



**COCHIN PORT AUTHORITY  
COCHIN-682009, KERALA, INDIA**

Tele: 91-0484-2666414, 2666871

Telefax: 91-0484-2666414

E-mail:coptce@gmail.com

**TENDER DOCUMENT FOR RENOVATION OF OFFICE ROOMS NAB 601 &  
NAB 605 OF NEW ADMINISTRATION BLOCK**

**TECHNICAL BID (e-Tendering Mode)**

**Website:www.tenderwizard.com/CPT**

**CHIEF ENGINEER'S OFFICE**

**COCHIN PORT AUTHORITY**

**COCHIN-682009**

**TENDER No.T6/T-1980/2023-C**

**Rs.1,680/- (Rs.1,500/-+12% GST)**

**COCHIN PORT AUTHORITY**

**TENDER FOR ‘RENOVATION OF OFFICE ROOMS NAB 601 & NAB 605 OF  
NEW ADMINISTRATION BLOCK’.**

**(Tender No.T6/T-1980/2023-C)**

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**SIGNATURE OF TENDERER**

## COCHIN PORT AUTHORITY



Chief Engineer's Office  
Cochin Port Authority  
W/Island , Cochin – 682009, KERALA  
Tele: 91-0484-2666414/0484-258-2400  
website: [www.cochinport.gov.in](http://www.cochinport.gov.in)

Tender No. T6/T-1980/2023-C

Date : 05/01/2023

### NOTICE INVITING TENDER

Electronic Tenders (**e-tenders**) on percentage basis are invited by Cochin Port Authority on behalf of GoI from reputed contractors in Single Stage Two Cover bidding procedure [Technical Bid and Financial Bid], meeting the Minimum Eligibility Criteria specified below for the work of **“RENOVATION OF OFFICE ROOMS NAB 601 & NAB 605 OF NEW ADMINISTRATION BLOCK”**.

1. **Minimum Eligibility Criteria:**

a) **Experience**

The tenderers should have experience of having successfully completed during the last 7 (seven) years ending **31<sup>st</sup> December, 2022**, at least either:

i) Three Similar Works each costing not less than **Rs.37.48 lakhs**

(OR)

ii) Two Similar Works each costing not less than **Rs.46.85lakhs**

(OR)

iii) One Similar Work costing not less than **Rs.74.95 lakhs**

b) **Financial Turnover**

Average Financial Turnover of the tenderer over the last three financial years ending 31<sup>st</sup> March 2022 [2019-'20, 2020-'21 & 2021-'22] shall not be less than **Rs.28.11 lakhs**.

**Explanatory Notes to a) & b) :**

i. Similar work(s) means **“Civil Construction work / Civil Repair Works/ Civil Architectural Works”**. The experience certificate of works executed in private sectors/ organisations shall be considered for qualification, only on submission of TDS certificate along with work order and completion certificate.

ii. Copy of completion certificates of each work issued by the owner/ responsible officer of the owner under whom he has executed such contract

shall be attached. The certificate shall contain details of work involved specifying the nature of work, the completion cost of the work, date of commencement & date of completion of the work.

- iii. The works reckoned for the above purpose are those executed by the tenderers as prime Contractor or proportionately as member of joint venture or Sub Contractor. The Sub-Contractor shall be an authorized and approved Sub-Contractor by the Employer of the work(s) against which the tenderer has claimed his experience. The tenderer shall attach 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. The tenderer is also obliged to produce the original of the certified copy(s) on request by the department.
- iv. 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 the past years.

**Table 1**

Year before	Multiplying factor
One year	1.07
Two years	1.14
Three years	1.21
Four years	1.28
Five years	1.35
Six years	1.42

- v. **Financial Turnover:**  
In proof of Financial Turnover Audited Annual Accounts Statements or IT returns duly acknowledged by the Income Tax department along with Computation Statement signed by the Auditor/ Chartered Accountant, for the last three years shall be produced by the tenderer..

**2. Other Eligibility Considerations**

- 2.1 Even though the bidders meet the above qualifying criteria, they are subject to 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, black listing/ debarring by Govt. departments etc.

**2.2 The bidders having EPF/ ESI registration certificates only shall be considered for qualification in the tenderers, if applicable, as per EPF /ESI Acts. In case, the Tenderer does not have the required number of employees which makes such registration mandatory, an Undertaking as per Annexure I to the effect shall be furnished.**

3. **Pertinent information to the tender is given in the following Tables:**  
 i) **Schedule of different activities till submission of the bid are detailed as under:**

**Table 2**

<b>Sl. No.</b>	<b>Particulars</b>	<b>Date and Time</b>
1	Tender e- publication date	<i>05 -01-2023</i>
2	Download period of Bid Documents	<i>05-01-2023 to 25-01-2023</i>
3	Date of Pre-Bid meeting	<i>Not Applicable</i>
4	Last date for seeking clarification	<i>18-01-2023</i>
5	Last date and time of submission of Bid	<i>25-01-2023 up to 14.30 hrs</i>
6	Date and time of opening the Bid	<i>25-01-2023 after 15.00 hrs</i>

- ii) **Bid information :**

**Table 3**

i)	Estimated Amount put to Tender	<b>: Rs.93,69,280/-</b>
ii)	Earnest Money Deposit	<b>:Rs.93,700/-</b> furnished through Demand Draft or Banker's Cheque drawn in favour of Financial Adviser & Chief Accounts Officer, CoPA from any Nationalised Bank/ Scheduled Bank in India.
iii)	Cost of Bid document	Rs.1,680/- (Rs.1,500/-+12% GST) (Non refundable) furnished either through Demand Draft/ Banker's Cheque drawn in favour of the Financial Adviser & Chief Accounts Officer, CoPA from any Nationalized Bank/ Scheduled Bank in India, being the cost of single copy of the tender document
iv)	Validity period of Tender	120 days from the Last Date of Submission of Bid.
v)	Time for Completion	<b>165 days (1<sup>st</sup> 75 days for Room NAB 605 &amp; further 90 days for Room NAB 601)</b>

4. This work essentially comprises of the following:  
 A covering letter from the tenderer enlisting the enclosures/ attachments.  
 b) Original Tender Document (Technical Bid) except Schedule of Quantities.  
 c) Copy of the documents in proof of fulfillment of the Minimum Qualification Criteria.  
 d) Copy of PAN Card, ESI/EPF & GST Registration documents.  
 e) Copy of Authorisation documents of Signatory of the bid in case of Registered Partnership firm / Limited company

- f) Partnership deed or Memorandum and Article of Association of the company and registration certificate of the company as the case may be.
  - g) Any other relevant document.
  - h) Dismantling of existing ACs and other Electrical installations in Chairperson & Dy Chairperson's Room NAB 605 & NAM 601
  - i) Supply , Installation, Testing and Commissioning of 4HP/6HP VRF ACs
  - j) Supply & Fixing of 40 A DB and connected accessories
  - k) Supply & Laying of different sizes of LT cables
  - l) Supply and Providing end termination for LT cables
  - m) Supply and fixing of light fixtures for Panel lighting/Focus lighting/Strip Lighting etc
  - n) Earthing the system
  - o) Supply , Providing , Testing and commissioning of Data cable
  - p) Supply & Installation of the following Electronic items
    - 1) Desktop PC
    - 2) 4 K Led TV
    - 3) Telephones with Mini Exchange
5. Tender documents can be downloaded from the e-Tendering portal [www.tenderwizard.com/CPT](http://www.tenderwizard.com/CPT) on the dates specified in Table 2 given above by making online requisition. Bid document will also be available in Cochin Port website ([www.cochinport.gov.in](http://www.cochinport.gov.in)) as well as Govt. tender website, [www.eprocure.gov.in](http://www.eprocure.gov.in), which can be downloaded for submission. The cost of bid document shall be furnished in the form of Demand Draft/ Banker's Cheque drawn in favour of FA & CAO, CoPA. The bidder shall submit the Originals of (i) DD / Bankers Cheque towards the cost of tender and EMD and (ii) Power of Attorney in favour of signatory(s) to the tender, with letter of submission in a sealed cover to the **Suptdg. Engineer(CM), Cochin Port Authority, W/Island, Cochin-682009, Kerala**, within 3 (Three) working days from the date of opening. **Non submission of original financial documents towards cost of tender document and EMD within 3 (Three) working days from the date of opening, will make the tender liable for rejection.**
6. The bidders need to obtain the one time User ID & password for log-in to in **e-Tendering** system from the service provider **KEONICS** by paying registration amount of **Rs.1124/-** by online Payment using Credit/Debit Card/Net banking or DD in favour of "KSEDCL, Bangalore".
7. The intending bidder must have valid Class-II or III digital signature certificate to submit the bid. For further details and to obtain the digital signature, please contact e-Tender Help Desk No.080-40482000 / 9746118529 / 9605557738.
8. Tenders shall be submitted "**online**" strictly in accordance with the Instructions to Tenderers and Terms & Conditions given in the tender document.
9. The bidder is responsible to download Addenda/ Amendments/ Errata/ Replies to the queries of the bidders etc., if any, issued by the Employer, from the website before submission of the bid. **Any shortfall in uploading the said Addenda/**

**Amendments/ Errata/ Replies to the queries of Tenderer etc. duly signed along with the downloaded documents while uploading the Tender will render the Tender incomplete and incomplete Tender Documents may be rejected.**

10. All Bids are to be submitted **online only** on the website [www.tenderwizard.com/](http://www.tenderwizard.com/) COPT. No Bids shall be accepted off-line (Hard copy).
11. Original DD / Bankers Cheque towards the cost of tender and EMD, shall be submitted in a sealed cover to the **Suptdg. Engineer (CM), COCHIN PORT AUTHORITY, W/Island, Cochin-682009, KERALA, and these original documents shall be reached to the employer within 3 (THREE) working days from the Bid Due date. Non submission of original financial instruments towards the cost of tender document, EMD, within the above period leads to disqualification of Bids.**
12. The intending bidder must have valid Class-II or III digital signature certificate to submit the bid. **For further details, please contact e-Tender Help Desk No. 080-40482000/ 9746118529/9605557738.**
13. **EARNEST MONEY TO BE DEPOSITED**
- 13.1 Each tender should be accompanied by an Earnest Money amounting to **Rs.93,700/-**.
- 13.2 The Earnest Money can be deposited through Demand Draft or Banker's Cheque or Pay Order from a Scheduled Bank in India, drawn in favour of Financial Adviser & Chief Accounts Officer, COCHIN PORT AUTHORITY. The original DD/ Banker's Cheque/ Pay Order shall be submitted to the SE(CM), COCHIN PORT AUTHORITY, Cochin-9, **within 3 (THREE) working days from the Bid Due date..** Scanned copy of the DD/ Banker's Cheque/ Pay Order shall be attached with the tender submitted "online". The Earnest Money deposited will not carry any interest.
- 13.3 EMD shall be refunded to the Contractor on acceptance of Performance Security and entering into agreement.
14. Cochin Port Authority will not be held responsible for any technical snag or net work failure during online bidding. It is the bidder's responsibility to comply with the system requirements i.e. hardware, software and internet connectivity at bidder's premises, to access the e-Tender 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 e-Tender system or internet connectivity failures.
15. The Bidder shall submit Originals of: (i) DD / Banker's Cheque towards the cost of Tender document and EMD; and (ii) Power of Attorney along with letter of submission in a sealed cover **to the Suptdg. Engineer(CM), Cochin Port Authority, W/Island, Cochin – 682009, KERALA, , within 3 (THREE) working days from the Bid Due date. Non submission of original financial document towards cost of Tender document and EMD etc as above will be liable for rejection.**

## 16 Securities:

16.1 Security Deposit (SD) shall be 3% of the Contract value or value of the work done whichever is higher and it shall consist of the following:

- a) **Performance Security** 3% of contract value payable on award of the work.
- B) **Retention Money:** NIL

In case, where the value of work done exceeds Contract value, Additional Security Deposit @ 3% of the excess amount will be deducted from the RA Bills. While making payment, which will be released along with the Performance Security only

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.

16.2 **Performance Security:** The Performance Security retained till end of Defect Liability period (1 year from the date of completion of work) shall be 3% of Contract Value or Cost of Work Done, whichever is higher. So, initially 3% of the Contract value shall be furnished as Performance Security.

In case, whether the value of work done exceeds Contract value, Additional Security Deposit @ 3% of the excess amount will be deducted from the RA Bills, while making payment, which will be released along with the Performance Security only.

16.3 The Security Deposit/ Performance Security @ 3% of the value of the contract awarded, shall be furnished by the Contractor to the Employer, not later than **14 days** from the date of letter of acceptance or such extension of that period as may be permitted by the Engineer in writing, and shall be furnished in one of the following forms:

- i) Banker's Cheque/Demand Draft/Pay Order of a Scheduled Bank.
- ii) An irrevocable Bank Guarantee(BG) enforceable and encashable at Cochin, drawn from any Scheduled Bank operating in India as per the prescribed proforma.

16.4 The Security Deposit/ Performance Security retained till end of Defects Liability Period (**1 year from the date of completion**) shall be 3% of Contract Value or Cost of Work Done, whichever is higher. So, initially 3% of the Contract value shall be furnished as Performance Security. **The BG furnished towards the Performance Security shall be valid until a date 30 days from the day of expiry of the Defect Liability Period stipulated as per the terms of the Contract.**

16.5 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, tenderer will be suspended and shall not be eligible to participate in the tenders invited by COCHIN PORT AUTHORITY for a period of **Two Years from the date of such suspension order.**

16.6 **Retention Money:** NIL. In case, where the value of work done exceeds Contract

- value, Additional Security Deposit @ 3% of the excess amount will be deducted from the RA Bills. While making payment, which will be released along with the Performance Security only.
- 16.7 **The Performance Security retained till end of Defect Liability Period (1 Year from the date of completion) shall be 3% of Contract Value or Cost of Work Done, whichever is higher.**
- 16.8 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 Additional Security Deposit recovered from the running account bills, shall amount to 3% of the Cost of Work done.
- 17 In the event of the tenderer, after the issue of the communication of acceptance of offer by the Board, failing /refusing to execute the agreement as hereinafter provided, the tenderer shall be deemed to have abandoned the Contract and such an act shall amount to and be construed as the Contractor's calculated and willful breach of the Contract, the cost and consequence of which shall be to the sole account of the tenderer and upon such an event, the Board shall have full right to claim damages therefore either together with or in addition to the forfeiture of Earnest Money Deposit.
- 19 **Signing of Agreement:**
- 19.1 The successful tenderer will be required to execute within **21 days** from the date of receipt of work order, an agreement at his expense on proper value Kerala State Stamp Paper in the prescribed departmental form, consisting of:
- a) The Tender Notice, all the documents including additional conditions/specifications and drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading there to, and
  - b) General Conditions of Contract-2016 (GCC), for the due and proper fulfillment of the Contract.
- 19.2 The Contractor shall make 10 copies of the Agreement and submit to CoPT within 7 days following the date of signing of Agreement.
- 20 Till signing of agreement the tender together with the acceptance letter shall constitute a binding Contract between the Contractor and Cochin Port.
- 1.21 Failure to comply with conditions **3ii(iv), 16 and 19** above will entail forfeiture of the Earnest Money.
16. **MSME Bidders who are registered with District Industries Centre (DIC) or Khadi and Village Industries Commission (KVIC) or Khadi and Village Industries Board (KVIB) or Coir Board or National Small Industries Corporation (NSIC) or directorate of Handicrafts and Handlooms or Udyog Aadhaar Memorandum or any other body specified by Ministry of MSME for similar nature of Works shall be eligible for issue of Bid Document free of cost and exemption from payment for issue of tender document & payment of EMD. They are required to submit documentary proof of such registration along with the offer, as detailed in Instructions to Bidders, for claiming the**

**available exemptions and a 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.**

17. The undersigned reserves the right to reject/cancel/postpone any one or all tenders at any stage of the tender, which shall be binding on all bidders.
18. Tenders which do not fulfill all or any of the above conditions or which contain any other condition of any sort including conditional rebates or are incomplete in any respect is liable for rejection. Such tenders shall be entered in the tender opening register but their rates shall neither be read out nor entered in the register. Only remark mentioning the reason of rejection in brief shall be appended against such entry.
19. Canvassing in connection with tender is strictly prohibited and tenders submitted by the Contractors who resort to canvassing will be liable to rejection.
20. **Taxes and Duties:**
- 20.1 Deductions towards statutory taxes as per the rules, prevailing in force at the time of payment of bills shall be made while releasing the bill amount.
- 20.2. GST for the work will be paid extra by the Port. The GST applicable as per law can be billed on the Port Authority, which will be paid to the Contractor by the Board along with the bills, for which the Contractor holds valid GST Registration number and the GST is being collected. The following are also to be considered while claiming payment towards GST:
  - i. Invoice in specific format should be provided by the Contractor for every payment.
  - ii. GST Registration Number of Cochin Port Authority and the Contractor is to be clearly mentioned with all the bills.
  - iii. Invoice should be attached along with the running bills.
  - iv. The Contractor shall comply all the GST regulations, viz.; timely uploading of invoices and issue of debit/ credit notes.
- 20.3. Any stipulation by a tenderer that taxes and duties deductible from these bills should be borne by the Port Authority will result in the summary rejection of his /their tender.
21. 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 Contractor’s account.
22. This Tender Notice shall form part of the Contract.

**Sd/-**

**Suptdg. Engineer(CM)**

**COCHIN PORT AUTHORITY**

**FOR AND ON BEHALF OF THE BOARD OF MAJOUR PORT  
AUTHORITY FOR COCHIN PORT**

## 2. TENDER FOR WORKS

To

**The Board of  
Major Port Authority  
for Cochin Port  
Through  
The Chief Engineer  
Cochin Port Authority, Cochin-9**

I/We hereby tender for the execution of the work specified in the underwritten memorandum within the time specified in such memorandum at the rates specified in the schedule attached hereto and in accordance in all respects with the specifications, designs, drawings and instructions in writing referred to in 'clause 16' of the General Conditions of Contract and with such materials as are provided for, by and in all other respects in accordance with such conditions so far as applicable.

### MEMORANDUM

- a) General description of work : **RENOVATION OF OFFICE ROOMS NAB 601 & NAB 605 OF NEW ADMINISTRATION BLOCK**
- b) Estimated cost : **Rs.93,69,280/-**
- c) Earnest Money : **Rs.93,700/-**
- d) Security Deposit : 3% of the value of the Contract awarded or value of the work done whichever is higher. (Performance Security @ 3%)
- e) Percentage, if any, to be deducted from the bills : In case, Where the value of work done exceeds Contract value, Additional Security Deposit @ 3% of the excess amount will be deducted from the RA Bills, while making payment, which will be released along with the Performance Security only.
- f) Time allowed for commencement of work from the date of receipt of work order : **7 days**
- g) Time allowed for the work from the date of commencement of work : **165 days (1<sup>st</sup> 75 days for Room NAB 605 & further 90 days for Room NAB 601)**

h) Schedule, specifications, conditions, : As per “Contents” sheet attached.  
drawings etc.

Should this tender be accepted, I/We hereby agree to abide by and fulfill all the terms and provisions of the said conditions of Contract annexed here to so far as applicable or in default thereof forfeit and pay to the Board the sum of money mentioned in the said conditions and to execute an agreement with the Board in the prescribed form or in default thereof to forfeit the Earnest Money deposited by me/us. The sum of Rs..... has been deposited with Financial Adviser and Chief Accounts Officer of the Port Authority as Earnest Money: (a) the full value of which is to be absolutely forfeited to the Board in office without prejudice to any other rights or remedies of the said Board in office should I/We fail to commence the work specified in the Contract Data or should I/We not deposit the full amount of Performance Security specified in the Contract Data in accordance with clause 52 of the said conditions of Contract otherwise the said sum of Rs. .... shall be retained by the Board as on account of such security deposit as aforesaid; or (b) the full value of which shall be retained by the Board on account of the security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered, upto maximum of the percentage mentioned in Contract Data and those in excess of that limit at the rates to be determined in accordance with the provision contained in Clause 40.3 of the Conditions of Contract.

Dated the ..... day of ..... 2023

**Signature of the Tenderer**

Address :

Witness :

Address :

Occupation :

**ACCEPTANCE**

The above tender is hereby accepted by me for and on behalf of the Board.

Dated the .....day of .....2023.

Dated.....

**Chief Engineer**

**COCHIN PORT AUTHORITY**

### 3. CONTRACT DATA

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

Sl. No.	Description	Reference Clause No. in GCC																
1	<i>The following documents are also part of the Contract</i>																	
	The Schedule of other Contractors	(8.2)																
	The Schedule of Key personnel – As per Tender	(9)																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Qualification of Staff</th> <th style="text-align: center;">No.</th> <th style="text-align: center;">Min. Experience (Years)</th> <th style="text-align: center;">Rate of recovery in case of non-compliance</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Graduate Engineer</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">Rs.15,000/- p.m</td> </tr> <tr> <td style="text-align: center;">or</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">Diploma Engineer</td> <td style="text-align: center;">1</td> <td style="text-align: center;">5</td> <td style="text-align: center;">Rs.15,000/- p.m</td> </tr> </tbody> </table>	Qualification of Staff	No.	Min. Experience (Years)	Rate of recovery in case of non-compliance	Graduate Engineer	1	2	Rs.15,000/- p.m	or				Diploma Engineer	1	5	Rs.15,000/- p.m	
Qualification of Staff	No.	Min. Experience (Years)	Rate of recovery in case of non-compliance															
Graduate Engineer	1	2	Rs.15,000/- p.m															
or																		
Diploma Engineer	1	5	Rs.15,000/- p.m															
2	The Employer is:	(1)																
	<b>The Board of Major Port Authority for Cochin Port, COCHIN PORT AUTHORITY, Cochin -9.</b>																	
	Name of Authorized Representative:																	
	Name : <b>Dr. M. Beena, Chairperson, Cochin Port Authority, Cochin -9.</b>																	
3	The Engineer is																	
	Name : <b>Shri. Paritosh Bala, Chief Engineer, Cochin Port Authority, Cochin-9.</b>																	
	Name of Nominee/Engineer-in-Charge: Name: <b>Sri. Sathyan.A.G, Suptdg. Engineer(CM)</b>																	

Sl. No.	Description	Reference Clause No. in GCC						
4	<p align="center"><b>Name of Contract- RENOVATION OF OFFICE ROOMS NAB 601 &amp; NAB 605 OF NEW ADMINISTRATION BLOCK.</b></p> <p><b>Tender No. T6/T-1980/2023-C</b></p>	(1)						
5	10 copies of Contract Agreement shall be furnished by the Contractor	(7.1)						
6	<p>Tender document and other data are available at Cochin Port web site, Government of India CPP Portal and e – tendering portal.</p> <p><a href="http://www.cochinport.gov.in">www.cochinport.gov.in</a>  <a href="http://www.eprocure.gov.in">www.eprocure.gov.in</a>  <a href="http://www.tenderwizard.com/CPT">www.tenderwizard.com/CPT</a></p>	(7.2)						
7	The Intended completion date for the whole of the Work is <b>165 days (1<sup>st</sup> 75 days for Room NAB 605 &amp; further 90 days for Room NAB 601)</b> with the following milestones:	(17,28)						
8	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" data-bbox="313 1079 1149 1119">Milestone dates:</td> </tr> <tr> <td data-bbox="313 1119 792 1241">Physical works to be completed</td> <td data-bbox="792 1119 1149 1241">Period from the date of receipt of LoA to proceed with the work</td> </tr> <tr> <td data-bbox="313 1241 792 1371"><b>165 days (1<sup>st</sup> 75 days for Room NAB 605 &amp; further 90 days for Room NAB 601)</b></td> <td data-bbox="792 1241 1149 1371">7 days</td> </tr> </table>	Milestone dates:		Physical works to be completed	Period from the date of receipt of LoA to proceed with the work	<b>165 days (1<sup>st</sup> 75 days for Room NAB 605 &amp; further 90 days for Room NAB 601)</b>	7 days	
Milestone dates:								
Physical works to be completed	Period from the date of receipt of LoA to proceed with the work							
<b>165 days (1<sup>st</sup> 75 days for Room NAB 605 &amp; further 90 days for Room NAB 601)</b>	7 days							
9	<p>The following shall form part of the Contract Document:</p> <ol style="list-style-type: none"> <li>(1) Agreement</li> <li>(2) Letter of Acceptance</li> <li>(3) Bill of quantities</li> <li>(4) Contractor’s Bid</li> <li>(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).</li> <li>(6) Contract Data</li> <li>(7) General Conditions of Contract</li> <li>(8) General Description and Special Conditions of</li> </ol>	(2.3)						

Sl. No.	Description	Reference Clause No. in GCC
	Contract (9) Technical Specifications (10) Drawings if any 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 within 21 days of date of the Letter of Acceptance.	(27)
11	<b>The site possession date</b> The site will be handed over within <b>7 days</b> after issue of LoA.	(21)
12	The start date shall be <b>7 days</b> from the date of receipt of the Letter of Acceptance (LoA) by the Contractor.	(1)
13	The site is located in W/Island.	
14	The Defects Liability Period: <b>One year from the date of completion of the work.</b>	(36)
15	The minimum insurance cover for physical property, injury and death is <b>Rs.10 lakhs (Rupees Ten lakhs)</b> per occurrence with the number of occurrences unlimited. After each occurrence, Contractor will pay additional premium necessary to make insurance valid always. Also refer Clause 4 of Special Conditions of Contract – Section III of this tender document.	(13)
16	The following events shall also be Compensation Events: <b>NIL</b>	(44)
17	The period between Programme updates shall be 30 days.	(27)
18	The amount to be withheld for late submission of an updated programme shall be ----- <b>NA</b>	(27)
19	The language of the Contract documents is <b>English.</b>	(3)
20	The law, which applies to the Contract, is the law of Union of India.	(3)
21	The currency of the Contract is <b>Indian Rupees.</b>	(46)
22	The proportion of payments retained (Retention Money) shall be 3% from each bill subject to a maximum of 3% of the contract price. - <b>NA</b>	(48)
23	The maximum amount of Liquidated Damages for the whole of the works is <b>10%</b> of the Contract Price.	(49)

<b>Sl. No.</b>	<b>Description</b>	<b>Reference Clause No. in GCC</b>
24	The amounts of the advance payments :	(51)
	The advance payments as applicable to the contract are: <b>NA</b>	
25	Repayment of advance payment for mobilization: <b>NA</b>	(51)
26	Repayment of advance payment for Construction and equipment: <b>NA</b>	(51)
27	Repayment of Secured Advance	(51)
28	The date by which “as-built” drawings are required is within 90 days of issue of certificate of completion of whole or section of the work, as the case may be: <b>NA</b>	(58)
29	The amount to be withheld for failing to supply “as built” drawings and/or operating and maintenance manuals by the date required is ----- <b>NA</b>	(58)
30	Schedule of Rates Applicable: CPWD DSR 2018 + 55% Cost Index x 0.8768 for deducting GST.	
31	Base Rate for materials to be considered for price variation <b>NA</b>	(47)
32	Permissible wastage on theoretical quantities of (a) Cement : (+) 2% (b) Steel Reinforcement and structural steel sections for each diameter, section and category : (+) 5.99 % (c ) Bitumen/Bitumen emulsion : (+) 2.5%	(47)

## 4. INSTRUCTIONS TO TENDERERS

- 4.1 Electronic Tenders (e-tenders) on percentage basis under “Two Cover system” are invited for **“Renovation of office rooms NAB 601 & NAB 605 of New Administration Block”**.
- 4.2 The tenderer shall submit the tender Cover-A (Hard Copy of EMD & Cost of Tender form) **within 3 (THREE) working days from the Bid Due date**. All the Technical Bid documents & Price Bid shall be submitted **“online”**.
- 4.3 The Tender Document will be available as three separate files in the e-tendering Portal:
- i. A. Technical Bid Documents (as per Sl. No 1 to 7 of the Contents sheet)
  - ii. B. Price Bid: Schedule of quantities of Work- Schedule-A and
  - iii. C. General Conditions of Contract-2016
- 4.4 The tenderer shall upload the documents indicated in 4.3 (i) & (iii) above and also the Schedule of Quantities(Percentage) [as per Cl.4.3(ii), duly filled in, **“online”**].

### 4.5 SUBMISSION OF TENDERS

- 4.5.1 The Cover A shall contain – hard copy of EMD & Cost of Tender form as mentioned in Table 3 of Tender Notice shall be submitted **within 3 (THREE) working days from the Bid Due date**.

#### 4.5.2 Technical Bid (Online mode)

Technical Bid shall contain all technical and commercial details except Schedule of Quantities. It shall consist scanned/ soft copies of the following documents.

- a) A covering letter from the tenderer enlisting the enclosures/ attachments.
- b) Original Tender Document (Technical Bid) except Schedule of Quantities.
- c) Copy of the documents in proof of fulfillment of the Minimum Qualification Criteria.
- d) Copy of PAN Card, ESI/EPF & GST Registration documents.
- e) Copy of Authorisation documents of Signatory of the bid in case of Registered Partnership firm / Limited company
- f) Partnership deed or Memorandum and Article of Association of the company and registration certificate of the company as the case may be.
- g) Any other relevant document.
- h) Dismantling of existing ACs and other Electrical installations in Chairperson & Dy Chairperson’s Room NAB 605 & NAM 601
- i) Supply , Installation, Testing and Commissioning of 4HP/6HP VRF ACs
- j) Supply & Fixing of 40 A DB and connected accessories
- k) Supply & Laying of different sizes of LT cables

- l) Supply and Providing end termination for LT cables
  - m) Supply and fixing of light fixtures for Panel lighting/Focus lighting/Strip Lighting etc
  - n) Earthing the system
  - o) Supply , Providing , Testing and commissioning of Data cable
  - p) Supply & Installation of the following Electronic items
    - 1) Desktop PC
    - 2) 4 K Led TV
    - 3) Telephones with Mini Exchange
- 4.5.2.3 Scanned copies of all documents as per Clause 4.5.2, EMD and Cost of Tender Form shall be submitted as “Technical Bid”.
- 4.5.2.4 Departmental Tender Document (except Schedule of Quantities), along with scanned copies of Cost of Tender form, EMD and other documents as per Clause 4.5.2 shall be submitted ‘**online**’ before 14.30 hrs of opening date of the Tender. **In no case shall filled in Price Bid - Schedule of Quantities be submitted in hard copy, as it shall result in rejection of the tender.**

#### 4.5.3 Price Bid:

- 4.5.3.1 Price Bid shall contain only the “Schedule of Quantities”, which shall be submitted only in e-tendering mode.
- 4.5.3.2 **Tenderer should ensure that his tendered percentage as per ‘Price Bid’ is not mentioned anywhere in any other documents, directly or indirectly. If any such mention is made, the tender will become invalid and shall become liable for rejection.**

#### 4.6 Minimum Eligibility Criteria:

##### a) Experience

The tenderers should have experience of having successfully completed during the last 7 (seven) years ending **30<sup>th</sup> November, 2022**, at least either:

- i) Three Similar Works each costing not less than **Rs.37.78 lakhs**  
(OR)
- ii) Two Similar Works each costing not less than **Rs.46.85lakhs**  
(OR)
- iii) One Similar Work costing not less than **Rs.74.95 lakhs**

##### b) Financial Turnover

Average Financial Turnover of the tenderer over the last three financial years ending 31<sup>st</sup> March 2022 [2019- ‘20, 2020- ‘21 & 2021- ‘22] shall not be less than **Rs.28.10 lakhs.**

*Explanatory Notes to a) & b) :*

- i. Similar work(s) means “*Civil Construction work / Civil Repair Works/ Civil Architectural Works*”. The experience certificate of works executed in private sectors/ organisations shall be considered for qualification, only on submission of TDS certificate along with work order and completion certificate.
- ii. Copy of completion certificates of each work issued by the owner/ responsible officer of the owner under whom he has executed such contract shall be attached. The certificate shall contain details of work involved specifying the nature of work, the completion cost of the work, date of commencement & date of completion of the work.
- iii. The works reckoned for the above purpose are those executed by the tenderers as prime Contractor or proportionately as member of joint venture or Sub Contractor. The Sub-Contractor shall be an authorized and approved Sub-Contractor by the Employer of the work(s) against which the tenderer has claimed his experience. The tenderer shall attach 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. The tenderer is also obliged to produce the original of the certified copy(s) on request by the department.
- iv. 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 the past years.

**Table 1**

Year before	Multiplying factor
One year	1.07
Two years	1.14
Three years	1.21
Four years	1.28
Five years	1.35
Six years	1.42

- v. **Financial Turnover:**  
In proof of Financial Turnover Audited Annual Accounts Statements or IT returns duly acknowledged by the Income Tax department along with Computation Statement signed by the Auditor/ Chartered Accountant, for the last three years shall be produced by the tenderer..
- c) Other Eligibility Considerations**
- i. Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:  
made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or

record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures, black listing/ debarring by Govt. departments etc.

- d) The bidders having EPF/ ESI registration certificates only shall be considered for qualification in the tenderers, if applicable, as per EPF /ESI Acts. In case, the Tenderer does not have the required number of employees which makes such registration mandatory, an Undertaking as per Annexure I to the effect shall be furnished.**

#### **4.7. OPENING AND EVALUATION OF TENDERS**

- 4.7.1 Technical Bids of the tenders received shall be opened at 15.00 hrs. on **25/01/2023**, the last date fixed for receiving the bid, in the SE's chamber in the presence of the tenderers or their representatives as may be present.
- 4.7.2 After opening the Technical Bid documents, it shall be thoroughly checked for completeness with respect to the details stipulated to be submitted as Technical Bid by the tenderer. The Price Bid of those tenderers satisfying the tender requirements shall only be opened. The Price Bid of those tenderers who are found responsive and satisfactory on evaluation of Technical Bid documents, will be opened after bringing all tenderers to the same footing and giving notice to the short listed tenderers, on a date to be decided and intimated later.

#### **4.8 GENERAL INSTRUCTIONS TO TENDERERS**

- 4.8.1 The submission of a tender by the tenderer implies that he has read the whole tender Documents including GCC-2016.
- 4.8.2 The tenderer is advised to visit and examine the site of work and its Surroundings, discuss with connected agencies and collect all necessary information on his own responsibility for preparing the tender.
- 4.8.3 The tenderer is expected to examine the Tender Documents including all conditions, specifications, forms etc and also conditions in the G.C.C. Failure to furnish the information required in the Tender Documents/ G.C.C. or submission of a tender not conforming to the requirements in every respect, is likely to result in the rejection of the tender.
- 4.8.4 The tenderer shall quote for the work on percentage basis. The departmental rate for each item of work is given in the Schedule of Quantities. The tenderer shall fill the percentage above or below the Departmental rate, in the column provided for the purpose in the Schedule.
- 4.8.5 In case of discrepancy between the specifications and the drawings, the following order of preference shall be observed:
- a. Conditions & Specifications of tender
  - b. Drawings.
  - c. B.I.S Specifications.
  - d. Sound Engineering Practice.
- 4.8.6. If there are varying or conflicting provisions made in any document forming part of the Contract, the Chief 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 tenderer/ Contractor.

- 4.8.7 Any error in description, any omissions there shall not vitiate the Contract or release the Contractor from the execution of whole or any part of the works comprised therein according to specifications or from any of his obligation under the Contract.
- 4.8.8 The Chief Engineer, Cochin Port Authority shall have the right to omit or Suspend certain items of work or revise or amend the Tender. Documents at any time prior to the due date of submission of the tender. Such revisions or amendments or extensions if any, shall be communicated to all the bidders who have downloaded the Tender Documents, in the form of an addendum by telefax /e- mail / writing. In order to afford the Bidders with reasonable time to take addendum into account, or for any other reason, the Port Authority may, at its discretion, extend the due date for submission of tender.
- 4.8.9 All payments due to the Contractor under this Contract will be made in Indian Rupees only.
- 4.8.10 Tenders received after the date specified for submission shall not be opened.
- 4.8.11 The Bank Guarantees (BGs) to be furnished by the Contractors in connection with the tender shall be sent to by the Chief 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.

**SIGNATURE OF TENDERER.**

## **5. GENERAL DESCRIPTION AND SPECIAL CONDITIONS OF CONTRACT**

### **1. SCOPE OF WORK**

1.1 The proposed work is for “**RENOVATION OF OFFICE ROOMS NAB 601 & NAB 605 OF NEW ADMINISTRATION BLOCK**”. The work consists of the following:

- a) A covering letter from the tenderer enlisting the enclosures/ attachments.
- b) Original Tender Document (Technical Bid) except Schedule of Quantities.
- c) Copy of the documents in proof of fulfillment of the Minimum Qualification Criteria.
- d) Copy of PAN Card, ESI/EPF & GST Registration documents.
- e) Copy of Authorisation documents of Signatory of the bid in case of Registered Partnership firm / Limited company
- f) Partnership deed or Memorandum and Article of Association of the company and registration certificate of the company as the case may be.
- g) Any other relevant document.
- h) Dismantling of existing ACs and other Electrical installations in Chairperson & Dy Chairperson’s Room NAB 605 & NAM 601
- i) Supply , Installation, Testing and Commissioning of 4HP/6HP VRF ACs
- j) Supply & Fixing of 40 A DB and connected accessories
- k) Supply & Laying of different sizes of LT cables
- l) Supply and Providing end termination for LT cables
- m) Supply and fixing of light fixtures for Panel lighting/Focus lighting/Strip Lighting etc
- n) Earthing the system
- o) Supply , Providing , Testing and commissioning of Data cable
- p) Supply & Installation of the following Electronic items
  - 1) Desktop PC
  - 2) 4 K Led TV
  - 3) Telephones with Mini Exchange

1.2 The work shall be meticulously planned in consultation with the departmental supervisory staff and nearby users, so that minimum inconvenience is caused to the functions of the wharf.

### **2. WORK SITE**

The work has to be carried out is at 6<sup>th</sup> Floor of New Administration Block of Cochin Port Authority at Willingdon Island. Administration Block building is accessible through road. Security rules and regulations including obtaining passes etc. for work are to be observed by the contractor. The work is to be carried out without disturbing the normal Port operations.

### **3. TIME SCHEDULE AND MONITORING OF PROGRESS**

- 3.1 The tenderer shall prepare and attach with the tender a detailed work schedule indicating key activities and critical items for completing the work within the stipulated Contract period of **165 days (1<sup>st</sup> 75 days for Room NAB 605 & further 90 days for Room NAB 601)**. This time schedule will form the basis for monitoring the progress of work.

#### **4. MATERIALS / FACILITIES TO BE PROVIDED BY DEPARTMENT**

##### **4.1. CONTRACTOR'S WORK AREA**

Space will be made available to the Contractor free of rent for storing materials and equipments etc., adjacent to the work site for the duration of the Contract. After the work is over, Contractor shall at his cost, reinstate the area by clearing the temporary works, debris etc. as decided by the Engineer's Nominee.

#### **5. CONTRACTOR'S RESPONSIBILITY**

- 5.1 The tenderer shall visit the area before tendering. It will be deemed that the tenderer has visited the site and studied the site conditions before submitting the tender. The tenderer should get himself acquainted with the nature and extent of the work. No claim whatsoever will be entertained on the plea of ignorance of difficulties involved in execution of work or carriage of materials etc.
- 5.2 All materials, plants and equipments, required for the work shall be provided by the Contractor at his own cost, and shall conform to relevant I.S. Specification unless otherwise specified.
- 5.3 Samples of all materials, to be incorporated in the work shall be got approved by the Engineer's Nominee before procurement.
- 5.4 The Contractor shall thoroughly study the specifications and errors / omissions/modifications if any shall be brought to the notice of the Engineer – in-Charge well in advance so that a final decision in the matter could be given in time.
- 5.5 All labour, skilled or unskilled shall be provided by the Contractor. Settling any dispute with the labour will be Contractor's responsibility. Insurance as per Indian Workmen's Compensation Act for the Contractors' workmen and Public Liability Policy shall be provided by the Contractor at his own cost.
- 5.6 The Contractor shall be solely responsible for any damage or injury to the persons or things caused or suffered during the execution of the work and shall be made good or compensated at his own cost.
- 5.7 The Contractor shall take all care and precautionary measures for avoiding any kind of damage/accidents in the work site due to any of his reasons. The

Contractor shall indemnify the Port against any compensation whatsoever payable to the workmen for accident or loss arising out of and in the course of their employment under this Contract.

- 5.8 The work shall be arranged by the Contractor without causing any damage to Port structures. Any damage or accident caused by the Contractor's operation shall be compensated / made good at Contractor's risk and cost to the satisfaction of the Engineer's Nominee of the works, failing which department will do the rectification work and the cost incurred will be recovered from his bill or from security deposit.
- 5.9 The Contractor shall not construct any structure, even of temporary nature, for any purpose at site, except with the written permission of the Engineer's Nominee of the work and any construction so put up shall be removed by the Contractor whenever the Engineer's Nominee calls upon the Contractor to do so.
- 5.10 The Contractor shall remove all temporary works, clear and make good the site, at his cost to the satisfaction of the Engineer's Nominee before the site is returned to the Port Authority. All materials shall be disposed to any place as pointed out by the Engineer's Nominee of the work and site shall be cleared in every respect at no extra cost after completion of work.
- 5.11 The Contractor shall remove all materials brought to work site / stacked at the work site or anywhere else within the Port area and clear the site at his cost to the full satisfaction of the Engineer's Nominee before the site is returned to the Port Authority. All such materials including debris, tools & plants etc. shall be disposed off to any place as pointed out by the Engineer's Nominee or be taken away from the location and shall be cleared in every respect and to reinstate to its original condition at no extra cost to the Port Authority immediately after completion of the work. In case, any such material is found left in the work site or anywhere in the Port area, rent for the storage space occupied by the Contractor, either for stacking the materials /debris or for areas used for such purpose but not cleared thereafter, will be recovered as per the prevailing Scale of Rate of Cochin Port Authority, for the rent applicable for open storage space for commercial purpose, for the period for which the area had been occupied by the Contractor. In addition to the above, in case the Port requires the area immediately for its use, Port will repossess the land after restoring it to its original condition, material will be confiscated and disposed off at the risk and cost of the Contractor, after issuing two notices giving 15 days' time each for removing the material. All expenses incurred in this shall be recovered by disposing off the material if any confiscated. If any balance amount still remains to be realized that will be recovered from the Contractor by appropriate means.
- 5.12 The Contractor shall observe all safety regulations during the execution of the work. Safety measures, precautions, warning signals etc. shall be taken/provided at the Contractor's cost, as directed by the Engineer-in-Charge of the work. The

- Contractor shall provide all necessary personnel protection equipments such as helmet, lifeguard, goggles, boots, safety belts etc. to the workmen at his own cost and it shall be the Contractor's responsibility to ensure that they use it while on the work site.
- 5.13 The Contractor shall ensure that no labourers with criminal background are engaged for the work.
- 5.14 The contractor shall take all precautions for not to damage any cables, pipelines etc. passing through the area of work.
- 5.15 The Contractor shall comply with all the provisions of the Indian Workmen's Compensations Act, Public Liability Policy, 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.
- 5.16 The bidders having EPF/ ESI registration certificates only shall be considered for qualification in the tenderers, if applicable, as per EPF /ESI Acts. In case, the Tenderer does not have the required number of employees which makes such registration mandatory, an Undertaking as per Annexure I to the effect shall be furnished..**
- 5.17 The Contractor shall provide, at every work place, at which 20 or more women workers are ordinarily employed, crèches of reasonable size and with adequate facility for the use of their children under the age of six years at his risk and cost.
- 5.18 The Contractor shall also be responsible for arranging and carrying out works as mentioned in Clauses 1.1 & 1.2 above.
- 5.19 Defect Liability period of the work is one year from the date of completion of the work.**
- 6. POWER AND WATER**
- 6.1 Electric power required for the work can be supplied by the department from the nearest existing line of the Port Authority at prevailing rates. The cost of drawing temporary lines/ cables/ providing switches and making connection and metering arrangements etc, shall be borne by the Contractor. 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 at their cost.
- 6.2 Water required for the work shall be arranged by the Contractor at his own cost.
- 7. WORKMANSHIP**
- 7.1 All the works shall be done strictly according to relevant B.I.S. specifications unless otherwise specified. Whenever special conditions and other specifications deviate from the B.I.S. the former shall prevail.
- 7.2 The whole work shall be completed in a diligent manner within the Contract period and defect or imperfection if any, observed during the Defect Liability Period/ guarantee period the same shall be rectified at Contractor's cost to the full satisfaction of the Engineer's Nominee within the time allowed.
- 7.3 Precautions shall be taken for not to damage cables/ pipe lines etc.

7.4 The work shall be arranged in the order of preference and as directed by the Engineer's Nominee of work.

**8. TEMPORARY WORKS**

8.1 All scaffolding, staging, bracing and other temporary works required for proper execution of the works, shall be provided by the Contractor at his own cost, unless stated otherwise and that should be inclusive of all materials, labour, supervision and other facilities. The layout and details of such temporary works shall have prior approval of the Engineer's Nominee, but the Contractor shall be responsible for proper strength and safety of the same. All temporary works shall be so constructed as not to interfere with any permanent work or with the work of other agencies. If it is necessary to remove any of the temporary works at any time to facilitate execution of works or work by other agencies, such removal and re erection, if required, shall be carried out by the Contractor at the direction of Engineer's Nominee without any delay and any extra cost on this account shall be borne by the Contractor.

8.2 On completion of the works, temporary works if any provided by the Contractor shall be removed from the site and the area shall be reinstated to the original condition at his own risk and cost.

**9. TIME FOR COMPLETION**

9.1 The time allowed for carrying out the work as mentioned in the memorandum shall be strictly observed by the Contractor. The work shall throughout the time period be proceeded with diligence, time being deemed to be the essence of the Contract. The number of days lost due to heavy rain shall be certified by the Engineer's Nominee. The Contract period shall be extended for such certified days also without imposing compensation for delayed performance.

9.2 The whole work shall be completed in accordance with the provisions under Contract Data or such extended time as may be allowed as per clause 29 of G.C.C.

**10. WORKING TIME**

The normal working time of the Port Authority is from 8 a.m. to 4.00 p.m. on all weekdays. If the Contractor wishes to carry out the work beyond normal working hours and or on holidays, he should get specific approval from the Engineer's Nominee for the same. Necessary supervision will be arranged by the department and the expenditure to be incurred in this connection will be borne by the department.

**11. RATES FOR VARIOUS ITEMS**

The rate specified for each item shall be all inclusive value of the finished work, income tax and other taxes but excluding Service Tax.

**12. ALTERATIONS / ADDITIONS / OMISSIONS**

The quantities given in the bill of quantities (Schedule of items) are only approximate and payment will be made as per actual quantity of work done and rate specified.

**13. MEASUREMENT**

The quantities shall, unless otherwise stated, be measured in accordance with I.S.1200.

14. For levying compensation as per Clause-49 of General Conditions of Contract (GCC), 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 conditions.
15. Clause-25 of GCC- 'Settlement of Disputes and Arbitration' is not applicable in this Contract.
16. Clause-26 of GCC- 'Computerised Measurement Book' is modified to the extent as detailed below.

**Measurements of Work Done:**

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.

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.

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.

If for any reason the Contractor or his authorised representative is not available and the work of recording measurements is suspended by the Engineer's Nominee or his representative, the Engineer's Nominee and the 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.

The Contractor shall, without extra charge, provide all assistance with every appliance, labour and other things necessary for measurements and recording levels.

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.

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.

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.

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.

**17. Clause 45 and Clause 80 of GCC shall be modified as below;**

**Clause 45-Rates for items to be inclusive of Taxes** The rate quoted by the Contractor 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 excluding Goods and Service Tax (GST). GST as may be applicable from time to time shall be shown separately in the invoice. 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. The invoice to be submitted by the Contractor should include the GST Registration Number of the Contractor as well as the Employer.

**Clause 80-Taxes and Duties 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 of

2% plus surcharge 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 all the GST Regulations viz. timely uploading of bills, issue of debit/ credit notes etc.

18. Sub clause **43.2** under **Clause 43:Payments,.....** in GCC 2016 stands amended as given below:

43.2 Payment of bills for Civil Works shall be regulated as detailed hereunder:

43.2.1 Any Interim/Final bill which is incomplete in any respect shall be returned to the Contractor within 5 days of date of submission of bill to the Engineer or his Nominee.

43.2.2 Interim bills shall be paid within 21 days of date of submission of bills in full shape, by the Contractor, as detailed below.

43.2.3 Clarifications/corrections if any required on an Interim bill submitted, shall be sought from the Contractor within 4 days of submission of the bill and also, all such clarifications/corrections required shall be sought at one go except in exceptional circumstances. The Contractor shall submit the clarifications including carrying out corrections in the bill, if required, within 4 days thereafter. The clarified / corrected bill shall be verified and forwarded to Finance Department within the next 4 days. Clarifications if any required by the Finance Department shall be sought within 3 days and the Engineer/Nominee shall clear it on top priority within the next 3 days and, finally, the bill shall be paid to the Contractor within 3 days thereafter, i.e., within a total 21 days of date of submission of bills in full shape, as indicated above.

43.2.4 However, on request by the Contractor, 75% of the bill amount shall be paid within 7 days of submission of the bill. Balance amount of the verified bill shall be paid within 21 days of the submission of the bill, on completion of all contractual requirements as brought out at sub clause 43.2.3. above.

43.2.5 Final bill shall be paid within 3 months of issue of Taking Over Certificate by the Engineer / Nominee, as detailed below.

43.2.6 The Contractor shall submit the Final bill to the Engineer / Nominee within 20 days of issue of Taking Over Certificate by the Engineer / Nominee. The bill shall be checked and all clarifications/corrections required on the bill submitted, shall be sought from the Contractor within 15 days thereafter. The Contractor shall submit the clarifications including carrying out corrections in the bill, if required, within the next 10 days. The clarified / corrected bill shall be verified and forwarded to Finance Department within the next 15 days. Thereafter, clarifications if any required by the Finance Department shall be sought within 10 days and the Engineer/Nominee shall clear it on top priority within the next 10 days and, finally, the bill shall be paid to the Contractor within 10 days thereafter, i.e., within a total 3 months of issue of Taking Over Certificate by the Engineer / Nominee, as indicated above.

43.2.7 However, on request by the Contractor, 50% of the final bill amount shall be paid within 7 days of submission of the bill, which will be adjusted against the final bill payment, on completion of all contractual requirements as brought out at sub clause 43.2.6. above.

**SIGNATURE OF TENDERER**

## **6. DETAILED SPECIFICATIONS FOR MATERIALS TO BE USED ON WORK**

### **6.1 GENERAL**

- 6.1.1 Except where otherwise specified or authorized by the Engineer-in-Charge, materials supplied by the contractor shall conform to the latest edition of the Indian Standard Specifications and code of practices published by the Indian Standard Institution. Samples of materials to be supplied by the contractor shall be shown to the Engineer-in-Charge sufficiently in advance for approval of its quality for use on the work.
- 6.1.2 All materials supplied shall be stored appropriately to prevent deterioration/ damage from any cause what so ever and to the entire satisfaction of the Engineer-in Charge.
- 6.1.3 The materials required for the work shall be brought to the site and stacked at the places shown by the Engineer-in-Charge and the same shall be got approved for use in work sufficiently advance so that the progress of the work is not affected by the supply of materials.
- 6.1.4 Payment for the materials supplied, shall be given only after they are used on the work.
- 6.1.5 Tolls are payable by the Contractor as per rules for vehicles using the Port's road for supplying the materials.
- 6.1.6 All materials required to complete the work as per given specifications & drawings etc, must be manufactured and supplied using fresh raw materials. Re-moulded, re-circulated materials are not acceptable. The procurement of materials must be made directly from manufacturer or through authorized dealer/ distributors. Documentary evidences to this effect are to be made available to the engineer-in-charge for necessary checks / verification of source of supply of materials. Second hand materials/ partial used materials/ used materials would not be acceptable. The offer should be as per Technical Specification without any deviation. But any deviation felt necessary to improve performance, efficiency and utility of equipment must be mentioned in the Deviation Schedule with reasons duly supported by documentary evidences during pre bid meeting. Such deviations suggested may or may not be accepted by the employer. Any deviations projected after the pre bid meeting shall not be entertained at any cost.

### **6.2 WOOD POLYMER COMPOSITION BOARDS (WPC BOARDS)**

WPC Boards are made from 70% Virging Polymer, 15% of Wood Powder & rest 15% of Additives and requisite chemicals.

### **6.2 VITRIFIED FLOORING / SKIRTING TILES**

- 6.2.1 Tiles shall be of approved premium quality, Johnson or Khajaria or Asian or Somany or Orient Bell or Nitro or Simpolo or Cera or approved equivalent make and of approved colour and shade. The tiles shall be generally conforming to IS:13756/ IS:15622 with water absorption less than 0.08% and having modulus of rupture greater than 500kg/sq.cm & modulus hardness 8.0. The tiles shall be flat, true to shape and free from cracks, crazing spots, clipped edged and corners. The tiles shall be of minimum 600mm x 600mm size and shall have minimum

thickness of 10mm.

6.2.2 The top surface of the tiles shall be glossy/ mat finish / antiskid as specified in the Schedule of quantities and as approved by the Engineer-in-Charge. The underside of the tiles shall be completely free from glazing in order to adhere properly to the base.

6.2.3 Manufactures test Certificate for water absorption, breaking strength, abrasion resistance and crazing has to be produced by the contractor.

### **6.3 GLASS**

The glass to be used on the work shall be of good quality toughened Glass conforming to IS:2553 and free from defects scratches etc. The thickness of glass shall be as specified in the Schedule of quantities.

### **6.4 WATER THINNABLE CEMENT PRIMER**

6.7.1 The primer used for the work shall be Silicon based primer, manufactured by Asian/ Nerolac/ Berger/ Nitco of premium quality.

### **6.5 ACRYLIC EMULSION PAINT EXTERIOR/INTERIOR**

6.8.1 The weather proof exterior acrylic emulsion paint shall be of approved premium quality either “Weather coat” by Berger or Nerolac Excel or “Weather shield” by ICI Dulux or Snowcryn XT-premium by Snowcem India Ltd. or Jotun Paints/ Asian paints. The interior acrylic emulsion paint shall be of approved premium quality either manufactured by Berger or Dulux or Nicholson or Jotun Paints/ Asian paints. The coverage shall conform to the manufacture’s specification. The colour/ shade shall be as per direction of the Engineer-in-Charge.

6.8.2 The Weather Proof Exterior Acrylic Emulsion paint shall be of approved premium quality manufactured by either Asian Paints/ Berger Paints/Nerolac Excel Paints or its equivalent. The coverage shall conform to the Manufacturer’s specification. The colour / shade shall be as per schedule or as per the direction of Engineer-in-Charge. . The paint shall be brought to the site of work by the Contractor in its original containers in sealed condition. The material shall be brought in at a time in adequate quantities to suffice for the whole work or at least a week’s work. The materials shall be kept in the joint custody of the Contractor and the Engineer-in-Charge. The empty containers shall not be removed from the site of work till the relevant item of the work has been completed and permission obtained from the Engineer-in-Charge.

6.8.3 The Contractor shall invariably produce the Test Certificates and Bills with batch number and date, signed by an authorised person of the Manufacturer / Dealer, while seeking final approval of the Engineer-in-Charge for use on the Work.

### **6.3 WHITE CEMENT BASED PUTTY**

White Cement based Putty shall be approved good quality and make (Birla White/ JK/ Asian).

### **6.6 MATERIALS NOT SPECIFIED**

6.6.1 All materials not herein detailed and fully specified but which may be required for use on works, shall be subjected to the approval of the Engineer-in-Charge without

which they shall not be used anywhere in the permanent works.

**6.7 SAMPLING AND TESTING OF MATERIALS**

- 6.7.1 Sampling and testing of the material supplied by the contractor for use on the Work shall be done as per the provisions of the relevant BIS codes/specifications. In the absence of BIS specification in a particular case, the sampling and testing shall be done as directed by the Engineer-in-Charge as per sound engineering practice. Material conforming to the specifications and approved by the Engineer-in-Charge shall only be used by the Contractor.
- 6.7.2 All the sampling and testing shall be done at the Contractor's cost.

**SIGNATURE OF TENDERER**

## **7. DETAILED SPECIFICATIONS FOR ITEMS OF WORKS**

### **7.1 GENERAL**

7.1.1 Except where otherwise specified or authorized by the Engineer-in-Charge, all items of works executed by the contractor shall conform to the latest edition of the Bureau of Indian Standard Specifications and code of practices published by the B.I.S. Where no such specifications or code of practice exists the latest B.S.S. codes of practice or any other equivalent / standard code of practice shall also be considered for adoption. The tenderer while indicating any such specifications shall enclose the full set of the publication so referred and not in extracts. Photostats / Xerox copies in duplicate shall be forwarded which shall not be returned to the contractor. In absence of any specification, the department reserves the right to adopt trade specifications and/or sound engineering practices for the specialized work as may be decided by the Engineer-in-Charge which shall be final, conclusive and binding on the contractor.

#### **7.1.2 Electrical**

##### **Standards**

Erection, testing and commissioning of the equipments covered shall be done as per standard codes of practice and shall comply with requirements of following Indian Standards and other relevant standards, Indian Electricity Rules and acts and also to the regulations that are in force at the place of installation.

IS: 1255 : Code of practice for installation and maintenance of power cables Up to and including 33 kV rating.

IS: 5216 : Guide for safety procedures and practices in Electrical work

IS: 100118 : Code of practice for selection, installation and maintenance for Switchgear and control gear-Part-III Installation.

IS: 13408 : Code of practice for the selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres (other than mining application of explosives processing and manufacture).

IS: 3043/87 : Code of practice for installation & maintenance of earthing of installation.

### **7.2 DISMANTLING/ DEMOLISHING WORKS**

7.2.1 The tenderer shall inspect the site and carry out the required investigation by himself about the present position and condition of the existing structures and assess the difficulties and the work involved in its dismantling and removal. It will

be deemed that the tenderer has satisfied himself the condition of the structure and the nature of the work involved for the dismantling and removal and estimated its cost accordingly and port will be in no way responsible for the lack of such knowledge and also consequences thereof to the tenderer. The dismantling shall be done carefully without causing any damage to the remaining portions / structure.

- 7.2.2 Aluminium/ Gypsum partitions, doors, windows, fixed glazing, Aluminium/ glass windows, tile work in floors etc. are to be dismantled as per the direction of Engineer-in-charge. All the dismantled usable materials shall be stacked at the area pointed out by the Engineer-in-charge and all unusable materials shall be disposed by the contractor.

Existing AC units and Electrical installations such as Lights, electrical switches, sockets etc, Network devices, Televisions, Telephones, existing wires above ceiling shall be removed, as per engineer-in-charge instruction with skilled (electricians) labour. Existing vent pipes shall be sealed.

All the dismantling works shall be done carefully without causing any damage to the adjacent portion/ existing structure. The unserviceable dismantled/ cut materials shall be disposed off within 6kms of the work site and levelled as directed by the Engineer-in-Charge.

### **7.3 WATER THINNABLE PRIMER COAT**

- 7.3.1 Primer coat shall be preferably applied by brushing and not by spraying.

#### **7.3.2 Preparation of the Surface**

The surface shall be thoroughly cleaned of dust, old white or colour wash by washing and scrubbing. The surface shall then be allowed to dry for at least 48 hours. It shall then be sand papered to give a smooth and even surface. Any unevenness shall be made good by applying Putty made of Plaster of Paris mixed with water, on the entire surface including filling up the undulations and then sand papering the same after it is dry.

#### **7.3.3 Application**

The water thinnable primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours, before emulsion Paint is applied.

Measurements of the work under this head shall be made on the basis of the area work done and the rate quoted shall include the cost of labour, materials scaffoldings etc. required for the completion of the work.

### **7.4 PAINTING-GENERAL**

#### **7.4.1 Commencing Work**

Painting shall not be started until the Engineer-in-Charge has inspected the items to be used, satisfied himself about their proper quality and given his approval to commence the painting work with the approved materials. Painting of external surface shall not be done in adverse weather condition like hail storm and dust

storm. Painting, except the priming coat, shall generally be taken in hand after practically finishing all other building works. The rooms should be thoroughly swept out and the entire building cleaned up, at least one day in advance of the Paint work being started.

#### 7.4.2 Preparation of Surface

The surface shall be thoroughly cleaned and dusted off. All rust, dirt, scales, smoke splashes, mortar droppings and grease shall be thoroughly removed before painting is started. The prepared surface shall have received the approval of the Engineer-in-Charge after inspection, before painting is commenced.

#### 7.4.3 Application

7.4.3.1 Before pouring into smaller containers for use, the Paint shall be stirred thoroughly in its containers, when applying also, the Paint shall be continuously stirred in the smaller containers so that its consistency is kept uniform.

7.4.3.2 The painting shall be laid on evenly and smoothly by means of crossing and laying off, the latter in the direction of the grains of wood. The crossing and laying off consists of covering the area over with Paint, brushing the surface hard for the first time over and then brushing alternately in opposite direction, two or three times and then finally brushing lightly in a direction at right angles to the same. In this process, no brush marks shall be left after the laying off is finished. The full process of crossing and laying off will constitute one coat.

7.4.3.3 No left over Paint shall be put back into the stock tins. When not in use, the containers shall be kept properly closed.

7.4.3.4 No hair marks from the brush or clogging of Paint puddles in the corners of panels, angles of mouldings etc. shall be left on the work.

7.4.3.5 In painting doors and windows, the putty round the glass panes must also be painted but care must be taken to see that no Paint stains etc. are left on the glass. Tops of shutters and surfaces in similar hidden locations shall not be left out in painting. However, bottom edge of the shutters where the painting is not practically possible, need not be done nor any deduction on this account will be done but two coats of primer of approved make shall be done on the bottom edge before fixing the shutters.

7.4.3.6 On painting steel work, special care shall be taken while painting over bolts, nuts, rivets overlaps etc.

7.4.3.7 The additional specifications for primer and other coats of Paints shall be as according to the detailed specifications under the respective headings.

#### 7.4.3.8 Brushes and Containers

After work, the brushes shall be completely cleaned of Paint and linseed oil by rinsing with turpentine. A brush in which Paint has dried up is ruined and shall on no account be used for painting work. The containers when not in use, shall be kept closed and free from air so that Paint does not thicken and also shall be kept safe from dust. When the Paint has been used, the

containers shall be washed with turpentine and wiped dry with soft clean cloth, so that they are clean, and can be used again.

#### 7.5 CEMENT PRIMER COAT

7.5.1 Cement primer coat is used as a base coat on wall finish of cement plaster before Paints are applied on them. The cement primer is composed of a medium and pigment which are resistant to the alkalis present in the cement in wall finish and provides a barrier for the protection of subsequent coats of Paints.

7.5.2 Primer coat shall be preferably applied by brushing and not by spraying. Hurried priming shall be avoided particularly on absorbent surfaces. New plaster patches in old work should also be treated with cement primer before applying Paints etc.

#### 7.5.3 Preparation of the Surface

The surface shall be thoroughly cleaned of dust, old white or colour wash by washing and scrubbing. The surface shall then be allowed to dry for at least 48 hours. It shall then be sand papered to give a smooth and even surface. Any unevenness shall be made good by applying putty, made of plaster of paris mixed with water on the entire surface including filling up the undulations and then sand papering the same after it is dry.

#### 7.5.4 Application

The cement primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first and vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks. It shall be allowed to dry for at least 48 hours, before oil emulsion Paint is applied.

#### 7.6 EXTERIOR PAINTING ON WALL

7.6.1 This paint shall be brought to the site of work by the Contractor in its original containers in sealed condition. The material shall be brought in at a time in adequate quantities to suffice for the whole work or at least a fortnight's work. The materials shall be kept in the joint custody of the Contractor and the Engineer-in-Charge. The empty containers shall not be removed from the site of work till the relevant item of work has been completed and permission obtained from the Engineer-in-Charge.

#### 7.6.2 Preparation of Surface

For new work, the surface shall be thoroughly cleaned off all mortar dropping, dirt dust, algae, fungus or moth, grease and other foreign matter of brushing and washing, pitting in plaster shall make good, surface imperfections such as cracks, holes etc. should be repaired using white cement. The prepared surface shall have received the approval of the Engineer-in-Charge after inspection before painting is commenced.

7.6.3 Before pouring into smaller containers for use, the paint shall be stirred thoroughly in its container, when applying also the paint shall be continuously stirred in smaller containers so that its consistency is kept uniform. Dilution ratio of paint with potable water can be altered taking into consideration the nature of surface

climate and as per the recommended dilution given by manufacturer. In all cases, the manufacturer's instructions & directions of the Engineer-in-Charge shall be followed meticulously. The lids of paint drums shall be kept tightly closed when not in use, as by exposure to atmosphere, the paint may thicken and also dust may accumulate.

7.6.4 Paint shall be applied with a brush on the cleaned and smooth surface. Horizontal strokes shall be given, First and vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks.

7.6.5 The specifications in respect of scaffolding, protective measures, measurements and rate shall be as described under 2.4 above.

#### 7.7 WALL PAINTING WITH PREMIUM ACRYLIC INTERIOR EMULSION PAINT

7.7.1 The wall surface shall be prepared as specified in Clause 15.5.2 above.

7.7.2 Application: The number of coats shall be as stipulated in the item. The Paint will be applied in the usual manner with brush, spray or roller. The Paint dries by evaporation of the water content and as soon as the water has evaporated the film gets hard and the next coat can be applied. The time of drying varies from one hour on absorbent surfaces to 2 to 3 hours on non-absorbent surfaces. The thinning of emulsion is to be done with water and not with turpentine. Thinning with water will be particularly required for the under coat which is applied on the absorbent surface. The quantity of water to be added shall be as per manufacturer's instructions. The surface on finishing shall present a flat velvety smooth finish. If necessary more coats will be applied till the surface presents a uniform appearance.

#### 7.7.3 Precautions

(a) Old brushes if they are to be used with emulsion Paints, should be completely dried of turpentine or oil Paints by washing in warm soap water. Brushes should be quickly washed in water immediately after use and kept immersed in water during break periods to prevent the Paint from hardening on the brush.(b) In the preparation of wall for plastic emulsion painting, no oil base putties shall be used in filling cracks, holes etc. (c) Splashes on floors etc. shall be cleaned out without delay as they will be difficult to remove after hardening. (d) Washing of surfaces treated with emulsion Paints shall not be done within 3 to 4 weeks of application.

#### 7.7.4 Measurements

The length and breadth shall be measured correct to a cm. Measurements of the work under this head shall be made on the basis of the area of work done and the rate quoted shall include the cost of labour, materials scaffoldings etc. required for the completion of the work.

### 7.8 WOOD WORK

7.8.1 Workmanship for the woodwork shall be good and conforming to the satisfaction of the Engineer-in-Charge.

- 7.8.2 Scantlings shall be accurately planed smooth to the full dimensions and rebates, roundings, mouldings etc. as directed by the Engineer-in-charge. Patching or plugging is not allowed.
- 7.8.3 Joints shall be simple, neat, and strong without wedging / filling and pinned with teak/ bamboo pins.
- 7.8.4 All wood works shall be brought to the site and approved by the Engineer-in-Charge before it is polished/ painted. The wood works brought to the site after applying polishing/ painting, but without obtaining prior approval from the Engineer-in-charge shall be rejected. All concealed timber surfaces and portions of timber butting against wall and lintel shall receive one coat of primer and 2 coats of coal tar or bituminous paint.
- 7.8.5 Glazing shall be with good quality glass of thickness specified in the schedule.
- 7.8.6 Fittings specified in the schedule shall be of approved quality / type. All fixtures / fittings shall be got approved by the Engineer-in-Charge before its use on work.

## **7.9 PROVIDING FLOORING WITH VITRIFIED FLOOR TILES**

- 7.9.1 The tiles shall be set in cement mortar 1:4 (1 cement : 4 sand) of average 20 mm thick laid to required level/ slope. Before laying cement mortar, the concrete surface shall be scrubbed with wire brush, all loose particles, foreign matters etc. shall be removed and the surface shall be made clean. Any undulations in the concrete shall be chipped off or made good with additional concrete of the same grade used for the under layer. The surface thus prepared shall be wetted and smeared with a coat of cement slurry using cement at the rate of 2.2 kg/m<sup>2</sup> of area just before the application of the mortar, so as to get good bond between base course concrete and plastering. For fixing tiles to mortar, neat cement slurry of honey like consistency using cement at the rate of 3.3 kg/m<sup>2</sup> shall be smeared on top of mortar bed. The joints between the tiles shall be uniform and of minimum thickness.
- 7.9.2 After laying the tiles, the surplus cement grout along the joints shall be cleaned off. The day after the tiles are laid, all joints shall be cleaned with wire brush to a depth of 5mm and pointed with epoxy joint filler of suitable colour, and approved make.
- 7.9.3 When the floor is ready to use the same shall be washed clean and dried with soft cloth or linen. If any tile is disturbed or damaged it shall be refitted or replaced and properly jointed and pointed.
- 7.9.4 Measurement of the work under this head including cement mortar bed shall be made on the basis of the area of work done and rate quoted shall include the cost of all labour, materials, scaffolding etc required for completion of work.

## **7.10 TECHNICAL SPECIFICATION – ELECTRICAL**

### **7.10.1 GENERAL CONDITIONS FOR INSTALLATION OF EQUIPMENTS**

- a) The erection/installation, testing and commissioning shall be carried out in accordance with specification, data sheets, drawings, manufacturer's recommendations, and relevant standards or as directed by owner/Engineer-

In-Charge. Requirements regarding erection/installation, testing and commissioning of switchboards, cables, etc, are generally explained here in. It is the responsibility of the contractor to supply all equipment, items, accessories, materials, tools, tackles, transporting, and lifting vehicles, consumables etc. required for unpacking, checking, transportation, storage, safe custody, installation, erection, testing, commissioning, return of unused equipment/items which are supplied from owner's stores and handing over of the installation to the entire satisfaction of owner.

- b) The erection scope shall include supply of all hardware and accessories such as bolts, nuts, washers, gaskets, cable termination accessories, lugs, paint, primer, sand, etc. required for completeness of the work. All consumable materials such as insulation, tape, cleaning and paint brushes, welding electrodes, rust preventive materials, jute, cotton waste, hack saw blades, bolts, nuts, inhibitive grease, fuel, lubricants, etc. and any other material required in carrying out the work, but not for incorporation in to the permanent work, shall also be included in the scope of contractor.
- c) The equipment/items to be erected shall be handled with care by experienced workers under the guidance of the competent supervisor. Proper handling and transporting equipments are to be used and dragging is to be avoided.
- d) The equipment/items supplied by the owner, shall normally be kept at their stores. The contractor shall inspect these items at the stores by unpacking the containers, if necessary. Responsibility of safe custody of materials after delivery and till handing over shall rest with the contractor. Unused materials and containers shall be returned to the stores. The items supplied by the owner shall be transported from the point of storage to the point of erection/installation using proper capacity transporting vehicles. The scope shall include unpacking the containers, assembling parts, fixing loose items, components, etc. Materials supplied by the contractor or issued by the owner shall be given suitable protection against weather, dust and vermin. In storage places, equipments shall be placed over wooden sleepers to keep them above ground. Before carrying out erection/installation works of any item, proper care regarding leveling, alignment, access to working parts, facilities for removing the items for repair, statutory clearance, etc. shall be taken.
- e) Foundation bolts, nuts, lock nuts, washers, etc. will normally be supplied by the equipment supplier. Any further requirement of these items shall be under the scope of contractor. The equipment shall be installed on the

foundation bolts firmly such that there will not be any vibration during operations. For mounting of equipment/items on the walls/ columns / supports, suitable MS/GI brackets shall be fixed/ grouted.

- f) Electrical connections shall be done with great care using spring washers, bimetallic strips, conducting grease, etc. wherever required, to ensure good contact without creating undue stresses. Copper bus bar joints shall be made after tinning the contact area. Supply of all required accessories or electrical connections shall be included in the contractor's scope. Discrepancies if any found between drawings/ statutory requirements and actual conditions at the site, shall be immediately brought to the attention of owner's representative. If any modification is found required in the writing or to suit site condition the same shall be carried out as per the instruction of the Engineer-In-Charge without any extra cost.
- g) All equipments under erection shall be kept properly cleaned and free of dust, vermin, moisture, etc. After erection, it shall be ensure that non-foreign materials, tools or tackles are left in the equipment. All unused cable entries, cutouts, etc. shall be sealed properly. For hazardous area, blanking plugs suitable for the area classification applicable shall be used.
- h) All tests shall be carried out in the presence of owner's representative and test shall be recorded on an approved proforma duly certified. The records of all tests shall be submitted to the purchaser's representatives. All interconnected wiring shall be checked thoroughly for correct connection with the wiring and schematic drawings of the manufacturer and the drawings supplied by owner before energizing.
- i) All power and bus bar connection shall also be thoroughly inspected and checked for connections, foreign materials, tightness, etc. before energizing the equipment All components within the main equipment shall be tested for proper performance and correct operation before commissioning the equipment.
- j) All labeling shall be checked for correctness. All nuts, bolts, clamps, joints, connections, etc. shall be checked for tightness and tightened wherever required. All moving parts shall be checked for its correct movement and proper lubrication. Apply lubrication wherever required. All equipment containing liquid shall be checked for correct quantity filling and all gaskets, walls, etc, shall be checked for leak proof. Oil filling, if found required, shall be done with dry and clean oil. Gaskets shall be replaced if found required. It shall be ensured that all CT leads are loaded or shorted prior to testing and

commissioning. Insulation tests shall be carried on all electrical devices, whether specifically mentioned or not, as per this work after properly cleaning these devices.

- k) All the relays and its settings after commissioning shall be furnished to the owner detailing relay type number, panel number etc. In case of any component of an equipment supplied by the owner is found to faulty/unsuitable, the same shall be replaced by the new one issued by owner. For all relays before installation, the rating, range and auxiliary supply voltages for the relay should be checked against drawings/ schematic/ schedule.

### **7.10.2 SUPPLY & LAYING OF 1.1 KV CABLES**

#### **Scope**

This specification provides for manufacture, testing at works before dispatch and delivery of 1.1 KV grade **XLPE insulated, FR** cables as required.

#### Application

The 1.1 KV cable is intended for use on Distribution network, lighting purpose etc. for outdoor application

Codes & standards as applicable in schedule

All standards, specifications and codes of practice referred to herein shall be the latest editions including all applicable official amendments and revisions as on date of opening of bid. In case of conflict between this specification and those (IS: codes, standards, etc.) referred to herein, the former shall prevail. All the cables shall conform to the requirements of the following standards and codes for 1.1KV grades if any applicable.

The cables shall comply with the latest edition of the following standards:

- (i) IS:1554 Insulated heavy duty cables
- (ii) IS:7098 (Part –I) Cables – LT
- (iii) IS:7098 (Part -II) Naked polyethylene insulated PVC sheathed cables for working voltages from 3.3 kV up to and including 33 kV.
- (iv) IS:1255 – 1983 Code of practice for installation and maintenance of power cables.

- (v) IS:8130                      :ors for insulated electric cables and flexible cords.
- (vi) IS:5831                      lation and sheath of electric cables
- (vii) IS:5819-1970              ended short circuit rating of high voltage PVC cables
- (viii) IS:3961-1987              ended current rating
- (ix) IS:3975                      el wires, strips and tapes for armouring of cables.
- (x) IS:2633                      s of testing weight, thickness and uniformity of coating on hot dipped galvanized articles.
- (xi) IS:209                        Specification of zinc.
- (xii) IS:3961 (Part-II)          Recommended current ratings for PVC insulated and PVC sheathed heavy duty cables
- (xiii) IS:10418                    Wooden drums for electric cables.
- (xiv) IEC:540 & 540A          Test methods for insulation and sheaths of electric cables and cords
- (xv) IS:10462 (Part-I)          Fictitious calculation methods for determination of dimensions of protective covering of electrometric and thermoplastic insulated cables.
- (xvi) IS:10810    (Part Oxygen Index test  
58)
- (xvii) BS 7655 LTS2              Flammability Characteristics of Cables
- (xviii) IEC 60092-SHF-          Flammability Characteristics of Cables  
1
- (xix) IEC-332                      Flammability Characteristics of Cables
- (xx) SS4241475 class          Flammability Characteristics of Cables  
F3
- (xxi) ASTM-D-2843              Determination of smoke generation of outer sheath under fire.

### **Technical particulars of LT cables**

- |                          |   |
|--------------------------|---|
| (i) Size of Cable        | <b>As per schedule of works</b>                             |
| (ii) Voltage Rating      | 1100 V  |
| (iii) Conductor Material | Plain Aluminium /copper as per<br>Specification             |
| (iv) Insulation          | - XLPE<br>- Inner sheath thickness As per IS                |
| (v) Outer sheath         | -Process of application Extrusion<br>- Thickness-As per IS. |

### **Technical requirements**

The cables shall be suitable for laying on racks, in ducts, trenches, conduits and underground (buried) installation with chances of flooding by water. Cables shall be Fire retardant as required and specified if any and designed to withstand all mechanical, electrical and thermal stresses developed under steady state and transient operating conditions as specified elsewhere in this specification. XLPE insulation shall be suitable for continuous conductor temperature of 90°C and short circuit conductor temperature of 250°C. Outer sheath shall be of PVC black in colour.

Cores of cables shall be identified by colouring of insulation or by providing coloured tapes helically over the cores, with Red, Yellow, Blue & black colours. In addition to manufacturer's identification on cables as per IS, following marking shall also be provided over outer sheath:

- (i) Cable size and voltage grade-To be embossed.
- (ii) Sequential marking of length of the cable in meters at every one meter to be embossed/ printed.

The embossing / printing shall be progressive, automatic, in line and marking shall be legible. Allowable tolerances on the overall diameter of the cables shall be +/-2 mm maximum over the declared value in the technical data sheets. In plant repairs to the cables shall not be accepted. Pimples, fish eye, blow holes etc. are not acceptable. The cross-sectional area of the metallic screen strip/tape/wires shall be considered in sizing calculations.

#### **7.10.3 PROVIDING END TERMINATION OF LT CABLES**

Supply and making of end terminations with brass/ pvc glands, lugs etc complete suitable for cables as per schedule of work. the item shall be single compression type tinned/nickel plated (coating thickness not less than 20 microns in case of tin and 10 to 15 microns in case of nickel) brass cable/pvc glands shall be provided by

the contractor for all power and control cables to provide dust and weather proof terminations. they shall comprise of heavy duty brass casting, machine finished and tinned to avoid corrosion and oxidation. rubber components used in cable gland shall be neoprene and of tested quality. required number of packing glands to close unused openings in gland plates shall also be provided. for copper cable the termination materials shall be copper materials.

#### **7.10.4 SUPPLY & INSTALLATION OF DISTRIBUTION BOARD**

Supply, Installation, Testing and Commissioning of following double door(metal door) MCB DB's with necessary insulated tinned copper bus bars, interconnections, earthing and neutral terminal blocks, circuit name plate etc.

DB's shall be installed flush with the wall with necessary terminal boxes for the incoming with following MCB's/RCBO/MCB Isolator and giving complete connections.

Spec: IP43, IK09, surface/ recess mounting, double door, CRCA SS, RAL9003, Powder coated, conforms to IS 8623-1,IEC 61439-1&3

40A TPN 4 way / 6 way MCB DB

Incomer – 40 A 3 phase, 4 pole TPN, 25KA with RCCB.

Out going – 1) 32A 3p MCB- 3no.

2) 20A/16A SP MCB- 2nos.

3) 10A SP MCB-2nos.

4) 6A SP MCB-remaining as per requirement.

A) 25A TPN 8 way MCB DB

Incomer – 25 A 3 phase, 2 pole.

Out going – 1) 10A SP MCB as per requirement

.2) 6A SP MCB as per requirement

The double door DBs are to be suitable for flush/surface mounting, with double doors and to be provided with inbuilt additional compartment for looping of loose wires/adaptor boxes for entry of armoured cables with IP 42 category of protection and conform to IS: 8623-1 &3 , IEC 61439-1&3. The exact location of DB shall be finalized in consultation with the engineer-in-charge.

Material

The DB's are to be fabricated out of 14 SWG CRCA sheet / IK09 for double door suitable for all weather operation. E current carrying parts are to be made of electrolytic grade copper and are to be rated for the duly intended. Powder coated ensuring rust prevention and scratch resistant. DBs shall be painted epoxy gray.

Accessories

Following accessories are to be provided:-

Copper bus bars of rated current capacity per phase.

Special brass terminals to ensure perfect connections of incoming cable with the bus bars, colour coded interconnecting wire set.

Earth bars for firm earthing and for facilitating individual earthings for each outgoing terminal, door earthing etc. Specified capacity neutral link bus bars shall be provided.

Suitable gaskets to ensure weather proof conditions

Sufficient number of blanking plates.

All MCB not specified otherwise shall be c curve with 10ka or above as per required breaking capacity.

The item shall be of powder coated CRCA sheet steel double door distribution board, IK 09 etc. and neutral link with all accessories as per annexure.

#### **7.10.5 SUPPLY AND FIXING OF LIGHT FIXTURES**

##### **LED Panel/Focus Light**

20w/15W Round Surface mounted LED Panel, PDC Aluminium Housing and high Translucent Frosted Plastic Diffuser ceiling light shall be fixed for the panel lighting/focus lighting by cutting the panel/false ceiling, giving connection, providing supports etc. and making good the surface if required. Luminaries should have Short Circuit, Reverse polarity protection & Open Load protection and inbuilt surge protection of minimum 2.5 KV

Operating voltage - 230V

Beam angle 120

Burning hours@25K

##### **LED Strip Light**

25 W LED Strip light including driver shall be provided with all accessories.

#### **7.10.6 CONDUITS, PIPES AND ACCESSORIES.**

All non-metallic conduit pipes and accessories shall be of suitable material complying with IS:2509-1973 and IS:3419-1989 for rigid conduits and IS:9537 (part 5) 2000 for flexible conduits. The interior of the conduits shall be free from obstructions. The rigid conduit pipes shall be ISI marked. The conduits shall be circular in cross-section. The conduits shall be designated by their nominal outside

diameter. No non-metallic conduit less than 20 mm in diameter shall be used. Voltage rating for cu wire shall be 650/1100V FRLS PVC insulated. The conduit wiring system shall be complete in all respect including accessories. Rigid conduit accessories shall be normally of grip type. Flexible conduit accessories shall be of threaded type. Bends, couplers etc shall be solid type in recessed type of works, and may be solid or inspection type as required, in surface type of works. Saddles for fixing conduits shall be heavy gauge non-metallic type with base.

#### **7.10.7 MODULAR TYPE SWITCHES AND SOCKETS**

Switches and Sockets shall be provided in standard metal box/PVC box with front plate concealed on wall and giving connection complete.

All the switches, plugs etc. shall be of modular type with plates, cover etc. complete. All wiring cables shall be Fire Retardant FRLSH PVC PVC insulated copper conductor multi stranded cable. Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm Fire Retardant PVC insulated copper conductor multi stranded cable in surface / concealed medium class PVC conduit, with Modular type switch, modular plates, suitable size M.S. box and earthing the point with 1.5 sq.mm. FRLSH PVC insulated multi stranded core cable etc as required All inter connections shall be provided as follows:

The outgoing of 6 A & 10A MCBs shall be connected to the light/ fan/ plug points with 1.5 Sq mm copper cable.

The outgoing of 16/20 A & 20A MCB's shall be connected to power plug points with 4/2.5 Sqmm copper cable. The other interconnections with TPN isolator shall also be carried out with suitable size of copper cables.

Point wiring shall include all works necessary for complete wiring of a switch circuit of any length from the tapping point on the distribution circuit to the following through the switch. Ceiling rose or connector (in the case of ceiling/exhaust fan point). Ceiling rose (in the case of pendant except stiff pendant point). Back plate (in the case of stiff pendants and fittings with down rods) .Socket and Outlets (in the case of socket outlets points) .Lamp Holder (in the case of wall brackets, batten points, bulk head and similar fittings).

The following shall be deemed to be included in the point wiring.

- a) Modular Switch, plates, cover, Ceiling rose or connector etc as required.
- b) Any special and suitable M. S. box for neatly housing the connector and covering the fan hook in case of fan point.
- c) Earth wire from the distribution boards to all current carrying apparatus through switch boards, M. S. Boxes etc.

- d) All metal blocks, boards, covers and M. S. Boxes, recessed or surface mounted including those required for mounting fan regulators but excluding those for fixing the distribution switch boards.
- e) All fixing accessories such as clips, nails, screws, Fiber plug, rawl plug etc. as required.
- f) Connection to ceiling rose, connector socket outlets, Lamp holders, switch, fan regulator etc.
- g) Looping in the same switch board and inter connections between points on the same circuit.
- h) All points in the distribution system shall be measured under point wiring irrespective of length of circuit from the respective switches to the ceiling rose/connector etc.
- i) In the case of plug points the point length shall be measured from the DB to individual plug socket.
- j) In case of point with more than one light point controlled by the same switch, the complete items shall be considered as separate point and the rate shall be quoted accordingly.
- k) A light point controlled by 2 Nos. of control switches shall be measured as one point from the switch to either side of the appliance viz. total of two points.
- l) Power wiring shall be kept separate and distinct from lighting and fan wiring. All conductors shall run as far as possible along the walls and ceiling so as to be easily accessible and capable of being thoroughly inspected except for concealed system. In all types of wiring due consideration shall be given for neatness, good appearance and safety. The balancing of circuits in 3 wires on poly phase installation shall be arranged to the satisfaction of Engineer-in-charge. In large/important rooms light fans and socket outlet points shall be distributed over more than one circuit as directed by the Engineer-in-charge.
- m) The Conductor of flexible cable for interconnecting the fan/lights to the respective points shall be of copper. The minimum permissible size of conductor for flexible cable shall be 16/0.2 mm. Only three core flexible cables shall be used for connecting single phase appliances.
- n) The Control switches are to be connected to phase conductor. The complete wiring shall be done as per IE rules & regulations. In the case where the wiring is done as per phenolic laminated sheet/ hylum, the switchboards for mounting switches, plug sockets, etc shall be made of M S boxes, with hylum top cover and piano switches of 6 A capacity and suitable colour. Switch boxes shall be mounted flush with the wall. All outlets such as switches, sockets etc shall be flush mounting type.
- o) All Civil works connected with this contract like plastering, grouting, making holes for providing fans, making good any damages caused etc shall be done by the contractor. The wall/ ceiling etc shall be re plastered by

providing original surface coating using putty, paints etc as required. No additional cost shall be given for repairing/resurfacing the wall, ceilings etc.

- p) The plug sockets shall be earthed continuously using separate multi stranded Cu wire (green). The light fittings and ceiling roses shall be fixed on junction boxes/ fixed on the false ceiling. All light fittings and fans shall be connected to the ceiling roses using twin core PVC insulated and overall sheathed flexible copper conductor cable.
- q) All internal wiring shall be securely supported, neatly arranged readily accessible and connected to equipment terminals and terminal blocks. Wire terminations shall be made with solder less crimping type of tinned copper lugs which firmly grip the conductor and insulation. Insulated sleeves shall be provided at all the wire terminations. Engraved core identification plastic ferrules marked to correspond with the wiring diagram shall be fitted at both ends of each wire. Ferrules shall fit tightly on the wires and shall not fall off when the wire is disconnected from terminal blocks. All wires directly connected to trip circuit breaker shall be distinguished by the addition of a red coloured unlettered ferrule.

#### **7.10.8 SUPPLY AND INSTALLATION OF VRF AC**

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.

The address of the indoor unit shall be set automatically in case of individual and group control.

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 self-diagnostic 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 Sce-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 by passing 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 of 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.

### **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 out door 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.

**MAKE OF AC UNITS: Blue star, Voltas, Daikin, Hitachi, Carrier**

### **7.10.9 SUPPLY & INSTALLATION OF ELECTRONIC ITEMS**

#### **1) Desktop PC**

Intel Core i5 Processor, 4GB, 500GB HDD, Windows 10 Pro.3yrs  
Warranty.

Approved Make :Intel NUC/RDP

#### **2) LED TV**

##### **a) LED TV**

55" 4 K (Samsung 55AU7700 or similar) - Brand Samsung/LG/Sony. The location shall be fixed in consultation with engineer in charge

##### **b) LED Monitor**

24" (Samsung LF24T352FHXXL or similar) - Brand: Samsung/HP. The location shall be fixed in consultation with engineer in charge

#### **3) Telephone**

Analog Telephones with Exchange facility shall be supplied as per schedule of work. Connections are to be provided to both rooms in consultation with Engineer in Charge.

### **7.10.10 EARTHING**

10 SWG Cu. strip/wire shall be clamped to walls, cable trays, ladders, run through pipes, laid underground etc., as required including interconnection between the earth stations etc., all complete as required

### **7.10.11 SPECIAL CONDITIONS FOR ELECTRICAL WORKS**

All current carrying components in all installation shall be of appropriate rating of voltage and frequency as required at respective areas. All equipments to be supplied and works to be executed shall conform to the CEA standards including protection and metering accessories. No extra amount will be paid in this regard.

All testing and calibration etc are to be carried out as per requirement of statutory authority concerned. On completion of work the contractor has to obtain necessary safety/energisation certificate from statutory agency concerned, by submitting necessary completion statement/ drawing, equipment details etc. before energisation. All costs incurred in obtaining such approval/certificate are to be borne by the contractor. Statutory fees paid shall be reimbursed on presentation of document.

1	POWER & DISTRIBUTION TRANSFORMER - OIL & CRT	KEL / TELK / INTRANS/ MEGAWIN/ C&G / UNIPOWER / RAYCHEM/ SCHNEIDER / TELWANE/ ABB/ SIEMENS / UNIPOWER /RESITECH
2	11 KV VCB	ABB / SCHNEIDER/ SIEMENS /CG / L&T / AREVA
3	11 KV SF6 LBS RMU	ABB / SCHNEIDER/ SIEMENS /CG
4	11 KV CMU+LBS (AIR-BREAK)	INTRANS/ MEGAWIN / UNIPOWER /RESITECH
5	CMU PANELS	ABB / SCHNEIDER/ SIEMENS /CG/ INTRANS/MEGAWIN / UNIPOWER /RESITECH
6	UNITISED SUB-STATION	ABB / SCHNEIDER/ SIEMENS /CG/ INTRANS/MEGAWIN / UNIPOWER /RESITECH
7	11 KV XLPE CABLE	CCI / INCAB / UNIVERSAL / RPG/ NICCO/ TORRENT / POLYCAR / PARAMOUNT / KEI / HAVELLS /PRIMECAB
8	1.1 KV XLPE CABLE	CCI / INCAB/ UNIVERSAL/ RPG/ NICCO/ TORRENT / POLYCAR / PARAMOUNT/ KEI / HAVELLS / FINOLEX / V-GUARD/ L&T / PRIMECAB / RR KABEL / GLOSTER
9	CABLE TERMINATION KIT	RAYCHEM /MAHINDRA / DENSON/3M/CCI / CABSEAL
10	TOD ENERGY METER	L&T/ ENERCON
11	ENERGY METER / AMMETER / VOLTMETER	SIMCO / MECO/ L&T/ HPL/ AE RISHAB / SCHNEIDER / SECURE /SOCOME C / CONZERVE /SIEMENS/ABB/C&S
12	RELAYS	ABB/ L&T/ SIEMENS / RISHAB / GE /SCHNEIDER / ALSTOM / EASUN REYROLLE / C&S
13	CURRENT / POTENTIAL TRANSFORMER	INTRANS/ KAPPA/ INDUS/ CG/ CYRO/ABB/BHEL/CG/ MEGAWIN/TRANSDELTA / KEL
14	MCCB / MCB / CONTACTOR / TIMER	LEGRAND / MERLIN GERIN / MK / ABB/ INDOASIAN / L &T / SIEMENS /SCHNEIDER / HPL
15	LT ACB	LEGRAND / ABB/ L &T /SIEMENS /SCHNEIDER
16	INDUSTRIAL PLUG WITH MCB	ABB / HAGER / HAVELLS / INDOASIAN / CROMPTON / LEGRAND / SCHNEIDER / L& T / HPL
17	PLUG SOCKETS -IP66	MENNEKES / HENSEL / MERLIN GERIN / L&T / ABB / WALTHER / CAPE
18	STREET LIGHT POLE / HIGHMAST	BAJAJ / VALMONT / ASTER / CG / PHILIPS / KLITE / UNIQUE POLES/UTKARSH
19	LED street / flood light fittings	OSRAM / BAJAJ/ CG/ PHILIPS / WIPRO/ GE
20	LED light fittings	OSRAM / BAJAJ/ CG/ PHILIPS / WIPRO/ GE /POLYCAR / Lighting Technologies
21	BATTERY	EXIDE / AMARON / PRESTOLITE / AMCO / STANDARD FURUKAWA
22	BATTERY CHARGER	WAVES ELECTRONICS / DUBAS / AMAR RAJA / TATA LIEBERT / NUMERIC /SAFE POWER /APC / GE / DELTA / ELNIX / DB POWER

24	PVC CONDUIT PIPES / CASING & CAPPING	BALCO/ ATUL/ GEO/ CLIPSAL/ PRECISION/ AVONPLAST/ KONSEAL
25	HDPE PIPE/ FLEXIBLE HOSE	KONDOOR or any other make with BIS
26	WIRING CABLE	FINOLEX/ QFLEX/ RR KABEL/ RPG CABLES/ LAPP KABEL/ V-GUARD/ HAVELLS/ L&T/ RALLISON
27	INSTRUMENTATION / TELEPHONE CABLES	TRACO / HINDUSTAN CABLES / DELTON / FINOLEX / USHA BELTRON / PRIMECAB / VIDYA
28	MODULAR SWITCHES/ PLUG SOCKETS/ CEILING ROSE	ANCHOR/ MK/ LEADER / CRABTREE/SIEMENS/ FINOLEX/LEGRAND/ABB / INDOASIAN
29	MV PANEL / DISTRIBUTION BOARD	ABB/ INTRANS/ MEGAWIN/HESSEL/ WAVES/POWER CONTORLS / ABB /L&T/ SIEMENS/SCHNEIDER /HENSEL /MENNEKAS/HAGGER/ IMPERIAL
30	CEILING/ WALL MOUNTED / EXHAUST FAN	CROMPTON / BAJAJ / USHA / KHAITAN / HAVELLS / ORIENT / ALMONARD
31	UPS	DB POWER/ TATA LIEBERT / NUMERIC/ SAFE POWER/ APC/ GE / DELTA/ SOCOMEC / VGUARD / EMERSON
32	AIR-CONDITIONER	VOLTAS / BLUE STAR / CARRIER / LG / HITACHI / DAIKIN
33	DIESEL ENGINE	CUMMINS / ASOK LEYLAND / GREAVES COTTON / CATTER PILLAR / MITSUBISHI/ VOLVO / KIRLOSKAR / MAHINDRA
34	ALTERNATOR	CROMPTON GREAVES / STAMFORD / LEROYSOMER / KIRLOSKAR / KEL / BHEL
35	FRP CABLE TRAY	PUSTRON/ SUMIP/ ERCON OR FIRM HAVING ISO AND CERTIFICATES AS PER THE TENDER SPECIFICATION .
36	GI CABLE TRAY	PUSTRON/ SUMIP/ ERCON/L&T OR REPUTED MAKE WITH ISO CERTIFICATION.

**SIGNATURE OF TENDERER**

**COCHIN PORT AUTHORITY**

**RENOVATION OF OFFICE ROOMS NAB 601 & NAB 605 OF NEW  
ADMINISTRATION BLOCK**

**UNDERTAKING REGARDING EPF AND ESI REGISTRATION**

I/ We, M/s..... (Name & Address of the tenderer) solemnly affirm and undertake that I/ We do not have the required number of employees for taking registration under EPF Organisation and ESI Corporation. I/ We also undertake that I/ We take the full responsibility for all the consequences arising due to the above and indemnify CoPA officials for any actions taken in this regard

**SIGNATURE OF TENDERER**