



## **COCHIN PORT AUTHORITY**

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### **TENDER DOCUMENT FOR**

**“PROVIDING NEW AC UNITS FOR SAGARIKA INTERNATIONAL  
CRUISE TERMINAL MAIN HALL, IMMIGRATION OFFICERS’ ROOMS &  
WAITING HALL, WITH 2 YEARS GUARANTEE AND 5 YEARS  
COMPREHENSIVE AMC THEREAFTER”**

**(TECHNICAL BID)**

**(e-Tendering Mode)**

**Website: [www.gem.gov.in](http://www.gem.gov.in)**

**OFFICE OF THE  
CHIEF MECHANICAL ENGINEER,  
I FLOOR, NEW ADMINISTRATIVE BUILDING,  
COCHIN PORT AUTHORITY,  
WILLINGDON ISLAND,  
COCHIN-682 009**



**TENDER DOCUMENT FOR**  
**“PROVIDING NEW AC UNITS FOR SAGARIKA INTERNATIONAL**  
**CRUISE TERMINAL MAIN HALL, IMMIGRATION OFFICERS’ ROOMS &**  
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**CONTENTS**

Section I	Notice Inviting Tenders	2-5
Section II	Instruction to Tenderers	6-18
Section III	General Conditions of Contract	19-30
Section IV	Special Conditions of Contract	31-49
Section V	Technical Specifications	50-63
Section VI	Pre-amble and Bill of Quantities	64-70
Section VII	Contract Data	71-73
	Annexure (1 to 14)	74-92

**COCHIN PORT AUTHORITY**  
**SECTION I**  
**NOTICE INVITING TENDER**

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**1 NOTICE INVITING TENDER**

Tenders are invited through Government e- Marketing Place (GeM portal) in Single Stage Two Cover bidding procedure [Technical Bid and Financial Bid], by the Chief Mechanical Engineer, Cochin Port Authority, Willingdon Island, Cochin-682009, from Proprietorship/ Individual/ Limited company/ LLP meeting the Minimum Qualification Criteria specified below for “**Providing new AC units for Sagarika International Cruise Terminal Main hall, Immigration Officers’ rooms and Waiting Hall, with 2 years guarantee and CAMC for 5 years thereafter**”. Tenderers, who fulfill the Minimum Qualification Criteria and Terms and Conditions given below, may register their tenders through GeM well in advance on or before the scheduled date of submission.

**2 MINIMUM QUALIFICATION CRITERIA (MQC)**

The Tenderer shall fulfill the following minimum qualifying criteria to prove the techno-commercial competence and submit the documents in support thereof:

**2.1 Experience**

- a) The Tenderer should be either an Original Equipment Manufacturer (OEM) or an Authorized Dealer of the air-conditioning systems offered. In the case of Authorized Dealer, valid dealership certificate shall be furnished along with the Technical Bid.
- b) The Bidder should have executed works involving “*Supply, installation, testing & commissioning of Package/Duct/VRF air-conditioning units*” as follows during the last 7 (seven) years ending on **30/08/2025**;
  - (a) One contract work, costing not less than **Rs.66,66,400 /- OR**
  - (b) Two contract works, each costing not less than **Rs.41,66, 500/- OR**
  - (c) Three contract works, each costing not less than **Rs.33,33,200 /-**Satisfactory Clients’/Owners’ Certificate or documentary proof shall be submitted in support of the Assignments/ Works performed and claimed by the Tenderer, in Annexure-4(a)/4(b) to fulfill the Eligibility Criteria for Qualification. The previous experience carried out by the Tenderer as subcontract to the main contractor will also be accepted.

**2.2 Financial Turnover**

Average annual financial turnover should be at least **Rs.24,99,900/-**during the last three (3) years, ending 31<sup>st</sup> March 2025[2022-23, 2023-24, 2024-25]. This may be furnished in the Proforma in ‘Annexure-5’ of the tender document.

**2.3 Authorised service centre**

Either the Bidder or OEM shall have own/authorized service centre in Kochi. The address of the Authorized service centre shall be furnished in the Bid.

**2.4 Electrical License**

The bidder shall possess minimum valid ‘B Class’ Electrical Contractors License issued by any State/

Central Licensing Authority or shall have a tie-up with an electrical contractor with valid “B” class license. Copy of the valid license or undertaking with “B” class electrical contractor shall be furnished along with the bid.

## 2.5 Explanatory Notes:

Note 1: Following enhancement factors will be used for the costs of works executed for bringing the financial figures to a common base value in respect of the works completed in past years.

**Table 1**

<b>Year before</b>	<b>Multiplying factor</b>
One year [2024]	1.07
Two years [2023]	1.14
Three years [2022]	1.21
Four years [2021]	1.28
Five years [2020]	1.35
Six years [2019]	1.42

Note 2: The experience certificate of Works executed in private sectors/organisations shall be considered for qualification, only on submission of **Form as per Annexure-5(a)** certified by Chartered Accountant for the transaction of the Project, along with Work Order and Completion Certificate. **Chartered Accountant is to provide their UDIN (Unique Document Identification Number) while certification with QR code if available.**

Note 3: Performance/ completion certificate from the CoPA shall be submitted in support of the assignments/ works performed and claimed by the tenderer to fulfill the eligibility criteria for qualification. The completion certificate/ performance certificate shall contain the work order no, work order value, completed cost of work and completion date and signature of issuing authority.

Note 4: A statement duly certified by the Chartered Accountant showing the Average Annual Financial Turnover during the last three financial years and Annual Accounts duly certified by a Chartered Accountant shall be submitted along with the tender. This may be furnished in the Proforma in ‘**Annexure-5**’ of the tender document. **Chartered Accountant is to provide their UDIN (Unique Document Identification Number) while certification with QR code if available.**

## 2.6 Even though the Tenderers meet the above qualifying criteria, they will be disqualified if they have:

- (i) Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/ or
- (ii) Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history or financial failures etc.

## 3 Pertinent information to the tender is given in the following tables:

- (i) Bid information:

i)	Estimated Amount put to tender	<b>Rs.83,33,033/-</b> including GST (Rupees Eighty Three Lakh Thirty Three Thousand Thirty Three only)
ii)	Earnest Money Deposit. (Exemption shall be given as per <b>Clause 8</b> below)	<b>Rs.1,66,660/-</b> (Rupees One Lakh Sixty Six Thousand Six Hundred Sixty only), shall be furnished either in the form of Insurance Surety Bond or through account payee Demand Draft, Banker's Cheque or an irrevocable Bank Guarantee drawn in favour of Financial Adviser & Chief Accounts Officer, CoPA, enforceable/ encashable at Kochi, from any Commercial Banks or online payment (State Bank of India, Cochin Port Authority Branch, IFSC Code: SBIN0006367, Account No. 41401802288), in an acceptable form safeguarding the interest purchaser's interest in all respects. The bid security shall be valid for a period of 45 days beyond the final bid validity period.
iii)	Cost of Tender document	<b>Not Applicable</b>
iv)	Validity of tender	120 days from the last date for receipt of tender
v)	Period of Contract	<b>120 days from the date of LOA</b>

**4 The scope of work includes the following works:**

1. SITC of 4 Nos. approx. 16.5TR jet diffuser AC system including INDOOR & OUTDOOR units.
2. SITC of 2 Nos. 10HP VRF AC systems including INDOOR and OUTDOOR units.
3. SITC of 8 Nos. 2 TR and 2 Nos.1.5 TR 4 way cassette AC units.
4. CAMC for the entire AC system for 5 years after the completion of 2 year warranty period.
5. Electrical works in connection with commissioning of AC units, which includes:
  - a) SITC of 250 A LT panel
  - b) SITC of 160 A MV panel.
  - c) LT cable laying, termination & commissioning.
  - d) Earthing of entire systems etc.

**The Bidder shall visit the site, ascertain the site conditions and scope before bidding.**

- 5 Tender documents which include Eligibility Criteria, Technical Specifications, various Conditions of Contract, Formats etc. are available in the GeM portal(<https://gem.gov.in/>), in the CoPA website ([www.cochinport.gov.in](http://www.cochinport.gov.in)) as well as in the Central Public Procurement Portal of Govt. of India, ([www.eprocure.gov.in](http://www.eprocure.gov.in)). Interested bidders have to necessarily register themselves in the GeM portal to participate in the tender and shall download the tender documents from these portals as per the provisions available therein.
- 6 A Single Stage Two Cover Bidding Procedure with Earnest Money Deposit (EMD) will be adopted and will proceed as detailed in the tender document.
- 7 The Chief Mechanical Engineer reserves the right to call for the Shortfall documents in case the bidders have submitted partial documents.
- 8 Bank details of Cochin Port Authority is as follows: State Bank of India, Cochin Port Authority Branch, IFSC Code: SBIN0006367, Account No.41401802288.
- 9 Exemption from the payment of EMD shall be given to Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by the Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organization or the concerned

Ministry or Department. The tenderers shall furnish a copy of the NSIC / MSME / UAM certificates for the exemption of EMD along with the Technical bid. Such Certificates should mention the QR code of such registration. The scanned copy of Exemption Certificate duly notarized shall be uploaded in the e-Tender Portal. If the Registration Certificate does not pertain to the Category of 'Similar Works' mentioned above, the Tender will be rejected.

- 10 Format for Self-Certification under Preference to "MAKE IN INDIA" Policy CERTIFICATE as per Annexure -7 - In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017 and No.P45021/2/2017-PP (BE-II) dt. 04.06.2020 as amended from time to time along with clarifications/amendments and other references as issued from time to time, the Contractor has to certify that they are meeting the requirement of Minimum Local Content in goods/services/ works to be supplied by local supplier as per declaration. (Class-I Supplier (50%) or Class-II Supplier (20%) or Non-Local Supplier (Less than 20%)
- 11 Bidders should submit their bid proposal online, complete in all aspects including scanned copy of EMD or MSME / UAM registration certificate for exemption of EMD, in the Portal of GeM (<https://gem.gov.in/>) on or before last date and time of Bid Submission as mentioned in the tender strictly in accordance with the instructions to bidders (ITB), terms and conditions of the tender document. Original of EMD shall be submitted to the office of the undersigned on or before the due date of opening.
- 12 Any amendment(s)/ corrigendum(s)/ clarification(s) with respect to this tender shall be uploaded on the above mentioned websites only and no intimation will be sent to the individual bidders. The Bidder should regularly check for any Amendment(s)/ Corrigendum(s)/ Clarification(s) on the above mentioned websites.
- 13 On the due date of bid opening, the Techno-Commercial bids will be opened online in the GeM Portal. Bid proposals received without the prescribed Earnest Money Deposit (EMD) or Documents for exemption of EMD will be considered as non-responsive. In the event of any date indicated is a declared Holiday, the tender will be opened on the next working day.
- 14 For proper uploading of the bids on the portal namely <https://gem.gov.in/> (referred to as the 'portal'), it shall be the sole responsibility of the bidders to appraise themselves adequately regarding all the relevant procedures and provisions as detailed in the portal as well as by contacting GeM, through e-mail to: [helpdesk-gem@gov.in](mailto:helpdesk-gem@gov.in) or call on Toll Free Numbers (Inbound): 1-1800-419-3436/ 1-1800-102-3436 (9:00am-6:00pm Mon to Sat) Help Desk Out bound No's: +911244875125, 7042737878& +917556685120, as and when required.
- 15 Cochin Port Authority will not be held responsible for any technical snag or network failure during online bidding. It is the bidder's responsibility to comply with the system requirement, i.e. hardware, software and internet connectivity, at bidder's premises to access the GeM Portal. Under any circumstances, Cochin Port Authority shall not be liable to the bidders for any direct/indirect loss or damages incurred by them, arising out of incorrect use of the GeM Portal or internet connectivity failures.
- 16 The bidder should not have been blacklisted or debarred by any Central / State Government / Agency of Central / State Government / Public Sector Undertaking / Regulatory Authority of India at the time of submission of this bid.
- 17 The undersigned reserves the right to reject/cancel/postpone/annul the tenders at any stage of the tender, which will be binding on all bidders
- 18 The bidders shall agree to all the terms and conditions of the tender document. This tender notice shall form part of the tender document and are to be signed and uploaded along with technical bid.

**CHIEF MECHANICAL ENGINEER**

**SECTION II**

## INSTRUCTIONS TO TENDERERS

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### 1 Introduction

Tenders are invited through GeM portal in Single Stage Two Cover bidding procedure [Technical Bid and Financial Bid], by the Chief Mechanical Engineer, Cochin Port Authority, Willingdon Island, Cochin-682009 from Proprietorship/ Individual/Limited company/LLP meeting the Minimum Qualification Criteria specified for the work of “**Providing new AC units for Sagarika International Cruise Terminal Main hall, Immigration Officers’ rooms and Waiting Hall, with 2 years guarantee and CAMC for 5 years thereafter**”, as per the Scope of Works and Technical Specifications given in the tender document. The site is at Willingdon Island, Cochin. The bidder shall visit the site, ascertain the site conditions and scope before Bidding.

## 2 General Instructions

- 2.1 The work is to be executed as described in the Bid document and in particular in the Technical specifications, Special Conditions, Schedule of Quantities etc. and in general includes, but is not limited to supplying all items including consumables and equipment necessary to execute the work as described in the Bid Document.
- 2.2 Before submitting the bid, the bidder shall examine carefully all conditions of contract, specifications etc. The bidders shall inspect the site of work with prior appointment with the Engineer of the work to get himself acquainted with the site conditions and to assess and satisfy himself of the difficulties and constraints which may be involved in executing the work in the location. It will be deemed that prior to the submission of tender, the tenderer has visited the site and has satisfied himself as to the nature and location of the work, general and local conditions, particularly those pertaining to transportation, handling and availability and storage of materials, availability of labour, weather conditions, tidal variations at site, working conditions, ground level, nature of soil etc. and that the tenderer has estimated his cost accordingly and the Port Trust will be in no way responsible for the lack of such knowledge and also consequences thereof to the tenderer. Failure to visit the site will in no way relieve the successful bidder of any of the obligations in performing the work in accordance with this Bid Document including addendum/corrigendum, within the quoted price.
- 2.3 A bidder shall be deemed to have full knowledge of all documents, site conditions etc. whether he has inspected them or not. The submission of a bid by the bidder implies that he has read the notice and conditions of contract and has made himself aware of the scope and specifications and other factors bearing on the bid and that they are binding on him.
- 2.4 The bidders may please note that the EMPLOYER will not entertain any correspondence or query on the status of the offers received against this Bid. Bidders are also requested not to depute any of their personnel or agents to visit the Employer's offices for making such enquiries till finalization of the bid. Should the EMPLOYER find it necessary to seek any clarification, technical or otherwise the concerned bidder will be duly contacted by the EMPLOYER.
- 2.5 Canvassing in any form by the bidder or by any other agency acting on behalf of the bidder after submission of the bid may disqualify the said bidder. The Employer's decision in this regard shall be final and binding on the bidder.
- 2.6 EMPLOYER will not be liable for any financial obligation in connection with the work until such time the EMPLOYER has communicated to the successful bidder in writing his decision to entrust the Work (covered by the bid document).
- 2.7 Telex/E-mail offers will not be considered. Bidders should prepare their bid themselves and upload in the GeM portal.
- 2.8 In case of an unscheduled holiday on the prescribed closing/opening day of the bid, the next working day will be treated as the scheduled prescribed day of closing/opening of the bid.
- 2.9 While evaluating the document, regard would be paid to National security considerations, at the discretion of the Cochin Port Authority. Bid received from any bidder may be summarily rejected on National security consideration without any intimation thereof to the bidder.
- 2.10 If there are varying or conflicting provisions made in any document forming part of the contract, the Chief Mechanical Engineer, Cochin Port Authority, Cochin – 682009 shall be the deciding authority with regard to the intention of the document which will be binding on the Bidder.
- 2.11 Any error in description, any omissions there from shall not vitiate the contract or release the

contractors from the execution of whole or any part of the works comprised therein according to drawing and specifications or from any of his obligations under the contract

- 2.12 All the Bank Guarantees (BGs) to be furnished by the contractors in connection with the tender shall be sent to the Chief Mechanical Engineer, Cochin Port Authority directly by the issuing bank under registered post with AD. The contractor shall take the responsibility of sending BGs directly to the Port Authority by the issuing bank.
- 2.13 The contractor shall comply with all the provisions of the Indian Employees's Compensations Act, Provident Fund Regulations, Employees Provident Fund and ESI Act etc. amended from time to time and rules framed there under and other laws affecting the contract labour that may be brought in to force from time to time.
- 2.14 The contractor shall be registered under EPF and ESI Act and the employees employed under them shall be covered in the EPF and ESI scheme. Work Order shall be issued only to the contractors who are registered under EPF organization and ESI Corporation. The contractors shall regularly remit the employer and employee contribution to the authorities. If not, the Department would remit the same and the amount so remitted shall be deducted from the part/final bill of contractors.
- 2.15 The contractor shall be registered under GST and shall furnish documentary evidence in support of valid GST registration.

**3 Invitation for Bids:**

The Invitation for Bids is open to all eligible bidders meeting the Minimum Qualification Criteria.

**4 Downloading of Tender Documents:**

The complete Tender Documents are available in the GeM portal <https://gem.gov.in/>, in the CoPA website [www.cochinport.gov.in](http://www.cochinport.gov.in) as well as in the Central Public Procurement Portal of Govt. of India, [www.eprocure.gov.in](http://www.eprocure.gov.in). Interested bidders shall download the Tender Documents from these portals as per the provisions available therein. Tenders attaching all required documents shall be submitted through GeM portal strictly in accordance with the instructions to bidders (ITB), terms and conditions of the tender document, before the tender submission time.

**5 One Bid per Bidder:**

Each bidder shall submit only one bid. A bidder who submits or participates in more than one Bid will be summarily rejected

**6 Cost of Bidding:**

The bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible and liable for those costs.

**7 Site visit:**

The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the work site and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for execution of the Works. The costs of visiting the site shall be at the Bidders' own expense.

**8 Clarification of the Bidding Documents:**

The tenderers are advised to examine the Tender Document carefully and if there be or appear to be any ambiguity or discrepancy in the documents, or any clarifications needed on the Tender Documents; these shall be referred to the Chief Mechanical Engineer in writing at the following address, so as to reach them before the pre-bid meeting. It is to be noted that queries, clarifications received after the above date will not be considered.

Address: Chief Mechanical Engineer,  
Cochin Port Authority, Willingdon Island,  
Cochin, 682009, Kerala, India.  
Phone: 91-0484-2666639/2582300 /2352, Fax: 91-0484-2666639  
Email: [cme@cochinport.gov.in](mailto:cme@cochinport.gov.in)/[dycmeele@cochinport.gov.in](mailto:dycmeele@cochinport.gov.in)  
[dycmeele@cochinport.gov.in](mailto:dycmeele@cochinport.gov.in); [ajithkumar@cochinport.gov.in](mailto:ajithkumar@cochinport.gov.in).

**9 Pre-bid meeting:**

A pre-bid conference will be held in the CME's office of Cochin Port Authority, to answer clarifications, if any, on the bid document. The Pre-Bid meeting will be held on the date notified in the Notice Inviting Tender, through Video Conference and the link will be shared to the bidders on their request. A prospective tenderer requiring any clarification of the tender shall submit their queries to the Chief Mechanical Engineer in writing/e-mail well in advance before the pre-bid meeting. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder. Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be published in GeM portal as well as in Cochin Port Authority official website as Addendum/corrigendum. Any modification of the bid documents as a result of the pre-bid meeting shall be made exclusively through the issue of an Addendum/corrigendum.

**10 Amendment of Bidding Documents:**

The Chief Mechanical Engineer, Cochin Port Authority shall have the right to revise or amend the Bid documents prior to the due date of submission of the Bid by issuance of addenda/corrigenda. Any addendum/ corrigendum thus issued shall be part of the tender document. The addendum/ corrigendum, if any, shall be hosted in the GeM portal as well as in the website of the Cochin Port and CPP Portal. It is the responsibility of the Bidders to download such addenda/ corrigenda hosted in the website and upload the same duly signed along with the Bid. In order to afford the Bidders reasonable time to take any addendum into account, or for any other reason, the Port may, at its discretion, extend the due date for submission of Bid and Bid Extension Notice shall be hosted in the GeM portal and web site.

**11 Preparation of bids:**

All documents relating to the bid shall be in the English language.

**12 Bid Prices:**

In the Financial bid / BOQ available in the GeM Portal, the tenderers are requested to quote the total cost for the work of "**Providing new AC units for Sagarika International Cruise Terminal Main hall, Immigration Officers' rooms and Waiting Hall, with 2 years guarantee and with CAMC for 5 years thereafter**", including GST.

Tenderer should ensure that his tendered price as per Price bid is not mentioned anywhere in any other documents in Technical bid submission, directly or indirectly. If any such mention is made, the tender will become invalid and shall not be considered for Financial evaluation and will be rejected.

The rate quoted by the Tenderer shall be inclusive of the cost of provision of plant and equipment, materials, labour, execution, supervision, maintenance, overheads and profits and every incidental and contingent cost and charges whatsoever and also including Goods and Service Tax (GST).

**13 Currencies of Bid and Payment:**

The price shall be quoted in Indian National Rupees (INR).

**14 Bid Validity:**

Bids shall remain valid for a period of not less than **120 (One Hundred Twenty) days** from the Tender submission date. A bid valid for a shorter period shall be rejected by the Employer as non-responsive. Should any tenderer withdraw his tender before the validity period will be treated as non-responsive and will be left out of consideration

**15 Bid Security / EMD:**

15.1 Each tender should be accompanied by an Earnest Money amounting to **Rs.1,66,660/- (Rupees One Lakh Sixty Six Thousand Six Hundred Sixty only)**. The EMD shall be furnished in the form of Insurance Surety bond or through account payee Demand Draft, Banker's Cheque drawn in favour of Financial Adviser & Chief Accounts Officer, CoPA, enforceable/ encasheable at Kochi, from any Commercial Bank or online payment (State Bank of India, Cochin Port Authority Branch, IFSC Code: SBIN0006367, Account No. 41401802288), in an acceptable form safeguarding the interest purchaser's interest in all respects. The bid security shall be valid for a period of 45 days beyond the final bid validity period.

15.2 The Earnest Money deposit will not carry any interest. Any bid not accompanied by an acceptable Bid Security shall be treated as Non- responsive and shall be rejected by the Employer. Exemption shall be given to Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organization or the concerned Ministry or Department).

**15.3 Forfeiture of Bid security/ EMD:**

Bid Security/EMD will be/liable to be forfeited in the following cases:

- (a) If a Bidder withdraws his bid during the period of bid validity.
- (b) The Tenderer does not accept the correction of the Tender Price pursuant to any arithmetical errors.
- (c) In the case of a successful bidder who fails
  - (i) to commence the work, within the specified time limit
  - (ii) to sign the Agreement or furnish the required Performance Security within the specified time limit.

**16. No Alternative Proposals by Bidders:**

Bidders shall submit offers that comply with the requirements of the bidding documents. Alternate / Conditional offers will not be considered.

**17. Format and Signing of Tender Document:**

17.1 The Tenderer shall prepare one set of his Tender (all Volumes), duly completed and signed, along with the set of Drawings and other documents mentioned hereinafter. The Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder with signature duly witnessed and company seal affixed. The Power of Attorney (in original) authorizing the signatory/s of the Tender shall be enclosed. All pages of the bid where entries or amendments have been made shall be signed by the person or persons signing the bid.

17.2 If the Tender is made by an individual, it shall be signed by his full name and his address shall be given. In the event of the Tender being submitted by a registered partnership firm, it must be signed individually by each Partner thereof. In the event of absence of any Partner, it must be signed on his

behalf by a person holding proper Power-of-Attorney authorising him to do so and to bind the Partner in all matters pertaining to the Contract including the Arbitration Clause, such Power-of-Attorney will be attached with the Tender which must also disclose that the firm is duly registered under Indian Partnership Act. If the Tender is made by a Limited Company, it shall be signed by a duly authorised person who shall produce with the Tender satisfactory evidence of the authorisation. In the case of a Limited Company the Tender should be accompanied by the Memorandum and Articles of Association of the Company.

**18. Bid Submission:**

Bid shall be submitted in two parts, **Part - I: Technical Bid** and **Part - II: Price Bid** through e-tender mode. For online submission of **Technical Bid**, the scanned copies of the documents under item nos. (a to n) as detailed in clause 18.1 below need to be submitted through e-Tendering mode on <https://gem.gov.in>. Price bid (Schedule-II), the total value of all the items mentioned in the Bill of Quantities shall be submitted only through e-tendering mode on <https://gem.gov.in> before the date and time notified in NIT. Information Required In The Bid

**18.1 Part I -Technical Bid shall contain the following:**

- (a) Bid security/EMD or relevant MSME/ UAM certificate for exemption of EMD.
- (b) Letter of Submission (vide **Annexure-1**)
- (c) Power of Attorney (vide **Annexure-2**)
- (d) Organization Details (vide **Annexure-3**)
- (e) Details of experience as per **Annexure-4(a)/4(b)** and Certificates in proof of experience in similar works as detailed under clause 12 of Instruction to bidders.
- (f) Financial documents in support of MQC (vide **Annexure-5**)
- (g) Format for considering works executed in Private Organisations(vide **Annexure-5(a)**)
- (h) Details of proposed approach & methodology (vide **Annexure-6**)
- (i) Make In India(MII) declaration as per format (vide **Annexure-7**)
- (j) Copies of PAN, GST, EPF and ESI registration
- (k) **Valid “B Class”** or above grade Electrical Contractor’s license or undertaking with an Electrical Contractor with at least “B” Class Electrical License.
- (l) Declaration as per **Annexure-8** that
  1. Confirmation that not made any payment or illegal gratification to any persons/ authority connected with the bid process so as to influence the bid process and have not committed any offence under PC Act in connection with the bid.
  2. We disclose with that we have made / not made payments or propose to be made to any intermediaries (agents) etc in connection with the bid.
- (m) Details of the party opting for refund of EMD through e-payment system(vide **Annexure-9**)
- (n) Bank information for e- Payment system (vide **Annexure-10**)

**18.2 Part II : “Price Bid”**

The Bidder shall fill in the rates and prices for all items of the works in the Bill of Quantities (BOQ) and shall submit the value of BoQ / Price Bid in GeM portal<https://gem.gov.in>. The quoted amount shall include all taxes and duties, including GST.

**19. Deadline for Submission of the Bids:**

Tenders attaching all documents shall be submitted through GeM portal strictly in accordance with the instructions to the tenderers, terms and conditions of tender document before the time and date notified in NIT.

**20. Bid Opening**

The Chief Mechanical Engineer or his representative will open the tenders in the GeM portal <https://gem.gov.in>. The technical bids of the tenders received will be opened on the due date of submission. **CoPA** at the time specified on the last date fixed for receiving the Tenders, will initially

verify the submission of EMD or NSIC/ MSME/ UAM certificate. In case the EMD / NSIC/ MSME/ UAM certificate is not furnished or is not in order, the Bid will not be opened further.

**21. Bid Opening – Price Bid:**

Price Bid of those tenderers found responsive in the evaluation of Technical bid, will be opened later. Short listed bidders will be communicated about the date and time of opening of the price bid.

**22. Clarification of Bids:**

22.1 The request for clarification and the response shall be in writing, but no change in the price or substance of the Bid shall be sought, offered, or permitted.

22.2 No Bidder shall contact the Employer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, he should do so in writing.

22.3 Any effort by the Bidder to influence the Employer's bid evaluation, bid comparison or contract award decisions, may result in the rejection of his bid.

**23. Examination of Bids and Determination of Responsiveness:**

23.1 Prior to detailed evaluation of Bids, Cochin Port Authority will determine whether each Bid

- a) meets the minimum eligibility criteria defined in Clause 12.
- b) is accompanied by the required Bid security(EMD) or MSME/UAM regn. certificate
- c) is responsive to the requirements of the Bidding documents.

23.2 A responsive Bid is one which conforms to all the terms, conditions and specification of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one which affects in any substantial way the scope, quality or performance of the Works;

- a) which limits in any substantial way, the Employer's rights or the Bidder's obligations under the Contract; or
- b) whose rectification would affect unfairly the competitive position of other Bidders presenting responsive Bids.
- c) Undertakes in the Technical Bid that he has not incorporated any conditions in the Financial Bid.
- d) **The financial evaluation will be carried out together for all the items and contract will be awarded to the overall lowest offer.**

If a Bid is not substantially responsive, it shall be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

**24. Evaluation and Comparison of Bids:**

The Employer will evaluate and compare only the Bids determined to be responsive.

**24.1 Evaluation of Price Bid**

- a) The tenderers shall quote their rates for all the items as per schedule, including GST, in the GeM portal.
- b) Only those tenders, as determined to be substantially responsive to the requirements of the Tender Documents will be evaluated. Other non-responsive tenders will be rejected. Cochin Port's decision on this shall be final, conclusive and binding.
- c) In order to determine the lowest evaluated bid, Cochin Port Authority will consider overall lowest of all the items together.
- d) **Evaluation of the price bid will be based on the combined cost of the Project and cost for**

**Operation and AMC of the entire system for 5 years after the 2 year guarantee period.**

**25. Alteration of tender documents:**

No alteration shall be made in any of the tender documents or in the Bill of Quantities and the tender shall comply strictly with the terms and conditions of the tender document. The Employer may however ask any tenderer for clarifications of his tender if required. Nevertheless, no tenderer will be permitted to alter his tender price after opening of the tender.

**26. Alternative conditions and Proposal:**

The Tenderer shall note that alternative or qualifying tender conditions, or alternative design proposal for whole or part of the work will not be acceptable. Tenders containing any qualifying conditions or even Tenderer's clarifications in any form will be treated as non-responsive and will run the risk of rejection. Price Bid of such Tenderer's will not be opened.

**27. Award of Contract:**

The Employer will award the Contract to the bidder whose bid has been determined to be responsive to the bidding documents and who has offered the lowest evaluated bid price, provided that such bidder has been determined to be

1. Eligible in accordance with the provisions of Clause 12, and
2. Qualified in accordance with the provisions of Clause 12.

**28. Letter of Award ("LoA")**

Prior to expiry of the validity or extended validity period of the Tender, the Employer will notify the Successful Bidder through e-mail confirmed by registered letter that its Tender has been accepted. This Letter (hereinafter and in the Contract Conditions referred to as the "Letter of Award" (of the Tender) or "LoA") shall specify the sum which the Employer will pay the Contractor (hereinafter and in the Contract Conditions referred to as the "Contract Price") in consideration of the execution and completion of the Works for the Project and the remedying of any defects therein by the Contractor in terms of the Contract.

**29. Performance Security:**

- a. Within not later than 21 days from the date of receipt of the Letter of Acceptance by e-mail or within such time as extended by the Employer, the Successful Tenderer shall deliver to the Employer, a Performance Security for an amount equivalent to 5% of the Contract Price ( Total cost of SITC of air-conditioners ) rounded off to the nearest Rs.1000/- in any one of the following forms:
  - (i) Insurance Surety Bond/ Banker's Cheque/ Account Payee Demand Draft from any Commercial Bank having its branch at Cochin acceptable by Cochin Port Authority
  - (ii) An irrevocable Bank Guarantee (BG) enforceable and encashable at Cochin, drawn from any Commercial Bank having its branch at Cochin acceptable by Cochin Port Authority. The BG shall be issued in favor of Cochin Port Authority in the Format enclosed in *Annexure-A* of GCC.
- b. The BG furnished towards the Performance Security shall be valid for a period of 60 days beyond the completion of guarantee period. Unless Performance Security is furnished within the period as specified above or such extension of that period as may be permitted by the Engineer in writing, the Earnest Money will be liable to forfeiture and the Contract to cancellation.
- c. The Security Deposit will not carry any interest.
- d. The security deposit submitted for the work of "**SITC of air-conditioning units**" shall be discharged by the Employer and returned to the Contractor not later than Twenty one (21) days following the date of Completion of the 2-year guarantee period and only after submission of security deposit for the 5-year CAMC contract. If the contractor does not submit security deposit for CAMC and execute the work, then the security deposit submitted towards "**SITC of air-conditioning units**" shall be forfeited.

- e. Separate order shall be issued for **Comprehensive AMC of the air-conditioning units** before the expiry of 2-year guarantee period and separate security deposit for 10% of total CAMC cost shall be furnished for covering the 5 year CAMC period, in the form of Account Payee Demand Draft/ Banker's Cheque/ Bank Guarantee from a Commercial Bank/ Insurance surety bonds in favour of "FA&CAO, Cochin Port Authority", encashable at Cochin or online payment in an acceptable form safeguarding the purchaser's interest in all respects and separate agreement for the AMC shall be executed. The security deposit furnished for the 5-year CAMC contract will be released and returned to the contractor not later than Twenty one (21) days following the date of Completion of the entire AMC period.

### **30. Forfeiture of Performance Security**

Provisions of Sanctions for Violation as detailed under shall be applicable for forfeiture of Performance Security in case of a decision by the Employer to forfeit the same without assigning any reason for imposing Sanctions for Violation.

### **31. Retention Money: Retention Money @ 5% shall be retained from each payment due to the Contractor.**

- a. Retention Money shall be deducted at 5% of the gross amount of the bill from the first Running Account bill onwards till the recovered sum along with Performance Security amounts to 10% of the Contract value or the value of the work done whichever is higher at all times. **Retention Money shall be refunded to the Contractor after One month after Defect liability/Guarantee period.**
- b. If the Cost of Work done exceeds the Contract Value, the total amount retained as Security Deposit considering the Performance Security initially submitted together with the Retention Money recovered from the running account bills, shall amount to 10% of the Cost of Work done.
- c. In cases where cost of Work done exceeds the Contract Value while releasing the Retention Money after payment of Final Bill, only 5% cost of Work Done is released, instead of the entire Retention Money recovered from the bills. The balance amount shall be retained; to make up for the shortage in the Performance Security, upto the completion of Defects Liability Period.

### **32. Sanctions for Violations:**

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

- (i) The Security Deposit/Performance Security shall stand forfeited either fully or partially, as decided by the Employer and the Employer shall not be required to assign any reason therefore.
- (ii) To immediately cancel the Contract, if already signed, without giving any compensation to the Tenderer.
- (iii) To cancel all or any other Contracts with the Tenderer. The Tenderer shall, be liable to pay compensation for any loss or damage to the Employer resulting from such cancellation/ rescission and the Employer shall be entitled to deduct the amount so payable from the money(s) due to the Tenderer.
- (iv) To debar the Tenderer from participating in future tendering processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the Employer.
- (v) To recover all sums paid in violation of the Tender by Tenderer(s) to any middleman or agent or broker with a view to securing the contract.
- (vi) Forfeiture of Performance Security in case of a decision by the Employer to forfeit the same without assigning any reason for imposing sanction for violation of this Tender.

32.2 The Employer will be entitled to take all or any of the actions mentioned above by the Tenderer

or any one employed by it or acting on its behalf (whether with or without the knowledge of the Tenderer), 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.

- 32.3 The decision of the Employer to the effect that a breach of the provisions of this Tender has been committed by the Tenderer shall be final and conclusive on the Tenderer. However, the Tenderer can approach the Independent Monitor(s) appointed for the purposes of this Pact [In case Integrity Pact is applicable].

### **33. Signing of Agreement**

After furnishing the Performance Security, the successful tenderer will be required to execute an Agreement at his expense within 28 (twenty eight) days from the date of LoA, on Kerala State Stamp Paper of appropriate value in the prescribed form. The agreement as finally executed will include the Employer's Bid Documents and the Bidder's offer as finally accepted by the EMPLOYER together with addendum/corrigendum, bid clarification and all correspondences exchanged between EMPLOYER and the bidder, if any. Till the formal agreement is executed, the Letter of Acceptance together with the offer as finally accepted along with correspondences shall form a binding contract between the two parties.

### **34. Release of Bid Security /EMD:**

The Bid Security/EMD of unsuccessful bidder other than L1 and L2 will be refunded immediately after ranking of the Bids. The bid security of L2 bidder shall be refunded immediately after entering into agreement with L1 bidder and acceptance of the Performance Security. The Bid Security of the successful bidder will be discharged after he has signed the Agreement and furnished the required Performance Security.

### **35. Fraud and Corrupt Practices:**

35.1 The bidder and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Selection Process. Notwithstanding anything to the contrary contained in this document, the Port shall reject the tender without being liable in any manner whatsoever to the bidder, if it determines that the bidder has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice (collectively the "Prohibited Practices") in the Selection Process. In such an event, the Port shall, without prejudice to its any other rights or remedies, forfeit and appropriate the Bid Security or Performance Security, as the case may be, as mutually agreed genuine pre-estimated compensation and damages payable to the Port for, inter alia, time, cost and effort of the Authority, in regard to the Tender, including consideration and evaluation of such Bidder's Proposal. Such Bidder shall not be eligible to participate in any tender or RFP issued by the Authority during a period of 2 (two) years from the date such Bidder is found by the Authority to have directly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as the case may be.

35.2 For the purposes of this Clause, the following terms shall have the meaning hereinafter respectively assigned to them:

- a) "corrupt practice" means
- i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of any person connected with the Selection Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Authority who is or has been associated in any manner, directly or indirectly with the Selection Process or the LOA or has dealt with matters concerning the Agreement or arising there from, before or after the execution thereof, at any

- time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Authority, shall be deemed to constitute influencing the actions of a person connected with the Selection Process; or
- ii) engaging in any manner whatsoever, whether during the Selection Process or after the issue of the LOA or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Agreement, who at any time has been or is a legal, financial or technical consultant/ adviser of the Authority in relation to any matter concerning the Project;
- b) “fraudulent practice” means a misrepresentation or omission of facts or disclosure of incomplete facts, in order to influence the Selection Process;
  - c) “coercive practice” means impairing or harming or threatening to impair or harm, directly or indirectly, any persons or property to influence any person’s participation or action in the Selection Process;
  - d) “restrictive practice” means forming a cartel or arriving at any understanding or arrangement among Applicants with the objective of restricting or manipulating a full and fair competition in the Selection Process.
  - e) “undesirable practice” means
    - i. establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Selection Process; or
    - ii. having a Conflict of Interest

**36. Rejection of Tender:**

Any Tender not conforming to the foregoing instructions will not be considered. The Employer does not bind himself to accept the lowest or any tender and has the right to reject any tender without assigning any reason thereof. No representation whatsoever will be entertained on this account.

**SIGNATURE OF TENDERER**

### SECTION III GENERAL CONDITIONS OF CONTRACT (GCC)

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#### **A. General**

##### **1. Definitions**

Terms which are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Capital initials are used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.

Compensation Events are those defined in Clause 44

The Completion Date is the date of completion of the Work as certified by the Engineer or his nominee in accordance with Sub Clause 56.1

The Contract is the contract between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in Clause 2.3 below.

The Contract Data defines the documents and other information which comprise the Contract

The Contractor is a person or corporate body who Bid to carry out the Works has been accepted by the Employer.

The Contractor's Bid is the completed Bidding documents submitted by the Contractor to the Employer.

The Contract Price is the price stated in the letter of acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

Days are calendar days, months are calendar months.

A Defect is any part of the Works not completed in accordance with the Contract.

The Defects Liability Period is the period named in the Contract Data and calculated from the Completion Date.

The Employer is the party who will employ the Contractor to carry out the Works.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The Initial Contract Price is the Contract Price listed in the Employer's Letter of Acceptance.

The Intended Completion Date is the date on which it is intended that the Contractor shall complete the works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Engineer or his nominee by issuing an extension of time.

Market Rate is the rate as decided by the Engineer on the basis of the cost of materials and labour at the Site where the Work is to be executed plus 15% to cover all overheads and profits.

Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.

The Engineer or his nominee is the person named in the Contract Data (or any other competent person appointed and notified to the Contractor to act in replacement of the Engineer or his nominee) who is

responsible for supervising the Contractor, administering the Contract, certifying payments due to the Contractor, issuing and valuing Variations to the Contract, awarding extensions of time and valuing the Compensation Events.

Plant is any integral part of the Works which is to have mechanical, electrical, electronic or chemical or biological function.

Ruling Percentage is the percentage by which the tendered amount of the works actually awarded is higher or lower than the corresponding estimated amount of the works actually awarded.

The Site is the area defined as such in the Contract Data.

Site Investigation Reports are those which were included in the Bidding documents and are factual interpretative reports about the surface and sub-surface conditions at the site.

Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Engineer or his nominee.

The Start Date is given in the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Date

A Sub Contractor is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract which includes work on the Site.

Temporary Works are works designed, constructed, installed and removed by the Contractor which are needed for construction or installation of the Works

A Variation is an instruction given by the Engineer or his nominee which varies the Original Works.

The Works are what the Contract requires the Contractor to construct, install and turn over to the Employer as defined in the Contract Data.

## **2. Interpretation**

- a) In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer or his nominee will provide instructions clarifying queries about the Conditions of Contract.
- b) If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion date for the whole of the Works).
- c) The documents forming the Contract shall be interpreted in the following order of priority:
  - (1) Agreement
  - (2) Letter of Acceptance and notice to proceed with works
  - (3) Contractor's Bid
  - (4) Contract Data
  - (5) Conditions of Contract including Special Conditions of Contract
  - (6) Specifications
  - (7) Drawings
  - (8) Bill of quantities and
  - (9) Any other documents listed in the Contract Data as forming part of the Contract.

### **3. Language and Law**

- a) The language of the Contract and the law governing the Contract are stated in the Contract Data.

### **4. Engineer or his nominee's Decisions**

- a) Except where otherwise specifically stated, the Engineer or his nominee will decide contractual matters between the Employer and the Contractor in the role representing the Employer.

### **5. Delegation**

- a) The Engineer or his nominee may delegate any of the duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

### **6. Communications**

- a) Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act 1872).

### **7. Contract Agreement**

- a) A suitable form is annexed as "FORM OF AGREEMENT" to the Tender Document. Upon signing the Contract Agreement, the Contractor shall make copies of Contract Documents, as indicated in the Contract Data, in hardbound cover which shall cover documents used in Contract/Agreement and provide the same to the Employer at no extra cost.
- b) Data made available by the Employer in accordance with provisions of the Condition of Contract shall be deemed to include data listed elsewhere in the Contract and open for inspection at the office of the Engineer as indicated in the Contract data of the Cochin Port Trust (by prior appointment with the Engineer).

### **8. Subcontracting**

- a) The Contractor may subcontract with the approval of the Engineer or his nominee but may not assign the Contract without the approval of the Employer in writing. Subcontracting does not alter the Contractor's obligations.

Notwithstanding any subcontracting with such approval as required under above and notwithstanding that the Engineer shall have received copies of any sub-contract, the Contractor shall be solely responsible for the quality and proper execution of the works, performance of all conditions of contract in all respects as if such subletting had not taken place and as if such work has been done directly by the Contractor.

If any Sub-Contractor engaged upon the works at the site executes any work, which in the opinion of the Engineer or his nominee is not in accordance with the Contract condition, written notice may be given to the Contractor requesting him to terminate such sub contract and the Contractor, upon receipt of such notice shall terminate such sub contract and the said Sub Contractor shall forthwith leave the works, failing which the Employer shall have right to remove such Sub Contractors from site. No action taken by the Employer under this clause shall relieve the Contractor of any of his liabilities under the contract or give rise to any compensation, extension of time or otherwise.

#### **b) Observance by Sub-Contractors**

The Contractor shall be responsible for observance by his sub-Contractors of the foregoing provisions.

#### **c) Other Contractors**

The Contractor shall co-operate and share the site with other Contractors, public authorities, utilities and the Employer between the dates given in the Schedule of other Contractors. The Contractor shall as referred to in the Contract Data, also provide facilities and services for them as described in the Schedule. The Employer may modify the schedule of other Contractors and shall notify the Contractor of any such modification.

## **9. Personnel**

- a) The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by the Engineer or his nominee. The Engineer or his nominee will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the schedule.
- b) If the Engineer or his nominee asks the Contractor to remove a person who is a member of the Contractor's staff from his work force stating the reasons, the Contractor shall ensure that the person leaves the site within seven days and has no further connections with the work in the contract.
- c) The Contractor shall engage an authorized agent experienced and qualified technical personnel for managing and supervising the work and shall see that all of them are always at the work spot during the working hours, personally checking all items of work. He shall take such orders as may be given to him by the Engineer-in-charge from time to time and shall be responsible to carry them out properly. In case contractor fails to provide an agent as per terms given above, EMPLOYER reserves the right to deduct a reasonable amount from the contractor's bill, subject to a maximum of Rs.25,000/- per month, for every month of absence

## **10. Employer's and Contractor's Risks**

- a) The Employer carries the risks which this Contract states are Employer's risks and the Contractor carries the risks which this Contract states are Contractor's risks.

## **11. Employer's Risks**

### **The Employers risks are**

- (a) loss or damage due to the use or occupation by the Employer of any Section or part of the Permanent Works, except as may be provided for in the Contract;
- (b) loss or damage to the extent that it is due to the design of the Works, other than any part of the design provided by the Contractor or for which the Contractor is responsible; and
- (c) any operation of the forces of nature (in so far as it occurs on the Site) which an experienced Contractor:
  - (i) could not have reasonably foreseen, or
  - (ii) could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures:
    - (A) prevent loss or damage to physical property from occurring by taking appropriate measures, or
    - (B) insure against.

## **12. Contractor's Risks**

- a) All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.
- b) Excepted risks are riot (in so far as it is uninsurable) war, invasion, act of foreign enemies, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military usurped power or a cause solely due to use of occupation by the Employer of any portion of the work, any operation of the forces of nature that the Contractor could not have foreseen or reasonably provided against. (All of such are herein collectively referred to as the excepted risks).

## **13. Insurance**

- a) The Contractor shall provide in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractors risks.
  - a) loss of or damage to the Works, Plant and Materials
  - b) loss of or damage to Equipment;
  - c) loss of or damage of property (except the Works, Plant, Materials and Equipment) in connection with the Contract; and
  - d) personal injury or death.

- b) Policies and certificates for insurance shall be delivered by the Contractor to the Engineer or his nominee for approval before the start date. All such insurances shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.
- c) If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from any payments due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.
- d) Alterations to the terms of insurance shall not be made without the approval of the Engineer or his nominee.
- e) Both parties shall comply with all conditions of the insurance policies.

**14. Site Investigation Reports**

- a) The Contractor, in preparing the Bid, shall rely on the Site Investigation Report referred to in the Contract Data, supplemented by any information available to the Bidder.

**15. Queries about the Contract Data**

- a) The Engineer or his nominee will clarify queries on the Contract Data.

**16. Contractor to Construct the Works**

- a) The Contractor shall construct and install the works in accordance with the Specification and Drawings.
- b) The Contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the Specifications. The Contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer or his nominee and the Contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the Specifications specified in Contract Data or in any Bureau of Indian Standard or any other published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the Contract.
- c) The Contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.
- d) **SITE MAINTENANCE DURING CONSTRUCTION**  
The Contractors shall time to time clear and remove all rubbish and obstructions from the site and the work area shall be kept clear and unobstructed at all times. Nothing extra shall be paid on this account.

**17. The Works to Be Completed by the Intended Completion Date**

- a) The Contractor may commence execution of the works on the Start Date and shall carry out the works in accordance with the program submitted by the Contractor as updated with the approval of the Engineer or his nominee, and complete them by the Intended Completion Date.
- b) The work shall be done in phases, in close co-ordination with civil/electrical/air conditioning false ceiling works and other works as directed by EMPLOYER.
- c) The Contractor shall note that the site for installation will be made available in parts or in phases. It is the responsibility of the contractor to programme his work accordingly. No extra amount will be paid on account of site being made available in phases/parts.

**18. Approval by the Engineer or his nominee**

- a) The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works or Permanent Works, in the case of Contractor's design to the Engineer or his nominee, who is to approve them if they comply with the specifications and Drawings.

- b) The Contractor shall be responsible for design of Temporary Works.
- c) The Engineer or his nominee's Approval shall not alter the Contractor's responsibility for design of the Temporary Works.
- d) All Drawings prepared by the Contractor for the execution of the temporary works, are subject to prior approval by the Engineer or his nominee before their use.

**19. Safety**

- a) The Contractor shall be responsible for the safety of all activities on the Site.
- b) Reporting of Accidents

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the local police authorities immediately by the available means.

**20. Discoveries**

- a) Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Employer. The Contractor is to notify the Engineer or his nominee of such discoveries and carry out the Engineer or his nominee's instructions for dealing with them.

**21. Possession of the Site**

- a) The Employer shall give possession of all parts of the Site to the Contractor, free from encumbrances. If possession of a part is not given by the date stated in the Contract Data the Employer is deemed to have delayed the start of the relevant activities and this will be a Compensation Event.

**22. Access to the Site**

- a) The Contractor shall allow the Engineer or his nominee and any person authorised by the Engineer or his nominee access to the Site or to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured, fabricated and /or assembled for the works.
- b) Port Entry Permission - The Contractor shall submit prior application for Port entry passes to the concerned Port authority for his labours and the staffs engaged in the works.  
The Contractor shall retain the original passes obtained by them in respect of their labour and staff engaged in the Works and produce the same to the Engineer as and when called for. It should not be either destroyed or allowed to be taken by the labour/staff after its use.

**23. Instructions**

- a) The Contractor shall carry out all instructions of the Engineer or his nominee which comply with the applicable laws where the Site is located.

**24. Disputes**

If the Contractor believes that a decision taken by the Engineer or his nominee was either outside the authority given to the Engineer or his nominee by the Contract or that the decision was wrongly taken, the decision shall be referred to the Employer within 28 days of the notification of the Engineer or his nominee's decision.

**25. Settlement of Disputes & Arbitration**

**25.1 Dispute Resolution**

- i) The Parties agree to use their best efforts for amicably resolving all Disputes arising under or in respect of this Agreement by mutual discussions.
- ii) Except where otherwise provided in the contract all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as

mentioned hereinafter:-

- (i) If the Contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-charge on any matter in connection with or arising out of the contract or carrying out of the work, to be unacceptable, he shall promptly within 15 days request the Engineer in writing for written instruction or decision. Thereupon, the Engineer shall give his written instructions or decision within 30 days of receipt of the Contractor's letter.
- (ii) If the Engineer fails to give his instructions or decision in writing within the aforesaid period or if the Contractor is dissatisfied with the instructions or decision of the Engineer, the Contractor may, within 15 days of the receipt of Engineer's decision, appeal to the Chairperson who shall afford an opportunity to the Contractor to be heard, if the latter so desires, and to offer evidence in support of his appeal. The Chairperson shall give his decision within 30 days of receipt of Contractor's appeal.
- (iii) If the Contractor is dissatisfied with this decision, the Contractor shall within a period of 30 days from receipt of the said decision, shall take further action in accordance with the conciliation procedure set forth in Clause 24.3.

## **25.2 Conciliation**

**25.2.1** In the event of any dispute or differences between the Port Authorities and the Contractor, which could not be resolved amicably by mutual consultations / Arbitration, then the Chairperson of Cochin Port Authority may refer such unresolved disputes or differences to the Conciliation and Settlement Committee (CSC) comprising of independent subject experts, constituted by the IPA and adopted by the Board of Major Port Authority for Cochin Port in its meeting dated 02.03.2022, to enable speedy disposal of pending / new cases.

**25.2.2** Either the Port or the Contractor may send a reference about the dispute to the other party. The party initiating conciliation shall send to the other party a written invitation to settle or conciliate under this Part, briefly identifying the subject of the dispute. The concerned Technical Division in the Port shall send a request or response within 7 working days if a reference is received from the contractor thereby inviting the Contractor to depute a team of their representatives to interact with the Contract Management Division (CMD) constituted by each Port.

**25.2.3** The procedure for referring disputes to the CSC will be as per the guidelines issued by IPA dated 05.10.2021, its amendment dated 21.03.2022 and subsequent amendments, if any. Recourse to such conciliation shall be open before, during or after the arbitration proceedings. The award of the Conciliation Committee / Council, if agreed by both the parties, shall then be placed for consideration of the Board of Major Port Authority for subject to the delegation of powers.

## **25.3 Arbitration**

- (i) Any disputes of a total value less than Rs.10 crores shall be resolved through arbitration by a Sole Arbitrator appointed by mutual consent of the parties.
- (ii) Either party shall within a period of 30 days from the date of termination of conciliation proceedings, give notice to other party for appointment of arbitrator.
- (iii) If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed jointly by both parties. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.
- (iv) It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each such dispute along with the notice for appointment of arbitrator and giving reference to the rejection by the Chairperson of the appeal.
- (v) It is also a term of this contract that if the Contractor does not make any demand for appointment of arbitrator in respect of any claims in writing as aforesaid within 120 days of receiving the intimation from the Engineer that the final bill is ready for payment, any claim of the Contractor shall be deemed to have been abandoned and absolutely barred and the Employer or his authorized representative shall be discharged and released of all liabilities under the contract in respect of these claims.

- (vi) The arbitration shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 (26 of 1996) or any statutory modifications or reenactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.
- (vii) It is also a term of this contract that the Arbitrator / Arbitral Tribunal shall adjudicate only on such disputes as are referred to him and give separate award against each dispute and claim referred to.
- (viii) It is also a term of the contract that if any fees are payable to the arbitrator the same shall be paid equally by both the parties.
- (ix) It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he / they issues notice to both the parties calling them to submit their statement of claims and counter statement of claims.
- (x) The seat and venue of the arbitration shall be at Cochin.
- (xi) The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any, of the arbitrator) shall be in the discretion of the arbitrator who may direct to any party by whom and in what manner, such costs or any part thereof shall be paid.

**b) Litigation**

- (i) Any disputes of total value above Rs. 10 crores not covered in the aforesaid arbitration clause shall be adjudicated by the courts.
- (ii) Only Courts in Cochin alone shall have jurisdiction to adjudicate any disputes between the parties.

**c) Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD)**

Notwithstanding anything contained above, in the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contracts between Central Public Sector Enterprises (CPSEs/ Port Authorities inter se and also between CPSEs and Government Departments/ Organizations, such dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in DPE OM No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22.05.2018.

**26. Computerised Measurement Book**

- a) Engineer or his nominee shall, except as otherwise provided, ascertain and determine by measurement, the value of work done in accordance with the contract.
- b) All measurement of all items having financial value shall be entered by the Contractor and compiled in the shape of the Computerised Measurement Book having pages of A-4size as per the format of the department so that a complete record is obtained of all the items of works performed under the Contract.
- c) All such measurements and levels recorded by the Contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the Contractor from the Engineer or his authorized representative as per interval or program fixed in consultation with Engineer or his authorized representative. After the necessary corrections made by the Engineer or his nominee, the measurement sheets shall be returned to the Contractor for incorporating the corrections and for resubmission to the Engineer for the dated signatures by the Engineer or his nominee and the Contractor or their representatives in token of their acceptance.
- d) Whenever bill is due for payment, the Contractor would initially submit draft computerized measurement sheets and these measurements would be got checked/test checked from the Engineer and/or his authorized representative. The Contractor will, thereafter, incorporate such changes as may be done during these checks/test checks in his draft computerized measurements, and submit to the department a computerized measurement book, duly bound, and with its pages machine numbered. The Engineer and/or his authorized representative would thereafter check this MB, and record the necessary certificates for their checks/test checks. The final, fair, computerized

measurement book given by the Contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the Contractor shall have to submit a fresh computerized MB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the department. Thereafter, the MB shall be taken in the Divisional Office records, and allotted a number as per the Register of Computerised MBs. This should be done before the corresponding bill is submitted to the Division Office for payment. The Contractor shall submit two spare copies of such computerized MB's for the purpose of reference and record by the various officers of the department.

- e) The Contractor shall also submit to the department, separately his computerized Abstract of Cost and the Bill based on these measurements, duly bound, and its pages machine numbered along with three spare copies of the Bill. Thereafter, this Bill will be processed by the Division Office and allotted a number as per the computerized record in the same way as done for the measurement book meant for measurements.
- f) The Contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels.
- g) Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the Specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed.
- h) The Contractor shall give not less than seven days' notice to the Engineer or his authorised representative in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer or his authorised representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Engineer's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.
- i) Engineer or his authorised representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.
- j) It is also a term of this Contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the Contractor from liabilities from any over measurement or defects noticed till completion of the Defects Liability Period.

## **B. TIME CONTROL**

### **27. Program**

- a) After the acceptance of his Tender, the Contractor shall, within fifteen days, submit to the Engineer-in-Charge for his approval, a detailed programme taking into account the total time period stipulated in the contract showing the order, the procedure and method in which he proposes to carry out the works.
- b) He shall furnish the particulars in writing of his arrangements of manpower, plant and machinery and all other resources owned and dedicated to this work. Cash flow during the execution of project for procurement of materials and for carrying out of the works including temporary works which the Contractor intends to construct shall also be furnished.

- c) In support of this programme, the Contractor shall submit a work schedule in the form of a CPM/PERT Chart. The Engineer-in-Charge shall if necessary modify the programme submitted by the Contractor and approval shall be given by the Engineer-in-Charge indicating the major milestones. The programme approved by the Engineer-in-Charge shall be final and binding on the Contractor. The approval by the Engineer-in-Charge of such programme, or furnishing of such particulars shall not relieve the Contractor of any of his duties or responsibilities under the contract.
- d) During the progress of work, the Contractor shall be required to furnish the resource mobilization plan as required by Engineer-in-Charge to keep up the target date of completion.
- e) This CPM/PERT programme will be required to be updated every month or more frequently as directed by the Engineer-in-Charge, based on the actual progress, resource mobilisation and other field conditions actually prevailing.

f) **PROGRESS REPORTS AND SCHEDULES**

The Contractor shall submit to the Engineer-in-Charge by the third day of every fortnight, six (6) copies of a report in a duly approved format showing the progress made in construction of the works, mobilization of resources etc. during the previous fortnight.

- g) The Contractor shall also submit by the end of every month his anticipated progress schedule for all items of work for the following month in six (6) copies in an approved proforma to the Engineer-in-Charge.
- h) An order book of work shall be maintained and the Contractor shall acknowledge the orders given by the Engineer-in-charge and shall carry them out accordingly.
- i) The Contractor shall particularly note that the tender rates of the various items shall be inclusive of all incidental charges, such as bailing, shoring, bunding, barricading and lighting, etc. if found necessary during execution and no extra shall be due therefore on any account to the Contractor.
- j) The Contractor should see that the labour and staff employed by him behave in a proper manner and should dispense with services of such person or persons from the site as directed by the Engineer-in-charge.

**28. Revised Program**

- a) The Engineer or his nominee's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Engineer or his nominee again at any time for approval. A revised Program is to show the effect of Variations and Compensation Events.

**29. Extension of the Intended Completion Date**

- a) The Engineer or his nominee shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost.
- b) The Engineer or his nominee shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Engineer or his nominee for a decision upon the effect of a Compensation Event or Variation or any other events causing delay, beyond the control of the Contractor and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

- c) Such Request for extension of time, to be eligible for consideration, shall be made by Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed form. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.
- d) **Extension of Time:**
  - i) If at any time during performance of the contract, the Contractor or its Sub-Contractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services, pursuant to GCC Clause 29, the Contractor shall promptly notify the Employer in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Contractor's notice, the Employer shall evaluate the situation and may at its discretion extend the Contractor's time for performance, in which case the extension shall be ratified by the parties by amendment of the contract.
  - ii) Except in case of Force Majeure, as provided under GCC Clause 33, a delay by the Contractor in the performance of its Delivery and Completion obligations shall render the Contractor liable to the imposition of liquidated damages pursuant to GCC Clause 49 (Liquidated Damages), unless an extension of time is agreed upon, pursuant to GCC Clause 29.

### **30. Delays Ordered by the Engineer or his nominee**

- a) The Engineer or his nominee may instruct the Contractor to delay the start or progress of any activity within the Works.

### **31. Management Meetings**

- a) Either the Engineer or his nominee or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.
- b) The Engineer or his nominee shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken is to be decided by the Engineer or his nominee either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

### **32. Early Warning**

- a) The Contractor is to warn the Engineer or his nominee at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of works. The Engineer or his nominee may require the Contractor to provide an estimate of the expected effect of the event or circumstance on the Contract Price and Completion Date. The estimate is to be provided by the Contractor as soon as reasonably possible.
- b) The Contractor shall cooperate with the Engineer or his nominee in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer or his nominee.
- c) The Contractor shall immediately give notice in writing to the Engineer or his nominee upon happening of any event as detailed below if the work is delayed by:
  - i) force majeure, or
  - ii) abnormally bad weather, or
  - iii) serious loss or damage by fire, or

- iv) civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
- v) delay on the part of other Contractors or tradesmen engaged by Engineer in executing work not forming part of the Contract, or
- vi) any other cause which, in the absolute discretion of Engineer, is beyond the Contractor's control.

### 33. Force Majeure

"Force Majeure" means an exceptional event or circumstance:

- (a) which is beyond a Party's control,
- (b) which such Party could not reasonably have provided against before entering into the Contract,
- (c) which, having arisen, such Party could not reasonably have avoided or overcome, and
- (d) which is not substantially attributable to the other Party.

Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

- (i) war and hostilities (whether war be declared or not), invasion, act of foreign enemies;
- (ii) rebellion, revolution, insurrection, or military or usurped power, or civil war;
- (iii) ionizing radiations, or contamination by radioactivity from any nuclear fuel, or from any nuclear waste, from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof;
- (iv) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds; and
- (v) riot, commotion or disorder, unless solely restricted to the employees of the Contractor or of his Sub Contractors and arising from the conduct of the Works;
- (vi) floods, tornadoes, earthquakes and landslides.

## C. QUALITY CONTROL

### 34. Identify Defects

- a) The Engineer or his nominee shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer or his nominee may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer or his nominee considers may have a Defect.

### 35. Tests

- a) If the Engineer or his nominee instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and if the test shows that it has defect, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

### 36. Defect Liability

- a) The Engineer or his nominee shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- b) Every time notice of a Defect is given, the Contractor shall correct the notified defect within the length of time specified by the Engineer or his nominee's notice. To the intent that the works shall, at or as soon as practicable after the expiration of the Defects Liability Period, be delivered to the Employer in the condition required by the Contract, fair wear and tear excepted, to the satisfaction of the Engineer, the Contractor shall :

- (a) complete the work, if any, outstanding on the date stated in the Taking-Over Certificate within the date to be intimated by the Engineer and
- (b) execute all such work of amendment, reconstruction, and remedying defects, shrinkages or other faults as the Engineer may, during the Defects Liability Period or within 14 days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to its expiration, instruct the Contractor to execute.

c) **Cost of Remedying Defects**

All work referred to in Sub-Clause 36.2 shall be executed by the Contractor at his own cost if the necessity thereof is, in the opinion of the Engineer, due to:

- a) The use of materials, Plant or workmanship not in accordance with the Contract, or
- b) Where the Contractor is responsible for the design of part of the Permanent Works, any fault in such design, or the neglect or failure on the part of the Contractor to comply with any obligation, expressed or implied, on the Contractor's part under the Contract.

d) **Defects Liability Certificate**

The Contract shall not be considered as completed until a Defects Liability Certificate shall have been signed by the Engineer and delivered to the Employer, with a copy to the Contractor, stating the date on which the Contractor shall have completed his obligations to execute and complete the Works and remedy any defects therein to the Engineer's satisfaction. The Defects Liability Certificate shall be given by the Engineer within 28 days after the expiration of the Defects Liability Period, or, if different defects liability periods shall become applicable to different Sections or parts of the Permanent Works, the expiration of the latest such period, or as soon thereafter as any works instructed, pursuant to Clauses 36, have been completed to the satisfaction of the Engineer.

e) **Unfulfilled Obligations**

Notwithstanding the issue of the Defects Liability Certificate the Contractor and the Employer shall remain liable for the fulfillment of any obligation incurred under the provisions of the Contract prior to the issue of the Defects Liability Certificate which remains unperformed at the time such Defects Liability Certificate is issued and, for the purposes of determining the nature and extent of any such obligation, the Contract shall be deemed to remain in force between the parties to the Contract.

f) **Uncorrected Defects.**

If the Contractor has not corrected a Defect within the time specified in the Engineer's or his nominee's notice the Engineer or his nominee will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

**D. COST CONTROL**

**37. Bill of Quantities**

- a) The Bill of Quantities shall contain items for the construction, supply, installation, testing and commissioning work to be done by the Contractor.
- b) The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.

**38. Changes in the Quantities**

- a) If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 % provided the change exceeds (+)10% of initial Contract Price, the Engineer or his nominee shall adjust the rate(s), to allow for the change.
- b) The Engineer or his nominee shall not adjust rates for changes in quantities if thereby the Initial Contract Price is exceeded by more than 10% except with the prior approval of the Employer.
- c) If requested by the Engineer or his nominee where the quoted rate (s) of any item(s) is abnormally

high, the Contractor shall provide the Engineer or his nominee with a detailed cost breakdown of such rate in the Bill of Quantities.

### 39. Variations

- a) The Engineer shall make any Variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following:
- (a) increase or decrease the quantity of any work included in the Contract,
  - (b) omit any such work,
  - (c) change the character or quality or kind of any such work,
  - (d) change the levels, lines, position and dimension of any part of the Works,
  - (e) execute additional work of any kind necessary for the completion of the Works,
  - (f) change any specified sequence or timing of construction of any part of the Works.

No such Variation shall in any way vitiate or invalidate the Contract, by the effect, if any, of all such Variations shall be valued in accordance with Clause 40. Provided that where the issue of an instruction to vary the works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor. All Variations shall be included in updated Programs produced by the Contractor.

- b) **Instructions for Variations**  
The Contractor shall not make any such Variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

### 40. Payments for Variations

- a) Variation permitted shall not exceed (+) 25% in quantity of each individual item, and (+)10% of the total contract price. Within 14 days of the date of instruction for executing varied work, extra work or substitution, and before the commencement of such work, notice shall be given either (a) by the Contractor to the Employer of his intention to claim extra payment or a varied rate or price, or (b) by the Employer to the Contractor of his intention to vary rate or price.
- b) For items not existing in the Bill of Quantities or substitution to items in the Bill of Quantities, rate payable should be determined by methods given below and in the order given below.
- i) Rates and prices derived from the rates of similar items in the Contract.
  - ii) Rates and prices in the Schedule of Rates applicable to the Contract plus Ruling Percentage.
  - iii) Market rates of materials and labour, hire charges of plant and machinery used, plus 15% for overheads and profits of Contractor.
- c) For items in the Bill of Quantities but where quantities have increased beyond the variation limits, the rate payable for quantity in excess of the quantity in the Bill of Quantities plus the permissible variation shall be as determined by methods given below.
- i) Rates and prices in the Schedule of Rates applicable to the Contract plus Ruling Percentage.
  - ii) Market rates of materials and labour, hire charges of plant and machinery used, plus 15% for overheads and profits of Contractor.
- whichever is lower, but not less than the rate in the Bill of Quantities.
- d) If there is delay in the Employer and the Contractor coming to an agreement on the rate of an extra item, rates as proposed by the Employer shall be payable provisionally till such time as the rates are finally determined or till date mutually agreed.
- e) If the Engineer or his nominee decides that the urgency of varying the work prevent a quotation being given and considers not delaying the work, no quotation shall be given and the Variation shall

be treated as a Compensation Event.

#### **41. Cash flow forecasts**

- a) When the Program is updated, the Contractor is to provide the Engineer or his nominee with an updated cash flow forecast.

#### **42. Payment Certificates**

42.1 The Contractor shall submit to the Engineer or his nominee monthly statements of the estimated value of the work completed less the cumulative amount certified previously.

42.2 The Engineer or his nominee shall check the Contractors' monthly statement within 14 days and certify the amount to be paid to the Contractor after taking into account any credit or debit for the month in question in respect of materials for the works in the relevant amounts and under conditions set forth in sub-clause 51.6 of the Contract Data (Secured Advance).

- a) The value of work executed shall be determined by the Engineer or his nominee.
- b) The value of work executed shall comprise the value of the quantities of the items in the Bill of quantities completed.
- c) The value of work executed shall include the valuation of variations and Compensation Events.
- d) The Engineer or his nominee may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

#### **43. Payments**

- a) Bills shall be prepared and submitted by the Contractor. Joint measurements shall be taken continuously and need not be connected with billing stage. System of 4 copies of measurements, one each for Contractor, Employer and Engineer or his nominee, and signed by both Contractor and Engineer or his nominee shall be followed.
- b) Payment of Bills for civil works shall be regulated as detailed hereunder:
  - i) Interim Bills shall be paid within 21 days of date of submission of bills in full shape by the Contractor. 75% of the bill amount shall be paid within 7 days of submission of the bill, if on request by the Contractor. Balance amount of the verified bill shall be paid within 21 days of the submission of the bill.
  - ii) Final Bill shall be paid within 3 months as detailed below on issue of Taking Over Certificate by the Engineer or his nominee. The Contractor shall submit final Bill within 30 days of issue of Taking Over Certificate. Engineer or his nominee shall check the bill within 30 days after its receipt and return the bill to Contractor for corrections, if any. The Contractor should re-submit the bill with corrections within 15 days of its return by the Engineer or his nominee. The re-submitted bill shall be checked and paid within 30 days of its receipt.
- c) Payment for Electrical and Mechanical works shall be regulated as detailed below:
  - i) The Contractor shall be entitled upon certificates of the Engineer or his nominee to payments in accordance with the following provisions:
    - D) For supply portion :
      - i) 75% of the value, as certified by the Engineer or his nominee, of the materials from time to time delivered on the site.
      - ii) Balance 25% after completing the work in all respects, commissioning and handing over the installation to the Employer to the satisfaction of the Engineer and his nominee and his certification.

II) For erection portion :

- i) 85% of the value as certified by the Engineer or his nominee, of the installation portion on completion of the erection work under contract, for which payments are claimed.
  - ii) Balance 15% along with other payments if any, after completing the work in all respects, commissioning and taking over the installation by the Employer to the satisfaction of the Engineer and his nominee and his certification.
- ii) For HT works, the work shall not be considered as completed until the installation is energized after obtaining approval certificate from Central Electrical Authority (CEA) and upon the issuance of taking over certificate by Engineer or his nominee. The final payment shall be made only after taking over the installation by the Employer.
- d) All the interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer or his nominee relating to the work done or materials delivered forming part of such payment, may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer- or his nominee-charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.
  - e) Pending consideration of extension of date of completion interim payments shall continue to be made as herein provided, without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.
  - f) No further claims shall be made by the Contractor after submission of the final bill and these shall be deemed to have been waived and extinguished.
  - g) If an amount certified is increased in a later certificate as a result of an award by the Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in the award. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.
  - h) Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.
  - i) All payments to the Contractor under the contract shall unless otherwise stated elsewhere be made to the Contractor in Indian currency through e- payments through designated Bank.

**44. Compensation Events**

The following mutually agreed Compensation Events unless they are caused by the Contractor would be applicable:

- (a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Contract Data.
- (b) The Employer modifies the schedule of other Contractors in a way which affects the work of the Contractor under the contract.
- (c) The Engineer or his nominee gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety.
- (d) Other Contractors, public authorities, utilities or the Employer does not work within the dates and other constraints stated in the Contract that cause delay or extra cost to the Contractor.
- (e) The effect on the Contractor of any of the Employer's Risks.
- (f) Any other Compensation Events listed in the Contract Data or mentioned in the contract.

Whenever any compensation event occurs, the Contractor will notify the Employer, within 14 days and provide a forecast cost of the compensation event.

If a Compensation Event would cause additional cost or would prevent the work being completed in the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Engineer or his nominee shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast has been provided by the Contractor, it is to be assessed by the Engineer or his nominee and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable the Engineer or his nominee shall adjust the Contract Price based on Engineer or his nominee's own forecast. The Engineer or his nominee will assume that the Contractor will react competently and promptly to the event.

Sum payable by way of compensation to be considered as reasonable compensation without reference to actual loss:

All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of the Board without reference to the actual loss or damage sustained and whether or not any damage shall have been sustained.

#### **45. Rates for items to be inclusive of Taxes**

- a) The Contractor's rates and prices shall include all taxes, duties and fees including Port charges like wharfage, Port dues, berth hire, pilotage etc. if any applicable, all charges and taxes whatsoever excluding Goods and Service Tax (GST) [For Civil/Mechanical/ Electrical works invited through e-tender portal [www.tenderwizard.com](http://www.tenderwizard.com) /COPT and including Goods and Services Tax (GST) For Mechanical/Electrical works invited through GeM portal [www.gem.gov.in](http://www.gem.gov.in).] in respect of materials, labour and plant and all other things obtained or used by the Contractor for the execution and maintenance of the Work or any temporary works.
- b) GST as may be applicable from time to time shall be shown separately in the invoice. The invoice to be submitted by the Contractor shall include the GST Registration Number of the Contractor as well as the Employer.
- c) The Employer will perform such duties in regard to the deduction of such taxes at sources as per applicable law. Any new taxes, levies, duties, imposed after signing the Contract shall be reimbursed by the Employer on production of documentary evidence.
- d) The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the Work and of the rates and prices stated in the Schedule of Quantities.
- e) The percentages/ rates / lumpsum amount as applicable shall except in so far as the Contract otherwise provides, cover all obligations of the Contractor under this Contract and all matters and things necessary for the proper completion and maintenance of the Work. The percentages/ rates / lumpsum amount quoted for each item shall be all inclusive value of the finished Work as per drawings and specifications and shall cover the cost of all constructional plants, temporary works, appliances, materials, both for the Work and temporary works, labour and all other matter in connection with each item quoted for.

#### **46. Currencies**

- a) All payments shall be made in Indian Rupees unless specifically mentioned.

#### **47. Retention**

- a) The Employer shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.
- b) Retention Money shall be deducted at 5% of the gross amount of the bill from the first Running Account bill onwards till the recovered sum amounts to 5% of the contract value or the value of the

work done whichever is higher. Retention money shall be refunded to the Contractor within 14days from the date of payment of final bill.

#### **48. Liquidated Damages**

- a) In case of delay in completion of the contract, liquidated damages (L.D) may be levied at the rate of half per cent (½%) of the contract price per week of delay, subject to a maximum of 10 per cent of the contract price. the amount of liquidated damages can be adjusted or set-off against any sum payable to the contractor.
- i) 49a(i) the employer, if satisfied, that the works can be completed by the contractor within a reasonable time after the specified time for completion, may allow further extension of time at its discretion with or without the levy of l.d. in the event of extension granted being with l.d, the employer will be entitled without prejudice to any other right or remedy available in that behalf, to recover from the contractor as agreed damages equivalent to half per cent (½%) of the contract value of the works for each week or part of the week subject to the ceiling defined in sub-clause 49 a.
- ii) 49a(ii) the employer, if not satisfied that the works can be completed by the contractor, and in the event of failure on the part of the contractor to complete work within further extension of time allowed as aforesaid, shall be entitled, without prejudice to any other right, or remedy available in that behalf, to rescind the contract.
- iii) 49a(iii) the employer, if not satisfied with the progress of the contract and in the event of failure of the contractor to recoup the delays in the mutually agreed time frame, shall be entitled to terminate the contract.
- iv) 49a(iv) in the event of such termination of the contract as described in clauses 49a(ii) or 49a(iii) or both the employer shall be entitled to recover l.d. upto ten per cent (10%) of the contract value and forfeit the security deposit made by the contractor besides getting the work completed by other means at the risk and cost of the contractor.
- b) **Reduction of liquidated damages**

If, before the time for completion of the whole of the works or, if applicable, any section, taking over certificate has been issued for any part of the works or of a section, the liquidated damages for delay in completion of the remainder of the works or of that section shall, for any period of delay after the date stated in such taking over certificate, and in the absence of alternative provisions in the contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the works or section, as applicable. The provisions of this sub-clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.
- c) For levying LD, the employer is not required to have documentary evidence to quantify or prove the losses suffered by the employer due to delay in completion of work by the contractor, as per agreement conditions.

#### **49. Nominated Sub Contractors**

- a) All specialists, merchants, tradesmen and others executing any work or supplying any good, materials, Plant or services for which provisional Sums are included in the Contract, who may have been or be nominated or selected or approved by the Employer or the Engineer, and all persons to whom by virtue of the provisions of the Contract, the Contractor is required to subcontract shall, in the execution of such work or the supply of such goods, materials, Plant or services, be deemed to be Sub Contractors to the Contractor and are referred to in this Contract as “Nominated Sub Contractors”.

#### **50. Securities**

- a) **Security Deposit (SD) shall be at 10% of the contract value or value of the work done whichever is higher and it shall consist of two parts:**

Performance Security to be submitted at award of the work

Retention Money to be recovered from Running Bills as detailed in Clause 47 above and Clause 31 in ITT

The total amount thus deposited towards SD will be retained as security for the due and proper fulfillment of the contract and will not carry any interest. Such deposit shall be forfeited on failure to perform or non-fulfillment by the Contractor of the terms and conditions of the contract.

b) **Performance Security shall be as below:**

- a) For civil works : 10 % of the Contract value (5% SD & 5% Retention)
- b) For all Electrical and Mechanical works : 10% (5% SD & 5% Retention) of the Contract value
- c) The Performance Security shall be provided by the Contractor to the Employer not later than 21 days for domestic bids and 28 days for international bids from the date of letter of acceptance and shall be furnished in one of the following forms:

Insurance Surety Bond/ Banker's Cheque/ Account Payee Demand Draft from any Commercial Bank having its branch at Cochin acceptable by Cochin Port Authority.

An irrevocable Bank Guarantee (BG) enforceable and encashable at Cochin, drawn from any Commercial Bank having its branch at Cochin acceptable by Cochin Port Authority.

- d) The BG furnished towards the Performance Security shall be valid for a period until a date 30days from the day of expiry of the defect liability period stipulated as per the terms of the contract.
- e) Unless performance Security is furnished within the period as specified in clause 52.3 above or such extension of that period as may be permitted by the Engineer in writing, the Earnest Money will be liable to forfeiture and the contract to cancellation.
- f) Performance Security will be released / refunded to the Contractor not later than 30 days from the date of completion of Defect Liability / warranty period of the work.

**51. Cost of Repairs**

- a) Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Liability period shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

**E. FINISHING THE CONTRACT**

**52. Completion**

- a) After completion of the work, the Contractor will serve a written notice to the Engineer or his nominee/Employer to this effect. The Engineer or his nominee/Employer upon receipt of this notice shall conduct a complete joint survey of the work within 7 days and prepare a defects list jointly. The defects pointed out by the Engineer or his nominee/ Employer would be rectified by the Contractor within 14 days and thereafter acceptance report be signed jointly by the Contractor and the Employer. This joint acceptance report shall be treated as 'Completion Certificate'. The Completion Report / Certificate to the Contractor will be issued only after obtaining 'No Claim Certificate' from the Contractor in the format approved by the department stating that they have no further claims against CoPA in respect of the Work.
- b) **No Claim Certificate:**  
No dispute or difference on any matter whatsoever, pertaining to the contract can be raised by the Contractor after submission of 'No Claim Certificate' as per the format in the tender document.
- c) **Substantial Completion of Parts**  
If any part of the Permanent Works has been substantially completed and satisfactorily passed any Tests on Completion prescribed by the Contract, the Engineer may issue a Taking-Over Certificate in respect of that part of the Permanent works before completion of the whole of the Works and,

upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the Permanent Works during the Defects Liability Period.

d) **Surfaces Requiring Reinstatement**

Provided that a Taking Over Certificate given in respect of any Section or part of the Permanent Works before completion of the whole of the Works shall not be deemed to certify completion of any ground or surfaces requiring reinstatement, unless such Taking Over Certificate shall expressly so state.

**53. TAKING OVER**

a) The Engineer or his nominee shall take over the Site and the Works within seven days of the Engineer or his nominee issuing a certificate of Completion.

b) **Taking Over Certificate**

When the whole of the Works have been substantially completed and have satisfactorily passed any Tests on Completion prescribed by the Contract, the Contractor may give a notice to that effect to the Engineer, with a copy to the Employer, accompanied by a written undertaking to finish with due expedition any outstanding work during the Defects Liability Period. Such notice and undertaking shall be deemed to be a request by the Contractor for the Engineer or his nominee to issue a Taking-over Certificate in respect of the Works. The Engineer or his nominee shall, within 21 days of the date of delivery of such notice, either issue to the Contractor, with a copy to the Employer, a Taking-Over Certificate, stating the date on which, in his opinion, the Works were substantially completed in accordance with the Contract, or give instruction in writing to the Contractor specifying all the work which in the Engineer's opinion, is required to be done by the Contractor before the issue of such Certificate. The Engineer or his nominee shall also notify the Contractor of any defects in the Works affecting substantial completion that may appear after such instructions and before completion of the Works specified therein. The Contractor shall be entitled to receive such Taking Over Certificate within 21 days of completion, to the satisfaction of the Engineer or his nominee, of the Works so specified and remedying any defects so notified.

**54. Termination:**

a) **Termination for Default:**

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

If the Contractor fails to deliver any or all of the Goods within the period specified in the Contract, or within the extensions granted by the Employer pursuant to GCC Clause 25.

If the Contractor fails to perform any other obligation under the contract or

If the Contractor, in the judgment of the Employer has engaged in fraud and corruption as defined in Clause 27 under Instruction to Tenderers, in competing for or in executing the contract.

In the event the Employer terminates the contract in whole or in part, pursuant to GCC Clause 26.1.1, the Employer reserves its right to take any one or more of the following actions:-

The Performance Security is to be forfeited;

The Employer may procure, upon such terms and in such manner as it deems appropriate, Goods or Related Services similar to those undelivered or not performed, and the Contractor shall be liable to the Employer for any additional costs for such similar Goods or Related Services. However, the Contractor shall continue performance of the Contract to the extent not terminated.

b) **Termination for Insolvency:**

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

c) **Termination for Convenience:**

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

If the contract is terminated for convenience of the Employer as stated in GCC Clause 26.3 (a), the Goods that are complete and ready for shipment within twenty-eight (28) days after the Contractor's receipt of notice of termination shall be accepted by the Employer at the Contract terms and prices. For the remaining Goods, the Employer may elect:-

To have any portion completed and delivered at the Contract terms and prices; and/or

To cancel the remainder and pay to the Contractor an agreed amount for partially completed Goods and Related Services and for materials and parts previously procured by the Contractor.

**55. Payment upon Termination**

- a) If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer or his nominee shall issue a certificate for the value of the work done less advance payments received upto the date of the issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less any extra cost of completing the Works through other means which may be incurred by the Employer. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.
- b) If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Engineer or his nominee shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and loss of profit on uncompleted works less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to be deducted at source as per applicable law.

**F. LABOUR LAWS AND MISCELLANEOUS CLAUSES**

**56. Labour**

- a) The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.
- b) The Contractor shall, if required by the Engineer or his nominee, deliver to the Engineer or his nominee a return in detail, in such form and at such intervals as the Engineer or his nominee may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer or his nominee may require.

**57. Compliance with labour regulations.**

During continuance of the contract, the Contractor and his sub Contractors shall abide at all times by all existing labour enactment and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules) regulations, bye laws that may be passed or notification that may be issued under any labour law in

future either by the State or Central Government or the local authority. Salient features of some of the major labour laws that are applicable to construction industry are given below. The Contractor shall keep the Employer indemnified in case any action is taken against the Employer by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Employer is caused to pay or reimburse such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/ bye laws/ Acts/ Rules/ regulations including amendments, if any, on the part of the Contractor the Engineer or his nominee/Employer shall have the right to deduct any money due to the Contractor including his amount of performance security. The Employer/Engineer or his nominee shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Employer.

**58. Insurance of Works and Contractor's Equipment**

- a) The Insurance shall be issued by any Insurance Company from its Branch at Cochin which has been determined by the Contractor to be acceptable to the Employer.

**59. Transport of Contractor's Equipment or Temporary Works**

- a) If it is found necessary for the Contractor to move one or more loads of heavy constructional plant or equipment materials or pre-constructed units or parts of units of work over roads, highways or bridges on which such oversized and overweight items are not normally allowed to be moved, the Contractor shall obtain prior permission from the concerned authorities. Payments for complying with the requirements, if any, for protection of or strengthening of the roads, highways or bridges shall be deemed to be included in his contract price.

**60. Transport of Materials or Plant**

- a) The Contractor shall save harmless and indemnify the Employer in respect of all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of or in relation to any claim made by the concerned authorities in respect of damage or injury to roads, highways or bridges. In case of failure of the Contractor to settle such claims and in case the Employer is held responsible for payment to the authorities, then the Employer shall settle the claim and the Employer's expenses in this regard, as certified by the Engineer, may be deducted by the Employer from any money due or to become due to the Contractor and the Engineer shall notify the Contractor accordingly with a copy to the Employer.

**61. Labour Laws & Regulations**

The Contractor shall at all times during the continuance of the Contract comply fully with all existing Acts, regulations and bye-laws including all statutory amendments and re-enactment of State or Central Govt. and other local authorities and any other enactments and act that may be passed in future either by the State or the Central Govt. or local authority, including Indian Workmen's Compensation Act, Contract Labour (Regulation And Abolition) Act 1970 and Equal Remuneration Act 1976, Employees' State Insurance Act, 1948, Factories Act, Minimum Wages Act, Provident Fund Regulations. Employees' Provident Fund Act and schemes made under the same Act, Health and Sanitary Arrangements for Workmen, Insurance and other benefits and shall keep the Employer indemnified in case any action is commenced for contravention by the Contractor. If the Employer is caused to pay or reimburse any amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated here-forth on the part of the Contractor, the Engineer shall have the right to recover from the Contractor any sum required estimated to be required for making good the loss or damage suffered by the Employer. The Contract shall maintain the records prescribed under ESI Regulations & EPF scheme and make the contribution towards ESI and EPF in respect of persons employed by Contractor. The Contractor shall also make available such records for inspection by ESI Inspector and EPF organization during the inspection and furnish copies of all such records to the Employer regularly.

- a) **Accident Prevention Officer**  
The Contractor shall have on his staff on site an officer dealing with all matters regarding safety and protection against, accidents of all staff and labour. This officer shall be qualified for this work and shall have the authority to issue instructions and shall take protective measures to prevent accidents.
- b) **Disorderly Conduct**  
The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour and for the preservation of peace and protection of Persons and property in the neighborhood of the Works from the same.
- c) **Health and Safety**  
Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour and, in collaboration with and to the requirements of the local health authorities, to ensure that medical staff, first aid equipment and stores, sick bay and suitable ambulance services are available at the camps, housing and on the site at all times throughout the period of the Contract and that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.
- d) **Supply of Water**  
The Contractor shall, so far as is reasonably practicable, having regard to local conditions provide on the Site, to the satisfaction of the Engineer's Representative, an adequate supply of drinking and other water for the use of the Contractor's staff and work people.
- e) **Alcoholic Liquor or Drugs**  
The Contractor shall not import, sell, give, barter or otherwise dispose of any alcoholic liquor, or drugs or permit or suffer any such importation, sale, gift, barter disposal by his sub-contract agents or employees.
- f) **Arms and Ammunition**  
The Contractor shall not give, barter or otherwise dispose of to any persons or person, any arms or ammunition of any kind or permit or suffer the same as aforesaid.
- g) **Festivals and Religious Customs**  
The Contractor shall in all dealings with labour in his employment have due regard to all recognised festivals, days of rest and religious or other customs.
- h) **Epidemics**  
In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.
- i) **Employment of Person in the Service of Others**  
The Contractor shall not recruit or attempt to recruit his staff and labour from amongst persons in the service of the Employer or other agencies engaged for any works of the Employer.
- j) **Housing for Labour**  
Save in so far as the Contract otherwise provides, the Contractor shall provide and maintain such accommodation and amenities as he may consider necessary for all his staff and labour employed for the purposes of or in connection with the Contract, including all fencing water supply (both for drinking and other purposes), electricity supply, sanitation, cook houses fire prevention and fire-fighting equipment, furniture other requirements in connection with such accommodation or amenities. On completion of the Contract, unless otherwise agreed with the Employer, the temporary camps/housing provided by the Contractor, shall be removed and the site reinstated to its original

condition, all to the approval of the Engineer. The land for construction of labour camps shall be allotted only outside the security area to the extent available and such areas allotted as per the prevailing lease rent.

k) **Fair Wages, Records, Inspection**

The Contractor shall pay the labourers engaged by him on the work not less than a fair wage which expression shall mean whether for time or piecework the respective rates of wages as notified under the provisions of the Minimum Wages Act from time to time.

The Contractor shall maintain records of Wages and other remuneration paid to his employee in such form as may be convenient and to the requirements of the Employer/Engineer and the Labour Enforcement Officer (Central), Ministry of Labour, Govt. of India, or such other authorized person appointed by the Central Govt. The Contractor shall allow inspection of the aforesaid Wage Records and Wage Slips to the Engineer and to any of his workers or to his agent at a convenient time and place after due notice is received, or to any other person authorized by him on his behalf.

l) **Reporting of Accidents**

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the local police authorities immediately by the available means.

m) **Observance by Sub-Contractors**

The Contractor shall be responsible for observance by his sub-Contractors of the foregoing provisions.

n) **Port Entry Permission**

The Contractor shall submit prior application for Port entry passes to the concerned Port authority for his labours and the staffs engaged in the works.

The Contractor shall retain the original passes obtained by them in respect of their labour and staff engaged in the Works and produce the same to the Engineer as and when called for. It should not be either destroyed or allowed to be taken by the labour/staff after its use.

o) **Site - Protected Area**

The Site of Work is a protected area. Entry to the Port premises is regulated by entry passes. These passes will be issued by the Central Industrial Security Force or any other authority authorized by the Employer. The Contractor should furnish a list of person for whom the passes are to be issued to the Engineer and arrange to obtain the passes from the appropriate authority, based on the recommendation of the Engineer and abide by the Rules of the Cochin Port Trust with regard to entry etc. For the entry of trucks and other vehicles also, the Contractor should obtain necessary permits at his own cost .

The Contractor shall retain the original passes obtained by them in respect of their labour and staffs engaged in the Works and produce the same to the Engineer as and when called for. It should not be either destroyed or allowed to be taken by the labour/staff after its use.

**62. Life Saving Appliances And First Aid**

- a) The Contractor shall provide and maintain upon the Works sufficient proper and efficient life saving appliances and first aid equipment to the approval of the Engineer. The appliances and equipment shall be available for use at all times.

**63. Action in case Work not done as per Specifications**

All works under or in course of execution or executed in pursuance of the contract shall at all times be open and accessible to the inspection and supervision of the Engineer or his authorised subordinates in charge of the work and all the superior officers, officer of the Quality Control Organisation of the Department, Vigilance Commissions, and the Contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the Contractor, either himself be present to receive orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the Contractor himself.

If it shall appear to the Engineer or his nominee or his authorised subordinates in charge of the work or to the Chief Vigilance Commissioner or his subordinate officers, that any work has been executed with unsound, imperfect, or unskillful workmanship, or with materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the contract the Contractor shall, on demand in writing which shall be made within twelve months of the completion of the work from the Engineer or his nominee specifying the work, materials or articles complained of notwithstanding that the same may have been passed, certified and paid for forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the materials or articles so specified and provide other proper and suitable materials or articles at his own charge and cost. In the event of the failing to do so within a period specified by the Engineer or his nominee in his demand aforesaid, then the Contractor shall be liable to pay compensation at the same rate as under Clause 49 of the contract (for non-completion of the work in time) for this default.

In such case the Engineer or his nominee may not accept the item of work at the rates applicable under the contract but may accept such items at reduced rates as the competent authority may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure or he may reject the work outright without any payment and/or get it and other connected and incidental items rectified, or removed and re-executed at the risk and cost of the Contractor. Decision of the Engineer or his nominee to be conveyed in writing in respect of the same will be final and binding on the Contractor.

**64. Action where no Specifications are specified**

- a) In the case of any class of work for which there are no such specifications as referred to in Clause 16, such work shall be carried out in accordance with the Bureau of Indian Standards Specifications. In case there is no such specifications in Bureau of Indian Standards, the work shall be carried out as per manufacturers specifications. In case there are no such specifications as required above, the work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer or his nominee.

**65. Bribes**

- a) If the Contractor, or any of his Sub Contractors, agents or servants gives or offers to give to any person any bribe, gift, gratification or commission as an inducement or reward for doing or forbearing to do any action in relation to the Contract or any other contract with the Employer, or for showing or forbearing to show favour or disfavor to any person in relation to the Contract or to any other contract with the Employer, then the Employer may enter upon the Site and the works and terminate the employment of the Contractor and the provisions of Clause 59 hereof shall apply as if such entry and termination had been made pursuant to that Clause.  
The bidders shall give an undertaking that they have not made any payment or illegal gratification to any person/authority connected with the bid process so as to influence the bid process and have not committed any offence under the Prevention of Corruption Act in connection with the bid.  
The bidders shall disclose any payments made or proposed to be made to any intermediaries (agents etc) in connection with the bid.

**66. Water Supply**

- a) Water required for the construction works including curing work shall be arranged by the Contractor on his own at his cost.

**67. Power Supply**

- a) The Electricity connection for lighting, welding and other mechanical works to the extent available will be made available by the Employer within the Port area. Drawing of power lines/cables etc. from the available source of supply of power to the actual work site, providing switches and making connections etc. shall be arranged by the Contractor at his cost. The temporary lines and connections by the Contractor shall be approved by the Engineer's representative before availing power. The Contractor shall provide Energy Meter to read consumption in units.

- b) The Contractor shall indicate his requirement of power to the Engineer within 15 days from the date of the letter of acceptance of the tender. The Contractor shall pay to the Employer, the power charges as per the prevailing Tariff schedule of Cochin Port Trust in force during the work of the Contractor. The Contractor shall also pay the connection and disconnection charges as applicable.
- c) The Contractor shall submit a complete drawing of the power points, wiring, diagram indicating all electrical loads, earthing etc. in complete shape along with the completion report. The Energy Meter provided is calibrated by Kerala State Electrical Inspectorate /TMR division, KSEB and such a Certificate to be produced. For non supply of power at any stage port will not be responsible and the Contractor shall not have any claim whatever for loss or damage.
- d) If there is any disruption in the power supply due to supply failure/restrictions imposed by the Kerala State Electricity Board, the department shall not be held responsible and the Contractor has to make suitable alternative arrangements like generator, welding set etc. at their cost.

**68. Taxes and Duties**

- a) The Price will be fixed and inclusive of all the duties and taxes including GST. All investments, operating expenses, incidentals, overheads etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the bidder.
- b) The Contractor shall be solely responsible for all taxes that may be levied on the Contractor or on the earnings of any of his employees or personnel engaged by him and shall hold the Owner/Purchaser indemnified and harmless against any claims that may be against the Owner/Purchaser in this behalf. The Owner/Purchaser does not undertake any responsibility whatsoever regarding taxes under Indian Income Tax Act of the Contractor or his personnel. If it is obligatory under the provision under the Indian Income Tax deduction of Income Tax at source shall be done by the Owner/Purchaser.
- c) Cess as per Building and other Construction Workers Welfare Cess Act (Act 28 of 1996) at the rate of one percent or at the rates prevailing in force at the time of payment of bills, of the cost of construction should be borne by the contractor and the same will be deducted from contractor's bills while making payment or when crediting amount to contractors account.
- d) GST will be governed as per the prevailing Rules. TDS Under GST Law shall be deducted as per prevailing rate.
- e) **Income Tax**  
The Contractor and his staff shall be responsible for payment of all personal income taxes to the concerned authorities as per the law in force from time to time. Deduction of Income Tax shall be made by the Employer from each certificate of payment to the Contractor at the rate as per prevailing rates or such other rates as may be specified by the Central Government from time to time, on the gross amount of the Contractor's bill for payment. The Contractor shall comply with all the GST Regulations, viz. timely uploading of bills, issue of debit/ credit notes etc.

**69. Noise and Disturbance**

- a) All works shall be carried out without unreasonable noise and disturbance. The Contractor shall indemnify the Employer from and against any liability for damages on account of noise or other disturbance created while or in carrying out the work and from and against all claims demands proceedings damages costs charges and expenses whatsoever in regard or in relation to such liability.

**70. Safety Code**

- a) Necessary Indian Dock Safety regulations for the safety purpose shall be adhered to by the Contractor and he will be held responsible for any violations of the same. The set of such conditions (regulation) is available with Cochin Port Trust and the Contractor is required to go through it before tendering.
- b) Besides the above, the Contractor shall also scrupulously adhere to and observe the following safety codes:
  - a) The Contractor has to provide sufficient barricades to site of work so that traffic plying nearby should not damage the recently concreted work. In case of any damage on account of above, the entire responsibility will remain with Contractor and nothing extra will be paid on this account.

- b) Suitable and strong scaffolds should be provided for the workmen for all work that cannot be safely done from ground.
- c) No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm (clear) and the distance between the two adjacent rungs shall not be more than 30 cm.
- d) Hoisting machines and tackles used in the works including their attachments, anchorage and supports shall be in perfect condition as per stipulations of the relevant Rules. The ropes used an hoisting or lowering materials or as means or suspension shall be of durable quality and adequate strength and free from defects.
- e) The excavated material shall no be placed within 1.5 meters of the edge of the trench or half of the depth of the trench, whichever is more. All trenches and excavation shall be provided with necessary fencing to lighting. Every opening in the floor of a building or in a working platform be provided with suitable fence to prevent the fall of persons or materials. No floor, roof or other parts of the structure shall be so overloaded with debris or materials as to render it unsafe
- f) Workers employed on mixing and handling materials such cement, cement mortars concrete, lime mortar and asphalt shall be provided with protective footwear and rubber hand gloves and thin cloth for covering face and head.
- g) Those engaged in welding work shall be provided with welder protective eye shield and glove.
- h) All safety rules shall be strictly followed while working on live electrical systems or installations as stipulated in the relevant Rules.

#### **71. Port Authority Rules**

- a) The Contractor shall observe the Conservancy Rules relating to the harbour and shall always take such necessary additional steps to keep the harbour waters free of noxious or unhygienic matters coming from his works as are required by the Employer. Under no circumstances shall inflammable materials be allowed to spill into the harbour waters.
- b) The Contractor shall always observe and comply with the working rules and regulations of the Port Trust in force or as issued from time to time.
- c) The Contractor's plants, equipments, floating crafts, dredgers, materials etc. which are brought to site for facilitating the proper execution of the contract work within the port area are not liable to port dues and charges like wharfage, berth hire and other charges during the period of contract and until expiry of defect liability period.

#### **72. Execution of work**

- a) The Contractor shall be required to execute the work in such a way so as not to cause any damage, hindrance or interference with port activities going on in the area or nearby. He should not also deposit the materials at such places which may cause inconvenience to the public and the work going on in the nearby area. The Contractor shall have to make good all damages done by him to the structures nearby while executing the work and no extra payment shall be made to him on that account.
- b) All the materials required to be used in the work shall have to be got approved from the Engineer-in-Charge before stacking at the site of work.
- c) Barricading, including proper lighting arrangement in the night at the required places shall have to be provided by the Contractor at his own cost, including necessary arrangements for proper movement of traffic by carefully maintained approaches and road diversions with suitable sign boards for indications of road signs etc. as directed by the Engineer-in-Charge.

#### **73. Indemnities**

The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

- a) bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, willful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and
- b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss:
  - c) arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, and
  - d) is attributable to any negligence, willful act or breach of the Contract by the Contractor, the Contractor's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

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## SECTION IV SPECIAL CONDITIONS OF CONTRACT

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- 1 Special conditions shall be read in conjunction with the general conditions of contract, specifications, drawings and any other document forming part of this contract wherever the context so requires.

Notwithstanding the Sub-division of the documents into these separate section and volume every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.

Where any portion of the General Conditions of Contract is repugnant to or at variance with any provision of the Special Conditions, the provisions of the Special Conditions shall be deemed to override the provisions of the General Conditions of Contract and shall to the extent of such repugnancy of variations, prevail.

**2 Measurements of Work Done:**

In addition to the Clauses in GCC- 'Computerised Measurement Book', measurement of the work can also be done as detailed below.

- 2.1 Executive Engineer (hereinafter called the Engineer's Nominee) shall, except as otherwise provided, ascertain and determine by measurement the value in accordance with the Contract of work done.
- 2.2 All measurement of all items having financial value shall be entered in Measurement Book and/or level field book so that a complete record is obtained of all works performed under the Contract.
- 2.3 All measurements and levels shall be taken jointly by the Engineer's Nominee or his authorised representative and by the Contractor or his authorised representative from time to time during the progress of the work and such measurements shall be signed and dated by the Engineer's Nominee and the Contractor or their representatives in token of their acceptance. If the Contractor objects to any of the measurements recorded, a note shall be made to that effect with reason and signed by both the parties.
- 2.4 Department shall not entertain any claim from Contractor for any loss or damages on this account. If the Contractor or his authorised representative does not remain present at the time of such measurements after the Contractor or his authorised representative has been given a notice in writing three (3) days in advance or fails to countersign or to record objection within a week from the date of the measurement, then such measurements recorded in his absence by the Engineer's Nominee or his representative shall be deemed to be accepted by the Contractor.
- 2.5 The Contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels.
- 2.6 Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set forth in the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available then a mutually agreed method shall be followed.
- 2.7 The Contractor shall give not less than seven days' notice to the Engineer's Nominee or his authorised representative in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer's Nominee or

his authorised representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Engineer's Nominee's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

2.8 Engineer's Nominee or his authorised representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.

2.9 It is also a term of this Contract that recording of measurements of any item of work in the measurement book and/or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates nor shall it relieve the Contractor from liabilities from any over measurement or defects noticed till completion of the defects liability period.

### **3 PHASING OF WORKS**

The work has to be carried out in phases as approved by COPA from time to time so that the total project work can progress smoothly with least obstruction to the operations and also works of other Contractors/ agencies..

### **4 SAMPLES**

The Contractor shall require to provide to COPA samples of all the materials sufficiently in advance free of cost to obtain approval of COPA. Approved samples shall be retained by COPA until the completion of the work and all materials and workmanship incorporated in the work are to conform to the approved samples in all respects. Rejected materials shall be removed from the site immediately under the supervision of COPA.

### **5 SCHEDULE OF QUANTITIES (SOQ)**

The quantities given in the tender SOQ are tentative and shall vary as per the site/ COPA requirements. Only required items & quantities are to be supplied/ installed. Contractor shall take detailed site measurements, for the items like Supply of HT & LT cables, Earth strips, piping, ducting etc., before placing purchase order / taking procurement action.

Contractor shall monitor the requirements of various items and shall report to COPA Engineer in charge with regard to deviations in the existing items and requirement of additional / extra items, if any, for taking necessary action.

### **6 GENERAL REQUIREMENTS OF COMPONENTS**

#### **6.1 Quality of materials**

All materials and equipments supplied by the contractor shall be new. They shall be of such design, size and material as to satisfactorily function under the rated conditions of operation and to withstand the environmental conditions at site.

#### **6.2 Inspection of material and Equipments**

Materials to be used in the work shall be inspected by the engineer-in-charge. Such inspection will be of the following categories.

- a) Inspection of materials/Equipments to be witnessed at the Manufacturer's premises in accordance with relevant BTS/Agreement Inspection Procedure. The contractor has to give inspection call for each item at least three weeks in advance. The inspection call should include (i) Name of the item (ii) Reference number of schedule of quantity (iii) Details of approval of specification/drawings etc (iv)Address of the suppliers/sub suppliers and (v) Tentative date of inspection. No item/equipment should be supplied without giving inspection call. All arrangements for conducting the inspection and testing at the factory shall be responsibility of the contractor. Inspection / despatch clearance issued by Engineer in charge does not absolve the contractor for the responsibility to meet the tender

specification. After the receipt of inspection call for an item from the contractor COPA will depute inspectors to suppliers works. In case the offered item is not ready or inspection could not be carried out due to lack of facilities for testing etc. at supplier's works, the inspector will return and the item has to be re-offered for inspection as per its readiness. In this case all the expenses (boarding, lodging, travelling expenses etc.) of the inspector for the second inspection shall have to be borne by the contractor. In case any defect is noticed at a later stage the contractor has to rectify / replace the entire lot to meet specified standards.

- b) To receive materials at site with manufacturer's Test Certificate(s)
- c) To receive materials after physical inspection at site.

### **6.3 Ratings of components**

All current carrying components in an installation shall be of appropriate ratings of voltage, current and frequency as required at the respective sections of the electrical installation in which they are used without their respective ratings being exceeded.

## **7 LIQUIDATED DAMAGES**

For levying LD as per General Conditions of Contract, the employer is not required to have documentary evidence to quantify or prove the losses suffered by the Employer due to delay in completion of work by the contractor, as per agreement conditions.

## **8 CONTRACTOR TO SUBMIT PROGRAMME**

After the acceptance of his Tender, the Contractor shall, within seven days, submit to the Engineer-in-Charge for his approval, a detailed programme taking into account the total time period stipulated in the contract showing the order, the procedure and method in which he proposes to carry out the works.

He shall furnish the particulars in writing of his arrangements of manpower, plant and machinery and all other resources owned and dedicated to this work. Cash flow during the execution of project for procurement of materials and for carrying out of the works including temporary works which the Contractor intends to construct shall also be furnished.

In support of this programme, the Contractor shall submit a work schedule in the form of a CPM/PERT Chart. The Engineer-in-Charge shall if necessary modify the programme submitted by the Contractor and approval shall be given by the Engineer-in-Charge indicating the major milestones. The programme approved by the Engineer-in-Charge shall be final and binding on the Contractor. The approval by the Engineer-in-Charge of such programme, or furnishing of such particulars shall not relieve the Contractor of any of his duties or responsibilities under the contract.

During the progress of work, the Contractor shall be required to furnish the resource mobilisation plan as required by Engineer-in-Charge to keep up the target date of completion.

This CPM/PERT programme will be required to be updated every month or more frequently as directed by the Engineer-in-Charge, based on the actual progress, resource mobilisation and other field conditions actually prevailing.

## **9 TAXES AND DUTIES**

All duties, taxes and other levies payable by the bidder/Contractor under the Contract, or for any other cause as applicable on the last date of submission of Bid, shall be included in the rates, prices and the total Bid Price submitted by the Bidder. All investments, operating expenses, incidentals, overheads etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the bidder. However, such duties, taxes, levies etc. which is notified after the last date of submission of Bid and/ or any increase over the rate existing on the last date of submission of Bid shall be reimbursed by the company on production of documentary evidence in support of payment actually made to the concerned authorities. Similarly if there is any decrease in such duties, taxes and levies the same shall become recoverable from the contractor. The details of such duties, taxes and other levies along with rates shall be declared by the bidder.

- 9.1 The Contractor shall be solely responsible for all taxes that may be levied on the Contractor or on the earnings of any of his employees or personnel engaged by him and shall hold the Owner/Purchaser indemnified and harmless against any claims that may be against the Owner/Purchaser in this behalf.

The Owner/Purchaser does not undertake any responsibility whatsoever regarding taxes under Indian Income Tax Act of the Contractor or his personnel. If it is obligatory under the provision under the Indian Income Tax deduction of Income Tax at source shall be done by the Owner/Purchaser.

- 9.2 Cess as per Building and other Construction Workers Welfare Cess Act (Act 28 of 1996) at the rate of one percent or at the rates prevailing in force at the time of payment of bills, of the cost of construction should be borne by the contractor and the same will be deducted from contractor's bills while making payment or when crediting amount to contractors account.
- 9.3 The item wise rate quoted by bidder shall be inclusive of all taxes, duties & levies. Payment of GST is the responsibility of bidder/contractor.
- 9.4 The rates and prices quoted by the Bidder shall be fixed for the duration of the contract and shall not be subject to variations on any account except to the extent variations allowed as per the conditions of the contract of the bidding document. The Company reserved the right to deduct / withheld any amount towards taxes, levies etc. and to deal with such amount in terms of the provisions of the Statute or in terms of the direction of any statutory authority and the Company shall only provide with certificate towards such deduction and shall not be responsible for any reason whatsoever.

#### **10 AUTHORIZED PERSONAL**

The Contractor shall engage an authorised agent experienced and qualified technical personnel for managing and supervising the work and shall see that all of them are always at the work spot during the working hours, personally checking all items of work. He shall take such orders as may be given to him by the Engineer-in-charge from time to time and shall be responsible to carry them out properly. In case contractor fails to provide an agent as per terms given above, CoPA reserves the right to deduct a reasonable amount from the contractor's bill, subject to a maximum of Rs.25, 000/- per month, for every month of absence.

#### **11 QUALITY PLAN FOR MANUFACTURE OF EQUIPMENT**

The Quality plan for manufacture is a document, which presents in a tabular form, the Quality Control checks to be exercised by the Contractor during the various stages of manufacture and dispatch in order to meet the requirements of this Contract. This plan shall detail the components manufactured, characteristics being controlled and acceptance norms for this characteristic and the agency responsible for performance and witnessing the checks.

After issuance of work order, the contractor shall submit to the Owner, the detailed quality plans to be followed during manufacture of all major equipment's. These quality plans shall be discussed mutually and updated by the Contractor taking into consideration the requirement of the Owner. The quality plan when approved shall form a part of the contract. This document shall be followed for inspection of the concerned equipment.

The details of the quality assurance/ quality checks envisaged by the Contractor during manufacturing of the equipment supplied by him or procured through his sub vendors/ sub-contractors shall be detailed out in the quality plans to be submitted by the Contractor. The contractor may also furnish any additional information regarding quality assurance/ quality checks in the additional sheets, if required. Quality plans for major equipment's manufactured by the Contractor or procured through his sub vendors/ sub-contractors shall be submitted during engineering. After approval of the Owner is accorded various quality plans shall be bound as a booklet and shall be submitted to the Owner as soon as possible. The contractor shall ensure that the approved quality plans are followed scrupulously by him and by his sub-vendors/ sub-contractors and manufacturing of the items covered under the quality plans shall be taken up only after Owner has approved the quality plan.

## **12 TEST REPORTS OF EQUIPMENTS**

On completion of tests of equipment at manufacturer's works, the Contractor shall furnish four copies of test certificates to the Owner for approval and subsequent dispatch clearance. The test report shall invariably indicate identification data, including model no., sl. no. etc. of the equipment, method of application and duration of test along with test results. Only on approval of these test results by the Owner or Owner's representative, dispatch clearance will be issued for dispatch of material to site. Traceability certificate in original of testing equipment shall be submitted to the owner or his representative attending tests and a copy of the same shall be attached with the reports.

## **13 LIST OF APPROVED MAKES**

It will be deemed that the contractor has priced the respective items on the basis of the approved makes. List of approved makes applicable for the contract is placed at respective volumes of technical specification.

- i) Where makes have not been indicated in the approved make list, such items shall be of ISI marked/reputed brands/UL certified. Reputed brand implies a brand which is supported by nationwide sales & service distributors/ dealers/network/centers. And all such items shall be got approved from Engineer-In-Charge.
- ii) Wherever "equivalent" mentioned against makes, suitable evidence shall be produced and get the prior approval of such makes from the Engineer-In-Charge.

## **14 TESTING AND MEASURING EQUIPMENTS**

Equipment for measurement of work and testing the installation shall be procured by the Contractor for their use at their own cost. The same shall also be made available to COPA without any charges to COPA.

## **15 SITE MAINTENANCE DURING CONSTRUCTION**

The Contractors shall time to time clear and remove all rubbish and obstructions from the site and the work area shall be kept clear and unobstructed at all times. Nothing extra shall be paid on this account.

## **16 CONTRACTOR'S STAFF AND LABOUR**

- 16.1 Workers above 60 years of age and below 18 years of age shall not be deployed by the contractor. All labour, skilled or unskilled shall be provided by the contractor. Settling any dispute with the labour, labour union, any Outside union, subcontractor will be contractor's responsibility. Loss of day in this regard should not be claimed for any hindrance at site. The workers engaged for works should have sufficient knowledge and experience in the respective fields. This shall be proved to the Engineer. The Owner may at any time request the contractor to remove from the Work/Site contractor's / subcontractor's supervisor or any other authorized representative including any employee of the Contractor or his Sub-contractor(s) or any person(s) deployed by Contractor for professional incompetence or negligence or for being deployed for work for which he is not suited.
- 16.2 The Owner may at any time object to and require the Contractor/sub-contractor to remove forthwith from the Site a supervisor or any other authorized representative or employee of the Contractor's /sub-contractor(s) or any person(s), if in the opinion of the Owner, the person in question has misconducted himself or his deployment is otherwise considered undesirable by the Owner, the contractor/sub-contractor shall forthwith remove and shall not again deploy the person in question of the Work Site without the written consent of the Owner.
- 16.3 The workmen deployed by the contractor are strictly banned from use of any kind of Narcotics drugs / Alcohol / smoking etc. at site and any illegal activity by the work men should be reported to

Engineer without delay and the contractor shall remove such persons from the work site forthwith.

## **17 STATUTORY APPROVALS**

The scope of work also includes obtaining Initial and final approval/ NOC for the system from State Fire Department/concerned departments /local bodies/ other statutory bodies and liaison works with the department. All incidental expenses in this regard shall be borne by the contractor however the statutory fees paid to the authorities will be reimbursed at actual on submission of documentation evidence.

- a) All the equipment to be supplied and works to be executed should conform to the Electrical Inspectorate/CEA Standards including all protection and metering accessories.
- b) Contractor has to obtain necessary scheme approval (NOC) for various facilities, if any, from the Electrical Inspectorate/CEA immediately after the award of work. Electrical works are included in different packages. However the scheme approval and final approval from KSEI shall be obtained by the electrical contractor having A Grade license issued by KSEI.
- c) All testing/calibration, etc. are to be carried out as per the requirements of statutory authorities. The tests/calibration certificates shall be submitted to COPA
- d) Letters/documents required for obtaining sanction/ approval from various bodies like Navy, Railway, National Highway, Corporation, Traffic Police, PTCC etc. for laying of cables along side roads, railway lines, crossing of roads/railway line etc. for facilitating the work will be issued by CoPA as per the intimation from the contractor, however the contractor shall co-ordinate/ Liaison with respective bodies for getting sanction etc.
- e) On completion of work, the contractor has to make arrangements for obtaining necessary safety / energisation certificate from Electrical Inspectorate / CEA by submitting necessary completion certificates, drawings, equipment details, load details, test results, etc. before energisation.
- f) All costs incurred in obtaining such approval/certificates are to be borne by the contractor. Statutory fees paid shall be reimbursed on presentation of documents.
- g) If the current rating of any of the switchgears including circuit breakers mentioned in the Schedule of requirements is not available or is not in conformation to the Inspectorate standards then it shall be rated to the nearest higher rating available with the current rating/fuse rating as specified.
- h) The Electrical works shall be carried out as per Central/State Electrical Inspectorate standards/specifications /guidelines and the contractor shall get the approval and safety certificate from the inspectorate after the completion of work and before energisation.
- i) The Contractor shall comply with proper and legal orders and directions of local or public authority or municipality and abide by their rules and regulations and pay all fees and incidental charges which may be liable during the contract period.

## **18 PERFORMANCE TESTING**

### **18.1 At Manufacturers works**

Before dispatching the equipment to site, the equipment will be inspected at the discretion of the COPA and tested for various parameters as detailed in the Technical Specifications, by the officials of COPA at the manufacturer's works and then cleared for shipment. The tenderer shall give adequate notice to enable COPA to plan their visit for such tests/inspection. The inspection conducted will however, not in any way absolve the contractor of his responsibility for the continued performance of the system/components after erection & commissioning at the designated site during the period of defects liability.

### **18.2 At site**

- (a) On-site testing shall be conducted to ensure that the machine performance continue to be with the contracted performance parameters for which contractor shall make necessary provisions during installation which will enable testing of the machines.
- (b) All the required equipments and measuring instruments for carrying out the testing have to be arranged by the contractor. The instruments used shall be calibrated to test and the valid certificate of calibration should be submitted to the COPA's Engineer in charge.

## **19 COMMISSIONING AND HANDING OVER OF EQUIPMENTS**

### **19.1 DEFECTIVE WORKS**

If the works or any portion thereof shall be damaged in any way excepting by the acts of the Purchaser, or if defects not readily detected by prior inspection shall develop before the final completion and acceptance of the whole work, the Contractor shall forthwith make good, without compensation, such damage or defects in a manner satisfactory to the Purchaser/Engineer. In no case shall defective or imperfect work be retained.

### **19.2 INITIAL TRIAL**

On completion of works, erection of equipment, each item of the work / equipment as applicable shall be thoroughly cleaned and inspected jointly by the Owner / Consultant and Contractor for correctness and completeness of installation and acceptability for initial trials of the equipment by the Contractor & Owner. During the above joint walk down, the list of equipment deficiency & defects shall be prepared and for such a punch list, action shall be initiated by the Contractor in agreed time frame. The list of tests to be performed prior to initial trials shall be mutually agreed and included in the Field Quality Plan by Contractor. Prior to starting of initial trials all site tests, calibrations and parameter settings as indicated in the technical specification shall be carried out. The purpose of these trials is to ensure integrity of each individual equipment for its operation in the system for initial operation.

### **19.3 INITIAL OPERATION**

After successful completion of works, initial trials of all the individual equipment, all equipment's shall be operated together as a system. The purpose of this initial operation is to ensure integrity of all the sub-systems which compose the total system. Based on the observations made during initial operation, necessary corrections shall be effected in the equipment / systems to ensure proper integrated operation of the system. After satisfactory completion of initial operation for each equipment & sub-system, the complete equipment shall be considered ready for trial operation/performance guarantee testing. The Contractor has also to ensure that he trains Owner's Engineers at site dealing with this system in proper way. During commissioning of major equipment, contractor has to ensure the presence of commissioning Engineers of OEMs wherever required.

## **20 TRIAL OPERATION / PERFORMANCE GUARANTEE TEST**

The method of trial operation, duration and loading conditions shall be discussed with the Engineer and a plan shall be prepared. During the period of trial operation, all the necessary adjustments in the plant/ equipments shall be made by the Contractor to establish that the complete system as a whole with all subsystems and with all standby equipment is ready for continuous operation. During these trials, all the standby equipments also shall be run alternatively and continuously to prove their performance.

A trial operation report comprising of dates and duration of trial, observations and recordings of various parameters to be measured shall be prepared by the Contractor and signed jointly by the Engineer and the Contractor. If the trial operation is not satisfactory, then based on the observations during trial operation, necessary modification/repairs to the plant/ equipment shall be carried out by the Contractor and on completion of such works, the trial operation shall be repeated again as per the relevant procedures.

## **21 FINAL ACCEPTANCE:**

Final acceptance of the equipment/system is after obtaining statutory approvals from all statutory authorities as applicable as per Clause 22 of SCC.

**22 HANDING OVER / CERTIFIED DATE OF COMPLETION**

Up on the satisfactory commissioning of the entire system, the system shall be observed for 15 days. After this satisfactory trial period, the work shall be handed over officially and completion date recorded by Engineer-in-charge with all the prescribed formalities for handing over. This date shall be reckoned, as the certified date of completion and the defects liability period shall commence from this date. Until the handing over of the installation, the responsibility lies with the contractor for safety, upkeep etc.

**23 COMPLETION CERTIFICATE**

For all works completion certificate shall be submitted to COPA, after completion of work. It is the responsibility of the contractor to provide and make arrangement of all spares including consumables for carrying out periodical/preventive maintenance during warranty / defect liability period without any cost to COPA. However, the tenderer should furnish a list of spares, they plan to make available at site, to take care of warranty period. These spares shall be supplied along with the equipment. In case, any spares are required other than the listed spares, contractor will provide the same without any cost to COPA including customs duty.

**24 GUARANTEE / WARRANTY**

All the items of equipment and installations shall be guaranteed to be free from defective workmanship or materials for a period of 2 year from the date of handing over. The Contractor at his own cost shall rectify any defect /replace material that may appear during the period.

During this period, the contractor shall without any extra cost, carry out all routine and special maintenance of the works executed by him and attend to any difficulties and defects that may arise in the day to day operation of the system within 24 hrs. Of complaint reported by COPA.

The Contractor shall guarantee that all material, machinery, Consumables and components, supplied, fabricated, designed and installed by him shall be free from defects due to faulty material and/or workmanship and that the system shall perform satisfactorily, and the efficiency of the system and all the components shall not be less than the values laid down in the specifications and the capacities shall be at least equal to those specified. During the guarantee period any or all components found to be defective shall be replaced or repaired free of charge and shortcoming found in the system as specified shall be removed at no extra cost. The Contractor shall provide the necessary personnel and tools for fulfilling the guarantee. If the defects are not remedied within a reasonable time, COPA may proceed to get the defects remedied at the Contractor's risk & expenses without prejudices to his right. The Contractor shall without any cost to the Employer carry out during the guarantee period all routine and special maintenance of the system and attend to any defects that may arise in the operation of the system.

The Contractor shall hold himself fully responsible for reinstallation or replace free of cost to COPA during the defect liability period as stipulated hereunder.

- a) Any defective material supplied by the Contractor or defective workmanship of the Contractor.
- b) Any material supplied by COPA which is proved to be damaged or destroyed as a result of defective workmanship by the Contractor.

**25 ARRANGEMENT OF MATERIALS**

All the materials required for this work should conform to relevant BIS Specifications unless otherwise specified. The copies of Purchase Vouchers & Gate Passes should be produced along with the materials. The test certificates, Routine test certificates and acceptance test certificates are also to be submitted.

**Comment [Legal1]:** Please ensure that we hold a valid security during this period.

## 26 STORAGE OF MATERIALS

The storage and custody of materials brought to site is the full responsibility of the contractor. Necessary store rooms if necessary should be constructed by the contractor. The land required for stores will be provided by the COPA free of cost. The store should have double lock arrangement with one key with the CoPA Engineer-in-charge and the other with the Contractor. **All materials supplied by the contractor should be covered under storage insurance.**

## 27 PROCUREMENT OF MATERIALS

Contractor shall make his own arrangements for the timely procurement of all materials required for the work. Status of procurement of every item required for the project is to be submitted every week. In case materials are not supplied in time, Engineer in charge will arrange for procurement directly from the supplier and the expenses incurred will be deducted from the contractor's bill. Immediately on award of contract, the contractor has to submit the list of makes of item, which he is planning to procure for the project and approval has to be obtained from the engineer in charge. After the make approval, detailed specification/drawings/ test reports etc of every item has to be submitted.

## 28 BYE-LAWS

- a) The contractor shall comply with all bye-laws and regulations of local and statutory authorities having jurisdiction over the works and shall be responsible for obtaining prior approval, if any, and payment of all fees and other charges, giving and receiving of all necessary notices and keeping the Engineer-in-Charge informed of the said compliance with the bye-laws, payments made, notices issued and received.  
The Contractor shall indemnify COPA against all claims in respect of royalties, patent rights, design trademarks of name or other protected rights in respect of any plant, machine, work or materials used for or in connection with the work or temporary works and from and against all claims, demands proceedings, costs, charges and expenses whatsoever in respect of or in relation thereto. The Contractor shall defend all actions arising from such claims and shall himself pay all royalties, license fees, damages, costs and charges of all and every sort that may be legally incurred in respect thereof.
- b) The Electrical works shall be carried out as per the local electrical inspectorate standards/specifications/guide lines and the contractor shall get the approval and safety certificate from the inspectorate after the completion of work and before energisation.
- c) The Contractor shall comply with proper and legal orders and directions of the local or public authority or municipality and abide by their rules and regulations and pay all fees and charges which he may be liable.
- d) The contractor should liaise with local authorities to ascertain the underground cables, pipes, ducts etc., if any, in the areas of construction site and furnish to the Engineer-in-Charge the information and precautions that are being taken to avoid damages.
- e) The work shall be carried out without infringing on any of the local Municipal Bye-Laws.

## **29 CONFORMITY TO RULES AND REGULATIONS**

**29.1** The work shall be carried out in the best workmanlike manner in conformity with this specification, the relevant specification/codes of practice of the Bureau of Indian Standards or IEC recommendations (Except where specified otherwise) and other relevant Indian/International standards with latest amendments, approved drawings and the instructions issued by the Engineer-in-charge or his authorised representative, from time to time. Equipment meeting any other authoritative standard, which ensures an equal or better quality than the above standards, will also be acceptable.

**29.2 In addition to the standards, all works shall also conform to the requirements of the followings:**

- a) All Electrical works shall be carried out in accordance with the provisions of Indian Electricity Act- 2003, Indian Electricity Rules 1956 amended up to date (Date of call of tender unless specified otherwise)
- b) The works shall also conform to relevant Bureau of Indian Standards' Codes of practice (COP) for the type of work involved.
- c) Materials to be used in work shall be ISI marked/UL certified wherever applicable.
- d) In all electrical installation works, relevant Safety codes of practices shall be followed.
- e) Fire Insurance Regulations.
- f) Regulations laid down by the Chief Electrical Inspector of the State Electrical Inspectorate/State Electricity Board/ Central Electrical Authority or any other agencies concerned.
- g) Regulations laid down by Fire & Rescue Services and National Building Code.
- h) Any other regulations laid down by the local authorities.
- i) Installation & operating manuals of original manufacturers of equipment.

## **30 SAFETY**

The contractor shall take necessary precautions to ensure safety of his crew, materials, equipment and the works during the period of the contract. No claim from the contractor for loss of or damage to equipment, materials, crew of the works during the course of the work due to natural causes like cyclones, gales, floods, rains or other cause or combination of causes will be entertained by COPA. The contractor shall be fully liable to compensate COPA for any loss or damage to works till the time of taking over of the work by COPA.

## **31 TESTING AND MEASURING EQUIPMENTS**

Equipment for measurement of work and testing the installation shall be procured by the Contractor for their use at their own cost. The same shall also be made available to the Engineer-in-charge without any charges to COPA. Equipment for measurement shall be made available at site for use of Engineer-in-Charge and shall be periodically calibrated.

## **32 SECURITY RULES**

The contractor shall follow all Security rules existing in the Port premises and strictly adhered to security norms. The Port security is under CISF and entry to the restricted area will be subject to security checks and other security procedures existing in working Ports. Only selected persons will be permitted to enter to restricted areas under special permission as required for the completion of the project.

The contractor shall also follow at site all Security rules as may be framed by the COPA from time to time regarding removal of materials from site, issue of identity cards, control of entry of personnel and all similar matters. The contractor and his personnel shall abide by all security measures imposed by the Managing Director or his duly authorised representative from time to time.

The contractor shall take ultimate care while working in a running port and minimize nuisance to the public. All the work sites shall be separated by providing temporary partitions as directed by Engineer-in-charge. Fencing, partitions, signages shall be provided as per directions of Engineer-in-charge.

### 33 COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT

#### 1. **The Annual Maintenance Contract shall cover the items as per Schedule.**

The contractor should enter into a 5 years CAMC with the Port Authority, after the successful completion of 2 years guarantee period, for the upkeep of the AC system and the cost of the same should be shown separately for each year in the price schedule.

#### 2. The AMC should be a comprehensive one and covers repairs and servicing to the complete system, replacement of all parts required for the satisfactory functioning of the system and the breakdown maintenance. The AMC rate shall be inclusive of the following items.

- a) Cost of spare parts.
- b) Cost of all types of cables and other accessories

During CAMC period the contractor would be bound to ensure that all the equipments and other software hardware systems are in working condition.

#### 3. The AMC period will start on completion of the mandatory guarantee period of 2 years. A separate order will be issued for the Annual Maintenance Contract, before the completion of the guarantee period of the installation.

- (i) **Security Deposit:** The successful bidder is required to submit Security Deposit equivalent to **10%** of the total AMC cost within 21 days from the date of issue of AMC Order, to guarantee fulfillment of performance and the obligations of the AMC contract, furnished in the form of Account Payee Demand Draft, Banker's cheque, Bank Guarantee from any Commercial Bank / Insurance Bond in India [*in favour of FA&CAO, Cochin Port Authority, encashable at Cochin*] or online payment to the designated bank account of CoPA in an acceptable form safeguarding the Purchaser's interests in all respects.

- (a) In case the Security Deposit is furnished in the form of Bank Guarantee, the same should remain valid for a period of 60 days beyond the completion of AMC period.
- (b) Cochin Port is not bound to pay interest on the Security Deposit furnished by the successful bidder.
- (c) In the event of the Contractor failing to honour any of the commitments entered into under this Contract, Cochin Port shall have unconditional option to encash the Security Deposit. The bank shall be obliged to make payment to Cochin Port upon demand.
- (d) The security deposit furnished towards "SITC of AC UNITS" will be released and returned only after submission of SD and execution of Agreement for CAMC

- (ii) **Agreement:** Upon the receipt of letter intimating award of the Contract (LoA) for AMC, the Contractor will be required to execute an Agreement at his expense within 28 (twenty eight) days from the date of Letter of Acceptance (LoA), on Kerala State Stamp Paper of value Rs.200/- in the prescribed form as per Annexure-B. Agreement can be entered only after furnishing of Security Deposit by the contractor. Contractor has to prepare four sets (one original and three duplicates) of the Agreement as per the format attached at Annexure-B in the Tender Document.

4. The Port Authority shall have the option to terminate the Annual Maintenance Contract, any time before the completion of the AMC period. In such cases, only pro-rata AMC amount will be paid. If any disputes arise, the same shall be settled through the Courts in Kochi.
5. Upon written intimation/ intimation over telephone/ mail/ whatsapp of a complaint/ defect (during the guarantee/ CAMC period), the contractor should send representative(s) to attend the defects immediately, but not later **than 12 hours**. If the equipment become nonfunctional beyond the period of 12 hours due to delay in rectifying the defect, proportionate deduction on pro rata basis shall be effected from the running bill of the contractor on AMC charges. However the routine maintenance with prior approval from the CoPA will not be counted as non-availability of the system.
6. The routine /usual visit/ inspection/preventive maintenance should be done at least once in a month and the report submitted to Dy. Chief Mechanical Engineer (Electrical). This visit shall be done with the permission/in the presence of the officer concerned and should cause only minimum disturbance to the functioning of the system.

**7. Payment for CAMC**

- a) CAMC will start after expiry of the guarantee period. Separate order shall be issued for the AMC on successful completion of guarantee period 2 years.
  - b) CAMC charges shall be released on successful completion of comprehensive maintenance on half yearly basis subject to the certification of Engineer in charge.
8. During the CAMC period of 5 years, if the system as a whole or any accessory/ equipment / item of the system is rendered non-operational a penalty @1% of the AMC amount for the year per week or part thereof will be levied for the non-operational days, the maximum of which shall be limited to 10% of the contract value for that year. Hours of non functionality in different spells will be accumulated to arrive at a day and a week. Day shall mean an English Calendar Day and seven such calendar Days will be a week. The LD amount so deducted shall be in addition to the deduction of AMC amount due to the contractor as mentioned in clause No.19 of GCC. However the routine maintenance with prior approval shall not be counted for arriving at the availability of the system.

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## SECTION V

### TECHNICAL SPECIFICATION

#### 1 SCOPE OF WORK

**The scope of work includes the following works:**

- i. SITC of 4 Nos. approx. 16.5TR jet diffuser AC system including INDOOR and OUTDOOR units.
- ii. SITC of 2 Nos. 10HP VRF AC systems including INDOOR and OUTDOOR units.
- iii. SITC of 8 Nos. 2 TR and 2 Nos.1.5 TR 4 way cassette AC units.
- iv. CAMC for the entire AC system for 5 years after the completion of 2 year warranty period.
- v. Electrical works in connection with commissioning of AC units, which includes:
  - a) SITC of 250 A LT panel
  - b) SITC of 160 A MV panel.
  - c) LT cable laying, termination & commissioning.
  - d) Earthing of entire systems etc.

**The Bidder shall visit the site, ascertain the site conditions and scope before bidding.**

#### 2 GENERAL TECHNICAL PARTICULARS.

**General conditions**

In addition to the above, the scope intends to cover but not restrict to the following activities, services and works.

- a) Complete design and engineering of all the systems, sub-systems, equipment, material and services.
- b) Providing engineering data, drawing and O&M manuals for Employer's review, approval and records.
- c) Supply, testing, packing transportation and insurance the equipments from the manufacturer's work to the site.
- d) Receipt, storage, insurance, preservation and conservation of equipment at the site.
- e) Fabrication, pre-assembly (if any), erection, testing and putting into satisfactory operation of all the equipment/ material including statutory clearances & successful commissioning.
- f) In addition to the requirements indicated in Technical Specifications, all the requirements as stated in relevant regulations stipulated for successful commissioning of the installation also be considered as a part of this specification and Contractor is bound for compliance the same.
- g) The Contractor shall be responsible for providing all material, equipment and services specified or otherwise which are required to fulfill the intent of ensuring operability, maintainability and the reliability of the complete work covered under this specification.
- h) For individual equipment specifications reference shall be made to the relevant Technical Specification of the equipment as per contract condition.
- i) The Contractor shall be responsible for the overall management and supervision of works. He shall provide experienced, skilled, knowledgeable and competent personnel for all phases of the project, so as to provide the Employer with a high quality system.
- j) A project execution schedule called Master Network (MNW) in the form of PERT / Gant chart/ network and based on 'Work break down structure' shall be prepared by the Contractor for Employer's approval. The MNW shall identify milestones of key events for each work/ component in the areas of engineering, procurement, manufacture, dispatch, erection and commissioning.

### **3 PROJECT MANAGEMENT & SITE SUPERVISION**

#### **3.1 Testing and commissioning**

The scope includes testing and commissioning of all equipment, sub-systems and systems of the project and putting them into successful commercial operation. The scope shall include but not limited to the requirements given elsewhere in the specification. The Contractor shall be responsible to provide all necessary testing and commissioning personal, tools and plant, test equipment, etc.

The Contractor shall identify all interface issues with Employer and other agencies, and shall be responsible for each interfacing, coordination and exchange of all necessary information.

The Contractor shall submit to the Employer all drawings for review. He shall list out the detailed requirements of interface between Contractor's work and the material and services to be supplied by Employer.

The interpretation of the Employer in respect of the scope, details and services to be performed by the Contractor shall be binding, unless specifically clarified otherwise by the Employer in writing before the award of the contract.

Failure of any equipment to meet the specified requirements of tests carried out at works or at site shall be sufficient cause for rejection of the equipment. Rejection of any equipment will not be held as a valid reason for delay in the completion of the works as per schedule. Contractor shall be responsible for removing all deficiencies and supplying the equipment that meet the requirement after furnishing of necessary fresh type test report, as per relevant ISS Standard from NABL Accredited Laboratory.

#### **3.2 COMPLIANCE OF ELECTRICITY ACT, REGULATIONS ETC.**

Contractor is required to follow statutory regulations stipulated in Electricity Act 2003, Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, Central Electricity Authority(Measures relating to Safety and Electric Supply) Regulations, 2023.and Standards as per Kerala Electrical Inspectorate.

The Contractor shall comply with all the statutory rules and regulations prevailing in the state of Kerala including those related to safety of equipment and human beings.

The successful Contractor (individual) or any of the partner of joint venture who has qualified, should obtain "B" class electrical license from Electrical inspectorate of Govt. of Kerala/GoI/ any other state/ Union territory etc, before award of contract and to be kept valid till such time all the erected work as per scope of the award is taken over by the Employer.

The Contractor shall do complete coordination with all local and statutory agencies for execution of complete works including obtaining clearance for energizing of the HT system upon completion of entire works.

The Contractor shall obtain approvals & clearances and right of way from all agencies involved. All cable routes shall generally be routed through public land/ along the road.

The Contractor shall be responsible for transportation to site all the materials to be provided by the Contractor as well as proper storage and preservation of the same at his own cost, till such time the erected installation is taken over by the Employer.

#### **3.3 METHODOLOGY OF PROCUREMENT**

All equipments/material shall be sourced from reputed manufacturers only. All equipment/ material offered shall be of reputed manufacturers only as per the list of approved make mentioned in the tender document and who have designed, manufactured, completely tested for relevant Indian Standards and supplied the equipment/ material to various State Electricity Boards or other reputed

utilities which are in trouble free services at least two different locations for a period of more than two (2) years as on the date of bid opening.

### 3.4 QUALITY ASSURANCE, INSPECTION AND TESTS

The Contractor shall offer proven and type tested equipment for the project. The type test Certificates shall be complete as per the relevant I.S., carried out by NABL, CPRI or any other statutory bodies responsible for testing of equipment and it shall valid on as on the date of installation.

If required, Sub-vender's credentials, copies of valid BIS Certificate past supply& performance certificates as per requirement will also be required for sub-vender's approval, if not already approved for a specific item.

In case during post award detail engineering stage, if any equipment is found to be not type tested or partially type tested, as per I.S., the Contractor shall carry out complete type test for the items at his own cost.

The Contractor shall arrange all type, routine and acceptance tests at manufacturer's works as per approved Material Quality Programme with CoPA's officer. Any expenditure in connection with deputing the representative to the manufacturer's work site will be borne by CoPA. The Contractor shall arrange the inspection program in consultation with engineer-in-charge to give sufficient advance intimation of the manufacturing and testing schedules to facilitate timely inspection of the equipments by CoPA. Fake inspection call will attract penalty as per the discretion of the employer.

The Contractor shall provide one set of tests reports in original to Employer on successful completion of the tests.

## 4. TECHNICAL SPECIFICATIONS – AIR-CONDITIONING

### 1. SCOPE OF WORKS

The general scope of works to be carried out under this HVAC subhead is illustrated in Specifications, Schedule of Quantities and Drawings.

Design, Engineering, Supply, Installation, Commissioning, Testing, Validation, Performance testing, Performance Guaranteeing and Providing warranty services for building services systems, sub systems, Equipments, assemblies and components covering mainly the following discipline covered in this part of the tender but not limited to:

HVAC works involves augmentation of the existing AC system at International Cruise Terminal, SAGARIKA at COCHIN PORT, Kerala to adapt to the domestic terminal requirements.

The Contractor shall carry out and complete the said work under this contract in every respect in conformity with the contract documents and with the direction of and to the satisfaction of the Client/Consultant. The contractor shall furnish all labour, materials and equipment details as listed under Schedule of Quantities (SOQ) including transportation and incidental necessary for supply, installation, testing and commissioning of the complete air conditioning system as described in the SOQ, Technical Specifications and as shown on the drawings. This also includes any material, equipment, appliances and incidental work not specifically mentioned herein or noted on the Drawings/Documents as being furnished or installed, but which are necessary and customary to be performed under this contract. The central Air-Conditioning , Ventilation system and related accessories and items shall comprise of following:

- a. Outdoor Split AC Units
- b. Indoor jet diffuser units
- c. Motor control centers.
- d. Thermostats for AHUs and its accessories etc.

- e. Refrigerant and condensate drain piping of all equipments including all supports, clamps, scaffolds, ladders, valves, fittings etc
- f. Sheet metal plenum inclusive of external insulation, acoustic lining, canvas connections, supports, clamps, scaffolds, ladders, volume control dampers as required.
- g. Vibration isolators for all HVAC equipment.
- h. Automatic controls and instruments.
- i. Cabling, Wiring and Earthing of MCC panels, Air conditioning units, control wiring and interlocking.
- j. Jet diffuser indoor unit shall be mounted / fixed on the wall or shall have free standing housing with suitable GI angle supports, coloured aluminium cladding material for covering the diffuser for aesthetic look.
- k. Cutting all openings/holes, Core cutting as per requirements , chases in walls or slab for duct/pipe crossings, including sealing, frame work, fire proofing, providing sleeves, cover plates, making good structure and finishes to an approved standard. After cutting etc. the surface shall be made to original condition including painting etc. No additional payment shall be made by client on this account.
- l. Necessary Civil works as required and making good as per original condition.
- m. Provide larger size sleeve for crossing of pipe, conduits & cables through fire rated wall/partition. The sleeve shall be sealed with fiberglass and fire sealant.
- n. Structural systems including foundations of equipments, support structure GI/ MS, sub support structure, structural penetration openings, making good of openings and finishing with basic building finishes materials, Including Epoxy painting .
- o. Providing Protective covering (curved shape / aesthetic) with Polycarbonate material (4mm thick) for the existing outdoor ducting units to prevent rain water and sunlight for the duct and insulation materials with 40mmX4MM GI angles for frames/truss, 50 MM GI pipe supports, foundation, Epoxy painting ( 2 coat Primer + 2 coat paint) etc.
- p. Drain water pit shall be provided with cover for AC units.
- q. Electrical Installation work shall be carried out only by experienced personals.
- r. Balancing, testing and commissioning of the entire HVAC and mechanical ventilation installation.
- s. Test reports, list of recommended spares, as-installed drawings, operation and maintenance manual for the entire HVAC installation.
- t. All tools and tackles required for loading/unloading/handling of equipments and materials at site, their assembly, erection, testing and commissioning shall be the sole responsibility of the contractor.
- u. To carry out the work as per the site safety Programmes and work surveying Programmes laid by client.
- v. The contractor shall submit the design of the AC system with indoor, outdoor , piping etc. after getting the approval from the OEM of the of AC units.
- w. To carry out the Comprehensive annual maintenance contract of the HVAC system proposed for FIVE years after successful completion of two years defect liability period.

## 2. STANDARD SPECIFICATIONS

The codes, regulation as detailed below shall be followed in this contract with latest IS/ Government standards/ rules Regulations applicable as per the latest IS standards.

No	Particulars	Codes
1	Testing of refrigeration Compressors	IS 5111: 1993
2	ASHRAE Standards	ASHRAE 90.1 ARI 210 ARI 270 ARI 340/360 ARI 410 ARI 430
3	Packaged Air-conditioner	IS 8148: 1976 (Amendment 1991) (Reaffirmed 1991)
4	Hermetic compressors	IS 10617: Part I, II & III 1983(Reaffirmed 1991)
5	Suppliers data sheet for clean air equipment	IS 12357: 1998 (laminar flow)
6	Thermostats for use in refrigeration etc	IS 11338: 1965 (Reaffirmed 1991)
7	Code of practice for design and construction of flue chimneys.	IS 11338: 1965 (Reaffirmed 1991)
8	Steel for general structural purpose	IS 2062: 1992
9	Piping Work	IS 1239 for pipe sizes upto 150 mm
10	Piping Work	IS 3589 for pipe sizes above 150 mm
11	Welding	IS: 3589
12	Hot Dip Zinc Coated Steel Tubes	IS 4736: 1968
13	Copper Alloy Gate Globe Check Valve for water lines	IS 778: 1980
14	Butterfly Valve	IS 13095: 1991
15	Steel Pipe flanges	IS: 6392
16	Gaskets	IS 638: 1979 (reaffirmed 1993)
17	Dual plate Check Valve for Water Lines	API: 194
18	Colour code for the identification of pipe lines	IS 2379: 1963
19	Specific requirements for the direct switching of the individual motors.	IS 4064 (Part II) 1978
20	PVC insulated (HD) Electric Cables for working voltage up including 1000 Volts.	IS: 1554 (Part I)
21	HRC Cartridge fuse links upto 650 Volts.	IS 2208: 1976
22	Starter	IS 8554 (Part I) 1979
23	Inspection and testing of installation	IS 732 (Part III)1979
24	Galvanized steel wire for fencing	IS 277: 1977
25	Three phase induction motors	IS: 325
26	PVC insulated (heavy-duty)cables for working voltage up to 1.1 KV and up to 11 KV Grade respectively.	IS 1554:1981 Part I & II
27	Code for practice for electrical wiring installations.	IS 732: 1989
28	Code for practice for earthing	IS 3043: 1966
29	Horizontal centrifugal pumps	IS: 1620

30	Centrifugal fans (1st Division)	IS 894: 1987 (reaffirmed 1991)
31	Wrought aluminium & aluminium alloy sheet and strip for general engineering purposes.	IS: 737
32	Bourdon tube pressure and vacuum gauges.	IS: 3624
33	Glossary of terms used in refrigeration and air-conditioning.	IS : 3615
34	Code for practice for standard for selection of standard worm and helical gears.	IS: 7403
35	Specification for single phase small A/C & universal motors	IS: 996
36	Specifications for flame proof motors.	IS: 2148
37	Circuit breaker A.C	IS 2516: 1980 Part I & II
38	Contactors for A.C for voltage upto 1100 V.	IS 2959: 1975
39	Low voltage switch gear and control gear assemblies.	IS 8623: 1993 Part I & II
40	Code of practice for selection of starters for AC induction motors	IS 3914
41	Specification for cables glands	IS 4821
42	Code for selection, installation & maintenance of switch gear and control gear	IS 10118: 1982 Part I to IV
43	Conduits for electrical installations	IS 9537: 1981 Part I to IV
44	Permissible limits of noise level for rotating electrical machines.	IS 12065: 1987
45	Code of practice for installation and maintenance of motors	IS 3106: 1966
46	Code of practice for selection of standard worm and helical gear boxes.	IS: 7403
47	Electrically welded steel pipes for water, gas and sewage.	IS: 3589
48	HRC cartridge fuse links upto 650 volts	IS: 2208
49	Method for testing Panel type air filters for AC purposes.	IS 7613: 1975 (reaffirmed 1991)
50	Resin bonded glass wool for thermal insulation (1st. Revision)	IS 3690: 1974
51	Expanded polystyrene for thermal insulation purposes. (1st. revision)	IS4671: 1984 (reaffirmed)
52	Propeller type AC Ventilation fans	IS 2312: 1967 (reaffirmed 1991)
53	Electrical axial flow fans	IS 3588: 1987 (reaffirmed 1991)

Note : All standards and regulations shall be upto date amendments , if not mentioned.

### 3. SAFTEY CODES

The following IS codes shall be followed with latest IS/ Government Standards/ Rules/Regulations applicable at present:

Sl no.	Particulars	Code
1	Safety code for mechanical refrigeration	IS 660
2	Safety code for air conditioning	IS 659
3	Safety code for scaffolds & ladders	IS 3696
4	Code of practice for fire precaution in Welding & cutting operations	IS 3016
5	Code for safety procedures and practices in electrical works	IS 5216
6	Code of practice for safety and health Requirements in electrical & gas welding and cutting operations.	IS 818

Note : All standards and regulations shall be upto date amendments , if not mentioned.

#### 4. GOVERNING STANDARDS

The installation shall comply with all relevant statutory instruments and regulations and in particular with the following with latest IS/ Government Standards/ Rules/Regulations applicable at present:

- 1 ARI American Refrigeration Institute
- 2 A.S.H.R.A.E American Society of Heating, Refrigerating and Air Conditioning Engineers Inc.
- 3 I.S.H.R.A.E Indian Society of Heating, Refrigerating and Air Conditioning Engineers Inc.
- 4 ASTM American Society of Testing Materials
- 5 BIS Bureau of Indian Standards
- 6 SMACNA Sheet Metal and Air Conditioning Contractors National Association.
- 7 CIBSE Chartered Institution of Building Services Engineers.
- 8 NFPA National Fire Protection Association.
- 9 UL Under writers Laboratory.
- 10 BS British Standards Institution
- 11 IEC International Electro -Technical Commission.
- 12 ISO International Organization of Standardization.

#### 5. ABBREVIATIONS

Generally, the following abbreviations are used

<b>Sl no.</b>	<b>Abbreviation</b>	<b>Expansion</b>
1	A.M.C.A.	Air Moving and Conditioning Assoc. Inc.
2	A. N. S. I.	American National Standards Institute
3	A. S. H. R. A. E	American Society of Heating, Refrigerating and Air-conditioning Engineers
4	A.S.M.E.	American Society of Mechanical Engineers
5	A.S.T.M.	American Society for Testing and Materials
6	A.W.W.A.	American Water Works Association
7	BIS (IS)	Bureau of Indian Standards
8	B.H.P.	Brake horsepower
9	BS	British Standard
10	Btu/hr	British thermal units per hour
11	S.W.G.	Standard Wire Gauge
12	Cfm	Cubic feet per minute
13	C.I	Cast Iron
14	DB	dry bulb
15	dB	Decibel
16	°C	degree Celsius
17	dia	Diameter
18	hp.	high pressure or motor horsepower
19	Kg	kilogram
20	Kpa	Kilopascals
21	L	Litre
22	Cfm	Cubic feet per minute
23	Gpm	Gallons per Minute
24	M	Meter
25	Mm	Millimetre
26	NBS	National Bureau of Standards

27	N.C.	Noise criterion as defined by graph in A.S.H.R.A.E.
28	N. F. P. A.	National Fire Protection Association
29	No.	Number
30	Pa	Pascals
31	Ph	hydrogen ion concentration
32	PPM	Parts per million
33	Rpm	Revolutions per minute
34	SMACNA	Sheet Metal and Air Conditioning Contractors National Association
35	SS	Stainless steel
36	UL	Underwriters' Laboratories
37	WB	Wet bulb
38	w.g.	Water gauge

#### 6. ASSOCIATED CIVIL WORKS

Following civil works associated with HVAC installation are included in the scope of this contract. These shall be executed in accordance with approved shop drawings.

- i. Providing foundation for all Out door Package Units/ AHU's etc. with GI supports as required.
- ii. Supply and fixing of GSS frames for mounting of diffusers.
- iii. Providing polycarbonate cover for existing Outdoor AC ducts with frames and supports as required.
- iv. Civil and Structural works as mentioned in the tender and as required for installation of equipments and associated items.

#### 7. ASSOCIATED SERVICE WORKS

All associated Electrical works listed below are to be executed as per the scope of this HVAC works as per the requirements and in accordance with approved shop drawings of HVAC system.

- i. Providing power supply and earthing at the incoming MCCB in each air handling unit /RTPU control panel.
- ii. Laying of cables as specified in the BOQ (Main Panel to sub panel in ground, clamping along walls and ceiling to avail power supply from the main panel to the sub panel inside the Terminal.
- iii. Laying of cables as specified in the BOQ (sub panel to outdoor units and indoor units) clamping along walls and ceiling to avail power supply from the sub panel to the outdoor units and indoor units.

- iv. Providing a LT Panels at the Cruise Terminal in order to take power supply for the New AC units (Specified in the BOQ).

**8. DESIGN CRITERIA**

- 1. The systems are conceptualized to cater air-conditioning needs with inherent features mentioned in subsequent paragraphs
- 2. The systems provided for this project shall meet the following parameters while satisfying all local design weather conditions and code requirements.

A. Cooling load Parameters : Basis of Design as detailed below

B. Plant Working Cycle : 24 Hrs.

**9. BASIS OF DESIGN**

1	Basis of Ambient Design Condition	ISHRAE HVAC Data Book/IMD Data Book
2	Ambient Design Condition	Cochin Port Authority, KOCHI
		Latitude -11.2° N
		Longitude -76.28° E
		Summer: DB 95°F/WB 82°F/ RH 58%
		Monsoon: DB 85°F/WB 82°F/RH 88%
		Winter: DB 75°F / WB 65°F / RH 69%
3	Inside Conditions	As per ASHRAE std
4	Lighting Load	1.5 watt/ sq.ft of floor area
5	Occupancy	As per ASHRAE std
6	Equipment Load	As per the Data sheet
7	Ventilation requirements	As per ASHRAE Std 62.1 (latest edition)

**10. PROPOSED AIR-CONDITIONING SYSTEM:**

Split package AC units with **Jet Diffuser** and **VRF Units** with Cassettes with indoor Jet Diffuser units are proposed for the Cruise Terminal main hall and Officer Rooms Outdoor Units are positioned

outside the Cruise Terminal and Indoor Units (Jet Diffusers, Cassettes) are placed inside the Cruise Terminal in the specified Corners and ceilings. Jet Diffusers are used so as to provide sufficient air flow for getting sufficient cooling inside the Cruise Terminal Building.

Equipments proposed for the works is as per Schedule of works in BOQ for ensuring/ getting comfort temperature inside the terminal building.

**Technical Specification :**

<b>AIR COOLED TYPE SPLIT AIR CONDITIONERS</b>		
<b>SL NO.</b>	<b>DESCRIPTION</b>	<b>SPECIFICATION</b>
1	Capacity	16.5 TR (Ton of Refrigeration)
2	<b>Cooling Capacity</b>	
	Nominal	198,000 BTU/h or 66528 KCal/Hr
3	<b>Power Supply</b>	
	Voltage	415 V
	Phase	Three-Phase (3-Ph)
	Frequency	50 Hz
5	Refrigerant	R-410A
6	Indoor Unit Dimensions (H x W x D) approx.	2035mm x 1085mm x 552mm
	Indoor Unit Weight	150 kg
	Compressor Type	Centrifugal forward curved double inlet or equivalent
7	Air filter	Non Woven polyester Media Enclosed by HDPE Mesh
8	Control	Microprocessor based with LCD display
9	Airflow Rate:	6800 CFM / 11560 CMH
10	External Static Pressure (High):	80 Pa
11	Sound Pressure Level (High)	59 dBA
12	Outdoor unit Dimensions (H x W x D)	919mm x 1437mm x 622mm & 925 x 1020 x 416 2(11TR +5.5TR)
	Outdoor Unit Weight	190 Kg & 90 Kg

	Condensor type	Air Cooled Fin and Tube Heat Exchanger	
	Condensor fan type	Propeller Type	
	Compressor Type	Hermetically sealed scroll compressor	
13	Piping Connections (Liquid/Gas)	12.7mm / 28.6mm (1/2" / 1 1/8")	
<b>VRF OUTDOOR AND INDOOR UNITS</b>			
<b>SL NO.</b>	<b>DESCRIPTION</b>	<b>SPECIFICATION</b>	
<b>INDOOR UNITS</b>			
1	Cooling Capacity	1.5 TR - 2 NOS	2 TR - 8 NOS
2	<b>Power Supply</b>		
	Voltage	230 V	230 V
	Phase	1 PHASE	1 PHASE
	Frequency	50 HZ	50 HZ
3	Air Flow (H/HM/M/ML/L)	490/445/385 CFM,	695/590/530 CFM
4	Sound Level (H/HM/M/ML/L)	36 dB (A)	38 dB (A)
5	Fan Motor Input Power	48 W	59 W
6	Fan Motor Rated Current	0.4 A	0.5 A
7	Refrigerant Pipe Connections		
	Liquid	6.5 mm dia	9.5 mm dia
	Gas	12.7 mm dia	15.9 mm dia
8	Type of Connections	Flared	
9	Drain Pipe Dia.	25 mm	
10	Net Dimensions (WxDxH) mm		
	Indoor Unit	840x840x190 mm	840x840x240 mm
	Grill	950x950x65 mm	950x950x65 mm
11	Net Weight (kg)		
	Indoor Unit	22.5 Kg	26.5 Kg
	Grill	7 Kg	

<b>OUTDOOR UNITS</b>		
<b>SL NO.</b>	<b>DESCRIPTION</b>	<b>SPECIFICATION</b>
1	Actual Cooling Capacity	10 HP, 8 TR, 28.1 kW, 96000 Btu/hr
2	<b>Power Supply</b>	
	Voltage	415 V
	Phase	Three-Phase (3-Ph)
	Frequency	50 Hz
3	Refrigerant	R410A
4	Refrigerant Precharge Quantity	10.5 Kg
5	Overall Dimensions (WXDXH)	978 x 800 x 1965 mm
6	Weight	276 Kg
7	Sound level	58 dB (A)
8	Compressor Type	Hermetically sealed scroll DC Inverter driven
9	<b>Ref. Pipe Connections</b>	
	Liquid	12.7 mm dia
	Gas	28.6 mm dia
	Oil	6.35 mm dia
10	<b>Air-Cooled Condenser</b>	
	Type	Tube fin type
	Fan Type	Axial flow
	No. of Fans	1 no.
	Air Quantity	7000 CFM
11	Motor Type	Brushless DC motor - 1 no.
12	Power supply	230 Volts, Single phase, 50 Hz AC supply

Note : The above item specified is indicative, the contractor shall design the system as per the OEM Design and Employers requirement.

## **10.1 NOISE CRITERIA:**

All air conditioning equipment and materials (like RTPU, AHU, motors, pipes, grills, acoustic lining etc) will be selected, designed and installed in such a manner that the inside noise criterion for all conditioned spaces will be in the range NC-35 to NC-40. When taking noise level measurements, the background noise level without the equipment operating shall be at least 7 DB below the actual background noise level when the equipment is in operation and shall comply with the latest standards.

## **10.2 PERFORMANCE REQUIREMENT**

The contractor shall carry out the work in accordance with the Drawings, Specifications, Schedule of Quantities and other documents forming part of the Contract.

The contractor shall be fully responsible for the performance of the selected equipment (installed by him) at the specified parameters and for the efficiency of the installation to deliver the required end result.

Complete set of architectural drawings is available in the CLIENT and reference may be made to same for any details or information. The contractor shall also guarantee that the performance of various equipments, shall not be less than the quoted capacity; also actual power consumption shall not exceed the quoted rating, during testing and commissioning, handing over and guarantee period.

## **11. FEES AND PERMITS**

The contractor shall obtain all permits/ licenses and pay for any and all fees required for the inspection, approval and commissioning of their installation.

## **12. ACCESSIBILITY**

The Contractor shall verify the sufficiency of the size of the shaft openings, clearances in cavity walls and suspended ceilings for proper installation of his ducting and piping. His failure to communicate insufficiency of any of the above, shall constitute his acceptance of sufficiency of the same. The Contractor shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. The exact location and size of all access panels, required for each concealed control damper, valve or other devices requiring attendance, shall be finalized and communicated in sufficient time, to be provided in the normal course of work. Failing this, the Contractor shall make all the necessary repairs and changes at his own expense. Access panel shall be standardized for each piece of equipment / device / accessory and shall be clearly named / marked and coordinate with other agencies.

It shall be responsibility of contractor to monitor the works executed by other agencies which may affect the performance of HVAC system.

## **13. PROJECT EXECUTION**

In addition to compliance of General Conditions of the Contract (GCC) and Special Conditions of the Contract (SCC) requirements, the tenderer shall have to consider the following:

#### **14. SUBMITTALS**

- a. Bidder's confirmation as per the tender format.
- b. Technical Data sheet of all Equipments and material as detailed in tender supported by OEM's product data to include Mechanical, Electrical, Hydraulics, thermal, Aerodynamic and acoustic properties.
- c. Product data sheets incorporating the physical, mechanical, electrical, thermal, hydraulic, aerodynamic, chemical and acoustic properties substantiated by OEM's catalogue, equipment computerized selection, performance curves, characteristics curves and relevant standards.
- d. Product /Material certifications from relevant authorities, manufacturers, testing labs etc. as and where required as per the tender specifications.
- e. Calculations to substantiate the design and engineering intent to meet the performance requirement for all mechanical, electrical, hydraulics, seismic, vibration, thermal, acoustic and structural considerations. Such Calculations, if required and insisted upon by client/Consultant, shall be carried out by independent experts to be hired by contractor without any extra cost to client.
- f. Manufacturer's shop testing procedure as per the relevant standards for the equipments wherever required.
- g. The Contractor shall submit detailed schedules showing the program and the sequence in which the Contractor proposes to carry out the work with dates and estimated completion times for various parts of the work. Such schedules shall be approved by the client before starting the work and shall be binding on the Contractor. If so required by the client, the Contractor shall furnish weekly progress reports.  
Installation procedures with site QAP indicating material handling, storage, installation methodology, inspection stages, pre commissioning checks, commissioning, testing and validation procedure for each system, subsystem and equipment.
- h. Routine, type and specific test reports for the equipments and materials wherever required.
- i. Internal Installation check and completion certificate, Pre commissioning procedures, Pre Commissioning results, Certification of punch list attendance, Commissioning and testing Procedures, Commissioning and testing results.
- j. Warranty certificates from OEM.
- k. Operation and maintenance manuals.
- l. List of recommended & mandatory spares and consumables.

#### **15. PRE-BID SITE VISIT**

Bidders shall visit the site and become completely familiar with existing conditions prior to submitting their bid. No extra charges shall be allowed as a result of existing conditions. To schedule a site visit, contact client's representative at least 48 hours in advance of desired time of visit.

#### **16. QUALITY OF MATERIALS, WORKMANSHIP AND TESTS**

All materials and workmanship shall be of the respective kinds described in the contract and in accordance with the Consultant / CLIENT or their representative's instructions and shall be subjected, from time to time, to such tests as the Consultant or his representative may direct at the place of manufacture or fabrication or on the site or at any of such places. The Contractor shall provide such assistance instruments, machines labour and materials, as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any material used and shall

supply samples of materials before incorporation in the works for approval as may be required by the Consultant / CLIENT.

#### **COST OF TESTS**

The cost of making any test as per specifications shall be borne by the Contractor, and the Contractor should arrange for all facilities like meters, instruments as required for carrying out such tests.

#### **17. INSPECTION OF OPERATION**

The Consultant / CLIENT or their representative shall at all times have access to the works and to the site and to all workshops and places where materials, manufactured articles or machinery are being obtained for the works and the Contractor shall afford every facility for every assistance in obtaining the right to such access.

#### **18. GENERAL STANDARDS OF MATERIALS**

Equipment and materials, unless otherwise noted, shall be new and of first quality, produced by manufacturers who have been regularly engaged in the manufacture of these products for a period of not less than five years. Equipment of one type shall be the products of one manufacturer; similar items of the same classification shall be identical, including equipment, assemblies, parts and components. Materials furnished shall be determined safe by a nationally recognized testing organization, such as Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corporation, and materials shall be labeled, certified or listed by such organizations. Where third party certification is required for packaged equipment, the equipment shall bear the appropriate certification label. With respect to custom made equipment or related installations which are constructed specially for this project, the manufacturer shall certify the safety of same on the basis of test data. The Owner shall furnish copies of such certificates.

#### **19. APPLICABLE CODES**

Materials furnished and work installed shall comply with latest applicable codes listed, with the requirements of the local utility companies, and with the requirements of governmental departments or authorities having jurisdiction.

#### **20. WATERPROOFING**

Where work pierces waterproofing, including waterproof concrete, the method of installation shall be approved by the Client prior to performing the work. Furnish necessary sleeves, caulking and flashing required to make openings absolutely watertight.

#### **21. ELECTRICAL CONNECTIONS**

Regardless of voltage, provide control wiring, interlock wiring, and equipment control wiring for all the equipment provided under this division of the specifications. Furnish electrical disconnect switches, starters and combination starter disconnects required for equipment provided under this division of the specifications. Circuit breakers furnished shall be rated for motor protection. Power wiring not used for control functions, complete from power source to motor or equipment junction box, including power wiring through starters, shall be provided as per electrical work specification of

the tender. Coordinate to ensure that electrical devices furnished or provided are compatible with the electrical systems used.

The electrical work related to air conditioning services, shall be carried out in full knowledge of, and with the complete coordination of the contractor. The electrical installation shall be in total conformity with the control wiring drawings prepared by the contractor and approved by the CLIENT. All air conditioning equipment shall be connected and tested in the presence of an authorized representative of the contractor/ client.

The air conditioning system shall be commissioned only after the contractor has certified in writing that the electrical installation work for air conditioning services has been thoroughly checked, tested and found to be totally satisfactory and in full conformity with the contract Drawings, Specifications and manufacturer's instructions. It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract requirements, of the electrical installation work for air conditioning services, lies solely with the contractor.

## **22. EQUIPMENT FOUNDATIONS, SUPPORTS, PIERS AND ATTACHMENTS**

Provide necessary foundations, auxiliary steel, supports, pads, bases and piers required for equipment specified in this division; submit drawings in accordance with Shop Drawing Submittal requirements prior to the purchase, fabrication or construction of same. Provide adequately thick concrete pads for compressors, rotating equipment, and floor-mounted equipment located in equipment rooms and as indicated on drawings. Pads shall be extended 6 inches beyond machine base in each direction with top edge chamfered. Anchor equipment pads to the floor in accordance with latest building codes seismic requirements. Construction of foundations, supports, and pads where mounted on the floor, shall be of the same materials and same quality of finish as the adjacent and surrounding floor material. Equipment shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are, in the opinion of the Consultant, deemed insufficient shall be replaced as directed, with no additional cost to the Owner.

## **23. CLEANING, PROTECTION AND ADJUSTMENT**

### **Cleaning:**

Upon completion of the work, clean the exterior surface of equipment, accessories, and trim installed. Clean, polish, and leave equipment, accessories, and trim in first-class condition.

### **Protection of Surfaces:**

Protect new and existing surfaces from damage during the construction period. Provide plywood or similar material under equipment or materials stored on floors or roofs. Provide protection in areas where construction may damage surfaces. Surfaces damaged during the construction shall be repaired or replaced at the cost of the Contractor at fault. The method of repairing or replacing the surface shall be approved by the Client and Consultant.

### **Protection of Services:**

Protect new and existing services from damage during the construction period. Repair, replace and maintain in service any new or existing utilities, facilities or services (Underground, Over ground, interior or exterior) damaged, broken or otherwise rendered inoperative during the course of

construction. Services damaged during the construction shall be replaced at the cost of the Contractor at fault. The method used in repairing, replacing or maintaining the services shall be approved by the Client and Consultant. The Contractor shall make good all damages to the Client's building, property, equipments and articles, how so ever arising from the erection of the equipment. The Contractor shall indemnify and hold harmless the client against all claims in respect of injury to any person how so ever arising out of the erection of the equipment in the course of such installation. During erection the Contractor shall at all times keep the working and storage areas free from waster rubbish. On time-to-time, as directed by Client in charge, he shall remove all temporary structures, debris, insulation bitumen, EPS wastage and leave the premises neat and clean in a satisfactory condition. All equipment shall be complete with approved safety devices wherever a potential hazard to personnel exists and with provision for safe access of personnel to and around equipment for operational and maintenance functions. These items shall include not only those usually furnished with elements of machinery but also covers, guards, crossovers, stair ways, ladders, platforms, handrails etc. which are necessary for safe operation of the system. The contractor shall include for all safety devices including but not limited as per the requirements.

**Protection of Equipment and Materials:**

Equipment and materials shall be stored in a manner that shall maintain an orderly, clean appearance. If stored on-site in open or unprotected areas, equipment and material shall be kept off the ground and out of standing water by means of pallets or racks, and covered with tarpaulins. Equipment and material, if left unprotected and damaged, shall be repainted or otherwise refurbished at the discretion of the Owner. Equipment and material is subject to rejection and replacement if, in the opinion of the Consultant or the manufacturer's engineering department, the equipment has deteriorated or been damaged to the extent that its immediate use or performance is questionable, or that its normal life expectancy has been curtailed. The contractor shall make his own arrangements for the storage of materials & their safe custody at site. During the construction period, protect plenum, piping and equipment from damage and dirt. Properly cap plenum and piping. Each system of piping shall be flushed to remove grit, dirt, sand, and other foreign matter for as long a time as required to thoroughly clean the systems.

**24. ACCESSIBILITY**

- A. Coordinate to ensure the sufficiency of the size of shafts, and chases, and the adequacy of clearances in hung ceilings and other areas required for the proper installation of this work.
- B. Locate equipment which must be serviced, operated or maintained in fully accessible positions. Locations in ceilings requiring access shall be coordinated with, but not limited to lights, curtain tracks, speakers, etc. Equipment requiring access shall include, but is not necessarily limited to, valves, traps, clean-outs, motors, fire dampers, controllers, switchgear, drain points, etc.
- C. Furnish access doors under this division for installation by General Contractor. Coordinate during bidding phase with General Contractor.

**25. PAINTING**

Painting requirements of this section shall confirm to relevant standards and Marine grade. Provide surface preparation, priming, and final coat application in strict accordance with manufacturer's recommendations. Provide field painting of all piping, ductwork, hangers, supports, equipment

platforms, railings, and miscellaneous metals located outdoors (including galvanized jacketed piping, galvanized jacketed ductwork, insulated ductwork, and insulated piping). Piping over 200 °F shall be finished with high temperature epoxy paint. Application shall be in strict accordance with manufacturer's recommendations. Provide painting of mechanical items exposed in mechanical equipment room and in occupied spaces.

**26. NEGLIGENCE**

If the Contractor shall neglect to execute the work with the due diligence or shall contravene the provisions of the contract, the Client may give notice in writing to the Contractor, calling upon him to make good the neglect or contravention complained of. If the Contractor fails to comply with such notice within a reasonable period, the Client shall have the option and be at liberty to determine the contract and to take the work wholly or in part out of the Contractor's hands and complete it either by himself or his agents at a reasonable price. The Client shall then be entitled to retain any balance payment which may otherwise be then due on the contract.

The cost of execution of such work as aforesaid will be adjusted against the payment due to the Contractor. If the cost of execution shall exceed the balance due to the Contractor, the Client shall be at liberty to dispose off any of the Contractor's material or construction system that may be at site and apply the proceeds for payment of the difference of such cost and recover the balance by process of law, or from any moneys due to the Contractor.

**27. INSPECTION**

The Client is at liberty to inspect the system during installation and the Contractor free of cost shall remedy defects found. The Contractor shall furnish all instruments and services needed for the tests. Any defects and deficiencies that are noticed during these inspections will have to be attended by the Contractor from time to time.

Only after the entire installations are satisfactorily completed and the defects found during inspections rectified, the system will be ready for commissioning and then will be subjected to run atleast 48 hours to demonstrate its satisfactory performance.

The contractor shall undertake to extend free training in operation and maintenance of Air-conditioning System offered by them to two technical persons of Client/ End users at their works for a period of 15 days and 15 days at the site of Client. A certificate in this regard will have to be obtained from the Client by the contractor. The expenditure in respect of journey and stay necessary for this training will be borne by the contractor. The choice of dates for training is to be decided in consultation with the Client.

**28. OPERATING INSTRUCTION & MAINTENANCE MANUAL**

Upon completion and commissioning of HVAC system the contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals to CLIENT. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 5 year period of maintenance of each equipment.

**29. ON SITE TRAINING**

Upon completion of all work and all tests, the Contractor shall train the CLIENT Engineers / Personnel in the operation, adjustment and maintenance of all equipment installed to the satisfaction of CLIENT. The training shall include both theoretical and practical modules and certification needs to be issued by the contractor.

**30. PART A - AIR COOLED SPLIT AIR CONDITIONER UNIT**

**OUTDOOR AIR HANDLING UNIT**

General

The outdoor Air-conditioning Unit shall be a factory assembled, single piece compact unit comprising compressors, air cooled condenser coil, condenser fan motor all assembled encased in a weather proof cabinet.

The base shall have slots and rigging holes to facilitate lifting and shifting of the unit. The unit shall have horizontal connections/horizontal adaptors for supply and return air ducts. The unit shall have a corrosion resistant sloped drain pan. The unit rating shall be in accordance with ARI Standards 210/240 or 270 & 340/360. All insulation and adhesives used shall meet NFPA 90 a requirements for flame spread and smoke generation.

Casing

The casing shall be constructed of 18G (minimum) galvanized steel, zinc phosphate bonderised and coated with an oven baked polyester paint on all externally exposed surfaces which be weather proof. Internally insulated access panels shall be provided for ease of service and maintenance. The insulation used shall be 25 mm thick, 24 kg/cu.mtr density fiberglass acoustic insulation tightly fitted with a gasket on a rigid frame.

Filter Section

Standard filter section shall consist of 50mm thick high efficiency filters. Filter mount integral within unit shall be accessible by hinged access panels.

Compressors

Hermetic or semi hermetic scroll compressors with isolated mounting, integral suction accumulation, oil pump, oil filter screen, magnetic discs, oil level sight glass, oil level sight glass, oil changing valve. Motor shall be suction gas cooled and shall have voltage utilization range plus or minus ten percent of nameplate voltages. Two winding thermostats imbedded between three motor winding shall protect motor against excessive winding temperatures. Safety controls shall conform to ARI 520. Motors shall conform to NEMA, MG-1 & MG-2 or latest and shall be of constant speed, squirrel cage induction, hermetically sealed high torque type with low starting current and line break or as per the BOQ/OEM specification.

Condenser Coils

Configured copper fin secondary surface shall be mechanically bonded to primary surface of seamless copper tubing. Sub cooling circuit(s) with liquid accumulator(s) shall be standard, shall be factory

tested at 450 psig air pressure and vacuum dehydrated. Coils shall conform to ARI 410. The coils shall be coated with dry phenolic thermally set heresite or approved equal coating suitable for salty seacoast with SO<sub>2</sub> environment.

#### Condenser Fans and Motors

Vertical discharge, direct drive fans, statically and dynamically balanced with corrosion resistance steel blades and zinc plated steel hubs. Motors shall be three-phase with permanently lubricated ball bearings, built in current and thermal over load protection and weather tight slingers over bearings.

Note: Contractor has to include control panel with necessary breakers, starters, timers, contactors, relays, indication lamps and all other accessories as required complete. (I.e. accessories required to take electrical power from single point power supply.). The RTPU Starter panel shall be provided with sufficient potential free contacts and relays for enabling Remote on and off from CLIENT AC plant control Room.

#### INDOOR AIR HANDLING UNIT

The indoor unit shall be a factory assembled single piece compact unit comprising of evaporator coil, air filter, air blower, all assembled on a common base along with a plenum properly insulated acoustically and jet diffuser units.

#### Refrigerant Circuits

Each refrigerant circuit shall have independent thermostatic expansion devices, service pressure ports for high pressure, low pressure and oil pressure gauges and refrigerant filter driers factory installed as standard. An area shall be provided for replacement of suction line driers.

#### Evaporator Coils

Seamless copper tubing mechanically bonded to heavy duty aluminium fins of configurator design. All coils shall be factory pressure and leak tested at 300 psi. Coils shall conform to ARI 410. Casing and tube support shall be 18 gauge minimum galvanized steel.

Above items are indicative. The contractor shall design the same as per the OEM standards confirming to the employers requirement.

### **31. JET DIFFUSER**

An HVAC jet diffuser is an air distribution device that shall discharge conditioned air in a high velocity, concentrated jet stream. Its unique design allows it to project air over **long distances**, making it ideal for large, open spaces with high ceilings where other diffusers can't reach. The core of a jet diffuser shall be adjustable, which gives you precise control over the direction and throw of the airflow.

The Jet Diffuser shall be of High-velocity discharge type, of conditioned air through a specially designed nozzle reaching upto 20 m, Controlled distribution of the mixed air over a long distance to ensure even temperature and comfort in large, open spaces. The jet diffuser shall be enclosed with suitable housing for functioning and shall be aesthetic in look with suitable colour as per the employers requirement.

## **JET NOZZLE DIFFUSERS**

Jet Nozzle diffuser for ventilation of large rooms, such as airports, commercial centers, large building entrance halls, movie or music theaters, manufacturing or assembly-halls.

Manufactured in aluminum. Powder-coated in RAL9003 (signal white or as per client requirements) as standard. Nozzle diffusers offer a low noise and a long throw air jet with remarkable precision over a length of more than 30 meters. These can be used for spot cooling. Their attractive appearance makes them particularly suitable for large rooms, such as large vestibules, entertainment areas, airport halls, department stores, hotels, etc. The configuration allows the nozzle to be swiveled in all directions to a maximum of  $\pm 30^\circ$  in the horizontal or vertical direction.

### Design

The aluminum wide-angle nozzles are powder-coated as standard. The connecting assembly is made of galvanized sheet steel. Available in the following nozzles diameters:  $\varnothing 100$ ,  $\varnothing 125$ ,  $\varnothing 160$ ,  $\varnothing 200$ ,  $\varnothing 250$ ,  $\varnothing 315$ ,  $\varnothing 400$ ,  $\varnothing 500$ .

- Size: 100
- Accessories: Not selected
- Air flow direction: Horizontal

### Technical parameters

#### Nominal data

Air flow(s): 75 - 110 m<sup>3</sup>/h

Duct connection type: Circular

Pressure drop: 90 - 200 Pa

Sound power level: 30 - 35 dB(A)

Sound pressure level : 30dB(A)

Dimensions and weights , Weight: 0.75 - 1 kg

## **Drain Piping**

Drain pipe shall be of suitable dia UPVC pipes. All Split units shall be provided with independent drain lines. The drain shall be taken to the drain main line. All drain pipe shall be insulated with 12mm thick insulation of closed cell elastomeric nitrile rubber with density not less than 80kg/m<sup>3</sup> finished with an 8 Oz canvas cloth covering adhered between two coats of fungicidal protective coating suitably supported on trays, clamps etc.

**NOTE: System shall be compatible with BACNET/MODBUS protocol for BMS interfacing and shall be provided with necessary converter/ integrator as required as part of RTPU line item.**

## **ELECTRICAL MOTORS:**

Motors shall be totally enclosed fan cooled(TEFC),ball bearing, squirrel cage induction type, for direct on line starting, class F insulation with temperature rise class B, degree of protection IP 55 minimum for unclassified areas. One data sheet shall be supplied for each individual motor.

## **PART B – VRF AIR CONDITIONER**

### **GENERAL**

Units shall be air cooled, variable refrigerant volume air conditioner consisting of two outdoor units and multiple indoor units, each indoor unit having capability to cool independently as per the requirement of the rooms. The AC units shall work in Master Slave mode, i.e. if the total AC load is less and if one AC OUTDOOR can cater the running load, only Master should work and second one shall go to standby mode or to OFF condition. The piping and fixing of indoor units shall be designed and fixed such that when one OD unit is only working the entire room shall have sufficient air conditioning as per the requirements.

It shall be possible to connect multiple indoor units on one refrigerant circuit. The indoor units on the circuit shall be as per BOQ and also can be controlled individually.

### **INDOOR UNIT**

The type, capacity and size of indoor units shall be as per the schedule. Indoor units shall be ceiling mounted cassette type as specified in BOQ and below. These units shall have electronic control valve to control refrigerant flow rate respond to load variations of the room. a) The address of the indoor unit shall be set automatically in case of individual and group control. b) In case of centralized control, it shall be set by liquid crystal remote controller. The fan shall be dual suction, aerodynamically designed turbo, multi blade type, statically & dynamically balanced to ensure low noise, necessary GI Steel supports, vibration isolation/ free operation of the system. The fan shall be direct driven type, mounted directly on motor shaft having supported from housing. The cooling coil shall be made out of seamless copper tubes and have continuous aluminium fins. The fins shall be spaced by collars forming an integral part. The tubes shall be staggered in the direction of airflow. The tubes shall be hydraulically/ mechanically expanded for minimum thermal contact resistance with fins. Each coil shall be factory tested at 21kg/sqm air pressure under water as per latest IS. Unit shall have cleanable type filter fixed to an integrally moulded plastic frame. The filter shall be slide away type and neatly inserted. Each indoor unit shall have computerized PID control for maintaining design room temperature. Each unit shall be provided with electronic expansion valve & should have microprocessor based thermostat for cooling. Each unit shall be with wired LCD type remote controller. The remote controller shall memorize the latest malfunction code for easy maintenance. The controller shall have selfdiagnostic features for easy and quick maintenance and service. The controller shall be able to change fan speed and angle of swing flat individually as per requirement. It shall be able to control up to whole groups of indoor units with the following functions:- a) Starting/stopping of Air conditioners as a zone or group or individual unit. b) Temperature settling for each indoor unit or zone. c) Switching between temperature control modes, switching of fan speed and direction of airflow, enabling/disabling of individual remote controller operation. d) Monitoring of operation status such as operation mode & temperature setting of Individual indoor units, maintenance information, trouble shooting information. e) Display of air conditioner operation history. f) Daily management automation through yearly schedule function with possibility of various schedules. The controller shall have wide screen user friendly color LCD display.

Ceiling Mounted Cassette Type Unit (Round flow Type) The unit shall be ceiling mounted type. The unit shall include pre-filter, fan section and DX coil section. The housing of the unit shall be powder coated Galvanized steel. The body shall be light in weight and shall be able to suspend from four corners. Unit shall have an external attractive panel for supply and return air. Unit shall have round flow/four way supply air grilles on sides and return air grille in centre. Each unit shall have high lift drain pump, fresh air intake provision (if specified) Low gas detection system and very low operating sound. All the indoor units regardless of their difference in capacity should have same decorative panel size for harmonious aesthetic point of view. It should have provision of connecting branch ducts. The noise level shall not be more than 43dB(A) for Indoor below 3.2TR

Centralized Type Remote (Touch Screen Type) Controller A multifunctional compact centralized controller shall be provided with the system. The Graphic Controller must act as an advanced air-conditioning management system to give complete control of VRV air-conditioning Equipment. It should have ease of use for the user through its touch screen, icon display and colour LCD display.

## **OUTDOOR UNIT**

The outdoor unit shall be factory assembled, having weather proof casing, constructed from heavy gauge mild steel panels and of powder coated finish. The unit should be completely factory wired, tested with all necessary controls and switch gears: All outdoor units shall have Inverter scroll compressors. It should also be provided with duty cycling for automatically switching starting sequence of multiple outdoor units/ compressors. The noise level shall not be more than 62 dB (A) at normal operation measured horizontally 1m away and 1.5m above ground level. The outdoor unit shall be modular in design and should be allowed for side by side installation. The unit shall be provided with its own microprocessor control panel. The outdoor unit should be fitted with low noise, streamlined Scroll fan with large airflow and should be designed to operate compressor-linking technology. The outdoor unit fan should also be capable to deliver at least 70Pa or external static pressure to meet long exhaust duct connection requirement. The condensing unit shall be designed to operate safely when connected to multiple units, which has a combined operating nominal capacity to cater the indoor units. The outdoor unit shall be equipped with 2 nos. of 10 HP (Total 20HP) Inverter Compressors with single phase preventer, overload relays, Gas, Vibration isolation pads etc.. The system shall be capable of changing the rotating speed of inverter compressor by inverter controller in proportion to variations in cooling load. Outdoor unit shall be suitable for mix-match connection of all types of indoor units. The refrigerant piping between indoor units and outdoor unit shall be extended up to 165m with maximum 50 m level difference without any oil traps. Both indoor units and outdoor unit shall be factory assembled & tested and before delivering at site the outdoor units shall be filled with first charge of refrigerant.

## **COMPRESSOR**

The compressor shall be highly efficient inverter scroll type operating on R410a environmental friendly refrigerant and capable of inverter control. It shall change the speed in accordance to the variation in cooling load requirement: The inverter shall be Insulated Gate Bipolar Transistor (IGBT) type for efficient and quiet operation. All outdoor units shall be designed for automatic capacity control to meet load fluctuation and indoor unit individual control. All parts of compressor shall be sufficiently lubricated stock. Forced lubrication may also be employed. Advanced Oil temperature control shall be provided in the compressor casing.

## **HEAT EXCHANGER**

The e-Pass heat exchanger shall be constructed with copper tubes mechanically bonded to aluminium fins to form a cross fin coil. The aluminium fins shall be provided with special coating. The unit shall be provided with necessary number of direct driven low noise level propeller type streamlined Scroll fan with DC motor arranged for vertical discharge. Each fan shall have Aero fitting grille resulting in reduced pressure loss.

## **REFRIGERANT CIRCUIT**

The refrigerant circuit shall include liquid & gas shut-off valves and a solenoid valve at Condenser end. All necessary safety devices shall be provided to ensure the safely operation of the system. The new See-bridge Circuit (sub-cool) feature prevents the flash gas from long piping and reducing the refrigerant volume required and there by reduction in piping size.

## **REFRIGERANT**

The refrigerant shall be R410A that exhibits superior safety characteristics. Even with zero coefficient of ozone layer depletion, R410A offers a better performance to than conventional R22. Further lead free PC Boards making its use even more environmentally conscious. Galbariuma material that requires no coating is used for the bottom plate for easy recycling

## **REFRIGERANT PIPING**

All refrigerant piping for the air conditioning system shall be constructed from soft seamless upto 19.1mm and hard drawn copper refrigerant pipes for above 19.1mm with copper Fittings and brazing joints which is not limited and shall be done as per the design considering maximum efficiency and endurance of the system. The refrigerant piping arrangements shall be in accordance with good practice within the air conditioning industry, and are to include charging connections, suction line insulation and all other items normally forming part of proper refrigerant circuits. The air-conditioning system supplier shall be design sizes and erect proper interconnections of the complete refrigerant circuit. The thickness of copper piping shall not be less than 20 gauge for pipes up to 19.1mm and 18 gauge for bigger sizes or as per the schedule of work. The Cu pipe shall be insulated with 19mm thick/13 mm thick Nitrile rubber sleeves. The suction line pipe size and the liquid line pipe size shall be selected according to the manufacturers specified outside diameter. All refrigerant pipes shall be properly supported and anchored to the building structure using steel hangers, anchors, brackets and supports which shall be fixed to the building structure by means of inserts or expansion shields of adequate size and number to support the load imposed thereon. All joints in copper piping shall be sweat joints using low temperature brazing and or silver solder. Before joining any copper pipe or fittings, its interiors shall be thoroughly cleaned bypassing a clean cloth via wire or cable through its entire length. The piping shall be continuously kept clean of dirt etc. while constructing the joints through nitrogen bleeding at 1.0kg/sqcm and subsequently, it shall be thoroughly blown out using nitrogen. After the refrigerant piping installation has been completed, the refrigerant piping system shall be pressure tested using nitrogen at pressure of 30Kg per sq. cm. Pressure shall be maintained in the system for 24 hours. The system shall then be evacuated to minimum vacuum if 700mm hg. To protect Nitrile rubber insulation of exposed copper piping from degrading due ultra violet Rays& atmospheric condition, it shall be covered with glass cloth insulation. ( Makes: Totoline/ Uniflow/ Mandev) .

## **SAFETY DEVICES**

All necessary safety devices shall be provided to ensure safe operation of the system. Following safety devices shall be part of outdoor unit: High pressure switch, fuse, crankcase heater, fusible plug, over load relay, protection for inverter and short recycling guard timer.

## **OIL RECOVERY SYSTEM**

Unit shall be equipped with an oil recovery system to ensure stable operation with long refrigeration piping lengths.

## **SCHEDULE TIMER**

A schedule timer shall be supplied as an optional accessory. a) The timer shall be able to set operation schedule for all indoor units. b) The timer shall be able to set 8 pattern of schedule combined with centralized controller.

## **PIPE INSULATION**

### **Refrigerant Pipe Insulation**

The whole of the liquid and suction refrigerant lines including all fittings, valves and strainer bodies, etc. shall be insulated with 19mm /13 mm thick elastomeric nitrile rubber as specified in BOQ.

### **PVC Drain Pipe Insulation**

Drain pipes carrying condensate water shall be supplied and insulated with 6 mm thick elastomeric nitrile rubber insulation. For proper drainage of condensate, U- Trap shall be provided in the drain piping(Wherever required). All pipe supports shall be of pre-fabricated.

### **FIXING OF OUT DOOR UNIT**

The outdoor unit shall be erected and fixed outside the proposed room with suitable cement foundation. Any modification for fixing the same shall be done by the successful bidder with necessary channels etc. as required

### **TESTING OF PIPING AND THE SYSTEM.**

The piping provided for the AC units shall be tested as per the standards given in the tender and also in line with prevailing testing procedure to ensure trouble operation of the system.

### **GUARANTEE PERIOD FOR THE AC SYSTEM**

Guarantee for the VRF AC systems as a whole will be for TWO (2) YEARS from the date of successful commissioning of the unit and shall be comprehensive in nature. The firm should carry out the regular maintenance of system during the guarantee period as per the OEM recommendation and format shall be given along with the tender documents.

## **THERMAL & ACOUSTIC INSULATION**

### **Plenum Thermal Insulation with glass cloth**

Insulation material shall be Closed Cell Elastomeric Nitrile Rubber with aluminium foil laminated on one side and anti-microbial properties. Thermal Insulation shall be finished with 7 mils woven fibre glass cloth covering adhered between two coats of fungicidal protective coating. Thermal conductivity of insulation material shall not exceed 0.035 W/ (m.K) at mean temperature of 0<sup>0</sup>C as per EN 12667. Moisture Diffusion Resistance Factor or 'μ' value of insulation material shall be minimum 10,000 without any external barrier as per EN 12086. The insulation material shall have fire performance such that it passes Class 1 as per BS476 Part 7 for surface spread of flame and also passes Fire Propagation requirement as per BS476 Part 6 to meet the Class 'O' Fire category as per 1991 Building Regulations (England & Wales) and the Building Standards (Scotland) Regulations 1990. The insulation material shall have fire performance of V0, HB as per UL 94, 1996. The insulation material shall be FM (Factory Mutual), Approved. Density of insulation material shall be between 40 to 55 Kg/m<sup>3</sup>. The insulation material shall be dust and fibre free. The insulation material shall withstand maximum surface temperature of +85 Deg.C and minimum surface temperature of +7 Deg.C as per EN 14706. The insulation material shall have anti-microbial product, which is EPA (Environmental Protection Agency), USA Approved, as an integral part of insulation that cannot be washed off or worn off.

The insulation material shall give enhanced level of protection against harmful Microbes such as bacteria, mold, mildew and fungi and should conform to following standards: DIN EN ISO 846 Method A - Fungi / Mould Resistance and DIN EN ISO 846 Method C - Bacterial Resistance. The material shall have ODP (Ozone Depletion Potential) and GWP (Global Warming Potential) of Zero. Thickness of the insulation shall be as specified for the individual application. The insulation material shall be installed as per manufacturer's recommendation and approved accessories.

Glass Cloth: Weight shall be 205 +/- 10 grams per square meter, Tensile Strength shall be 275 +/- 25 Kg / 50 mm (minimum) and Thickness shall be 0.18 mm / 7 mil.

Glass Cloth shall be UV resistant for artificial weathering as per EN ISO 4892-2 Method - A.

The material shall have ODP (Ozone Depletion Potential) and GWP (Global Warming Potential) of Zero.

Thickness of the insulation shall be as specified for the individual application.

The insulation material shall be installed as per manufacturer's recommendation and approved accessories.

#### **Refrigerant Piping/ Piping Insulation – Thermal**

- a. Insulation material shall be Closed Cell Elastomeric Nitrile Rubber with aluminium foil laminated on one side. Thermal Insulation shall be finished with 7 mils woven fibre glass cloth covering adhered between two coats of fungicidal protective coating.
- b. Thermal conductivity of insulation material shall not exceed 0.035 W/ (m.K) at mean temperature of 0°C as per EN ISO 8497.
- c. Moisture Diffusion Resistance Factor or 'μ' value of insulation material shall be minimum 7,000 without any external barrier as per EN 13469.
- d. The insulation material shall have fire performance such that it passes Class 1 as per BS476 Part 7 for surface spread of flame and also passes Fire Propagation requirement as per BS476 Part 6 to meet the Class 'O' Fire category as per 1991 Building Regulations (England & Wales) and the Building Standards (Scotland) Regulations 1990.
- e. The insulation material shall have fire performance of V0, HB as per UL 94, 1996.
- f. The insulation material shall be FM (Factory Mutual), USA Approved.
- g. Density of insulation material shall be between 40 to 55 Kg/m<sup>3</sup>.
- h. The insulation material shall be dust and fibre free.
- i. The insulation material shall withstand maximum surface temperature of +105 Deg.C and minimum surface temperature of 0 Deg.C as per EN 14707.
- j. The Aluminium foil shall be of 12 micron thickness with reinforced glass scrim and weight shall be 70 gsm as per EN 22286, tensile strength shall be 250N/50mm as per ISO 527-3 with elongation of 4% as per DIN 53354.
- k. The material shall have ODP (Ozone Depletion Potential) and GWP (Global Warming Potential) of Zero.
- l. Thickness of the insulation shall be as specified for the individual application.
- m. The insulation material shall be installed as per manufacturer's recommendation.

Thermal Insulation shall be finished with 7 mils woven fibre glass cloth covering adhered between two coats of fungicidal protective coating.

Glass Cloth: Weight shall be 205 +/- 10 grams per square meter, Tensile Strength shall be 275 +/- 25 Kg / 50 mm (minimum) and Thickness shall be 0.18 mm / 7 mil. Glass Cloth shall be UV resistant for artificial weathering as per EN ISO 4892-2 Method - A.

The material shall have ODP (Ozone Depletion Potential) and GWP (Global Warming Potential) of Zero.

Thickness of the insulation shall be as specified for the individual application.

The insulation material shall be installed as per manufacturer's recommendation and approved accessories.

- a. The acoustic insulation material shall be dust and fibre free.
- b. The acoustic insulation material shall have good sound absorption, damping and barrier properties.
- c. The density of acoustic insulation material shall be within 140-180 Kg/m<sup>3</sup>.
- d. The acoustic insulation material shall have antimicrobial product protection, and shall pass Fungi / Moulds Resistance as per DIN EN ISO 846method And Bacterial Resistance as per DIN EN ISO 846 method C, from an independent testing agency.
- e. The acoustic insulation material shall have a thermal conductivity not exceeding 0.047 W/ (m.K) @ 20 Deg. C as per EN 12667.
- f. The acoustic insulation material shall withstand maximum surface temperature of +85 Deg.C and minimum surface temperature of -20 Deg.C as per EN 14706.
- g. The material shall conform to Class 1 rating for surface spread of Flame in accordance to BS 476 Part 7 & UL 94 (HB, V-0) in accordance to UL 94, 1996.
- h. The acoustic insulation material shall pass Air Erosion Resistance Test in accordance to ASTM Standard C 1071-05 without any laminate or covering (section 12.7), from an independent accredited testing agency.
- i. Thickness of the insulation shall be as specified for the individual application.
- j. The insulation material shall be installed as per manufacturer's recommendation using approved accessories.

#### **Installation procedure for Plenum:**

Insulation must be installed in accordance with manufacturer's instruction. All joints should be butted firmly against each other, seal all joints with 75mm wide reinforced aluminium tape with UV resistance and weather resistance properties.Ensure no air pockets during the installation of the insulation to the plenum. Any minor surface cuts should be covered with aluminium foil tape.

#### **PLENUM ACOUSTIC LINING**

Plenum so identified and marked on Drawings and included in Schedule of Quantities shall be provided with acoustic lining.

#### **INSTALLATION PROCEDURE**

The inside surface for the plenum shall be covered with adhesive. Cut Foamed sheets into required sizes apply adhesive on the foam and stick it to the plenum surface

**32. INSPECTION, TESTING AND COMMISSIONING:**

**SCOPE:**

This section covers initial inspection and testing of compressor, & RTPUs at manufacturer's works, initial inspection of other equipments/ materials on receipt at site, final inspection testing & commissioning of all equipment at site & description of testing requirements & procedure.

**PRE DELIVERY INSPECTION AND TESTING**

This shall be carried out at Manufacturer's works for the items mentioned as Category 1 in the list of approved makes.

**33. INITIAL INSPECTION AT SITE**

**Plenum**

The sheet used for fabrication of plenum shall be checked by physical test at site. The physical test should include the sheet thickness and bend test as per relevant IS specifications. Both Zinc coating and thickness of GSS sheet will be tested from a Govt. of India approved independent list laboratory for which randomly selected samples from each lot of supply will be taken. The cost of such testing will be borne by the contractor

**Switch Gear, Control Gear, and Measuring Instruments**

These should be of specified make. For air circuit breaker manufacturer's test certificate shall be furnished by contractor and the same shall be verified as per contract requirements.

Electric motors should be of specified make, manufacturer's test certificate for electric motor shall be furnished.

**Insulation and acoustic lining**

Physical verification for thickness and make should be made as per contract before application of insulation.

Manufacturer's test certificate for density should be furnished.

Note: Accuracy of testing instruments shall be as mentioned in the final inspection procedure.

**34. FINAL INSPECTION:**

After completion of the entire installation as per specification in all respects, the AC contractor shall demonstrate trouble free running of the AC equipments and installation for a period of minimum 120 hours of running. After the trial run, the AC contractor shall offer the plant for the seasonal test as mentioned in the **Final Performance and Capacity Test**. The test result as per CPWD General Specifications for HVAC works 2004 Appendix G shall be furnished. The equipment capacity computations shall be carried out as per CPWD General Specifications for HVAC works 2004 para B under notes of Appendix G. The input KW of the unit / TR at full load shall also be checked against contract requirements. All instruments for testing shall be provided by the AC contractor. The accuracy of the instruments shall be as follows:

Temperature: Liquid in glass thermometer having accuracy  $\pm 1$  deg. C as per IS: 4825.

Wet bulb Temperature: Sling psychrometer conforming to IS: 6017.

Scale Error: For less than 0 deg C.  $0.3 \text{ deg C} \pm 0.2 \text{ deg. C}$ .

For over 0 deg. C  $-0.2 \text{ deg. C} \pm 0.1 \text{ deg. C}$ .

Pressure Gauge: With the accuracy of  $\pm 1\%$  for maximum scale value from 10 to 90%, and  $\pm 1.9\%$  for maximum scale value for rest of the scale conforming to IS: 3695.

Water flow meter: Water flow shall be measured using the water flow meter.

In case the tendering firms do not have testing instruments of the accuracy mentioned above, they should specify the accuracy of the instrument available with them for testing at the tender stage.

### **35. TESTING REQUIREMENTS AND PROCEDURES**

Balancing of all air and water system and all tests as called for in the specification shall be carried out by the HVAC contractor in accordance with the specifications and relevant local codes if any. Performance tests of individual equipment and control shall be carried out as per manufacturer's recommendation. All tests and balancing shall be carried out in the presence of Engineer-in charge or his authorized representative.

The whole system balancing shall be tested with microprocessor based hi-tech instruments with an accuracy  $\pm 0.5\%$ .

The instrument shall be capable of storing data and then down loading into a P.C. The HVAC contractor shall provide a minimum but not limited to the following instruments:

Microprocessor based calculation meter to measure DB and WB temperature, RH and Dew point.

- a. Velo meter to measure air volume and air velocity.
- b. Pitot tube.
- c. Electronic rotary vane Anemometer.
- d. Accubalance flow measuring hood.
- e. The contractor shall be responsible to provide necessary sockets and connections for fixing of the testing instruments, probes etc.

### **36. FINAL DOCUMENTATION:**

The contractor shall leave the system operating in complete balance with water and air quantities as shown on drawings. Set stops on all balancing valves and lock all damper quadrants in proper position. Secure all automatic damper and valve linkages in proper positions to provide correct operating ranges. Proper damper positions shall be marked on ducts with permanent indication. Notify the department of any areas marginal or unacceptable system performance.

The above tests and procedures are mentioned herein, for general guidance and information only, but not by way of limitation to the provisions of conditions of contract and design/performance criteria.

Upon commissioning and final handover of the installation, the Ventilation & Air Conditioning contractor shall submit (within 4 weeks) to the engineer-in-charge/ department 6 (six) portfolios of the following indexed and bound together in hard covering binder (300x 450 mm) in addition to the completion drawings.

- a. Comprehensive operation and maintenance manual.
- b. Test certificates, consolidated control diagram and technical literature on all controls.
- c. Equipment warranties from manufacturers.
- d. Commissioning and testing reports.
- e. Rating charts for all equipments.
- f. Log books as per equipment manufacturer's standard format.
- g. List of recommended spares and consumables.
- h. Any special tools required for the operation or the maintenance of the plant shall be supplied free with the plant.

At the close of the work and before issue of final certificate of completion by the Engineer-in-charge, the contractor shall furnish a written guarantee indemnifying the department against defective materials and workmanship for the Defects liability period. The contractor shall hold himself fully responsible for reinstallation or replace free of cost to the department.

Any defective material or equipment supplied by the contractor.

Any material or equipment supplied by the department which is proved to be damaged or destroyed as a result of defective workmanship by the contractor.

### **37. ELECTRICAL INSTALLATION**

Motors above 0.25 HP shall be provided with overload protection. Motors above 100 HP shall be provided with thermal protection and thermistor detector in the starter winding.

#### **PIPING WORK**

- a) The length of piping accessories & fittings shall be measured along its centre line in meters and no measurements for bends, elbows, tees etc. shall be made. All such fittings / accessories shall be treated as part of the piping work.
- b) Flanges shall not be measured, as they form part of piping work.
- c) For thermometer wells & pressure gauge sockets no measurement shall be done separately.
- d) All kinds of supports, hangers etc shall be part of piping work & no extra measurements shall be done.
- e) No additional price for installation of purge & descaling valves as required at site shall be paid.

#### **STRUCTURAL SUPPORTS**

No extra price shall be paid on account of structural supports required for piping, ducting & cabling work.

All wooden/METAL frames for fixing like Grill etc. will be provided by the Contractor without any extra cost.

### **38. PAINTING AND FINISHES**

#### **SCOPE**

The scope of this section comprises of colour scheme required for each piece of equipment

## COLOUR SCHEME.

Description	Standard Colour & Reference	Lettering Colouring
Exposed Duct Work (other than plant room) instruction	To Architect's Choice	
Air Conditioning Duct Work (Plant Rooms)	BSS 111 Pale Blue	Black
Ventilation Duct Duct Work (Plant Rooms)	BSS 111 Pale Blue	Black
Conditioner Casings, Air Handling Units, Filter Plenums	BSS 111 Pale Blue	Black
Electrical (Conduit Ducts and Motors )	BSS 557 Light Orange	Black
Drains	Black	White
Vents	White	
Fans	BSS 111 Pale Blue	Black
Belt guards	Black and yellow diagonal stripes (45 25 mm wide)	
Switchboards - exterior - interior	BS 366 Light Beige White	
Machine Bases, Inertia Bases and Plinths	Charcoal Grey	

## 39. TECHNICAL DATA

TECHNICAL DATA TO BE FURNISHED WITH TENDER:

### 1. Outdoor Unit

Manufacturer  
Model  
Actual capacity TR  
Overall dimensions  
Over all weight  
Operating weight  
Refrigerant

### 2. Compressor

Manufacturer  
Model  
Type  
Type of capacity control provided  
Type of lubrication  
KW / TR

- 3. Motor**  
 Model  
 Manufacturer  
 Number of motors  
 Capacity HP  
 Type  
 Class of insulation  
 Speed RPM  
 Characteristics  
 Type of starter  
 Rating  
 Whether the following protections are provided.  
 a. Overload Yes/No  
 b. Under voltage Yes/No  
 c. Single phase protection Yes/No  
     (for three phase motor starters)
- 4. Indoor units**  
 Manufacturer  
 Model  
 Type of fan  
 Fan speed (R.P.M.)  
 No. of fans.  
 Fan wheel diameter (mm)  
 Drive arrangement  
 Material and thickness of fan wheel and blades.  
 Materials and thickness of housing.  
 Fan outlet area  
 Outlet velocity.  
 Total air quantity  
 Static pressure at outlet. (mm. of water)  
 Whether statically and dynamically balanced.  
 B.H.P. Consumed  
 Total weight of all items
- 5. Cooling Coil**  
 Material of Tubes  
 Material of fins  
 Tube diameter  
 Tube thickness  
 Fin thickness  
 Method of bonding of fins  
 No. of fins/cm.  
 Total tube surface outside  
 Test pressure  
 Coil face area
- 6. Filter**  
 Manufacturer  
 Type of filters  
 Filter medium  
 Material of frame work and its thickness  
 Face area  
 Face velocity across filters  
 Pressure drop across filters (mm of water)

**7.**

**Motor**

- Manufacturer
- Model
- Number of motors
- Capacity HP
- Type
- Class of insulation
- Speed RPM
- Characteristics
- Type of starter
- Rating

Whether the following protections are provided.

- i) Overload Yes/No
- ii) Under voltage Yes/No
- iii) Single phase protection Yes/No  
(for three phase motor starters)

**Note : Any other data relevant to each equipment shall also be furnished.**

**40. LIST OF APPROVED MAKES:**

- A. Contractor shall use the material of approved make as indicated below unless specified otherwise in BOQ or as approved by the Client’s representative.
- B. The Contractor shall ensure the correct selection of the approved make meeting the specifications and application duties. Before placing order for procurement, the sample of approved make shall be got verified for its suitability to the specification and application duty.

Sl No	Description	Suppliers	Remark
1.	Outdoor Split AC Unit	Carrier/Trane/York/Daikin/ Dunham/Voltas/Bluestar/ bush/ Climaveneta	Category 2
2.	Indoor Air Handling Units with Jet Diffuser	Carrier/Trane/York/Daikin/Dun ham/Voltas/Bluestar/ bush/ Climaveneta	Category 2
3.	Air curtain	SystemAir/Almonard/Kruger/ Euronics	Category 2
4.	Electric Motors	ABB/ GEC/Siemens	Category 2
5.	GI Sheet	Sail/TATA/ Jindal/Nippon	Category 2
6.	Factory Fabricated Ducts	SevenStar/Rolastar/ Westernairducts	
7.	Thermostats	Siemens/ Honeywell/ Schneider/ Belimo/ JCI	Category 3

8.	Grilles/Diffuser/Louvers/Sand Trap Louvers	Caryaire/ Betec Cad /Dynacraft / Systemair	Category 3
9.	Volume Control Dampers	Caryaire/ Dynacraft /Betec Cad/Systemair	Category 3
10.	Fire Damper	Systemair / Rolastar/Caryaire/Greenheck	Category 3
11.	Duct Insulation	Aeroflex/K Flex/Armaflex/Thermobreak	Category 2
12.	Gaskets	Neoprene Rubber	Category 3
13.	Adhesives	Fevicol / Superlon	Category 4
14.	Vibration Isolator	Kinetics/Resistoflex/Dunlop/Easyflex /Flexionics	Category 2
15.	Filters	Thermadyne/AAF/Camfil	Category 3
16.	Firewrap/Paint	3M/Hilti/Promat	Category 2
17.	Sound Attenuator	Caryaire/Mapro/Trox / Systemair/ Greenheck	Category 2
18.	Nitrile rubber Insulation/ polyolefin insulation	Armacell/Aeroflex/K-Flex/ Thermobreak/Trocelyn	Category 2
19.	Welding Electrodes	Advani /Esab/Superon	Category 3
20.	Anchor Fastener	Fischer/Hilti	Category 3
21.	Fire Sealant & Paint	Birla /3 M /Hilti/Promat	Category 3
22.	Flexible Insulated Ducts	ATCO/Seven Star/Supaflex	Category 3
23.	Actuators	Honeywell/Siemens/Belimo	Category 3
24.	CPVC Pipes	Supreme/Finolex/Hycount/ Saroplast	Category 3
25.	Vapour Barrier	Foster/Fevicol	Category 3

**CATEGORY REQUIREMENT OF TEST CERTIFICATE / INSPECTION**

**CATEGORY -1:**

- a) Type test certificate for similar item done if not, one of the items offered to be type tested.
- b) OEMs routine test certificate.
- c) Acceptance test to be conducted in the presence of CLIENT representative at OEMs factory.

**CATEGORY-2:**

- a) Type test certificate for similar item done if not, one of the items offered to be type tested.
- b) OEMs routine test certificate.
- c) Visual and functional check by CLIENT official at site.

**CATEGORY -3:**

- a) OEM / Dealer/ Contractor routine test certificate.
- b) Visual and functional check by CLIENT official at site.

**CATEGORY -4:**

- a) Visual and functional check by CLIENT official at site.

## SECTION VI

### PREAMBLE TO BILL OF QUANTITIES

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#### 1 General Instructions

##### 1.1 General

- a) This Bill of Quantities must be read with the Drawings, Conditions of Contract and the Specifications, and the Contractor shall be deemed to have examined the Drawings, Specifications, General Conditions of Contract and to have acquainted himself with the detailed descriptions of the Works to be done, and the way in which they are to be carried out.
- b) Notwithstanding that the work has been sectionalized every part of it shall be deemed to be supplementary to and complementary of every other part and shall be read with it or into it so far as it may be practicable to do so.
- c) The detailed descriptions of work and materials given in the Specifications are not necessarily repeated in the Bill of Quantities.
- d) The Contractor shall be deemed to have visited the Site before preparing his tender and to have examined for himself the conditions under which the work will proceed and all other matters affecting the carrying out of the works and cost thereof.
- e) The Tenderer will be held to have familiarized himself with all local conditions, in so far as they affect the work, means of access and the locality of existing services, in order to execute the Works measured and described hereinafter. No claims for want of knowledge in this respect will be reimbursed.

##### 1.2 Rates and Prices to be Inclusive

- 1.2.1 Rates and prices set against items are to be the all-inclusive value of the finished work shown on the Drawings and/or described in the Specification or which can reasonably be inferred there from and are to cover the cost of provision of plant, labour, supervision, materials, test charges, freight, transportation, erection, installation, performance of work, care of works, insurance, maintenance, overheads and profits and every incidental and contingent cost and charges whatsoever including all taxes and duties such as turnover tax and every kind of temporary work executed or used in connection therewith (except those items in respect of which provision has been separately made in the Bills of Quantities) and all the Contractor's obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the Works.
- 1.2.2 The Specifications are intended to cover the supply of material and the execution of all work necessary to complete the works. Should there be any details of construction or material which have not been referred to in the Specifications or in the Bill of Quantities and Drawings, but the necessity for which may reasonably be implied or inferred there from, or which are usual or essential to the completion of all works in all trades, the same shall be deemed to be included in the rates and prices entered in the Bill of Quantities. The rates and prices are to cover the item as described in the Bill of Quantities and if there is inconsistency in the description between the Bill of Quantities, Specifications or Drawings, the interpretation will be done according to General Conditions of Contract.
- 1.2.3 The quantities given in the Bill are approximate and are given to provide a common basis for tendering. They are not to be taken as a guarantee that the quantities scheduled will be carried out or required or that they will not be exceeded. The Employer / Engineer reserves the right to delete any item and / or increase / reduce quantities indicated in the Bills of Quantities at any time. Payment will be made according to the actual quantities of work ordered and carried out in the contract. However, the rates quoted shall be valid for any extent of variation in quantity of each individual

item provided that the total contract value does not get altered by more than indicated in conditions of contract. No claim whatsoever for extra payment due to variation of quantities within the above said limit would be entertained.

**1.2.4** The drawings for tender purposes are indicative only of the work to be carried out. However, construction purposes. Rate and price shall include any additional design/ detailing to be carried out by contractor.

**1.2.5** The rates and prices shall include (except where separate items are given) for the provision and operation of the following items, for compliance with the Condition of Contracts, Special Conditions, the specifications and Tender drawings:

- a) Supervision and labour for the Works;
- b) All materials, installation/erection, handling and transportation;
- c) All Contractor's Equipment;
- d) All testing, commissioning, insurance, maintenance, security, welfare facilities, overheads and profit and every incidental and contingent costs and charges whatsoever including;
- e) All temporary fencing, watching, lighting, sanitary accommodation, general security arrangements, welfare facilities and first aid provision;
- f) Provision and maintenance of Contractor's Site offices, cabins, huts, maintenance and storage areas;
- g) All taxes and duties including General Tax, Turn-Over tax, Duties etc.
- h) All necessary temporary services including fresh water, compressed air lines, electrical cabling and switchgear, telephone, walkie-talkie and facsimile facilities
- i) The maintenance of all Contractor's services;
- j) All insurances for the Works;
- k) Allow for complying with all environmental aspects as specified;
- l) For carrying out hot work of any kind contractor should consider safety of vessel in adjoining berth;
- m) Detail design of components of temporary works, wherever necessary as directed by Engineer.

**1.3 Method of Measurement**

Standard Method: The work included in Bill of Quantities once completed will be presented to the Engineer's representative for checking quality and quantity of work. The Engineer's representative after satisfying himself issue a certificate to that effect. Unless stated or billed otherwise quantities shall be measured in accordance with Indian Standard Code No.1200 for civil work and shall be not as they are provided in the works. The rates and prices shall include whatsoever allowance is considered to be necessary for wastage, working spaces, construction slopes and batters. The mode of measurement and payment described in the relevant technical specifications shall apply for the relevant items.

**1.4 Currency**

All monetary reference herein and the Bill of Quantities shall be priced in Indian Rupee Currency.  
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<b>DETAILED BOQ FOR SITC OF ADDITIONAL AIR CONDITIONING SYSTEMS FOR SAGARIKA CRUISE TERMINAL</b>					
<b>PART A - BOQ -Enhancement of Air-conditioning system for Passenger terminal area.- SAGARIKA including CAMC for 5 years after 2 years guarantee period</b>					
<b>Supply, Installation, Testing and Commissioning of 16.5 TR Jet diffuser AC Systems</b>					
<b>A1</b>	<b>Item description</b>	<b>Qty</b>	<b>Unit</b>	<b>Rate (Rs.) Including GST</b>	<b>Amount (Rs.) Including GST</b>
1	Supply, Installation, testing and commissioning of approx. 16.5 TR fixed speed ductable split unit Jet diffuser AC Systems including indoor and outdoor Unit . R410A refrigerant including all materials for commissioning , foundation works, Aesthetic covering materials for Indoor units etc. are inclusive	4	Nos		
2	Supply and charging of additional refrigerant - R407C	140	Kgs		
3	Supply & installation of Hard drawn copper refrigerant piping of various dia with 13 mm nitrile rubber tubular insulation for 16.5 TR Ductable Air conditioners	80	M		
4	Supply & installation of suitable casing and capping 300 mm for enclosing copper refrigerant piping.	80	M		
5	Supply & installation of control cabling between indoor to outdoor of Ductable Unit with conduit pipe (2.5 sqmm, 4 core )	200	M		
6	Supply, Installation, testing & commissioning of canvass connection	4	Set		
7	Supply, Installation, testing and commissioning of fabricated ducting plenum JSW, (120 GSM)(Box) - 24 G Rectangular Duct.(TDF)(0.80mm)	48	Sq.m		
8	Supply, Installation of round Alu. Powder coated Jet Diffuser with damper of desired dia as per the CFM requirements and locations.	32	Nos		
9	Supply and fabrication of MS Channel / Angle pedestal for ODU's	4	Nos		
10	Supply and fabrication of MS Channel Support for IDU and duct plenum Hanging arrangements	4	Nos		
11	Supply, Installation, testing and commissioning				
a	32 mm Rigid PVC Drain piping with 9 mm nitrile rubber tubular insulation, complete fittings, U trap as specified nearest drain point	20	M		

b	32 mm Rigid PVC Drain piping without insulation, complete fittings, U trap as specified nearest drain point	20	M		
12	<b>Electrical works</b>				
a	Supply, installing, testing, commissioning of the 250 A LT Panel Board (IP 54) and shall also include the following: a) Supporting rigid steel framework. b) Cubicle type, 14 gauge CRCA sheet steel enclosed with powder coated with approved shade. c) Complete with interconnections and distribution Copper bus bars - 250 A. d) Proper bonding to earth. e) Painting / lettering on Breakers and distribution boards, the location and purpose, SLD of each panel and DB details. f) Providing cable clamps / supports within distribution boards cable alley. g) Door interlocking for all outgoing feeders shall be provided. h) All hinged door shall be earthed through 2.5 sq mm tinned braided copper wire. <b>Incomer: 250A 4P MCCB - 01 no., Outgoing: 160 A 4P MCCB - 01 No., 63A 4P MCCB - 3 Nos.</b>	1	No.		
b	SITC of MV panel with Incomer -160 A , 4P MCCB - 01 No. , Outgoing 63A 4P MCB- 5 nos. including all materials as required.	1	No.		
c	Supply and laying of 3.5C x 185 sq mm Aluminium armoured cable (Main panel to Sub - Panel), under ground , ceiling supports, clamping along walls including all materials as required.	50	M		
d	Supply and laying of 3.5C x 120 sq mm Aluminium armoured cable (Main panel to Sub - Panel) through ceiling supports, clamping along walls etc. including all materials as required.	150	M		
e	Supply and laying of 3.5 C x 50 Sq mm Aluminium armoured cable (Sub - Panel to outdoor isolator)	160	M		
f	Supply and laying of 4 x 16 mm copper armoured cable (outdoor isolator to ODU)	45	M		
g	Supply and end termination of 3.5 x 185 mm Aluminium armoured cable	2	Nos		
h	Supply and end termination of 3.5 x 120 mm Aluminium armoured cable	2	Nos		
i	Supply and end termination of 3.5 x 50 mm Aluminium armoured cable	8	Nos		

j	Supply and laying of end termination of 4 x 16 mm Copper armoured cable	8	Nos		
l	Supply and installation of 63 A 4 pole isolator with lockable box	4	Nos		
m	Supply and installation of 25 x 3 GI strip (outdoor unit earthing)	25	Mtr		
n	Supply and installation of 10 SWG copper (earthing Panel DB and isolator box)	50	Mtr		
o	Excavation for laying 3.5C x150 sqmm cable and replacing the interlock tiles etc.	25	Mtr		
p	SITC of B class GI pipe of size 65 MM for laying cables.	18	Mtr.		
13	SITC of 250 A MCCB in existing MV panel at substation after removing the existing 125 A MCCB with suitable modifications including all materials as required.	1	nos.		
14	Providing protective polycarbonate sheet covering in the existing outdoor ducting units to prevent rain water and sunlight directly falling above the ducting items. The work shall include fabrication of covering system with GI angles 40X4 / Pipe supports 50 MM, Epoxy painting , foundations for supports etc. as required.	150	Sq M		
	<b>TOTAL for SITC OF JET DIFFUSER AC INCLUDING GST</b>				
<b>A2</b>	<b>Comprehensive Annual Maintenance Contract ( CAMC) for Jet Diffuser AC units for 5 years after 2 years guarantee period</b>				
	<b>Item description</b>	<b>Qty</b>	<b>Unit</b>	<b>Rate Incl.GST</b>	<b>Amount Incl. GST</b>
a	CAMC for 3rd year after 2 years guarantee period	1	LS		
b	CAMC for 4th year after 2 years guarantee period	1	LS		
c	CAMC for 5th year after 2 years guarantee period	1	LS		
d	CAMC for 6th year after 2 years guarantee period	1	LS		
e	CAMC for 7th year after 2 years guarantee period	1	LS		
	<b>TOTAL CAMC AMOUNT -JET DIFFUSER FOR 5 YEARS INCLUDING GST</b>				
	<b>TOTAL FOR SITC OF JET DIFFUSER AC+CAMC FOR 5 YEARS AFTER 2 YEARS GUARANTEE PERIOD</b>				

<b>PART B - SITC of VRF Air-conditioning system for Officer Cabins / waiting area etc. at SAGARIKA including CAMC for 5 years after 2 years guarantee period</b>					
<b>Sl. No.</b>	<b>Description of item</b>	<b>Qty</b>	<b>Unit</b>	<b>Rate including GST</b>	<b>Amount including GST</b>
<b>B1</b>	<b>HIGH SIDE</b>				
1	Supply Installation, testing and commissioning of 10HP VRF Rotary inverter compressor with cooling only function including refrigerent R410A as required .	2	Nos.		
2	Supply, Installation, testing and commissioning of 2.0 TR 4-Way cassette type units by modification of existing ceiling .	8	Nos.		
3	Supply, Installation, testing and commissioning of 1.5TR 4-Way cassette type units by modification of existing ceiling	2	Nos.		
4	Supply, Installation, testing & Commissioning of branch joints	10	Nos.		
<b>B2</b>	<b>LOW SIDE</b>				
5	Supply, Installation, testing & Commissioning of VRF Copper refrigerant piping with Insulation and necessary supports	300	M		
6	Supply, Installation, testing & Commissioning of VRF Communication cable	300	M		
7	Supply, Installation, testing & Commissioning of incoming power cable 4C x 4 sq mm for IDU. ( Power supply to be provided within 5 Mtrs from the unit)	120	M		
8	Supply & laying of incoming power cable of AHU - 4C X 10 Sq.mm Copper armoured cable (Electrical power supply to be provided within 10meteres of each ODU)	40	M		
9	Supply and installation of 63 A 4 pole isolator with lockable box	2	Nos		
10	Supply and laying of end termination of 4C x 10 Sq.mm Copper armoured cable	2	Nos.		
11	Charges for providing foundation and pedestal for ODU	1	LS		
	<b>Total for SITC of VRF AC + CASSETTE units including GST</b>				
<b>B3</b>	<b>Comprehensive Annual maintenance Contract ( CAMC) for VRF AC + CASSETTE units for 5 years after 2 years guarantee period</b>				

B3		Qty	Unit	Rate Incl.GST	Amount Incl. GST
1	<b>Description of item</b>				
a	CAMC for 3rd year after 2 years guarantee period	1	LS		
b	CAMC for 4th year after 2 years guarantee period	1	LS		
c	CAMC for 5th year after 2 years guarantee period	1	LS		
d	CAMC for 6th year after 2 years guarantee period	1	LS		
e	CAMC for 7th year after 2 years guarantee period	1	LS		
	<b>TOTAL CAMC AMOUNT FOR 5 YEARS FOR VRF+CASSETTE AC INCL. GST</b>				
	<b>TOTAL FOR SITC OF VRF+CASSETTE AC+ CAMC FOR 5 YEARS AFTER 2 YEARS GUARANTEE PERIOD</b>				
	<b>GRAND TOTAL AMOUNT QUOTED FOR SITC OF AC+CAMC FOR 5 YEARS INCLUDING GST@18%</b>				

Price for the above Bill of Quantities including GST shall be quoted in the GeM portal(<https://gem.gov.in/>)

**SECTION VII  
CONTRACT DATA**

Items marked "N/A" do not apply in this Contract.

Sl. No.	Description	Reference Clause .No. in GCC
1	The following documents are also part of the Contract	
	The Schedule of other Contractors	
	The Schedule of Key personnel	
2	The Employer is	
	<b>The Board of Major Port Authority for the Cochin Port, Cochin -9</b>	
	Name of Authorized Representative:	
	Name : <b>Sri. B. Kasiviswanathan, IRSME The Chairperson, Cochin Port Authority, Cochin -9</b>	
3	The Engineer is	
	Name : <b>Shri. A. Jayasimha, Chief Mechanical Engineer, Cochin Port Authority, Cochin-9</b>	
	Name of Nominee is : <b>Will be notified in LoA/ LoI</b>	
	Name : <b>Shri..... Cochin Port Authority Cochin-9</b>	
4	Name of Contract: <b>Providing new AC units for Sagarika International Cruise Terminal Main hall, Immigration Officers' room and Waiting room</b>	
5	4 <b>copies</b> of Contract Agreement shall be furnished by the Contractor	
6	Tender document and other data are available at : GeM portal <a href="https://gem.gov.in/">https://gem.gov.in/</a> , in the CoPA website <a href="http://www.cochinport.gov.in">www.cochinport.gov.in</a> as well as in the Central Public Procurement Portal of Govt. of India, <a href="http://www.eprocure.gov.in">www.eprocure.gov.in</a>	
7	The Intended completion Date for the whole of the Work is <b>120 days</b> from date of issue of LoA/GeM Order with the following milestones:	

**Comment [Legal2]:** Verify. 120 days in LoA

Sl. No.	Description	Reference Clause .No. in GCC
8	Milestone dates: <b>Physical works to be completed</b>   <b>120 days from the date of Issue of LoA/GeM Order</b>	
9	The following shall form part of the Contract Document: (1) Agreement (2) Letter of Acceptance (3) Bill of quantities (4) Contractor's Bid (5) Correspondence exchanged after the opening of the Bid and before the issue of Letter of Acceptance by which the Condition of Contract are amended, varied or modified in any way by mutual consent (to be enumerated). (6) Contract Data (7) Conditions of Contract (8) General Description and Special Conditions of Contract (9) Technical Specifications (10) Drawings and (11) Any other documents listed in the Contract Data as forming part of the Contract.	
10	The Contractor shall submit a Program for the Works	
11	<b>The site possession date</b> The site will be handed over within immediately after issue of LoA/LoI and the site is free from encumbrances. Such possession will not be exclusive to the contractor. Refusal of the contractor to take over the possession, shall entitle CoPA to terminate the contract without payment of any compensation.	
12	The start date shall be 7 days after issue of GeM order.	
13	The site is located in Willingdon Island.	
14	The Defects Liability Period is <b>TWO years from the date of completion of the work and handing over the site to CoPA</b>	
15	The minimum insurance cover for physical property, injury and death is <b>Rs.7 lakh (Rupees Seven Lakh)</b> per occurrence with the number of occurrences unlimited. After each occurrence, Contractor will pay additional premium necessary to make insurance valid always.	
16	The language of the Contract documents is <b>English.</b>	
17	The law, which applies to the Contract, is the law of Union of India.	
18	The currency of the Contract is <b>Indian Rupees.</b>	
19	The maximum amount of liquidated damages for the whole of the works is <b>10%</b> of the contract price.	

**Comment [Legal3]:** Verify whether 75 or 120

**Comment [Legal4]:** May verify with date of commencement already defined in the contract

**Comment [Legal5]:** LoA or GeM order

**Comment [Legal6]:** Please confirm if a provision for same is existing in Contract.

**LETTER OF SUBMISSION - COVERING LETTER**

(ON THE LETTER HEAD OF THE BIDDER)

Date:

To

The Chief Mechanical Engineer,  
Cochin Port Authority.

Sir,

**Sub : Providing new AC units for Sagarika International Cruise Terminal Main hall,  
Immigration Officers' rooms and Waiting Hall, with 2 years guarantee and CAMC for  
5 years thereafter**

Being duly authorized to represent and act on behalf of ..... (Hereinafter referred to as "the Bidder") and having reviewed and fully understood all of the requirements of the bid document and information provided, the undersigned hereby apply for the project referred above.

We are submitting our Bid enclosing the following, with the details as per the requirements of the Bid Document, for your evaluation.

- i) EMD/ MSME registration certificate
- ii) Power of attorney
- iii) (documents as per MQC)

Signature

(Authorised Signatory)

**PROFORMA OF POWER- OF-ATTORNEY/LETTER OF AUTHORITY  
(To be submitted on Non-judicial Stamp Paper of appropriate value)**

To

The Chief Mechanical Engineer,  
Cochin Port Authority,  
Cochin 682009.  
Kerala, India.

Dear Sir,

We \_\_\_\_\_  
do hereby confirm that Mr./Ms./Messrs \_\_\_\_\_ **[INSERT NAME AND ADDRESS]**, whose signature is given below, is /are authorized to represent us to bid, negotiate and conclude the agreement on our behalf with you against Tender for Contract **“Providing new AC units for Sagarika International Cruise Terminal Main hall, Immigration Officers’ rooms and Waiting Hall, with 2 years guarantee and CAMC for 5 years thereafter”**

We confirm that we shall be bound by all and whatsoever our said agents shall commit.

Signature of the authorized person :

Name & Designation :

Yours faithfully,

Signature, name and seal of the certifying authority

**ORGANIZATION DETAILS**

CONTRACT No.:

NAME OF APPLICANT:

1. Name of the Owner:
2. Address:  
Telephone No. :  
  
Fax No.  
  
e-mail id:
3. Description of Applicant  
(for e.g. A or B grade electrical contractor etc.)
4. Registration and Classification  
of Contractors
5. Name and address of bankers
6. Number of years of experience  
as a contractor :-  
  
In own Country:  
  
Internationally:
7. Name and Address of partners or  
associated companies to be involved  
in the project and whether Parent/  
Subsidiary/other
8. Name and address of any associates  
knowledgeable in the procedures  
of customs, immigration and local  
experience in various aspect of the  
project etc.

9. Name and address of the companies/  
Sub-contractors who will be involved  
in the execution of works, namely:

Name and address of companies who  
will be involved in the supply of  
bought out items

12. Attach organization chart showing the structure of the  
company including names of Directors/ Key Personnel  
at Head Office who would be responsible for the project  
and a separate chart showing proposed Site Construction Organisation.

Signature  
(Authorised Signatory)

Tenderer shall furnish Details of “eligibility works experience” as per Clause 12 of Minimum Eligible Criteria (MEC) of Instruction to Tenderer and certificates in the following format (CoPA Certificates/work completion certificates or any other documentary evidences with respect to the eligibility work)

**ELIGIBLE ASSIGNMENT DETAILS FOR MQC**

Assignment Number :

Description	Bidder to fill up the details here
Name and Address of the firm	
Title of the Eligible Assignment	
Date of completion of the Eligible Assignment	
Project Completion Cost	
Reference No. of the enclosed firm Completion Certificate/ Documentary Evidence for having successfully completed the Eligible assignment	
Name, telephone no, telefax no and email address of the firm’s representative	
Description and Scope of Work	

Instructions:

- i) Bidders are expected to provide information in respect of Eligible Assignments in this Section. The assignments cited must comply with the criteria specified Clause No. 12(a) Minimum eligibility of the Instructions to Tenderers”.
- ii) A separate sheet should be filled for each of the eligible assignments.
- iii) The details are to be supplemented by documentary proof from the respective form /owner for having carried out such assignment duly certified by firms/ owner.
- iv) **The works indicated in this Annexure- 4 will be only being considered for evaluation. Mere submission of work completion certificate will not be considered as Eligible Assignments.**
- v) Original or notary certified copy of completion certificates of each work issued by the owner/ the responsible officers of the owner under whom he has executed such contracts shall be attached. The certificate shall invariably contain the following among other things.
  - a) Details of work involved specifying the nature of work
  - b) The completion cost of the work and
  - c) Date of commencement ; and
  - d) Date of completion of the work.

- vi) If the experience in similar works is as a member of joint venture, notary attested copy of joint venture agreement in this respect shall be attached.
- vii) If the experience in similar works is as a subcontractor, notary attested copy(s) of approval issued by the Employer(s) authorizing as a sub-contractor; in proof of the claim of the tenderer as a sub-contractor shall be attached.
- viii) If the experience in similar work is in works executed in private sectors/organisations, the Form 26AS along with notary attested copy(s) work order and completion certificate.
- ix) The tenderer is also obliged to produce the original of the certified copy(s) on request by the department.

Signature

(Authorised Signatory)

**DETAILS OF PAST EXPERIENCE OF CONTRACTORS FOR SIMILAR WORKS**

Sl. No.	Name & Location of Project	Owner's Complete address including TeleFax No. with contact Person	Value of Contract	Duration of Contract			Details of work including major items of work involved	Reference No. & Date of letter of intent & completion certificate enclosed
				Commencement date	Scheduled completion date	Actual completion date		
1	2	3	4	5	6	7	8	9

**Note:** Bidder to enclose completion certificate issued by owner, certified by a Notary public or equivalent certifying authority.

**SIGNATURE OF TENDERER**

**FINANCIAL CAPABILITY**

Average Annual Turnover of the Bidder

<b>Turnover (Rs.)</b>			
<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Average</b>
<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>	

**Certified by Chartered Accountant**

Signature  
(Authorized Signatory)

**Instructions:**

- (i). The Bidder shall provide audited Annual Reports / Audited financial statements such as balance sheets and profit & loss account statements as required under this Bid Document.
  
- (ii). Annual turnover of the bidder shall be submitted duly verified by Chartered Accountant

**Annexure- 5-A**

**DETAILS OF PAST EXPERIENCE OF CONTRACTORS**  
**FOR SIMILAR WORKS EXECUTED IN PRIVATE**  
**ORGANISATIONS**

Sl. No.	Name & Location of Project	Owner's address including Tele No. Fax No. with contact Person	Complete including No. with	Value of Contract	Details of work including major items of work involved	Details of Payment made
1	2	3		4	5	6

**Note:** Bidder to enclose completion certificate issued by owner, self certified

Signature

**Certified by Chartered Accountant**  
(with UDIN (Unique Document Identification Number)  
while certification with QR code if available.)

(Authorised Signatory)

**Annexure - 6**

**DETAILS OF PROPOSED APPROACH & METHODOLOGY**

Bidder shall furnish a detailed method statement (Technical Note) for carrying out of the works, along with a programme showing sequence of operation and the time frame for various segments of works.

Signature  
(Authorised Signatory)

**Format for Self-Certification under Preference to “MAKE IN INDIA” Policy**

**CERTIFICATE**

In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt.15.06.2017 and No.:P-45021/2/2017-PP(BE-II) dt.04.06.2020 as amended from time to time along with clarifications/ amendments and other references as issued from time to time, where by certify that we

M/s \_\_\_\_\_ (supplier name)

are supplier meeting the requirement of **Minimum Local content** as per below declaration.

**(Class-I Supplier (50%) or Class-II Supplier (20%) or Non-Local Supplier (Less than 20%))**

as defined in above orders/ circulars/ clarifications/ amendments for the material against Tender No

Details of Location (Complete Address) at which local value addition will be made is as follows:

-----

We have also read the clarification issued vide Circular No.: P-45021/102/2019-BE-II-Part(1) (E-50310), Dtd.: 04.03.2021 and any other subsequent circular/ amendment/ order as issued by competent authority.

Total Value of local content addition/ manufacturing for offered material/ item(s)/ service is as per below declaration.

Accordingly, we declare to be (Tick One)

- a. **Class-I Supplier (50% or more local content)**
- b. **Class-II Supplier (20% to 50% local content)**
- c. **Non Local Supplier (less than 20% local content)**

We also understand, false declaration swill be in breach of the Code of Integrity under Rule 175(1) (i) (h) of the General Financial Rule for which a bidder or its successors can be debarred for up two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

**Note:-“Make in India” certificate must be in the letter head of OEM/ Manufacturers.**

Seal and Signature of Authorized Signatory

**DECLARATION**

We M/s (Name & address of the bidder) hereby declare that:-

1. All details regarding construction plant, temporary work and personnel for site organisation considered necessary and sufficient for the work have been furnished in the Annexure 7 and that such plant, temporary works and personnel for site organisation will be available at the site till the completion of the respective work.
2. No conditions are incorporated in the financial bid. In case any conditions are specified in the financial bid, the tender will be rejected summarily without making any further reference to the bidder.
3. We have not made any payment or illegal gratification to any persons/ authority connected with the bid process so as to influence the bid process and have not committed any offence under PC Act in connection with the bid.
4. We disclose with that we have \* made / not made payments or propose to be made to any intermediaries (agents) etc in connection with the bid.
5. We do hereby confirm that no changes have been made in the tender document downloaded and submitted by us for the above bid. Port Tender document will be treated as authentic tender and if any discrepancy is noticed at any stage between the Port's tender document and the one submitted by the tenderer, the Port's document shall prevail.

Signature

(Authorized Signatory)

**\* Note: Delete whichever is not applicable.**

**DETAILS OF THE PARTY OPTING FOR  
REFUND OF EMD THROUGH E-PAYMENT SYSTEM**

Name of the Party :  
Bank A/c No :  
Account type : (Savings / Current / Overdraft)  
Bank Name :  
Branch :  
IFSC Code Number : (11 digit code)  
Centre (Location) :  
FAX No. :  
E-Mail ID : (For forwarding information of remittance)  
Mobile No :

Signature of the Party

**FORMAT FOR FURNISHING BANK INFORMATION FOR e-PAYMENT**

1	Name and full address of the beneficiary	
2	Credit Account No. (Should be full 14 digit)	
3	Account Type (SB or CA or OD)	
4	Name of the Bank	
5	Branch (Full address with telephone No.)	
6	MICR code (Should be 9 digit)	
7	Telephone/Mobile/Fax No. of the beneficiary	Telephone :
		Mobile :
		Fax :
8	Cancelled Cheque	

Signature with seal  
(Authorised Signatory)

**FORM OF AGREEMENT  
TO BE EXECUTED ON KERALA STAMP PAPER (Rs.200/-)**

**AGREEMENT NO. .... OF 2025**

**Sub: “ ..... ”**

THIS agreement is made at Cochin on ..... day of .....Two thousand and Twenty five (..... - .....-2025) between THE BOARD OF MAJOR PORT AUTHORITY FOR COCHIN PORT commonly known as COCHIN PORT AUTHORITY, a Body Corporate under the Major Port Authorities Act, 2021, with its Administrative Office at Willingdon Island, Cochin-682009, having PAN Card No. AAALC1134F, represented by its Chief Mechanical Engineer, ..... (hereinafter referred to as “The Employer” which expression shall include their successors, assignees and administrators in the office) of the one part AND M/s. .... represented by Sri/Smt.. ----- aged -----years, son/daughter of Sri. ----- residing at ----- (House name and No.) ----- District ----- State ----- (hereinafter referred to as “The Contractor” which expression shall include their successors, assignees and administrators) of the other part.

WHEREAS the “Employer” had called for the tenders for “ ..... ” vide Tender Notice No. .... Dt: ..... and the contractor had submitted a tender for the same giving the rates subject to the terms and conditions etc.

AND WHEREAS the said tender of the contractor has been accepted by the employer and a letter of acceptance No..... Dt: ..... has been issued to the contractor accepting their tender subject to the “General Conditions of Contract”, “Instructions to the Tenderers” and such other contract documents. And as per one of the terms of the above work order, an agreement has to be executed between the contractor and the employer.

NOW THESE PRESENT WITNESSES AS FOLLOWS:

1. The contractor hereby agrees to execute the work “.....” as described in the schedule, its annexure etc. at the rates shown there under subject to the “General Conditions of Contract”, ‘Scope of work’ and ‘Technical Specifications’ and all hereunto annexed within ..... from the date of issue of Letter of Acceptance or in default to forfeit and pay to the employer the sum of money mentioned in the said conditions.

The contractor has furnished a Bank Guarantee for **Rs.....** (Rupees .....only)vide Bank Guarantee No. ----- Dated----- from -----, in lieu of Security Deposit for the due and proper fulfillment of the contract. The contractor further agrees that the aforesaid Bank Guarantee will be kept valid until one month beyond the expiry of the Guarantee Period. The contractor also agrees that the Bank furnished in lieu of Security Deposit for the due and proper fulfillment of the contract will be suitably enhanced so as to cover 10% cost of

any additional items/works that may be required for the proper completion of the contract or otherwise the employer can deduct such additional amounts towards Security Deposit from the Contractor's bills.

2. The following documents shall be deemed to form and be read and construed as part of this agreement viz:
  - a) Cochin Port Authority's GeM Bid No. .... Dt: .....
  - b) Offer from M/s. ....No:..... dated.....
  - c) Cochin Port Authority's LoA No..... Dt:.....
  - d) This office e-mail letter dated ..... and your reply through e-mail received on .....
3. The Conditions given in the LoA dated ..... shall over-ride the general conditions given in the tender document, wherever they differ. Any of the counter terms and conditions of the contractor shall not be taken as terms and conditions of this contract/ agreement unless the CoPA in writing specifically agree to it.

IN WITNESS WHEREOF THE CONTRACTOR hereunto set his hand and seal on behalf of M/s.....And on behalf of the Board of Major Port Authority for Cochin Port, the Chief Mechanical Engineer has set his hand and seal and common seal of CoPA as has been hereunto affixed the day and year first written above.

Signed, sealed and delivered  
by Shri. -----  
of M/s -----  
-----

**CONTRACTOR**

(COMMON SEAL OF THE FIRM)

Signed and affixed seal in the presence of:

- 1) Signature with address:
- 2) Signature with address:

- 1) Signed, sealed and delivered by  
The Chief Mechanical Engineer,  
Cochin Port Authority on behalf of  
Board of Major Port Authority  
For Cochin Port.

**EMPLOYER**

- 2) Signed and affixed the common  
seal of Board of Major Port Authority  
For Cochin Port in the presence of

**PROFORMA OF BANK GUARANTEE FOR SECURITY DEPOSIT**

(TO BE EXECUTED ON STAMP PAPER WORTH RS.200/-)

GUARANTEE BOND NO.

In consideration of the THE BOARD OF MAJOR PORT AUTHORITY FOR COCHIN PORT commonly known as COCHIN PORT AUTHORITY (hereafter called the "Port Authority" which expression shall include their successors and assignees) having accepted the tender No. No..... dated ..... submitted by M/s.....(hereinafter called "the said tender") for name of work"....." as per the Chief Mechanical Engineer, Cochin Port Authority's order No..... dated .....and having agreed to exempt M/s..... (hereinafter called as the "Contractor (s)" which expression shall include their successors and assignees) from the demand under the terms and conditions of the said tender and the agreement to be executed between the Port Authority and the said contractor and which shall include any amendments, alterations or additions made with the mutual consent between the parties (hereinafter called " the said agreement") of Security Deposit for the due fulfillment by the said contractor(s) of the terms and conditions contained in the said tender and Agreement, on production of a Bank Guarantee for **Rs.....** (Rupees .....).

1. We,..... (Name of Bank) (hereinafter referred to as "the Bank") do hereby undertake to pay to the Port Authority an amount not exceeding **Rs.....** (Rupees .....only) against any loss or damage caused to or suffered by the or would be caused to or suffered by the port Authority by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the agreement.
2. We, ..... Bank Ltd., do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Port Authority stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding **Rs.....** (Rupees.....).
3. We,..... Bank Ltd., undertake to pay to the Port Authority any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the contractor(s) shall have no claim against us for making such payment.
4. We ..... Bank Ltd., further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the

performance of the said agreement and that it shall continue to be enforceable till all the dues of the Port Authority under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer – in – charge on behalf of the Port Authority certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges this guarantee.

5. We,..... Bank Ltd., further agree with the Port Authority that the Port Authority shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Port Authority against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor (s) or for any forbearance act or omission on the part of the Port Authority or any indulgence by the Port Authority to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision, have effect of so relieving us.
6. This guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).
7. We, ..... Bank Ltd., lastly undertake not to revoke this guarantee except with the previous consent of the Port Authority in writing.

This guarantee shall be valid up to unless extended on demand by Port Authority. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to **Rs.....** (Rupees ..... only).and unless in claim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee, all our liabilities under this guarantee shall stand discharged.

**Dated the .....day of .....**  
for ..... Bank Ltd