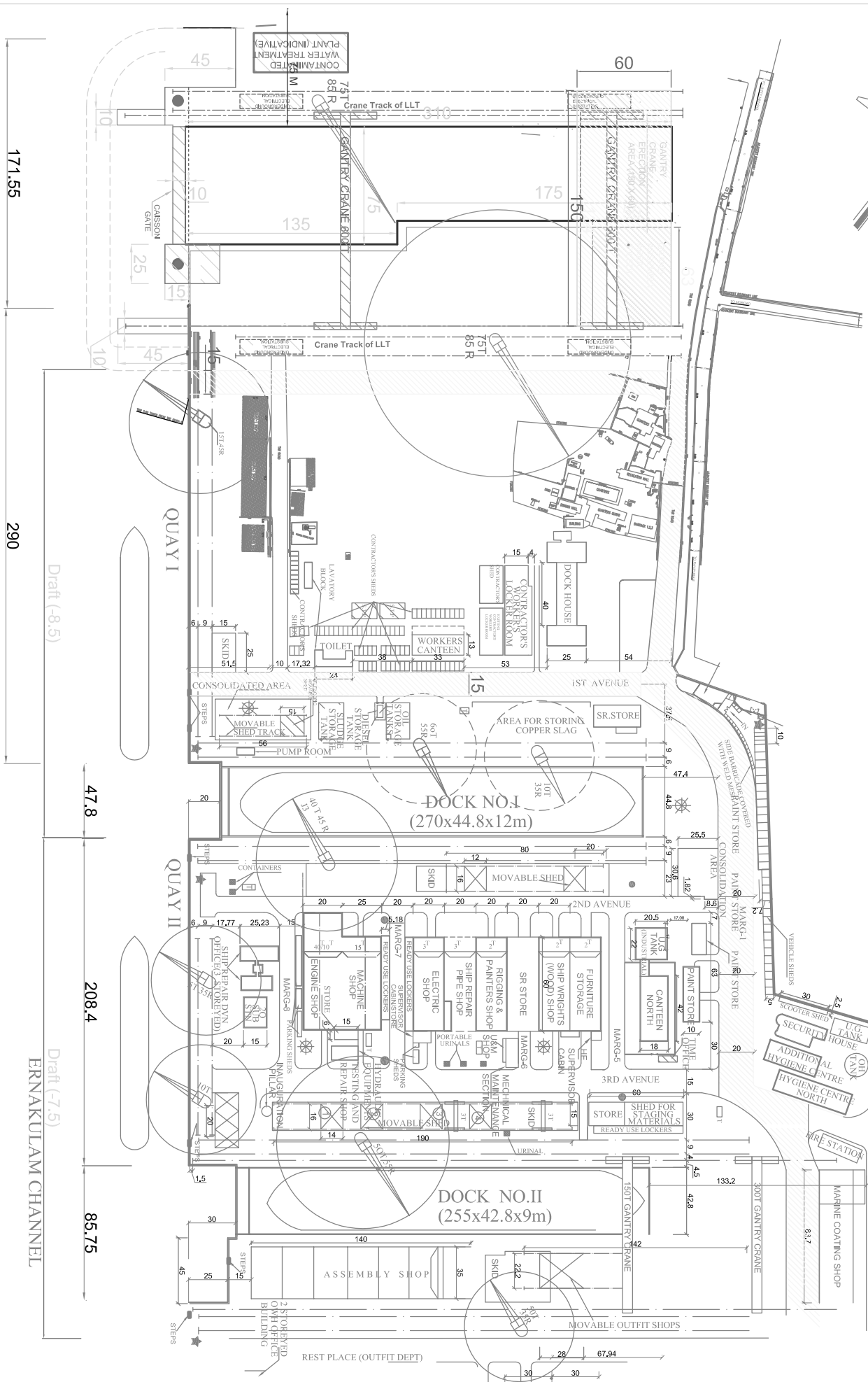
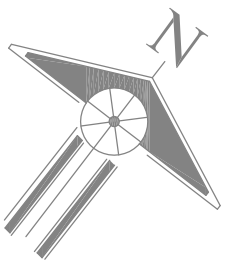
ROYAL HASKONINGDHV
 Engineering Society Together

NEW DRY DOCK PROJECT

GRAND ASSEMBLY AREA SECTIONS

PROJECT: NEW DRY DOCK PROJECT
 CLIENT: Cochin Shipyard Limited
 DRAWING NO: QLS-RH-GI-ZZ-DR-C-0213
 DATE: FEB. 2015
 SCALE: AS SHOWN
 DESIGNER: JAC
 CHECKER: ASB
 APPROVER: ASB
 CONTRACTOR: P20

CSL PROJECT AREA



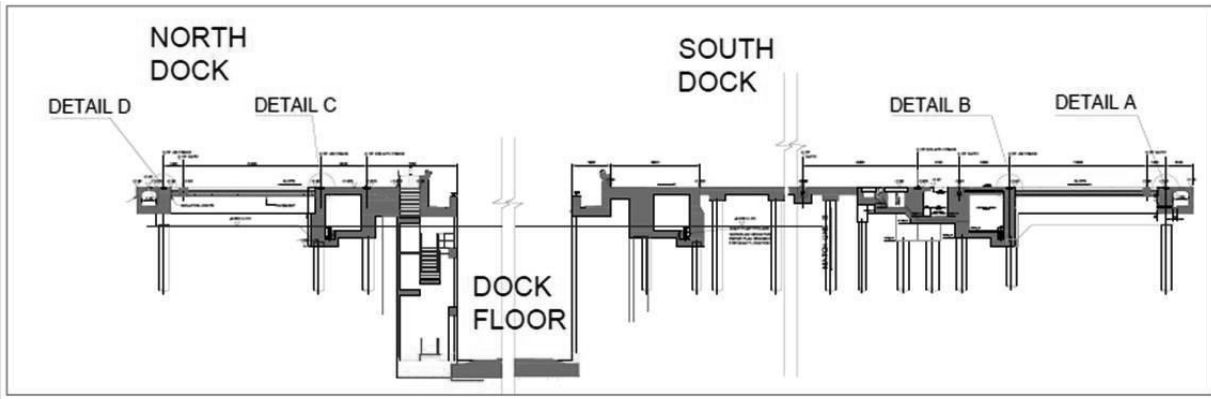
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Draft (-7.5)

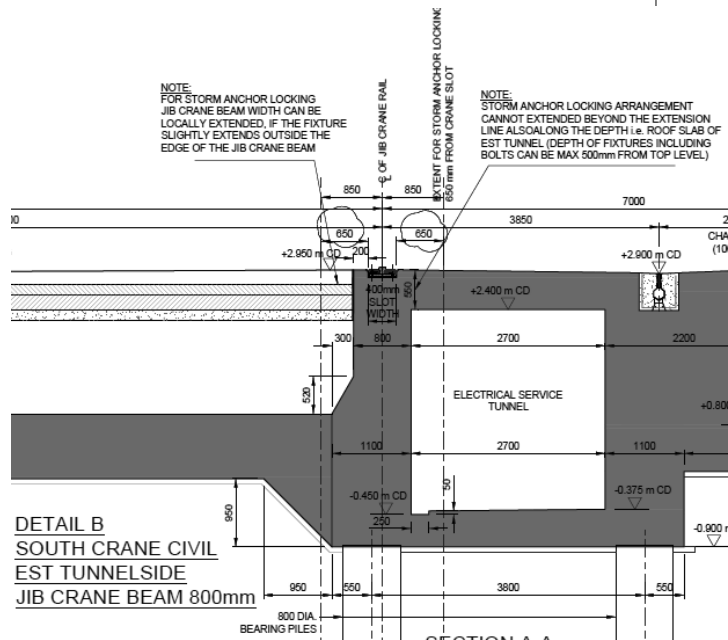
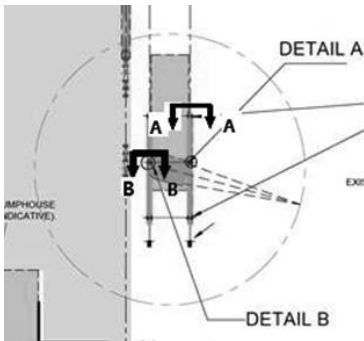
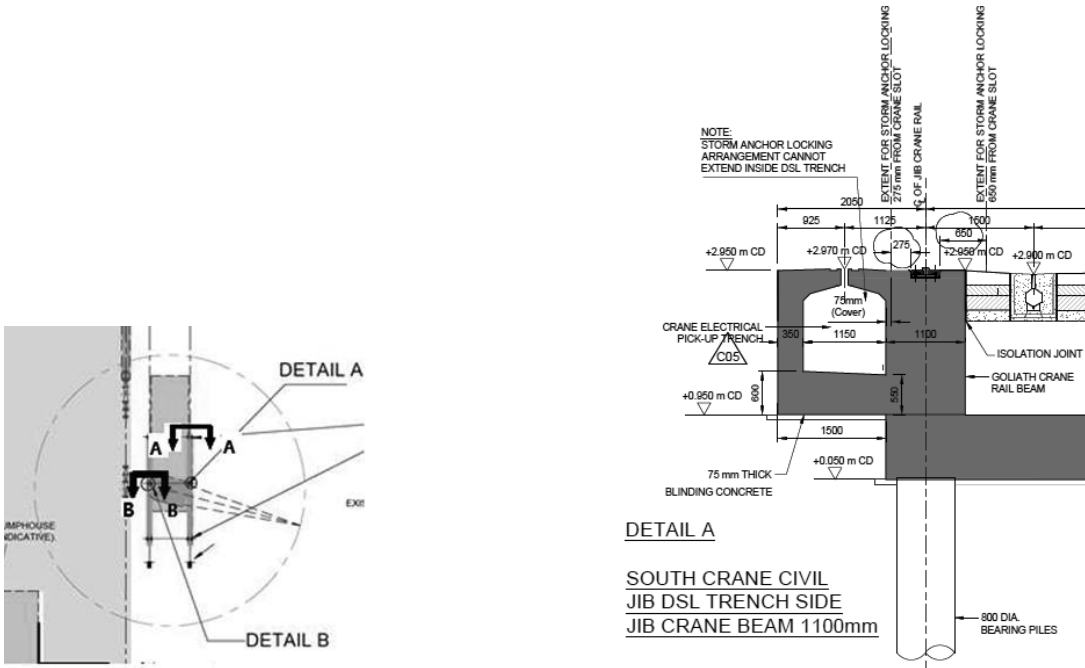
ERNAKULAM CHANNEL

CRANE BEAM DETAILS

1. DRY DOCK CROSS SECTION TYP

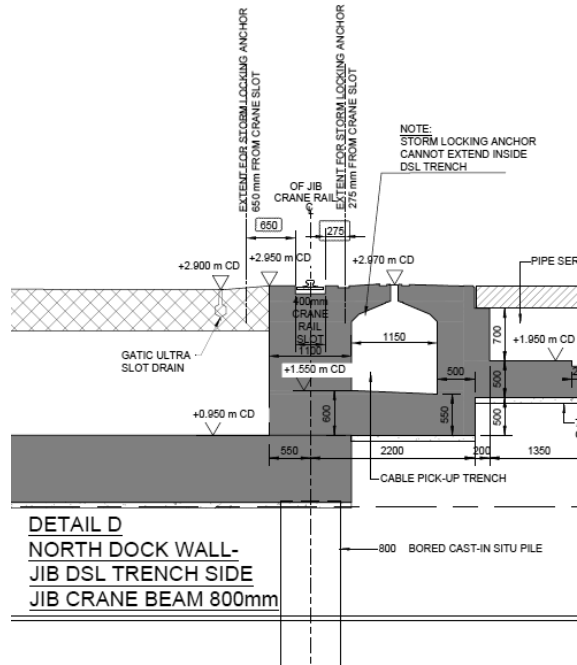
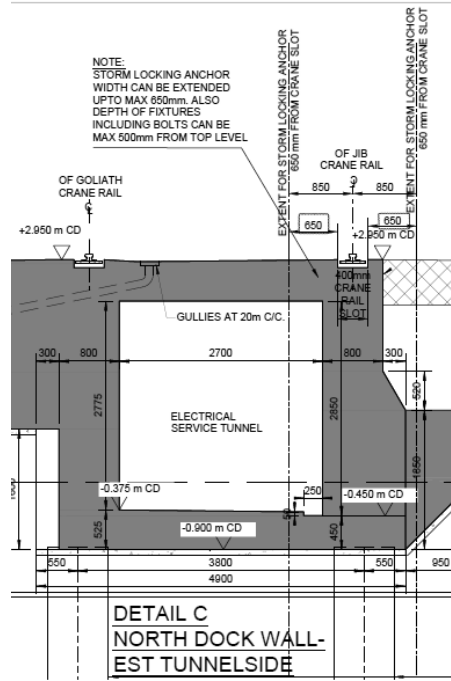
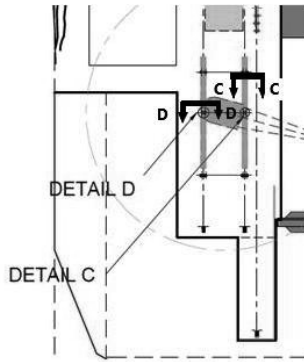


2. SOUTH DOCK WALL SIDE

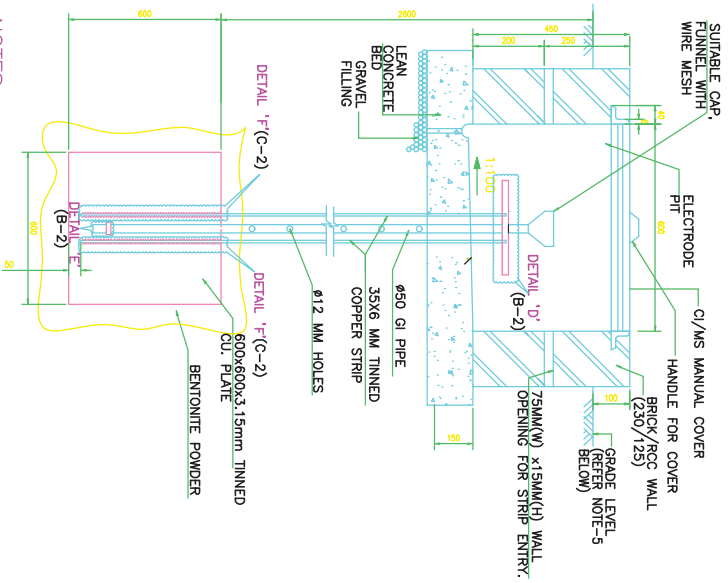


CRANE BEAM DETAILS

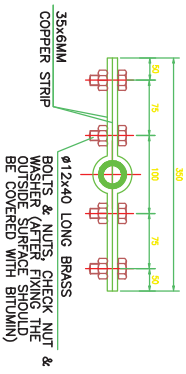
3. NORTH DOCK WALL SIDE



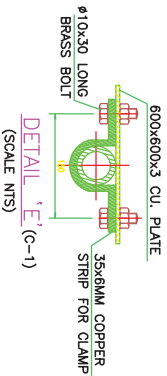
Additional Information/Requirements related to Crane Beam		
1	Wheel loads	The maximum wheel loads shall such that wheel load divided by wheel spacing shall not exceed 490kN/m.
2	Jacking points	<p>The maximum total jacking load (from one or more jacks) at any point along the rail shall not exceed 1000 kN.</p> <p>The maximum jacking loads shall be such that the total jacking load at any point along the rail divided by the jack spacing (along length of rail) shall not exceed 490 kN/m. For example, if the jacking arrangement requires a pair of jacks with 500 kN jack load at 2.5m spacing the load intensity would be $2 \times 500 \text{ kN} / 2.5\text{m} = 400 \text{ kN/m}$.</p> <p>The jacking pads shall be located within 800mm strip centred on the rail. In other words, the outer edges of jacking up pads shall be not more than 400mm away from the rail centreline.</p> <p>The number and arrangement of jacking points per corner, along with jacking load at each points shall be provided.</p>
3	Tie down points	<p>If tie down points are required for crane parking, the maximum concentrated vertical load per corner shall not exceed 770 kN.</p> <p>No pits in the concrete shall be permitted to accommodate any tie down arrangement and any fixing for tie down arrangements shall be capable of being fixed on top of the horizontal concrete deck surface.</p> <p>Any fixings for tie down arrangement shall be located within 800mm strip centred on the rail. In other words, the outer edges any fixings shall be not more than 400mm away from the rail centreline.</p> <p>The number and arrangement of tie down points (if any) per corner, for each crane parking position, along with tie down load at each points shall be provided.</p>
4	Longitudinal Locking Pins/ Clamps	<p>Longitudinal clamps that attach to the rail for locking the crane in longitudinal direction shall not be permitted since the arrangement of the selected rail section will not accommodate such arrangements.</p> <p>If longitudinal locking fixings are required in the form of locking pins, at crane parking positions, any socket for accommodate a pin shall be surface mounted on the concrete deck and shall be entirely above the deck level with no pit of socket inside the concrete.</p> <p>Any fixings for longitudinal locking arrangements shall be located within 800mm strip centred on the rail. In other words, the outer edges any fixings shall be not more than 400mm away from the rail centreline.</p> <p>The number and arrangement of longitudinal locking arrangements, for each crane parking position, along with locking pin load at each points shall be provided.</p>
5	Crane Buffer End Stops	Arrangements for crane buffer end stop assemblies at the end of the crane rail shall be provided together with maximum crane buffer loads.



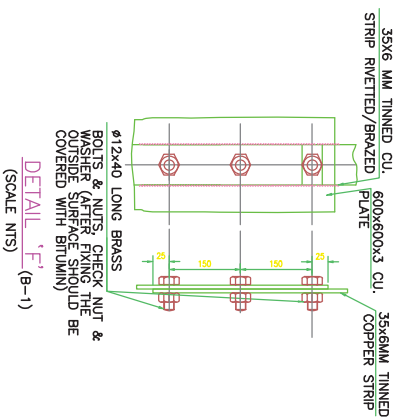
- NOTES:**
1. ALL DIMENSIONS ARE IN MM.
 2. FOR EARTHING AND LIGHTNING PROTECTION SYSTEMS INSTALLATION NOTES REFER DWG NO. TCE-M2-EL-GL-S-2350.
 3. WALL OPENING TO BE SEALED AFTER LAYING CONDUCTOR.
 4. THE BENT PLATE AND CONNECTION PLATE SHALL BE OF THE SAME WIDTH AND THICKNESS AS THE MAIN EARTHING CONDUCTOR.
 5. IN CASE OF ROAD/PAVED AREA PIT SHALL BE FLUSHED WITH THE ROAD/PAVED AREA.



DETAIL 'D' (B-1)
(SCALE NTS)



DETAIL 'E' (C-1)
(SCALE NTS)



DETAIL 'F' (B-1)
(SCALE NTS)

TYPICAL ARRANGEMENT OF COPPER PLATE
ELECTRODE TYPE EARTH PIT
(SCALE NTS)