कोचिन पत्तन प्राधिकरण
Cochin Port Authority

Tele: 91-0484 -2666414/0484-258-2400
Telefax: 91-0484-2666414
E-mail: coptce@gmail.com
ce@cochinport.gov.in,
Website: www.cochinport.gov.in

TENDER DOCUMENT FOR

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

TECHNICAL BID

(e-Tendering Mode)
Website: www.tenderwizard.com/COPT

Tender No.T10/T-1992/2023-C

COCHIN PORT AUTHORITY
CHIEF ENGINEER'S OFFICE
COCHIN-682 009

Price: Rs.2,360/-(2,000+ 18% GST)

COCHIN PORT AUTHORITY

CIVIL ENGINEERING DEPARTMENT

Tender No:T10/T-1992/2023-C

Tender for

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

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SECTION -I

SECTION I
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

Tender No.T10/T-1992/2023-C **Date :17/05/2023**

1. NOTICE INVITING TENDER

Electronic Tenders **(e-tenders)** on percentage basis are invited by Cochin Port Authority 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 **"DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE".**

1. ***Minimum Eligibility Criteria:***

a) Experience

The tenderers should have experience of having successfully completed during the last 7 (seven) years ending **30th April, 2023,** at least either:

i) Three Similar Works each costing not less than **Rs.139.59 lakhs**

(OR)

ii) Two Similar Works each costing not less than **Rs.174.49 lakhs**

(OR)

iii) One Similar Work costing not less than **Rs.279.18 lakhs**

b) Financial Turnover

Average Financial Turnover of the tenderer over the last three financial years ending 31st March of the previous financial year *[2020-'21, 2021-'22 & 2022-'23]*shall not be less than **Rs.104.69 lakhs.**

Explanatory Notes to a) & b) :

***Note 1:- Similar Work(s) means* "Building Construction/ renovation works including Electro-Mechanical works"**

Note 2:- Following enhancement factors will be used for the costs of works executed for bringing the financial figures to a common base value in respect of the works completed in past years.

Table 1

Year before	Multiplying factor
One year *[March,2022]*	1.07
Two years *[March, 2021]*	1.14
Three years *[March, 2020]*	1.21
Four years *[March, 2019]*	1.28
Five years *[March, 2018]*	1.35
Six years *[March, 2017]*	1.42

Note 3:-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.

Note 4:- Satisfactory Client/Owners's Certificate or documentary proof shall be submitted in support of the assignments / works performed and claimed by the tenderer to fulfill the eligibility criteria for qualification. A statement duly certified by the Chartered Accountant showing the Average Annual Financial Turnover over the last 3 financial years and audited financial statements for the last three years shall be submitted.

Note 5:- The works reckoned for the above purpose are those executed by the tenderers as prime contractor or proportionately as member of joint venture or as a sub-contractor authorized and approved by the Employer of the work(s) against which the tenderer has claimed his experience; it will be considered for qualification only if documentary proof of such authorization / approval of the Employer are submitted.

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 – 11 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

Sl. No.	Particulars	Date and Time
1	Tender e- publication date	***17-05-2023***
2	Download period of Bid Documents	***17-05-2023 to 06-06-2023***
3	Last date for seeking clarification	***24-05-2023***
4	Pre Bid meeting	***25-05-2023***
5	Last date and time of submission of Bid	***06-06-2023*** **up to 15.00 hrs**
6	Date and time of opening the Bid	***06-06-2023*** **after 15.30 hrs**

ii) Bid information :

Table 3

i)	Estimated Amount put to Tender	: **Rs.3,48,97,000/-**.
ii)	Earnest Money Deposit	:**Rs.3,49,000/- f**urnished 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.2,360/-** (Rs.2,000 + 18% GST) (Non refundable) furnished either through Demand Draft/ Banker's Cheque drawn in favour of the Financial Adviser & Chief Accounts Officer, CoPT 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	**6 (Six) months** including submission of final application to IGBC for certification

4. This work essentially comprises of the following:

   (i) Developing and Upgrading the existing warehouse building at North End of W/Island to a Green Warehouse by carrying out the Civil / renovation, Landscaping and MEP works to meet the Indian Green Building Council (IGBC) certification requirements;

   (ii) All documentation works and providing assistance to CoPA in submitting preliminary application & final application to Indian Green Building Council (IGBC) till obtaining final Green Warehouse Certification by IGBC.

5. Tender documents can be downloaded from the e-Tendering portal ***www.tenderwizard.com/COPT***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) as well as Govt. tender website, www.tenders.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, CoPT along with the submission of bid.

6. The bidders need to obtain the one time User ID & password for log-in to **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/COPT. No Bids shall be accepted off-line (Hard copy).

11. 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.

12. The Bidder shall submit Originals of: (i) DD / Banker's Cheque towards the cost

of Tender document and EMD, (iii) Power of Attorney and; (iv) Integrity Pact in favour of signatory(s) to the tender along with letter of submission in a sealed cover **to the Chief Engineer, Cochin Port Trust, W/Island, Cochin – 682009, KERALA**, before opening date and time of the tender. **Non submission of original financial document towards cost of Tender document, EMD, Integrity Pact etc, before opening date and time, of the Tender will be liable for rejection**.

13. 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 of Earnest Money Deposit. 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.

14. Integrity Pact (IP) shall cover this Tender throughout its various phases, and IP would be deemed as a part of the contract though an appropriate provision. The bidders should sign and submit an "Integrity Pact" to be executed between the bidder and Cochin Port Trust in a separate envelope superscribed "Integrity Pact" before due date and time of the tender. Bids not accompanied by a duly signed "Integrity Pact" shall be liable for rejection. IP would be implemented through the following Independent External Monitors (IEMs) for this tender.

(i) Shri. M.J Joseph, ICAS (Retd.)
37,Da Costa Square,
3rd Cross, Cooke Town,
Bangalore – 560 084.Email:mohan.joseph@gmail.com

(ii) Shri. Punati Sridhar, IFoS (Retd.)
8C, Block-4, 14-C Cross,
MCHS Colony, HSR 6th Sector,
Bangalore – 560 102. Email: poonatis@gmail.com

For full details of the scheme of IP, you may visit the website of Central Vigilance Commission, New Delhi.

15. 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.

CHIEF ENGINEER
COCHIN PORT AUTHORITY

SECTION I
COCHIN PORT AUTHORITY

2.INSTRUCTIONS TO TENDERERS

SECTION I
COCHIN PORT AUTHORITY

2.INSTRUCTIONS TO TENDERERS

1. Introduction

This tender is invited for **"DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE''**

The work essentially comprises of the following:

(i) Developing and Upgrading the existing warehouse building at North End of W/Island to a Green Warehouse by carrying out the Civil / renovation, Landscaping and MEP works to meet the Indian Green Building Council (IGBC) certification requirements;

(ii) All documentation works and providing assistance to CoPA in submitting preliminary application & final application to Indian Green Building Council (IGBC) till obtaining final Green Warehouse Certification by IGBC.

2. General Instructions

2.1 The work is to be executed as described in the Bid document and in particular in the Technical Specifications, Special Conditions, Schedule of Quantities and Drawings and in general includes, but is not limited to supplying all including consumables and equipment necessary to execute the work as described in the Bid Document.

2.2 Before submitting the Bid, the bidder shall examine carefully all conditions of contract, specifications, drawings etc. supplied herewith. The bidders shall inspect the site of work with prior appointment with the concerned Section Engineer of the work to get himself acquainted with the site conditions and to assess and satisfy himself of the difficulties and constraints which may be involved in executing the work in the location. It will be deemed that prior to the submission of Tender, the tenderer has visited the site and has satisfied himself as to the nature and location of the work, general and local conditions, particularly those pertaining to transportation, handling and availability and storage of materials, availability of labour, weather conditions, tidal variations at site, working conditions, ground level, nature of soil etc. and that the tenderer has estimated his cost accordingly; the Port Authority will be in no way responsible for the lack of such knowledge and also consequences thereof to the Tenderer. Failure to visit the site will in no way relieve the successful bidder of any of the obligations in performing the work in accordance with this Bid Document including Addenda / Corrigenda, within the quoted price.

2.3 A bidder shall be deemed to have full knowledge of all documents, site conditions etc. whether he has inspected them or not. The submission of a Bid by the bidder implies that he has read the notice and conditions of contract and has made himself aware of the scope and specifications and other factors bearing on the bid and that they are binding on him.

2.4 The bidders may please note that the EMPLOYER will not entertain any correspondence or query on the status of the offers received against this Bid. Bidders are also requested not to depute any of their personnel or agents to visit the Employer's offices for making such enquiries till finalization of the bid. Should the EMPLOYER find it necessary to seek any clarification, technical or otherwise, the concerned bidder will be duly contacted by the EMPLOYER.

2.5 Canvassing in any form by the bidder or by any other agency acting on behalf of the bidder after submission of the bid may disqualify the said bidder. The Employer's decision in this regard shall be final and binding on the bidder.

2.6 EMPLOYER will not be liable for any financial obligation in connection with the work until such time the EMPLOYER has communicated to the successful bidder in writing his decision to entrust the Work (covered by the bid document issued to him).

2.7 E-mail offers will not be considered. Bidders should prepare their bid themselves and submit it "online". Bids submitted by agents will not be recognized.

2.8 Bids received after the due date and time and any change in bid after the specified date & time will be rejected. EMPLOYER will not be responsible for the loss of the bid document or for the delay in postal transit.

2.9 In case of an unscheduled holiday on the prescribed closing/opening day of the bid, the next working day will be treated as the scheduled prescribed day of closing/opening of the bid.

2.10 While evaluating the document, regard would be paid to National defense and security considerations, at the discretion of the Cochin Port Authority. Bid received from any bidder may be summarily rejected on National security consideration without any intimation thereof to the bidder.

2.11 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 shall be binding on the Bidder.

2.12 In case the department desires to inspect the equipments/ machinery for confirmation of its availability and capacity etc., necessary arrangements shall be made by the contractor for such inspection at his own cost.

2.13 Any error in description, and any omissions there from shall not vitiate the contract or release the Contractor from the execution of whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract

2.14 All the Bank Guarantees (BGs) to be furnished except for EMD by the Contractors in connection with the tender shall be sent to 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.

2.15 ***The Contractor / approved Sub-Contractor if any, shall comply with all the provisions of the Indian Workmen's Compensations Act, Provident Fund Regulations, Employees Provident Fund and ESI Act etc. amended from time to time and rules framed there under and other laws affecting the contract labour that may be brought into force from time to time.***

2.16 ***If applicable as per EPF/ESI Acts, the Tenderer shall be registered under EPF and ESI Act and the employees employed under them shall be covered in the EPF and ESI scheme. In such cases, who are registered under EPF Organisation and ESI Corporation and furnish documentary evidence in support of valid registration shall only be considered for qualification for opening of Price Bids. In case, the Tenderer does not have the required number of employees which makes such registration mandatory, an undertaking as per Annexure – 11 to the effect shall be furnished.***

2.17 ***The Contractor shall regularly remit the Employer and Employee contribution to the authorities. If not, the Employer would remit the same and the amount so remitted shall be deducted from the part/final bill of Contractor.***

2.18 ***The contractor shall be registered under GST and shall furnish documentary evidence in support of valid GST registration.***

2.19 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 UdyogAadhaar 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 of Earnest Money Deposit. 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

2.20 If a bidder has already been awarded or qualified for a similar nature work with a higher value or equivalent value within the last 6 months from the date of Notice Inviting Tender, the tender of such bidder shall be evaluated / considered for qualification with the documents submitted by the bidders in those tenders **provided the Bidder clearly states the details of above such works in the Letter of Submission**.

2.21 In the Letter of submission, the Bidder shall compulsorily indicate 2 nos. of current active e-mail IDs to which further Bid related communication can be sent by CoPA. All communication from CoPA shall be deemed to have been delivered when the e-mail is sent to the specified e-mail ID and the date of sending the e-mail by CoPA shall be considered as the receipt by the Bidder. CoPA shall no way be responsible for the non-receipt of any such communication by the Bidder whatever be the reason due to which this has occured.

3. Invitation for Bids:

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

4. Downloading of Tender Documents:

Tender documents can be downloaded from the e-Tendering portal **www.tenderwizard.com/COPT** on the dates specified in NIT by making online requisition. Tender document can also be downloaded from Cochin Port website **www.cochinport.gov.in** or Government of India (GOI) tender portal **www.tenders.gov.in.** Demand Draft /Banker's cheque for cost of tender

document drawn in favour of the Financial Adviser & Chief Accounts Officer(FA &CAO), CoPA from any Scheduled / Nationalized Bank having its branch at Cochin shall be submitted at the time of submission of bids and scanned copy of the same shall be attached with the e-tender.

In case of tender document being downloaded from the website, at the time of uploading, the tenderer shall give an undertaking that no changes have been made in the document. Port's Tender document will be treated as the authentic Tender document and if any discrepancy is noticed at any stage between the Port's Tender document and the one submitted by the Tenderer, the Port's document shall prevail. For the discrepancies found at any time, the Tenderer shall be liable for legal action.

5. One Bid per Bidder:

Each bidder shall submit only one bid. A bidder who submits or participates in more than one Bid will cause all the proposals with the Bidder's participation to be disqualified.

6. The Bidder

The Bidder shall be a single entity only.

7. Cost of Bidding:

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

8. Site visit:

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

9. Clarification of the Bidding Documents:

9.1 The Tenderers are advised to examine the Tender Document carefully and if there be or appear to be any ambiguity or discrepancy in the documents, or any clarifications needed on the Tender Documents; these shall be referred to the Chief Engineer in writing at the following address, so as to reach him at least by ***24-05-2023.*** It is to be noted that no queries, clarifications will be answered after this date.

THE CHIEF ENGINEER,
CHIEF ENGINEER'S OFFICE,
COCHIN PORT AUTHORITY,
WILLINGDON ISLAND,
KOCHI-9,
KERALA, INDIA.
Ph: - 91-0484-2666414/2582400.
Fax:-91-0484-2666414.
Email: coptce@gmail.com/ce@cochinport.gov.in

The replies/clarifications/decisions shall be hosted at the Cochin Port Authority website www.cochinport.gov.in, e-Tendering Portal and CPP Portal.

At any time prior to the deadline for submission of Bid, CoPA may, for any reason, whether at its own initiative or in response to clarifications requested by a Bidder, modify the Bid Document by the issuance of Addenda/Corrigenda.

Any Addenda/ Corrigenda / Errata/ Replies to the queries of Bidder etc., if any, issued by CoPA will be hosted in Cochin Port Authority website www.cochinport.gov.in, e-Tendering Portal and CPP Portal only and the Bidder shall be responsible to check and download those Documents, if any, issued by CoPA, from the website before submission of Bid. Bids with any shortfall in uploading the said **Addenda/ Corrigenda / 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**. In order to afford Bidders with reasonable time to take an Addendum into account, or for any other reason, the CoPA may, at its discretion, extend the Bid Submission Date and the Bid extension notice shall be hosted in the websites only.

9.2 **Pre-Bid Meeting:**

A pre-bid conference will be held in the Conference hall of Cochin Port Trust, to answer clarifications, if any, on the bid document. This conference will be held on the date notified in the Notice Inviting Tender. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder. Minutes of the meeting, including the text of the questions raised (without identifying the source of enquiry) and the responses given will be published in e- tender portal as well as in Cochin Port Authority official website as Addendum/corrigendum. Any modification of the bid documents as a result of the pre-bid meeting shall be made exclusively through the issue of an Addendum/corrigendum. **Pre Bid meeting shall also be arranged through VC.**

10. Amendment of Bidding Documents:

The Chief Engineer, Cochin Port Authority shall have the right to omit or suspend certain items of work or revise or amend the Bid documents prior to the due date of submission of the Bid by issuance of Addenda / Corrigenda. Any Addendum / Corrigendum thus issued shall be part of the Tender documents. The Addenda / Corrigenda, if any, shall only be hosted in the e-tender portal as well as in the website of the Cochin Port. It is the responsibility of the Bidders to download such Addenda/ Corrigenda hosted in the website and submit the same duly signed along with the Bid. 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 Bid and bid extension notice shall be hosted in the web site.

11. Preparation of bids:

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

12. Minimum Eligibility Criteria:

(a) Experience

The tenderers should have experience of having successfully completed during the last 7 (seven) years ending **30th April, 2023,**at least either:

iv) Three similar works each costing not less than **Rs.139.59 lakhs**

(OR)

v) Two similar works each costing not less than **Rs.174.49 lakhs**

(OR)

vi) One similar work costing not less than **Rs.279.18 lakhs**

(b) Financial Turnover

Average Financial Turnover of the tenderer over the last three financial years ending 31st March of the previous financial year *[2020-'21, 2021-'22& 2022-'23]* shall not be less than **Rs.104.69 lakhs.**

Explanatory Notes to (a) & (b):

Note 1:-Similar work(s)means **"Building Construction / renovation works including Electro-Mechanical Works"**

Note 2:-Following enhancement factors will be used for the costs of works executed for bringing the financial figures to a common base value in respect of the works completed in past years.

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One year [March, 2022]	1.07
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Note 3:- The experience certificate of works executed in privatesectors / organisations shall be considered for qualification, only on submission of TDS certificate along with work order and completion certificate.

Note 4:- Satisfactory Client/ Owner's Certificate or documentary proof shall be submitted in support of the assignments / works performed and claimed by the tenderer to fulfill the eligibility criteria for qualification. A statement duly certified by the Chartered accountant showing the average annual Financial Turnover over the last 3 financial years and audited financial statements for the last three years shall be submitted.

Note 5:- The works reckoned for the above purpose are those executed by the tenderers as prime contractor or proportionately as member of joint venture or as a sub contractor authorized and approved by the Employer of the work(s) against which the tenderer has claimed his experience; it will be considered for qualification only if documentary

proof of such authorization / approval of the Employer are submitted.

13. Other Eligibility Considerations

13.1 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.

13.2 **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 – 11 to the effect shall be furnished.**

14. Bid Prices:

14.1 **Percentage Basis Contract**

The Bidder shall fill the percentage above / below in the Bidder's Quoting Area under "Percentage Quoted" in the Schedule-II (Schedule of Quantities to be done on Contract) both in **figures and words**. The Bidder shall also fill 'Above / Below' column.

14.2 On scrutiny, if there are differences between the percentage given in figures and in words, the following procedure shall be followed:-

a) When there is a difference between the percentage quoted in figures and in words, the percentage in words shall be taken as correct.

b) When the sign (+) / (-) and Above / Below does not correspond with each other, the "words" under "Above / Below" shall be taken as correct.

14.3 **Rates Quoted**

The rate quoted by the Tenderer shall be inclusive of the cost of provision of plant and equipment, materials, labour, execution, supervision, maintenance, overheads and profits and every incidental and contingent cost and charges whatsoever excluding Goods and Service Tax (GST). GST as may be applicable from time to time shall be shown separately in the invoice.

14.4 The Contract shall be for the whole Work based on the priced Bill of Quantities submitted by the Bidder. **The Bidder should ensure that his tendered percentage as per Price Bid is not mentioned anywhere in any documents in Technical Bid submission, directly or indirectly. If any such mention is made, the tender will become invalid and shall become liable for rejection**.

14.5 **Currencies of Bid and Payment:**

The unit rates and the prices shown in Schedule II of this document are in Indian National Rupees (INR).

15. Bid Validity:

Bids shall remain valid for a period not less than one twenty days (120 days) from

the deadline date for bid submission. A bid valid for a shorter period shall be rejected by the Employer as non-responsive.

In exceptional circumstances, prior to expiry of the original time limit, the Employer may request the Bidder to extend the period of validity for an additional period. The request and bidders response shall be made in writing. A bidder agreeing to the request will not be permitted to modify his bid (ie, the extension shall be unconditional)

16. Bid Security / EMD:

16.1 Each tender should be accompanied by an Earnest Money amounting to Rs.3,49,000/- (Rupees Three Lakhs Forty Nine Thousand only). EMD shall be deposited /furnished either through Demand Draft or Banker‟sCheque drawn in favour of Financial Adviser & Chief Accounts Officer, Cochin Port Authority from any Nationalised Bank/ Scheduled Bank in India. The Earnest Money deposit will not carry any interest. Any bid not accompanied by an acceptable Bid Security shall be treated as Non-responsive and shall be rejected by the Employer.

17. No Alternative Proposals by Bidders:

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

18. Format and Signing of Bid:

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

18.2 If the tender is made by an individual it shall be signed by his full name and his address shall be given. In the event of the tender being submitted by a registered partnership firm, it must be signed individually by each partner thereof. In the event of absence of any partner, it must be signed on his behalf by person holding a proper power-of- attorney authorizing him to do so and to bind the partner in all matters pertaining to the contract including the arbitration clause, such power-of-attorney to be attached with the tender which must disclose that the firm is duly registered under Indian Partnership Act. If the tender is made by a Limited Company it shall be signed by a duly authorized person who shall produce with the tender satisfactory evidence of the authorization. In the case of a Limited Company the tender should be accompanied by the Memorandum and Articles of Association of the Company.

19 Bid Submission:

19.1 Bid shall be submitted in two parts, **Part - I: Technical Bid** and **Part - II: Price Bid** through **e- tender mode before 15.00 Hrs on 06-06-2023.**

19.2 The Technical Bid document and the scanned copies of the documents as detailed in clause 20 below shall be submitted through e-Tendering mode

on**www.tenderwizard.com/COPT.**

19.3 Price bid (Schedule-II) in the provided format shall be submitted **only through e-tendering mode on www.tenderwizard.com/COPT** before 15.00 Hrs on **06-06-2023.In no case shall filled in Price Bid (Schedule II) be submitted in hard copy, as it shall result in rejection of the tender**.

19.4 Tenders shall be submitted "**online"** strictly in accordance with the Instructions to Tenderers and Terms & Conditions given in the tender document. The bidders shall submit scanned copy of all the required documents such as DD / Banker's Cheque towards the cost of tender, proof of experience, financial details etc. through the e-tendering portal.

19.5 The Bidder shall submit **Original (i) DD / Pay Order / Bankers Cheque towards the cost of Tender document,(ii) EMD, (iii) Power of Attorney and : (iv) Integrity Pact** along with Letter of submission in a sealed cover, super scribing thereon the Tender Number, Name of Work, date notified for submission of tender and the name of the tenderer. Tenders can be brought either in person or sent by registered post/ courier to the Chief Engineer, Cochin Port Authority, W/Island, Cochin - 682009, KERALA**,** before opening date & time of the tender**.** Tenders brought in person, shall be put in the Tender Box **on or before the due date and closing time specified above**.

19.6 **Tenders without submitting the original documents towards (i) Cost of tender document, (ii) EMD, (iii) Power of Attorney and ; (iv) Integrity Pactas above, before opening date and time of the tender will be liable for rejection.**

19.7 The successful Bidder shall submit original copy of complete Technical Bid already submitted in e-mode within 7 days of receipt of Letter of Acceptance issued for the work.

20 Information Required in the Bid

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

a) Letter of Submission (vide ***Annexure-1***)

b) Bid Security / EMD as per clause 16.1 above

c) Cost of Tender Document

d) Check list as per ***Schedule I*** attached along with Technical Bid in the e-Tendering Portal

e) Power of Attorney (in original) in favour of signatory/s to the Tender, duly authenticated by Notary Public. (vide ***Annexure*-2**)

f) Details of experience as per ***Annexures -3a &3b*** and Certificates in proof of experience in Similar Works as detailed under Clause 12 of Instructions to Tenderers.

Explanatory notes:

(1) Original or Notary certified copy of completion certificates of each work issued by the owner/ the responsible officers of the owner under whom he has executed such contracts a work order shall be attached. The certificate shall invariably contain the following among other things.

(i) Details of work involved specifying the nature of work

(ii) The completion cost of the work
(iii) Date of commencement ; and
(iv) Date of completion of the work.

(2) If the experience in Similar Works is as a member of joint venture, Notary attested copy of joint venture agreement in this respect shall be attached.

(3) If the experience in Similar Works is as a subcontractor, Notary attested copy(s) of approval issued by the Employer(s) authorizing as a sub-contractor; in proof of the claim of the tenderer as a sub-contractor shall be attached.

(4) The works indicated in *Annexure-3a* will only be considered for evaluation. Mere submission of work completion certificate will not be considered towards Eligible Assignments

g) A statement duly certified by Chartered Accountant showing the Average Annual Financial Turnover of the tenderer over the last three financial years ending 31st March 2023 [*2020-'21, 2021-'22& 2022-'23*] (vide ***Annexure-4***) supported by Audited Financial statements for the last three years.

h) Form of Bid duly signed and sealed

i) **Bid document including all Addenda / Corrigenda duly signed and sealed**

j) Partnership Deed or Memorandum and Articles of Association of the Company and Registration certificate of the company as the case may be.

k) **Copies of EPF ,ESI,PAN and GST registration**

l) Documentary proof for NSIC registration, if applicable.

m) A detailed Method Statement (Technical Note) for carrying out of the works (vide ***Annexure-5***).

n) A list of Plant and equipment proposed to be engaged for the work (vide ***Annexure-6)***.

o) A declaration to the effect that (vide ***Annexure-7***):-

i) All details regarding construction plant and machinery, temporary work and personnel for site organization considered necessary and sufficient for the work have been furnished in the Annexure-7 and that such plant, temporary works and personnel for site organization will be available at appropriate time of relevant works for which the equipment have been proposed at site till the completion of the respective work

ii) No conditions are incorporated in the Price Bid. In case any conditions are specified in the PriceBid, the tender will be rejected summarily without making any further reference to the bidder.

iii) We have not made any payment or illegal gratification to any persons/ authority connected with the bid process so as to influence the bid process and have not committed any offence under PC Act in connection with the bid.

iv) We disclose with that we have made / not made (strike out whichever is not applicable) payments or propose to be made to any intermediaries

(agents) etc in connection with the bid.

v) We do hereby confirm that no changes have been made in the Tender document uploaded by us for the above bid. Port Tender document will be treated as the authentic Tender Document and if any discrepancy is noticed at any stage between the Port's tender document and the one submitted by the tenderer, the Port's document shall prevail.

p) Bank information for e- Payment system as per ***Annexure-8.***

q) Details of litigation history, blacklisting etc. of the Bidder as per ***Annexure-9***.

r) Integrity Pact duly signed as per ***Annexure-10***

s) Undertaking regarding EPF & ESI Registration as per ***Annexure-11***.

t) Details of the IGBC Accredited professional/consultant proposed to be engaged for the project including Accreditation certificate and details of Experience certificates.

20.2 **Scanned copy of all the above documents shall be uploaded for on line submission of Technical Bid.**

NOTE: If a bidder has already been awarded or qualified for a similar nature work with a higher value or equivalent value within the last 6 months from the date of notice inviting tender, the tender of such bidder shall be evaluated / considered for qualification with the documents submitted by the bidders in those tenders, provided the Bidder clearly states the details of above such works in the Letter of Submission.

20.3 **List of Documents to be Submitted in Original.**

i) DD / Pay Order / Bankers Cheque towards Cost of Tender document

ii) Bid Security / EMD

iii) Power of Attorney, duly authenticated by Notary Public (vide ***Annexure-2***)

iv) Letter of Submission (vide ***Annexure-1***)

20.4 **Part II :**"**Price Bid**" shall contain the Preamble to BoQ and Bill of Quantities-**Schedule II** shall be duly filled in and fully priced, which shall be submitted only **in e-tendering mode**.

21 Deadline for Submission of the Bids:

E-tenders attaching all documents shall be submitted '**online**' in the **e tender portal** strictly in accordance with the terms and conditions of tender document before ***the time and the day notified*** in Table 2 of NIT.

The (i) Original DD / Pay Order / Bankers Cheque towards the Cost of Tender document,(ii) Bid Security / EMD (iii) Power of Attorney; and (iv) Integrity Pact along with letter of submission in a sealed cover in original super scribed with the Tender Number, Name of Work, date notified for submission of tender and the Name of the Tenderer, should reach the office of the Chief Engineer, Cochin Port Authority, Cochin-9, on or before the time and the day notified in Table 2 of NIT.

22 Late Bids:

Any Bid received by the Employer after the Bid Due Date will be returned

unopened to the bidder.

23 Bid Opening

23.1 The Officer inviting the tender or his duly authorized assistant will open the tenders in the presence of intending tenderers who may be present at the time in person or through their authorized representative. In the case of the tenders invited under Two Cover System, the technical bids of the tenders received will be opened first.

23.2 **Technical Bid**: Technical Bid shall be opened in the office of the **Chief Engineer, Cochin Port Authority**after**15.30** Hours on the last date fixed for receiving the Tenders. Submission of EMD and Cost of Tender Document is verified initially. In case the Earnest Moneyand Cost of Bid Document are not deposited/submitted or is not in order, the Bid will not be opened further and hard copy submitted will be returned.

23.3 If all Bidders have submitted unconditional Bids together with requisite Bid Security/ EMD, then all Bidders will be so informed then and there. If any Bid contains any deviation from the Bid documents and /or if the same does not contain Bid Securityin the manner prescribed in the Bid documents, then that Bid will be rejected and the Bidder will be informed accordingly. The Price Bid submitted in e- mode will not be opened.

24 Bid Opening – Price Bid:

Price Bid of those Tenderers found responsive on evaluation of Technical Bids, will be opened later. **Short listed bidders will be communicated about the date and time of opening of the Price Bid through e-tender portal notification / communication and there will be no direct communication from department in this regard.** The Bidder's name, the Bid percentages, the total amount of each Bid, any discounts, Bid modifications and withdrawals, and such other details as the Employer may consider appropriate, will be announced by the Employer at the time of opening.

25 Clarification of Bids:

To assist in the examination and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his Bid, including breakdown of unit rates. The request for clarification and the response shall be in writing, but no change in the price or substance of the Bid shall be sought, offered, or permitted.

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

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

26 Examination of Bids and Determination of Responsiveness:

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

(a) Meets the Minimum Eligibility Criteria defined in Clause 12.

(b) Has been properly signed by an authorised signatory (accredited representative) holding Power of Attorney in his favour. The Power of

Attorney shall interalia include a provision to bind the Bidder to settlement of disputes clause;

(c) Is accompanied by the required Bid Security and cost of bid document.

(d) Undertaking in the Technical Bid that he has not incorporated any conditions in the Price Bid.

A responsive Bid is one which conforms to all the terms, conditions and specification of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one;

i) Which affects in any substantial way the scope, quality or performance of the Works;

ii) Which limits in any substantial way, the Employer's rights or the Bidder's obligations under the Contract; or

iii) Whose rectification would affect unfairly the competitive position of other Bidders presenting responsive Bids.

(e) Is responsive to the requirements of the Bidding documents.

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

27 Correction of Errors:

Bids determined to be responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as detailed in Clause 14.2

The amount stated in the Bid will be adjusted by the Employer in accordance with the above stated procedure for the correction of errors and shall be considered as binding upon the bidder. If the Bidder does not accept the corrected amount, the Bid shall be rejected and the Bid security shall be forfeited in accordance with Clause 16.2.

28 Evaluation and Comparison of Bids:

The Employer will evaluate and compare only the Bids determined to be responsive in accordance with Clause 27. In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:

(a) Making any correction for errors pursuant to Clause 28;
(b) Making appropriate adjustments to reflect discounts or other price modifications offered.

29 Alteration of tender documents:

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

30 Alternative Conditions and Proposals:

The Tenderer shall note that alternative or qualifying tender conditions, or

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

31 Award of Contract:

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

(a) Eligible in accordance with the provisions of Clause 12, and
(b) Qualified in accordance with the provisions of Clause 12.

32 Release of Bid Security / EMD:

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

33 Performance Security:

33.1 Within not later than 21 days of receipt of the Letter of Acceptance, the Successful Bidder shall deliver to the Employer a Performance Security in the form of Bank Guarantee (BG) for an amount equivalent to 5**%** of the Contract price rounded off to the nearest Rs.1,000/- in the following forms;

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

33.2 If the Performance Security is provided by the Successful Bidder in the form of a Bank Guarantee, it shall be issued by a Nationalized /Scheduled Indian bank having its branch at Cochin acceptable by ***Cochin Port Authority.*** The BG shall be issued in favor of ***Cochin Port Authority*** in the Format enclosed in ***Annexure-A of GCC.***

34 Signing of Agreement

34.1 The Successful Tenderer will be required to execute an Agreement at his expense within 28 (twenty eight) days from the date of Letter of Acceptance / Work Order, on proper value Kerala State Stamp Paper in the prescribed form**.** The agreement as finally executed will include the Employer's Bid Documents and the Bidder's offer as finally accepted by the EMPLOYER together with Addendum/ Corrigenda, bid clarification and all correspondences exchanged between EMPLOYER and the bidder, if any. Till the formal agreement is executed, the Letter of Acceptance together with the offer as finally accepted along with correspondence shall form a binding contract between the two parties.

34.2 The Contractor shall made 13 copies of the Agreement and submit to the Employer within 7 days following the date of signing of Agreement.

34.3 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 the 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.

35 Fraud and Corrupt Practices:

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

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

(a) "corrupt practice" means

(i) The offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of any person connected with the Selection Process for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Authority who is or has been associated in any manner, directly or indirectly with the Selection Process or the LOA or has dealt with matters concerning the Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Authority, shall be deemed to constitute influencing the actions of a person connected with the Selection Process; or

(ii) Engaging in any manner whatsoever, whether during the Selection Process or after the issue of the LOA or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Agreement, who at any time has been or is a legal, financial or technical consultant/ adviser of the Authority in relation to any matter concerning the Project;

(b) "fraudulent practice" means a misrepresentation or omission of facts or

disclosure of incomplete facts, in order to influence the Selection Process;

(c) "coercive practice" means impairing or harming or threatening to impair or harm, directly or indirectly, any persons or property to influence any person's participation or action in the Selection Process;

(d) "undesirable practice" means

(i) Establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Selection Process; or

(ii) Having a Conflict of Interest; and

(e) "Restrictive practice" means forming a cartel or arriving at any understanding or arrangement among Applicants with the objective of restricting or manipulating a full and fair competition in the Selection Process.

36 Rejection of Tender:

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

SIGNATURE OF BIDDER

COCHIN PORT AUTHORITY

SECTION I

3.FORM OF BID

To

The Board of Cochin Port Authority

Through

The Chief Engineer
Cochin Port Authority, Cochin -9

Tender for the work of **''DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE''**

I/We have read and examined the Notice inviting tenders, Instructions to tenderers, Form of Agreement, Contract Data, General Conditions of Contract, General description of work, Special conditions of Contract, Technical Specifications, Drawings, Preamble, Bill of Quantities, & other documents and rules referred to in the General Conditions of Contract and all other contents in the tender document for the work.

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.

M E M O R A N D U M

a)	General description of work	**:**	**DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE**
b)	Estimated cost	**:**	**Rs.3,48,97,000/-**.
c)	Earnest Money	**:**	**Rs.3,49,000/-**
d)	Security Deposit	**:**	10% of the value of the contract awarded or the value of the work done whichever is higher [performance guarantee @ 5% and retention money @5%].

e)	Percentage, if any, to be deducted from the bills	**:**	The retention money will be recovered from the first running bill onwards at the rate of 5% of the gross amount of each bill
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.	**:**	**6(Six) months**
h)	Schedule, specifications, conditions, drawings etc. as per contents sheet attached.	**:**	As per content sheet attached

I/ We agree to keep the tender open for 120 days from the due date of submission and not to make any modifications in its terms and conditions

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..... is hereby forwarded in Port challan receipt / Bankers cheque or demand Draft of a scheduled bank / Bank Guarantee issued by a Scheduled bank drawn in favour of Financial Adviser and Chief Accounts Officer of the Port Trust 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 above Memorandum 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 Clause 40.1 of Conditions of Contract 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 (as modified by you as provided in the letters mentioned hereunder) is accepted by me for and on behalf of the Board of Major Port Authority for a sum of Rs……..(Rupees
……)

The letters referred to below shall form part of this Contract Agreement

a) ..
b) ..
c)

Dated…… **Chief Engineer**
Cochin Port Authority

COCHIN PORT AUTHORITY

SECTION – I

4. FORM OF AGREEMENT

AGREEMENT No……of20……

AGREEMENT FOR THE WORK OF DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

THIS AGREEMENT IS MADE on this day …… of …… BETWEEN THE BOARD OF COCHIN PORT AUTHORITY , a body corporate under the Major Port Trust Act, 1963 having office on Willingdon Island, Cochin – 682009 represented by its *Chief Engineer/*Deputy Chief Engineer/*Superintending Engineer Shri.…… S/o …….. Aged …… years residing at ……. Village …….. Taluk …… District (hereinafter referred to as the Employer which expression shall include his successors, assignees and administrators in the office) of the one part and M/s. ……..….. represented by Shri. ……..……. aged …..….. S/o …….. residing at …… Village …… Taluk ……. District(hereinafter referred as "Contractors" which expression shall include their successors, assignees and administrators) of the other part.

WHEREAS the Employer invited tenders for …… …… vide Tender Notice ……. Date …… and the Contractor submitted a tender for the same giving rates subject to the terms and conditions etc. of the tender document.

AND WHEREAS the said tender submitted by the Contractor has been accepted by the Employer vide work order No …….…… dated ……, issued to the Contractor while accepting their tender.

NOW THESE PRESENTS WITNESSETH and the parties hereby agree as follows.

1. The tender submitted by the Contractor for execution for the Board, 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 is accepted.
2. It is mutually understood and agreed that, notwithstanding that the works has been sectioned, every part of it shall be deemed to be supplementary to and complementary of every other part and shall be read with it or into it.

3. The Contractor agreed to abide by and fulfill all the terms and provisions of the said Conditions of Contract or in default thereof forfeit and pay to the Board the sum of money mentioned in the said conditions.

4. The sum of Rs……../- [Rupees……..only) has been deposited by the Contractor with Financial Adviser and Chief Accounts Officer of the Port Authority as Performance Security (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 the Contractor fail to commence the work specified in underwritten memorandum or should the Contractor not deposit the full amount of security deposit specified in underwritten memorandum 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, up to maximum of the percentage mentioned in Clause 40.1 of the Conditions of Contract and those in excess of that limit at the rates to be determined in accordance with the provisions contained in Clause 40.3 of the Conditions of Contract.

5. It is mutually agreed that the tender submitted in its entirety shall form part of this agreement. Apart from the tender the following shall also form part of the agreement
   (a) The Letter of Acceptance ;
   (b) Bill of Quantities and
   (c) Letters exchanged between the Employer and the Tenderer upto the issue of Letter of Acceptance as separately listed and annexed here to.
   (d) Replies to Prebid queries and amendments issued, if any.

M E M O R A N D U M

a)	General description of work	**:**	**DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE**
b)	Estimated cost	**:**	: **Rs.3,48,97,000/-**.
c)	Tendered cost	**:**	……
d)	Earnest Money	**:**	**Rs.3,49,000/-**
e)	Security Deposit	**:**	10% of the value of the contract awarded or the value of the work done whichever is higher [performance guarantee @ 5% and retention money @5%]

f)	Percentage, if any, to be deducted from the bills	**:**	The retention money will be recovered from the first running bill onwards at the rate of 5% of the gross amount of each bill.
g)	Time allowed for commencement of work from the date of receipt of work order	**:**	7 days
h)	Time allowed for the work from the date of commencement of work.	**:**	**6(Six)** months
i)	Schedule, specifications, conditions, drawings etc. as per contents sheet attached.	**:**	

IN WITNESS WHEREOF THE CONTRACTOR hereunto set his hand and seal on behalf of M/s…… and on behalf of the Board of COCHIN PORT AUTHORITY, the CHIEF ENGINEER has set his hand and seal and common seal of Trustees has been hereunto affixed the day and year first written above.

CONTRACTOR

- (Retain only the authority signing the agreement)

Signed, sealed and delivered by

Shri…….of M/s. ……

(Common Seal of the Firm)

Signed and affixed seal in the presence of :

1) Signature with address :

2) Signature with address :

EMPLOYER

Signed, sealed and delivered by the

CHIEF ENGINEER
Cochin Port Authority
On behalf of Board of
Cochin Port Authority.

Signed and affixed the common seal of

Board of Trustees of the Port of Cochin

In the presence of

1)

2)

COCHIN PORT AUTHORITY

SECTION I

6. CONTRACT DATA

[*To be filled up before issuing tender document as applicable for each tender]*

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

Sl. No.	Description	Reference Clause No. in GCC
1	*The following documents are also part of the Contract*	
	The Schedule of other Contractors (Will be informed in due course)	(8.2)
	The Schedule of Key personnel : **NA**	(9)
2	The Employer is	(1)
	The Board of Cochin Port Authority, **Cochin -9**	
	Name of Authorized Representative:	
	Name: **Dr. M. Beena** **The Chairperson,** **Cochin Port Authority,** **Cochin -9**	
3	The Engineer is	
	Name: **Shri. E Rema** **Chief Engineer** **Cochin Port Authority,** **Cochin-9**	
	Name of Nominee(s) is **:Will be notified in LoA/ LoI**	
4	Name of Contract –"**DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE"** Tender No**: T10/T-1992/2023-C**	(1)
5	**13**copies of Contract Agreement shall be furnished by the Contractor	[7.1]
6	Tender document and other data are available at the following web sites : 1) www.cochinport.gov.in 2) www.tenders.gov.in 3) tenderwizard.com/copt	(7.2)

Sl. No.	Description	Reference Clause No. in GCC
7	The Intended Completion Date for the whole of the Work /is 6**(Six)** Months	(17,28)
8	Milestone dates: Physical works to be completed | Period from the date of commencement of work The activity wise schedule needs to be submitted by the Contractor within **21 days** of receipt of LoA from CoPA. This needs to be strictly followed for the timely completion of the work.	
9	The following shall form part of the Contract Document: (1) Agreement (2) Letter of Acceptance (3) Bill of Quantities (4) Contractor's Bid (5) Correspondence exchanged after the opening of the Bid and before the issue of Letter of Acceptance by which the Condition of Contract are amended, varied or modified in any way by mutual consent (to be enumerated). (6) Contract Data (7) General Conditions of Contract (8) General Description and Special Conditions of Contract (9) Technical Specifications (10) Drawings and (11) Any other documents listed in the Contract Data as forming part of the Contract.	(2.3)
10	The Contractor shall submit a Program for the Works within **21 days** of date of the Letter of Acceptance/LoI.	(27)
11	**The site possession date** The site will be handed over within **7 days** after issue of LoA/LoI and the site is free from encumbrances.	(21)
12	The start date shall be **7days** from the date of receipt of the Letter of Acceptance (LoA)/LoI by the Contractor.	(1)
13	The site is located at corner plot of Milne road and 3rd Cross road intersection, formally Indian Potash Ltd Warehouse plot near EDC. **Project Location shown in** drawing No.9776-02-2023.	
14	The Defects Liability Period is **One year from the date of completion of the work.**	(35)
15	The minimum insurance cover for physical property, injury and death is **Rs.10 lakhs (Rupees Ten Lakhs)**per occurrence with the number of occurrences unlimited. After each occurrence, Contractor will pay additional premium necessary to make insurance valid always.	**(13)**
16	The following events shall also be Compensation Events: (Nil)	(44)
17	The period between Programme updates shall be 90 days.	(27)
18	The amount to be withheld for late submission of an updated	(27)

Sl. No.	Description	Reference Clause No. in GCC
	Programme shall be **Rs.25,000**/-.	
19	The language of the Contract documents is **English.**	(3)
20	The law, which applies to the Contract, is the law of Union of India.	(3)
21	The currency of the Contract is **Indian Rupees.**	(46)
22	The proportion of payments retained (retention money) shall be 5% from each bill subject to a maximum of 5% of the contract price or cost of work done whichever is higher.- NA	(48)
23	The maximum amount of liquidated damages for the whole of the works is **10%** of the Contract Price.	[49]
24	The amounts of the Advance Payments: NA	[51]
25	Repayment of advance payment for mobilization : NA	[51]
26	Repayment of advance payment for Construction and equipment: NA	[51]
27	Repayment of Secured advance:	[51.6]
	NA	
28	The date by which "As-Built" drawings are required is within **60 days** of issue of certificate of completion of whole or section of the work, as the case may be.	(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 Rs.50,000/-.	(58)
30	Schedule of Rates Applicable: (**DSR 2018 + Cost Index 55%) multiplied by a factor 0.8768 to remove GST**	
31	Base Rate for materials to be considered for price variation **: NA**	**(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 %	**(47)**

COCHIN PORT AUTHORITY

SECTION I

6. ANNEXURES

Annexure-1

COCHIN PORT AUTHORITY

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

LETTER OF SUBMISSION- COVERING LETTER

(*On the Letter Head of the Bidder*)

Date:……..

To

The Chief Engineer,
Cochin Port Authority.

Sir,

Sub: Tender for **"DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE"**

~~~~~~~

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

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

(i) Cost of Tender Document & EMD
(ii) Power of Attorney ***(Annexure-2)***
(iii) Pre Contract Integrity Pact ***(Annexure-10)***

We have also uploaded the following documents for online submission of Technical Bid.

(i) Details of Eligible Assignments to fulfill the "Minimum Eligibility Criteria" and certificates***(Annexure-3a)***
(ii) Details of Past Experience of Contractor for Similar works ***(Annexure-3b)***
(iii) Average Financial Turnover over the last three financial year***(Annexure-4)***
(iv) Detailed Method Statement (Technical Note)***(Annexure-5)***
(v) List of Plant and Equipment ***(Annexure-6)***
(vi) Declaration ***(Annexure -7)***
(vii) Bankers Details ***(Annexure-8)***
(viii) Details of litigation history / blacklisting of the bidder ***(Annexure-9)***
(ix) Undertaking regarding EPF & ESI registration. ***(Annexure-11)***
(x) Tender Document along with Addenda Nos ----,

We also certify that further Bid related communication, if any, will be sent to the following e-mail IDs by CoPA.

(i)…….
(ii)……..
(Furnish 2 nos. current active e-mail IDs)

Signature

(Authorized Signatory)
~~~~~~~

Annexure- 2

PROFORMA OF POWER- OF-ATTORNEY/LETTER OF AUTHORITY

(To be submitted on Non-judicial Stamp Paper of appropriate value)

To

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

Dear Sir,

We_____
do herebyconfirm that Mr./Ms./Messrs_____ [***INSERT NAME AND ADDRESS]***, whose signature is given below, is /are authorized to represent us to bid, negotiate and conclude the agreement on our behalf with you against Tender for **DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE**
(Tender No.T10/T-1992/2023- C).

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

Signature of the authorized person:

Name & Designation :

Yours faithfully,

Signature, name and seal of the certifying authority

Annexure –3a

COCHIN PORT AUTHORITY

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

Tenderer shall furnish Details of "Eligibility Works Experience" as per Clause 12 of Minimum Eligible Criteria (MEC) of Instruction to Tenderer and certificates in the following format (Client Certificates/work completion certificates or any other documentary evidences with respect to the eligibility work)

ELIGIBLE ASSIGNMENT DETAILS FOR MEC

Assignment Number:

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

Instructions:

i) Bidders are expected to provide information in respect of Eligible Assignments in this Section. The assignments cited must comply with the criteria specified Clause No. 12 (a) Minimum Eligibility of the Instructions to Tenderers".

ii) A separate sheet should be filled for each of the eligible assignments.

iii) The details are to be supplemented by documentary proof from the respective client /owner for having carried out such assignment duly certified by clients/ owner.

iv) The works indicated in this **Annexure-3a**will be only being considered for evaluation. Mere submission of work completion certificate will not be considered as Eligible Assignments

v) Original or Notary certified copy of completion certificates of each work issued by the owner/ the responsible officers of the owner under whom he has executed such

contracts shall be attached. The certificate shall invariably contain the following among other things.

a) Details of work involved specifying the nature of work
b) The completion cost of the work and
c) Date of commencement ; and
d) Date of completion of the work.

vi) If the experience in Similar Works is as a member of joint venture, Notary attested copy of joint venture agreement in this respect shall be attached.

vii) If the experience in Similar Works is as a subcontractor, Notary attested copy(s) of approval issued by the Employer(s) authorizing as a sub-contractor; in proof of the claim of the tenderer as a sub-contractor shall be attached.

viii) If the experience in Similar Work is in works executed in private sectors/organizations, the TDS certificate along with Notary attested copy(s) of work order and completion certificate shall be attached.

ix) In case of bid submitted by JV/ Consortium, the Minimum Eligibility Criteria EXCEPT Financial Turnover can be fulfilled collectively by the Partners of the JV/ Consortium.

x) The tenderer shall also be obligated to produce the original of the certified copy(s), on request by the department.

Signature
(Authorized Signatory)

Annexure –3b

COCHIN PORT AUTHORITY

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

DETAILS OF PAST EXPERIENCE OF CONTRACTORS FOR SIMILAR WORKS

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

Note:1) Bidder to enclose completion certificate issued by owner, certified by a Notary Public or equivalent certifying authority.

2) If the Bidder is claiming his experience as Subcontractor; it will be considered for qualification only if documentary proof of sub-contractor authorized and approved by the Employer of the work(s) is submitted.

SIGNATURE OF TENDERER

Annexure-4

COCHIN PORT AUTHORITY

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

FINANCIAL CAPABLITY

(A) Average Annual Turnover of the Bidder

Turnover (Rs.)			
Year 1	**Year 2**	**Year 3**	**Average**

Instructions:

(i). Year 1 will be the Financial Year-2022-23**.** Year 2 shall be the year immediately preceding Year 1 and Year 3 shall be the year immediately preceding Year 2.

(ii). The Bidder shall provide audited Annual Reports / Audited financial statements such as balance sheets and profit & loss account statements as required under this Bid Document.

(iii). Annual Turnover of the bidder shall be submitted duly verified by Charted Accountant or Competent Authority.

Certified by Chartered Accountant

Signature
(Authorized Signatory)

Annexure -5

COCHIN PORT AUTHORITY

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

DETAILS OF PROPOSED APPROACH & METHODOLOGY

Bidder shall furnish a detailed Method Statement (Technical Note) for carrying out of the works, along with a construction programme [Preferably in MS project / Primavera] showing sequence of operation and the time frame for various segments of temporary and permanent works showing critical path of activities.

Signature
(Authorized Signatory)

Annexure -6

COCHIN PORT AUTHORITY

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

PLANT AND EQUIPMENT PROPOSED FOR THE WORK

Please indicate the main plant and equipments considered to be necessary and proposed to be deployed for undertaking this work and whether this plant is ready in ownership or will be purchased or hired.

Sl. No.	Description of equipment	Requirement No. / Capacity	Owned / leased / to be procured	Nos / Capacity	Age / Condition	Remarks (From whom to be purchased)	At what Stage of contract period the Equipment will be available

Signature
(Authorized Signatory)

Annexure -7

COCHIN PORT AUTHORITY

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

DECLARATION

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

1. All details regarding construction plant, temporary work and personnel for site organization considered necessary and sufficient for the work have been furnished in the ***Annexure-7*** and that such plant, temporary works and personnel for site organization will be available at the site till the completion of the respective work.

2. No conditions are incorporated in the Financial/ Price bid. In case any conditions are specified in the financial bid, the tender will be rejected summarily without making any further reference to the bidder.

3. We have not made any payment or illegal gratification to any persons/ authority connected with the bid process so as to influence the bid process and have not committed any offence under PC Act in connection with the bid.

4. We disclose with that we have ***** made / not made payments or propose to be made to any intermediaries (agents) etc in connection with the bid.

5. We do hereby confirm that no changes have been made in the tender document downloaded and uploaded by us for the above bid. Port Tender document will be treated as authentic tender and if any discrepancy is noticed at any stage between the Port's tender document and the one uploaded by the tenderer, the Port's document shall prevail.

Signature
(Authorized Signatory)

**** Notes:***

(i) Delete whichever is not applicable.

(ii) The above Declaration shall be submitted in the Letter head

Annexure-8

FORMAT FOR FURNISHING BANK INFORMATION FOR e-PAYMENT

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

Signature with seal
(Authorized Signatory)

Annexure-9

LITIGATION HISTORYAND DETAILS OF BLACK LISTING

(A). Details of Litigation History till 30th March, 2023 in accordance with clause 20.1(s) of Instruction to Bidders are as follows:

Sl No	Date, month & Year of award	Amount of Award, INR	Contract Identification	Total Contract Amount INR
1	*[insert date]*	*[insert amount]*	*Contract Identification: [indicate complete contract name, number, date and any other identification]* *Name of Employer: [insert full name]* *Address of Employer: [insert street/city/country]* *Matter in dispute: [indicate main issues in dispute]* *Party who initiated the dispute: [indicate "Employer" or "Contractor"]* *Status of dispute: [Indicate if it is being treated by the Adjudicator, under Arbitration or being dealt with by the Judiciary]*	*[insert amount]*
2				
3				

(B). Details of Black listing/ debarring by the Govt. departments for last 5 years till 30thMarch, 2023:

Sl. No	Date, month & year of Black listing / de barring	Name of Agency Black listed / de barred	Period of Black listing / de barring	Ending date of Black listing / de barring
1	*[insert date, month & year]*	*[insert name and place of agency]*	*[insert period in years & months]*	*[insert date, month & year]*
2				

(C). Details of Pending Litigation upto30th March 2023:

Sl No	Date, month & Year of award	Amount of Award, INR	Contract Identification	Total Contract Amount INR
1	*[insert date]*	*[insert amount]*	*Contract Identification: [indicate complete contract name, number, date and any other identification]* *Name of Employer: [insert full name]* *Address of Employer: [insert street/city/country]* *Matter in dispute: [indicate main issues in dispute]* *Party who initiated the dispute: [indicate "Employer" or "Contractor"]* *Status of dispute: [Indicate if it is being treated by the Adjudicator, under Arbitration or being dealt with by the Judiciary]*	*[insert amount]*
2				

Certified that the above information is correct as per records and nothing has been omitted / concealed.

……(Signature of the Statutory Auditor)

…… (Full Name of the Statutory Auditor)

…… (Name of the Statutory Auditor's Firm)

…… (Complete Address of the Statutory Auditor's Firm)

…… (Telephone/fax numbers, including country and city codes)

…… (E-mail of the Statutory Auditor)

…… (Seal of the Statutory Auditor)

Membership No. of the Statutory Auditor: ……..……

Notes:

(i) The Tenderer shall provide accurate information about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last three years.

(ii) This may be noted that under this category only cases of arbitration /litigation finally settled against the Tenderer should be listed. If the case is pending at any level of arbitration or judiciary, the same should be listed in Pending Litigation and NOT under Litigation History. A consistent history of awards against the Tenderer may result in failure of the Application/Tender.

Date:

Tenderer's Signature with Stamp

Annexure- 10

PROFORMA OF PRE CONTRACT INTEGRITY PACT-

(To be signed on Plain Paper)

(To be submitted as part of Technical bid)

Tender No.....; Tender Title: .....

This Agreement (hereinafter called the Integrity Pact) is made on _____ day of the month of _____2023 at _____, India BETWEEN THE BOARD OF MAJOR PORT AUTHORITY FOR COCHIN PORT commonly known as COCHIN PORT AUTHORITY, a Body Corporate under the Major Port Authorities Act, 2021, with its Administrative Office at Willingdon Island, Cochin-682009, represented by its Chief Engineer, Sri ….., S/o Sri….., aged …years residing at ……(address)…….(hereinafter called the "The Principal", which expression shall mean and include unless the context otherwise requires, his successors in office and assigns) of the First Part AND M/s. _____ represented by Shri.....Chief Executive Officer (hereinafter called the "BIDDER" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

PREAMBLE

"The Principal" intends to award, under laid down organizational procedures, contract/ s for _____, "The Principal‟ values full compliance with all relevant laws of the land, rules, regulations, economic useof resources and of fairness/ transparency in its relations with its Bidder(s) and/ or Contractor(s). In order to achieve these goals, the Principal shall appoint Independent External Monitors (IEMs) who shall monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 -Commitments of the "The Principal"

(1) "The Principal‟ commits itself to take all measures necessary to prevent corruption and to observe the following principles:

a. No employee of the Principal, personally or through family members, shall in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

b. The Principal shall, during the tender process, treat all Bidder(s) with equity and reason. The Principal shall in particular, before and during the tender process, provide to all Bidder(s) the same information and shall not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

c. The Principal shall exclude from the process all known prejudiced persons.

(2)If the Principal obtains information on the conduct of any of its employees, which is a criminal offence under the IPC/ PC Act, or if there be a substantive suspicion in this regard, the Principal shall inform the Chief Vigilance Officer and in addition, can initiate disciplinary actions.

Section 2 -Commitments of the "Bidder/ Contractor"

(1) The "Bidder/ Contractor" commit themselves to take all measures necessary to prevent corruption. The „Bidder/ Contractor" commit themselves to observe the following principles during participation in the tender process and during the contract execution.

a. The "Bidder/ Contractor" shall not, directly or through any other person or firm, offer, promise, or give to any of the Principal's employees involved in the tender process or the execution of the contract, or to any third person any material or other benefit which he is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
b. The 'Bidder/ Contractor' shall not enter with other Bidders info any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the tender process.
c. The 'Bidder/ Contractor' shall not commit any offence under the relevant IPC/ PC Act; further, the 'Bidder/ Contractor' shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals, and business details, including information contained or transmitted electronically.
d. The 'Bidder/ Contractor' of foreign origin shall disclose the name and address of the Agents/ representatives in India if any. Similarly, the Bidder/ Contractors of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder/ Contractor. Further, as mentioned in the Guidelines, all the payments made to the Indian agent/ representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" is placed in Appendix to this agreement.
e. The 'Bidder/ Contractor' shall, when presenting their bid, disclose any and all payments made, is committed to, or intends to make to agents, brokers, or any other intermediaries in connection with the award of the contract.
f. Bidder/ Contractor who have signed the Integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.

(2) The 'Bidder/ Contractor' shall not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 -Disqualification from tender process and exclusion from future contracts

If the 'Bidder/ Contractor', before award or during execution, has committed a transgression through a violation of Section 2, above or in any other form such as to put their reliability or credibility in question, the Principal is entitled to disqualify the 'Bidder/ Contractor' from the tender process or take action as per the procedure mentioned in the "Guidelines on Banning of business dealings".

Section 4 -Compensation for Damages

(1) If the Principal has disqualified the „Bidder/ Contractor" from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from „Bidder/ Contractor" the damages equivalent to Earnest Money Deposit/ Bid Security.

(2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled

to demand and recover from the contractor liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 -Previous transgression

(1) Bidder declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India that could justify his exclusion from the tender process.

(2) If Bidder makes an incorrect statement on this subject, he can be disqualified from the tender process, or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

Section 6 -Equal treatment of all Bidders/ Contractors/ Subcontractors

(1)In the case of Sub-contracting, the Principal Contractor shall take responsibility for the adoption of the Integrity Pact by the Sub-contractor.

(2)The Principal shall enter into agreements with identical conditions as this one with all Bidders and Contractors.

(3)The Principal shall disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 -Criminal charges against violating Bidder(s)/ Contractor(s)/ Subcontractor(s)

If the Principal obtains knowledge of the conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal shall inform the same to the Chief Vigilance Officer.

Section 8 -Independent External Monitor

(1) The BUYER/ EMPLOYER has appointed the following panel of Independent Monitors (hereinafter referred to as Monitors) for this Pact in consultation with the Central Vigilance Commission:

1. Shri. M.J. Joseph, ICAS (Retd.)
   37,Da Costa Square, 3rdcross, Cooke Town, Bangalore -560084
   Email: joseph.iem@cochinport.gov.in

3 Shri. Punati Sridhar, IFoS (Retd.)
8C, Block-4, 14-C Cross, MCHS Colony,
HSR6thSector,Bangalore-560 102
E-mail id: sridhar.iem@cochinport.gov.in

The task of the Monitor is to review independently and objectively whether and to what extent the parties comply with the obligations under this agreement.

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. The Monitor would have access to all Contract documents whenever required. It shall be obligatory for him/ her to treat the information and documents of the Bidders/ Contractors as confidential. He/ she reports to the Head of the Procuring Organization.

(3) The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal, including that provided by the contractor. The contractor shall also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is applicable to Sub-contractors project documentation. The same is applicable to Sub-contractors.

(4) The Monitor is under contractual obligation to treat the information and documents of the Bidder/ Contractor(s)/ Sub-contractor(s) with confidentiality. The Monitor has also

signed declarations on „Non-Disclosure of Confidential Information" and of „Absence of Conflict of Interest". In case of any conflict of interest arising at a later date, the IEM shall inform the Head of the Procuring Organisation and rescue himself/ herself from that case.

(5) The Principal shall provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the contractor. The parties offer the Monitor the option to participate in such meetings.

(6) As soon as the Monitor notices, or believes to have noticed, a violation of this agreement, he shall so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can, in this regard, submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action, or tolerate action.

(7) The Monitor shall submit a written report to the Head of the Procuring Organizationwithin 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

(8) If the Monitor has reported to Head of the Procuring Organization, a substantiated suspicion of an offence under relevant IPC/ PC Act, and Head of the Procuring Organizationhas not, within the reasonable time, taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(9) The word 'Monitor' would include both singular and plural.

(10) In the event of any dispute between the Management and the Contractor, incase, both the parties are agreeable, dispute may be settled through mediation before the panel of IEMs in a time bound manner. If required, the organizations may adopt any mediation rules for this purpose.

(11) The fees/ expenses on dispute resolution shall be equally shared by both the parties.

(12) A person signing the IP shall not approach the Courts while representing the matters to IEMs and he/ she will await their decision in the matter.

(13) In case of Joint Ventures all the partners of the joint venture should sign the Integrity Pact. In case of sub-contracting, the Principal contractor shall take the responsibility of the adoption of IP by the sub –contractor. It is to be ensured that all sub-contractors also sign the IP.

Section 9 -Pact Duration

This Pact begins when both parties have legally signed it. It expires for the contractor 12 months after the last payment under the contract and for all other Bidders 6 months after the contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings. If any claim is made/ lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above unless it is discharged/ determined by the Head of the Procuring Organization.

Section 10 -Other provisions

(1) This agreement is subject to Indian Law. The place of performance and jurisdiction is the Registered Office of the Principal, i.e., Kochi.

(2) Changes and supplements, as well as termination notices, need to be made in writing. Side agreements have not been made.

(3) If the contractor is a partnership or a consortium, this agreement must be signed by all

partners or consortium members.

(4) Should one or several provisions of this agreement turnout to be invalid, the remainder of this agreement remains valid. In this case, the parties shall strive to come to an agreement with their original intentions.

(5) Issues like Warranty/ Guarantee etc., shall be outside the purview of IEMs.

(6) In the event of any contradiction between the Integrity Pact and its Appendix, the Clause in the Integrity Pact shall prevail.

For and on behalf of the Principal
(Name of the Officer and Designation)
(Office Seal)

For and on behalf of 'Bidder/ Contractor'
(Name of the Officer and Designation)
(Office Seal)

For and on behalf of the Principal
Place Date

Witness 1: (Name & Address)

Witness2 : (Name & Address)

Annexure- 11

COCHIN PORT AUTHORITY

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

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

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Annexure –A

PROFORMA OF BANK GUARANTEE FOR PERFORMANCE GUARANTEE/ SECURITY DEPOSIT

(To be executed on non-judicial Stamp Paper of appropriate value)

[The bank, as requested by the successful Tenderer, shall fill in this form in accordance with the instructions indicated]

In consideration of the Board of Major Port Authority for Cochin incorporated by the Major Port Authorities Act, 2021 (hereinafter called "The Board" which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include the Board of Major Port Authority for Cochin Port , its successors and assigns) having agreed to exempt _____ (hereinafter called the "Contractor")'

(Name of the Contractor/s)

from the demand under the terms and conditions of the Contract, vide _____ 's letter No._____

(Name of the Department)

date _____ made between the Contractors and the Board for execution of _____ covered under Tender No._____ dated _____ (hereinafter called "the said contract") for the payment of Security Deposit in cash or Lodgement of Government Promissory Loan Notes for the due fulfillment by the said Contractors of the terms and conditions of the said Contract, on production of a Bank Guarantee for Rs._____ (Rupees_____) only we, the (Name of the Bank and Address) _____ _____ (hereinafter referred to as "the Bank") at the request of the Contractors do hereby undertake to pay to the Board an amount not exceeding Rs._____ (Rupees _____) only against any loss or damage caused to or suffered or which would be caused to or suffered by the Board by reason of any breach by the Contractors of any of the terms and conditions of the said contract.

2. We, _____, _____, do hereby

(Name of Bank) (Name of Branch)

undertake to pay the amounts due and payable under this guarantee without any demur merely on a demand from the Board stating that the amount claimed is due by way of loss or damage caused to or which would be caused to or suffered by the Board by reason of any breach by the Contractors of any of the terms and conditions of the said contract or by reason of the Contractors failure to perform the said contract. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to any amount not exceeding Rs._____ (Rupees _____) only.

3. We, _____ (Name of Bank and Branch)_____, undertake to pay to the

Board any money so demanded notwithstanding any dispute or disputes raised by the

Contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.

4. We, _____ (Name of Bank and Branch) further agree with the Board that the guarantee herein contained shall remain in full force and effect during the period that would be taken for performance of the said contract and that it shall continue to be enforceable till all the dues of the Board under or by virtue of the said contract have been fully paid and its claims satisfied or discharged or till the _____

(Name of the user department)

of the said certifies that the terms and conditions of the said contract have been fully and properly carried out by the said Contractors and accordingly discharge this guarantee. PROVIDED HOWEVER that the Bank shall be the request of the Board but at the cost of the Contractors, renew or extend this guarantee for such further period or periods as the Board may require from time to time.

5. We, _____ further agree with the Board

(Name of Bank and Branch)

that the Board shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said contract or to extend the time of performance by the said contract or to extend the time of performance by the said Contractors from time to time or to postpone for any time or from time to time any of the powers exercisable by the Board against the said Contractors and to forebear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason of any such variation or extensions being granted to be Contractors or for any forbearance, act or omission on the part of the Board or any indulgence shown by the Board to the Contractors or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

7. It is also hereby agreed that the Courts in ***[insert city]*** would have exclusive jurisdiction in respect of claims, if any, under this Guarantee.

8. We, _____ Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Board in writing.

9. Notwithstanding anything contained herein:

a) Our liability under this Bank Guarantee shall not exceed Rs._____

(Rupees _____ only);

b) This Bank Guarantee shall be valid upto ___*_____; and

c) we are liable to pay the guarantee amount or any part thereof under this Bank

Guarantee only and only if you serve upon us a written claim or demand on or before _____ (date of expiry of Guarantee)."

Date _____ day of _____ 20

For (Name of Bank)

(Name)

Signature

* The date will be thirty (30)days after the end of the period of Defect Liability as specified in the Contract.

Annexure - B

PROFORMA OF BANK GUARANTEE FOR ADVANCE

(To be submitted on Non-Judicial Stamp Paper of appropriate value)

Bank Guarantee No_____ dated_____

Amount of Guarantee Rs. _____

Guarantee cover from _____ to _____

Last date of lodgment of claim

In consideration of Board of Major Port Authority for Cochin(hereinafter called "Port Authority") which expression shall include all their successors and assignees having agreed to pay advance of Rs. _____ (Rupees _____ only) repayable with interest @_____ % per annum to _____ (Name & Address of contractor) (hereinafter called the "CONTRACTOR") which expression shall include their successors and assignees for the contract for the work of _____(Name of work) evidenced by the offer of the Contractor dated…….. and accepted by the Port Authority forming the contract and the work order No…….. dated,……. for the work of (name of work) issued by the Port Authority and the formal stamped agreement to be entered into between parties in the above, the said amount and interest being recoverable from the running bills of the contractor on pro-rata basis as per terms of agreement, we (Name of Bank) having our Head office at …….. (hereinafter referred to as "the Bank") do hereby undertake to pay The Cochin Port Authority an amount of Rs……..…(Rupees……..only) with interest against any loss or damage caused to or would be caused to or suffered by the Port Authority by reason of any breach by the said contractor of any of the terms or conditions contained in the said agreement, making it impossible or difficult to recover the said mobilization advance of Rs……(Rupees……..only) or part thereof or interest thereon we (Name of the Bank)do hereby undertake to pay the amounts due and payable under the guarantee without any demur, merely on demand of The Cochin Port Authority by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement or by the reason of contractor's failure to perform the said agreement. Any such demand made on the Bank shall be conclusive not only as regards to contractor's failure but also as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee will be restricted to an amount of Rs…….(Rupees…….. only) with interest as per the agreement.

We, (Name of the Bank) further agree the guarantee herein contained will remain in full force and affect during the period that would be taken for the recovery of the loan and that it shall continue to be live and enforceable till all the amounts due with interest thereon have been fully recovered and its claims satisfied or discharged or till The Cochin Port Authority certifies that the amount outstanding under the advance has been fully recovered from the contractor and accordingly discharged the guarantees. Unless a demand or claim under this guarantee is made on us in writing on or before (date of the expiry) we shall be discharged from all liability under this guarantee thereafter.

We, (Name of the Bank) further agree with the Port Authority that the Port Authority shall have the fullest liberty without or consent and without affecting in any manner or obligation hereunder to vary any of the terms and conditions regarding the recovery or repayment and we shall not relieved from our liability by reason of any such variation or extension being granted to the said contractor or any forbearance, act or omission on the part of Cochin Port Authority or any indulgence by the Port Authority to the contractor or in such matter or things whatsoever which under the law relating to sureties would but for this provision have the effect of so relieving us.

Notwithstanding anything contained herein:

(i) Our liability under this bank guarantee shall not exceed Rs……. (Rupees……..…)

(ii) This bank guarantee shall be valid upto……

(iii) Our liability to make payment shall arise and we are liable to pay the guaranteed amount or any part thereof under this guarantee, only if you serve upon us a written claim or demand in terms of this guarantee on or before…….

We, (Name of the Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Port Authority in writing.

Dated this the……day of…….. (Year)

For (Name of Bank)

(Signature)

SECTION III

COCHIN PORT AUTHORITY

CIVIL ENGINEERING DEPARTMENT

Tender No: **T10/T-1992/2023-C**

Tender for

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

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SECTION -III

SECTION -III
COCHIN PORT AUTHORITY

1. GENERAL DESCRIPTION OF WORK

SECTION -III
COCHIN PORT AUTHORITY

1. GENERAL DESCRIPTION OF WORK

1. General

Where it is mentioned in the Specifications that the Contractor shall perform certain Work or provide certain facilities, it is understood that the Contractor shall do so at his own Cost.

The materials, design and workmanship shall satisfy the relevant Indian Standard Specification and conditions herein referred to. Where the Specifications stipulate requirement in addition to those contained in the Standard codes and Specifications, these additional requirements shall also be satisfied.

1.1 **Definitions**

"Contract" means the agreement entered into between the Employer and the Contractor, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein;

"Contract Price" means the price payable to the Contractor under the Contract for the full and proper performance of its contractual obligations;

"Employer / Client" means Cochin Port Authority, the Organization purchasing the Works and Services.

"Contractor" means the individual or firm supplying the Works and Services under this Contract.

"Engineer-in-Charge" means the nominee/representative of the Employer/Consultant authorized to give instruction to the Contractor during the various stages of execution of the Work.

2. Scope of work

Cochin Port proposes to upgrade / develop an existing warehouse at North end of W/Island having an approximate area of 2500 sq.m trussed roof structure to a Green Warehouse Building by carrying out the Civil/maintenance works, Landscaping and MEP works to meet the IGBC certification requirements of highest rating.

There is also an office building of about an area of 350 sq.m with toilets. Location plan is attached at Drawing 9776-01-2023.

2.1 This work essentially comprises of works of the following:

(i) Civil maintenance/ renovation works, which includes but not limited to:

(a)Re-roofing the building with Galvalume sheets, after removing the existing Asbestos sheeting

(b) Re-flooring with CC M20 Grade150mm thick after leveling the undulations etc. of the existing floor

(c) Providing new ventilators, rolling shutters, exhaust fans etc.

(d) Re-plastering and re-painting the structure

(e) Renovation / Repairs to the office room

(f) Renovation / Repairs to the compound wall

(g) Construction of Rain water harvest tank, well etc.

(ii) Landscaping works: It includes landscaping works around the building as well as at other interior/ exterior areas

(iii) MEP works : It shall include all MEP works viz., providing Solar Power plant, HT/LT equipments, CCTV,cabling etc. meeting IGBC requirements;

(iv) Obtaining preliminary/final approval from IGBC- It shall include submission of design/drawings/documents required for IGBC certification of Building, Providing assistance to CoPA in submitting documents/ preliminary application & final application to Indian green Building council (IGBC) till obtaining final Green Warehouse Certification by IGBC of highest rating.

3. Site conditions

3.1 Location

The site is located at corner plot of Milne road and 3rd Cross road intersection, formally Indian Potash Ltd warehouse plot near EDC . The proposed Location plan and Site plan are shown in drawing No. 9776-02-2023

3.2 Reference Level

All the levels indicated in the drawings and/or specifications are with reference to Port Chart Datum, which is at 0.582 m below Mean Sea Level. The contractor shall establish reference benchmarks at suitable spots. The maintenance of these reference benchmarks will be the responsibility of the contractor for which no payment will be made.

The tenderers shall make their own arrangements for inspecting the area and satisfying themselves regarding the geography of the area.

3.3 Tide and Flood Levels

The tides at Cochin are semi-diurnal with a marked daily inequality. The contractor shall carefully investigate the records of all past states of tides and flood and shall be held to have satisfied himself on all the tide and flood levels likely to prevail during the period of contract so far as it may affect the work.

The various tidal levels in the area as per Naval Hydrographic Chart No.2004 are as indicated below for the general guidance to the tenderer.

Tide		**Levels with reference to Port Chart datum (in metres)**
Highest High Water Level	:	+1.20m
Mean High Water Spring (MHWS)	:	+0.92m
Mean Low Water Spring (MLWS)	:	+0.80m
Mean Sea Level (MSL)	:	+0.582m
Mean High Water Neap (MHWN)	:	+0.60m
Mean Low Water Neap (MLWN)	:	+0.30m

Lowest Low Water Level : +0.20m

3.4 **Current**

The maximum current expected in the inner harbour is about 0.5 metre/sec.

3.5 **Waves**

In the inner harbour area where generally calm conditions prevail throughout the year

3.6 **Wind**

Wind at Cochin is highly influenced by the land and sea breezes. Wind direction changes from north-east during morning hours to west during evening for the period of October to May. During peak of south-west monsoon, especially from June to September, predominant wind direction remains south-west both during morning and evening hours. Due to strong monsoon winds, effect of land winds is not dominant during south-west monsoon. During the non-monsoon periods, the predominant wind direction is from north east during the morning and west during the evening which shows influence of land breeze.

3.7 **Rainfall**

The climate is characterized by dry and wet seasons. The wet seasons starts in late May and ends in November. During this period, two monsoons pass by one after another. The major monsoon is south-west monsoon which lasts from June to September. This is followed by north-east monsoon during October and November. The average annual rainfall is about 3000mm; and the major portion is during south-west monsoon.

3.8 **Temperature**

Cochin experiences moderate temperatures throughout the year. The temperature varies from 22°C to 34°C. The low temperature occurs during the southwest monsoon, December and January. Daytime temperature goes upto 30°C even during this period. The hot months are from March to May.

4. Drawings

The drawings enclosed with the tender document are to provide some idea of the job only and are preliminary and for tender purpose and are by no means complete and final and do not show the full range of the work under the scope of the contract. Work shall be carried out only on the basis of drawings marked "Issued for Construction" with addition, alteration, modifications, if any made to aforesaid drawings as required from time to time and also according to other drawings that would be supplied to the contractor from time to time

5. Time Schedule and monitoring of progress

5.1 Tenderer shall prepare and attach with the tender a detailed work schedule [preferably in MS Project / Primavera] indicating key activities and critical items showing critical path of activities for completing the work within the stipulated contract period. This time schedule forms the basis for monitoring the progress of work. Issue of working drawings by the department will be regulated as per the time schedule approved by the department.

5.2 The contractor shall furnish to the Engineer-in-Charge monthly progress reports of the work during execution in the approved proforma indicating delay, if any, its reason and proposal to cover up the delay.

6. Facilities to be provided by the Port

6.1 **Contractor's work area:**

Work area as per availability near to the site will be made available to the contractor, free of rent.

6.2 **Power**

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

7. Contractor's responsibility

7.1 All materials for use on the works shall be supplied and provided by the contractor at his own cost and shall conform to relevant BIS Specification unless otherwise specified.

7.2 Samples of all materials including fixtures, if any, to be incorporated in the work shall be got approved by the Engineer-in-Charge before procurement.

7.3 The contractor shall thoroughly study the specifications and drawings 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.

7.4 All labour, skilled or unskilled shall be provided by the contractor. Settling any dispute with the labour will be contractor's responsibility.

7.5 The contractor shall take all care to observe no / least disturbance to the functioning of the officers at the working places.

7.6 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 these shall be made good or compensated at his risk & cost. The contractor shall ensure that valid Insurance Policy as per contract document is available at all times.

7.7 The contractor shall take all care and precautionary measures for avoiding any kind of damage/accident in the work site on any account. The department shall not entertain any claim from the contractor whatsoever towards compensation for any damage/accidents at the site due to negligence from his part, during the execution of work.

7.8 The contractor shall prior to commencement of the work insure in the joint names of the Employer and the contractor against all loss or damage from whatever cause arising for which he is responsible under the terms of contract.

7.9 The work shall be arranged by the contractor without causing any damage to Port's/ any other structures. Any damage caused by the contractor's operation shall be compensated/ made good at contractor's risk and cost to the satisfaction of the Engineer-in-Charge of the works, failing which department will do the rectification work and the cost incurred will be recovered from any sum due to him from the Port.

7.10 All plants and equipments and consumables required for the whole work shall be provided by the contractor at his own cost.

7.11 The contractor shall not construct any structure, even of temporary nature, for any purpose at site, except with the written permission of the Engineer-in-Charge of the work and any construction so put up shall be removed by the contractor whenever the Engineer-in-Charge calls upon the contractor to do so.

7.12 The Contractor shall be responsible for the true and proper setting out of the works in relation to original points, lines and levels of reference given by the Engineer-in-charge and for the correctness of the position, levels, dimensions and alignment of all parts of the works and for the provision of all necessary instruments, appliances and labour in connection therewith. If at any time during the progress of work any error shall appear or arrive in the position, levels, dimensions or alignment of any part of the works, the contractor on being required to do so by the Engineer-in-Charge shall, at his own cost, rectify such error to the satisfaction of the Engineer-in-Charge, unless such error is based on incorrect data supplied by the Engineer-in-Charge, in which case the expense of rectifying the same shall be borne by the department. The checking of any setting out or of any line or level by the Engineer-in-charge shall not in any way relieve the contractor of his responsibility for the correctness thereof and the contractor shall carefully protect and preserve all bench marks, pegs, other things used in setting out the work and measurement purpose.

7.13 Qualified Engineers with sufficient experience in works of similar nature as indicated in "Contract Data" shall be available at site throughout the contract period during working hours in order to receive instructions from department and to implement them properly and in time.

7.14 ***The contractor shall engage HT contractor having valid HT , 11KV license and work experience in SITC of HT/ LT panels, Electrical installations, cabling laying, Solar panels and accessories of similar capacity, with the prior approval of Employer.***

7.15 ***The Contractor shall engage IGBC accredited professional for assisting Cochin Port in connection with the IGBC certification.***

7.16 The contractor shall observe all safety regulations during the execution of the work. Safety measures, precautions, warning signals etc. shall be done 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 etc. to the workmen at his own cost. It shall be the contractor's responsibility to ensure that the workmen make use of the personnel protection equipments during the execution of work**

7.17 The contractor shall supply at his own cost monthly or at intervals as directed by the Engineer-in-charge, well executed photographs in standard size

(approximately 24x18 cm) with soft copy showing the progress of the work and also such other particular item of the work.

7.18 No information or photograph concerning the works shall be published without the prior permission of the Chief Engineer and drafts of all such proposal/ publication shall be submitted for approval.

7.19 The information and data shown in the drawing and detailed elsewhere in the tender document are furnished for general information and guidance only and the Port Authority in no case will be held responsible for the strict accuracy thereof or any deduction, interpretation or conclusion drawn by the tenderer.

7.20 The contractor will have to provide a site office accommodation using container of approx. size 12m x 2.4m x 2.4m(min.) with 3 cabins & one toilet on 30cm high raised platform and all around concrete hard-standing near the contractor's work area or other location as approved by the Engineer-in-charge, for the use of departmental staff, within 15 days of the work order which shall be maintained till completion of work. .

7.21 The contractor shall provide necessary arrangements as desired by the Engineer-in-Charge for inspection of work without any extra cost from commencement till completion of work.

7.22 The Contractor shall ensure that no labourers with criminal background are engaged for the work.

7.23 All fossils, coins, articles of value or antiques and structures and other remains or things of geological or archaeological interest discovered in the site of work shall be deemed to be the absolute property of the Port Authority and the contractor shall take responsible precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall immediately upon discovery thereof and before removal, acquaint the departmental officers of such recovery and carry out at the expense of the department, the Engineer-in-Charge's orders as to the disposal of the same.

7.24 ***Water required for the construction works including curing work shall be arranged by the contractor at his own cost.***

7.25 The contractor shall take all precautions for not to damage any cables/pipes etc. passing through the area of work. Damages, if any, caused to electrical cables/ water lines/ telephone lines shall be rectified by the Contractor at his cost and risk.

7.26 While carrying out hot works such as welding, cutting, chipping the concrete etc. at W/Island, the following conditions shall be strictly observed by the contractor:

(i) Hot work shall be carried out with the approval of the Dy. Conservator's department and the work shall be done as per the instruction of the fire service personnel.

(ii) Suitable spark arresters shall be provided on the exhaust of the engine connected to the pile driving mechanism.

7.27 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-in-Charge 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-in-Charge 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 on 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.

7.28 **The contractor shall extend all facilitations and cooperation for other contractors for simultaneous execution of other works in the area entrusted by Cochin Port Authority.**

7.29 The contractor shall comply with all the provisions of the Indian Workmen's Compensations Act, Provident Fund Regulations, Employees Provident Fund and ESI Act etc. amended from time to time and rules framed there under and other laws affecting the contract labour that may be brought in to force from time to time."

7.30 The contractor shall be registered under EPF and ESI Act and the employees employed under them shall be covered in the EPF and ESI scheme. Work Order shall be issued only to the contractors who are registered under EPF organization and ESI Corporation. The contractors shall regularly remit the employer and employee contribution to the authorities. If not, the Department would remit the same and the amount so remitted shall be deducted from the part/final bill of contractors.

7.31 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 at the age of six years at his risk and cost.

8. Workmanship

8.1 All the works shall be done strictly according to relevant B.I.S. specifications unless otherwise specified.

8.2 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, shall be rectified at contractor's cost to the full satisfaction of the Engineer-in-Charge within the time allowed.

8.3 **The work shall be arranged in the order of preference if so directed by the Engineer-in-Charge of work. In addition to above, contractor shall submit a Quality Assurance Plan (QAP) for the entire works under this contract and it shall be approved by the Engineer-in-Charge before commencing the work and shall be ensured strict compliance of the same. The QAP shall contain**

the details of tests to be conducted for each material to be used in the work and work.

9. Temporary works

9.1 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-in-Charge, 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-in-Charge without any delay and any extra cost on this account shall be borne by the contractor.

9.2 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.

10. Time For Completion

10.1 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.

10.2 The completion of work may entail working in monsoon period/rainy season without any extra cost. The contractor shall take such an eventuality into consideration while quoting for the work. Normally, no extension of time will be admissible for work in monsoon.

10.3 The whole work shall be completed in the stipulated time, accordance with the provisions under Memorandum included under "Form of Tender" or such extended time as may be allowed under clause 29 of Conditions of Contract included in the GCC.

11. Working time

The normal working time of the Port Authority is from 8 a.m. to 4.00 p.m. on all working days. 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-in-Charge 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.

12. Method of Execution

The contractor shall clearly indicate in their tender as per ***Annexure-5,*** the method proposed by them for executing the various items of works. During the actual execution of the works if modifications or changes in the method of execution of work are found necessary the contractor shall obtain approval from the Engineer-in-charge of work for such modifications or changes in the method. No claim from

the contractor for additional payment shall be entertained by the department on the above account.

The detailed list of equipment/machineries/tools & plants proposed to be mobilized for the deployment in the work as furnished as per ***Annexure-7***of **Section- I**and method of execution furnished under clause above, are considered only for the technical appreciation of the proposal of the contractors and it shall not relieve the contractor of his responsibility of executing the work with the quality specified in the tender and any discrepancy occurs, the construction procedures detailed/specified in the tender will prevail. In case, any additional equipment are required to be mobilized than those listed in the tender for deployment in the work, it shall be arranged and the work executed as per the tender specifications without any extra cost to the Department

13. Alterations and Additions

The Employer shall have power and authority from time to time and at all times to make amendments or additions or alternations or changes in the scope of the work, and specifications, drawings and bill of quantities and give such further instructions and directions as may appear to the Employer necessary and proper for the guidance of the Contractor and the good and efficient execution of the works and the contractor shall receive, obey and be bound by the same according to the true intent and meaning thereof as if the same had been mentioned or referred to in the scope of the work, specifications, Bill of Quantities and Schedules and drawings. The Employer may also vary or alter the lines, levels or positions of any of the works contemplated or may order any of the works contemplated thereby to be omitted, with or without the substitution of any other works in lieu thereof, or may order any work or any portion of works executed or partially executed to be removed, changed or altered, if required, and may order that other work shall be substituted in lieu thereof and any difference in the cost occasioned by any such diminution or alteration so ordered and directed shall be added to or deducted from the Contract Price based on rates available in the contract or where the rates are not specified a suitable rate backed up by rate analysis shall be submitted by the contractor and agreed upon between the contractor and the Employer. In the event of disagreement, the Employer shall fix such rates or prices as shall in their opinion, be reasonable and proper having regard to the circumstances. The contractor shall give to the Employer before the tenth day of every month, a statement in writing of any extra work which he may have performed during the preceding month, failing which any claim for which he may afterwards make for payment on account of any such extra work will not be allowed.

SECTION -III

COCHIN PORT AUTHORITY

2. SPECIAL CONDITIONS OF CONTRACT

SECTION -III

COCHIN PORT AUTHORITY

2. SPECIAL CONDITIONS OF CONTRACT

1. GENERAL

1.1 Special Conditions shall be read in conjunction with the General Conditions of Contract, Specifications, Drawings and any other document forming part of this Contract wherever the context so requires.

1.2 Notwithstanding the subdivision of the documents into separate section and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with and into the Contract so far as it may be practicable to do so.

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

2. RATES FOR VARIOUS ITEMS

2.1 The rates percentage /lump sum amount as applicable shall except in so far as the contract otherwise provides, cover all obligations of the contractor under this contract and all matters and things necessary for the proper completion and maintenance of the works. The rates percentage / lump sum amount quoted for each item shall be all inclusive value of the finished work as per drawings and specifications and shall cover the cost of all constructional plants, temporary works, appliances, materials, both for the works and temporary works, labour and all other matter in connection with each item quoted for.

2.2 **Rates shall also be inclusive of engaging IGBC Consultant for Green Building Certification**.

2.3 The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices stated in the Schedule of Quantities.

2.4 The contractor's rates and prices shall include all taxes, duties and fees including Port charges like wharfage, Port dues etc. if any applicable, all charges and taxes whatsoever excluding Goods and Service Tax (GST) in respect of materials, labour and plant and all other things obtained or used by the contractor for the execution and maintenance of the works or any temporary works and also considering the base rates indicated in Sl. No.31 of Contract Data.

3. WORKS EXECUTED THROUGH SUBLETTING

3.1 The contractor may sublet any portion of the contract, as per clause 8 of Conditions of Contract of GCC.

3.2 Notwithstanding any subletting with such approval as required under above and notwithstanding that the Engineer-in-Charge shall have received copies of any sub-contract, the contractor shall be solely responsible for the quality and proper

execution of the works, performance of all conditions of contract in all respects as if such subletting had not taken place and as if such work has been done directly by the contractor.

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

4. MEASUREMENTS OF WORK DONE

4.1 In addition to the Clause-26 of GCC- 'Computerized Measurement Book', measurement of the work can also be done as detailed below

4.2 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.

4.3 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.

4.4 All measurements and levels shall be taken jointly by the Engineer's Nominee or his authorized representative and by the Contractor or his authorized 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.

4.5 Department shall not entertain any claim from Contractor for any loss or damages on this account. If the Contractor or his authorized representative does not remain present at the time of such measurements after the Contractor or his authorized 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.

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

4.7 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.

4.8 The Contractor shall give not less than seven days' notice to the Engineer's Nominee or his authorized 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 authorized 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.

4.9 Engineer's Nominee or his authorized 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.

4.10 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.

5. BASIC RATES AND ADJUSTMENT FOR SUBSEQUENT PRICE VARIATION

5.1 No price adjustment shall be made for the variation in price of cement, reinforcement steel, Mild Steel plate, Structural steel, bitumen emulsion.

6. LIQUDATED DAMAGES

For levying compensation as per Clause-49 of General Conditions of Contract, the Employer is not required to have documentary evidence to quantify or prove the losses suffered by the Employer due to delay in completion of work by the contractor, as per agreement conditions.

7. ADVANCE

The Mobilization Advance and Construction/Installation equipment Advance shall be as per clause 51 of General Conditions of Contract. Secured Advance shall be given for non - perishable materials as provided in clause 51.6 of General Conditions of Contract. Cement is not considered as a non - perishable item.

8. CARE OF WORKS

From the commencement to the completion of the work the contractor shall take full responsibility for the care of the work and his employees in connection with the work thereof and in case any damage, loss or injury shall happen to the works or any part thereof or to any temporary work from any cause whatsoever save and except the excepted risks as defined in clause 5 given below shall at his own cost repair and make good the same so that the work shall be completed in good order and in conformity in every respect with requirement of the contract. In the event of any such damage, loss or injury happening from any of the excepted risks, the

Contractor shall if and to the extent required by the Engineer-in-Charge, make good the same as aforesaid and it will be to the account of the Board.

9. EXCEPTED RISKS

The excepted risks are riot (in so far as it is uninsurable) war, invasion, act of foreign enemies, hostilities (whether war be declared or not), civil war, rebellion, revolution, insurrection or military usurped power or a cause solely due to use of occupation by the Board of any portion of the work, any operation of the forces of nature that the contractor could not have foreseen or reasonably provided against. (All of such are herein collectively referred to as the excepted risks).

10. INSURANCE OF WORKS

10.1 The insurance cover for the loss of or damage to the Works, plant, materials and equipment stated in the clause 13 of GCC shall be as follows:

a) The insurance cover for the Works for the time being executed to the estimated current contract value thereof plus 10(ten) percent thereon to allow any additional costs and professional fees resulting from the loss or damage.

b) The constructional plant and other things brought on to the site by the Contractor to the replacement value of such constructional plant and other things.

10.2 It shall be the responsibility of the Contractor to notify the insurer of any change in the nature and extent of the Works and to ensure the adequacy of the insurance cover at all times in accordance with the provisions of this clause.

11. PAYMENTS OF SALARY / WAGES AND OTHER BENEFITS etc. TO CONTRACT / CASUAL WORKERS

11.1 **The Contractors shall make all payments of salary/wages and other benefits etc. to the contract / casual workers deployed for the work through Bank / Cheque only.**

11.2 **All the payments to the contractors would be released only on submission of undertaking to comply with the clause 10.1 above.**

12. MODIFICATIONS TO GCC

The following clauses of General Conditions of Contract (GCC) shall be replaced and modified as below.

1. DEFINITIONS

Following Definitions stands replaced as:

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

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

25. SETTLEMENT OF DISPUTES AND ARBITRATION

Clauses 25 stands replaced as:

The settlement of disputes and arbitration shall be as per clause 25 of General Conditions of Contracts. However the venue of the arbitration shall be at Cochin.

25.1 General

Except where otherwise provided in the contract all questions and disputes relating to the meaning of the specifications, design, drawings and instructions here-in before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works or the execution or failure to execute the same whether arising during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be dealt with as mentioned hereinafter:-

If the Contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer on any matter in connection with or arising out of the contract or carrying out of the work, to be unacceptable, he shall promptly within 15 days request the Engineer in writing for written instruction or decision. Thereupon, the Engineer shall give his written instructions or decision within a period of one month from the receipt of the Contractor's letter.

If the Engineer fails to give his instructions or decision in writing within the aforesaid period or if the Contractor is dissatisfied with the instructions or decision of the Engineer, the Contractor may, within 15 days of the receipt of Engineer's decision, appeal to the Chairman who shall afford an opportunity to the Contractor to be heard, if the latter so desires, and to offer evidence in support of his appeal. The Chairman shall give his decision within 30 days of receipt of Contractor's appeal. If the Contractor is dissatisfied with this decision then:

a) The Dispute in respect of contract of value uptoRs. 1crore shall not be referred for adjudication through arbitration and.

b) If the value of the contract is exceeding Rs.1 crore and upto Rs.5 crores ,the Dispute shall be resolved through arbitration as follows;

(v)The Parties together shall appoint a Sole Arbitrator by mutual consent to resolve the dispute as per the provisions of the Arbitration and Conciliation Act, 1996. The award of the Arbitrator so appointed shall be final and conclusive and binding on all the Parties to the Agreement subject to as amended from time to time or any statutory re-enactment thereof for the time being in force. The Arbitrator may, with the consent of the Parties extend the time, from time to time, to make and publish award as the case may be.

(ii) If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any

reason whatsoever, another Sole Arbitrator shall be appointed in the manner aforesaid. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

c) If the value of the Contract is above Rs.5 crores, the Contractor shall within 30 days of receipt of the decision of the Chairman, appoint an arbitrator and give notice to the Chairman and the dispute shall be resolved through Arbitral Tribunal as detailed below:

The Arbitral Tribunal shall be a panel of three arbitrators, one to be appointed by each Party and the third to be appointed by the two Arbitrators appointed by the Parties. A Party requiring Arbitration shall appoint an Arbitrator in writing, inform the other Party about such appointment and call upon the other Party to appoint its Arbitrator. If the other Party fails to appoint its Arbitrator, the Party appointing Arbitrator shall take steps in accordance with Arbitration and Conciliation Act, 1996 or any statutory modifications or reenactment thereof

d) In case of the dispute or difference is relating to interpretation and application of the provisions of commercial contract between Central Public Sector Enterprises (CPSE), Port Authority inter se or CPSE and Government Department shall be referred by either party for arbitration to the Permanent Machinery of Arbitrators in the Department of Public Enterprises through the Secretary to the Government of Public Enterprises as per the guidelines issued by Department of Public Enterprises OM No.4 (1) 2011- DPE (PMA) – GL dtd. 12.06.2013 or any statutory amendment thereof.

25.2.1 It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each such dispute along with the notice for appointment of arbitrator and giving reference to the rejection by the Chairman of the appeal.

25.2.2 It is also a term of this contract that no person other than person / persons appointed as aforesaid should act as arbitrator / arbitrators and if for any reason that is not possible, the matter shall not be referred to arbitration at all.

25.2.3 It is also a term of this contract that if the Contractor does not make any demand for appointment of arbitrator in respect of any claims in writing as aforesaid within 120 days of receiving the intimation from the Engineer that the final bill is ready for payment, the claim of the Contractor shall be deemed to have been waived and absolutely barred and the Employer or his authorized representative shall be discharged and released of all liabilities under the contract in respect of these claims.

25.2.4 The arbitration shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 (26 of 1996) or any statutory modifications or reenactment thereof and the rules made

there under and for the time being in force shall apply to the arbitration proceeding under this clause.

25.2.5 It is also a term of this contract that the Arbitrator / Arbitral Tribunal shall adjudicate only on such disputes as are referred to him/them and give separate award against each dispute and claim referred and in all cases where the total amount of the claims by any party exceeds Rs. 1,00,000/- the arbitrator shall give reasons for the award.

25.2.6 It is also a term of the contract that if any fees are payable to the arbitrator these shall be paid equally by both the parties.

25.2.7 It is also a term of the contract that the arbitrator/arbitrators shall be deemed to have entered on the reference on the date he / they issues notice to both the parties calling them to submit their statement of claims and counter statement of claims. The venue of the arbitration shall be at Cochin. The fees, if any, of the arbitrator shall, if required is to be paid before the award made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any, of the arbitrator) shall be in the discretion of the arbitrator who may direct to any party by whom and in what manner, such costs or any part thereof shall be paid and fix or settle the amount of costs to be so paid.

26. COMPUTERIZED MEASUREMENT BOOK

5th para stands replaced as follows:

The Contractor shall also submit to the department separately his computerized Abstract of Cost and the bill based on these measurements, duly bound, and its pages machine numbered along with **three** spare copies of the bill. Thereafter, this bill will be processed by the Division Office and allotted a number as per the computerized record in the same way as done for the measurement book meant for measurements

40. PAYMENTS FOR VARIATIONS

Clauses 40.2 and 40.3 shall be replaced as follow:

40.2 For items not existing in the Bill of Quantities or substitution to items in the Bill of Quantities, rate payable should be determined by methods given below and in the order given below:

i) Rates and prices derived from the rate of similar items in Contract.

ii) Rates and prices in the Schedule of Rates applicable to the Contract plus Ruling percentage.

iii) Market rates of materials and labour, hire charges of plant and machinery used, plus **15%** for overheads and profits of Contractor.

40.3 For items in the Bill of Quantities but where quantities have increased beyond the variation limits, the rate payable for quantity in excess of the quantity in the Bill of Quantity plus the permissible variation shall be as determined by methods given below:

i) Rates and prices in the Schedule of Rates applicable to the Contract plus Ruling percentage.

ii) Market rates of materials and labour, hire charges of plant and machinery used plus**15%** for overheads and profits of Contractor.

whichever is lower, but not less than the rate in the Bill of Quantities

43. PAYMENTS

Clause 43.2 stands replaced as follows:

43.2 Payment of bills for Civil Works shall be regulated as detailed hereunder. Only 70% of the Amount for Part-A Items of work will be paid against the interim bills on its submission. Balance 30% of will be paid on getting the certification from IGBC. As such, each interim bill shall be submitted corresponding to 70% of the amount of work done.

43.2.1 Any Interim/Final bill which is **incomplete in any respect** shall be returned to the Contractor within 4 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:

43.2.2.1 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.

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

43.2.3.1 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 **Payment for Electrical and Mechanical works shall be regulated as detailed below:**

43.2.1 The Contractor shall be entitled upon certificates of the Engineer or his nominee to payments in accordance with the following provisions:

Only 70% of the Amount for Part-B Electrical Items of work will be paid against the interim bills on its submission. Balance 30% of will be paid on getting the certification from IGBC and handing over the installation to the Employer.

1) For supply portion :

i)50% of the value, as certified by the Engineer or his nominee, of the materials from time to time delivered on the site.

ii) 20% after completing the work in all respects, commissioning etc., to the satisfaction of the Engineer/ his nominee and his certification.

iii) Balance 30% of will be paid on getting the certification from IGBC and handing over the installation to the Employer.

2) For erection portion :

i) 50% of the value as certified by the Engineer or his nominee, of the installation portion on completion of the erection work under contract, for which payments are claimed.

ii) 20% along with other payments if any, after completing the work in all respects, commissioning etc., to the satisfaction of the Engineer / his nominee and his certification.

iii) Balance 30% of will be paid on getting the certification from IGBC and handing over the installation to the Employer..

3) For SITC Items :

i)50% of the value, as certified by the Engineer or his nominee, of the materials from time to time delivered on the site.

ii) 20% after completing the work in all respects, commissioning etc., to the satisfaction of the Engineer/ his nominee and his certification.

iii) Balance 30% of will be paid on getting the certification from IGBC and handing over the installation to the Employer.

(b)All other sub clauses under Clause 43 remain the same.

44. COMPENSATION EVENTS

44.1 (c) to (e) - Deleted.

All other clauses under clause 44 remains the same.

45. RATES FOR ITEMS TO BE INCLUSIVE OF TAXES

Clause 45 stands replaced as follows:

45.1 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.

45.2 Rates shall also be inclusive of engaging IGBC Consultant for Green Building Certification

45.3 The invoice to be submitted by the Contractor should include the GST Registration Number of the Contractor as well as the Employer.

55. COMPLETION

(a) Clause 55.4 shall be added as follows:

55.4 The Completion Report / Certificate to the Contractor will be issued only after obtaining 'No Claim Certificate' from the Contractor in the format approved by the department stating that they have no further claims against CoPA in respect of the Work.

(b)All other sub clauses under Clause 55 remain the same.

80. TAXES AND DUTIES

80.1 -Deleted

80.2 -Deleted

80.3 -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.

80.4 The Contractor shall comply with all the GST Regulations, viz. timely uploading of bills, issue of debit/ credit notes etc.

G. Salient Features of Some Major Laws Applicable To Establishments Engaged In Construction Work.

Clauses [d] & [l(i)] stands replaced as follows:

(d) Maternity Benefit Act 1961 or Maternity Benefit Amendment Act 2017:- The Acts provide for leave and some other benefits to workmen/ employees in case of confinement or miscarriage etc.

(l) ESI Act, 1948:-

(i) As per the Govt. Notification dt. 20.7.09, Cochin Port Authority has registered under the ESI Act with ESI Corporation and provision of ESI Act, 1948 are applicable to contract/casual employees drawing wages/Salary upto**Rs.20,000/-**per month and working in Cochin Port Authority. Workers covered under ESI Act, are entitled for full medical care for self and family, besides, cash benefit in the event of sickness, maternity and employment injury. Accordingly, the contractual/casual employees drawing wages upto**Rs.20,000/-** per month employed either directly by Port Authority or through contractor are covered under ESI Act, 1948. It is obligatory on the part of the Employer to calculate and remit ESI contribution comprising of Employers' share of 4.75% plus Employees' share of 1.75% which is payable on or before 21st of the following month, to which the salary relates.

SIGNATURE OF TENDERER

SECTION IV

COCHIN PORT AURTHORITY

CIVIL ENGINEERING DEPARTMENT

Tender No.: T10/T-1992/2023-C

Tender for

DEVELOPING AND UPGRADING AN EXISTING WAREHOUSE BUILDING AT NORTH END OF W/ISLAND IN COCHIN PORT TO A GREEN WAREHOUSE

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COCHIN PORT AUTHORITY

TECHNCAL SPECIFICATIONS

1. TECHNICAL SPECIFICATIONS FOR CIVIL WORKS

1.1. DETAILED SPECIFICATIONS FOR MATERIALS TO BE USEDFOR WORKS

1.1.1. GENERAL

1.1.1.1. Except where otherwise specified or authorized by the Engineer-in-Charge, materials supplied by the contractor shall conform to the latest edition of code of practices published by the Bureau of Indian Standard. 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.

1.1.1.2. All the materials to be used on the works shall have BIS certification mark if so available, unless otherwise specified elsewhere or shall be of approved brand with equivalent material as approved by the Engineer-in-Charge.

1.1.1.3. 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.

1.1.1.4. The materials required for the work shall be brought to the site and stacked at places shown by the Engineer-in-Charge and the same shall be got approved for use in work sufficiently in advance so that the progress of the work is not affected by the supply of materials.

1.1.1.5. Tolls are payable by the contractor as per rules for vehicles using the Port's road for supplying the materials.

1.1.2. AGGREGATES FOR CONCRETE

1.1.2.1. Aggregates (fine and coarse) for concrete shall comply with the requirements of IS: 383 – 'Specifications for coarse and fine aggregate from natural sources for concrete'. Aggregate shall be obtained from sources approved by the Engineer-in-Charge. Aggregates, which are not perfectly clean, shall be washed in clean water to the entire satisfaction of the Engineer-in-Charge.

1.1.2.2. The fine aggregate shall be clean, hard, durable, uncoated, dry and free from injurious, soft or flaky pieces and organic or other deleterious substances.

1.1.2.3. Each type of aggregate shall be stored separately for the approval of Engineer-in-Charge. Wet aggregate delivered at the site shall be kept in storage for at least 24 hours to ensure adequate drainage before being used for concreting.

1.1.2.4. Contractor shall maintain at site at all times such quantities of each type of aggregate as are considered by the Engineer-in-Charge to be sufficient to ensure continuity of work.

1.1.3. CEMENT

1.1.3.1. Quality of cement used for the work shall be 43 grade ordinary Portland cement conforming to IS:8112 or 53 grade ordinary Portland cement

conforming to IS:12269 or Pozzolona cement conforming to I.S. 1489 unless otherwise approved by the Engineer-in-Charge.

1.1.3.2. The cement required for the work will have to be procured by the contractor and shall comply with the relevant IS. As far as possible, the cement required for the work will have to be procured from the government agencies. The cement shall, if required by the Chief Engineer / Engineer-in-Charge, be tested and analyzed by an independent analyst at the Contractor's cost and result produced to the Engineer-in-Charge.

1.1.3.3. Supply of cement shall be taken in 50kg bags bearing manufacture's name and BIS marking. Samples of cement arranged by the contractor shall be taken by the Engineer-in-Charge and got tested in accordance with provisions of relevant BIS codes. In case, test results indicate that the cement arranged by the Contractor does not conform to the relevant BIS codes, the same shall stand rejected and shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer-in-Charge to do so.

1.1.3.4. A cement godown of adequate capacity as directed by the Engineer-in-Charge shall be constructed by the contractors at the site of the work for which no extra payment shall be made. Double lock provision shall be made to the door of the cement godown. The key of one lock shall remain with the Engineer-in-Charge or his authorized representative and the key of the other lock shall remain with the contractor. The contractor shall be responsible for the watch and ward and safety of the cement godown. The contractor shall facilitate the inspection of the cement godown by the Engineer-in-Charge.

1.1.3.5. The cement brought to the site and cement remaining unused after completion of work shall not be removed from the site without written permission from /of the Engineer-in-Charge.

1.1.3.6. The cement shall be stored in a weather proof building with facilities for inspection.

1.1.3.7. The contractor shall maintain a cement register showing dates of receipt and issue, quantities used daily and balance which shall be accessible to the Engineer-in-Charge.

1.1.3.8. For cement stored in silo, clauses 1.1.3.3 and 1.1.3.4 are not applicable.

1.1.4. STEEL REINFORCEMENT

1.1.4.1. The reinforcement steel used for the work will have to be procured by the contractor and shall be HYSD bars of Fe550 /Fe 500 / Fe415 grade conforming to IS:1786 unless otherwise approved by the Engineer-in-Charge.

1.1.4.2. As far as possible, the reinforcement steel required for the work shall be procured from Steel Authority of India or RashtriyaIsbat Nigam Ltd. The reinforcement steel can also be procured from the firms TATA Iron & Steel, Jindal Steel & Power Ltd., JSW and Shyam Steel Industries, Durgapur for use in the work subject to production of valid license certificate from BIS. In case steel is not available from the above sources, the contractor shall obtain specific approval from the Engineer-in-Charge well in advance for purchase of steel from other sources.

1.1.4.3. The contractor shall have to obtain and furnish test certificates to the Engineer-in-Charge in respect of all supplies of steel brought by him to the site of work. Samples shall also be taken and got tested by the Engineer-in-Charge as per provisions in this regard in relevant BIS codes. In case the test results indicate

that the steel arranged by the Contractor does not conform to BIS codes, the same shall stand rejected and shall be removed from the site of work by the Contractor at his cost within a week's time of written orders from the Engineer-in-Charge to do so.

1.1.4.4. The steel reinforcement shall be brought to the site in bulk supply of 10 tonnes or more or as decided by the Engineer-in-Charge.

1.1.4.5. The steel reinforcement shall be stored by the contractor at site of work in such a way as to prevent distortion and corrosion and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.

1.1.4.6. For checking nominal mass, tensile strength, bend test etc., specimen of sufficient length as per IS:432/ IS:1608/ IS:1599 or as specified by the Engineer-in-Charge shall be cut from each size of the bar at random at frequency not less than the specified below.

Size of bar	For consignment below 100 tonnes	For consignment over 100 tonnes
Under 10 mm dia	One sample for each 25 tonnes or part thereof	One sample for each 40 tonnes or part thereof
10 mm to 16 mm dia	One sample for each 35 tonnes or part thereof	One sample for each 45 tonnes or part thereof
Over 16 mm dia	One sample for each 45 tonnes or part thereof	One sample for each 50 tonnes or part thereof

1.1.4.7. The contractor shall supply free of charge the steel required for testing. The cost of tests shall be borne by the Contractor.

1.1.4.8. Steel brought to site and steel remaining unused shall not be removed from site without the written permission of the Engineer-in-Charge.

1.1.5. WATER

1.1.5.1. Clean fresh water free from oils, acids, alkalies, salt, sugar, organic materials or other harmful materials shall be used for washing aggregates, mixing and curing of concrete. The water used shall comply with clause 5.4 of IS:456-2000. Potable water is generally considered good for mixing concrete.

1.1.5.2. **Cochin Port Authority will not provide/supply water for the work**. Water has to be arranged by the contractor himself for the construction works including curing work at his own risk and cost.

1.1.5.3. Samples of water arranged by the contractor shall be taken by the Engineer–in–Charge and got tested in accordance with the provisions of relevant BIS codes. In case test results indicate that the water arranged by the contractor does not conform to the relevant BIS codes, the same shall not be used for any works. The cost of tests shall be borne by the contractor.

1.1.6. ADMIXTURES IN CONCRETE

1.1.6.1. Admixture in concrete will be allowed only with prior approval of the Engineer–in–Charge. The contractor shall produce test certificates from recognized laboratories before use, if so desired by the Engineer–in–Charge.

1.1.7. STRUCTURAL STEEL

1.1.7.1. The mild steel flats / plates/ angles/ channels/ I-sections used for the work shall conform to IS: 2062. The material shall be free from visible as well as hidden defects such as pitting cracks, laminations, twists etc. and excessive rusting.

1.1.7.2. It is not necessary for the Contractor to obtain separate approval in case mild steel plate is purchased from Steel Authority of India Ltd or TATA Iron & Steel or Jindal Steel & Power Ltd.(JSPL) In case of purchase from Tata Iron & Steel &JSPL,valid license certificate from BIS shall be produced. For purchase from other sources, the contractor shall apply sufficiently in advance and obtain written permission of the Engineer-in-Charge for making purchase from such sources.

1.1.8. SAND FOR MAKING MORTAR FOR MASONRY WORK / PLASTERING WORK

Sand used for masonry mortar shall conform to IS: 2116-. Sand used for plastering shall conform to IS: 1542-1992.

1.1.9. PRECAST CEMENT CONCRETE BLOCKS

1.1.9.1. Factory made precast concrete blocks shall be of size 300mm x 200mm x 150mm and 300mm x 100mm x 150mm or nearest available size conforming to IS: 2185 having minimum compressive strength 50kg/cm^2 made in plain cement concrete of M-15grade with 20mm graded metal. However, the length and shape of blocks to be provided at junctions shall be suitably modified to fit into the general configuration. These blocks are to be cast in appropriate moulds preferably steel moulds, which shall provide a smooth surface. Blocks used at junctions as required also be cast in same way. The finished blocks shall be cured properly for a minimum period of 14days. Blocks damaged during the removal of forms and handling will be rejected.

1.1.10. EXTERIOR/INTERIOR ACRYLIC EMULSION PAINT

The weather proof exterior acrylic emulsion paint shall be of approved premium quality and make. The interior acrylic emulsion paint shall be of approved premium quality and make. The coverage shall conform to the manufacturer's specification. The colour/shade shall be as per direction of the Engineer-in-Charge.

1.1.11. PROVIDING AND FIXING UPVC JOINERIES

UPVC joinery systems shall be with outer frame having profile thickness above 2 mm. Glass for windows shall be of min. 5 mm thick toughened and that of fixed glazing of doors shall be of 12mm thick toughened and it shall be fixed using Stainless steel screws and sealing sides top and bottom with silicon sealant etc. Windows and ventilators shall of approved colour and shade. The joinery shall be water resistant by providing water channel & EPDM gasket. Impact modifiers shall be used to ensure strength and durability and special additives to ensure UV resistance. UPVC Profiles shall withstand extreme temperature 0 – 50 degree temperature and ensure low maintenance. All fixtures shall be made up of stainless steel. The frame shall be fixed in prepared opening in the walls. All civil works shall be completed before fixing the frames.

1.1.12. P.V.C. PIPES FOR RAIN WATER DOWN PIPES

1.1.12.1. PVC pipes shall conform to IS: 4985-2000 and class as specified in the schedule. The pipes shall be supplied in random length from 4 to 7m and shall have BIS certification marks.

1.1.13. ROOFING SHEETS, RIDGES AND FASTENERS

1.1.13.1. Roofing sheets shall be of Galvalume based prepainted steel sheets of 0.5mm thick of profile as specified in the schedule. The minimum yield strength of the sheet shall be 550 MPa. The alloy coating provided shall be of AZ 150 ie; 55% Aluminium, 43.5% Zinc and 1.5% silicon. The sheets shall be free from cracks, split edges, twists and surface flaws.

1.1.13.2. Ridges shall be of prefabricated and using Galvalume based prepainted, steel sheets of 0.5mm thick of profile as specified in the schedule.

1.1.13.3. All fasteners shall be good quality G.I 'J'/ suitable shape bolt, along with approved brand / quality leak proof materials shall also be provided as directed by the Engineer –in-Charge.

1.1.13.4. The internal and external surface of the pipe shall be smooth and clean, free from grooving and other defects. The end shall be cleanly cut and shall be square with the axis of the pipe. Slight shallow longitudinal grooves or irregulations in the wall thickness shall be permissible provided the wall thickness remains within the permissible limits.

1.1.14. VITRIFIED FLOORING / SKIRTING TILES

1.1.14.1. Tiles shall be of approved premium quality, 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 600mm x 600mm (minimum) size available higher size and shall have minimum thickness of 10mm.

1.1.14.2. 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.

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

1.1.15. RED EARTH

1.1.15.1. Red earth (Laterite gravel) shall be of good quality (top fertile soil) free from clods, stones, roots and thoroughly free from dirt or an foreign materials and suitable for gardening.

1.1.15.2. The earth shall be stacked at site in stacks not less than 50cm. high and of volume not less than 3.0 m3. The volume of the stacks shall be reduced by 20% for voids before payment, unless otherwise described.

1.1.16. MANURE / SLUDGE

1.1.16.1. The manure / sludge shall be Farm Yard Manure, Stearameal, Neam Cake, Coco Peat etc.

1.1.16.2. It shall be transported to the site in Lorries with sufficient arrangement to prevent spilling enroute. It shall be stacked at site. Each stack shall not be less

than 50cm. height and volume not less than 3.0 m3. The volume of the stack shall be reduced by 8% for looseness in stacking and to arrive at the net quantity for payment.

1.1.17. GRASS

1.1.17.1. The grass shall be Mexican Grass free from diseases, fungus, weeds etc. The grass may be supplied in mat.

1.1.17.2. The cost of supplying and stacking of grass shall be paid after the work of grassing is completed and for the finished landscaping area.

1.1.18. PLANTS

1.1.18.1. The plants should be as per following specifications

a) The plants should be full of fresh and healthy foliage.
b) The plants should be free from insect, pest and disease.
c) The plants should be healthy and vigorous growth.
d) The plants should be well settled and should not be newly shifted.
e) The plants should be true to the variety and named variety should be tagged.
f) The plant should be well stabilized and good spread.
g) The flowering plants should also have proper flowering and should be true to the variety.
h) All plant should have the tendency of growth and should not be stunted type.

1.1.19. MATERIALS NOT SPECIFIED

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

1.1.20. SAMPLING AND TESTING OF MATERIALS

1.1.20.1. 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 sound engineering practice. Material conforming to the specifications and approved by the Engineer-in-Charge shall only be used by the contractor.

1.1.20.2. All the sampling and testing shall be done at the contractor's cost.

1.2. DETAILEDSPECIFICATIONS OF ITEMS FORWORKS

1.2.1. GENERAL

1.2.1.1. Except where otherwise specified or authorised by the Engineer-in-Charge all items of works executed by the Contractor must conform to the latest edition of the Bureau of Indian Standard (BIS) Specifications, I.RC., MORT&H's specifications and Code of practices published by BIS. Where no such specifications or code of adoption. The tenderer while indicating such specifications shall practice exists the latest BSS codes of practice shall also be considered for enclose the full set of the publication so referred and not in extracts. Photostat / 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 specialised work as may be decided by the Engineer-in-Charge which shall be final, conclusive and binding on the contractor.

1.2.1.2. Detailed specifications of items of works are described below:

1.2.2. DISMANTLING WORKS

1.2.2.1. The tenderers 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 inspected the site and satisfied himself the condition of the structure and the nature of the work involved for the dismantling and removal and that the tenderer has 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.

1.2.2.2. Following dismantling works are to be carried out under this tender:

(i) All existing steel ventilators shall have to be dismantled carefully without causing any damage to the structure.

(ii) All rolling shutters shall have to be dismantled carefully without causing any damage to the structure.

(iii) The existing AC sheet roof & ridges have to be dismantled as per detailed specifications & directions of the Engineer-in-charge.

(iv) Any other items which are required to be dismantled shall be carried out as per the directions of Engineer-in-charge

1.2.2.3. Usable materials after dismantling, if any, shall be the property of the cochin Port and the unusable dismantled materials/debris shall be disposed off within a distance of 6km from the project site as directed by the Engineer-in-Charge..

1.2.2.4. All dismantled materials/debris shall be disposed off within a distance of 6km from the project site as directed by the Engineer-in-Charge..

1.2.2.5. The debris shall be cleared on completing each day's work, if so directed by the Engineer-in-Charge.

1.2.3. PLAIN AND REINFORCED CEMENT CONCRETE

1.2.3.1. General

The concrete used for all works, concreting procedure etc. shall be in accordance with IS: 456-2000.

1.2.3.2. Concrete Mix

Mix used for R.C.C. shall be of minimum M20 grade unless otherwise specified. Design mix shall be used for M20 and higher grade of concrete unless otherwise specified in the schedule.

1.2.3.3. Nominal Mix

For nominal mix concrete, proportion of fine aggregate to coarse aggregate shall be 1:2 by mass. The minimum cement content per cubic meter of nominal

mix concrete shall be as per table 5 of IS: 456-2000.

1.2.3.4. **Design Mix**

1.2.3.4.1. For design mix concrete of following grades of concrete the minimum cement content per cubic metre and maximum water cement ratio are as given below.

Sl. No	Grade of Concrete	Minimum cement content in Kg / m^3	Maximum free Water cement ratio
1.	M25	300	0.50
2.	M20	300	0.55

1.2.3.4.2. For design mix concrete, the contractor shall make calculations jointly with Engineer-in-Charge and carryout all necessary tests at contractor's cost to determine the proportion by weight of cement, aggregates (coarse and fine), admixture if required and water necessary to produce concrete of required grade having the desired workability and, water cement ratio not exceeding the allowable limit, prior to commencement of work. The contractor shall submit the following for the approval of Engineer-in-Charge.

(i) The proportion of cement, coarse aggregate, fine aggregate and water so determined.

(ii) The sieve analysis of aggregates which he proposes to use in the works.

(iii) Full details of the tests conducted.

(iv) All calculations relevant to mix design.

1.2.3.4.3. When the proportions are submitted to the Engineer-in-Charge which he considers will produce concrete having the required properties, it shall become the declared proportions to be used for the work. The agreement by the Engineer-in-Charge to such declared proportions shall not relieve the contractor of any of his responsibilities to use in the work at all times concrete having the required properties. No deviation from the declared proportions shall be allowed unless and until the Engineer-in-Charge shall have given his written authorization for the adoption of revised proportions for the concrete.

1.2.3.4.4. Sampling, testing and acceptance criteria for designed mix concrete shall be as per clause 15, 16 & 17 of IS: 456-2000 unless otherwise specified. Sampling and testing shall be done at contractor's own cost. Testing shall be done in a laboratory approved by the Engineer-in-Charge.

1.2.3.5. **Size of Coarse Aggregate**

For all concrete, plain or reinforced of M20 and higher grades, 20 mm size graded aggregate conforming to IS: 383-2016 shall be used unless otherwise specified. If 20 mm graded aggregates as per IS:383 are not readily available, graded 20 mm aggregate shall be obtained by blending 20 mm and 12.5/ 10 mm aggregates in the proportion arrived based on the combined sieving of aggregates.

1.2.3.6. **Batching and Mixing**

1.2.3.6.1. For production of concrete, concrete batching and mixing plant, with type and capacity approved by the Engineer-in-Charge shall be installed at site by the contractor. The plant shall be approved by the Engineer-in-Charge and shall be installed at an approved location. All measuring equipments should be

maintained in a clean serviceable condition, and their accuracy shall be periodically checked as directed by the Engineer-in-Charge.

1.2.3.6.2. In proportioning concrete, the quantity of both cement and aggregate should be determined by weight. Where the weight of cement is determined on the basis of weight of cement per bag, a reasonable number of bags should be weighed periodically to check the net weight. Where the cement is weighed on the site and not in bags, it should be weighed separately from the aggregates. Water should be either measured by volume in calibrated tanks or weighed. Any solid admixture that may be added may be measured by weight; liquid and paste admixture by volume or weight.

1.2.3.6.3. Except where it can be shown to the satisfaction of the Engineer that supply of properly graded aggregate of uniform quality can be maintained over the period of work, the grading of aggregate should be controlled by obtaining the coarse aggregate in different sizes and blending them in the right proportion when required, different sizes being stacked in separate stock piles. The grading of coarse and fine aggregate should be checked frequently for a given job being determined by the Engineer-in-Charge to ensure that the specified grading is maintained.

1.2.3.6.4. Under unavoidable circumstances, change from weigh batching to volume batching may be permitted by Engineer-in-Charge, on specific request from the contractor.

1.2.3.6.5. Ready mix concrete from outside source shall be allowed for use on the work subject to the conditions that: (i) Written permission shall be obtained from the Engineer-in-Charge, (ii) All quality control measures as stipulated by the Engineer-in-Charge are strictly adhered to by the contractor at his cost, (iii) All design mix calculations as per Clause 1.2.3.4.4 of tender document shall be submitted by the contractor for approval of the Engineer-in-Charge & approval obtained; and (iv) All expenses towards conveyance and incidentals of providing departmental supervision at the mixing plant shall be borne by the contractor.

1.2.3.7. **Cover to Reinforcement**

Cover as specified in drawing shall be provided by using precast cement concrete block made from concrete of same grade as that of main work unless otherwise directed by the Engineer-in-Charge.

1.2.3.8. **Transporting, placing, compacting and curing of concrete**

1.2.3.8.1. Transporting placing, compacting and curing of concrete shall be as per clause 13 of IS: 456-2000. Placement of concrete shall be done with concrete pumps and pipelines unless otherwise approved by the Engineer-in-Charge in special cases.

1.2.3.8.2. Concrete shall be transported from the mixer to the worksite as rapidly as possible which will prevent the segregation or loss of any ingredient, and for maintaining the workability.

1.2.3.8.3. The concrete shall be placed and compacted before setting commences and should not be subsequently disturbed. Care should be taken to avoid displacement of reinforcement or movement of formwork.

1.2.3.8.4. All concrete shall be vibrated unless otherwise specified or approved by the Engineer-in-Charge and such vibrating shall be as required by the Engineer- in-Charge. The mechanical vibrators complying with IS: 2505, IS: 2506or

IS:4656 shall be used for compacting concrete. All vibrations shall be carried out to a plan approved by the Engineer-in-Charge. No workman shall be allowed to operate the vibrator without having received instructions and training in its use. Care must be taken to avoid segregation and excessive vibration.

1.2.3.8.5. Concreting shall be carried out continuously upto construction joints, the positions and arrangement of which shall be as directed by the Engineer-in-Charge. When the work has to be resumed the construction joints shall be prepared in accordance with clause 13.4 of IS:456-2000.

1.2.3.8.6. Unless otherwise specified, all concrete shall be kept continuously in a damp condition by ponding or by covering with a layer of sacking, canvas, hessian or similar materials with fresh water for not less than 7 days after laying the concrete. If curing is not done properly the department will be at liberty to engage labour for curing and the expenditure incurred will be recovered from the contractor's bill. The decision of the Engineer-in-Charge will be final on this.

1.2.3.8.7. Stripping time for the form work shall be as stipulated in clause 11.3 of IS:456-2000. Any impression, fins etc. that may occur from the form work shall be removed and treated with cement mortar 1:1.5 (1 cement: 1.5 sand).

1.2.3.8.8. Contractor shall arrange to fix any fixtures wherever necessary while doing concreting work without any extra cost. Cost of fixtures will be paid separately, if it is provided by the contractor.

1.2.3.8.9. The unit rate quoted by the tenderer shall be for the finished work and deemed to include cost of all materials and labour, form work, provision of holes, recess, other contingent items etc. required for the completion of work as specified etc.

1.2.4. CEMENT CONCRETE FLOORING

1.2.4.1. The floor inside the Warehouse shall be raised with cement concrete M20 grade with 20mm aggregates so as to form a uniform level.

1.2.4.2. Payment for cement concrete shall be made on cubic meter. The rate shall include all labour and materials including curing etc. complete required for completion of work

1.2.5. CEMENT CONCRETE BLOCK MASONRY

1.2.5.1. The blocks shall be laid to level and alignment to bring out joint not more than 10 mm wide between the blocks. The grade of mortar shall be specified in the schedule of items. Curing shall be done for 7 days.

1.2.5.2. Payment for cement concrete block masonry shall be made on cubic meter. The rate shall include all labour and materials including curing etc. complete required for completion of work.

1.2.6. CEMENT PLASTERING

1.2.6.1. Cement plastering shall be with the grade of mortar and of thickness specified in the schedule. The surface to be plastered shall be thoroughly cleaned and kept wet for 4 hours before plastering.

1.2.6.2. All the corners shall be rounded off to a radius of 25 mm unless otherwise specified.

1.2.6.3. Where smooth finishing is specified in the schedule the plastering shall be floated over with neat cement slurry using 2.2 kg of cement per square meter immediately after the final coat of plastering and rate quoted for plastering shall include cost of this finishing work.

1.2.6.4. The plastered surface on which glazed tiles or other similar type of finishing are to be provided subsequently shall not be finished smooth but shall be scarified for forming a base for providing the final surface finish as required.

1.2.6.5. The surface shall be cured for 7 days.

1.2.6.6. The rate shall include all labour and materials including scaffolding, curing etc. complete required for completion of work. Measurement of the work under this head shall be made on the basis of the area of work done.

1.2.7. PROVIDING AND APPLYING EXTERIOR / INTERIOR ACRYLIC EMULSION PAINT

1.2.7.1. The surface shall be thoroughly cleaned of dust and then be sand papered to give a smooth and even surface. Over the prepared surface one base coat of primer for exterior/interior emulsion paint of same brand shall be applied with hand brush in horizontal stroke followed immediately by a vertical one which together shall constitute one coat. After the primer coat has dried for at least 48 hours, the surface shall be lightly sand papered to make it smooth. All loose particles shall be dusted off after rubbing and the surface cleaned well. The first finishing coat of exterior/interior emulsion paint shall then be applied with hand brush in horizontal stroke followed immediately by a vertical one which together shall constitute one coat. The second coat shall be applied in the same way of first coat to obtain an even surface, after the first finishing coat dried as per the directions of the Engineer-in –Charge.

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

1.2.8. PROVIDING AND APPLYING SYNTHETIC ENAMEL PAINT

1.2.8.1. Paints/ primers of approved premium brand and manufacture shall be used. Only ready mixed Paint (Exterior grade) as received from the manufacturer without any admixture shall be used. If for any reason, thinning is necessary in case of ready mixed Paint, the brand of thinner recommended by the manufacturer or as instructed by the Engineer-in-Charge shall be used.

1.2.8.2. The surface shall be thoroughly cleaned off all dirt, rust, dust, grease etc. with wire brush, sand paper etc., and be made perfectly clean and dry while painting. For wood surfaces visible knots, holes etc. shall be filled with appropriate filling material with some shade as paint and rubbed smooth before applying paint.

1.2.8.3. The number of coats shall be as per schedule. Successive coats shall be applied only on the next day after rubbing with the finest grade of wet abrasive paper and dusting of the loose particles.

1.2.8.4. Measurements of the work under this head shall be made on the basis of the area of work done and rate quoted shall include the cost of surface preparation, materials, labour, scaffolding etc. required for the completion of works as detailed above.

1.2.9. PROVIDING RAIN WATER DOWN PIPE AND FITTINGS

1.2.9.1. The pipes used for rain water down lines shall of class-2 (4kg/cm^2) type of approved quality. The joints shall be made perfectly water tight using approved solvent cement confirming to IS: 14182-1994. The pipes shall be secured to the face of the walls with suitable PVC clamps fixed to walls by means of teak wood / fibre plugs and SS screws at maximum 3 metres intervals.

1.2.9.2. The rate shall include cost of all specials like bends, couplings, PVC clamps, plugs, screws etc. and cost of cutting masonry / concrete for laying / fixing pipes and its rectification on completion of work.

1.2.9.3. Fixing shall be done as per directions of the Engineer-in-Charge.

1.2.10. STEEL FABRICATION WORK

1.2.10.1. The steel sections as specified shall be cut square accurately to correct lengths. The cut edges should be dressed to a neat and workmanship finish and be free from distortion where parts are to be in contact metal to metal. All materials shall be straight and if necessary, before being worked shall be straightened and/ or flattened and shall be free from twists.

1.2.10.2. The component parts shall be assembled and aligned in such a manner that they are neither twisted nor otherwise damaged and shall be so prepared that the specified camber, if any, is provided. Proper clamps, clips, jigs and other fasteners (bolts & welds) shall be placed in a balance pattern to avoid any distortion in the members and to ensure their correct positioning.

1.2.10.3. Welded connections shall be provided for joints except for the joints specially provided for erection purposes. For joints provided for erection purposes bolted connections shall be used.

1.2.10.4. All bolts shall be provided with washers of sufficient thickness. The threaded portion of each bolt shall project through the nuts at least one thread.

1.2.10.5. Welding shall be done in accordance with the specifications laid down in IS 816 and as per detailed working drawing. Welding edges and the adjacent areas of the members (extending up to 20mm) shall be thoroughly cleaned of all oil, grease, scale and rust and made completely dry. Gaps between the members to be welded shall be kept free from all foreign matters. The welding procedure adopted and consumables used shall be got specifically approved by the Engineer-in-charge. Excessive convexity, shrinkage, cracks, under cutting, improperly fitted / misaligned parts, members distorted by the heat of welding etc. due to faulty welds shall be corrected- whole or portion- as directed by the Engineer-in-charge.

1.2.10.6. The steel sections as specified shall be straightened and cut square to correct lengths. The steel work shall be hoisted and placed in position carefully without any damage to itself and other building work and injury to workmen.

1.2.10.7. The suitability and capacity of all plants and equipments used for the work shall be to the complete satisfaction of the Engineer-in-charge.

1.2.10.8. Proper safety arrangements shall be provided for working and inspection at no extra cost wherever required.

1.2.10.9. If the fabrication is done outside the worksite premises the structurals and fabrication should be subject to the inspection by the departmental officials. Suitable transport facilities shall be provided for the inspection staff.

1.2.10.10. The electrodes required for the welding work shall be got approved before use. The electrodes should be stored properly without exposing them to atmospheric action. Proper protection should be given for site fabrication. The welding must be carried out under a covered roof.

1.2.10.11. The contractor should possess plant and equipments, derricks. Lifting tackles, wire ropes, chain pulleys, jacks, welding sets etc. that may be required for fabrication and erection. The equipment being used shall be kept in good condition throughout.

1.2.10.12. Fabrication and erection of steel work shall be in accordance with the provision of IS 800-2008.

1.2.10.13. All damages to steel works caused during the transit or otherwise at the time of fabrication or erection and after erection shall be made good at no extra cost.

1.2.10.14. All steel work shall be provided with one coat of iron primer Zinc Chromate. Before applying primer, all rust & scale shall be removed by scrapping or brushing with steel wire brushes. All dust & dirt shall be thoroughly wiped away from the surface. If the surface is wet, it shall be dried before priming coat is applied.

1.2.10.15. After completion of the required fabrication of gate/posts/ trusses/ purlins, the surface shall be well cleaned with wire brush and sandpapering as directed by the Engineer-in-charge and one coat of Zinc Chromate primer shall be applied. Before application of the primer coat all the welded joints shall be got inspected and approved by the Engneer in charge. Immediately after applying the primer, two coats of synthetic enamel/Aluminium paint as required shall be applied to all the steel works. All painting work shall be done after the erection of gate/ truss in position. Any damage to the painted surface during the course of erection shall be rectified as directed by the Engineer In charge after fixing the members in position. The fasteners like bolts, nuts etc. used during erection shall also be painted with a coat of primer and two coats of Synthetic enamel/Aluminium paint.

1.2.10.16. Sequence of erection of posts/ trusses/ purlins shall be so arranged that the structural stability is fully ensured.

1.2.10.17. Prior to the positioning of the post all laitance and loose materials shall be removed by wire brushing and chipping and bearing surfaces cleaned and made thoroughly wet and cement grout shall be applied or as directed by the Engineer in charge.

1.2.10.18. The rates given shall be for the finished items of work including fabricating, erecting and alignment with appropriate materials, all connections, welding, rectification wherever necessary, transporting and handling charges, all accessories equipments, scaffolding, all lifts etc. including cost of labour, materials other than those supplied by the department free of cost .

1.2.10.19. The finished post work including erection shall be measured in Kilogram inclusive of the weight of posts, M.S plate stiffeners, M.S base plates, foundation bolts, nuts, washers but no allowance shall be made for the welded material. The measurement for plates used on the work shall be made for the actual quantity used in work. The rate quoted per Kilogram shall be inclusive of cost of all materials &labour applying iron primer, erection in position, scaffolding, all transportation, lifts etc.

1.2.10.20. The finished truss work/ purlin including erection shall be measured in Kilogram inclusive of the weight of cleats, brackets, bolts, nuts, washers, distance pieces, separators, gusset plates etc. but no allowance shall be made for the welded material. The measurement for plates used on the work shall be made for the actual quantity used in work. The rate quoted per Kilogram shall be inclusive of cost of all materials, labour applying iron primer, erection in position, scaffolding, all lifts etc.

1.2.11. PROVIDING ROOFING WITH PRE-COATED GALVALUME SHEET

1.2.11.1. The sheets shall be laid on the purlins / rafters to true line and plane. Sheets shall be fixed to the purlins or rafters with good quality G.I. fasteners as directed by the Engineer-in-Charge. There should be a minimum of 4 to 5 fasteners per square metre area.

1.2.11.2. Approved brand/ quality leak proof materials shall also be provided at the bottom locations as directed by the Engineer-in-Charge.

1.2.11.3. The lapping shall be as per manufacturer's standards. The sheets shall be fixed on each crests of the sheet for connecting with the purlins. The sheet shall be fixed at all purlin points using suitable fasteneers of appropriate size or as per the direction of Engineer-in-Charge.

1.2.11.4. Ridges shall be covered with prefabricated pieces of same colour / shade as that of roofing sheet as per the drawing. Ridges shall be provided as directed by the Engineer- in Charge. The edges of ridges shall be straight when fixed end to end and their surface should be plane and parallel to the general plane of the roof.

1.2.11.5. Roof edge at eave ends shall be made perfectly in line and level.

1.2.11.6. Roofing sheets to be used shall have no scratches in the coating. All care shall be taken not to cause any scratches while handling the sheets.

1.2.11.7. Both inside and out side surfaces of the roofing sheets shall be cleaned off dirt, dust etc, after the roofing work.

1.2.11.8. Measurement for providing the roof sheet shall be made on square metre basis for the superficial (Slopping) area of roof covering without allowances for end and side laps / corrugations

1.2.11.9. Measurements for providing ridges shall be made on running metre basis measured along the centre line of the ridge without allowances for end laps.

1.2.11.10. The rate quoted for all the items detailed above shall include the cost of all materials, labour, fixtures, scaffolding, and lifts etc. involved for the finished work.

1.2.12. PROVIDING BASE COURSE OF FLOORING WITH CEMENT CONCRETE

1.2.12.1. Thickness and grade of concrete for base course of flooring shall be as specified in the schedule of items.

1.2.12.2. Before laying the base course of concrete the bed shall be well rammed and compacted and wetted thoroughly for two days. Drain holes, if necessary shall be provided as per the directions of the Engineer-in-Charge. The bed shall have slope similar to the finished floor surface.

1.2.12.3. Over the bed thus prepared cement concrete shall be laid to the specified thickness and to the slope as required. The concrete shall be compacted by ramming and shall be finished to an even surface and shall be kept wet for 48 hours.

1.2.13. LANDSCAPING WORKS

1.2.13.1. Landscaping operations shall be started on ground previously levelled and dressed to required formation levels and slopes. In case where unsuitable soil is met with, it shall be either removed or, replaced or it shall be covered over to a thickness decided by the Engineer-in-Charge with good earth. In the course of excavation or trenching during horticultural operations, any walls, foundations, etc. met with shall not be dismantled without pre-measurement and prior to the written permission of the Engineer-in-Charge.

1.2.14. MIXING OF GOOD RED EARTH AND MANURE / SLUDGE

1.2.14.1. The stacked red earth shall, before mixing, be broken down top particle of sizes not exceeding 6 mm in any direction. Good earth shall be thoroughly mixed with sludge or manure in specified proportion of 2:1 or 1:1, as the case may be or as directed by the Engineer-in-Charge.

1.2.14.2. The quantity of good earth and sludge or manure mixed shall be determined by the difference in the volume of good earth, sludge or manure in stack, before and after spreading duly accounted for voids and looseness in stack.

1.2.14.3. The rate shall include the cost of all labour and materials involved in all the operations described above, but does not include the cost of good earth, sludge or manure which shall be paid for separately.

1.2.15. SPREADING GOOD RED EARTH AND MANURE / SLUDGE

1.2.15.1. Good red earth mixed with sludge or manure as above shall be spread evenly over the surface to the thickness ordered by the Engineer-in-Charge. It shall be spread with a twisting motion to avoid segregation and to ensure that spreading is uniform over the entire area.

1.2.15.2. The rate shall include of all the labour and material involved in all the operations described above, but does not include the cost of the good earth, sludge or manure which shall be paid for separately.

1.2.16. GRASSING WITH MEXICAN GRASS

1.2.16.1. The surface to provide grass shall be cleared by removing weeds or other vegetation and disposed off. The soil shall then be loosened by turning over the top layer containing weeds etc. and bringing the lower layer of good earth to form a proper medium for grassing, regrassing, hedging and shrubbery.

1.2.16.2. The ground shall be levelled and rough dressed and if there are any hollows and depressions resulting from subsidence which cannot be so levelled, these shall be filled properly with good earth brought from outside to bring the depressed surface to the level of the adjoining land and to remove discontinuity of slope and then rough dressed again. The quantity of good earth used for filling and leveling the area, if any, shall be measured and paid separately under the item of supply of good earth.

1.2.16.3. The area from where the grass roots are to be obtained shall be specified by the Engineer-in-Charge at the time of execution of the work and no royalty shall be charged on this account from the Contractor. Grass is to be arranged by Contractor.

1.2.16.4. The soil shall be suitably moistened and then the operation of planting grass shall be commenced. Dead grass and weeded shall not be planted. The Contractor shall be responsible for watering and maintenance of levels and the lawn for 3 months.

1.2.16.5. During the defect liability period, any irregularities arising in ground levels due to watering or due to trampling by labour, or due to cattle straying thereon, shall be constantly made up to the proper levels with earth as available or brought from outside as necessary. Constant watch shall be maintained to ensure that dead patches are replanted and weeds are removed.

1.2.16.6. The rate shall include of all the labour and material involved in all the operations described above, including supply of the requisite quantity of good earth and grass so needed for properly maintaining the levels of the lawns.

2. TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS

2.1. SCOPE OF WORK

The Electrical scope of work is for setting up of Green Warehouse. The technical specification of the items shall be in accordance with the latest IGBC standards /norms and approval.

Detailed scope of work is as below.

1 Design and SITC of 250 KWP Roof Top solar panel.
2 SITC of 315 kva ,11kv/433 v, 3 phase, 50 hz, energy efficiency level-2, outdoor transformer
3 Supply and laying of 3.5 x 300 sqmm lt power cable for interlinking mv panel/ transformers etc.
4 SITC of 4 compact outdoor rmu 4 panel sf6 rmu with frtu and scada.
5 SITC of single compact outdoor outdoor single sf6 , vcb vcb panel with protections for transformer and scada.
6 SITC of 11kv ht /lt ug cables.
7 Work for Item No.79 of the Schedule II includes Supply of materials and providing electrification/ wiring inside the ware house, outside lighting, CCTV system comprising of minimum 4 Nos. fixed type out door cameras with DVR, monitor, cabling, storage etc as per requirements etc.
8 Supply of materials and providing electrification/ wiring inside the office building , bathroom, water pump etc.
9 SITC of 1 no. 1.5 t , 5 star invertor split type ac unit
10 SITC of smart lighting panel with ioe standards with communication facilities etc.
11 SITC of high bay led lighting minimum 150 lm/w and integrating with smart lighting systems

12 SITC of out door led flood light min 120 lm/w and integrating with smart lighting systems

13 SITC of 24" exhaust fans.

14 SITC of ss wind turbine 24" at roof of the building.

15 Earthing of all the system.

16 amc rate of 5 years after warrantee period for the solar panel , puc , cabling , panels etc in complete related items to solar power plant .

The bidder shall visit the site, ascertain the site conditions , scope and schedule of works before bidding.

2.2. GENERAL TECHNICAL SPECIFICATIONS OF ELECTRICAL WORKS

2.2.1. General specification

Fault level at 11 KV	: 25 KA
Anticipated Max. fault level	: 50 KA
Rated system voltage	: 11 KV
Rated frequency	: 50 Hz
Neutral earthing	: effectively earthed.
Installation of cable	:Underground burial.
Rated short circuit current at 11 KV side	: 25 KA
Proximity of extraneous heat source	: Nil
Max. Permissible operating temp.4 of conductor under normal Operation	: 90 ^{0} C
Under short circuit	: 250^0 C
Ground temperature	: 40^0 C
Type of installation	: Earthed
Maximum temperature of air	: 45 degree C
Minimum temperature of air	: 22 degree C
Maximum relative humidity	: 95%
Minimum relative humidity	: 10%
Average No. Of thunderstorm days	: 40 days
Average number of rainy days per annum	: 90 days

2.2.2. SUPPLY AND INSTALLATION OF A 250 KWP ROOFTOP SOLAR SYSTEM

Supply,Installation,Testing and Commissioning of on grid Solar Photo voltaic Power Plant conforming to MNRE specifications as amended, consisting of Mono/ Poly Crystalline silicon solar cells, netmetering facility, necessary protections, earthing, mounted on Aluminium / GI structure of suitable strength with following components complete as required.

2.2.2.1. **Solar Panels:**

2.2.2.1.1. Solar Photo voltaic Module of 250 KWp conforming to IS 14286 /IEC61215,IS/IEC61730-Part-1,IS/IEC61730-Part

2.2.2.1.2. Supply, Installation, Testing and Commissioning of on grid Solar Photovoltaic Power Plant conforming to MNRE specifications asamended, consisting of PERC- Mono /PolyCrystalline silicon solar cells, net metering facility, necessary protections, earthing, mounted on Aluminium/ GI structure of suitable strength with following components complete in all respect as required. (Including 5 years warranty and

maintenance as per terms and conditions)

2.2.2.1.3. Solar Photovoltaic PERC Module of capacity 545 Wp or above, not less than 184 nos, manufactured in India, conforming to IS 14286/IEC 61215, IS/IEC 61730- Part-1, IS/IEC 61730-Part-2. Solar Photovoltaic Module conversion efficiency shall not be less than 20.8%. PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years (On Site Warranty) and 80% at the end of 25 years and warranty should be provided in document from manufacturer to customer.

2.2.2.2. **Power Conditioning Unit**

Power Conditioning Unit (PCU) Of 350-800 V DC Input Voltage Range And 415 V AC, Three Phase, 4 Wire, 50Hz +/- 2.5 Hz, Output Voltage Suitable To Generate AC Power With Efficiency Not Less Than 97%, Total Harmonic Distortion Less Than 3% And Suitable For Ambient Temperature From 0 To 50 Degree C. The PCU Shall Adjust The Voltage And Frequency Level To Suit The Grid Voltage Frequency. Warranty 10 Years On Site Warranty Warranty Should Be Provided In Doccument From Manufacturer To Customer.

2.2.2.3. **Data Monitoring System Complete With Accessories.**

2.2.2.4. **Fixing of Array Junction Box &Main Junction Box**

Fixing of array junction box & main junction box with IP65 protection and termination arrangement for incoming and outgoing cables along with glands, lugs and other accessories etc. as required.

2.2.2.5. **Lightning and Surge Voltage Protection.**

2.2.2.6. **Supply And Fabrication Of Suitable Frame Work Roof Top For Installation**

Supply and fabrication of suitable frame work roof top for installation of solar photovoltaic module / made of suitable size MS / GI pipes / Tubular sections / C channels / Angle iron, GI sections, bolts & nuts along with all required accessories including painting with one or more coats of epoxy primer followed by two or more coats of epoxy paint, complete as required. (The structure design and drawings shall be vetted by structural consultant and got approved from the department)

2.2.2.7. **Metering And Cabling**

a) 120 Amps, 4P, 36 KA MCCB (Ics = 100% Icu) with thermal magnetic release for over current, short circuit Release, extended rotary handle etc -1 No.
b) Compartmet for installation of Power Conditioning Unit (PCU) with suitable mounting arrangement.
c) Cable alley for termination and routing of the input / output cables
d) Solar meter and Net Meter with metering CTs, Termination, Metering panel
e) Suitable size of 3.5 C XLPE CU/ Aluminium Cable.

2.2.2.8. **Earthing**

Earthing with 1.5 mtr long earth rod, including accessories, and providing earth pit chamber with cover plate having locking arrangement and watering facility and carbon compounds as required.

2.2.2.9. **Connections &Interconnections**

By Supplying & fixing requiredsize XLPE Insulated Copper Conductor 1.1KV Grade Armoured Power and Control Cables between Solar Modules, Mainpower Cable to

Grid Supply PCU along with Supplying & Fixing of necessary Channel / Conduit ,Lugs and other accessories etc. as required.

2.2.3. GENERAL SPECIFICATIONS FOR WIRING AND ELECTRICAL INSTALLATIONS

All the switches, plugs etc. shall be of modular type with plates, cover etc. complete. All cables shall be Fire Retardant 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. FRLS PVC insulated multi stranded core cable etc as required All inter connections shall be provided as follows:

A. The outgoings of 6 A & 10A MCBs shall be connected to the light/ fan/ plug points with 1.5 Sq mm copper cable.
B. The outgoings 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.
C. 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.
    a. Ceiling rose or connector (in the case of ceiling/exhaust fan point).
    b. Ceiling rose (in the case of pendant except stiff pendant point).
    c. Back plate (in the case of stiff pendants and fittings with down rods)
    d. Socket and Outlets (in the case of socket outlets points)
    e. Lamp Holder (in the case of wall brackets, batten points, bulk head and similar fittings).
D. 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, phil 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.
E. 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.
F. In the case of plug points the point length shall be measured from the DB to individual plug socket.
G. 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.
H. 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.
I. 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.

J. 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.

L. 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.

M. 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.

N. 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

O. 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.

P. All the JB's shall be of Poly carbonate materials with IGBC standards and Norms.

2.2.4. TECHNICAL SPECIFICATION OF 11KV 4 PANEL SF6 RMU and VCB PANEL METAL ENCLOSED, OUTDOOR DUPLEX , MARINE GRADE

2.2.4.1. Scope

This specification covers design, manufacture, shop testing, inspection, packing, delivery to site, erection, testing and commissioning of 11KVMetal Enclosed, panel type, Outdoor SF6 LOAD BREAK SWITCH RING MAIN UNIT (RMU), fully type tested according to IEC 62271-200 standards as required.

The RMU should be complete with all components necessary for its effective and trouble free operation along with associated equipment etc. such components should be deemed to be within the scope of supplier's supply.

The design of the switchgear should be exclusive and specific responsibility of supplier and should comply with current good engineering practice, the relevant codes and recommendation, the project specific requirements.

The RMU should be fixed type SF-6 insulated both side extensible. It should be maintenance free equipment, having stainless steel robotically welded enclosure.

2.2.4.2. **Standards And Reference Documents**

The RING MAIN UNIT (RMU)should be designed, manufactured and tested according to the latest version of:

- **IEC 60694 :** Common specifications for high-voltage switchgear and control gear standards.
- **IEC 62271-200 :** A.C metal-enclosed switchgear and control gear for rated voltages above 1KV and up to and including 72KV and the IEC Codes herein referred.
- **IEC 62271-102:** Alternating current isolators and earthing switches
- **IEC 60529 :** Classification of degrees of protection provided by enclosures
- **IEC 60265 High-voltage switches-Part 1**:Switches for rated voltages above 1kV & less than 52 kV
- **IEC 60056:** Circuit breakers
- **IEC 62271-105:** High-voltage alternating current switch-fuse combinations
- **IEC 60185:** Current transformers
- **IEC 60186: Voltage** transformers
- **IEC 60255:** Electrical relays

Any other codes recognized in the country of origin of equipment might be considered provided that they fully comply with IEC standards.

The design of the switchgear should be based on safety to personnel and equipment during operation and maintenance, reliability of service, ease of maintenance, mechanical protection of equipment, interchangeability of equipment and ready addition of future loads.The switchgear shall be painted with marine grade paint.

2.2.5. SPECIFICATION FOR RMU

a) SF6, +CCCV+, 11 KV RMU

Out door type, 4 Panel compact , SF6, +CCCV+, 11 KV RMU , battery operated Self powered Relay -1, SCADA compatible, with FRTU , Voltage presence Indicator, marine grade painting etc.

b) Single Panel SF6 VCB

11KV SF6 Outdoor, Extensible, Ring Main Unit (RMU), battery operated ,Self powered Relay -1, SCADA compatible, with FRTU , Voltage presence Indicator, marine grade painting etc. comprising 1 no. with live line indicators etc.

2.2.5.1. **11 KV, 630A VCB Feeder**

Vacuum circuit breaker module with vacuum circuit breaker, three position isolator/ earthing switch, busbars, interlocking, earthbar and stored spring energy mechanism (A-mech.).

1	Vacuum circuit breaker 12kV, 630A, 21kA
1	Stored energy mech. for motorized operation
1	Control Voltage 24 V DC for Motor Operation
1	Bushings for connection of external busbar
1	Busbar cover
1	Optical indication of latch function
1	Self powered Microprocessor based 2 O/C + 1no. E/F Relay

3	Ring core current transformer of suitable ratio
1	Cable bushings 400 series bolted, 630A
1	Arc proof cable cover complete incl. Interlocking
1	Capacitive voltage indication fixed type VPIS 9-15 kV
1	Shunt Trip Coil
1	Aux. switch for vacuum circuit breaker position 2NO + 2NC
1	Vacuum circuit breaker tripped signal 1NO

2.2.5.2. **Load Break Switch (630A)**

Load break switch should have the following components

a. Manually operated 12 KV, 630A Load Break switch and Earthing Switch with making capacity
b. "Live Cable" LED Indicators through Capacitor Voltage Dividers mounted on the bushings.
c. Mechanical ON/OFF/EARTH Indication
d. Operating handle
e. Cable Testing facility inside cable boxes without disconnecting the Cable terminations
f. Cable end boxes suitable for 1 run of 3 C x 300 sq mm XLPE Cable with right angle Cable Termination Protectors.
g. Cable boxes should be Arc Proof and interlocked with respective Earthing Switches. For safety of operator it should not be possible to open the cable box unless the earth Switch is ON.
h. Switch module with a three position load break switch and earthing switch, bus bars, interlocking and earth bus.
i. Cable switch 12kV, 630A
j. Cable bushings 400 series bolted, 630 A, standard
k. Arc proof cable cover complete incl. Interlocking
l. Capacitive voltage indication fixed type VPIS 9-15 kV
m. Aux. switch for load break switch position 2NO + 2NC

2.2.5.3. **Service Conditions**

a. The Ring Main unit shall be suitable for operations in the sea facing area and shall be suitable for marine environment.
b. The RMU shall be capable of operating normally within the following temperature ranges up to 50◦C:
c. The Compact switchgear shall be capable of being exposed to high relative humidity (max 95%) and ambient air pollution.
d. The Compact switchgear shall be capable of being operated in electrically exposed locations.

2.2.5.4. **Design Parameters: Electrical Data**

1.	Rated voltage	11 KV
2.	Rated frequency	50 Hz
3.	Rated current busbars	630 A
4.	Rated current (cable switch)	630 A
5	Rated current (T-off)	630 A

2.2.5.5. **General Data, Enclosure And Dimensions**

1. Standard to which Switchgear complies	IEC
2. Type of Ring Main Unit	Outdoor, Metal Enclosed, bolted type.

3. Number of phases	3
4. Whether facility is provided with pressure relief	Yes
5. Insulating gas	SF6
6. Nominal operating gas pressure	1.4 bar abs. 20° C
7. Gas leakage rate / annum %	0.1 % per annum or as per IEC 62271
8. Expected operating lifetime	30 years or as per IEC.
9. Whether facilities for gas monitoring	Yes, temperature compensated Manometer
10. Material used in tank construction	Stainless steel sheet, 2.5/3 mm

2.2.5.6. **No. of Operations, Degree of Protection and Colours**

Means of switch operation Separate handle

Degree of protection:
SF6 tank IP 67

Front cover	IP 2X
Cable cover	IP 3X
Outdoor Enclosure	IP 54
Bus bars 240 mm2 Cu	
Earth bar (external):	120 mm2 Cu - Bolt dimension: M10

Thickness of Stainless Steel Tank: 2.5 mm or above.

Colours:

Front cover	RAL 7012
Side and cable cover	RAL 7035

2.2.5.7. **Technical Specification:**

SF6 Compact switchgear

Name of switchgear: 11KV +CCC+ (3 nos. LBS (OD))
(Front Terminated and Cable Entry from Bottom, Incoming through Load break switch and Outgoings through Load break switch

Total number of modules 3 pieces

Dimension Approx.: 1170 x 1021 x 2250 mm

2.2.5.8. **Standards and Mechanical Data**

Metal Enclosed switchgear:	IEC 60298
General Purpose switches:	IEC 60265
Disconnectors&Earthing switches	IEC 60129
Switch Fuse Combination:	IEC 60420
Circuit Breakers:	IEC 60056
Common clauses:	IEC 60694
Pressure of SF6 gas:	1.4 bar at 20 °C
Cable bushings:	DIN 47636
Temperature class:	-25 °C to 40°C Outdoor

2.2.5.9. **Electrical Data – 12 KV - 28KV-1min**

Rated current busbars: 630 A
Rated current cable switch disconnector : 630 A
Short time withstand current (3 sec) cable switch disconnector : 21 kArms
Short time withstand current (3 sec) vacuum circuit breaker: 21 kArms
Rated current for transformer T-off : 630 A

Impulse withstand voltage :
To earth and between phases: 75 kV
Insulation level:
Power frequency 1 min: 28 kV

2.2.5.10. **General Structural andMechanical Construction**

a. The offered RMU should be of the fully arc proof metal enclosed, free standing, floor mounting, flush fronted type, consisting of modules assembled into one or more units. Each unit is made of a robotically welded sealed-for life stainless steel tank of thickness not less than 2.5 mm or above, filled with SF6, containing all high voltage components sealed off from the environment with Ingress protection IP67. The enclosure should meet the '**Sealed Pressure System'** criterion in accordance with IEC 62271-200 standard (i.e a system for which no handling of gas is required throughout the 30 years of service life), so that no refilling of gas is required. In addition, manufacturer shall confirm that maximum leakage rate is lower than 0.1% per year. The overall design of the switchgear should be such that front access only is required. It should be possible to erect the switchboard against a substation wall, with HV and LV cables being terminated and accessible from the front.
b. The design of the units should be such that no permanent or harmful distortion occurs either when being lifted by eyebolts or when moved into position by rollers.
c. Sheet metal for outdoor enclosure must be suitably treated and painted with about 70 micron thickness, to achieve outdoor worthiness and corrosion protection and should pass salt spray test for not less than 500 Hours
d. Enclosure must be suitably ventilated for ambient conditions and shall have IP54 class of protection.
e. RMU must have a pressure relief device at the bottom of the stainless steel housing to ensure that in the rare case of an internal arc, the high pressure caused by the arc will be released and the hot gases are allowed to be exhausted out at the bottom of the cubicle towards back side to ensure complete safety to the operator. A controlled direction of flow of the hot gas should be achieved.

2.2.5.11. **Earthing of the Main Circuit**

a) Each disconnector shall be provided with an integral earth switch. Earthing switches should be rated equal to the switchgear rating. Earthing switches should be quick make type capable of making Rated Fault Current. Earthing switch should be operated from the front of the cubicle by means of a removable handle. The earthing switch can be operated only when the main isolator or circuit breaker are open.
b) Mechanical interlocking systems shall prevent all operator errors such as closing the earth switch when switch is closed.
c) The HT cables are terminated in the dedicated cable. At the bottom of the cable compartment, an earthing bar system made of copper with a minimum cross section of 200 sq mm(50x4 mm / 40x5 mm) should be fitted. In each compartment the earthing bar should be fitted with 4 screws M10. The earthing system is connected to the tank by a copper bar, which rises up to the connecting point of the tank behind the rear partition wall on the middle of the switchgear.

2.2.5.12. **Load Break Switch (630 Amp Cable Feeder)**

It should consist of an SF6 cubicle housing a switch disconnector and an earthing switch. Bus bars and all electrical connections are located inside the tank. The switch positions are closed – open – earthed. The operating shafts for the switches should have rotary seals where they enter the SF6 cubicle. The operating mechanisms should be located outside on the front of the SF6 tank. Cable bushings should be located on

the front of the SF6 cubicle in a separate cable compartment. Front covers containing the mimic diagram and having a degree of protection IP2XC close the fronts.

2.2.5.13. **Operating Mechanisms**

a. All mechanisms should be situated in the mechanism compartment behind the front covers outside the SF6-tank. The mechanism for the switch and the earthing switch is operating both switches via one common shaft. The mechanisms provide independent manual operation for closing and opening of the switch, independent closing of the earthing switch and dependent opening of the earthing switch.
b. The mechanism for the T-off switch and earthing switch is operating both switches via one common shaft. The mechanisms has stored spring energy and provide independent manual operation for closing and opening of the switch, independent closing of the ear thing switch and dependent opening of the earthing switch. The mechanism for the disconnectorearthing switch provide independent manual operation for closing and opening of the disconnector, independent closing of the earthing switch and dependent opening of the earthing switch.
c. The operating mechanism shall be designed in such a way that in case of failure of operating mechanism the same shall be possible to repair without any gas refilling.

2.2.5.14. **Interlocking**

a. The mechanism for the cable switch should be provided with a built in interlocking system to prevent operation of the switch when the earthing switch is closed, and to prevent operation of the earthing switch when the switch is in the closed position.
b. Further is should not be possible to Open the Cable doors unless the Earthing Switch is Turned ON. In case the Cable door is accidentally left open a positive interlock shall prevent operation of Load Break Switch and Isolators / Breaker from any operation.

2.2.5.15. **Bus-Bars**

The bus bar shall comprise of 3 single phases copper bus bars and the connections to the switch or circuit breaker. The bus bar should be integrated in the cubicle. Bus bars should be rated to withstand all dynamic and thermal stresses for the full length of the switchgear.

2.2.5.16. **Front Covers**

The front cover contains the mimic diagram of the main circuit with the position indicators for the switching devices. The voltage indicators are situated on the front panels. Access to the cable bushings is in the lower part of each module.

2.2.5.17. **Position Indicators**

The position indicators shall be visible through the front cover and must be directly linked to the operating shaft of the switching devices. The operator shall be able to confirm the closing of earth switch. Same can be accomplished either by providing a viewing window for earth switch or by means of true position indication duly type tested as per IEC 62271-102 sub clause A.6.105 to verify proper functioning of position indicating device.

2.2.5.18. **Voltage Indicators**

The Voltage Indicators/Live Line Indicators through capacitor dividers or with VT supported indicators shall be provided on the front cover, one for each module, and indicate the voltage condition of each incoming cable. Identification of the phases is achieved with labels L1, L2 and L3 on the front of the voltage indicators. The voltage indicator with capacitor dividers shall satisfies the requirements of IEC 61243.

2.2.5.19. **Cable Compartment**

It should be possible to terminate up to a 1x 3c x300 sqmm core HV cables in each cable compartment. The cable compartments should be in front and cable entry shall be from bottom. The access to the compartment will be possible by removing the cable cover, hinged to the main frame only when earth switch is ON. Cable Compartments should be Arc Proof and interlocked with respective Earth Switches. Each module has a separate cable compartment that is segregated from each other by means of a partition wall. A partition wall should be fitted to divide the cable compartment from the rear side of the switchgear. In case of an arc inside the tank, followed by the opening of the pressure relief, the partition wall prevents the hot gases flowing out from the pressure relief to enter the cable compartments. All covers are removable. The ground continuity is achieved when the covers are in place by means of hinged connections. It should be possible to perform cable testing inside the cable boxes without disconnecting the cables.

2.2.5.20. **Padlocking Facilities**

The circuit breakers, isolators and the earthing switches can be locked in open or closed position by padlocks 6 to 8 mm in diameter.

2.2.5.21. **Base Frame**

Suitable base frame shall be supplied along with the RMU unit

2.2.5.22. **EarthingSystem.**

The equipment shall be supplied with earth bus of 200 Sq mm, tinned copper (50x4 copper or 40x5 copper). The earth bus of the equipment shall also be interconnected to the existing earth pit with same size of strips provided for the equipment. GI strips are also acceptable with sufficient size so as to withstand the fault current of 25 KA for 3 sec. The existing earth strips may also be used for interlinking purpose, however if the existing strip is not sufficient, the additional quantity shall be supplied by the contractor without any extra cost.

2.2.5.23. **Documentation**

a. An instruction manual should be provided with necessary information for receiving, handling, storage, installation, operation and maintenance.
b. Routine test certificate should be follow each unit, and standard schematic drawings should be delivered for Ring Main Units. Compact Switchgear should have drawings that consist of system single line drawings, general arrangement and schematic drawings for order specific units.
c. All drawings shall confirm to International Standards Organization (ISO) “A” series of drawing sheets/Indian Standards Specification IS : 11065.. All dimensions and data shall be in S.I. Units.

2.2.5.24. **List of Drawings And Documents**

The bidder shall furnish four sets of relevant descriptive and illustrative published Literature, pamphlets and the following drawings for preliminary study along with offer.

a. General outline drawings showing dimensions and shipping weights, quantity of Insulating media.
b. Sectional views showing the general constructional features of the circuit breaker
c. Including operating mechanism, arcing chambers, contacts with lifting dimensions for maintenance.
d. Drawings showing control cabinets and circuit diagrams for operating mechanism.
e. Schematic diagrams of breaker offered for control and supervision

f. Structural drawings for support structures.
g. Foundation plan and loading data and foundation design.
h. Drawings showing the complete operation cycle of the Ring Main Unitwith description.

2.2.5.25. **Testing And Certification**

i. Type Tests.

Units should be type tested in accordance with IEC standards 60056, 62271-102, 60265, 62271-200, 62271-105, 60529 and 60694. The following type tests have been performed and available if required

a. Short time and peak withstand current test
b. Temperature rise tests
c. Dielectric tests
d. Test of apparatus i.e. circuit breaker and earthing switch
e. Arc fault test
f. Measurement of resistance of main circuit.
g. Mechanical endurance test.
h. Duty cycle test.
i. Internal arc test for HT chamber.
j. Degree of protection for IP –54 for Outdoor enclosure.
k. Tests to verify true position indication devices as per IEC 62271-102.

Type test reports for above tests shall be submitted with the offer.

ii. Routine tests

Routine tests should be carried out in accordance with IEC 62271-200 standards. These tests should ensure the reliability of the unit.

Below listed test should be performed as routine tests before the delivery of units:

a. Withstand voltage at power frequency
b. Measurement of the resistance of the main circuit
c. Partial discharge test for the tank
d. Withstand voltage on the auxiliary circuits
e. Operation of functional locks, interlocks, signaling devices and auxiliary devices
f. Suitability and correct operation of protections, control instruments and electrical
g. connections of the circuit breaker operating mechanism
h. Verification of wiring
i. Visual inspection
j. Time travel characteristics measurement facility for Breaker should be available with the manufacturer to assess the quality of RMU.

2.2.6. LT UG CABLES

2.2.6.1. **Scope**

This specification provides for manufacture and delivery of 1.1 KV grade PVC insulated cables as required.

2.2.6.2. **Application**

The 1.1 KV cable is intended for use on Distribution net work, lightings purpose etc. for outdoor application.

2.2.6.3. **Codes & Standards**

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 latest requirements of the relevant IS standards and codes for 1.1KV grades applicable .

2.2.6.4. **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 flame retardant 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. The aluminium used for armouring shall be of H4 grade as per IS: 8130 with maximum resistivity of 0.028264 ohm-sq.mm / mtr at 20 deg. C. The gap between armour wires / formed wires shall not exceed one armour wire / formed wire space and there shall be no cross over / over-riding of armour wires / formed wires. The minimum area of coverage of armoring shall be 90%. The breaking load of armour joint shall not be less than 95% of that of armour wire / formed wire. Zinc rich paint shall be applied on armour joint surface of GS wires / formed wires. Outer sheath shall be of PVC black in colour. In addition to meeting all the requirements of Indian standards referred to, outer sheath of all the cables shall have the following FRLS properties:

(i) Oxygen index of min. 29 (Test method as per IS 10810 Part-58)

(ii) Acid gas emission of max. 20% as per IEC – 754(Part-I)

(iii) Smoke density rating shall not be more than 60% during Smoke Density Test as per ASTMD-2843.

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:

2.2.6.5. **Technical Particulars of LT Cables**

(i) Size of Cable — As per schedule of works

(ii) Voltage Rating — 1100 V

(iii) Conductor Material — Plain Aluminium /copper as per specification.

(iv) Insulation

-Type — Type A PVC Compound

-Tolerance — 0.1 mm + 0.1 nominal thickness of insulation

(v) Inner sheath thickness — As per IS

(vi) Outer sheath

- Process of application — Extrusion
- Thickness — As per IS.

2.2.7. SPECIFICATION FOR MV PANEL

2.2.7.1. **General Specification**

The MV /LT Panel Shall Be Of CRCA Sheet Rated Capacity

Normal voltage - 415 V, +/- 5%

Frequency - 50 cycles/sec

Bus bars - Copper with current carrying capacity of 1.2A /Sq mm for phase and for neutral half of main bus , Earth as per standards

(i) The outgoing cables shall be connected to the bus bars directly and hence sufficient working space shall be provided between each phase and to body.

(ii) MCCB from 160 A and above shall be of LSIG protection and confirm to solar requirements .

(iii) ACB shall be as per lasted IEC standard and shall confirm to solar requirements. With LSIG protection, relays , draw out type .

(iv) The apnel shall be equipped with RYB indicator , Voltmeter, Ammeter in each panel , Selector switch, metering etc. as per IEC/ standards.

(v) (The panels shall be type tested as per CPRI for the current rating specified. The panel manufactures shall be ISO 9001-2008 certified and CPRI approved.

(iii) The material shall be CRCA sheet panels

(iv) The cable entry shall be through from top or bottom as per the site location of panels, this has to be considered while making of drawing ofpanels. Sufficient knock outs to be provided.

(v) The panel shall accommodate 1.1KV XLPE cable ranging from 3.5 C x500 Sq. mm to 3.5C x 16 Sq. mm. Hence the size of the MSB shall befabricated accordingly.

(vi) The bus bar shall be supported with FRP/SMC support. The panel shallbe in single front execution only.

(vii) The general arrangement drawing and SLD of the panels shall be gotapproved by engineer in charge before its fabrication.

(viii) The size of panels shall be uniform, which accommodate maximumnumber of cable termination shall be treated as standard one.

(ix) The Panel shall be made of CRCA sheet steel clad with the frame fabricated out of 14SWG cold rolled sheet steel and single/double doorentry shall be provided depends on the convenience. For the Loadbearing membrane the angle supports shall be provided with suitable size

(x) All metal sheets shall undergo 9 tank metal treatment process. The finish of panel board shall be epoxy grey. All joints and connectionsof the panel members shall be made of galvanized. Zinc passivated orcadmium plated high quality steel bolts, nuts and washers securedagainst loosening.

(xi) The decision of Engineer in charge shall be final regarding thedimensions of the DB and the SLD, GA diagram etc of DB shall be gotapproved before its fabrication.

- **Panel has be type tested as per IEC61439 , 1&2 Edition-III**

2.2.8. 315 KVA OIL COOLED TRANSFORMER OUTDOOR TRANSFORMER.

2.2.8.1. Scope

This specification covers design, engineering, manufacture, assembly, stage testing, inspection and testing before supply and delivery at site of oil immersed, naturally cooled 3 phase 11 kV/433 - 250 V distribution transformers for outdoor use with cable end box at both end. The transformer shall comply the relevant BIS and "Guideline for Specification of Energy efficient Out Door type (Cable end box), 3 Phase, Distribution Transformers". And shall comply with IS 1180 (Level-2) or latest as per the BIS/BEE and MOP standards, With Cu windings .

It is not the intent to specify completely herein all the details of the design and construction of equipment. However the equipment shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation, in a manner acceptable to the

purchaser, who will interpret the meanings of drawings and specification and shall have the power to reject any work or material which, in his judgment is not in accordance therewith. The offered equipment shall be complete with all components necessary for their effective and trouble free operation. Such components shall be deemed to be within the scope of bidder's supply irrespective of whether those are specifically brought out in this specification and / or the commercial order or not.
The transformer and accessories shall be designed to facilitate operation, inspection, maintenance and repairs. The design shall incorporate every precaution and provision for the safety of equipment as well as staff engaged in operation and maintenance of equipment. All outdoor apparatus, including bushing insulators with their mountings, shall be designed so as to avoid any accumulation of water

2.2.8.2. **Ratings And Type**

The KVA ratings and types of transformer shall be as follows: KVA Ratings	No. of Phases	Nominal System Voltage (ph-ph)	No Load Voltage Ratio
315 KVA	Three phase	11 KV	11KV/433kV

2.2.8.3. **Standards.**

The materials shall conform in all respects to the relevant Indian/International Standards, with latest amendments thereof unless otherwise specified herein. Some of them are listed below:

Indian Standard	Title	International and Internationally recognised standards
IS -2026	Specification for Power Transformers	IEC 76
IS - 1180 Level- II	Outdoor distribution Transformer , Star rated	
IS 12444	Specification for Copper wire rod	ASTM B-49
IS-335	Specification for Transformer Oil	BS 148, D-1473, D-1533-1934 IEC Pub 296
IS - 5	Specification for colors for ready mixed paints	
IS - 104	Ready mixed paint, brushing zinc chromate, priming	
IS – 2099	Specification for high voltage porcelain bushing	
IS - 649	Testing for steel sheets and strips and magnetic circuits	
IS - 4257	Dimensions for clamping arrangements for bushings	
IS - 7421	Specification for Low Voltage bushings	
IS - 3347	Specification for Outdoor Bushings	DIN 42531 to 33

Material conforming to other internationally accepted standards, which ensure equal or better quality than the standards mentioned above, would also be acceptable. In case the bidders who wish to offer material conforming to other standards, the bidder shall clearly bring out the salient points of difference between the standards adopted and the specific standards in relevant schedule. Four copies of such standards with authentic English translations shall be furnished along with the offer.

2.2.8.4. **Service Condition.**

The Distribution Transformers to be supplied against this Specification shall be suitable for satisfactory continuous operation under the following climatic conditions as per IS 2026 (Part - I).

Location	: W/Island, Kochi
Maximum ambient air temperature (0C)	: 40
Minimum ambient air temperature (0C)	: 16
Maximum average daily ambient air temperature (0C)	: 40
Maximum yearly weighted average ambient temp (0C)	: 32
Maximum altitude above mean sea level (Metres)	: 1 Mtr

Note:

The climatic conditions specified above are indicative and can be changed by the user as per requirements.

The equipment shall generally be for use in moderately hot and humid tropical climate, conducive to rust and fungus growth unless otherwise specified.

2.2.8.5. **Principal Parameters.**

The transformers shall be suitable for outdoor installation with three phase, 50 Hz, 11 kV in which the neutral is effectively earthed and they should be suitable for service with fluctuations in supply voltage upto plus 12.5% to minus 12.5%. The transformers shall conform to IS 1180 (Level-2) and the following specific parameters :

No.	Item	11 kV Distribution Transformers
1	System voltage (max.)	12 kV
2	Rated voltage HV	11 kV
3.	Rated voltage LV	433 - 250 V
4.	Frequency	50 Hz
5	No. of Phases	Three
6	Connection HV	Delta
7	Connection LV	Star (Neutral brought out)
8.	Vector group	Dyn-11
9.	Type of cooling	ONAN
10.	Insulation Class	Class A

2.2.8.6. **Technical Requirement:-**

2.2.8.6.1. **Core Material Crgo(M-4 Grade)**

The core shall be stack / wound type of high grade cold rolled grain oriented annealed steel lamination having low loss and good grain properties, coated with hot oil proof insulation, bolted together and to the frames firmly to prevent vibration or noise. The core shall be stress relieved by annealing under inert atmosphere if required. The complete design of core must ensure permanency of the core loss with continuous working of the transformers. The value of the maximum flux density allowed in the design and grade of lamination used shall be clearly stated in the offer. The transformers core shall be suitable for over fluxing (due to combined effect of voltage and frequency) up to 12.5% without injurious heating at full load conditions and shall not get saturated. The bidder shall furnish necessary design data in support of this situation. No-load current shall not exceed 3% of full load current and will be measured by energising the transformer at 433 volts, 50 Hz on the secondary. Increase

of voltage of 433 volts by 12.5% shall not increase the no-load current by 6% (maximum) of full load current.

2.2.8.6.2. **Windings**

HV and LV windings shall be wound from Super Enamel covered / Double Paper covered copper conductor/foil winding . LV winding shall be such that neutral formation will be at top.The winding construction of single HV coil wound over LV coil is preferable. Inter layer insulation shall be Nomex /Epoxy dotted Kraft Paper. Proper bonding of inter layer insulation with the conductor shall be ensured. Test for bonding strength shall be conducted. Dimensions of winding coils are very critical. Dimensional tolerances for winding coils shall be with in limits as specified in Guaranteed Technical Particulars. Current density for HV and LV winding should not be more than 2.8 Ampere per sq mm for copper and 1.6 Ampere per sq mm for Aluminium Conductor.

The core/coil assembly shall be securely held in position to avoid any movement under short circuit conditions. Joints in the winding shall be avoided. However, if jointing is necessary the joints shall be properly brazed and the resistance of the joints shall be less than that of parent conductor. In case of foil windings, welding of leads to foil can be done within the winding.

2.2.8.6.3. **Taps:**

Tappings shall be provided on the higher voltage winding for variation of HV voltage within range of (+) 5.0 % to (-) 5.0% in steps of 2.5%. Tap changing shall be carried out by means of an externally operated self position switch and when the transformer is in de-energised condition. Switch position No.1 shall correspond to the maximum plus tapping. Each tap change shall result in variation of 2.5% in voltage. Provision shall be made for locking the taping switch handle in position. Suitable aluminiumanodised plate shall be fixed for tap changing switch to know the position number of tap.

2.2.8.6.4. **Transformer Oil**

The insulating oil shall comply with the requirements of IS 335 or BS 148. Use of recycled oil is not acceptable. The specific resistance of the oil shall not be less than 2.5 X1012 ohm-cm at 27 0C when tested as per IS 6103. The oil shall be filled under vacuum. The design and all materials and processes used in the manufacture of the transformer, shall be such as to reduce to a minimum the risk of the development of acidity in the oil.

Sl. No.	**Voltage (kV)**	**Impulse Voltage (kV Peak)**	**Power Frequency Voltage (kV)**
1	0.433	-	3
2	11	95	28

2.2.8.6.5. **Losses**

The bidder shall guarantee individually the no-load loss and load loss without any positive tolerance. The bidder shall also guarantee the total losses at 50% and 100% load condition (at rated voltage and frequency and at 75 0C). Shall comply with latest standards mentioned in the scope/tender.

2.2.8.6.6. **Tolerances**

No positive tolerance shall be allowed on the maximum losses displayed on the label for both 50% and 100% loading values.

2.2.8.6.7. **Percentage Impedances:**

The value of impedance of transformers at 75 0C shall be in accordance with IS 2026

2.2.8.6.8. **Temperature Rise**

The temperature rise over ambient shall not exceed the limits given below:
Top oil temperature rise measured by thermometer : 35 0C
Winding temperature rise measured by resistance method : 40 0C
The materials not meeting the above limits of temperature rise will be rejected.
The transformer shall be capable of giving continuous rated output without exceeding the specified temperature rise.

2.2.8.7. **Cable End Boxes.**

The transformer shall be fitted with suitable cable box on 11 kV side to terminate one 11kV/ 3 core aluminium conductor cable up to 240 sq. mm.(Size as per requirement). The bidder shall ensure the arrangement of HT Cable box so as to prevent the ingress of moisture into the box due to rain water directly falling on the box. The cable box on HT side shall be of the split type with faces plain and machined and fitted with Neo-k-Tex or similar quality gasket and complete with brass wiping gland to be mounted on separate split type gland plate with nut-bolt arrangement and MS earthing clamp. The bushings of the cable box shall be fitted with nuts and stem to take the cable cores without bending them. The stem shall be of copper with copper nuts. The cross section of the connecting rods shall be stated and shall be adequate for carrying the rated currents. On the HV side the terminal rod shall have a diameter of not less than 12 mm. The material of connecting rod shall be copper. HT Cable support clamp should be provided to avoid tension due to cable weight. The transformer shall be fitted with suitable LV cable box having non-magnetic material gland plate with appropriate sized single compression brass glands on LV side to terminate 1.1 kV/single core XLPE armoured cable of suitable size.

2.2.8.8. **Terminal Markings**

High voltage phase windings shall be marked both in the terminal boards inside the tank and on the outside with capital letter 1U, 1V, 1W and low voltage winding for the same phase marked by corresponding small letter 2u, 2v, 2w. The neutral point terminal shall be indicated by the letter 2n. Neutral terminal is to be brought out and connected to local grounding terminal by an earthing strip.

2.2.8.9. **Drawings**

The Bidder shall furnish two sets of following drawings for approval before commencing the erection of the Transformer.

- General outline drawings of the complete equipment with technical parameters.
- Drawings showing clearance from ground and other live objects shall be submitted.
- Drawings showing details of mounting plinth of 11 KVtransformer
- Drawing showing details of line and ground terminals and connection.

2.2.8.10. **Fittings**

The following standard fittings shall be provided for the Transformer as per standards .

a) Rating and terminal marking plates, non-detachable.
b) Earthing terminals with lugs - 2 Nos.
c) Lifting lugs for main tank and top cover
d) Terminal connectors on the HV/LV bushings
e) Thermometer pocket with cap - 1 No.
f) Air release device or plug .
g) Pulling lugs
h) Stiffener
i) Radiators
j) Prismatic oil level gauge/indicator.
k) Drain cum sampling valve.
l) Top filter valve
m) Oil Conservator tank with drain plug ,filling hole and Cap.
n) Silica-gel breather
o) Under carriage with Four Bi-directional rollers.
p) Base channel 100 mmx50 mm, 460 mm long with holes to make them suitable for fixing on a platform or plinth.
q) Pressure relief device or explosion vent.

2.2.9. SPECIFICATION FOR THE FOUNDATION , ROOFING & FENCING OF RMU,SINGLE PANEL VCB SWITCH ETC.

a) The details for the roofing, fencing and foundation shall be as given below. The Contractor shall supply all the required materials for the above. The Contractor shall prepare the drawing and get it approved from engineer in charge before the commencement of work. The area of the fencing shall be not less than **2.5 mtr x 1.8 mtr and shall accommodate the RMU unit.**

b) The contractor shall develop foundation designs for the equipments based on the information furnished by the manufacturers of the same and after assessment of the soil condition in the field and shall prepare the drawings submit the same to the CoPT for approval. Only after approval of these designs and drawings the work should commence.

c) The location where RMU is to be installed shall be developed by filling soil / earth up to one feet from road level. The foundation shall be RCC. The RMUs shall be placed on the RCC foundations at least 50CM above the surrounding surface to prevent deterioration due to flow of rainwater. Cement concrete used shall conform to IS: 456 shall be of grade approved by engineer in charge. The finishing of the foundation above ground level shall be made with cement mortar and shall have a neat appearance. The concerned Site Engineer shall fix the location of the equipments. The work of casting the foundation at each location shall be commenced only after the approval of the Site Engineer.

d) The foundation for fixing the RMU panel shall be made of RCC with wall thickness not less than 15 cms and depth of appro.1 M from the base of RMU unit . Width of the foundation trench shall be as per the base size of panel. M20 mix concrete with NYSED grade Fe 415 rods of 12 mm size. shall be used for the construction of concrete foundation of RMU. Sufficient provision shall be provided at sides of the basement for entry of workman inside the trench.

e) The main flooring inside the fencing shall be RCC of thickness 10 CM with Fe 415 rods of 8 mm size at 20 cms. Interval.

f) The open portion of trench if any shall be covered with MS sheet not less than 4 mm thickness or FRP sheet.

g) For fencing foundation 20 CM x 20 CM RCC beam / belt with 8 mm Fe 415 rods shall be constructed throughout the outer periphery of the fencing foundation. Sand filling and PCC shall be provided below the RCC beam throughout the fencing area. Above the RCC work all sides shall be provided with powder coated troughed Aluminum sheet of thickness not less than 0.46 MM with MS angle supports of size not less than 40 mm x 40 mm x 6 mm up to the roof level . GI 'B' class pipe 50 mm dia. at distance of 1 M shall be provided around the fencing .Provision for air passage shall be given.

h) Suitable door shall be provided in the front side of the fencing with angle supports for the entry of workers with tools. Doors shall be provided with suitable pad locking arrangements. Roofing with powder coated troughed Aluminum sheet of not less than 0.46 mm thickness including bolts, nuts, washer and ridge capping shall be provided. The outer frame of roof shall be 50 mm dia: 'B' class GI pipe. Roofing shall cover entire fencing for preventing rain water entering inside the same. The structure shall be painted with two coats of epoxy grey paint over 2 coats of epoxy primer.

2.2.10. 11KV XLPE GRADE CABLE

2.2.10.1. Scope

This specification provides for manufacture, testing at works before despatch and delivery of **FRLS , 11 KV grade 3x300 sqmm (E) XLPE Aluminium cable** .

2.2.10.2. Application

The 11 KV cable is intended for use on Distribution net work, outdoor application for flexibility with connected to RMUs and VCBs for better distribution network.

2.2.10.3. Codes & Standards

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:

IS: 7089(Part-II) Specification for Cross linked polyethylene insulated PVC sheathed
cable :For working voltages from 3.3 KV upto and including 33 KV
IS:3975 Low Carbon Galvanized steel wires, formed wires & tapes for armouring of cable
IS:4905 Methods for random sampling.
IS:5831 PVC insulation and sheath of electrical cables.
IS:8130 Conductors for insulated electrical cables and flexible cords.
IS:10418 Specification for drums for electric cables.
IS:10810 Methods of tests for cables.
IS:1255 Code of Practice for installation and Maintenance of power cable up to an Edition 3.1including 33 KV Rating.
ASTM-D-2843 Standard test method for density of smoke from the burning or decomposition of plastics.
IEC-754(Part-1) Tests on gases evolved during combustion of electric cables.
IEC-332 Test on electric cables under fire conditions. Part-3: Tests on bunched

wires or cables (Category-B).

2.2.10.4. 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 flame retardant, low smoke (FRLS) type 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 deg. C and short circuit conductor temperature of 250 deg C. The aluminium used for armouring shall be of H4 grade as per IS: 8130 with maximum resistivity of 0.028264 ohm-sq.mm / mtr at 20 deg. C. The gap between armour wires / formed wires shall not exceed one armour wire / formed wire space and there shall be no cross over / over-riding of armour wires / formed wires. The minimum area of coverage of armouring shall be 90%. The breaking load of armour joint shall not be less than 95% of that of armour wire / formed wire. Zinc rich paint shall be applied on armour joint surface of GS wires / formed wires. Outer sheath shall be of PVC black in colour. In addition to meeting all the requirements of Indian standards referred to, outer sheath of all the cables shall have the following FRLS properties:

a) Oxygen index of min. 29 (Test method as per IS 10810 Part-58)
b) Acid gas emission of max. 20% as per IEC – 754(Part-I)
c) Smoke density rating shall not be more than 60% during Smoke Density Test as per ASTMD-2843.

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

a) Cable size and voltage grade-To be embossed
b) Word 'FRLS' at every 5 meter To be embossed
c) 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.

2.2.10.5. Constructional Features

Cables shall conform to IS 7098 Part-II. These cables shall be multi-stranded, compacted Aluminium conductor, XLPE-insulated, metallic screened suitable for carrying the system earth fault current. The conductor screen and insulation screen shall both be of extruded semiconducting compound and shall be applied along with the XLPE insulation in a single operation of triple extrusion process so as to obtain continuously smooth interfaces. Method of curing for 11 KV Cables shall be "dry curing/ gas curing" For the single core armoured cables; the armouring shall constitute the metallic part of the screening.

2.2.10.6. Tests

All Types and sizes of cables being supplied shall be subjected to type tests, routine tests and acceptance tests as specified below and according to relevant standards.

2.2.11. General requirements of joints and terminations

The installed joints and terminations must provide the following:

a) Complete external leakage insulation between the high voltage conductor and earth potential using anti-track heat shrink material.

b) Electrical stress control using semi-conducting heat shrinkable tubing over the cores and by the insertion of high di-electric strength insulating material into the crutch of the termination such that electrical discharge activity does not occur in the termination after it has been energised at its rated voltage.

c) Hermetic sealing of the interfaces between heat shrinkable materials and cable surfaces, bushings or cable lugs by use of track resistant hot melt adhesive which can accommodate the creep and relaxations that may occur with recovered heat shrink materials. This sealant shall be pre-coated inside the heat shrinkable components and activated by the heat applied to shrink the components which shall be in excess of 125 Deg.C.

d) Uniform adhesive flow from the adhered heat shrink component into the adjoining surfaces will be used as an indicator that shrinking is complete, and therefore, the adhesive must be suitable for this purpose.

e) Outdoor terminations shall incorporate a design feature to prevent flexing of the terminated cores under short circuit conditions.

f) Joints and terminations must be insensitive to cable manufacturers tolerances allowed under BSS 6480-1969.

g) The length of core insulation required is 450 mm per phase.

h) Copper braid should be provided to connect the metal shield of XLPE cable and to make electrical contact with the outer screen of the joint for transition joints.

2.2.12. HDPE (HIGH DENSITY POLYETHYLENE) PIPE

2.2.12.1. HDPE pipe shall be provided for laying the HT cable at road crossing/hard surfaces.The HDPE pipes shall be 110 mm. dia: with thickness of not less than 5 mm. The HDPE pipe shall be made from high-density polyethylene (HDPE) resins meeting the following requirements:

2.2.12.2. The HDPE material supplied under this specification shall be high density, high molecular weight conforming to relevant IEC/BIS. The HDPE material shall conform to ASTM D 3350. Suitable size PVC flexible pipe with collar shall be provided for the end portion of HDPE pipe.

2.2.13. PLATE EARTHING

The earthing with plate earth shall be done as per IS 3043/1987. The life of the earth rod / CU plate / pipe shall be minimum 20 years and earth resistance of the installation after earthing shall be < 1 ohm. The earthing conductor (protective conductor from earth electrode up to the main earthing terminal/ earth bus, as the case may be) shall be of CU flat of 25mmX3mm . confirming to I.S. 3043, and in the form of wire or strip as specified.

2.2.13.1. Applicable Standards

Earthing Materials shall conform to latest applicable standards

IS: 2062 Grade A Quality Specification for MS angles, MS channel & MS Flat
IS: 2062 Chemical & Physical composition of materials.
IS: 1852 Rolling & Cutting tolerances for Hot Rolled Steel products

2.2.13.2. GI Flat Specification ForEarthing

The steel sections shall be re-rolled from the BILLETS/INGOTS of tested quality as per latest version of IS 2830 .The GI Flat shall be of size 40mm X 6mm. The GI Flats shall be free from any defects. The Zinc for galvanizing shall conform to grade Zen 98 specified in IS 209-1966 &IS : 4826-1979 with up to date amendments.

2.2.14. 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 FRLSPVC 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.

2.2.15. SPECIFICATION FOR SAFETY EQUIPMENTS

2.2.15.1. 11 KV Grade Rubbers Mat.

HT grade high quality Rubber mat of width of 1M, Min. 3MM thick shall be provided in front of HT Panel, covering throughout the length of panel and it shall be pasted to the floor. The applicable standard latest IS-15652.

2.2.15.2. Fire Buckets

Bottom rounded Fire buckets (Min 3 nos in each set) with stand filled with clean dry sand along with stand shall be provided in convenient and accessible locations . They shall be neatly painted and conspicuously marked. Sloping canopy shall also be provided over the fire buckets.

2.2.15.3. First Aid Boxes and chart

2nos of fully equipped and conspicuously marked Fist Aid Boxes shall be provided at convenient locations. First Aid Charts having first aid instructions printed in English and local language shall be affixed in noticeable places.

2.2.15.4. Fire Extinguishers

No. fire extinguisher of DCP/CO2 type of 4.5kg shall be provided at suitable locations. All the extinguishers shall be of reputed make and should have been approved by Tariff Advisory Committee of India or any other international authorities like FOC - London/NFPA-USA. All extinguishers shall be ISI marked. All the portable extinguishers shall be of free standing type and shall be capable of discharging freely and completely in upright position. Each extinguisher shall have the instructions for operating the extinguishers on its body itself. All extinguishers shall be supplied with initial charge and accessories as required. Portable type extinguishers shall be provided with suitable clamps for mounting on walls or columns. All extinguishers shall be painted with durable enamel paint of fire red colour, conforming to relevant Indian Standards. Dry chemical powder type extinguisher shall conform to

IS: 2171. Carbon Dioxide type extinguisher shall conform to IS:2878.

2.2.15.5. **HT grade Rubber gloves**

One set of high quality rubber gloves of HT grade conforming to relevant Indian Standards shall be provided at noticeable locations.

2.2.15.6. **Other safety equipments.**

A standard danger board notice in English, Hindi and local language with sign of skull &bones shall be affixed permanently at noticeable places. Warning strips "ISOLATE POWER SUPPLY BEFORE OPENING THE PANEL COVER" shall be affixed at the rear side of each panel.

2.2.15.7. 11 KV Grade high quality Rubber mat of width 1 m shall be provided in front of LBS & RMU. The applicable standard is IS- 15652. It shall be laid throughout the length of the panels and properly pasted to the floor.

2.2.15.8. A standard danger board notice in English and Malayalam with sign of skull &bones shall be affixed permanently at noticeable places. Warning strips "ISOLATE POWER SUPPLY BEFORE OPENING THE PANEL COVER" shall be affixed at the rear side of each panel.

2.2.16. TECHNICAL SPECIFICATION-INSTALLATION OF EQUIPMENTS

2.2.16.1. **Scope**

This specification covers the engineering requirements for erection/installation, testing and commissioning of equipment/items and its associated works.

2.2.16.2. **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 installation.

2.2.16.3.**Reference**

Following documents shall be read in conjunction with this specification

i. Scope of work and special requirements
ii. Schedule of items of work
iii. Engineering Specification and Data sheet of General requirements of Electrical system.

2.2.17. 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 hard wares 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 owners 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 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. All relays, before installation, the rating, range and auxiliary supply voltages for the relay should be checked against drawings/schematic/schedule.

2.2.18. INSTALLATION OF RMU.

a) The Equipments shall be erected at convenient locations as per the instruction from the Engineer in charge. All civil works, foundation including supply and laying of MS angles, channels and grouting fasteners for erection shall be responsibility of the Contractor. After installation of the equipments they shall be tested and commissioned in the presence of Engineer- in- charge in accordance with IE rules, relevant standards and as per requirements. All backfill of the site must be compacted before final site finish.

b) It is necessary to measure the soil resistivity at the site even before the foundation pits are dug. The earth electrodes shall be installed and the required earth resistance is obtained. It may even become necessary to shift the location in case the desired earth resistance cannot be achieved. Hence to avoid possible relocation in such cases and consequent additional expenditure, the earth electrodes shall be installed before commencing the associated works. The contractor shall note and keep in

mind that the success of the operation of the RMU depends on the way it is erected to a large extent and also depend on leveling of foundation. The flooring on which the RMU is erected shall be perfectly leveled using a spirit level. The position of the hold down bolts shall be fixed by using a suitable template made to suit the corresponding holes in the equipment. The verticality of the panels shall be checked and ensured. Only appropriate foundation-hold-down bolts, nuts and check nuts shall be used and all the necessary spring and flat washers shall be provided. Suitable packing shims shall be used wherever necessary under the bottom of the frame for adjustment and leveling and checked with a spirit level. All the units shall then be assembled at site.

c) After installation of RMU, it shall be tested and commissioned in the presence of Engineer- in- charge in accordance with IE rules, relevant standards and as per requirements. The bus bars shall be connected properly with fishplates and tightened giving the appropriate tightening torque, wherever necessary using a torque wrench. These bolted joints shall be properly addressed with the insulating plastic compound pressed to form a spherical or elliptical shape and exclude trapped air pockets. The same shall be covered with PVC adhesive tapes to form a suitable protective covering. Adequate precaution shall be taken to prevent flashover between metallic portion of the panel and the bus bars.

d) The locations shall be finalized in consultation with the Engineer in charge. The provision for the cable entry shall be from bottom and necessary space/ provision shall be made for drawing the cables conveniently into the feeder pillar. The verticality of the panels shall be checked and ensured. Only appropriate foundation-hold-down bolts, nuts and check nuts shall be used and all the necessary spring and flat washers shall be provided. Suitable packing shims shall be used wherever necessary under the bottom of the frame for adjustment and leveling and checked with a spirit level. All the units shall then be assembled at site if necessary.

e) HT grade high quality Rubber mat (3MM Thickness) of width 1m shall be provided in front of HT/MV panels**.** The applicable standard is IS-15652. It shall be laid throughout the length of the panels and properly pasted to the floor.

f) A standard danger board notice in English, Hindi and local language with sign of skull &bones shall be affixed permanently at noticeable places. Warning strips "ISOLATE POWER SUPPLY BEFORE OPENING THE PANEL COVER" shall be affixed at the rear side of each panel.

g) RMU shall be connected to the existing earth pit with suitable strips.

2.2.19. DRAWING OF CABLE BY HDD

Cable shall be drawn through road crossings / hard surfaced areas by horizontal direct drilling at a minimum depth of not less than 3 m except at both ends. The length of the route for providing HDD shall be minimum possible and shall be finalized after the approval of Engineer in charge.

HDD shall be done with 110 mm HDPE pipe having thickness of not less than 5 mm as referred in ASTM D 1505 .

Method of Drilling

The pipe shall be pulled through the borehole of sufficient depth & size after successfully reaming the borehole. Once pull back operations have commenced, the operation must continue without interruption until the pipe is completely pulled through the reamed hole.

The Contractor shall take all care and necessary precautions to protect existing structures, utilities and services in planning and execution of the Works for which the contractor shall carry out proper sounding before starting the HDD work. Any damage to adjacent properties that are not part of this work shall be repaired and restored to its original condition at the Contractor's expense. The Contractor shall be responsible for the identification and protection of services where these are crossed by construction activities. Where crossing of roadways and railways are involved, the Contractor shall be required to record and report any ground settlement to the satisfaction of the controlling agencies. Where utilities and pipelines are involved the Contractor shall monitor ground settlement or heave directly above and 3 m before and after the utility or pipeline intersection. The Contractor shall cease operations when monitoring points indicate any surface disruption. Necessary clearances from the concerned authority shall be obtained by the contractor.

Precautions To Be Taken

All necessary measures must be taken to ensure that excavations are left in a safe condition, including the erection of suitable hard barricades, warning signs and hazard lights. The earthworks shall be set out in accordance with the design drawings. All excavations shall be made to the depth and extent as shown on the Drawings with proper allowance for fill, additional cover (where required) and formwork. The excavations shall be kept free and clear of loose materials, water and rubbish. After satisfactory completing, excavated materials for the HDD operations shall be removed, the Contractor shall prepare the bottom of all pits to the same specification as required for the pipe foundation. The Contractor shall ensure that the terminal sections of pipe that are joined are connected with Central Plastics Electrofusion Couplings or connectors with tensile strength equivalent to that of the pipe being joined.

Safety

The Contractor shall undertake works in accordance with appropriate safety requirements by local & state regulations. Safety measures shall include, but not be limited to, personal protective equipments, operating of machinery within job site, and storage and transportation of materials and equipments.

After the HDD work, the HT cable shall be drawn through the pipe as per the schedule. Due Care shall be taken not to damage the cable while drawing .

Cable Tags And Marker

Each cable and conduit run shall be tagged with numbers that appear in the cable and conduit schedule. The tag shall be of aluminum with the number punched on it and securely attached to the cable conduit by not less than two turns of 20 SWG GI wire conforming to IS: 280. Cable tags shall be of rectangular shape for power cables and of circular shape for control cables. Alternately, the contractor may provide cable tags made up of nylon, cable marking ties of 'TY-CAB' or equivalent type with cable number heat stamped on the cable tags. Location of cables laid directly underground shall be clearly indicated with cable marker made of galvanized iron plate. Location of underground cable joints shall be indicated with cable marker with an additional inscription "Cable joint". The marker shall project 150mm above ground and shall be spaced at an interval 100 meters and at every change in direction. They shall be located on both sides of road and drain crossings. Cable tags shall be provided on all cables at each end (just before entering the equipment enclosure), on both sides of a wall or floor crossing, on each duct/conduit entry. Cable tags shall be provided inside the switchgear, motor control centers, control and relay panels etc., wherever required for cable identification, such as where a number of cables enter together through a

gland plate. The price of cable tags and markers shall be included in the installation rates for cables /conduits quoted by the Contractor. Specific requirements for cabling, wiring ferrules as covered in respective equipment section shall also be complied with.

Cable Route Marker

(a) Route markers shall be provided along the runs of cables at locations approved by the Engineer in charge and generally at interval as suggested by Engineer in Charge. Markers shall also be provided to identify change in the direction of the cable route and at locations of underground joints. Route markers shall be fixed firmly with cement concrete.

(b) Route identifiers shall be made out of RCC in 1:2:4 (cement: 2coarse sand: 4graded stone aggregate of 20mm in size) of size 75 cm x 30 cm x 10 cm shall be laid and centered over the cable. The concrete markers, shall project over the surrounding surface so as to make the cable route easily identifiable. The reinforcement shall be with 10 SWG MS rod having the size of 50mmx50mm

(c) The words **'CoPT 11 KV CABLE/ JOINT-2017"** as the case may be, shall be engraved / inscribed on the marker.

2.2.20. SPECIAL CONDITIONS FOR ELECTRICAL WORKS.

a) All current carrying component in all installation shall be of appropriate rating of voltage and frequency as required at respective areas.
b) Electrical work shall be done by only HT license holder and also having relevant experience in the field of installations.
c) All equipments to be supplied and works to be executed shall conform to the CEA/IS/IEC standards including protection and metering accessories. No extra amount will be paid in this regard.
d) All testing and calibration etc are to be carried out as per requirement of statutory authority concerned.
e) On completion of work the contractor has to submit necessary completion statement/ drawing, equipment details etc. before energisation.

2.3. PREPARING SCHEME OF INSTALLATION AND SUBMIITING THE SAME TO CEA FOR GETTING APPROVAL

The contractor shall measure the soil resistivity and prepare the scheme and get the approval from engineer in charge or authorized officer before the commencement of work. The schemes, drawings and other technical data shall be submitted to CEA for getting the approval and coordinate with CEA officials for the installation get tested during the pendency of contract. Contractor shall do liaison work with officials of CEA, and other statutory bodies for early approvals for the installation. The defects if any noticed by the CEA during his inspection shall be rectified by the contractor.

2.4. APPROVED MAKES

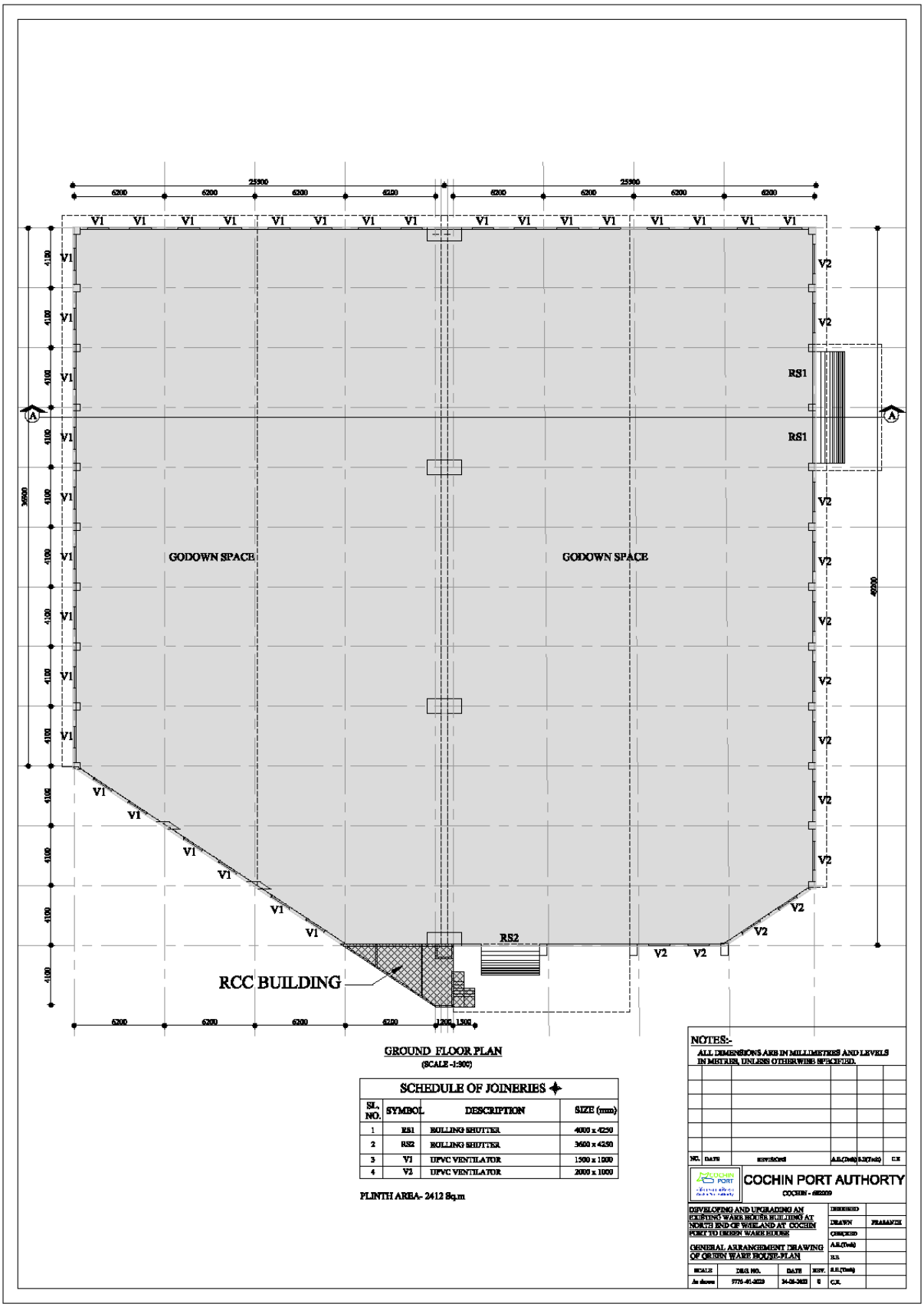
APPROVED MAKES- shall confirm to IGBC norms

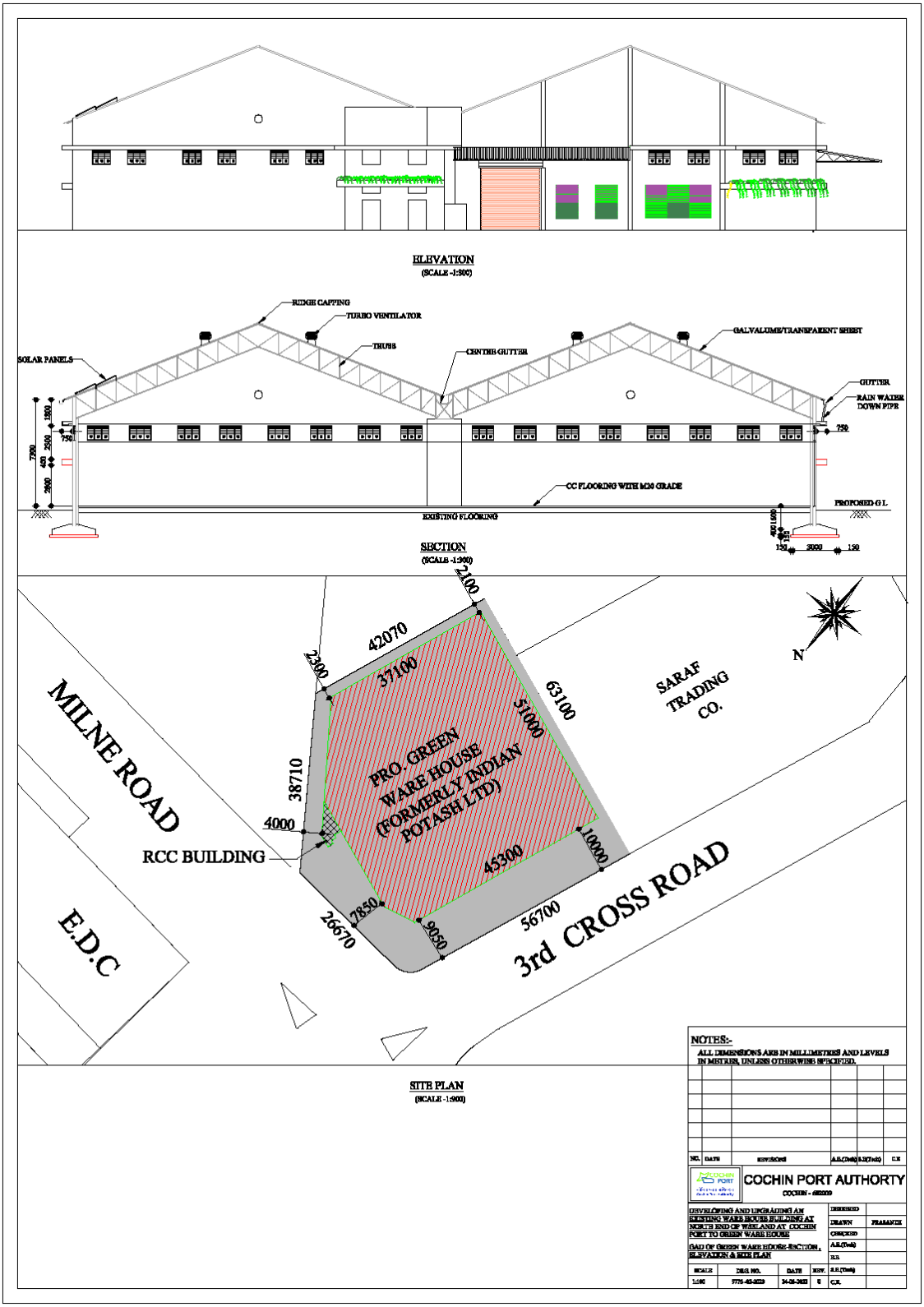
1	POWER & DISTRIBUTION TRANSFORMER - OIL & CRT	KEL / TELK / INTRANS/ MEGAWIN/ C&G / RAYCHEM/ SCHNEIDER / TELWANE/ ABB/ SIEMENS
2	11 KV VCB	ABB / SCHNEIDER/ SIEMENS /CG / L&T / AREVA
3	11 KV SF6 LBS RMU	ABB / SCHNEIDER/ SIEMENS /CG/LUCy Electric
4	11 KV CMU+LBS (AIR-BREAK)	INTRANS/ MEGAWIN / UNIPOWER /RESITECH
5	CMU PANELS	ABB / SCHNEIDER/ SIEMENS /CG/ INTRANS/MEGAWIN
6	UNITISED SUB-STATION	ABB / SCHNEIDER/ SIEMENS /CG/ INTRANS/MEGAWIN
7	11 KV XLPE CABLE	CCI / INCAB / UNIVERSAL / RPG / NICCO/ TORRENT / POLYCAB / PARAMOUNT / KEI / HAVELLS /PRIMECAB
8	1.1 KV XLPE CABLE	CCI / INCAB/ UNIVERSAL/ RPG/ NICCO/ TORRENT / POLYCAB / 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 /SOCOMEC / 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	BAJAJ / GE / ASTER / CG / PHILIPS / K LITE / UNIQUE POLES
19	LED street / flood light fittings	OSRAM / BAJAJ/ CG/ PHILIPS / WIPRO/ GE
20	LED light fittings	OSRAM / BAJAJ/ CG/ PHILIPS / WIPRO/ GE /POLYCAB / 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

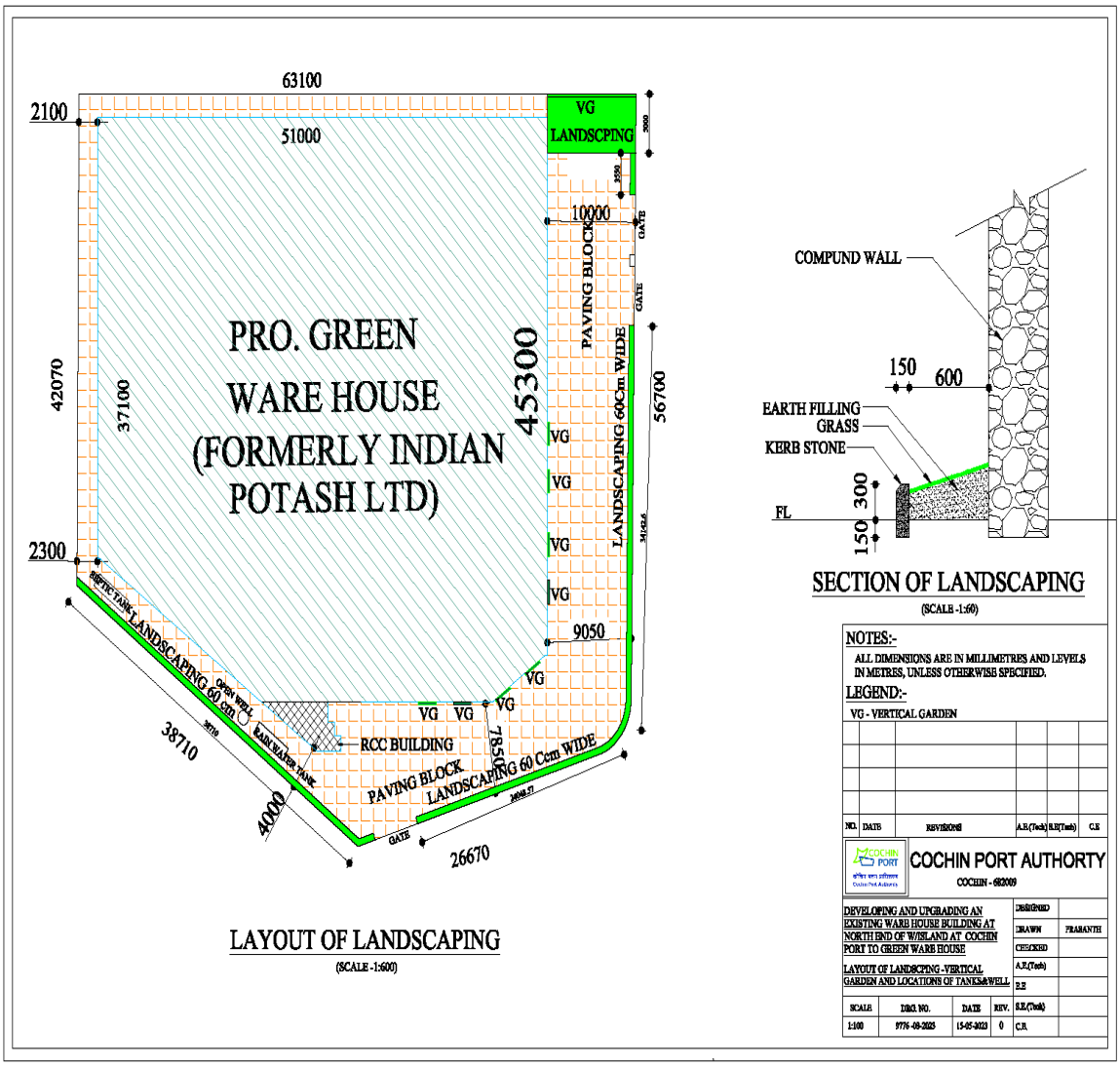
24	PVC CONDUIT PIPES / CASING & CAPPING	BALCO/ ATUL/ GEO/ CLIPSAL/ PRECISION/ AVONPLAST/ KONSEAL
25	HDPE PIPE/ FLEXIBLE HOSE	KONDOOR or any other make with BIS
26	WIRING CABLE	FINOLEX/ QFLEX/ RR KABEL/ RPG CABLES/ LAPP KABEL/ V-GUARD/ HAVELLS/ L&T/ RALLISON
27	INSTRUMENTATION / TELEPHONE CABLES	TRACO / 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 1SO AND CERTIFICATES AS PER THE TENDER SPECIFICATION .
36	GI CABLE TRAY	PUSTRON/ SUMIP/ ERCON/L&T OR REPUTED MAKE WITH ISO CERTIFICATION.

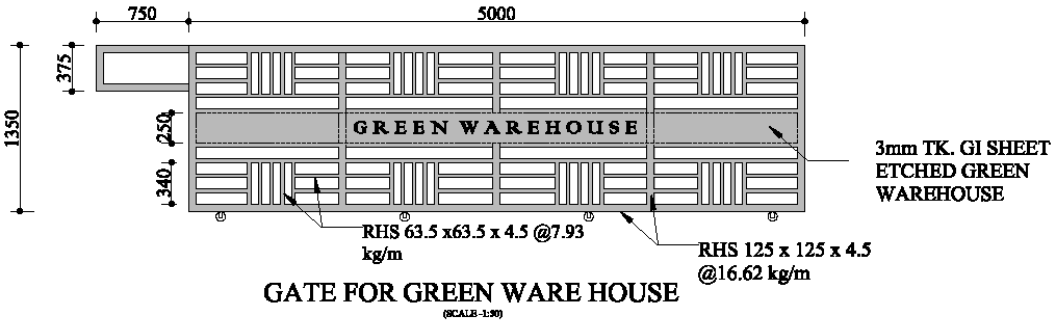
LIST OF DRAWINGS

Sl. no	Drawing no.	Description of drawing	No. of sheets	Page no.
1.	9776-01-2023	General Arrangement Drawing-Plan	1	143
2.	9776-02-2023	General Arrangement Drawing –Section Elevation & Site Plan	1	144
	9776-03-2023	Layout of landscaping	1	145
2.	9776-04-2023	Details of Gate & Rainwater Collection Tank	1	146


GODOWN SPACE
GODOWN SPACE
RCC BUILDING
RS1
RS1
RS2
V1
V2
GROUND FLOOR PLAN
(SCALE -1:300)
SCHEDULE OF JOINERIES
SL. NO.
SYMBOL
DESCRIPTION
SIZE (mm)
1 RS1 ROLLING SHUTTER 4000 x 4250
2 RS2 ROLLING SHUTTER 3600 x 4250
3 V1 UPVC VENTILATOR 1500 x 1000
4 V2 UPVC VENTILATOR 2000 x 1000
PLINTH AREA- 2412 Sq.m
NOTES:-
ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS, UNLESS OTHERWISE SPECIFIED.
COCHIN PORT AUTHORTY
DEVELOPING AND UPGRADING AN EXISTING WARE HOUSE BUILDING AT NORTH END OF WHARF AT COCHIN PORT TO ORDEN WARE HOUSE
GENERAL ARRANGEMENT DRAWING OF ORDEN WARE HOUSE-PLAN
DESIGNED
DRAWN
PRASANTH
CHECKED
A.E.(Tech)
E.E.
A.E.(Tech)
C.E.
SCALE
DRG NO.
DATE
REV.
As shown
5775-01-2020
24-08-2021
0

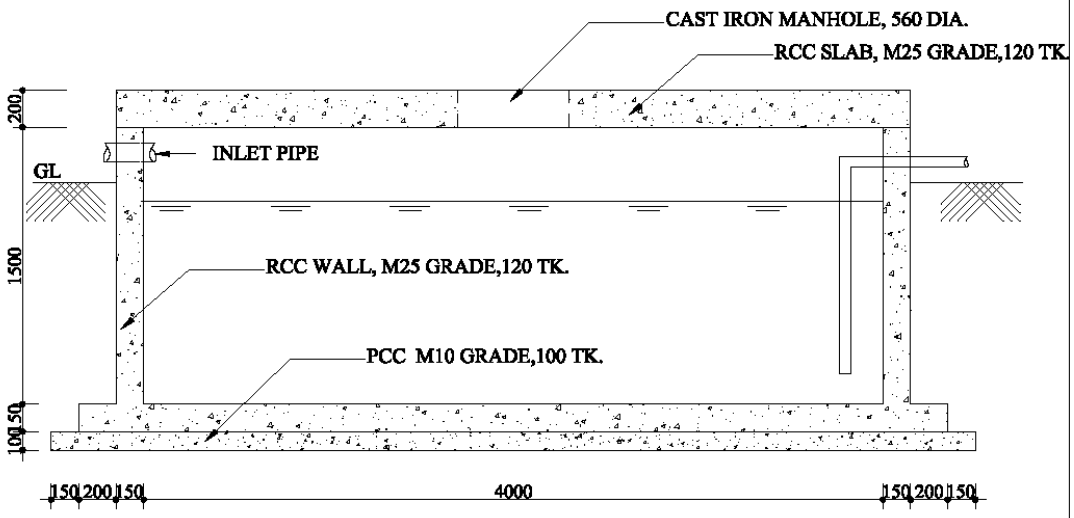

ELEVATION
(SCALE -1:500)
RIDGE CAPPING
TURBO VENTILATOR
TRUSS
CENTRE GUTTER
GALVALUME/TRANSPARENT SHEET
SOLAR PANELS
GUTTER
RAIN WATER DOWN PIPE
CC FLOORING WITH M20 GRADE
EXISTING FLOORING
PROPOSED GL
SECTION
(SCALE -1:200)
2100
42070
2390
37100
63100
51000
38710
4000
RCC BUILDING
PRO. GREEN WARE HOUSE (FORMERLY INDIAN POTASH LTD)
45300
10000
7850
26670
9050
56700
MILNE ROAD
E.D.C
SARAF TRADING CO.
3rd CROSS ROAD
N
SITE PLAN
(SCALE -1:900)
NOTES:-
ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES, UNLESS OTHERWISE SPECIFIED.
COCHIN PORT AUTHORTY
DEVELOPING AND UPGRADING AN EXISTING WARE HOUSE BUILDING AT NORTH END OF WHARF AND AT COCHIN PORT TO GREEN WARE HOUSE
DESIGNED
DRAWN
PRASANTH
CHECKED
A.E.(Tvdr)
EE
A.E.(Tvdr)
C.E.
SCALE
1:100
DRG NO.
9770-43-2020
DATE
24-08-2022
REV.
0


63100
2100
51000
VG
LANDSCPING
3000
3500
10000
GATE
PAVING BLOCK
GATE
PRO. GREEN
WARE HOUSE
(FORMERLY INDIAN
POTASH LTD)
45300
56700
42070
37100
VG
VG
VG
VG
LANDSCAPING 60Cm. WIDE
2300
SEPTIC TANK
LANDSCAPING 60 cm
OPEN WELL
RAINWATER TANK
38710
9050
VG
VG
VG
VG
RCC BUILDING
PAVING BLOCK
LANDSCAPING 60 Cmm WIDE
GATE
4000
26670
LAYOUT OF LANDSCAPING
(SCALE -1:600)
COMPUND WALL
150
600
EARTH FILLING
GRASS
KERB STONE
FL
300
150
SECTION OF LANDSCAPING
(SCALE -1:60)
NOTES:-
ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES, UNLESS OTHERWISE SPECIFIED.
LEGEND:-
VG - VERTICAL GARDEN
NO. DATE REVISIONS A.E.(Tech) S.E(Tech) C.E
COCHIN PORT AUTHORTY
COCHIN - 682009
DEVELOPING AND UPGRADING AN EXISTING WARE HOUSE BUILDING AT NORTH END OF W/ISLAND AT COCHIN PORT TO GREEN WARE HOUSE
LAYOUT OF LANDSCPING -VERTICAL GARDEN AND LOCATIONS OF TANKS&WELL
DESIGNED
DRAWN PRASANTH
CHECKED
A.E.(Tech)
S.E
S.E.(Tech)
C.E.
SCALE 1:100
DRG. NO. 9776-09-2023
DATE 15-05-2023
REV. 0

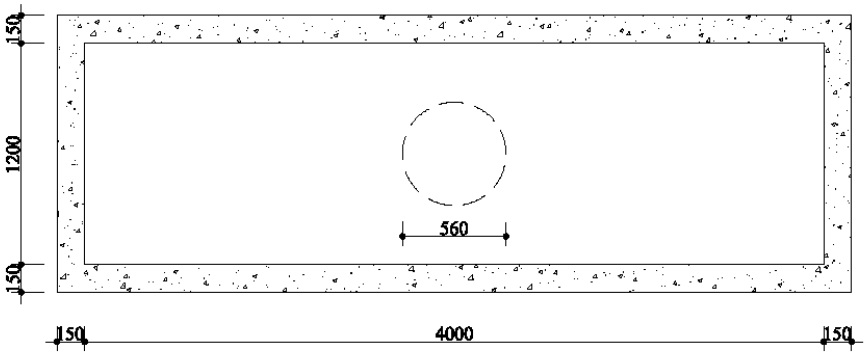


GATE FOR GREEN WARE HOUSE

(SCALE -1:30)



SECTION



PLAN

RAIN WATER COLLECTION TANK

(SCALE -1:30)

NO.	DATE	REVISION	A.E.(Tech)	C.E.

COCHIN PORT AUTHORITY

COCHIN - 682009

DEVELOPING AND UPGRADING AM CRATING WARE HOUSE BUILDING AT NORTH END OF WHARLAND AT COCHIN PORT TO GREEN WARE HOUSE	DESIGNED
	DRAWN PRASANTH
	CHECKED
DETAILS OF BATH AND RAIN WATER COLLECTION TANK	A.E.(Tech)
	S.S.
SCALE: As shown; DRG NO.: 7775-04-2020; DATE: 15-03-2021; REV.: 0	A.E.(Tech) / C.E.