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Cochin Port Authority

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e-Tender document for

**SITC of AMI System for the Smart Meters installed at  
Cochin Port Authority and Providing O&M for 5 years**

(E-Tendering Mode)

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

**OFFICE OF THE  
CHIEF MECHANICAL ENGINEER  
COCHIN PORT AUTHORITY,  
WILLINGDON ISLAND, COCHIN-682009**

**COCHIN PORT AUTHORITY**  
**SITC of AMI System for the Smart Meters installed at**  
**Cochin Port Authority and Providing O&M for 5 years thereafter**

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**COCHIN PORT AUTHORITY**website: [www.cochinport.gov.in](http://www.cochinport.gov.in)

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**SECTION-I****1. NOTICE INVITING TENDER****1 Notice Inviting Tender**

Tenders are invited through Government e-Marketing Place (GeM portal) in Single Stage Two Cover bidding procedure [Technical Bid and Financial Bid], by the Chief Mechanical Engineer, Cochin Port Authority, Willingdon Island, Cochin-682009, from **Proprietorship/ Individual/ Limited company/ LLP meeting the Minimum Qualification Criteria** specified below for the work of “SITC of AMI System for the Smart Meters installed at Cochin Port Authority and Providing O&M for 5 years thereafter”

- 1.1 For submitting the e-tender, the prospective bidders willing to participate in this tender shall fulfill the Minimum Qualification Criteria and agree to the Terms and Conditions required to get registered their firm with Government of India e- tendering portal (GeM) well in advance on or before the scheduled date of submission. Tender timeline is available in the BID INFORMATION SHEET given in the tender document.

**2 Back Ground :**

Cochin Port Authority is a Deemed Electricity Distribution Licensee at W. Island and Vallarpadam and Puthuvypin SEZ area as per Electricity Act 2003. Cochin Port Authority (DISCOM) is a Designated Consumer as Per Bureau of Energy Efficiency Regulations and hence CoPA has to conduct Annual Energy Auditing, Periodic accounting and RCO auditing. CoPA has already replaced the energy meters with SMART meters and implemented AMI in the year 2020 for about 1400 nos. of SMART Meters through M/s.NSoft Bengaluru, Karnataka-560085 with AMI service valid upto July 2025. Genus Meters and L& T Meters are presently being used in CoPA. CoPA has to comply with directions / regulations of Ministry of Power, BEE etc. CoPA has so far not implemented Prepaid billing system. However CoPA has to switch over to Prepaid billing system as per the directions of BEE. The AMI Service provider (AMISP) shall implement Prepaid billing system as and when required by CoPA. CoPA has already registered in NFMS portal and feeder meters are already integrated with NFMS. AMISP shall be responsible for integrating all the feeder meters in CoPA so as to achieve communication above 95% or as amended from time to time by MoP. CoPA has to conduct unmanned energy auditing, periodic accounting and RCO auditing as per BEE Regulations. The AMISP shall generate all reports required for billing as per tariff orders , unmanned auditing ( including computation of Feeder wise losses , DT Wise losses , Injection point

wise losses, Export and Banking of Prosumers etc) in compliance with BEE Regulations. SAIDI/SAIFI/MAIFI shall be computed automatically through AMI so as to submit with Regulatory Authorities. AMISP shall revise the Prepared billing software ( After implementation of Prepaid billing) within 10 days from the date of notification of tariff orders by Kerala State Electricity Regulatory Commission so as to issue bills in time. Fuel surcharge orders of Kerala State Electricity Board Limited shall be incorporated in the prepaid billing software within the stipulated time.

### 3 Minimum Qualification Criteria (MQC):

The tenderer must fulfill the following Minimum Qualification Criteria to prove the techno-commercial competence and submit the documents in support thereof:

#### 3.1 Technical:

The Tenderer should have the experience of successfully carried out similar works of value as mentioned below, including GST during the last 7 years as on 31/07/2025 to Government Departments/ Reputed Private organizations.

At least Three similar completed works costing not less than Rs.48,87,107/- each

(OR)

At least Two similar completed works costing not less than Rs.61,08,884/- each

(OR)

At least One similar completed work costing not less than Rs.97,74,214/-.

#### 3.2 Additional Requirements – Technical :

- (a) The Bidder shall comply with all applicable laws including the guidelines issued in the Public Procurement (Preference to Make in India) Notification to provide for purchase preference (linked with local content) in respect of Power Distribution Sector vide Order No. 11/05/2018-Coord., published by the Ministry of Power, Government of India dated 17 September 2020 including any amendments or modifications to the same from time to time. Undertaking shall be submitted along with the Bid.
- (b) Bidder shall have experience as AMI service provider for SMART ENERGY Meters in Power Sector for integration of head-end system with MDM on standard interfaces and data exchange models for at least 2000 consumers (cumulatively) in an Indian/ Global Power Sector Utility in the last 5 (five) years which are in operation for at least 1 (one) year. Certificate shall be submitted along with the Bid.
- (c) Experience Certificate / report issued by Client / Billing system solution provider shall be submitted.
- (d) The bidder Should have valid ISO 9001:2015 certification and copy of valid certificate shall be submitted
- (e) The bidder Should have IEC/ ISO 27001 certification or CMMi Level 3 (or above) certifications and copy of valid certificate shall be submitted

**Power sector** shall mean projects relating to generation or transmission or distribution of electricity.

#### 3.3 Financial :

Average Annual Financial Turnover of the tenderer during the last three financial years, ending **31/03/2025** (viz.2022-23, 2023-24 and 2024-25) shall not be less than **Rs.36,65,330/-**

- Note 1:** Similar Work(s) means SITC of AMI system for smart meters including Operation & Maintenance.
- 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 1.1**

Year before	Multiplying Factor
One year [2023]	1.07
Two years [2022]	1.14
Three years[2021]	1.21
Four years [2020]	1.28
Five years [2019]	1.35
Six years [2018]	1.42

- Note 3:** Satisfactory Clients’/Owners’ Certificate or documentary proof shall be submitted in support of the Assignments/ Works performed and claimed by the Tenderer / Partners, in Annexure-4(a)/4(b) to fulfill the Eligibility Criteria for Qualification..
- Note 4:** The Works reckoned for the above purpose are those executed by the Tenderers as Prime Contractor 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.
- Note 5:** The experience certificate of Works executed in private sectors/organisations shall be considered for qualification, only on submission of **Form as per Annexure-5(a)** certified by Chartered Accountant for the transaction of the Project, along with Work Order and Completion Certificate. **Chartered Accountant is to provide their UDIN (Unique Document Identification Number) while certification with QR code if available.**
- Note 6:** A statement duly certified by the Chartered Accountant showing the Average Annual Financial Turnover during the last three financial years and Annual Accounts duly certified by a Chartered Accountant shall be submitted along with the tender. This may be furnished in the Proforma in ‘**Annexure-5**’ of the tender document. **Chartered Accountant is to provide their UDIN (Unique Document Identification Number) while certification with QR code if available.**

#### 3.4 **Other Eligibility Considerations:**

Even though the tenderers meet the above qualifying criteria, they are subject to be disqualified if they have made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or record of poor performance such as abandoning the works/purchases, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.. In this regard the firm should submit a declaration that they have no record of poor performance, at the time of submitting the tender.

## 3.5 BID INFORMATION SHEET

A	Bid No.	<b>GeM Bid No.</b>
B	Name Of Work	<b>SITC of AMI System for the Smart Meters installed at Cochin Port Authority and Providing O&amp;M for 5 years thereafter</b>
C	Brief Scope Of Work	Supply, Installation, Testing & Commissioning of AMI System consisting of Head End System and Meter Data Management System and providing O&M for the AMI system for 5 years thereafter
D	Tender E-Publication Date	
E	Type Of Bidding System	E-TENDER through GeM portal <a href="https://gem.gov.in/">(https://gem.gov.in/)</a>
F	Type Of Tender	Single stage 2 cover system with EMD
G	Language Of Tender And All Correspondences	English
H	Download Period Of Tender Documents	As per tender in GeM portal
I	Contract Period	The AMI system shall be commissioned within 120 Days and O&M for 5 years thereafter
J	Estimated Amount Put To Tender	<b>Rs.1,22,17,767/- including GST</b>
K	Cost of Bid Document	Not applicable since bidding is through GeM
L	Earnest Money Deposit (Exemption Given As Per Cl. No.14 Below)	<b>Rs.2,44,360/-</b> (Rupees Two Lakh Forty Four Thousand Three Hundred Sixty only) shall be furnished either in the form of Insurance Surety Bond or through account payee Demand Draft, Banker's Cheque or an irrevocable Bank Guarantee drawn in favour of Financial Adviser & Chief Accounts Officer, CoPA, enforceable/ encashable at Kochi, from any Commercial Banks or online payment (State Bank of India, Cochin Port Authority Branch, IFSC Code: SBIN0006367, Account No. 41401802288), in an acceptable form safeguarding the interest purchaser's interest in all respects. The bid security shall be valid for a period of 45 days beyond the final bid validity period.
M	Date, Time & Venue Of Pre-Bid Meeting	As per date mentioned in the tender document on GEM portal. Pre-bid meeting will be held in the CME's office of CoPA on the date notified in the NIT, through Video Conference to answer clarifications, if any, on the bid document and the link will be shared to the bidders on their request.

N	Online Bid-Submission Deadline Date	As per tender document on GEM portal. The extension of the deadline for submission of Tenders shall be made normally not more than 7 days before the expiry of the original deadline.
O	Techno- Commercial Bid Opening	As per tender document on GEM portal, at the Office of the Chief Mechanical Engineer, 1st Floor, New Administrative Building, Cochin Port Authority, Cochin <b>After the deadline for submission of tenders, only technical submission will be opened on the due date of tender opening.</b> <b>Only tenders that are responsive to the mandatory requirements in the technical evaluation shall have their financial submission opened.</b>
P	Price Bid Opening	Date and time will be informed later to the eligible bidders. The price shall be fixed. The currency in which the prices shall be quoted shall be: Indian Rupees (INR) Prices quoted shall be net including GST
Q	Validity Of Tender	Bid shall remain valid for a period of 120 days from the date of Tender opening.
R	Contact Details Of Gem	Mail at: <a href="mailto:helpdesk-gem@gov.in">helpdesk-gem@gov.in</a> Toll Free Numbers (Inbound): 1-1800-419-3436/ 1-1800-102-3436 (9:00am-6:00pm Mon to Sat) Help Desk Out bound No's: +911244875125 & +917556685120
S	Name, Designation, Address And Other Details (For Submission Of Tender))	The Chief Mechanical Engineer, Cochin Port Authority, 1st floor, New Administrative Building, Willingdon Island, Kochi-682 009 Tel. 0484-2666639, 2582300, 2582352 Fax:- 0484-2666639 Email: <a href="mailto:cme@cochinport.gov.in">cme@cochinport.gov.in</a> ; <a href="mailto:dycmeele@cochinport.gov.in">dycmeele@cochinport.gov.in</a>

### 3.6 General

- The Scope of the work of this tender includes “Supply, Installation and Testing & Commissioning of AMI System for SMART Energy meters consisting of Head End System and Meter Data Management System and providing O&M for the AMI system for 5 years thereafter”. Detailed Scope of Works is given in Section-IV, Technical Specifications.
- Cochin Port Authority will not be held responsible for any technical snag or networks/ purchase failure during online bidding. It is the bidder’s responsibility to comply with the system requirement, i.e. hardware, software and internet connectivity, at Bidder’s premises to access the GeM Portal.
- Under any circumstances, Cochin Port Authority shall not be liable to the Bidders for any direct/ indirect loss or damages incurred by them, arising out of incorrect use of the GeM Portal or internet connectivity failures. The bidders are requested to watch the GeM Portal/ CoPA website / CPPP

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Website viz. [www.gem.gov.in](http://www.gem.gov.in) / [www.cochinport.gov.in](http://www.cochinport.gov.in) / [www.eprocure.gov.in](http://www.eprocure.gov.in) for Addendums / Amendments/ Errata / Replies to the queries of the bidder etc., if any, issued by the Employer, and upload a copy of the Tender Document and Amendments / Corrigendum duly signed on all the pages by the Authorised signatory with Company seal affixed.

- d) For proper uploading of the bids on the portal namely <https://gem.gov.in/> (hereinafter referred to as the ‘portal’), it shall be the sole responsibility of the bidders to appraise themselves adequately regarding all the relevant procedures and provisions as detailed in the portal as well as by contacting GeM, through e-mail to: [helpdesk-gem@gov.in](mailto:helpdesk-gem@gov.in) or call on Toll Free Numbers (Inbound): 1-1800-419-3436/ 1-1800-102-3436 (9:00am-6:00pm Mon to Sat) Help Desk Out bound No's: +911244875125 & +917556685120, as and when required, contact details are also mentioned on the Bid Information Sheet. The Employer in no case shall be responsible for any issues related to timely or properly uploading/ submission of the bid in accordance with the relevant provisions of Section II - ITB of the Bidding Documents
- e) The Chief Mechanical Engineer reserves the right to call for the Shortfall documents in case the bidders had submitted partial documents.
- f) Bank details of Cochin Port Authority are as follows: State Bank of India, Cochin Port Authority Branch, IFSC Code: SBIN0006367, Account No.41401802288.
- g) Exemption from the payment of EMD shall be given to Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by the Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organization or the concerned Ministry or Department. The tenderers shall furnish a copy of the NSIC / MSME / UAM certificates for the exemption of EMD along with the Technical bid. Such Certificates should mention the QR code of such registration. The scanned copy of Exemption Certificate duly notarized shall be uploaded in the e-Tender Portal. If the Registration Certificate does not pertain to the Category of ‘Similar Works’ mentioned above, the Tender will be rejected.
- h) Format for Self-Certification under Preference to “MAKE IN INDIA” Policy CERTIFICATE as per **Annexure – 17** - In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017 and No.P45021/2/2017-PP (BE-II) dt. 04.06.2020 as amended from time to time along with clarifications/amendments and other references as issued from time to time, the Contractor has to certify that they are meeting the requirement of Minimum Local Content in goods/services/ works to be supplied by local supplier as per declaration. (Class-I Supplier (50%) or Class-II Supplier (20%) or Non-Local Supplier (Less than 20%)
- i) The bidder should not have been blacklisted or debarred by any Central / State Government / Agency of Central / State Government / Public Sector Undertaking / Regulatory Authority of India at the time of submission of this bid. In this regard the firm should submit a declaration that they have not been blacklisted or debarred by any Central /State Government/ Agency of Central / State Government/ Public Sector Undertaking / Regulatory Authority of India at the time of submission of bid.**Annexure 9.**
- j) The undersigned reserves the right to reject/cancel/postpone/annul the tenders at any stage of the tender without assigning any reason thereof, which will be binding on all bidders.
- k) This tender notice shall form part of the tender document and are to be signed and uploaded along with the technical bid.

Sd/-

**CHIEF MECHANICAL ENGINEER**

**COCHIN PORT AUTHORITY**  
**SITC of AMI System for the Smart Meters installed at**  
**Cochin Port Authority and Providing O&M for 5 years thereafter**

**SECTION-I**  
**2.INSTRUCTIONS TO BIDDERS (ITB)**

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**SECTION-I**  
**2.INSTRUCTIONS TO BIDDERS (ITB)**

**1 Introduction**

Tenders are invited through GeM portal in Single Stage Two Cover bidding procedure [Technical Bid and Financial Bid], by the Chief Mechanical Engineer, Cochin Port Authority, Willingdon Island, Cochin-682009 from Proprietorship/ Individual/Limited company/LLP meeting the Minimum Qualification Criteria specified for the work of **“SITC of AMI System for the Smart Energy Meters installed at Cochin Port Authority and Providing O&M for 5 years thereafter”**, as per the Scope of Work and Technical Specifications given in the tender document. The site is at Willingdon Island, Vallarpadam & Puthuvypin SEZ area, Cochin.

**2 General Instructions**

The Contract is to be executed as described in the Bid document and in particular in the Scope of Works/purchase, Technical Specification, General Conditions of Contract, Bill of Quantities and in general includes, but is not limited to supplying all materials including consumables and equipment necessary to execute the Work as described in the Bid Document etc.

Before submitting the Tender, the Tenderer shall examine carefully all conditions of contract, specifications etc. supplied herewith. The Tenderers shall inspect the site of Work with prior appointment with the Engineer-in-Charge 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 and that the Tenderer has estimated his cost accordingly and 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 Tenderer of any of the obligations in performing the Work in accordance with this Tender Document including addenda/corrigenda, within the quoted price.

- 2.1 A tenderer shall be deemed to have full knowledge of all documents, works/purchase conditions etc. 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.
- 2.2 The tenderer 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.
- 2.3 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.
- 2.4 The EMPLOYER will not be liable for any financial obligation in connection with the Work until such time the Employer has communicated to the Successful Tenderer in writing his decision to entrust the Work (covered by the Tender Document issued to him).
- 2.5 Telefax/E-mail offers will not be considered. Tenderers should prepare their Tender themselves and submit it online. Tenders submitted by agents will not be recognized.
- 2.6 Employer will not be responsible for the loss of the Original Documents connected with the tender

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submission or for the delay in postal transit.

- 2.7 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 day of closing/opening of the bid.
- 2.8 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.
- 2.9 If there are varying or conflicting provisions made in any document forming part of the Contract, the conditions in General Conditions of Contract will prevail and the Chief Mechanical Engineer, Cochin Port Authority, Cochin – 682009 shall be the deciding authority with regard to the intention of the Document which will be binding on the Tenderer.
- 2.10 In case the department desires to inspect the equipments/software for confirmation of its availability and capacity etc., necessary arrangements shall be made by the Tenderer for such inspection at his own cost.
- 2.11 Any error in description, any omissions there from shall not vitiate the Contract or release the Contractor from the execution of whole Work or any part of the works comprised therein, according to drawing and specifications or from any of his obligations under the Contract.
- 2.12 All the Bank Guarantees (BGs) to be furnished except for EMD by the Contractors in connection with the Tender shall be sent to the Chief Mechanical Engineer, Cochin Port Authority, directly by the issuing bank under registered post with AD. The Contractor shall take the responsibility of sending BGs directly to the Port Authority by the issuing bank.
- 2.13 The contractor / 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 in to force from time to time.
- 2.14 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 – 6 to the effect shall be furnished.
- 2.15 The contractors shall regularly remit the employer and employee contribution to the authorities. If not, the Department would remit the same and the amount so remitted shall be deducted from the part/final bill of contractors.
- 2.16 The Contractor shall be registered under GST and shall furnish documentary evidence in support of valid GST registration.
- 2.17 The Tenderer shall provide accurate information about all pending litigation, and / or arbitration cases resulting from Contracts completed or ongoing under its execution as per Annexure – 7. Any misrepresentation of information in this regard is liable for rejection of the Tender.
- 2.18 The Tenderer shall also provide accurate information about any litigation or arbitration cases resulting from Contracts completed or ongoing under its execution over the last three years as per Annexure - 8. It may be noted that under this category only cases of litigation / arbitration finally settled against the Tenderer should be listed. A consistent history of awards against the Tenderer may result in failure of the Application/Tender. Any misrepresentation of information in this regard is liable for rejection of the Tender.
- 2.19 The Tenderer shall provide accurate information about all barred cases by the Central/State Government, or any entity controlled by it, from participating in any Project as per Annexure - 9. Any misrepresentation of information in this regard is liable for rejection of the Tender.
- 2.20 Any entity which has been barred by the Central/State Government, or any entity controlled by it,

from participating in any Project, and the bar subsists as on the date of Tender submission, would not be eligible to submit its Tender either individually or as Member or Associate of a Joint Venture/Consortium.

- 2.21 Exemption from the payment of EMD shall be given to Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by the Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organization or the concerned Ministry or Department. The Tenderers shall furnish a copy of the MSME/UAM certificates for the exemption of EMD along with the Technical bid. Such Certificates should mention the QR code of such registration. The scanned copy of Exemption Certificate duly notarized shall be uploaded in the e-Tender Portal. If the Registration Certificate does not pertain to the Category of 'Similar Works' mentioned above, the Tender will be rejected.
- 2.22 If a Tenderer has already been awarded or qualified for a Similar Work with a higher value or equivalent value within the last 6 months from the date of Notice Inviting Tender, the Tender of such Tenderer shall be evaluated / considered for qualification with the documents submitted by the Tenderers in those Tenders, **provided the Tenderer clearly states the details of such Works in the Letter of Submission.**
- 2.23 In the Letter of Submission, the Tenderer shall compulsorily indicate two nos. of current active email addresses to which further Tender related communication can be sent by CoPA. **All communication from CoPA shall be deemed to have been delivered when the email is sent to the specified email addresses and the date of sending email by CoPA shall be considered as the date of receipt by the Tenderer.** CoPA shall, in no way, be responsible for the non-receipt of any such communication by the Tenderer due to whatever reasons on this account.

### 3 **Invitation for Bids:**

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

### 4 **Downloading of Tender Documents:**

- a. The complete Tender Documents are available in the GeM portal <https://gem.gov.in/>, in the CoPA website [www.cochinport.gov.in](http://www.cochinport.gov.in) as well as in the Central Public Procurement Portal of Govt. of India, [www.eprocure.gov.in](http://www.eprocure.gov.in) . Interested bidders shall download the Tender Documents from these portals as per the provisions available therein. Tenders attaching all required documents shall be submitted through GeM portal strictly in accordance with the instructions to bidders (ITB), terms and conditions of the tender document, before the tender submission time mentioned in the tender.
- b. In case of Tender Document being downloaded from the Cochin Port website, at the time of uploading, the Tenderer shall give an undertaking that no changes have been made in the Document. The Port's Tender Document will be treated as authentic Tender and if any discrepancy is noticed at any stage between the Port's Tender Document and the one submitted by the Tenderer, the Port's Document shall prevail. 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 (Proprietorship/ Individual/ Limited company/ **LLP**) meeting the Minimum Qualification Criteria

### 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

Contractor Signature and Seal

and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for execution of the Works. The costs of visiting the site shall be at the Bidders' own expense.

## 9 **Clarification of the Bidding Documents:**

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

Address:

Chief Mechanical Engineer,  
Cochin Port Authority, Willingdon Island,  
Cochin, 682009, Kerala, India.

Phone: 91-0484-2666639/2582300 /2352/2320, Fax: 91-0484-2666639

Email: [cme@cochinport.gov.in](mailto:cme@cochinport.gov.in)/[dycmeele@cochinport.gov.in](mailto:dycmeele@cochinport.gov.in)

## 10 **Pre-Bid Meeting:**

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

## 11 **Amendment of Bidding Documents:**

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

## 12 **Preparation of bids:**

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

## 13 **Financial Bid :**

In the Financial bid / BOQ available in the GeM Portal, the tenderers are requested to quote the total cost for **"SITC of AMI System for the Smart Meters installed at Cochin Port Authority and Providing O&M for 5 years thereafter"**, including GST.

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

The rate quoted by the Tenderer shall be inclusive of all the cost for AMI software, any equipment, materials, labour, execution, supervision, maintenance, overheads and profits and every incidental and contingent cost and charges whatsoever and also including Goods and Service Tax (GST). The percentage of GST applicable shall be indicated in the Technical Bid.

**14 Currencies of Bid and Payment:**

The price shall be quoted by the bidder entirely in Indian National Rupees (INR).

**15 Bid Validity:**

Bids shall remain valid for a period not less than **120 (One Hundred Twenty days) from the date of bid submission**. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive. Should any tenderer withdraw his tender before these periods, or make any modification in the terms and conditions of the tender which are not acceptable to the department, the earnest money deposited by the tenderer shall be forfeited and Bid will be treated as defective and will not be considered for further evaluation.

**16 Bid Security /EMD:**

16.1 Each Tender should be accompanied by an Earnest Money amounting to **Rs.2,44,360/- Rupees Two Lakh Forty Four Thousand Three Hundred Sixty only**). EMD shall be furnished either in the form of Insurance Surety bond or through account payee Demand Draft, Banker's Cheque or an irrevocable Bank Guarantee, as per the proforma at **Annexure-15**, drawn in favour of Financial Adviser & Chief Accounts Officer, CoPA, enforceable/ encasheable at Kochi, from any Commercial Banks or online payment (State Bank of India, Cochin Port Authority Branch, IFSC Code: SBIN0006367, Account No. 41401802288), in an acceptable form safeguarding the interest purchaser's interest in all respects. The bid security shall be valid for a period of 45 days beyond the final bid validity period. In case, BG is furnished for EMD, BG shall be verified independently by the Port with the bank before finalisation of technical offers. In the event of lack of confirmation of issuance of the BG by the bank, the Tender shall stand disqualified.

16.2 The Earnest Money Deposit will not carry any interest.

16.3 Any Tender not accompanied by an acceptable Bid Security / EMD shall be treated as Non-responsive and shall be rejected by the Employer.

**16.4 Forfeiture of Bid Security / EMD**

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

- a) If a Tenderer withdraws his Tender during the period of Tender Validity.
- b) Tenderer does not accept the correction of Tender Price pursuant to any arithmetical errors.
- c) In case the Successful Tenderer fails:
  - i. to commence the Work, within the specified time limit; and/or
  - ii. to sign the Agreement or furnish the required Performance Security within the specified time limit.

**17 No Alternative Proposals by Bidders:**

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

**18 Format and Signing of Tender Document:**

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

**19 Bid Submission:**

Bid shall be submitted in prescribed form in two parts:

**Part-I Technical Bid and Part-II Financial Bid.**

**20 Information Required In The Bid:**

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

- 1) Bid security/EMD or relevant MSME/ UAM certificate for exemption of EMD.
- 2) Bid document signed by Authorized signatory , including all addendum/corrigendum
- 3) Integrity Pact, duly signed (vide **Annexure-16**)
- 4) Letter of Submission (vide **Annexure-1**)
- 5) Power of Attorney (in original) in favour of signatory/s to the Tender, duly authenticated by Notary Public. (vide **Annexure-2**). Companies/Contractors may jointly undertake Contract/ Contracts. Each entity shall be jointly and severally responsible for completing the task as per the Contract; however, one of the partners shall be nominated as the Lead Partner by all the constituent firms.
- 6) Organization Details (vide **Annexure-3**)
- 7) List of Annexures (Section I.6 Annexures) . The Bidder shall submit the list of annexures indicating the status in column 5 of the above table. (Submitted/not submitted/Not Applicable) along with the bid
- 8) Financial documents in support of MQC– A statement showing Average Annual Financial turnover of the tenderer over the last three (3) financial years [ 2022-'23, 2023-'24 & 2024-'25] (vide **Annexure-5**) supported by Audited Financial statements (balance sheets/profit & loss account) for the last three years duly certified by Chartered Accountant.
- 9) Details of experience as per the format at **Annexure-4(a) /4(b)** and Certificates in proof of experience in similar works as detailed in Section I- Instruction to bidders.

**Explanatory notes:**

- a) Proof of experience shall contain the following:
  - i. Work order no. and date and details specifying the nature of work involved
  - ii. The completion cost of the work and
  - iii. Date of commencement and
  - iv. Date of completion of the work
- b) The Bidder shall complete the documents as per formats, without any alterations to the text given in this Tender, failing which his offer shall be summarily rejected
- c) Original or notary certified copy of completion certificates with number and date, for each work issued by the owner/ the responsible officers of the owner under whom he has executed such contracts and the work order shall be submitted. The completion certificate shall invariably contain the following among other things.
- d) In case a particular project / contract has been jointly executed by the Bidder (as part of a Consortium), it should further support its claim for the share in work done for

that particular project / contract by producing a certificate from its Statutory Auditor or the Client. Also, notary attested copy of joint venture agreement in this respect shall be attached.

- e) CA certificate for the transaction details should be furnished if the Work Completion Certificate from any Private Organization is submitted towards fulfillment of qualifying criteria.
- f) The works indicated in **Annexure-4(a) /4(b)** will only be considered for evaluation. Mere submission of work completion certificate will not be considered as Eligible Assignments.
- g) **The Bidder should be a System Integrator with experience and technical requirement as below:**
  - (i). In addition to the above qualifying requirements, the Bidder shall comply with all applicable laws including the guidelines issued in the Public Procurement (Preference to Make in India) Notification to provide for purchase preference (linked with local content) in respect of Power Distribution Sector vide Order No. 11/05/2018-Coord., published by the Ministry of Power, Government of India dated 17 September 2020 including any amendments or modifications to the same from time to time. Undertaking shall be submitted along with the Bid.
  - (ii). Bidder shall have experience as AMI service provider for SMART ENERGY Meters in Power Sector for integration of head-end system with MDM on standard interfaces and data exchange models for at least 2000 consumers (cumulatively) in an Indian/ Global Power Sector Utility in the last 5 (five) years which are in operation for at least 1 (one) year. Certificate shall be submitted along with the Bid.
  - (iii). Experience Certificate / report issued by Client / Billing system solution provider shall be submitted.
  - (iv). The bidder Should have valid ISO 9001:2015 certification and copy of valid certificate shall be submitted
  - (v). The bidder Should have IEC/ ISO 27001 certification or CMMi Level 3 (or above) certifications and copy of valid certificate shall be submitted

**Power sector** shall mean projects relating to generation or transmission or distribution of electricity.

- 10) Copies of PAN, GST, EPF and ESI registration with **Annexure 6**.
- 11) A detailed method statement (Technical Note) for carrying out of the works, along with implementation schedule showing sequence of operation and the time frame for various segments of temporary and permanent works.(vide **Annexure-10**). The information provided will form part of the work methodology and the same shall be in line with the Specifications and Bill of quantities.
- 12) A declaration to the effect as per sl.no.11 (vide **Annexure-12**)
- 13) Bank information for e- Payment system as per **Annexure-14**.
- 14) Copy of Professional Indemnity Insurance Policy (PI) for minimum amount equal to the estimated project cost. The policy shall be effective till the completion of 1 ½ years (18 months) after issue of Taking Over Certificate by the Employer.
- 15) Information regarding Financial Situation and Current Contract Commitments supported by a certificate from its Statutory Auditor **Annexure-8**
- 16) The proposed methodology and program of construction, backed with equipment planning and deployment, duly supported with broad calculations and quality control procedures proposed to be adopted, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion **Annexure-10**

- 17) Personnel / Staff proposed for the Project **Annexure-11**
- 18) Proposed Site Organization **Annexure-11**
- 19) Historical Contract Non-Performance Pending Litigation and Litigation History-**Annexure-8**
- 20) Details of Tenderer for refund of EMD through E-Payment, if applicable **Annexure-13**

Tenderers shall quote for the whole of the item as per Scope of Work on a single responsibility basis, such that the total Tender Price covers all the Contractor's obligations mentioned in the Tender Document

## 20.2 **Part II :“Price Bid”**

Tenderers shall submit the BoQ / Price Bid in GeM portal.

- 20.2.1 The Bidder shall fill in the rates and prices for all items of the works in the completed/ updated version of Bill of Quantities (BOQ) as per his design. Items against which no rate or price is entered by the Bidder shall be deemed covered by the rates for all other items in the Bill of Quantities and will not be paid separately by the Employer. The Bill of Quantities enclosed in the tender document is only nominal. The bidder shall submit the detailed BoQ if requested by CoPA.
- 20.2.2 Tenderers shall provide price in the manner and detail called for Bid (Financial Proposal). The prices shall only be mentioned in the BOQ uploaded in the GeM portal and the quoted price shall be inclusive of all taxes and duties including GST.

## 21 **Deadline for Submission of the Bids:**

- 21.1 Tenders attaching all documents shall be submitted through GeM portal strictly in accordance with the instructions to the tenderers, terms and conditions of tender document before **the time and the day notified** in NIT.
- 21.2 A Tenderer may modify or substitute or withdraw its Tender after it has been submitted, provided that modification, including substitution or withdrawal of the Tender, is materialized prior to the deadline prescribed for submission of Tenders notified in the NIT.
- 21.3 No Tender may be withdrawn, replaced or modified in the interval between the deadline for submission of Tenders and the expiration of the period of Tender validity. Withdrawal of a Tender between the deadline for submission of Tenders and the expiration of the period of Tender validity specified in the **Tender** shall result in the forfeiture of Bid Security/EMD, pursuant to the **ITB**
- 21.4 Tenderers may only offer discounts to, or otherwise modify the prices of their Tenders by submitting Tender modifications in accordance with this Clause, or included in the original Tender submission.

## 22 **Bid Opening**

- 22.1 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.
- 22.2 **Technical Bid:** Technical Bid shall be opened in the office of the **Chief Mechanical Engineer, Cochin Port Authority** at the time specified on the last date fixed for receiving the Tenders. Submission of EMD or MSME/ UAM certificate is verified initially. In case the earnest money / MSME/ UAM certificate is not furnished or is not in order, the Bid will not be opened further.
- 22.3 If all Bidders have submitted unconditional Bids together with requisite Bid security, then all Bidders will be so informed then and there. If any Bid contains any deviation from the Bids documents and /or if the same does not contain Bid security in 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.

- 22.4 In the event of a tender being rejected, the earnest money paid with such unaccepted tender shall be refunded to the tenderer.

**23 Bid Opening – Price Bid:**

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

**24 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.

**25 Examination of Bids and Determination of Responsiveness:**

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

- a) Meets the minimum eligibility criteria defined in Clause 3 of NIT.
- b) Has been properly signed by an authorized signatory (accredited representative) holding Power of Attorney in his favour. The Power of Attorney shall inter-alia include a provision to bind the Bidder to settlement of disputes clause;
- c) Is accompanied by the required Bid security and;
- d) Is responsive to the requirements of the Bidding documents.
- e) A responsive Bid is one which conforms to all the terms, conditions and specification of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one which affects in any substantial way the scope, quality or performance of the Works;
  - i. which limits in any substantial way, the Employer's rights or the Bidder's obligations under the Contractor
  - ii. Whose rectification would affect unfairly the competitive position of other Bidders presenting responsive Bids.
  - iii. Undertakes in the Technical Bid that he has not incorporated any conditions in the Financial Bid.
- f) If a Bid is not substantially responsive, it shall be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non- conforming deviation or reservation.

**26 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 follows:

- a) Where there is a discrepancy between the quoted price in figures and in words, the percentage in words will govern;
- b) The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, 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 16.4 above.

**27 Evaluation of Price Bid**

The tenderers shall quote their total cost for all the items as per schedule, including GST, in the GeM portal.

Only those tenders, as determined to be substantially responsive to the requirements of the Tender Document will be evaluated. Other non-responsive tenders will be rejected. Cochin Port's decision on this shall be final, conclusive and binding.

In order to determine the lowest evaluated bid, Cochin Port Authority will consider overall lowest of all the items together.

**28 Comparison of Bids:**

The Employer will evaluate and compare only the Bids determined to be responsive in accordance with Clause 24 of ITB. In evaluating the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:

Making any correction for errors pursuant to Clause 25.

Making appropriate adjustments to reflect discounts or other price modifications offered.

**Evaluation of the price bid will be based on the combined cost of the Project and cost for O&M of the AMI system for 5 years after the taking over of the AMI system. NPV on O&M charges will be taken at a discounted factor of 7 %.**

**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 Proposal:**

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

**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 24 and
- b) Qualified in accordance with the provisions of Clause 27.

**32 Letter of Award (LoA)**

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

**33 Release of Bid Security / EMD:**

The Bid Security/EMD of unsuccessful Tenderers other than L1 and L2 will be refunded immediately after ranking of the Tenders. The Bid Security/EMD of L2 Tenderer shall be refunded immediately after acceptance of the Performance Security and entering into Agreement with L1 Tenderer. The Bid Security/EMD of the Successful Tenderer will be discharged after he has

furnished the required Performance Security, which has been accepted and has signed the Agreement.

### 34 **Performance Security:**

Within not later than 21 days from the date of receipt of the Letter of Acceptance by e-mail or within such time as extended by the Employer, the Successful Tenderer shall deliver to the Employer, a Performance Security for an amount equivalent to **10% of the total Contract price including taxes & duties, for the “SITC of the AMI system – Item No.1 of BoQ”**, rounded off to the nearest Rs.1000/- in any one of the following forms:

- i) Insurance Surety Bond/ Banker’s Cheque/ Account Payee Demand Draft from any Commercial Bank having its branch at Cochin acceptable by Cochin Port Authority
  - ii) An irrevocable Bank Guarantee (BG) enforceable and encashable at Cochin, drawn from any Commercial Bank having its branch at Cochin acceptable by Cochin Port Authority. The BG shall be issued in favor of Cochin Port Authority in the Format enclosed as **Form XII**.
- a) **This Performance Security furnished shall be valid till 3 months after the satisfactory completion and taking over of the AMI system by CoPA**, as per the terms of the contract. This Performance security will be released only after submission of the Performance Security for the O&M period.
  - b) A separate Performance security for **10% of the total O&M charges for Five years including taxes & duties– Item No.2 of BoQ** has to be furnished by the contractor for the proper completion of the O&M period. **This Performance Security furnished shall be valid till 3 months after the satisfactory completion of the 5 years O&M period**. This Performance Security will be released/ refunded to the contractor not later than 14 days **after satisfactory completion of the O&M period** and release of payment of final bill for O&M.
  - c) Unless Performance Security is furnished within the period as specified above or such extension of that period as may be permitted by the Engineer in writing, the Earnest Money will be liable to forfeiture and the Contract to cancellation.
  - d) The CoPA may at their option Claim the Performance Security either in full or part if the contractor fails to carry out the work or perform or observe the conditions of contract. The CoPA will also be at liberty to deduct from Performance Security Deposit or from any sums of money due or that may become due under contract with the contractor that may become due to CoPA. This is without prejudice to the rights of CoPA under the terms of the Contract.
  - e) The Performance Security furnished will not carry any interest.

### 35 **Forfeiture of Performance Security**

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

### 36 **Sanctions for Violations:**

- 36.1 Any breach of the aforesaid provisions by the Tenderer or any one employed by it or acting on its behalf (whether with or without the knowledge of the Tenderer) shall entitle the Employer to take all or any one of the following actions, wherever required:-
- a) The Security Deposit/Performance Security shall stand forfeited either fully or partially, as decided by the Employer and the Employer shall not be required to assign any reason therefore.
  - b) To immediately cancel the Contract, if already signed, without giving any compensation to the Tenderer.
  - c) To cancel all or any other Contracts with the Tenderer. The Tenderer shall, be liable to pay compensation for any loss or damage to the Employer resulting from such cancellation/rescission and the Employer shall be entitled to deduct the amount so payable from the money(s) due to the Tenderer.

- d) To debar the Tenderer from participating in future tendering processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the Employer.
- e) To recover all sums paid in violation of the Tender by Tenderer(s) to any middleman or agent or broker with a view to securing the contract.
- f) Forfeiture of Performance Security in case of a decision by the Employer to forfeit the same without assigning any reason for imposing sanction for violation of this Tender.

36.2 The Employer will be entitled to take all or any of the actions mentioned above by the Tenderer or any one employed by it or acting on its behalf (whether with or without the knowledge of the Tenderer), of an offence as defined in Chapter IX of the Indian Penal Code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.

**36.3** The decision of the Employer to the effect that a breach of the provisions of this Tender has been committed by the Tenderer shall be final and conclusive on the Tenderer.

### **37 Signing of Agreement:**

37.1 The Successful Tenderer will be required to execute an Agreement at his expense within 28 (twenty eight) days from the date of receipt of the Letter of Acceptance by e-mail or within such time as extended by the Employer, on proper value Kerala State Stamp Paper in the prescribed form. The Agreement as finally executed will include the Employer's Tender Documents and the Tenderer's offer as finally accepted by the Employer together with Addenda/Corrigenda, Tender clarifications and all correspondence exchanged between Employer and the Tenderer, 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.

37.2 The Contractor shall make **7 copies of the Agreement** and submit to the Employer hard bounded copy of the original as well as copies within 7 days following the date of signing of Agreement, at contractor's own expenses.

37.3 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 therefor either together with or in addition to the forfeiture of Earnest Money Deposit..

### **38 Fraud and Corrupt Practices:**

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.

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.

### 39 **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 or discharge the tender without assigning any reason. No representation whatsoever will be entertained on this account.

**SIGNATURE OF TENDERER**

**COCHIN PORT AUTHORITY**  
**SITC of AMI System for the Smart Meters installed at Cochin Port Authority and Providing**  
**O&M for the system for 5 years**

**SECTION I**

**3.FORMS OF BID**

To

THE BOARD OF MAJOR PORT AUTHORITY FOR COCHIN PORT

**Through**

The Chief Mechanical Engineer,  
Cochin Port Authority, Cochin -9

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.

**MEMORANDUM**

a)	General Description of Work	:	SITC of AMI System for the Smart Meters installed at Cochin Port Authority and Providing O&M for 5 years thereafter
b)	Estimated Cost	:	<b>Rs. 1,22,17,767/- including GST</b>
c)	Earnest Money Deposit	:	<b>Rs. 2,44,360/-</b>
d)	Security Deposit	:	10% of the value of the Contract awarded or the value of the Work done whichever is higher
e)	Percentage, if any, to be deducted from the bills	:	NIL
f)	Time allowed for commencement of Work from the date of receipt of Letter of Acceptance	:	7 days.
g)	Time allowed for the Work from the date of commencement of Work.	:	4 (four) months. The AMI system shall be commissioned within 120 Days from the date of LoA. The O& M Period shall be 5 years from the date of certification of satisfactory commissioning of AMI system.
h)	Schedule, Specifications, Conditions, Drawings etc.	:	As per the 'Contents' sheet attached.

Contractor Signature and Seal

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 chalan receipt / Bankers cheque or demand Draft from any Commercial Bank having its branch at Kochi / Bank Guarantee issued by any Commercial Banks bank having its branch at Kochi 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 (GCC) 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 General Conditions of Contract and those in excess of that limit at the rates to be determined in accordance with the provision contained in the General Conditions of Contract.

Dated the ..... day of ..... 20....

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 Trustees for a sum of Rs.....

..... ( Rupees .....

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

Dated.....

Chief Mechanical Engineer  
Cochin Port Authority

Contractor Signature and Seal

**COCHIN PORT AUTHORITY  
SECTION I  
4. FORM OF AGREEMENT**

**AGREEMENT No. ....of 2025**

**AGREEMENT FOR THE WORK OF .....**

..... *[Insert Title]*

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

**WHEREAS** the Employer 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 in to 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 Trust 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

Contractor’s signature and seal

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, upto 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 hereto.
  - d) Replies to Pre bid queries and amendments issued, if any.

IN WITNESS WHEREOF THE CONTRACTOR hereunto set his hand and seal on behalf of M/s..... and on behalf of **The Board of Major Port Authority of COCHIN PORT**, the CHIEF MECHANICAL ENGINEER/\*DEPUTY CHIEF ENGINEER / \*SUPERINTENDING ENGINEER has set his hand and seal and common seal of Trustees has been hereunto affixed the day and year first written above.

**CONTRACTORS**

\*(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 :  
Signature with address :

Signature with address :

Signed, sealed and delivered by the

CHIEF MECHANICAL ENGINEER/\*Dy. CHIEF ENGINEER/  
\*SUPERINTENDING ENGINEER,  
COCHIN PORT AUTHORITY

on behalf of **The Board of Major Port Authority of COCHIN PORT**.  
EMPLOYER

Signed and affixed the common seal of **The Board of Major Port Authority of COCHIN PORT**, In the presence of

- 1)
- 2)

Contractor's signature and seal

**COCHIN PORT AUTHORITY  
SECTION I  
5.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
	The following documents are also part of the Contract	
	The Schedule of other Contractors (i) ..... (ii) .....	(8.2)
	The Schedule of Key Personnel (i) ..... (ii) ..... (iii) .....	(9)
	The Employer is	(1)
	<b>The Board of Major Port Authority for Cochin Port (Cochin Port Authority) , Cochin -682009</b>	
	Name of Authorized Representative:	
	Name: <b>Shri. B. Kasiviswanathan, IRSME Chairperson, Cochin Port Authority, Cochin - 682009.</b>	
	The Engineer is :	
	Name: <b>Shri. A. Jayasimha, Chief Mechanical Engineer, Cochin Port Authority, Cochin-9</b>	
	Name of Nominee is : <b>Will be notified in LoA/ LoI</b>	
	Name: <b>Shri..... Cochin Port Authority, Cochin-9</b>	
	Name of Contract : <b>SITC of AMI System for the Smart Meters installed at Cochin Port Authority and Providing O&amp;M for 5 years thereafter</b>	
	<b>7 (seven)</b> copies of Contract Agreement shall be furnished by the Contractor	[7.1]
	Tender document and other data are available at : GeM portal <a href="https://gem.gov.in/">https://gem.gov.in/</a> , in the CoPA website <a href="http://www.cochinport.gov.in">www.cochinport.gov.in</a> as well as in the Central Public Procurement Portal of Govt. of India, <a href="http://www.eprocure.gov.in">www.eprocure.gov.in</a>	(7.2)

Contractor signature and seal

	The Intended Completion Date: The AMI system shall be commissioned within 120 days from the date of LoA. The O& M Period shall be 5 years from the date of certification of satisfactory commissioning of AMI system, with the following milestones:	
	Milestone dates:	
	<b>Physical works to be completed</b>	<b>Period from the date of Issue of LoA</b>
	SITC OF AMI – ITEM 1 OF BoQ	120 DAYS
	The activity wise schedule needs to be submitted by the Contractor within <b>7 days</b> of receipt of LoA. This need to be strictly followed for the timely completion of the project	
9	The following shall form part of the Contract Document: (1) Agreement (2) Letter of Acceptance (3) Bill of quantities (4) Contractor's Bid (6) 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. (7) Contract Data (8) Conditions of Contract (9) General Description and Special Conditions of Contract (10) Technical Specifications (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 <b>7 days</b> of date of the LO A	(27)
11	<b>The site possession date</b> The site will be handed over within <b>7 days</b> after issue of LoA/ LoI and the site is free from encumbrances.	(21)
12	The start date shall be <b>7 days</b> from the date of receipt of the Letter of Acceptance (LoA)/ LoI by the Contractor.	(1)
13	is located at Willingdon Island, Kochi-682009	
15	imum insurance cover for physical property, injury and death is <b>Rs.....lakhs (Rupees .....lakhs)</b> per occurrence with the number of occurrences unlimited.	<b>(13)</b>
19	The language of the Contract documents is <b>English.</b>	(3)
20	The law, which applies to the Contract, is the law of Union of India.	(3)
21	The currency of the Contract is <b>Indian Rupees.</b>	(46)
22	The maximum amount of liquidated damages for the whole of the works is <b>10%</b> of the contract price.	[49]

SIGNATURE OF TENDERER

Contractor signature and seal

**COCHIN PORT AUTHORITY**

**SECTION - I**

**6. ANNEXURES**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Sl.No.</b>	<b>Annexures</b>	<b>Description</b>	<b>Page No.</b>	<b>Submitted / not submitted/ Not Applicable</b>
1	1	Letter of Submission – Covering Letter	29	
2	2	Proforma of Power-of-Authority/Letter of Authority	31	
3	3	Organization Details	32	
4	4 (a)	Eligible Assignment Details For MQC	34	
5	4(b)	Details of Past Experience of Contractors For Similar works	36	
6	5	Financial Capablity	37	
7	5A	Details of Past Experience of Contractors for Similar Works Executed in Private Organisations	38	
8	6	Undertaking Regarding EPF and ESI Registration	39	
9	7	Details of Pending Litigation of the Tenderer	40	
10	8	Details of Litigation History of the Tenderer	41	
11	9	Details of Barred Cases of the Tenderer	42	
12	10	Details of Proposed Approach & Methodology	43	
13	11	Plant and Equipment Proposed for the Work	44	
14	12	Declaration	45	
15	13	Details of the Tenderer opting for Refund of EMD through e-payment system	46	
16	14	Format for Furnishing Bank information for e-payment	47	
17	15	Proforma of Irrevocable Bank Guarantee for Earnest Money Deposit	48	
18	16	Integrity Pact	50	
19	17	Declaration for Make In India (MII)	51	
20	18	List of subcontractors	52	

The Bidder shall submit the list of annexures indicating the status in column 5 of the above table. (Submitted/not submitted/Not Applicable) along with the bid

**LETTER OF SUBMISSION - COVERING LETTER**

(ON THE LETTER HEAD OF THE TENDERER)

No.....

Date :

To

The Chief Mechanical Engineer,

Cochin Port Authority.

Sir,

Sub: Tender for .....[Insert Title]

Being duly authorized to represent and act on behalf of ..... (hereinafter referred to as “the Tenderer”) and having reviewed and fully understood all of the requirements of the Tender Document and information provided, the undersigned hereby apply for the Project/Work referred above.

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

- (i) Letter of Submission – Covering Letter
- (ii) Cost of Tender Document in the form of DD / Pay Order / Banker’s Cheque bearing No ----- dated -----, for Rs..... issued by ..... Bank
- (iii) Bid Security/EMD in the form of Account Payee DD / Banker’s Cheque/Insurance Surety Bond bearing No -----dated -----, for Rs..... issued by .....Bank / in the form of BG as per **Annexure-15**.
- (iv) Pre-Contract Integrity Pact (**Annexure-16**) (If applicable)
- (v) Power-of-Attorney (**Annexure-2**) (If applicable)

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

- (i) Tender Document along with Addendum / Corrigendum No...../ Addenda/Corrigenda Nos. ...., and General Conditions of Contract with Amendments, in PDF format.
- (ii) Scanned copy of financial instruments towards the Cost of Tender Document and Bid Security/EMD
- (iii) Notarized copy of Exemption Certificate towards the Cost of Tender Document & Bid Security/EMD (If applicable)
- (iv) Organization Details (**Annexure-3**)
- (v) Details to fulfill the “Minimum Eligibility Criteria” and Certificates (**Annexure-4**)
- (vi) Notarized copies of Completion Certificates of Similar Works
- (vii) Average Annual Financial Turnover over the last three financial years (**Annexure-5**)
- (viii) Scanned copies of Audited Financial Statements for the last three years
- (ix) Undertaking regarding EPF and ESI Registration (**Annexure-6**)
- (x) Details of Pending Litigation of the Tenderer (**Annexure-7**)

Contractor signature and seal

- (xi) Details of Litigation History of the Tenderer (*Annexure-8*)
- (xii) Details of Barred Cases of the Tenderer (*Annexure-9*)
- (xiii) Detailed Method Statement (Technical Note) (*Annexure-10*)
- (xiv) List of Plant and Equipment (*Annexure-11*)
- (xv) Declaration ( *Annexure-12*)
- (xvi) Banker’s Details (*Annexures-13 & 14*)
- (xvii) Scanned copy of Form of Tender, duly signed and sealed
- (xviii) Scanned copy of Partnership Deed or Memorandum and Articles of Association of the Company and Registration Certificate of the Company, as the case may be.
- (xix) Scanned copies of GST and PAN registrations.
- (xx) Scanned copies of EPF and ESI registration, if applicable.
- (xxi) ..... [*Insert More Details If Any Needed*].

**We also certify that further Tender related communication can be sent to the following e-mail IDs by CoPA:**

- (i)** .....
- (ii)** .....

*(Furnish two nos. current active email addresses)*

**SIGNATURE OF TENDERER**

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

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

Dear Sir,

We\_\_\_\_\_ do hereby confirm that Mr./Ms./Messrs\_\_\_\_\_ **[INSERT NAME AND ADDRESS]**, whose signature is given below, is/are authorized to represent us to bid, negotiate and conclude the agreement on our behalf with you against Tender for .....*[Insert Title]*(Tender No.....)

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

Contractor signature and seal

**ORGANIZATION DETAILS**

CONTRACT No.:

- 1) NAME OF APPLICANT :
- 2) Name of the Owner :
- 3) Address :
- 4) Telephone No. :
- 5) E-mail ids [2 nos.] :
- 6) Fax No. :
- 7) Description of Applicant :  
(for e.g. General, Civil Engineering  
Contractor or Joint Venture/Consortium etc.)
- 8) Registration and Classification :  
of Contractors
- 9) Name and address of Bankers :
- 10) Number of years of experience :  
as a General Contractor :-  
  
In own Country :
- Internationally :
- 11) Number of years of experience :  
as a Sub-Contractor
- 12) Name and Address of Partners or :  
associated companies to be involved  
in the Project and whether Parent/  
Subsidiary/other

Contractor signature and seal

- 13) Name and address of any associates :  
knowledgeable in the procedures  
of customs, immigration and local  
experience in various aspect of the  
Project etc.
- 14) Name and address of the companies/ :  
Sub-Contractors who will be involved  
in the execution of Works,:
- 15) Name and address of companies who :  
will be involved in the supply of  
bought out items
- a) Insert item ..... :
- b) Insert item ..... :
- 16) Attach Organization Chart showing the structure  
of the company including names of Directors/  
Key Personnel at Head Office who would be  
responsible for the project and a separate chart  
showing proposed Site Construction Organisation.

**SIGNATURE OF TENDERER**

**ELIGIBLE ASSIGNMENT DETAILS FOR MQC**

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

Assignment Number :

<b>Description</b>	<b>Bidder to fill up the details here</b>
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	
telephone no, tele fax 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 in 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- 4 will be only being considered for evaluation. Mere submission of work completion certificate will not be considered as Eligible Assignments
- v) Original or notary certified copy of completion certificates of each work issued by the owner/ the responsible officers of the owner under whom he has executed such contracts shall be attached. The certificate shall invariably contain the following among other things.
  - a) Details of work involved specifying the nature of work
  - b) The completion cost of the work and
  - c) Date of commencement ;and
  - d) Date of completion of the work.

Contractor signature and seal

- 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 Chartered Accountants certificate as per Annexure 5(a) for the transaction of the Projects.
- ix) The tenderer is also obliged to produce the original of the certified copy(s) on request by the department.

**SIGNATURE OF TENDERER**

**DETAILS OF PAST EXPERIENCE OF CONTRACTORS FOR SIMILARWORKS**

Sl. No.	Name & Location of Project	Owner's Complete address including details of Contact Person	Value of Contract	Duration of Contract			Details of Work including major items of Work involved	Reference No. & Date of Letter of Intent & Completion Certificate enclosed
				Commencement date	Scheduled completion date	Actual completion date		
1	2	3	4	5	6	7	8	9
1	Name:  Location:	Address:  Fax No.  Contact person:  Mobile No.  Email:						Letter of Intent No. & date:  Completion Certificate No. & date:
2	Name:  Location:	Address:  Fax No.  Contact person:  Mobile No.  Email;						Letter of Intent No. & date:  Completion Certificate No. & date:
3	Name:  Location:	Address:  Fax No.  Contact person:  Mobile No.  Email:						Letter of Intent No. & date:  Completion Certificate No. & date:

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

**SIGNATURE OF TENDERER**

Contractor signature and seal

### FINANCIAL CAPABILITY

Average Annual Turnover of the Bidder

<b>Annual Turnover</b>			
<b>Year 1</b> [2022-23]	<b>Year 2</b> [2023-24]	<b>Year 3</b> [2024-25]	<b>Average of 3 years</b>

**Instructions:**

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

**Certified by Chartered Accountant**

**SIGNATURE OF TENDERER**

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

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

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

Signature

**Certified by Chartered Accountant**

(with UDIN (Unique Document Identification Number)

while certification with QR code if available.)

(Authorised Signatory)

Contractor Signature and seal

**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 the above and indemnify CoPA officials for any actions taken in this regard.

**SIGNATURE OF TENDERER**

**DETAILS OF PENDING LITIGATION OF THE TENDERER**

Details of Pending Litigation upto ..... [Insert Date and Year - last day of the month previous to the one in which Tenders are invited] are as follows:

Sl.	Date, month & Year of Dispute	Amount in Dispute	Contract Identification	Total Contract Amount
			Contract Identification : [indicate complete contract name, number, date and any other identification]  Name & Address of Employer: [insert full Name & Address]  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]	

We declare that the information given above are true to the best of our knowledge and belief and nothing has been omitted / concealed and if at any stage it is found / noticed that any information provided by us thereon above is not true / incorrect and in case of receipt of adverse / unsatisfactory report from other Clients / Employers, our Tender may not be considered and CoPA may take further appropriate action against us.

**SIGNATURE OF TENDERER**

Contractor Signature and seal

**DETAILS OF LITIGATION HISTORY OF THE TENDERER**

Details of Litigation History till ..... [Insert Date and Year - last day of the month previous to the one in which Tenders are invited] are as follows:

Sl.N	Date, month & Year of Award	Amount in Award	Contract Identification	Total Contract Amount
			<p>Contract Identification : [Indicate complete contract name, number, date and any other identification]</p> <p>Name &amp; Address of Employer: [Insert full Name &amp; Address]</p> <p>Matter in dispute: [Indicate main issues in dispute]</p> <p>Party who initiated the dispute: [Indicate "Employer" or "Contractor"]</p> <p>Status of dispute: [Indicate if it is being treated by the Adjudicator, under Arbitration or being dealt with by the Judiciary]</p>	

We declare that the information given above are true to the best of our knowledge and belief and nothing has been omitted / concealed and if at any stage it is found / noticed that any information provided by us thereon above is not true / incorrect and in case of receipt of adverse / unsatisfactory report from other Clients / Employers, our Tender may not be considered and CoPA may take further appropriate action against us.

**SIGNATURE OF TENDERER**

Contractor Signature and seal

### DETAILS OF BARRED CASES OF THE TENDERER

Details of all barred cases by the Central/State Government, or any entity controlled by it, from participating in any Project till ..... *[Insert Date and Year - last day of the month previous to the one in which Tenders are invited]* are as follows:

Sl.No	Date, month & Year of Contract	Amount of Contract	Contract Identification	Remarks
			Contract Identification : [Indicate complete contract name, number, date and any other identification]  Name & Address of Employer: [Insert full Name & Address]  Matter in dispute: [Indicate main issues in dispute]  Period of barring: [Indicate the date from which the Contractor is barred and the period for which he is barred]	

We declare that the information given above are true to the best of our knowledge and belief and nothing has been omitted / concealed and if at any stage it is found / noticed that any information provided by us thereon above is not true /incorrect and incase of receipt of adverse / unsatisfactory report from other Clients / Employers, our Tender may not be considered and CoPA may take further appropriate action against us.

**SIGNATURE OF TENDERER**

Contractor Signature and seal

**DETAILS OF PROPOSED APPROACH & METHODOLOGY**

Bidder shall furnish a detailed method statement (Technical Note) for carrying out of the works, along with an implementation programme [ Preferably in MS project / Primavera] showing sequence of operation and the time frame for various segments of temporary and permanent works.

**SIGNATURE OF TENDERER**

**PLANT AND EQUIPMENT PROPOSED FOR THE WORK**

Please indicate the main plant and equipment 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.

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

**Note:**

The equipment indicated in the above statement will form part of Contract Agreement and as such, the Tenderers are requested to indicate the availability of the equipment at site and at what stage of the construction period, in a separate column

**SIGNATURE OF TENDERER**

**DECLARATION**

I/We, M/s. ....(Name & address of the Tenderer) hereby declare that:-

- 1) All details regarding construction plant, temporary Work and personnel for site organisation considered necessary and sufficient for the Work have been furnished in the Annexure-11 and that such plant, temporary Works and personnel for site organisation will be available at the site till the completion of the respective Work.
- 2) No conditions are incorporated in the Price Bid. In case any conditions are specified in the Price Bid, the Tender will be rejected summarily without making any further reference to the Tenderer.
- 3) We have not made any payment or illegal gratification to any persons/ authority connected with the Tender process so as to influence the Tender process and have not committed any offence under PC Act in connection with the Tender.
- 4) We disclose with that we have *\*made / not made / propose to make* payments to any intermediaries (agents) etc. in connection with the Tender.
- 5) We do hereby confirm that no changes have been made in the Tender Document downloaded and submitted by us for the above Tender. The Port's Tender Document will be treated as authentic 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.
- 6) We are not barred by the Government of India or any State Government in India and no bar subsists as on the Tender submission date.

**SIGNATURE OF TENDERER**

**Notes:**

- (i) **\*Delete whichever is not applicable.**
- (ii) **The above Declaration shall be submitted in the Tenderer's Letter Head**

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

Name of the Party Bank A/c No.:

Account type : (Savings / Current / Overdraft) Bank Name :

Branch :

IFSC Code Number : (11 digit code) Centre (Location) :

FAX No. :

E-Mail ID : (For forwarding information of remittance) Mobile No :

**SIGNATURE OF TENDERER**

Contractor Signature and seal

**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/ e-mail id [2 nos]/ Fax No. of the beneficiary	Telephone :
		Mobile :
		e-mail id : (1) (2)
		Fax :
8	Enclose Cancelled Cheque	(Enclosed / Not Enclosed)

**SIGNATURE OF TENDERER**

**PROFORMA OF IRREVOCABLE BANK GUARANTEE FOR  
EARNEST MONEY DEPOSIT**

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

B.G. No.....dated.....

This Deed of Guarantee executed at .....by ..... (Name of Bank) having its Head/Registered office at ..... (hereinafter referred to as “the Guarantor”) which expression shall unless it be repugnant to the subject or context thereof include its executors, administrators, successors and assigns;

**In favour of**

The Board of Trustees of Cochin Port Authority (hereinafter called “the EMPLOYER”), having its office at Willingdon Island, Cochin – 682 009, which expression shall unless it be repugnant to the subject or context thereof include its executors, administrators, successors and assigns;

Whereas Sri..... / M/s. .... / JV / Consortium of M/s. ...., M/s. .... & M/s. .... (Name of Tenderer) ..... (Composition and legal status of the Tenderer) (hereinafter called “the Tenderer”), which expression shall unless it be repugnant to the subject or context thereof include its executors administrators, successors and assigns, has Bid for the Work of “.....” [Insert Title], **AND TENDER No.....** [Insert Tender No.] (hereinafter referred to as “the Work”).

Whereas in terms of the Tender Notice dated ..... (hereinafter referred to as “Tender Document”) the Tenderer is required to furnish to the Port Authority an unconditional and irrevocable Bank Guarantee for an amount of Rs. .... (Rupees ..... only) as Earnest Money Deposit (EMD) and the Guarantor has at the request of the Tenderer agreed to provide such Guarantee being these presents:

Now this deed witnesseth that in consideration of the premises, We, ..... Bank hereby declare, undertake and agree as follows:

We as primary obligor shall, without demur, pay to the Port Authority an amount not exceeding Rs. .... (Rupees ..... only), within 5 days of receipt of a written demand from the Port Authority stating that the EMD has been forfeited in terms of Clause 16.4 of the Instruction of Tenderers of Tender Document. Any such demand made on us by the Port Authority shall be conclusive and absolute as regards the forfeiture of the EMD and the amount due and payable under this Guarantee.

The above payment shall be made by us without any reference to the Tenderer or any other person and irrespective of whether the claim of the Port Authority is disputed by the Tenderer or not.

This Guarantee shall remain in full force for a period of ..... days (45 days beyond the final bid validity period) from (date)\* ..... or for such extended period as may be mutually agreed between the Port Authority and the Tenderer and shall continue to be enforceable till all amounts which are demanded by the Port Authority under this Guarantee are paid.

Contractor Signature and seal

In order to give full effect to this Guarantee, the EMPLOYER shall be entitled to treat the Guarantor as the principal debtor and the obligations of the Guarantor shall not be affected by any variations in the terms and conditions of the Tender Document or other documents or by extension of time of performance of any obligations by the Tenderer or any postponement for any time of the powers exercisable by the EMPLOYER against the Tenderer or forebear or enforce any of the terms and conditions relating to non-compliance of the Tender Document by the Tenderer and we shall not be relieved from our obligations by reason of any variation or extension being granted to the Tenderer or forbearance or omission on the part of the EMPLOYER or any indulgence by the EMPLOYER to the Tenderer to give such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

This Guarantee shall be irrevocable and shall remain in full force and effect until all our obligations under this Guarantee are duly discharged.

The Guarantor has power to issue this Guarantee and the undersigned is duly authorised to execute this Guarantee pursuant to the power granted under .....

In Witness whereof the Guarantor has set its hands hereunto on the day, month and year first hereinabove written.

Signed and Delivered by .....

Bank by the hand of Shri.....

its.....and authorised official

\*Fill in the scheduled date of submission of Tender.

**Annexure-16**

**PROFORMA OF PRE CONTRACT INTEGRITY PACT**

(Deleted)

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

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

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

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

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

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

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

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

Accordingly, we declare to be (TickOne)

a. **Class-I Supplier (50% or more local content)**

b. **Class-II Supplier (20% to 50% local content)**

c. **Non Local Supplier (less than 20% local content)**

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

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

**Seal and Signature of Authorized Signatory**

Contractor Signature and seal

### LIST OF SUB-CONTRACTOR(S)

The Bidder shall identify below the Sub-contractor(s) for major Project items. For sub-contractor a Letter of Intent must be provided.

Major Project Item	Proposed Consortium Member / Sub- Contractor(s)
<b>Meter Manufacturer (if any)</b>	
<b>Communication Provider</b>	Required
<b>System Integrator (if any)</b>	
<b>MDM Provider (if any)</b>	
<b>HES Provider (if any)</b>	
<b>Cloud Service Provider (if any)</b>	
<b>[Other](if any)</b>	

**Signature of the tenderer**

Contractor Signature and seal

**COCHIN PORT AUTHORITY**  
**SECTION-II**  
**GENERAL CONDITIONS OF CONTRACT (GCC)**

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#### **GENERAL GUIDELINES**

1. This book of "General Conditions of Contract (GCC)" is applicable to all types of tenders i.e. "Percentage rate tenders, item rate tenders and custom bid(GeM)".
2. This GCC is applicable to Civil, Electrical and Mechanical works, except dredging work.
3. All blanks are confined to Contract Data. The blanks provided therein shall be filled up carefully for each tender as applicable.
4. Authority approving the Notice Inviting Tenders (NIT) shall fill up all the blanks in Contract Data before issue of tender document.
5. Additional clauses or modifications to the clauses in the GCC, as applicable specifically to the work shall be incorporated under Special Conditions of Contract.

\*\*\*\*\*

## GENERAL CONDITIONS OF CONTRACT

### A. General 1 Definitions

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

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

Compensation Events are those defined in Clause 44

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

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

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

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

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

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

Days are calendar days, months are calendar months.

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

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

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

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

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

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

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

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

The Engineer or his nominee is the person named in the Contract Data (or any other competent person appointed and notified to the Contractor to act in replacement of the Engineer or his nominee) who is responsible for supervising the Contractor, administering the Contract, certifying payments due to the Contractor, issuing and valuing Variations to the Contract, awarding extensions of time and valuing the Compensation Events.

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

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

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

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

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

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

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

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

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

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

## **2 Interpretation**

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

- (5) Conditions of Contract including Special Conditions of Contract
- (6) Specifications
- (7) Drawings
- (8) Bill of quantities and
- (9) Any other documents listed in the Contract Data as forming part of the Contract.

### **3 Language and Law**

3.1 The language of the Contract and the law governing the Contract are stated in the Contract Data.

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

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

### **5 Delegation**

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

### **6 Communications**

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

### **7 Contract Agreement**

7.1 A suitable form is annexed as "FORM OF AGREEMENT" to the Tender Document. Upon signing the Contract Agreement, the Contractor shall make copies of Contract Documents, as indicated in the Contract Data, in hardbound cover which shall cover documents used in Contract/Agreement and provide the same to the Employer at no extra cost.

7.2 Data made available by the Employer in accordance with provisions of the Condition of Contract shall be deemed to include data listed elsewhere in the Contract and open for inspection at the office of the Engineer as indicated in the Contract data of the Cochin Port Trust (by prior appointment with the Engineer).

### **8 Subcontracting**

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

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

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

8.2 Observance by Sub-Contractors

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

8.3 Other Contractors

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

### **9 Personnel**

9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data to carry out the functions stated in the Schedule or other personnel approved by

Contractor Signature and seal

the Engineer or his nominee. The Engineer or his nominee will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the schedule.

9.2 If the Engineer or his nominee asks the Contractor to remove a person who is a member of the Contractor's staff from his work force stating the reasons, the Contractor shall ensure that the person leaves the site within seven days and has no further connections with the work in the contract.

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

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

10.1 The Employer carries the risks which this Contract states are Employer's risks and the Contractor carries the risks which this Contract states are Contractor's risks.

## **11 Employer's Risks**

11.1 The Employers risks are

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

## **12 Contractor's Risks**

12.1 All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

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

## **13 Insurance**

13.1 The Contractor shall provide in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractors risks.

- a) loss of or damage to the Works, Plant and Materials
- b) loss of or damage to Equipment;
- c) loss of or damage of property (except the Works, Plant, Materials and Equipment) in connection with the Contract; and
- d) personal injury or death.

13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Engineer or his nominee for approval before the start date. All such insurances shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may effect

Contractor Signature and seal

the insurance which the Contractor should have provided and recover the premiums the Employer has paid from any payments due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

13.4 Alterations to the terms of insurance shall not be made without the approval of the Engineer or his nominee.

13.5 Both parties shall comply with all conditions of the insurance policies.

#### **14 Site Investigation Reports**

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

#### **15 Queries about the Contract Data**

15.1 The Engineer or his nominee will clarify queries on the Contract Data.

#### **16 Contractor to Construct the Works**

16.1 The Contractor shall construct and install the works in accordance with the Specification and Drawings.

16.2 The Contractor shall execute the whole and every part of the work in the most substantial and workmanlike manner both as regards materials and otherwise in every respect in strict accordance with the Specifications. The Contractor shall also conform exactly, fully and faithfully to the design, drawings and instructions in writing in respect of the work signed by the Engineer or his nominee and the Contractor shall be furnished free of charge one copy of the contract documents together with specifications, designs, drawings and instructions as are not included in the Specifications specified in Contract Data or in any Bureau of Indian Standard or any other published standard or code or, Schedule of Rates or any other printed publication referred to elsewhere in the Contract.

16.3 The Contractor shall comply with the provisions of the contract and with the care and diligence execute and maintain the works and provide all labour and materials, tools and plants including for measurements and supervision of all works, structural plans and other things of temporary or permanent nature required for such execution and maintenance in so far as the necessity for providing these, is specified or is reasonably inferred from the contract. The Contractor shall take full responsibility for adequacy, suitability and safety of all the works and methods of construction.

#### **16.4 SITE MAINTENANCE DURING CONSTRUCTION**

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

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

17.1 The Contractor may commence execution of the works on the Start Date and shall carry out the works in accordance with the program submitted by the Contractor as updated with the approval of the Engineer or his nominee, and complete them by the Intended Completion Date.

17.2 The work shall be done in phases, in close co-ordination with civil/electrical/air conditioning false ceiling works and other works as directed by EMPLOYER.

17.3 The Contractor shall note that the site for installation will be made available in parts or in phases. It is the responsibility of the contractor to programme his work accordingly. No extra amount will be paid on account of site being made available in phases/parts.

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

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

18.2 The Contractor shall be responsible for design of Temporary Works.

18.3 The Engineer or his nominee's Approval shall not alter the Contractor's responsibility for design of the Temporary Works.

18.4 All Drawings prepared by the Contractor for the execution of the temporary works, are subject to prior

approval by the Engineer or his nominee before their use.

## **19 Safety**

19.1 The Contractor shall be responsible for the safety of all activities on the Site.

19.2 Reporting of Accidents

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

## **20 Discoveries**

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

## **21 Possession of the Site**

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

## **22 Access to the Site**

22.1 The Contractor shall allow the Engineer or his nominee and any person authorised by the Engineer or his nominee access to the Site or to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured, fabricated and /or assembled for the works.

22.2 Port Entry Permission - The Contractor shall submit prior application for Port entry passes to the concerned Port authority for his labours and the staffs engaged in the works. The Contractor shall retain the original passes obtained by them in respect of their labour and staff engaged in the Works and produce the same to the Engineer as and when called for. It should not be either destroyed or allowed to be taken by the labour/staff after its use.

## **23 Instructions**

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

## **24 Disputes**

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

## **25 Settlement of Disputes & Arbitration**

25.1 Dispute Resolution

25.1.1 The Parties agree to use their best efforts for amicably resolving all Disputes arising under or in respect of this Agreement by mutual discussions.

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

- (i) If the Contractor considers any work demanded of him to be outside the requirements of the contract, or disputes any drawings, record or decision given in writing by the Engineer-in-charge on any matter in connection with or arising out of the contract or carrying out of the work, to be unacceptable, he shall promptly within 15 days request the Engineer in writing for written instruction or decision. Thereupon,

the Engineer shall give his written instructions or decision within 30 days of receipt of the Contractor's letter.

- (ii) If the Engineer fails to give his instructions or decision in writing within the aforesaid period or if the Contractor is dissatisfied with the instructions or decision of the Engineer, the Contractor may, within 15 days of the receipt of Engineer's decision, appeal to the Chairperson who shall afford an opportunity to the Contractor to be heard, if the latter so desires, and to offer evidence in support of his appeal. The Chairperson shall give his decision within 30 days of receipt of Contractor's appeal.
- (iii) If the Contractor is dissatisfied with this decision, the Contractor shall within a period of 30 days from receipt of the said decision, shall take further action in accordance with the conciliation procedure set forth in Clause 24.3.

## 25.2 Conciliation

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

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

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

## 25.3 Arbitration

- (i) Any disputes of a total value less than Rs. 10 crores shall be resolved through arbitration by a Sole Arbitrator appointed by mutual consent of the parties.
- (ii) Either party shall within a period of 30 days from the date of termination of conciliation proceedings, give notice to other party for appointment of arbitrator.
- (iii) If the arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever another sole arbitrator shall be appointed jointly by both parties. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.
- (iv) It is a term of this contract that the party invoking arbitration shall give a list of disputes with amounts claimed in respect of each such dispute along with the notice for appointment of arbitrator and giving reference to the rejection by the Chairperson of the appeal.
- (v) It is also a term of this contract that if the Contractor does not make any demand for appointment of arbitrator in respect of any claims in writing as aforesaid within 120 days of receiving the intimation from the Engineer that the final bill is ready for payment, any claim of the Contractor shall be deemed to have been abandoned and absolutely barred and the Employer or his authorized representative shall be discharged and released of all liabilities under the contract in respect of these claims.
- (vi) The arbitration shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 (26 of 1996) or any statutory modifications or reenactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.
- (vii) It is also a term of this contract that the Arbitrator / Arbitral Tribunal shall adjudicate only on such disputes as are referred to him and give separate award against each dispute and claim referred to.
- (viii) It is also a term of the contract that if any fees are payable to the arbitrator the same shall be paid equally by both the parties.
- (ix) It is also a term of the contract that the arbitrator shall be deemed to have entered on the reference on the date he / they issues notice to both the parties calling them to submit their statement of claims and counter statement of claims.

- (x) The seat and venue of the arbitration shall be at Cochin.
- (xi) The fees, if any, of the arbitrator shall, if required to be paid before the award is made and published, be paid half and half by each of the parties. The cost of the reference and of the award (including the fees, if any, of the arbitrator) shall be in the discretion of the arbitrator who may direct to any party by whom and in what manner, such costs or any part thereof shall be paid.

## 25.2 Litigation

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

## 25.3 Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD)

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

## 26 Computerised Measurement Book

- 26.1 Engineer or his nominee shall, except as otherwise provided, ascertain and determine by measurement, the value of work done in accordance with the contract.
- 26.2 All measurement of all items having financial value shall be entered by the Contractor and compiled in the shape of the Computerised Measurement Book having pages of A-4size as per the format of the department so that a complete record is obtained of all the items of works performed under the Contract.
- 26.3 All such measurements and levels recorded by the Contractor or his authorized representative from time to time, during the progress of the work, shall be got checked by the Contractor from the Engineer or his authorized representative as per interval or program fixed in consultation with Engineer or his authorized representative. After the necessary corrections made by the Engineer or his nominee, the measurement sheets shall be returned to the Contractor for incorporating the corrections and for resubmission to the Engineer for the dated signatures by the Engineer or his nominee and the Contractor or their representatives in token of their acceptance.
- 26.4 Whenever bill is due for payment, the Contractor would initially submit draft computerized measurement sheets and these measurements would be got checked/test checked from the Engineer and/or his authorized representative. The Contractor will, thereafter, incorporate such changes as may be done during these checks/test checks in his draft computerized measurements, and submit to the department a computerized measurement book, duly bound, and with its pages machine numbered. The Engineer and/or his authorized representative would thereafter check this MB, and record the necessary certificates for their checks/test checks. The final, fair, computerized measurement book given by the Contractor, duly bound, with its pages machine numbered, should be 100% correct, and no cutting or over-writing in the measurements would thereafter be allowed. If at all any error is noticed, the Contractor shall have to submit a fresh computerized MB with its pages duly machine numbered and bound, after getting the earlier MB cancelled by the department. Thereafter, the MB shall be taken in the Divisional Office records, and allotted a number as per the Register of Computerised MBs. This should be done before the corresponding bill is submitted to the Division Office for payment. The Contractor shall submit two spare copies of such computerized MB's for the purpose of reference and record by the various officers of the department.
- 26.5 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.
- 26.6 The Contractor shall, without extra charge, provide all assistance with every appliance, labour and

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other things necessary for measurements and recording levels.

- 26.7 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.
- 26.8 The Contractor shall give not less than seven days' notice to the Engineer or his authorised representative in charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is covered up or placed beyond the reach of measurement and shall not cover up and place beyond reach of measurement any work without consent in writing of the Engineer or his authorised representative in charge of the work who shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Engineer's consent being obtained in writing the same shall be uncovered at the Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.
- 26.9 Engineer or his authorised representative may cause either themselves or through another officer of the department to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.
- 26.10 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.

## **B. TIME CONTROL**

### **27 Program**

- 27.1 After the acceptance of his Tender, the Contractor shall, within fifteen days, submit to the Engineer-in-Charge for his approval, a detailed programme taking into account the total time period stipulated in the contract showing the order, the procedure and method in which he proposes to carry out the works.
- 27.2 He shall furnish the particulars in writing of his arrangements of manpower, plant and machinery and all other resources owned and dedicated to this work. Cash flow during the execution of project for procurement of materials and for carrying out of the works including temporary works which the Contractor intends to construct shall also be furnished.
- 27.3 In support of this programme, the Contractor shall submit a work schedule in the form of a CPM/PERT Chart. The Engineer-in-Charge shall if necessary modify the programme submitted by the Contractor and approval shall be given by the Engineer-in-Charge indicating the major milestones. The programme approved by the Engineer-in-Charge shall be final and binding on the Contractor. The approval by the Engineer-in-Charge of such programme, or furnishing of such particulars shall not relieve the Contractor of any of his duties or responsibilities under the contract.
- 27.4 During the progress of work, the Contractor shall be required to furnish the resource mobilization plan as required by Engineer-in-Charge to keep up the target date of completion.
- 27.5 This CPM/PERT programme will be required to be updated every month or more frequently as directed by the Engineer-in-Charge, based on the actual progress, resource mobilisation and other field conditions actually prevailing.

#### **27.5.1 PROGRESS REPORTS AND SCHEDULES**

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

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mobilization of resources etc. during the previous fortnight.

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

## **28 Revised Program**

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

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

- 29.1 The Engineer or his nominee shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost.
- 29.2 The Engineer or his nominee shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Engineer or his nominee for a decision upon the effect of a Compensation Event or Variation or any other events causing delay, beyond the control of the Contractor and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.
- 29.3 Such Request for extension of time, to be eligible for consideration, shall be made by Contractor in writing within fourteen days of the happening of the event causing delay on the prescribed form. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.
- 29.4 Extension of Time:
- 29.4.1 If at any time during performance of the contract, the Contractor or its Sub-Contractors should encounter conditions impeding timely delivery of the Goods or completion of Related Services, pursuant to GCC Clause 29, the Contractor shall promptly notify the Employer in writing of the delay, its likely duration, and its cause. As soon as practicable after receipt of the Contractor's notice, the Employer shall evaluate the situation and may at its discretion extend the Contractor's time for performance, in which case the extension shall be ratified by the parties by amendment of the contract.
- 29.4.2 Except in case of Force Majeure, as provided under GCC Clause 33, a delay by the Contractor in the performance of its Delivery and Completion obligations shall render the Contractor liable to the imposition of liquidated damages pursuant to GCC Clause 49 (Liquidated Damages), unless an extension of time is agreed upon, pursuant to GCC Clause 29.

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

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

### **31 Management Meetings**

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

### **32 Early Warning**

- 32.1 The Contractor is to warn the Engineer or his nominee at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of works. The Engineer or his nominee may require the Contractor to provide an estimate of the expected effect of the event or circumstance on the Contract Price and Completion Date. The estimate is to be provided by the Contractor as soon as reasonably possible.
- 32.2 The Contractor shall cooperate with the Engineer or his nominee in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer or his nominee.
- 32.3 The Contractor shall immediately give notice in writing to the Engineer or his nominee upon happening of any event as detailed below if the work is delayed by:
- i) force majeure, or
  - ii) abnormally bad weather, or
  - iii) serious loss or damage by fire, or
  - iv) civil commotion, local commotion of workmen, strike or lockout, affecting any of the trades employed on the work, or
  - v) delay on the part of other Contractors or tradesmen engaged by Engineer in executing work not forming part of the Contract, or
  - vi) any other cause which, in the absolute discretion of Engineer, is beyond the Contractor's control.

### **33 Force Majeure**

"Force Majeure" means an exceptional event or circumstance:

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

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

- (i) war and hostilities (whether war be declared or not), invasion, act of foreign enemies;
- (ii) rebellion, revolution, insurrection, or military or usurped power, or civil war;

- (iii) ionizing radiations, or contamination by radioactivity from any nuclear fuel, or from any nuclear waste, from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof;
- (iv) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds; and
- (v) riot, commotion or disorder, unless solely restricted to the employees of the Contractor or of his Sub Contractors and arising from the conduct of the Works;
- (vi) floods, tornadoes, earthquakes and landslides.

## **C. QUALITY CONTROL**

### **34 Identify Defects**

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

### **35 Tests**

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

### **36 Defect Liability**

- 36.1 The Engineer or his nominee shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 36.2 Every time notice of a Defect is given, the Contractor shall correct the notified defect within the length of time specified by the Engineer or his nominee's notice. To the intent that the works shall, at or as soon as practicable after the expiration of the Defects Liability Period, be delivered to the Employer in the condition required by the Contract, fair wear and tear excepted, to the satisfaction of the Engineer, the Contractor shall :
- (a) complete the work, if any, outstanding on the date stated in the Taking-Over Certificate within the date to be intimated by the Engineer and
  - (b) execute all such work of amendment, reconstruction, and remedying defects, shrinkages or other faults as the Engineer may, during the Defects Liability Period or within 14 days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to its expiration, instruct the Contractor to execute.
- 36.3 Cost of Remedying Defects

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

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

### **36.4 Defects Liability Certificate**

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

period, or as soon thereafter as any works instructed, pursuant to Clauses 36, have been completed to the satisfaction of the Engineer.

36.5 Unfulfilled Obligations

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

36.6 Uncorrected Defects.

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

**D. COST CONTROL**

**37 Bill of Quantities**

37.1 The Bill of Quantities shall contain items for the construction, supply, installation, testing and commissioning work to be done by the Contractor.

37.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.

**38 Changes in the Quantities**

38.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 % provided the change exceeds (+)10% of initial Contract Price, the Engineer or his nominee shall adjust the rate(s), to allow for the change.

38.2 The Engineer or his nominee shall not adjust rates for changes in quantities if thereby the Initial Contract Price is exceeded by more than 10% except with the prior approval of the Employer.

38.3 If requested by the Engineer or his nominee where the quoted rate (s) of any item(s) is abnormally high, the Contractor shall provide the Engineer or his nominee with a detailed cost breakdown of such rate in the Bill of Quantities.

**39 Variations**

39.1 The Engineer shall make any Variation of the form, quality or quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following:

- (a) increase or decrease the quantity of any work included in the Contract,
- (b) omit any such work,
- (c) change the character or quality or kind of any such work,
- (d) change the levels, lines, position and dimension of any part of the Works,
- (e) execute additional work of any kind necessary for the completion of the Works,
- (f) change any specified sequence or timing of construction of any part of the Works.

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

39.2 Instructions for Variations

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

#### **40 Payments for Variations**

- 40.1 Variation permitted shall not exceed (+) 25% in quantity of each individual item, and (+)10% of the total contract price. Within 14 days of the date of instruction for executing varied work, extra work or substitution, and before the commencement of such work, notice shall be given either (a) by the Contractor to the Employer of his intention to claim extra payment or a varied rate or price, or (b) by the Employer to the Contractor of his intention to vary rate or price.
- 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 rates of similar items in the Contract.
  - ii) Rates and prices in the Schedule of Rates applicable to the Contract plus Ruling Percentage.
  - iii) Market rates of materials and labour, hire charges of plant and machinery used, plus 15% for overheads and profits of Contractor.
- 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 Quantities plus the permissible variation shall be as determined by methods given below.
- i) Rates and prices in the Schedule of Rates applicable to the Contract plus Ruling Percentage.
  - ii) Market rates of materials and labour, hire charges of plant and machinery used, plus 15% for overheads and profits of Contractor.

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

- 40.4 If there is delay in the Employer and the Contractor coming to an agreement on the rate of an extra item, rates as proposed by the Employer shall be payable provisionally till such time as the rates are finally determined or till date mutually agreed.
- 40.5 If the Engineer or his nominee decides that the urgency of varying the work prevent a quotation being given and considers not delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

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

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

#### **42 Payment Certificates**

- 42.1 The Contractor shall submit to the Engineer or his nominee monthly statements of the estimated value of the work completed less the cumulative amount certified previously.
- 42.2 The Engineer or his nominee shall check the Contractors' monthly statement within 14 days and certify the amount to be paid to the Contractor after taking into account any credit or debit for the month in question in respect of materials for the works in the relevant amounts and under conditions set forth in sub-clause 51.6 of the Contract Data (Secured Advance).
- 42.1 The value of work executed shall be determined by the Engineer or his nominee.
- 42.2 The value of work executed shall comprise the value of the quantities of the items in the Bill of quantities completed.
- 42.3 The value of work executed shall include the valuation of variations and Compensation Events.
- 42.4 The Engineer or his nominee may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

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## 43 Payments

- 43.1 Bills shall be prepared and submitted by the Contractor. Joint measurements shall be taken continuously and need not be connected with billing stage. System of 4 copies of measurements, one each for Contractor, Employer and Engineer or his nominee, and signed by both Contractor and Engineer or his nominee shall be followed.
- 43.2 Payment of Bills for civil works shall be regulated as detailed hereunder:
- 43.2.1 Interim Bills shall be paid within 21 days of date of submission of bills in full shape by the Contractor. 75% of the bill amount shall be paid within 7 days of submission of the bill, if on request by the Contractor. Balance amount of the verified bill shall be paid within 21 days of the submission of the bill.
- 43.2.2 Final Bill shall be paid within 3 months as detailed below on issue of Taking Over Certificate by the Engineer or his nominee. The Contractor shall submit final Bill within 30 days of issue of Taking Over Certificate. Engineer or his nominee shall check the bill within 30 days after its receipt and return the bill to Contractor for corrections, if any. The Contractor should re-submit the bill with corrections within 15 days of its return by the Engineer or his nominee. The re-submitted bill shall be checked and paid within 30 days of its receipt.
- 43.3 Payment for Electrical and Mechanical works shall be regulated as detailed below:
- 43.3.1 The Contractor shall be entitled upon certificates of the Engineer or his nominee to payments in accordance with the following provisions:
- I) For supply portion :
    - i) 75% of the value, as certified by the Engineer or his nominee, of the materials from time to time delivered on the site.
    - ii) Balance 25% after completing the work in all respects, commissioning and handing over the installation to the Employer to the satisfaction of the Engineer and his nominee and his certification.
  - II) For erection portion :
    - i) 85% of the value as certified by the Engineer or his nominee, of the installation portion on completion of the erection work under contract, for which payments are claimed.
    - ii) Balance 15% along with other payments if any, after completing the work in all respects, commissioning and taking over the installation by the Employer to the satisfaction of the Engineer and his nominee and his certification.
- 43.3.2 For HT works, the work shall not be considered as completed until the installation is energized after obtaining approval certificate from Central Electrical Authority (CEA) and upon the issuance of taking over certificate by Engineer or his nominee. The final payment shall be made only after taking over the installation by the Employer.
- 43.4 All the interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer or his nominee relating to the work done or materials delivered forming part of such payment, may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or materials to which it relates is/are in accordance with the contract and specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer- or his nominee-charge under the contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the contract.

- 43.5 Pending consideration of extension of date of completion interim payments shall continue to be made as herein provided, without prejudice to the right of the department to take action under the terms of this contract for delay in the completion of work, if the extension of date of completion is not granted by the competent authority.
- 43.6 No further claims shall be made by the Contractor after submission of the final bill and these shall be deemed to have been waived and extinguished.
- 43.7 If an amount certified is increased in a later certificate as a result of an award by the Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in the award. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.
- 43.8 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.
- 43.9 All payments to the Contractor under the contract shall unless otherwise stated elsewhere be made to the Contractor in Indian currency through e- payments through designated Bank.

43.10 Payments\*

[\*Modification applicable only for tenders invited combining Civil, Electrical and Mechanical Works]

*Sub Clause 43 shall be replaced by the following:*

- 43.10.1 Bills shall be prepared and submitted by the Contractor. Joint measurements shall be taken continuously and need not be connected with the billing stage. System of 4 copies of measurements, one each for Contractor, Employer and Engineer or his Nominee and signed by both the Contractor and Engineer or his Nominee shall be followed.
- 43.11 Payment for Electrical/Mechanical Works shall be certified by the respective Nominees from the concerned departments.
- 43.12 Payment of bills for Civil Works shall be regulated as detailed here under.
- 43.12.1 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.
- 43.12.2 Interim bills shall be paid within 21 days of date of submission of bills in full shape, by the Contractor, as detailed below.
- 43.12.6 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.
- 43.12.7 However, on request by the Contractor, 75% of the bill amount shall be paid within 7 days of submission of the bill. Balance amount of the verified bill shall be paid within 21 days of the submission of the bill, on completion of all contractual requirements as brought out at Sub Clause 43.2.2.1.above.
- 43.12.8 Final bill shall be paid within 3 months of issue of Taking Over Certificate by the Engineer / Nominee, as detailed below.
- 43.12.9 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

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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.

43.12.10 However, on request by the Contractor, 50 % of the final bill amount shall be paid within 7 days of submission of the bill, which will be adjusted against the final bill payment, on completion of all contractual requirements as brought out at Sub Clause 43.2.3.1 above.

43.12.11 All other sub clauses under Clause 43 remain the same.

#### **44 Compensation Events**

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

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

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

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

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

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

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

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

45.1 The Contractor's rates and prices shall include all taxes, duties and fees including Port charges like wharfage, Port dues, berth hire, pilotage etc. if any applicable, all charges and taxes whatsoever

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excluding Goods and Service Tax (GST) [For Civil/Mechanical/ Electrical works invited through e-tender portal [www.tenderwizard.com](http://www.tenderwizard.com) /COPT and including Goods and Services Tax (GST) For Mechanical/Electrical works invited through GeM portal [www.gem.gov.in.](http://www.gem.gov.in)] in respect of materials, labour and plant and all other things obtained or used by the Contractor for the execution and maintenance of the Work or any temporary works.

- 45.2 GST as may be applicable from time to time shall be shown separately in the invoice. The invoice to be submitted by the Contractor shall include the GST Registration Number of the Contractor as well as the Employer.
- 45.3 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.
- 45.4 The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the Work and of the rates and prices stated in the Schedule of Quantities.
- 45.5 The percentages/ rates / lumpsum amount as applicable shall except in so far as the Contract otherwise provides, cover all obligations of the Contractor under this Contract and all matters and things necessary for the proper completion and maintenance of the Work. The percentages/ rates / lumpsum amount quoted for each item shall be all inclusive value of the finished Work as per drawings and specifications and shall cover the cost of all constructional plants, temporary works, appliances, materials, both for the Work and temporary works, labour and all other matter in connection with each item quoted for

#### **46 Currencies**

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

#### **47 Price Adjustment.**

- 47.1 No price adjustment shall be made for works except for the provisions under clause 47.1.1 herein under and clause 47.2 for any subsequent change in legislation.
- 47.1.1 For Civil contract works, with intended completion period of the contract more than 12 months, Price adjustment shall be made for the variation in price of materials such as cement, reinforcement steel, structural steel, bitumen and bitumen emulsion. Compensation for variation in cost of the materials shall be regulated as described below subject to the condition that such compensation for variation in prices shall be only for the work done during the stipulated period of the contract including such period for which the validity of the contract is extended.

The rates quoted for the items in the Schedule of Quantities shall be based on the Base rates of the materials provided in the Contract Data and these base rates are applicable at the Supplier's local delivery point and shall not include cost of loading to Contractor's vehicle, transporting to work site and unloading and stacking at work site.

During execution and actual procurement by the Contractor, increase or decrease in the cost of materials over the Base rate (which results in an increase or decrease of cost to the Contractor in carrying out the works) shall form an addition or reduction as the case may be to or from the contract price and shall be paid to or allowed by the Contractor accordingly, provided that such increase or decrease shall relate only to the quantities of material which the Engineer is satisfied as reasonably required for the works. While considering the reasonable requirement of the materials for the work, allowance towards wastage/unusable cutting bits shall be permitted as provided in the Contract Data. The prices of materials considered for regulating the payment as aforesaid shall be the price charged by the suppliers approved by the Engineer at the supplier's local delivery point and this shall not include the cost of loading to the Contractor's vehicle, transporting to the work site and unloading and stacking at work site

- 47.2 Subsequent Legislation

If, after 28 (Twenty eight) days prior to the last date for submission of tenders for the contract, there occur changes to any National or State Statute, Ordinance or Decree or other Law or any regulation or

bye law of any local or other duly constituted authority or introduction of any such state statute, Ordinance, Decree, Law, regulation or bye law which causes additional or reduced cost to the Contractor in execution of the contract, such additional or reduced cost shall, after due consultation with the Employer and the Contractor be determined by the Engineer or his nominee and shall be added to or deducted from the contract price and the Engineer or his nominee shall notify the Contractor accordingly with a copy to the Employer.

#### **48 Retention**

- 48.1 The Employer shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.
- 48.2 For civil works, Retention Money shall be deducted at 5% of the gross amount of the bill from the first Running Account bill onwards till the recovered sum amounts to 5% of the contract value or the value of the work done whichever is higher. Retention money shall be refunded to the Contractor within 14days from the date of payment of final bill. \
- 48.3 No retention money shall be deducted for Electrical and Mechanical works.

#### **49 Liquidated Damages**

- 49.1 in case of delay in completion of the contract, liquidated damages (l.d) may be levied at the rate of half per cent ( $\frac{1}{2}\%$ ) of the contract price per week of delay, subject to a maximum of 10 per cent of the contract price. the amount of liquidated damages can be adjusted or set-off against any sum payable to the contractor.
- 49.1.1 49a(i) the employer, if satisfied, that the works can be completed by the contractor within a reasonable time after the specified time for completion, may allow further extension of time at its discretion with or without the levy of l.d. in the event of extension granted being with l.d, the employer will be entitled without prejudice to any other right or remedy available in that behalf, to recover from the contractor as agreed damages equivalent to half per cent ( $\frac{1}{2}\%$ ) of the contract value of the works for each week or part of the week subject to the ceiling defined in sub-clause 49 a.
- 49.1.2 49a(ii) the employer, if not satisfied that the works can be completed by the contractor, and in the event of failure on the part of the contractor to complete work within further extension of time allowed as aforesaid, shall be entitled, without prejudice to any other right, or remedy available in that behalf, to rescind the contract.
- 49.1.3 49a(iii) the employer, if not satisfied with the progress of the contract and in the event of failure of the contractor to recoup the delays in the mutually agreed time frame, shall be entitled to terminate the contract.
- 49.1.4 49a(iv) in the event of such termination of the contract as described in clauses 49a(ii) or 49a(iii) or both the employer shall be entitled to recover l.d. upto ten per cent (10%) of the contract value and forfeit the security deposit made by the contractor besides getting the work completed by other means at the risk and cost of the contractor.
- 49.2 reduction of liquidated damages  
if, before the time for completion of the whole of the works or, if applicable, any section, taking over certificate has been issued for any part of the works or of a section, the liquidated damages for delay in completion of the remainder of the works or of that section shall, for any period of delay after the date stated in such taking over certificate, and in the absence of alternative provisions in the contract, be reduced in the proportion which the value of the part so certified bears to the value of the whole of the works or section, as applicable. the provisions of this sub-clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.
- 49.3 for levying ld, the employer is not required to have documentary evidence to quantify or prove the losses suffered by the employer due to delay in completion of work by the contractor, as per agreement conditions.

**50 Nominated Sub Contractors**

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

**51 Advance payment**

The Employer shall make the following advance payments (as admissible in the contract data) if requested by the Contractor in writing:

51.1 Mobilisation Advance shall be paid upto 5% of Contract price, payable in two equal installments. The first installment shall be paid after mobilisation has started and next installment shall be paid after satisfactory utilisation of earlier advance for which, the Contractor shall furnish proof of the satisfactory utilization of the amount.

51.2 Construction/ installation equipment Advance shall be paid upto 5% of Contract price, limited to 90% of assessed cost of machinery. Equipment advance will be paid in two or more installments. First installment shall be paid after Construction Equipment has arrived at the site and next installment shall be paid after satisfactory utilisation of earlier advance (s).

51.3 Mobilization Advance and Construction Equipment Advance shall be paid at SBI PLR + 2% interest rate and against Bank Guarantee for Mobilization Advance and against hypothecation of Construction Equipment to the Employer.

51.4 Recovery of Mobilisation and Construction Equipment advance will start when 15% of the work is executed and recovery of total advance should be completed by the time 80% of the original Contract work is executed.

51.5 The above advance payments shall be admissible only for the works where estimated cost put to tender is more than Rs.5.0 crores.

**51.6 Secured Advance**

The Engineer or his nominee shall make advance payment in respect of materials and plant brought to site but not yet incorporated and installed in the Works in accordance with conditions stipulated in the Contract Data.

75% of cost of materials and plant brought to site for incorporation into the works only shall be paid as Secured Advance. Materials which are of perishable nature should be adequately insured.

The Contractor, on signing an indenture in the form to be specified by the Engineer, shall be entitled to be paid during the progress of the execution of the work upto 75% of the assessed value of any materials which are in the opinion of the Engineer nonperishable, non-fragile and noncombustible and are in accordance with the contract and which have been brought on the site in connection therewith and are adequately stored and/or protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has been made under this sub-clause are incorporated in the work the amount of such advance shall be recovered/deducted from the next payment made under any of the clause or clauses of this contract.

Such secured advance shall also be payable on other items of perishable nature, fragile and combustible with the approval of the Engineer provided the Contractor provides a comprehensive insurance cover for the full cost of such materials. The decision of the Engineer shall be final and binding on the Contractor in this matter. No secured advance, shall however, be paid on high-risk materials such as ordinary glass, sand, petrol, diesel etc.

**52 Securities**

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

Performance Security to be submitted at award of the work

Retention Money to be recovered from Running Bills as detailed in Clause 48 above.

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

52.2 Performance Security shall be as below:

a) For civil works : 5% of the Contract value

b) For all Electrical and Mechanical works : 10% of the Contract value

52.3 The Performance Security shall be provided by the Contractor to the Employer not later than 21 days for domestic bids and 28 days for international bids from the date of letter of acceptance and shall be furnished in one of the following forms:

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

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

52.4 The BG furnished towards the Performance Security shall be valid for a period until a date 30days from the day of expiry of the defect liability period stipulated as per the terms of the contract.

52.5 Unless performance Security is furnished within the period as specified in clause 52.3 above or such extension of that period as may be permitted by the Engineer in writing, the Earnest Money will be liable to forfeiture and the contract to cancellation.

52.6 Performance Security will be released / refunded to the Contractor not later than 30 days from the date of completion of Defect Liability / warranty period of the work.

**53 Removal of Craft or Plant which has sunk**

53.1 The Contractor shall forthwith and with dispatch at his own cost raise and remove any craft or plant (floating or otherwise) belonging to him or to any sub-Contractor employed by him (including also any plant which is held by the Contractor or any sub-Contractor under agreement for hire or hire-purchase) which may be sunk in the course of the construction completion or maintenance of the Works or otherwise deal with the same as the Engineer may direct or until the same shall be raised and removed, the Contractor shall set all such buoys and display at night such lights and do all such things for the safety of navigation as may be required by the Engineer or by Employer. In the event of the Contractor not carrying out his obligation imposed upon him by this clause the Employer may provide buoy and light such sunken craft or plant and raise and remove the same (without prejudice to the right of the Employer to hold the Contractor liable under General Conditions) and the Contractor shall refund to the Employer all costs incurred in connection therewith.

53.2 Contractor's Temporary Moorings

Should the Contractor need, in connection with implementing the Works, to provide temporary moorings for his craft he may be allowed to do so in location and manner approved by the Engineer subject to all necessary permissions being first obtained by the Contractor from the authorities concerned. The

Contractor shall not lay his temporary moorings such as to interfere with the port traffic and such moorings shall be removed if and when required by the Employer.

#### **54 Cost of Repairs**

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

### **E. FINISHING THE CONTRACT**

#### **55 Completion**

- 55.1 After completion of the work, the Contractor will serve a written notice to the Engineer or his nominee/Employer to this effect. The Engineer or his nominee/Employer upon receipt of this notice shall conduct a complete joint survey of the work within 7 days and prepare a defects list jointly. The defects pointed out by the Engineer or his nominee/ Employer would be rectified by the Contractor within 14 days and thereafter acceptance report be signed jointly by the Contractor and the Employer. This joint acceptance report shall be treated as 'Completion Certificate'. The Completion Report / Certificate to the Contractor will be issued only after obtaining 'No Claim Certificate' from the Contractor in the format approved by the department stating that they have no further claims against CoPA in respect of the Work.

- 55.2 No Claim Certificate:

No dispute or difference on any matter whatsoever, pertaining to the contract can be raised by the Contractor after submission of 'No Claim Certificate' as per the format in the tender document.

- 55.3 Substantial Completion of Parts

If any part of the Permanent Works has been substantially completed and satisfactorily passed any Tests on Completion prescribed by the Contract, the Engineer may issue a Taking-Over Certificate in respect of that part of the Permanent works before completion of the whole of the Works and, upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the Permanent Works during the Defects Liability Period.

- 55.4 Surfaces Requiring Reinstatement

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

#### **56 Taking Over**

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

- 56.2 Taking Over Certificate

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

- 56.3 Taking Over of Sections or Parts

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Similarly, in accordance with the procedure set out in above Clause 55, the Contractor may request and the Engineer or his nominee shall issue a Taking Over Certificate in respect of :

- a) any Section in respect of which a separate Time for Completion is provided in the Contract Data ,  
or
- b) any substantial part of the Permanent Works which has been both completed to the satisfaction of the Engineer and, otherwise than as provided for in the Contract, occupied or used by the Employer, or
- c) any part of the Permanent Works which the Employer has elected to occupy or use prior to completion (where such prior occupation or use is not provided for in the Contract or has not been agreed by the Contractor as a temporary measure).

## **57 Final Account**

- 57.1 The Contractor shall supply to the Engineer or his nominee a detailed account of the total amount that the Contractor considers payable under the Contract within 30 days of issue of Taking Over Certificate and the Engineer or his nominee shall certify any final payment that is due to the Contractor within 60 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer or his nominee shall issue within 30 days a schedule that states the scope of the corrections or additions that are necessary for the correction. If the Final Account is still unsatisfactory after it has been resubmitted the Engineer or his nominee shall decide on the amount payable to the Contractor and issue a payment certificate, within 60 days of receiving the Contractor's revised account.

## **58 Submission of 'As built Drawings'**

- 58.1 "As built" Drawings are required to be submitted by the Contractor by the dates stated in the Contract Data. If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract Data, or they do not receive the Engineer or his nominee's approval, the Engineer or his nominee shall withhold the amount stated in the Contract Data from payments due to the Contractor.

## **59 Termination:**

- 59.1 Termination for Default:

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

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

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

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

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

The Performance Security is to be forfeited;

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

59.2 Termination for Insolvency:

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

59.3 Termination for Convenience:

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

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

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

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

## 60 Payment upon Termination

60.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer or his nominee shall issue a certificate for the value of the work done less advance payments received upto the date of the issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less any extra cost of completing the Works through other means which may be incurred by the Employer. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.

60.2 If the Contract is terminated at the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Engineer or his nominee shall issue a certificate for the value of the work done, the reasonable cost of removal of Equipment repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works and loss of profit on uncompleted works less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to be deducted at source as per applicable law.

60.3 Employees of the Board not individually liable :

No official or employee of the Board shall in any way be personally bound or liable for acts or obligation under the contract or answerable for any default or omission in the observance or performance of any of the acts, matters or things which are herein contained.

## 61 Property

61.1 All materials on the Site, Plant, Equipment, Temporary Works and Works for which payment has been made to the Contractor by the Employer, are deemed to be the property of the Employer, if the Contract is terminated because of a Contractor's default.

## 62 Release from Performance

62.1 If the Contract is frustrated by the outbreak of war or by other event entirely outside the control of either the Employer or the Contractor, the Engineer or his nominee shall certify that the Contract has been frustrated. The Contractor shall leave the Site and stop work as quickly as possible after receiving

this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

## **F. LABOUR LAWS AND MISCELLANEOUS CLAUSES**

### **63 Labour**

63.1 The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

63.2 The Contractor shall, if required by the Engineer or his nominee, deliver to the Engineer or his nominee a return in detail, in such form and at such intervals as the Engineer or his nominee may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer or his nominee may require.

### **64 Compliance with labour regulations.**

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

64.1 The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Employer at any point of time.

### **65 Safety, Security and Protection of the Environment.**

65.1 Subject and without prejudice to any other provision of the Contract, the Contractor shall take all reasonable precautions:

- a) In connection with the sea or any harbours, docks, rivers, streams waterways drains, watercourses, lakes, reservoirs and the like to prevent:
  - a) Silting
  - b) Erosion of their beds or balks
  - c) Pollution of the water so as to affect adversely the quality or appearance thereof or cause injury or death to animal and plant life.
- b) In connection with underground water resources (including percolating water) to prevent
  - (i) Any interference with the supply to or abstraction from such sources

(ii) Pollution of the water so as to affect adversely the quality thereof.

- (c) All works shall be carried out without unreasonable noise and disturbance. The Contractor shall indemnify the Employer from and against any liability for damages on account of noise or other disturbance created while or in carrying out the work and from and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in regard or in relation to such liability.
- (d) The Contractor at his own cost shall make such provisions for lighting of Works, Temporary Works, Materials and Plant and shall provide all such marks and lights as may be required by the Employer or the Engineer or any other authority having jurisdiction over the Site together with all labour stores and services required for their efficient working and use at any time, day or night.
- (e) The Contractor shall also provide at his own cost every description of watching and maintenance required in connection with the foregoing, and all other services for protecting and securing all places dangerous whether to Contractor's workmen or to other persons until the Works are handed over to the Employer, or till such time when the Engineer decides that such services are no longer required.
- (f) All lights provided by the Contractor shall be placed or screened such as not to interfere with any navigation lights or with any traffic or signal lights of any local or other authority.

#### **66 Insurance of Works and Contractor's Equipment**

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

#### **67 War Risks Insurance**

67.1 If the Contractor receives instructions from the Employer to insure against war risks, such insurance if normally available shall be effected, at the cost of the Employer, with the Insurance Company acceptable to the Employer and shall be in the joint names of the Employer and the Contractor.

#### **68 Royalties**

68.1 Except where otherwise stated, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation. If any, for getting stone, sand, gravel, clay or other materials by him and his subordinates and his subContractors and required for the works, at the rates and such conditions as notified by the State Government and shall be realized from the Contractor by way of deductions from the interim certificates and/or final certificate for payments to the Contractor for the gross quantity of material used for or in connection with the work. The royalty will not be deducted if the Contractor submits the Mineral Dispatch Permit (MDP) for the quantity executed by the Contractor for the requisite quantity of material incorporated in works for which MDPB issued.

#### **69 Transport of Contractor's Equipment or Temporary Works**

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

#### **70 Transport of Materials or Plant**

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

## **71 Labour Laws & Regulations**

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

### **71.1 Accident Prevention Officer**

The Contractor shall have on his staff on site an officer dealing with all matters regarding safety and protection against, accidents of all staff and labour. This officer shall be qualified for this work and shall have the authority to issue instructions and shall take protective measures to prevent accidents.

### **71.2 Disorderly Conduct**

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his staff and labour and for the preservation of peace and protection of Persons and property in the neighborhood of the Works from the same.

### **71.3 Health and Safety**

Due precautions shall be taken by the Contractor, and at his own cost, to ensure the safety of his staff and labour and, in collaboration with and to the requirements of the local health authorities, to ensure that medical staff, first aid equipment and stores, sick bay and suitable ambulance services are available at the camps, housing and on the site at all times throughout the period of the Contract and that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements.

### **71.4 Supply of Water**

The Contractor shall, so far as is reasonably practicable, having regard to local conditions provide on the Site, to the satisfaction of the Engineer's Representative, an adequate supply of drinking and other water for the use of the Contractor's staff and work people.

### **71.5 Alcoholic Liquor or Drugs**

The Contractor shall not import, sell, give, barter or otherwise dispose of any alcoholic liquor, or drugs or permit or suffer any such importation, sale, gift, barter disposal by his sub-contract agents or employees.

### **71.6 Arms and Ammunition**

The Contractor shall not give, barter or otherwise dispose of to any persons or person, any arms or ammunition of any kind or permit or suffer the same as aforesaid.

### **71.7 Festivals and Religious Customs**

The Contractor shall in all dealings with labour in his employment have due regard to all recognised festivals, days of rest and religious or other customs.

#### 71.8 Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government, or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.

#### 71.9 Employment of Person in the Service of Others

The Contractor shall not recruit or attempt to recruit his staff and labour from amongst persons in the service of the Employer or other agencies engaged for any works of the Employer.

#### 71.10 Housing for Labour

Save in so far as the Contract otherwise provides, the Contractor shall provide and maintain such accommodation and amenities as he may consider necessary for all his staff and labour employed for the purposes of or in connection with the Contract, including all fencing water supply (both for drinking and other purposes), electricity supply, sanitation, cook houses fire prevention and fire-fighting equipment, furniture other requirements in connection with such accommodation or amenities. On completion of the Contract, unless otherwise agreed with the Employer, the temporary camps/housing provided by the Contractor, shall be removed and the site reinstated to its original condition, all to the approval of the Engineer. The land for construction of labour camps shall be allotted only outside the security area to the extent available and such areas allotted as per the prevailing lease rent.

#### 71.11 Fair Wages, Records, Inspection

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

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

#### 71.12 Reporting of Accidents

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

#### 71.13 Observance by Sub-Contractors

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

#### 71.14 Port Entry Permission

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

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

#### 71.15 Site - Protected Area

The Site of Work is a protected area. Entry to the Port premises is regulated by entry passes. These passes will be issued by the Central Industrial Security Force or any other authority authorized by the

Employer. The Contractor should furnish a list of person for whom the passes are to be issued to the Engineer and arrange to obtain the passes from the appropriate authority, based on the recommendation of the Engineer and abide by the Rules of the Cochin Port Trust with regard to entry etc. For the entry of trucks and other vehicles also, the Contractor should obtain necessary permits at his own cost .

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

## **72 Life Saving Appliances And First Aid**

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

## **73 Action in case Work not done as per Specifications**

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

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

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

## **74 Action where no Specifications are specified**

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

## **75 Bribes**

- 75.1 If the Contractor, or any of his Sub Contractors, agents or servants gives or offers to give to any person any bribe, gift, gratification or commission as an inducement or reward for doing or forbearing to do

any action in relation to the Contract or any other contract with the Employer, or for showing or forbearing to show favour or disfavor to any person in relation to the Contract or to any other contract with the Employer, then the Employer may enter upon the Site and the works and terminate the employment of the Contractor and the provisions of Clause 59 hereof shall apply as if such entry and termination had been made pursuant to that Clause.

The bidders shall give an undertaking that they have not made any payment or illegal gratification to any person/authority connected with the bid process so as to influence the bid process and have not committed any offence under the Prevention of Corruption Act in connection with the bid.

The bidders shall disclose any payments made or proposed to be made to any intermediaries (agents etc) in connection with the bid.

## **76 Details to be Confidential**

76.1 The Contractor shall treat the details of the contract as private and confidential, save insofar as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the previous consent in writing of the Employer. If any dispute arises as to the necessity of any publication or disclosure for the purpose of the Contract the same shall be referred to the decision of the Employer whose award shall be final.

## **77 Contractor's Temporary works, office etc**

77.1 The Contractor shall submit to the Engineer for his approval not less than 15 days before commencement of erection of any part of Temporary Works, drawings and detailed proposals for the method of construction of Temporary works such as office, store, false work and temporary platforms, pre-casting yard, workshop, etc. which he intends to construct for the execution of the contract and no such work shall be constructed before obtaining the written approval of Engineer or his nominee. These temporary works, office, store etc. shall be erected at or near the work area subject to approval of the Employer and the land space for the same will be allotted free of ground rent to the extent available. The Contractor shall obtain permission for any Temporary Works and would ensure that during execution of works the statutory requirements of the concerned authorities such as Cochin Port Trust, Police, Customs, etc. would be complied with.

77.2 Submission of Reports, Returns etc

All reports, statements, returns, drawings, diagrams etc. which the Contractor is required to submit to the Engineer during the progress of the Works, shall be furnished in triplicate without any additional cost.

## **78 Water Supply**

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

## **79 Power Supply**

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

79.2 The Contractor shall indicate his requirement of power to the Engineer within 15 days from the date of the letter of acceptance of the tender. The Contractor shall pay to the Employer, the power charges as per the prevailing Tariff schedule of Cochin Port Trust in force during the work of the Contractor. The Contractor shall also pay the connection and disconnection charges as applicable.

79.3 The Contractor shall submit a complete drawing of the power points, wiring, diagram indicating all electrical loads, earthing etc. in complete shape along with the completion report. The Energy Meter provided is calibrated by Kerala State Electrical Inspectorate /TMR division, KSEB and such a Certificate to be produced. For non supply of power at any stage port will not be responsible and the Contractor shall not have any claim whatever for loss or damage.

- 79.4 If there is any disruption in the power supply due to supply failure/restrictions imposed by the Kerala State Electricity Board, the department shall not be held responsible and the Contractor has to make suitable alternative arrangements like generator, welding set etc. at their cost.

## **80 Taxes and Duties**

- 80.1 The Price will be fixed and inclusive of all the duties and taxes including GST. All investments, operating expenses, incidentals, overheads etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the bidder.

- 80.2 The Contractor shall be solely responsible for all taxes that may be levied on the Contractor or on the earnings of any of his employees or personnel engaged by him and shall hold the Owner/Purchaser indemnified and harmless against any claims that may be against the Owner/Purchaser in this behalf. The Owner/Purchaser does not undertake any responsibility whatsoever regarding taxes under Indian Income Tax Act of the Contractor or his personnel. If it is obligatory under the provision under the Indian Income Tax deduction of Income Tax at source shall be done by the Owner/Purchaser.

- 80.3 Cess as per Building and other Construction Workers Welfare Cess Act (Act 28 of 1996) at the rate of one percent or at the rates prevailing in force at the time of payment of bills, of the cost of construction should be borne by the contractor and the same will be deducted from contractor's bills while making payment or when crediting amount to contractors account.

- 80.4 GST will be governed as per the prevailing Rules. TDS Under GST Law shall be deducted as per prevailing rate.

- 80.5 Income Tax

The Contractor and his staff shall be responsible for payment of all personal income taxes to the concerned authorities as per the law in force from time to time. Deduction of Income Tax shall be made by the Employer from each certificate of payment to the Contractor at the rate as per prevailing rates or such other rates as may be specified by the Central Government from time to time, on the gross amount of the Contractor's bill for payment. The Contractor shall comply with all the GST Regulations, viz. timely uploading of bills, issue of debit/ credit notes etc.

## **81 Noise and Disturbance**

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

## **82 Safety Code**

- 82.1 Necessary Indian Dock Safety regulations for the safety purpose shall be adhered to by the Contractor and he will be held responsible for any violations of the same. The set of such conditions (regulation) is available with Cochin Port Trust and the Contractor is required to go through it before tendering.

- 82.2 Besides the above, the Contractor shall also scrupulously adhere to and observe the following safety codes:

- a) The Contractor has to provide sufficient barricades to site of work so that traffic plying nearby should not damage the recently concreted work. In case of any damage on account of above, the entire responsibility will remain with Contractor and nothing extra will be paid on this account.
- b) Suitable and strong scaffolds should be provided for the workmen for all work that cannot be safely done from ground.
- c) No portable single ladder shall be over 8 meters in length. The width between the side rails shall not be less than 30 cm (clear) and the distance between the two adjacent rungs shall not be more than 30 cm.
- d) Hoisting machines and tackles used in the works including their attachments, anchorage and supports shall be in perfect condition as per stipulations of the relevant Rules. The ropes used in hoisting or lowering materials or as means or suspension shall be of durable quality and adequate strength and free from defects.

- e) The excavated material shall not be placed within 1.5 meters of the edge of the trench or half of the depth of the trench, whichever is more. All trenches and excavation shall be provided with necessary fencing to lighting. Every opening in the floor of a building or in a working platform be provided with suitable fence to prevent the fall of persons or materials. No floor, roof or other parts of the structure shall be so overloaded with debris or materials as to render it unsafe
- f) Workers employed on mixing and handling materials such as cement, cement mortars, concrete, lime mortar and asphalt shall be provided with protective footwear and rubber hand gloves and thin cloth for covering face and head.
- g) Those engaged in welding work shall be provided with welder protective eye shield and glove.
- h) All safety rules shall be strictly followed while working on live electrical systems or installations as stipulated in the relevant Rules.

### **83 Port Authority Rules**

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

### **84 Execution of work**

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

### **85 Drawings & Designs**

- a) General details of the works are shown on the drawings accompanying the tender document. The Engineer will supply to the Contractor from time to time during the progress of the works such further working drawings as will be necessary in his opinion for the proper and adequate execution and maintenance of the Works in accordance with the Engineer's designs and/or any modification thereof as decided by the Engineer and the Contractor shall carry out the work in accordance with the said working drawings. Two sets of such working drawings will be issued. If the Contractor requires more sets he will have to make his own arrangement at his cost.

Residual Design, Detailing & Engineering: - Generally, detailed design and engineering of the work shall be provided by the Engineer. During execution of the work the residual design, detailing and engineering, if needed, is to be carried out by the Contractor at no extra cost to the Employer. Such design, detailing & engineering shall be got approved by the Contractor from the Engineer. For equipments/ Installations detailed drawings need to be produced by the Contractor at no extra cost to the Employer. Such detailing & engineering shall be got approved by the Contractor from the Engineer.

- b) In the event of the Contractor proposing any alteration/ modification to the Engineer's design, detail, method of construction, he shall at his own expenses prepare and submit for approval of the Engineer copies in duplicate (in the first instance) of detailed working drawings which may be required for such alteration/ modification and at the same time call the attention of the Engineer to any alternative detail or modification of the contract drawings which the Contractor may wish to make at least 30 days prior to the commencement of the work or part of the work to which such drawings relate. The Contractor shall at the same time, if so required by the Engineer, furnish calculation sheets in duplicate relating to the strength and anticipated deflections in respect of such altered/ modified works. The Engineer will, after any such alteration which he may approve, record on the copies as amended his approval and will return one copy of the drawings and calculation sheets to the Contractor, who shall carryout the work in accordance therewith. The Contractor shall forward to the Engineer three additional copies of the working drawings and calculation sheets as approved in additions to these working drawings and calculation sheets as approved. In addition to these, working drawings are also to be submitted (the same procedure as in the case of the Contractor) in respect of any work proposed to be executed by sub-Contractors. The approval of the Engineer of all or any of the calculation sheets, drawings shall not relieve the Contractor of responsibility in connection with the execution of the altered/ modified or Sub Contractor's work.
- c) Three complete sets of tracing film of all drawings showing every and all works 'As Made' under the Contract shall be made by the Contractor at his own expense and delivered to the Engineer within one month of the completion of the various sections of the work or at such times as directed by the Engineer. All departure /alteration /modifications from the Contract Drawings and supplementary working drawings issued by the Engineer also shall be incorporated in the "As Built" drawings. The drawings shall be fully dimensioned, of an approved size and as approved by the Engineer.

## **86 Monsoon Period**

86.1 Normally Monsoon period will be reckoned from 1<sup>st</sup> June to 30<sup>th</sup> September.

## **87 Reports**

The following reports shall be submitted for review as an input to the Management meeting to be held as per Clause No 31 of Conditions of Contract

### **87.1 Daily reports**

The Contractor shall submit daily report indicating daily activities, weather condition, actual manpower, equipment and the materials arriving on site.

### **87.2 Monthly Reports**

Monthly progress reports shall be prepared by the Contractor and submitted to the Engineer in triplicate. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7days after the last day of the period to which it relates. Reporting shall continue until the Contractor has completed all work, which is known to be outstanding at the completion date, stated in the Taking-Over Certificate for the Works.

### **87.3 Each report shall include:**

- a) Charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each Sub-Contractor,
- b) Photographs in hardcopy & digital copy and videography in two sets showing the various stages of progress on the Site monthly;
- c) For the supply of manufactured items, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:
- d) Commencement of manufacture,

- e) Contractor's/ Engineer's inspections,
- f) Tests,
- g) Shipment and arrival at the Site;
- h) Copies of quality assurance documents, test results and certificates of Materials;
- i) Safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
- j) Comparisons of actual and planned progress, with details of any events or circumstances which may jeopardise the completion In accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

## **88 Completion Documents**

88.1 To treat that the work has been completed and issue a final payment certificate, the following documents will be deemed to form the completion documents:

- a) The Technical documents according to which the work was carried out.
- b) The set of construction drawings showing therein the modifications and corrections made during the course of execution signed by the Engineer.
- c) Certificates of final levels and dimensions as set out for various works.
- d) Certificates of tests performed for various works.
- e) "As Built" Drawings.

## **89 Changes in firm's Constitution to be intimated**

The Contractor shall intimate the Engineer in writing of any change made in the constitution of the firm

## **90 Indemnities**

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

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

## **G. SALIENT FEATURES OF SOME MAJOR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN CONSTRUCTION WORK.**

- (a) Workmen Compensation Act 1923:- The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- (b) Payment of Gratuity Act 1972: Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

- (c) Employees P.F and Miscellaneous Provision Act 1952: The Act Provides for monthly contributions by the Employer plus workers @ 12% / 8.33%. The benefits payable under the Act are:

- (i) Pension or family pension on retirement or death, as the case may be.
- (ii) Deposit linked insurance on the death in harness of the worker.
- (iii) payment of P.F accumulation on retirement/death etc.

The employees employed by the Contractor for the work of Port Trust have to be enrolled under the relevant scheme of the EPF & MP Act 1952. The Contractor shall produce documents pertaining to the same for verification to the Engineer/ his nominee. Further the Contractor has to pay the necessary monthly contributions to the said scheme in respect of the employees employed by him for the work of CoPT and shall produce necessary document to show that the monthly contribution in respect of these employees due to the said scheme are paid.

In case the contractor has not paid the EPF contribution same will be recovered in the running bill and paid to the EPF Organization. Any delay in payment of contribution payable under the Act may be recovered as an arrear of Land Revenue

- (d) Maternity Benefit Act 1961 or Maternity Benefit Amendment Act 2017:- The Acts provides for leave and some other benefits to Workmen/ employees in case of confinement or miscarriage etc.
- (e) Contract Labour (Regulation & Abolition) Act 1970:-The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by Law. The Principal Employer is required to- take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labor.
- (f) Minimum Wages Act 1948: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment Construction of Buildings, Roads, Runways are scheduled employment.
- (g) Payment of Wages Act 1936:-It lays down as to by what date the wages are to be paid when it will be paid and what deductions can be made from the wages of the workers.
- (h) Equal Remuneration Act 1979:-The Act provides for payment of equal wages for work of equal nature to Male and Female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- (i) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. The Act provides for payments of annual bonus subject to a minimum of As per the provision of the Act and amendment issued from time to time. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.
- (j) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979:The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home upon the establishment and back,
- (k) The Building and Other Construction workers (Regulation of Employment and Conditions of

Service) Act 1996 and the Cess Act of 1996:-All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Employer of the establishment is required to provide safety measures at the Building or Construction work and other welfare measures, such as Canteens, First-Aid facilities. Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

(I) 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 21<sup>st</sup> of the following month, to which the salary relates.

(ii) In case the Contractor employs more than 20 employees, they should register their name with ESI scheme as per ESI Act, 1948 and obtain ESI Code. Both Employers share of 4.75% and Employees contribution of 1.75 % (recovered from employees), totally 6.5% to be paid as contribution to ESI in their Code on or before 21st of following month to which the salary relates and acknowledgement for the same shall be submitted to the Port while claiming the bill. The bill without the acknowledgement of ESI contribution will not be entertained. In case the contractor has not paid the ESI contribution same will be recovered in the running bill and paid to the ESI Corporation in contractor's code. Any delay in payment of contribution payable under the Act may be recovered as an arrear of Land Revenue.

In case the contractor employs less than 20 employees, the list of employees' name, their father's name, identification proof, one passport photo shall be submitted to the Port Trust. The contribution of ESI amount, both Employers share of 4.75% and Employees of 1.75% (recovered from Employees salary), totally 6.5% shall be paid by the contractor in the Cochin Port Trust Code on or before 21st of the following month to which the salary relates or otherwise payment to the contractor will be withheld. If the contractor fails to comply with the above instruction, then the Principal Employer (Cochin Port Trust) will make payment to the ESI Corporation. Such amount will be deducted from any amount due to the contractor. Any delay in payment of contribution payable under the Act may be recovered as an arrear of Land Revenue.

As per the above Government Notification

- i) All intending tenderer at the time of tender shall disclose all necessary documents as to whether they are covered under ESI Act or not.
- ii) in case they are covered under ESI Act, they have to furnish the details of registration.

**CONTRACTOR'S STAFF AND LABOUR**

Workers above 60 years of age and below 18 years of age shall not be deployed by the contractor. All labour, skilled or unskilled shall be provided by the contractor. Settling any dispute with the labour, labour union, any Outside union, subcontractor will be contractor's responsibility. Loss of day in this regard should not be claimed for any hindrance at site. The workers engaged for works should have sufficient knowledge and experience in the respective fields. This shall be proved to the Engineer. The Owner may at any time request the contractor to remove from the Work/Site contractor's / subcontractor's supervisor or any other authorized representative including any employee of the

Contractor or his Sub-contractor(s) or any person(s) deployed by Contractor for professional incompetence or negligence or for being deployed for work for which he is not suited.

The Owner may at any time object to and require the Contractor/sub-contractor to remove forthwith from the Site a supervisor or any other authorized representative or employee of the Contractor's /sub-contractor(s) or any person(s), if in the opinion of the Owner, the person in question has mis-conducted himself or his deployment is otherwise considered undesirable by the Owner, the contractor/sub-contractor shall forthwith remove and shall not again deploy the person in question of the Work Site without the written consent of the Owner.

The workmen deployed by the contractor are strictly banned from use of any kind of Narcotics drugs / Alcohol / smoking etc. at site and any illegal activity by the work men should be reported to Engineer without delay and the contractor shall remove such persons from the work site forthwith.

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**COCHIN PORT AUTHORITY****SECTION II  
2. Form of Securities****SITC of AMI System for the Smart Meters installed at Cochin Port Authority  
and Providing O&M for the system for 5 years**

<b>Sl. No.</b>	<b>Annexures</b>	<b>Description</b>	<b>Page No.</b>
1	A	Proforma of Bank Guarantee for Performance Guarantee/ Security Deposit	55
2	B	Proforma of Bank Guarantee for Advance	57

**PROFORMA OF IRREVOCABLE BANK GUARANTEE FOR PERFORMANCE GUARANTEE**

(To be submitted 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]

Ref: Bank Guarantee No \_\_\_\_\_

Date \_\_\_\_\_

To

Cochin Port Authority W/Island, Cochin 682009.

Dear Sirs,

In consideration of THE BOARD OF MAJOR PORT AUTHORITY FOR COCHIN PORT commonly known as COCHIN PORT AUTHORITY, a Body Corporate under the Major Port Authorities Act, 2021, with its Administrative Office at Willingdon Island, Cochin-682009, having PAN Card No. AAALC1134F, which expression shall include their successors and assignees) having accepted the tender (hereinafter referred to as the 'Cochin Port' which expression unless repugnant to the context or meaning thereof includes its successors, administrators and assigns) having awarded to M/s \_\_\_\_\_ with its Registered / Head Office at \_\_\_\_\_ (hereinafter referred to as the "CONTRACTOR" which expression shall unless repugnant to the context or meaning thereof, include its successor, administrators, executors and assigns), a "CONTRACT" by issue of Port Trust's work order dated \_\_\_\_\_ the same having been unequivocally accepted by the Contractor resulting in a "CONTRACT" bearing No. \_\_\_\_\_ dated \_\_\_\_\_ value \_\_\_\_\_ at \_\_\_\_\_ for \_\_\_\_\_ and the CONTRACTOR having agreed to provide a Contract Performance Guarantee for the faithful performance of the entire Contract equivalent to \_\_\_\_\_, to Port Trust under the terms and conditions of an agreement between Board of Trustees of Port of Cochin and ..... For the execution of the work (hereinafter called "the said agreement").

2. We \_\_\_\_\_ having its Head office at \_\_\_\_\_ (hereinafter referred to as the "Bank", which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Port Authority on demand any and all money payable by the Contractor to the extent of \_\_\_\_\_ as aforesaid at any time upto \_\_\_\_\_ without any demur, reservation, contest, recourse or protest and/or without any reference to the CONTRACTOR. Any such demand made by the Port Trust on the Bank shall be conclusive and binding notwithstanding any difference between Port Trust and CONTRACTOR.
3. We, \_\_\_\_\_ Bank Ltd., do hereby undertake to pay to the Cochin Port any money without demur so demanded notwithstanding any dispute or disputes Raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the contractor(s) shall have no claim against us for making such payment.
4. We, \_\_\_\_\_ Bank Ltd., further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Port Trust under or by virtue of the said Agreement

Contractor signature and seal

have been fully paid and its claim satisfied or discharged or till Engineer-in-charge on behalf of the Cochin Port certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges this guarantee.

- 5. We, \_\_\_\_\_ Bank Ltd., further agrees with the Cochin Port that the Cochin Port shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Cochin Port against the said contractor(s) and to forebear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor(s) or by any such matter or things whatsoever which under the law relating to sureties would but for this provision, have effect of so relieving us.
- 6. This guarantee will not be discharged due to the change in the constitution of the Bank or the contractor(s).
- 7. We, \_\_\_ Bank Ltd., lastly undertake not to revoke this guarantee except with the previous consent of the Cochin Port in writing and further agrees that the guarantee herein contained shall continue to be in endorsable till the Cochin Port discharges its guarantee.
- 8. We, \_\_\_\_\_ Bank Ltd. also agrees that Cochin Port at its option shall be entitled to enforce this Guarantee against the Bank as principal debtor, in the first instance without proceeding against CONTRACTOR and notwithstanding any security or other guarantee that Cochin Port may have in relation to the CONTRACTOR’s liabilities.
- 9. This guarantee shall be valid upto \_\_\_\_\_ unless extended on demand by Cochin Port. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs \_\_\_\_\_ (Rupees \_\_\_\_\_ only) and unless a claim in writing is lodged with us within six months of the date of expiry of or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated the .....day of.....20

WITNESSES

\_\_\_\_\_

(Signature) (Signature)

\_(Name)\_

\_\_\_\_\_

\_(Name)\_

Bank’s Rubber Stamp

\_\_\_\_\_

\_\_\_\_\_ (Name) (Name)  
 \_\_\_\_\_ (Official address) (Designation with Bank Stamp)  
 Attorney as per Power of Attorney No. \_\_\_ Dated \_\_\_\_\_

**PROFORMA OF BANK GUARANTEE FOR ADVANCE**

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

**(Deleted)**

**COCHIN PORT AUTHORITY****SECTION III****INDEX**

<b>Sl. No.</b>	<b>Clause/ Sections</b>	<b>Description</b>	<b>Page No.</b>
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2	2.	Special Conditions of Contract	64

## COCHIN PORT AUTHORITY

### SECTION III

#### 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, the 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.

##### 2 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 Trust, the Organization purchasing the Works and Services.

“**Consultants**” means, the firm appointed by the Cochin Port Authority to undertake on their behalf, all technical activities to enable smooth completion of the project, such as design, engineering, procurement, inspection, site management, certification of bills, etc.

“**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.

##### 3 Scope of Work

1. Supply, Installation, Testing & Commissioning of AMI System consisting of Head End System (HES) and Meter Data Management System (MDMS) as per Specifications.
2. Design and Provide Server sizing and Storage requirements
3. Appoint a SIM card services Provider, Co-ordinate and making arrangements with SIM Provider for Meter connectivity during O&M period and paying the SIM charges
4. Integrate with CoPA’s billing application SAP-ISU to provide Billing data.
5. Integrate the existing Smart Meters of CoPA to the HES and MDMS for seamless Meter Data Collection.
6. Migration of existing Historical Meter Data to the new System.
7. Integration with National Feeder Monitoring System (NFMS) Portal.
8. Provide the Data/ Report in the format provided by CoPA time to time as and when required as per MoP/ BEE Regulations including unmanned energy auditing.
9. Provide software for Pre- Paid Billing for future use.
10. Installation/ Removal of Smart Meters by both Physical and software means as and when required
11. Training and knowledge transfer.
12. Operation and Maintenance of system including SIM Services for 5 years with effect from the date of taking over the Facility.

Unless otherwise stipulated in the Contract, the scope of work shall include all such items not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for comprehensive, successful and satisfactory implementation of the Solution as if such items were expressly mentioned in the Contract.

Wherever references are made in the Contract to codes and standards in accordance with which the Solution shall be executed, the edition or the revised version of such codes and standards shall be those specified in the scope of work;

The systems which are at a risk of technical obsolescence over the operating life of the system should be identified; this should include end-of-sale and end-of-support policies governing the proposed technologies. Forward and backward compatibility need to be considered and mitigation option shall be indicated in detail and shall not be limited to periodic update from OEM/System supplier

#### **4 Site Conditions**

##### **4.1 Location**

W. Island , Vallarpadam and Puthuvypin SEZ area

#### **5 Time Schedule and monitoring of progress**

Tenderer shall prepare and attach with the tender a detailed work schedule indicating key activities and critical items for completing the work within the stipulated contract period. This time schedule forms the basis for monitoring the progress of work.

The contractor shall furnish to the Engineer 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:**

Space will be made available to the Contractor to the possible extent, free of rent for setting up site office, store, adjacent to the Work Site.

#### **7 Contractor's responsibility**

- i. The contractor shall thoroughly study the specifications and errors/omissions/modifications if any shall be brought to the notice of the Engineer-in-Charge well in advance so that a final decision in the matter could be given in time.
- ii. All labour, skilled or unskilled shall be provided by the contractor. Settling any dispute with the labour will be contractor's responsibility.
- iii. 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.
- iv. 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.
- v. 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.
- vi. The work shall be arranged by the contractor without causing any damage to Port's/ any other equipment/ installations/ 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.
- vii. All plants and equipments and consumables required for the whole work shall be provided by the contractor at his own cost.
- viii. 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

Contractor signature and seal

construction so put up shall be removed by the contractor whenever the Engineer-in-Charge calls upon the contractor to do so.

- ix. Qualified Engineers with sufficient experience in works of similar nature 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.
- x. 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 risk and cost. It shall be the Contractor's responsibility to ensure that the workmen make use of the personnel protection equipment during the execution of the Work.
- xi. 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) showing the progress of the work and also such other particular item of the work.
- xii. No information or photograph concerning the works shall be published without the prior permission of the Chief Mechanical Engineer and drafts of all such proposal/ publication shall be submitted for approval.
- xiii. 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 Trust in no case will be held responsible for the strict accuracy thereof or any deduction, interpretation or conclusion drawn by the Tenderer.
- xiv. 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.
- xv. The Contractor shall ensure that no labourers with criminal background are engaged for the work.
- xvi. 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 Trust 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.
- xvii. The contractor shall take all precautions for not to damage any cables/pipes etc. passing through the area of work.
- xviii. The contractor shall extend all the facilitations and cooperation for other contractors for simultaneous execution of other works in the area entrusted by Cochin Port Authority.
- xix. 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."
- xx. 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.
- xxi. 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**

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

The work shall be arranged in the order of preference as directed by the Engineer-in-Charge of work. In addition to above, contractor shall submit a Quality Assurance Plan (QAP) for the work 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 Time For Completion**

The time allowed for carrying out the work as mentioned in the memorandum shall be strictly observed by the contractor. The work shall throughout the time period be proceeded with diligence, time being deemed to be the essence of the contract.

The 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.

The whole work shall be completed in the stipulated time, in 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.

## **10 Working time**

The Electrical Division of Port works in 3 shifts i.e 24 x 7 basis on all working days with no interval in between. If the Contractor wishes to carry out the work 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.

## **11 Method of Execution**

The contractor shall clearly indicate in their tender the method proposed by them for implementing the AMI system. During the actual execution of the works if modifications or changes in the method of execution of work is 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-11** 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

## **12 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.

**SIGNATURE OF TENDERER**

**COCHIN PORT AUTHORITY**  
**SECTION -III**  
**2. SPECIAL CONDITIONS OF CONTRACT (SCC)**

**1 General:**

- c) 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.
- d) Notwithstanding the sub-division of the documents into separate sections 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.
- e) Where any portion of the General Conditions of Contract (GCC) 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 PHASING OF WORKS**

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

**3 BILL OF QUANTITIES (BOQ)**

The BoQ shall be considered in conjunction with the Scope of works, Specification and all the project documentation.

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

**4 TESTING AND MEASURING EQUIPMENTS**

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

**5 STATUTORY APPROVALS**

- a) All the works to be executed should conform to the CEA Standards
- b) All testing/calibration, etc. are to be carried out as per the requirements of statutory authorities. The tests/calibration certificates shall be submitted to EMPLOYER
- c) The Contractor shall comply with proper and legal orders and directions of local or public authority and abide by their rules and regulations and pay all fees and incidental charges which may be liable during the contract period.

**6 AT SITE**

- a) On-site testing shall be conducted to ensure that the performance continues to be with the contracted performance parameters.
- b) All the required equipments and measuring instruments for carrying out the testing has to be arranged by the contractor. The instruments used shall be calibrated to test and the valid certificate of calibration should be submitted to the EMPLOYER's Engineer in charge.

**7 COMMISSIONING AND HANDING OVER OF EQUIPMENTS**

**7.1 DEFECTIVE WORKS**

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

## 7.2 INITIAL OPERATION

After successful completion of AMI system initial trials of the AMI software and integration with SMART Meters and SAP billing software etc. shall be tested. The purpose of this initial operation is to ensure integrity of all the sub-systems which compose the total system. Based on the observations made during initial operation, necessary corrections shall be effected in the equipment / systems to ensure proper integrated operation of the system. After satisfactory completion of initial operation the system shall be considered ready for trial operation/performance guarantee testing. The Contractor has also to ensure that he trains Owner's Engineers at site dealing with this system in proper way. During commissioning of AMI, contractor has to ensure the presence of commissioning Engineers of OEMs wherever required. AMI system shall be tested and commissioned as per the directions of the CoPA. All required documents required by CoPA shall be produced before commencing the trial run of the AMI system.

## 8 TRIAL OPERATION / PERFORMANCE GUARANTEE TEST

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

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

## 9 FINAL ACCEPTANCE:

Final acceptance of the AMI system is after obtaining statutory approvals from all statutory authorities.

## 10 HANDING OVER / CERTIFIED DATE OF COMPLETION

Up on the satisfactory commissioning of the entire system, the system shall be observed for 15 days. After this satisfactory trial period, the work shall be handed over officially and completion date recorded by Engineer-in-charge with all the prescribed formalities for handing over.

This date shall be reckoned, as the certified date of completion and the defects liability period shall commence from this date.

Until handing over of the AMI system, the responsibility lies with the contractor for safety, upkeep etc.

## 11 COMPLETION CERTIFICATE

For all works completion certificate shall be submitted to EMPLOYER, after completion of work.

It is the responsibility of the contractor to provide and make arrangement for AMI for carrying out periodical/preventive maintenance during warranty / defect liability period without any cost to EMPLOYER.

## 12 PAYMENT TERMS

Bills shall be prepared and submitted by the Contractor. Joint inspection and testing measurements shall be taken continuously and need not be connected with billing stage. System of 4 copies of measurements, one each for Contractor, Employer and Engineer or his nominee, and signed by both Contractor and Engineer or his nominee shall be followed.

- 1) Part I - 100 % of BoQ item 1 (Providing AMI Software and commissioning) will be released
  - a) after satisfactory commissioning and certification of Engineer in Charge and
  - b) on the production of necessary valid PBG for O&M

- 2) Part II - O&M Charges – will be released on half yearly basis

- a) After successful Commissioning of the AMI system, Format of monthly Service report shall be got approved by Engineer in Charge and O&M Charges will be paid on production of monthly service reports signed by authorized signatory.

- b) Present SIM Service providers for the smart meters, appointed by CoPA is M/s Vodafone. SIM Charges upto the month of commissioning, as certified by the Engineer in Charge will be paid by CoPA. From the next month onwards Ownership of SIM is to be transferred to the Contractor and afterwards SIM Charges will be included in O&M Charges of the successful AMI service provider.

All payments to the Contractor under the contract shall unless otherwise stated elsewhere be made to the Contractor in Indian currency through e- payments through designated Bank.

### **13 ACCOMMODATION/SITE OFFICE**

The contractor shall make his own arrangements at his cost for accommodation/medical aid/treatment for staff and workers engaged by him on this project

### **14 BYE-LAWS**

- 14.1 The contractor shall comply with all bye-laws and regulations of local and statutory authorities having jurisdiction over the works and shall be responsible for obtaining prior approval, if any, and payment of all fees and other charges, giving and receiving of all necessary notices and keeping the Engineer-in-Charge informed of the said compliance with the bye-laws, payments made, notices issued and received.
- 14.2 The Contractor shall indemnify EMPLOYER against all claims in respect of royalties, patent rights, design trademarks of name or other protected rights in respect of any plant, machine, work or materials used for or in connection with the work or temporary works and from and against all claims, demands proceedings, costs, charges and expenses whatsoever in respect of or in relation thereto. The Contractor shall defend all actions arising from such claims and shall himself pay all royalties, license fees, damages, costs and charges of all and every sort that may be legally incurred in respect thereof.
- 14.3 The Contractor shall comply with proper and legal orders and directions of the local or public authority and abide by their rules and regulations and pay all fees and charges which he may be liable.

### **15 CONFORMITY TO RULES AND REGULATIONS**

- 15.1 The work shall be carried out in the best workmanlike manner in conformity with this specification, the relevant specification/codes of practice of the Bureau of Indian Standards or IEC recommendations (Except where specified otherwise) and other relevant Indian/International standards with latest amendments, approved drawings and the instructions issued by the Engineer-in-charge or his authorised representative, from time to time. Equipment meeting any other authoritative standard, which ensures an equal or better quality than the above standards, will also be acceptable.
- 15.2 In addition to the standards, all works shall also conform to the requirements of the followings:
- a) All Electrical works shall be carried out in accordance with the provisions of Indian Electricity Act- 2003, Indian Electricity Rules 1956 amended upto date (Date of call of tender unless specified otherwise)
  - b) The works shall also conform to relevant Bureau of Indian Standards' Codes of practice (COP) for the type of work involved.
  - c) In all electrical installation works, relevant Safety codes of practices shall be followed.
  - d) Regulations laid down by the Chief Electrical Inspector of the State Electrical Inspectorate/State Electricity Board/ Central Electrical Authority or any other agencies concerned.
  - e) Any other regulations laid down by the local authorities.
  - f) Installation & operating manuals of original manufacturers of equipment.
  - g) Rapid implementation of IT and OT enabled services in the power sector, the sector has become more and more prone to the cyber threats and attacks. AMISP shall comply the relevant provisions listed in CEA Cyber Security In Power Sector Guidelines. The Firm shall take all actions for updating the system in accordance with the regulations/rules

amended by Ministry of IT and Other Ministries regarding the Cyber Security and norms/rules for IT / IoT etc

**16 CONTRACT DOCUMENTS**

The Contract document is confidential and must strictly confined to the contractor's own use (except so far as confidential disclosure to sub-contractors or suppliers, if necessary) and to the purpose of the contract.

**17 PLAN OF OPERATION AND CO-ORDINATION**

For execution of the work under the contract the contractor shall be required to co-ordinate his work with that of other contractors performing works at the site and also in the same areas. So far as practicable all contractors shall have equal rights to use all roads, ground and facilities made available for the joint use of the contractors. The contractor shall permit such works to be carried out without any hindrance and fully co-ordinate his activities with other agencies. No compensation or claim for such contingencies shall be entertained.

**18 SAFETY**

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

**19 ASSISTANCE FOR TAKING MEASUREMENTS**

The contractor shall provide necessary labour and assistance to the Engineer-in-charge for checking layout, alignments, levels and other survey works connected with the execution of work and also for taking measurement for finalised works at no extra cost.

**20 SCHEDULE OF QUANTITIES AND RATES**

The schedule of quantities to be read in conjunction with these Particular Specifications, special conditions, general conditions of contract, specifications, drawings documents forming part of this contract. All corrections in the tender schedule shall be duly attested by the dated initials of the tenderer. Corrections which are not attested may entail the rejection of the tender. The tender document should be signed and returned without detaching any part of the document.

Rates shall include design, develop and implement AMI software including SIM charges for SMART meters , taxes, contractor's supervision, overheads, profits, general risks or liabilities and all that is necessary for the satisfactory completion of the job. The rates shall be firm and shall not be subject to exchange variations, labour conditions or any conditions whatsoever other than what is approved in the contract.

**21 SITE INVESTIGATION**

The contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, which can in any way affect the work or his cost thereof under this contract. Any failure of the contractor to acquaint himself with all the available information concerning these conditions will not relieve him from responsibility for not estimating properly the difficulty or cost of successfully performing the work. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the work in strict conformity with drawings and specifications. The contractor shall note that if any clarifications regarding specifications, conditions of contract, schedule of quantities, scope of work, etc. are required, he should contact the Engineer-in-Charge, EMPLOYER. No claim on account of ambiguity in any respect will be entertained.

**22 TESTING AND MEASURING EQUIPMENTS**

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

**23 SECURITY RULES**

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

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

The contractor shall take ultimate care while working in a running port and minimize nuisance to the public.

**24 TRANSFER OF ASSETS / AMI SOLUTIONS**

- a) In the event the AMISP fails to meet a particular rperformance criterion as mentioned under the Service Level Agreement (SLA) of this Contract for cumulatively 3 (three) months in past 6 (six) months, resulting in the maximum penalty for the particular performance criterion, Utility may issue a SLA Default Notice to the AMISP directing it to take steps within 90 days to comply with the performance
- b) CoPA shall be entitled to serve notice in writing on the AMISP at any time during the Exit Management Period requiring the AMISP and/or its sub-contractor to provide the CoPA with a complete and up to date list of the Assets within 30 (thirty) days of such notice. CoPA shall also be entitled to serve notice in writing on the AMISP at any time prior to the end of the Exit Management Period requiring the AMISP to transfer to the CoPA or its nominated agencies in accordance .
- c) In case of contract being terminated by CoPA, CoPA reserves the right to ask AMISP to continue running the project operations for a period of 3 months after termination orders are issued. In case of contract being terminated by AMISP, Utility reserves the right to ask the AMISP to continue running the project operations for a period of 6 (six) months after termination notice is served by AMISP. In such case, payments during the Exit Management Period shall be made in accordance with original payment conditions.
- d) In the event the AMISP fails to meet a particular performance criterion as mentioned under the Service Level Agreement (SLA) specified of this Contract for cumulatively 3 (three) months in past 6 (six) months, resulting in the maximum penalty for the particular performance criterion, Utility may issue a SLA Default Notice to the AMISP directing it to take steps within 90 days to comply with the performance criterion specified in the SLA
- e) Intellectual Property: 1 All Intellectual Property Rights in all material (including but not limited to all Source code, Object code, records, reports, designs, application configurations, data and written material, products, specifications, reports, drawings and other documents), which have been newly created and developed by the AMISP solely during the performance of Related Services and for the purposes of inter-alia use or sub-license of such services under this Contract, shall be the property of the AMISP. The AMISP undertakes to disclose all such material, which

have been newly created and developed by the AMISP solely during the performance of Related Services and for the purposes of inter-alia use or sub-license of such services under this Contract, to the Utility. The AMISP hereby grants to Utility a perpetual, non-exclusive, non-transferable, irrevocable, royalty-free license to use all material disclosed to the Utility under the Contract. Nothing contained herein shall be construed as transferring ownership of any Intellectual Property Right from the AMISP to the Utility.

**25 CONDITIONS FOR QUOTING THE RATE FOR OPERATION AND MAINTENANCE PERIOD**

- (i) The bidder shall quote for the rates for the Operation and Maintenance (O&M) of the entire system for five years along with the Project cost in the GeM Portal for arriving at the lowest offer (L1), which will be commenced as soon as the system is successfully completed to the satisfaction of the employer.
- (ii) The O&M period will be 5 years after the guarantee period and the bidder shall quote their rates for each year. The O&M charges shall be quoted in Indian Rupee only. Discounting factor @ 7% per year will be taken to arrive NPV.
- (iii) Performance Guarantee: The successful bidder shall have to submit a performance guarantee @10% of Total value including O&M Cost , within 21 (Twenty One) days from the date of issue of Letter of Acceptance (LOA) in Irrevocable Bank Guarantee valid up to the completion of O&M period with claim period of 3 months from completion date. If the validity is before the date of completion period an undertaking shall be furnished stating the PBG will be extended upto the date as required by the Employer.
- (iv) The Performance guarantee (PG)/ Security Deposit shall be released only after expiry of the maintenance period and after passing the final bill based on 'No Claim Certificate' from the contractor
- (v) The payment for O&M: The payment for O&M shall be made half yearly on successful completion of each half year, upon certification of Engineer or the authorized representative of the employer.
- (vi) Whenever the contract of O&M is rescinded the Security Deposit shall be forfeited and the Bank Guarantee shall be encashed. The balance work shall be got done independent without risk & cost of the failed contractor. The failed contractor shall be debarred from participating in the tender for executing the balance work.

**SIGNATURE OF TENDERER**

**COCHIN PORT AUTHORITY****SECTION IV****INDEX**

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## **COCHIN PORT AUTHORITY**

### **SECTION IV**

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

##### **1 Back Ground :**

Cochin Port Authority is a Deemed Electricity Distribution Licensee at W. Island and Vallarpadam and Puthuvypin SEZ area as per Electricity Act 2003. Cochin Port Authority (DISCOM ) is a Designated Consumer as Per Bureau of Energy Efficiency Regulations and hence CoPA has to conduct Annual Energy Auditing, Periodic accounting and RCO auditing. CoPA has already replaced the meters with SMART meters and implemented AMI in the year 2020 for about 1400 nos. of SMART Meters through M/s.NSoft, Bengaluru, Karnataka-560085 with AMI service valid upto July 2025. Genus Meters and L & T Meters are presently being used in CoPA. CoPA has to comply with directions / regulations of Ministry of Power, BEE. CoPA has so far not implemented Prepaid billing system. However CoPA has to switch over to Prepaid billing system as per the directions of BEE. The AMI Service provider (AMISP) shall implement Prepaid billing system as and when required by CoPA. CoPA has already registered in NFMS portal and feeder meters are already integrated with NFMS. AMISP shall be responsible for integrating all the feeder meters in CoPA so as to achieve communication above 95% or as amended from time to time by MoP CoPA has to conduct unmanned energy auditing, periodic accounting and RCO auditing as per BEE Regulations. The AMISP shall generate all reports required for billing as per tariff orders , unmanned auditing ( including computation of Feeder wise losses , DT Wise losses , Injection point wise losses, Export and Banking of Prosumers etc) in compliance with BEE Regulations. SAIDI/SAIFI/MAIFI shall be computed automatically through AMI so as to submit with Regulatory Authorities. AMISP shall revise the Prepared billing software ( After implementation of Prepaid billing) within 10 days from the date of notification of tariff orders by Kerala State Electricity Regulatory Commission so as to issue bills in time. Fuel surcharge orders of Kerala State Electricity Board Limited shall be incorporated in the prepaid billing software within the stipulated time.

Cochin Port Authority (CoPA) is one of the Licensees for distribution of electricity in Kerala State having about 1500 Consumers located in the Port area of Willingdon Island, Vallarpadam & Puthuvypin in Kochi urban area. Around 1500 Nos. of Smart Meters have been installed in CoPA Electrical Distribution Area which includes Single phase, Three Phase, LTCT & HTCT Smart Energy Meters for the Consumers, DT & Feeder metering. The Existing AMI Service Provider has installed all the meters in August 2019 with a service period of 5 years. All meters are of GENUS make except a few meters ( L&T, Zen & Schneider) later installed. All are having Cellular Communications. The SIM cards are provided and operated by Vodafone – Idea and the SIM Card charges are paid directly by CoPA and the same will be continued till the commissioning period of the new AMI system. During the O&M period, SIM charges will have to be borne by the AMI service provider and O&M charges for each year shall include the SIM charges. Since the tenure of existing AMI Service Period is nearing completion, Bids are invited from the experienced Service Providers. The New AMI Service provider shall handle all the existing and upcoming Smart Meters in the new AMI system with integration of billing in SAP-ISU and other activities as detailed in the technical specifications.

##### **2 ABBREVIATIONS**

1. AMI Advanced Metering Infrastructure
2. ACI Available Capital for Investment
3. AMISP Advanced Metering Infrastructure Service Provider
4. BG Bank Guarantee
5. BIS Bureau of Indian Standards
6. BoM Bill of Material
7. C&I Commercial and Industrial

8. CAIDI Consumer Average Interruption Duration Index
9. CAIFI Consumer Average Interruption Frequency Index
10. CEA Central Electricity Authority
11. CERT-In Indian Computer Emergency Response Team
12. CIM Common Information Model
13. CIS Consumer Information System
14. CMMI Capability Maturity Model Integration
15. CPU Central Processing Unit
16. CRM Consumer Relationship Management
17. CT Current Transformer
18. CUM Cumulative
19. CV Curriculum Vitae
20. DBFOOT Design Build Finance Own Operate and Transfer
21. DBMS Database Management System
22. DCU Data Concentrator Unit
23. DMZ Demilitarized Zone
24. DT Distribution Transformer
25. ESB Enterprise Service Bus
26. FAT Factory Acceptance Test
27. FOR Freight on Road
28. GIS Geographic Information System
29. GPRS General Packet Radio Service
30. GPS Global Positioning System
31. GST Goods and Services Tax
32. GUI Graphical User Interface
33. HES Head-End System
34. HHU Handheld Unit
35. IBMS Integrated Building Management Systems
36. IDS Intrusion Detection Systems
37. IEC International Electrotechnical Commission
38. IP Internet Protocol
39. IPR Intellectual Property Rights
40. IS Indian Standard
41. ISO International Organization for Standardization
42. ISP Internet Service Provider
43. IT Information Technology
44. IVRS Interactive Voice Response System
45. kVA kilo Volt-Ampere
46. kW kilo Watt
47. LAN Local Area Network
48. LCD Liquid Crystal Display

49. LED Light Emitting Diode
50. LT Low Tension
51. M&V Monitoring and Verification
52. MCB Miniature Circuit Breaker
53. MD Maximum Demand
54. MDAS Meter Data Acquisition System
55. MDM Meter Data Management
56. MICC Mineral-Insulated Copper-Clad Cable
57. NAN Neighborhood Area Network
58. NIC Network Interface Card
59. NMS Network Management System
60. NOMC Network Operation cum Monitoring Center
61. NTP Network Time Protocol
62. OEM Original Equipment Manufacturer
63. OS Operating System
64. OSF Open Software Foundation
- 65 P&L Profit & Loss
66. PCI Payment Card Industry
67. PLC Power Line Communication
68. PLCC Power Line Carrier Communication
69. PO Purchase Order
70. PON Power Outage Notification
71. PRN Power Restoration Notification
72. PT Potential Transformer
73. PV Photovoltaic System
74. QA Quality Assurance
75. QC Quality Control
76. QR Qualification Requirement
77. RAM Random Access Memory
78. RDBMS Relational Database Management System
79. RF Radio Frequency
80. RFP Request for Proposal
81. RPO Recovery Point Objective
82. RTC Real Time Clock
83. RTO Recovery Time Objective
84. SAIDI System Average Interruption Duration Index
85. SAIFI System Average Interruption Frequency Index
86. SAN Storage Area Network
87. SAT Site Acceptance Test
88. SCADA Supervisory Control and Data Acquisition
89. SEBI Securities and Exchange Board of India

- 90. SI System Integrator OR System Integration
- 91. SLA Service Level Agreement
- 92. SNMP Simple Network Management Protocol
- 93. SOA Service Oriented Architecture
- 94. SQL Structured Queried Language
- 95. TCP Transmission Control Protocol
- 96. TOD Time of Day
- 97. TOU Time of Use
- 98. UDP User Datagram Protocol
- 99. UPS Uninterrupted Power Supply
- 100. VEE Validation Estimation and Editing
- 101. VM Virtual Machine
- 102. VoIP Voice over Internet Protocol
- 103. WAN Wide Area Network
- 104. WO Work Order
- 105. WPC Wireless Planning & Coordination Wing
- 106. XML Extensible Mark-up Language

### 3 **Standards and Regulations:**

Following CEA regulations shall be applicable during execution of work:

- a) Metering Regulations – Central Electricity Authority (Installation and Operation of meters) Regulations, 2006; (as amended time to time)
- b) Safety Regulations-Central Electricity Authority (Measures relating to safety and Electric supply) Regulations 2023
- c) BIS/IEC applicable for smart meters
- d) Communication Regulations- Central Electricity Authority (Technical Standards for Communication System in Power System Operation) Regulations, 2020
- e) CEA Cyber security in power sector guide lines
- f) SMART Meter / AMI specifications as per MoP/ CEA standards

### 4 **BRIEF SCOPE OF WORK**

- 1. Supply, Installation, Testing & Commissioning of AMI System consisting of Head End System (HES) and Meter Data Management System (MDMS) as per Specifications.
- 2. Design and Provide Server sizing and Storage/cloud requirements
- 3. Appoint a SIM card services Provider, Co-ordinate and making arrangements with SIM Provider for Meter connectivity during O&M period and paying the SIM charges
- 4. Integrate with CoPA's billing application SAP-ISU to provide Billing data.
- 5. Integrate the existing Smart Meters of CoPA to the HES and MDMS for seamless Meter Data Collection other AMI applications..
- 6. Migration of existing Historical Meter Data to the new System.
- 7. Integration with National Feeder Monitoring System (NFMS) Portal.
- 8. Provide the Data/ Report in the format provided by CoPA time to time as and when required as per MoP/ BEE Regulations including unmanned energy auditing.
- 9. Provide software for Pre- Paid Billing for future use.
- 10. Installation/ Removal of Smart Meters by both Physical and software means as and when required
- 11. Training and knowledge transfer.
- 12. Operation and Maintenance of system including SIM Services for 5 years with effect from the date of taking over the Facility.

## 5 Detailed Scope of Work

The Bidder shall provide AMI System comprise of:

1. Head End System (HES), where all the Meter data are made available.
2. Meter Data Management System (MDMS)
3. Appointment of SIM Service Provider during O&M period
4. Operation and Maintenance of the System for 5 years

### 5.1 HEAD END SYSTEM (HES)

#### 5.1.1 Basic architecture

The AMI Service Provider(AMI SP) shall provide the HES suitable to support the collection and storage of data as per performance level for 2000 smart meters with facility of future expansion as per the requirement of the utility.

HES should perform all the requisite functions as per the defined functionalities of AMI and it is the responsibility of the System Integrator to supply the requisite software and hardware to achieve the defined functionalities of AMI. HES shall ensure data integrity checks, for example, checksum, time check, pulse, overflow, etc. on all metered data.

HES shall be developed on open platform based on distributed architecture for scalability without degradation of the performance using additional hardware. HES shall support storage of raw meter data, alarms and alerts for minimum 3 days. Adequate data base and security features for storage of data at HES needs to be ensured

#### 5.1.2 Functional Requirements

1. Acquisition of meter data on demand & at user selectable periodicity
2. Two way communication with meter/ DCU
3. Signals for connect & disconnect of switches present in end points like meter
4. Audit trail and Event & Alarm Logging
5. Encryption of data for secure communication
6. Maintain time sync with DCU / meter
7. Store raw data for the defined duration
8. Handling of Control signals / event messages on priority
9. Setting of Smart meter configurable parameters
10. Communication device status and history
11. Network information in case more than one technology is deployed in field between the two devices.
12. Critical and non-critical reporting functionality. The suggestive critical events may be alarms and event log for meter events like tamper/power failures etc., if data is not received from DCU/Meter, if relay does not operate for connect / disconnect or there is communication link failure with DCU/Meter or network failure while non critical events may be retry attempts on communication failure, periodic reading missing and failure to connect etc.

#### 5.1.3 Configuration Requirements

- a) Load profile capture period
- b) Demand integration period
- c) Setting of parameters for time of day (TOD) billing
- d) Prepaid function
- e) Net metering

Contractor signature and seal

- f) Billing date
- g) Clock setting/time synchronization
- h) Load curtailment limit
- i) Event setting for connect/disconnect
- j) Number of auto reconnection attempt
- k) Time interval between auto reconnection attempt
- l) Lock out period for relay
- m) Remote firmware upgrade
- n) Password setting
- o) Push schedule
- p) Setting threshold limits for monitored parameters
- q) Remote configuration of DCU/routers as applicable
- r) Provision for adding more programming features in future

#### 5.1.4 Integration Requirements

HES shall preferably interface with MDM on standard interfaces and the data exchange models and interfaces shall comply with CIM / XML / IEC 61968 or any other open standard. The solution shall be Service Oriented Architecture (SOA) enabled.

#### 5.2 METER DATA MANAGEMENT SYSTEM:

The Meter Data Management System shall support storage, archiving, retrieval & analysis of all meters (Feeders, DTRs & Consumers) data including that of Smart meters and various other MIS along with validation & verification algorithms. The MDMS shall comply with the CEA guidelines "Functional Requirements of AMI". It shall act as a central data repository. MDMS shall have capability to import raw or validated data in defined formats and export the processed and validated data to various other systems sources and services in the agreed format. It shall provide validated data for upstream systems such as billing, consumer Information system, customer care, analytics, reporting, load analysis, Outage Management etc. MDMS shall comprise of advanced applications modules such as Load Analysis & Forecasting, Revenue Protection & Assurance, Peak Load Management, Demand Response, Outage Monitoring and other use cases that can be derived from the Smart Meter data.

#### 5.2.1 Software Requirement Specifications (SRS) and Functional Requirements

##### 5.2.1.1 Asset Management

- a) The MDMS shall maintain information and relationships between
  - The current installed meter location (apartment, shop, industry/ address etc.)
  - Consumer information (Name etc.)
  - Consumer account no., Meter ID
  - Type of Meter (type of consumer, 1 phase/3phase, with or without relay, etc.),
  - Meter configuration (Demand integration period, Load profile capture period etc.)
  - GIS supplied information (longitude, latitude, connection with feeder/ transformer/ pole etc.)
  - The solution should provide the Network Hierarchy & Organizational Hierarchy the constituent meters. Consumer mapping shall be done by the AMI SP.
- b) The software shall support tracking the status of meters and communication equipment from the date when they are installed in the field. The history of in-service asset location is maintained throughout the device life with start and end dates associated with each in-service location reference.
- c) Ability to report and log any damage / deterioration in the meter attributable to consumer / Utility.
- d) Provision for Logging in any other customised information.

### 5.2.1.2 AMI Installation Support

- a) The MDM shall also support device lifecycle management from device registration, installation, provisioning, operations and maintenance to decommissioning etc. The MDM shall generate exceptions for meter or modules not delivering the correct meter data after installation.
- b) The MDM shall provide a reconciliation report that identifies the meters that have been installed but not communicating for a designated (configurable) period. MDM shall generate reports on the number of meters installed in comparison to the number of meters successfully communicating.

### 5.2.1.3 Meter Data

- a) The MDM shall accept input, process, store and analyze meter data from HES and meter data collected through hand held meter reading devices and manual meter reads. In case of manual reads, provision should be there to insert associated notes like assessed energy etc.
- b) The MDM should accept input, process, store, and analyse non-billing meter data such voltage and power quality data (like under/over voltage etc) as they are available from AMI Head End Systems.
- c) The MDM should also support schedule and on-demand meter reads and pinging of meter energized states by authorized users and by other utility systems.
- d) The MDM shall provide for storage of all collected Meter Data, events and alarm. It shall have capacity of storing 5 Years data or more via archiving.
- e) Correctly track & resolve energy usage across meter changes with no loss of individual meter data.
- f) Provide complete history and audit trail for all data collected from meters including commands sent to meters and other devices for 30 days (configurable period).
- g) Execute on-demand read processes.
- h) Handle special metering configurations like net metering/ Group Net metering, Virtual Net Metering/ Gross metering / open access etc. .
- i) The MDM shall have the ability to manage at a minimum 15-minutes interval data.
- j) MDM shall ensure data integrity checks on all metered data received from all HES.
- k) The Bidder AMI service provider shall provide facility to access the old data transferred from the previous Server in CoPA desired format. The proposed software should be able to access these data through a Front End Application.

### 5.2.1.4 Data Validation, Estimation and Editing (VEE)

- 1) The validation and estimation of metered data shall be based on standard estimation methods. The MDMS shall also support and maintain following data-
  - a) Registered Read Data including register reads, daily billing cycle, as well as derived billing determinants like TOU.
  - b) Calculated Data that is derived or computed such as billing determinants and aggregated loads.
  - c) Event data storage of all collected event and alarm data from meters, network equipment, and MDMS itself
- 2) MDMS shall flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in the cumulative ("CUM") register reads
  - a) CUM Decrements within a billing cycle (except net-metering)
  - b) CUM reads increments more than configurable threshold
  - c) Future or old read dates
  - d) Number of digits exceeds number of meter dials
- 3) MDMS shall detect, flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in Time of Use (TOU) register reads
  - a) Register Decrements (except net-metering)
  - b) Resets (to zero) (except net-metering)
  - c) CUM reads increments more than configurable threshold
  - d) Future or old read dates e) Erratic compared to CUM read (sum of TOU reads minus CUM read)

- 4) MDMS shall detect, flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in Demand register reads
  - a) Do not reset on cycle
  - b) Do not reset coincident with customer move-out or move-in
  - c) Reset off cycle inappropriately
  - d) Too high
- 5) All data shall be transferred to billing system after meter data validation and estimation including transformer / feeder station wise energy audit.
- 6) The MDMS shall maintain both the original received raw data in a non-manipulated state, in addition to VEE data.
- 7) Notwithstanding the latency of data collection via the AMI system, once the MDMS receives meter read data, the VEE process occurs in real-time and the post-VEE data is then immediately available to user or external systems.
- 8) The MDMS shall be able to automatically flag data changes from manual edits, VEE (Validating, Editing and Estimating) rules and data source corrections and electronically generate audit trail with timestamps and user-ids.

#### **5.2.1.5 Billing Determinants Calculations**

The MDMS

- a. Shall allow configuring multiple TOU/TOD options (e.g. the number and duration of TOU rate periods) by customer type, tariffs and day type (weekend, weekdays and holidays) and by season.
- b. Shall support the processing of interval data into billing determinants to include the following at a minimum:
  1. Total Consumption
  2. Consumption in different time blocks for ToU billing
  3. Maximum Demand (in kW and kVA)
  4. Number of tamper counts
  5. Average power factor
- c. Shall process interval data and frame it into the appropriate TOU periods for consumption and demand; for example, roll up 15/30-minute data intervals into hourly data
- d. Shall have the ability to properly account for special metering situations such as check metering, sub metering, prepaid metering and net metering when calculating billing determinants and sending them to billing and other systems
- e. Shall have the ability to properly account for special situations including, but not limited to, curtailment requests, demand response scenarios when calculating billing determinants and sending them to billing software.

#### **5.2.1.6 Exception Management**

- a) Ability to capture and log data exceptions, problems and failures and to generate management reports, provide trend analysis, automate generation of service requests and track corrective actions.
- b) Ability to group, prioritize, filter and send system generated alarms and events to predetermined email addresses, cellular text messages to phone numbers/ SMS/ customer care etc. The application should be integratable with existing SMS gateway
- c) Exception Generation - MDMS shall generate exceptions based on configurable business rules including but not limited to the following:
  - i. Meter tamper alerts
  - ii. Communication module health alerts for Meter
  - iii. If the consumption is less/more than pre-defined average consumption
  - iv. Negative Consumption (not for net-metering)
  - v. Power outage indications received from the Smart meter.

**5.2.1.7 Service Orders**

MDM shall send service orders via SMS, email, etc. with the email addresses / phone numbers being configurable. MDM shall receive feedback on action taken on the service order and track the status of service orders

**5.2.1.8 Customer Service and Support**

1. The solution shall provide customers with access to current and historical consumption and interval data, outage flags, voltage and power quality indications. The data shall be displayed in graphical and tabular form depending on user choice. The Customer may also access data through customer portal. The solution shall integrate via a user friendly graphical interface.
2. MDM shall support email/SMS notification of configured alarms & events to selected users.
3. The MDM shall support the web portal or shall have the ability to interface with the third party portal/utility portal to provide the consumer near real time online views of both usage and cost and helping consumers to understand electricity usage and cost information, alerts and notifications and energy savings tips with different levels of detail.
4. The portal should support the view for past electricity usage, last week's, yesterday's, current days or other period etc. as per selection.
5. The portal should provide user friendly access to consumer for their data via colourful graphs and charts and can download the data into a spreadsheet.
6. Shall develop/support mobile app through which consumer shall be able to log in through android/iOS/Window based mobile app to see information related to his energy consumption.
7. In case of Pre-paid system, Provide Current Balance and probable date for recharge before current balance is exhausted.
8. Bill to date functionality ( Indicate expected monthly bill based on consumption trend for the first week of the billing month)
9. Indicate daily sleeping demand and maximum demand & comparison of consumption with Industry peers for industrial consumers

**5.2.1.9 Analysis**

The MDM shall have analysis capability based on configurable business rules including but not limited to the following:

- a) Display consumption/load profiles by configurable period (15/30 min, hour, day, month, year etc.) day type (weekday, weekend, holiday, festival wise etc.) and by tariff, customer type or any user specified collection of meters.
- b) Generate peak & off-peak load patterns by aggregating all loads of DT/Feeder/ consumer group.
- c) Perform DT/feeder wise / input injection wise / unmanned energy audit and periodic accounting and RCO audit as per BEE regulations .
- d) Perform load analysis for different groups and categories of consumers.
- e) Ability to provide the data to load forecasting, load research or demand response applications and perform error management like: Missed reads and intermittent meter reads before taking into forecasting, load research or demand response
- f) Ability to configure the system to effectively visualize consumption trends, identify unusual patterns, and visualize load analysis to understand which assets are being over utilized.
- g) Analyzing data to identify new patterns of usage, Setting fraud alert / transformer overload alerts / demand – supply gap alert etc.
- h) Ability to receive and store outage and restoration event data from smart meters and outage systems and to log all such events for analysis. The key performance parameters of Electrical distribution licensee like SAIDI, SAIFI, MAIDI, MAIFI and other details as per the existing / future requirements needed to be given to the respective statutory/ Ministry/Govt. agencies.

### 5.2.1.10 Reporting

The solution shall include a list of the standard reports including but not limited to following:

- a) Daily data collection report
- b) Usage exceptions
- c) VEE validation failures
- d) Missing interval Read date and times (on hourly, daily, weekly & monthly basis)
- e) Physical meter events (install, remove, connect, disconnect) & meter reset report
- f) Meter flags
- g) Meter inventory
- h) Defective meters
- i) AMI performance measurements
- j) Threshold Exception
- k) The solution shall support users modifying standard reports to better meet specific reporting requirements.
- l) The MDM shall enable the Utility to deliver reports in standard digital format such as PDF, Excel etc.
- m) Ability for GUI (Graphical User Interface) to set up or change report delivery to configurable email addresses, network file directories, ftp sites or printer systems without modifying source program code and without any proprietary language skills.
- n) All queries shall be generated through user driven drop down menu in GUI. The Bidder shall provide example queries to support internal report generation needs.
- o) Ability to provide daily & weekly interface exception reports between MDM and other sub systems e.g. billing, outage etc.
- p) In case more than one technology of AMI (example PLC and RF between Smart Meter & DCU) deployed in the field The MDM shall generate report on the performance and availability of data being delivered per AMI technology.
- q) Feeder meter integration with NFMS Portal .
- r) Reports of open access, export & storage details from energy storage systems etc.

### 5.2.1.11 Revenue Protection Support

- a) Ability to analyse meter tampering flags, power outages, usage trends and usage profiles to identify potential energy diversion situations, and produce daily reports, monthly reports and service order requests for investigation.
- b) The business rules for revenue protection alerts shall be configurable via a user-friendly interface.
- c) The MDM shall filter out revenue protection alerts that may be caused by field activities if the field activity information is provided to the MDM.
- d) The MDM shall support the analytics/ investigation (i.e. view current and historical usage patterns) to valid suspected revenue protection issues.

### 5.2.1.12 AI/ML based Demand Forecasting

- a) Day Ahead and Week Ahead Load Forecasting.
- b) Bidder to provide model with self-learning/ Artificial Intelligence features, so that the accuracy of the model improves over time.
- c) The model should include Historical Data at a minimum to arrive at the Day Ahead and Week Ahead Load Forecast.
- d) Model should provide Day Ahead Load Forecast in MW for all 96 blocks / as per requirements by on a day ahead basis for open access facility / as per SLDC norms of M/s KSEBL.
- e) Week Ahead Load Forecast in MW for all 96 blocks of a day.

### 5.2.1.13 Demand Control/Demand Response Support

MDM shall support Smart Grid Demand Response programs involving Demand Response (DR) systems as part of PLM. The solution shall support the following analysis:

- a) Totaling the actual consumption during the DR event.
- b) Totaling the actual consumption of different groups that participated in the DR event.
- c) Comparing the actual to baseline consumption for the groups in above.
- d) The MDM shall support the tracking, monitoring and managing of Smart Meter and events, and monitors customer response to facilitate payment of customer incentives.

### 5.2.1.14 Additional Features

Net-Metering / Gross Metering/ Group Net Metering /Virtual net metering, open access, energy storage etc.

MDM shall flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur:

- a. CUM decrements of forward energy within a billing cycle Register decrements for Time of Use (ToU) of forward energy
- b. Power generated(exported) by any net-metering consumer more than the installed capacity of solar PV rooftop/ground mounted system / other RE plants like wind , waste to energy, etc
- c. Energy exported(exported) in any given day by any net-metering consumer more than the programmable threshold value

#### a) Prepaid functionality

The prepaid functionality can either be availed at smart meter level or through MDM. In case of MDM, following shall apply

- The MDM should support pre-payment metering and capability to interface with pre-payment application.
- The prepayment should support the system that payment and connection parameters are stored centrally and the details are being updated to consumer portal/ app.
- The system should periodically monitor the energy consumption of prepaid consumer and decrease the available credit based on consumption. – The system should send connect/disconnect command on the basis of available credit as per notified rules & regulations.
- The system should send low-credit notifications to the consumer when their balance approaches a threshold.

### 5.2.1.15 User Interface

The following User Interface functionalities will be provided in the MDMS.

#### 1) Utility Interfaces:

- a) Display meter data at a user defined configurable cycle through a GUI that allows authorized users to view energy usage patterns and the data behind them for selected customers.
- b) Allow authorized users to view metered data, initiate and view reports, modify configurations, and initiate and update service requests via a GUI.
- c) Display via a GUI the energy usage profile for a single meter or group of meters. The load profile shall illustrate energy consumption and peak demand in user defined intervals for a user-specified time period.
- d) Display via a GUI the energy usage profile for a single meter or group of meters according to Time of Use (ToU) tariff.

- e) Access to a minimum of 5 years of historical energy usage and meter reads through the GUI
- f) GUI to clearly and visually distinguish between metered, estimated, allocated and substituted data
- g) GUI to provide role-based access based on user identity and user role. Shall have following types of users:
  - Administrator
  - Operator
  - Field staff
- h) Ability for utility through user interface to set up alarm and event notifications that can be directed to a combination of configurable email addresses, cellular text messages or phone numbers.
- i) User interface for utility to update the credit amount of prepaid consumers to MDM. Such type of user interface before login shall require password & login i.d.for authentication. User interface after getting information like consumer i.d., mobile number & recharge amount etc. shall update the same to MDM. The details of payment information shall also update to consumer through SMS, email etc.

## 2) Consumer Interfaces

User interface for all authorized consumers shall have ability for at least the following functionality:

- a) View metered data, initiate and view reports
- b) View data according to Time of Use(ToU) tariff
- c) Can make request for connection/disconnection
- d) User can update mobile number/email
- e) Can initiate service requests for maximum demand updating, meter checking etc.
- f) In case on on net-metering / group net metering, gross metering, virtual net metering , open access consumers, consumers with energy storage can view data for both import & export
- g) In case of prepaid consumers, consumers can view recharge history & present balance.
- h) Prepaid consumers shall be provided facility to recharge their account by logging on user interface. User interface shall require consumer id., mobile number & password for secure login. This user interface shall be integrated with the present online payment gateway of utility

## 3) Integration with other Systems

- a) MDM shall preferably interface with other systems on standard interfaces and the data exchange models and interfaces shall comply with CIM / XML / IEC 61968 Specification/ any other open standard. MDM solution shall be Service Oriented Architecture (SOA) enabled as approved by CoPA
- b) MDM integration with other systems shall include but not limited to the following :
  - i. HES for data exchange from other AMI solutions
  - ii. Existing other Data Collection Systems
  - iii. CRM, Consumer Portal
  - iv. It supports the interfacing of other smart grid functionalities like
  - v. SCADA
  - vi. OMS
  - vii. Billing and collection system (SAP-ISU)

At present CoPA is using SAP –ISU Module for the management of consumers, financial, billing and reporting purposes. The proposed AMI Software should have facility to handle the following services as part of integration:

- a. Device Master Data Synchronisation
- b. Technical Master Data Exchange

c. Automated Meter Reading Process

d. Defaulters – Management of Disconnection and Re- Connection.

(The integration of AMI system with SAP –ISU shall be done by the contractor and the expenses towards the same shall be borne by the AMISP.)

The MDMS apart from the base functionalities as the above shall have the following advanced Functionalities. This overall MDM should be a highly scalable solution which can support the increase in data volumes and number of users accessing the system. The key areas of consideration for the MDM include:

#### **A. Data Management**

The solution should provide the capability to natively connect to the various sources and underlying operational systems of data. The solution should provide GUI driven capabilities to validate and cleanse, de-duplicate the data based on customizable rules. Additionally the solution should perform transformations of data from native sources to the destination repository, without the underlying operational systems needing to be changed

The proposed analytics solution is expected to provide an integrated environment for predictive and descriptive modelling, data mining, forecasting, optimization, simulation, experimental design and more. For advanced Analytics, the application shall use AI/ML based techniques in addition to the Statistical tools. From dynamic visualization to predictive modelling, model deployment and process optimization, the tool should provide a single platform based range of techniques and processes for the collection, classification, analysis and interpretation of data to reveal patterns, anomalies, key variables and relationships, leading ultimately to new insights and better answers faster.

The solution should provide an easy to use, web based portal for users to access overall information collated from the multiple operational sources for enhanced decision making. The information in the form of various visualizations (interactive graphs, charts, tables etc.) would be available as per the role of the user logged in. The solution should also provide alerts based on user defined criteria which would be dispensed in the form of emails, portal alerts etc. The solution should also provide power users the capability to perform ad-hoc analysis on the data and distribute the results on mobile tablet devices for on-the-go analysis offline.

The MDM shall have following analysis capability based on configurable business rules including but not limited to the following:

- i. Display consumption/load profiles of each consumer by configurable period (15 min, hour, day, month, year etc.) day type (weekday, weekend, holiday, special day, festival etc.) and by rate tariff, customer type (hospitals, schools, Malls, business centre, commercial, residential, etc), or any user specified group of meters.
- ii. Generate peak & off-peak load patterns by aggregating all loads of feeder/distribution transformer/consumer group for configurable period (15 min, hour, day, month, year etc.) day type (weekday, weekend, holiday, special day, festival etc.) and by rate tariff, customer type, or any user specified group of meters.
- iii. Perform distribution transformer/feeder wise energy audit., generate data required for energy auditing and RCO audit as per BEE guidelines
- iv. Perform load analysis for different groups and categories of consumers.
- v. Ability to configure the system to effectively visualize consumption trends, identify unusual patterns and visualize load analysis to understand which assets are being over utilized.
- vi. Identify & visualize poor performing assets like feeder/distribution transformer on multiple criteria like energy losses, collection losses, billing losses, outage duration etc. and generates appropriate colour coding
- vii. Analyzing data to identify patterns of usage, setting fraud alert / transformer overload alerts etc.

- viii. Ability to receive & store outage and restoration event data from smart meters and outage systems and to log all such events for analysis. Generate monthly and annual SAIDI/SAIFI/MAIDI
- ix. Analyzing data of net-metering consumers to identify patterns of export energy on hourly/weekly/monthly/yearly basis. Suggest list of most likely consumers who will back feed energy to grid.

#### **i. Scalability**

Suggested analytics solution should be able to cater to the needs of all users in the location without any named user restriction for the Smart Grid that can scale enterprise wide.

- Predictive Modelling & Optimization
- Data Mining including but not limited to data mining process, advanced modelling capability
- Statistical Analysis
- cluster analysis
- Real time Visual Analytics for meter data
- Data Management and Data Quality
- Dashboard and Reporting

The proposed analytics application shall be using data from the project area's LT network and should provide the following functions for analyzing:

- LT load requirements in short term and long term
- Consumer load pattern
- Distribution Transformer (DT) loading and balancing

Forecasting load for short term, as well as plan network augmentation in the long-term. The data shall also be analysed to aid in the day to day operation

Analytics solutions should provide operational reports as given below. This is a suggestive list, the solution provide report types based on Utility's specific requirement.

- a) Daily data collection reports Provides a total count of meters that reported at least one register read during the most recent daily read period, segmented by type and read age.
- b) Estimation failure report: Detailed list of service delivery points for which the Validation of Error & Estimation (VEE) could not complete estimation and the reason for the failure.
- c) VEE summary Report: Delivers an overview of validation, estimation and edit activity.
- d) Zero consumption report: Lists all meters where the meter has been reporting data but has reported zero consumption in all the intervals over a configurable period (based upon the report run date).
- e) Service requests summary report: Summarizes service requests created in MDMS as a result of conditions met during analysis.
- f) AMI Installation status report: Displays summary with regard to AMI installation, provisioning and cutover.
- g) Meter reset report: Provides a detailed list of meters that have a total consumption that is lower than the prior total consumption read.
- h) Missing reads report: Identifies meters that have surpassed a user-defined ratio of the number of days missing register reads within the number of consecutive days. The report returns meter information and the percentage of days missing reads.
- i) Missing reads summary report: Provides a summary of missing reads grouped by number of missed reads.

- j) Billing data change report: Shows a list of service delivery points that have sent for billing data impacted by updated incoming data from the AMR/AMI network head end. This supports rebilling and regulatory requirements.
- k) Billing no reads report: Delivers the exceptions for service delivery points where billing quantities could not be delivered.
- l) Billing request detailed exception report: Provides the detail of billing requests that could not be processed due to an exception.
- m) Billing service summary report: Summarizes the meter reads provided by the MDMS for billing. The output report provides total numbers by cycle end date for each meter read source (for example, AMR/AMI, estimated) as well as the number of reads that were expected and a breakdown of reads by read status and export status.
- n) Profiling of data in the case that the AMR/AMI fails.

#### 5.2.1.16 Reporting

The MDMS solution provider shall provide Analytics to the Utility for strategic, tactical and operational decision making which must be data driven through various models such as predictive, prescriptive and forensic analytics of data. Analytics will serve as one of the critical success factors in ensuring the successful implementation of the AMI system at the Utility. The primary objective is to ensure that the huge volumes of data generated by the smart meters installed at Utility render unambiguous and insightful results that become an action point for the Utility either in 'Day in Life' or future scenarios, aimed at driving decisions to take corrective actions thereby improving performance and bringing value to both customers and operations. Using analytics, It shall be possible to derive trends of regular usage as per the season and to single out cases for investigations in cases where usage is abnormal. The Utility shall be able to reap tangible benefits through the deployment of analytics which would be integrated with other enterprise applications of Utility to ensure;

- a) Loss and anomalies (theft) reduction
- b) Optimum customer experience by performing analytics on events like last gasp and power restore to identify field outages and take proactive action even before consumer calls.
- c) Consumer analytics to determine consumer usage pattern, payment behaviour etc
- d) Revenue analysis and insights for example pre and post audit of meter reading
- e) Benefit Analysis for AMI Deployment (pre and post)
- f) Device/area wise power quality related information
- vii) Reporting of KPIs based on smart meter data example (peak load, billing efficiency, reliability indices, transformer failure rate etc.)
- g) Static and dynamic reporting based on flexible rules/algorithm
- h) Operations and distribution network optimization analytics
- i) Analytics of historical and real time data for fault analysis to take corrective measures.
- j) SMART meters are provided for accounting RE generation of Prosumers. This details also to be accounted for generating RCO details.

The analytics software deployed shall have analysis capability based on configurable business rules including but not limited to the following:

- a) Generate peak & off-peak load patterns by aggregating all loads of consumer group/ consumer type/DT/Feeder over configurable period/day type.
- b) Ability to display consumption trends, identify unusual patterns, and load analysis to understand which assets are being over utilized.

- c) Ability to analyze data to identify new patterns of usage, fraud alert / transformer overload alerts/ demand – supply gap alert etc.
- d) Reliability indices calculation and display (SAIDI, SAIFI, CAIFI, MAIFI, CAIDI etc.)
- e) Identify & visualize poor performing assets like feeder/DT on multiple criteria like energy losses, outage duration etc. through appropriate colour coding depending on severity thresholds.
- f) Analyze data of net-metering and TOU (if present) consumers to identify patterns of energy export to grid on hourly/weekly/monthly/yearly basis.
- g) Feeder meter reporting to NFMS Portal

### 5.3 Indicative Analytics Use Cases for AMI

Table below shows indicates business benefits that are foreseeable through the usage of analytics in the AMI implementation. Indicative use list that shall add value through Analytics and Reporting are mentioned below. In addition, the Implementing Partner shall ensure that best industry practices are adopted to achieve the best outputs from deployment of analytics.

SL NO.	ANALYTICS APPLICATION	BUSINESS OBJECTIVE	SAMPLE SCENARIOS	INPUT DATA (EXTERNAL/ INTERNAL)	EXPECTED OUTPUT	BUSINESS BENEFITS
1	BEHAVIOUR ANALYSIS	VALUE ADDED SERVICES FOR CONSUMER	BENCHMARKING OF POWER CONSUMPTION RELATIVE TO NEIGHBOURS. POWER SAVING RECOMMENDATIONS	SMART METER CONSUMPTION DATA AT CONSUMER	DASHBOARD BENCHMARKING ANALYSIS	INCREASED NON-TARIFF REVENUE OPPORTUNITIES
2	USAGE PATTERN ANALYSIS	PEAK LOAD OPTIMIZATION	TARIFF DESIGN FOR ToU BASED VARIABLE CHARGING	CONSUMPTION PATTERN TARIFF PER TIME SLOT	TARIFF STRUCTURE DESIGN FOR ToU CHARGES	REDUCE COST ON PURCHASE OF PEAK POWER
3	USAGE PATTERN ANALYSIS	LOSS AND ANOMALIES (THEFT) DETECTION	COMPARE USAGE WITH PAST 12 MONTH AVERAGE AND CLUB THEM INTO SUB-SECTIONS, COMPARE MONTHLY USAGE TO SEE VARIANCES IN HIGH CHANGE CATEGORIES	USAGE DATA OF CONSUMERS OVER PAST 12 MONTHS	IDENTIFICATION OF AREAS/HIGH RISK CONSUMERS TO DETERMINE VIGILANCE	IMPROVED REVENUE COLLECTION, DECREASED WORKING CAPITAL REQUIREMENTS
4	USAGE PATTERN ANALYSIS	PAYMENT FOLLOWUP	PROVIDE CATEGORIES OF CONSUMERS FOR ADDITIONAL FOLLOWUP DEPENDING ON PAYMENT CYCLE. REGULAR PAYERS ARE CATEGORIZED AS LOW RISK AND LESSER ALERTS, HIGH RISK CATEGORIES ARE GIVEN REGULAR ALERTS	PAYMENT INFORMATION OF CONSUMERS FOR PAST 1 YEAR	DETERMINE GROUPS TO SEND ADDITIONAL ALERTS BASED ON PAYMENT PATTERN	IMPROVED COLLECTION PER PREDICTABILITY LEADING TO REDUCED WORKING CAPITAL REQUIREMENTS
5	CUSTOMER PROFILING	TO IDENTIFY CATEGORIES	IMPROVE IN SELLING VALUE SERVICES	CRM,CIS	CLUSTERING OUTPUT	BETTER CUSTOMER SERVICE
6	REVENUE FORECASTING	UNDER CASH FLOW	PREDICTING THE CASH IN FLOW	BILLING , METERING	REVENUE FORECAST	BETTER PLANNING

#### 5.3.1 Energy Accounting

This module shall support the following functions:

- 1) Generate report of Loss analysis for different groups and categories of consumers on daily basis.

- 2) Generate report of AT&C loss calculation and RCO calculation on monthly and annual basis.
- 3) Generate report for accounting and auditing at Feeder level, Distribution Transformer level and voltage wise and grid input injection points wise DCU level.
- 4) Create graphical representation of all results that can be displayed on monitor and printed as per requirement.
- 5) Generate Energy Audit on a Feeder basis, Distribution Transformer Basis with duration of
  - a. Daily
  - b. Weekly
  - c. Monthly
  - d. Hourly basis

5.4 SIM Services

Codes and Standards of relevant IS / IEC, pertaining to SIM card communication to smart meters with their latest amendments shall be followed.

Cellular technologies should be supporting 3 G or 4 G communications networks complying with IPv6. SIM card should establish a secure data route to a single or multiple networks. SIM card should have static IP (Private/Public)

SIM card should have a private APN/Public APN. In case of public APN, system should comply to required security as per guidelines issued by Department of Telecom

The SIM Card should be capable of establishing wireless communication with external entities such as Server, Head End System, DCU etc. The communication should be bi-directional i.e. from meter to external entity and from external entity to meter

SIM Card supplied should have facility of GPRS/3G/4G to fall back to 3G networks, where 4G network is not available.

The SIM Card should support both Data and SMS transmission. It should have GSM/GPRS and 3G LTE features

Supply the required 3G/4G/GPRS SIMs along with the appropriate data. Service provider should size the required data.

Service providers can also offer MPLS /NB-IoT based solutions .Offered solution should meet above requirements of Cochin Port Authority. In case of MPLS network solution, then service provider should include the charges applicable for installation and any other recurring charges within the per SIM/Month cost only

5.5 Connectivity

The successful bidder on appointment as service provider shall ensure that the SIM cards for all the smart meters in operation ( upto maximum 2000 nos.) readily available and integrated with the AMI for proper communication of the data on 24 x 7 basis throughout the year with the AMI infrastructure and areas having weak signal shall adequately be addressed.

5.6 Existing SIM Specification

Description	Specification
SIM	M2M (13digits)

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Form Factor	Mini (2FF) & Micro (3FF) (Mini SIM card cut to micro)
Operating Temperature Range	-20to+85°C
Network Type	2G/3G/LTE/4G fall back to 2G
SIM IP address	IPv6StaticIP
SIM APN	Standard Public Shared APN or Any private APN
Data-Plan	450 MB/month
Voice	NA
SMS	NA(Required, Specify qty)

5.7 The Existing Smart Meter Details are:

Equipment	Tech Spec	Quantity
Single phase Direct reading Smart meter	Make : Genus Model : Saksham 145 240V, 5-60 A, 50 Hz, Accuracy Class : 1 Single phase, 2 wire, AC static, KWh Smart meter	1055
Three phase Direct reading Smart meter	Make : Genus Model : Saksham 345 3 x 240V, 3 x (10-60) A, 50 Hz, Accuracy Class : 1 Three phase, 4 wire, AC static, KWh Smart meter	180
Three phase LT CT Smart meter	Make : Genus Model : Saksham 340 3 x 240V, 3 x (-/5) A, 50 Hz, Accuracy Class : 0.5 s (Active), 1s (Reactive) Three phase, 4 wire, AC static, LT CT Smart meter	100
Three phase HT	Make : Genus	50

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CT Smart meter	Model : Saksham 340 3 x 63.5V, 3 x (-/5) A, 50 Hz, Accuracy Class : 0.2 s (Active), 0.5s (Reactive) Three phase, 4 wire, AC static, CT/PT operated HT CT Smart meter	
	L & T	
	ZEN	
	SCHNEIDER	

## 5.8 GENERAL

The data volume provided by the existing sim service provider is 50 mb per sim per month. The cost for any additional requirement in the data volume for the proper functioning of the AMI system shall be paid by the AMI Service Provider.

The IT infrastructure as part of AMI Software installation has to be provisioned and maintained in the Cloud by the proposed bidder including Server, OS, Data Base, Storage with necessary valid licenses during the entire period/ extended period of contract. The Cloud provider should have a Tier IV datacenter. CoPA shall be consulted before finalising the software related matters and get it approved .

The AMI software should be implemented, commission and maintain during the entire contract period / extended period by the successful bidder. Major Changes has to be implemented by the successful bidder based on the mutually agreed manday charges. Minor changes including rectification of issues, additional reports, etc. have to be done by the successful bidder without any cost.

Cyber Security: The bidder has to engage CERT-IN / Ministry of Electronics and Information Technology (MIETY) Empanelled Auditors for cyber security audit and the Audit certification from the engaged agency has to be submitted by the bidder. The Audit has to be conducted regularly as per the norms of the Government from time to time and the certificates have to be submitted accordingly.

The successful bidder has to resolve the issues / suggestions raised in any IT audit observations at free of cost.

The AMI Project shall cover end-to-end smart metering (from injection point meters Feeders, Distribution Transformers (DTs) and all end consumers) at electrical locations to enable complete energy accounting with zero manual intervention.

The AMI system should be designed such that all the required hardware, software, and firmware with upgrades satisfy the AMI system requirements and service level agreements as specified in this Contract and are suitable for future scaling up. AMISP is free to decide upon the best solution out of all the available options. However, the entire responsibility of fully functional AMI system shall rest with the AMISP in order to meet the performance levels as given in the Contract. The AMISP shall ensure that the Solution comply with the Applicable Law, technical specifications and other provisions of the Contract.

## 5.9 Other

- a) Carry out consumer indexing along with its regular updates during contract period.
- b) Generation of automated energy audit reports (DT level/ Feeder level / voltage wise / input injection point wise ) and other reports
- c) Operation, maintenance, and support services after the successful completion of the Operational Go-Live of the system;

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- d) Training of Utility personnel, as required for efficient, viable and fully functional system
- e) Testing, inspection, approval of test records and in general, management of the Quality Assurance / Quality Control program of the AMI project.

5.10 Configuration

HES shall facilitate configuration of following minimum AMI parameters:

- 1) Load profile capture period
- 2) Demand integration period
- 3) Setting of parameters for TOU billing
- 4) Prepaid / post-paid configuration
- 5) Net metering
- 6) Billing date / month-to-date for prepaid meters
- 7) Clock setting/time synchronizations
- 8) Load curtailment limit Section 6. Project Requirements 141
- 9) Event setting for connect/disconnect
- 10) Number of auto reconnection attempt
- 11) Time interval between auto reconnection attempt
- 12) Lock out period for endpoint (meter) relay
- 13) Remote firmware update: It shall be possible to update the firmware of the meters in both Unicast (one to one) and in Multicast fashion (Group of meters). It shall be also possible to have remote firmware upgrade for an individual and a group of nodes (NAN/WAN, Routers/Gateways/Access Point, DCU).
- 14) Password setting
- 15) Push schedule
- 16) Setting threshold limits for monitored parameters

5.11 Service Level Agreement (SLA) Penalty Calculation

Data Type	Performance Requirement (Averaged over a month) <sup>1</sup>	Penalty	SLA Penalty Calculation (For understanding purpose only)
<b>Scheduled Tasks</b>			
<b>1. Scheduled Interval data readings and integration of feeders with NFMS portal</b>			
Periodic collection of the interval load profile data for the day <sup>2</sup> and integration of HT feeders with NFMS Porta	From 95% of meters /feeders within 8 hours	Deduction of 0.2% of AMISP Service Charge for every 1% or part there of Capped at 1% penalty	Maximum Penalty of 1% if action takes place for <91% of meters
<b>2. Scheduled Interval data readings</b>			
Periodic collection of the interval load profile data for the Day <sup>3</sup>	From 98% of meters within 12 hours	Deduction of 0.2% of AMISP Service Charge for every 1% or part there of Capped at 1% penalty	Maximum Penalty of 1% if action takes place for <94% of meters

<b>3. Scheduled daily meter readings</b>			
Previous days <sup>4</sup> interval energy and total accumulated energy	From 99.5% of meters within 24 hours after midnight	Deduction of 0.2% of AMISP Service Charge for every 1% or part thereof Capped at 2% penalty	Maximum Penalty of 2% if action takes place for <90.5% of meters
<b>4. Scheduled billing profile data for the bill period</b>			
Collection of billing data for the bill period	From 99.5% of Meters within 72 hours of the scheduled periodic collection/ end of the billing period and From remaining 0.5% of meters within 168 hours of the scheduled periodic collection/ end of the billing period.	Deduction of 0.5% of AMISP Service Charge for every 0.5% or part thereof capped at 3% penalty	Maximum Penalty of 3% if action takes place for <97.5% of meters
<b>5. Scheduled energy audit and reliability indices report<sup>5</sup> (DT wise)</b>			
Generation of Monthly energy audit and reliability indices report	From 100% of DT installed meters within 384 hours (16 days)	Deduction of 0.1875% of AMISP Service Charge for every 1% or part thereof Capped at 1.5% penalty	Maximum Penalty of 1.5% if action takes place for <93% of meters

Data Type	Performance Requirement (Averaged over a month) <sup>1</sup>	Penalty	SLA Penalty Calculation (For understanding purpose only)
<b>6. Scheduled energy audit and reliability indices report<sup>6</sup> (Feeder wise)</b>			
Generation of monthly energy audit and reliability indices report	From 100% of installed Feeder meters within 384 hours(16 days)	Deduction of 0.25% of AMISP Service Charge for every 0.5% or part thereof capped at 1.5% penalty	Maximum Penalty of 1.5% if action takes place for <97.5% of meters
<b>B. Remote Actions/ tasks performed by AMI System</b>			
<b>7. For remote connect/ disconnect with acknowledgement/ response for Selected meters</b>			
Remote connect/ disconnect of the AMI meters	Action performed at 90% of meters within 15 minutes	Deduction of 0.5% of AMISP Service Charge for every 0.5% or part thereof Capped at 2.0% penalty	Maximum Penalty of 2.0% if within 15 minutes, delivery takes place for <97.5% of meters
<b>8. Disconnect with acknowledgement/ response for Selected meters</b>			

Remote connect/ disconnect of the AMI meters	Action performed 99.5% of meters Within 6 hours	Deduction of 0.25% of AMISP Service Charge for every 0.5% or part thereof Capped at 1.0% penalty	Maximum Penalty of 1.0% if within 6 hours, delivery takes place for <98% of meters
<b>9. Remotely top-up amount (for pre-paid application only)</b>			
Delivery of top up amount/ credit recharge in case of prepayment post successful transaction from payment gateway up to Consumer interface <sup>7</sup>	99.9% meters within 30minutes (delivered and intimated to consumer)	Deduction of 0.5% of AMISP Service Charge for delay of every 0.5% or part there of capped at 3.0% penalty	Maximum Penalty of 3.0% if within 30 minutes, delivery takes place for <97.4% of meters
<b>System Availability</b>			
<b>10. Availability of AMI System per month</b>			
Availability of AMI System per month	≥99.5%	Deduction of 0.4% of AMISP Service Charge for every 0.5% or part thereof reduction in availability Capped at 4.0% penalty	Maximum penalty of 4% shall be deducted when system availability is 5.0%

**Notes 1:**

<sup>1</sup> Local intervention allowed to achieve SLAs

<sup>2</sup> Assuming interval of 30 minutes. <In case, Utility aims to change the interval, accordingly the performance requirement may need to be changed>

<sup>3</sup> Assuming interval of 30 minutes. <In case, Utility aims to change the interval, accordingly the performance requirement may need to be changed>

<sup>4</sup> All previous days from the last billing cycle

<sup>5</sup> Unless both energy audit and reliability indices report (DT wise) are generated at scheduled periodic interval, AMISP shall be considered non-compliant to the defined SLA and shall be liable to penalties.

<sup>6</sup> Unless both energy audit and reliability indices report (Feeder wise/input injection points) are generated at scheduled periodic interval, AMISP shall be considered non-compliant to the defined SLA and shall be liable to penalties.

<sup>7</sup> Delay in delivery of credit recharge information to payment gateway or Utility Billing System excluded from the SLA measurement.

**Notes 2:**

1. Maximum Penalty out of the above shall be restricted at 20% of AMISP Service Charge. The deduction shall be computed as AMISP Service Charge X penalty % as computed in above table.

2. The penalty, as mentioned above, shall be computed as per the performance deviated from the performance requirement. For instance, for SLA "Periodic collection of the interval load profile

data for the day”, if within 8 hours, data is received from only 94.6% meters which means deviation of 0.4%, then the penalty shall be computed as  $\{ \max(0.4\%, 1\%) / 1\% \times 0.2\% \} = 0.2\%$

3. Averaged over a month means weighted average performance from meter population over a predefined time interval. For instance,

a) Assuming on  $i$  th day or event, action was done on  $x_i$  % of total meters and within stipulated time, data was received from  $y_i$  % of  $x_i$  % meters. So, the average SLA over the month shall be

computed as 
$$\frac{\sum x_i y_i}{\sum y_i}$$

b) For system availability, the availability is computed as  $\frac{S1 \times 1 + S2 \times 0.8 + S3 \times 0.5}{THM}$  ; Where THM is total hours in the month when power supply to AMI system is available, S1/S2/S3 is the total non-available hours in Severity Level-1/Level-2/ Level-3.

4. AMISP shall submit AMI generated reports for cases mentioned above based on data available in HES/MDM
5. Exclusions: Power Outages, Meter bypass by consumers, Local Temporary/ Permanent disconnection by CoPA, Meter burnt shall be excluded from above SLA calculations. For these cases, joint visit of AMISP and CoPA shall be carried out and field inspection report shall be submitted by AMISP to CoPa for suitable action.
6. For the purpose of joint visit, AMISP shall put a request to CoPA who should allocate manpower for joint visit within 1 working day. In case of non-allocation/ non-availability of manpower from Utility, the report submitted by AMISP shall be final and actionable by Utility.
7. The penalties would be computed on the basis of performance of AMISP for a calendar month.
8. AMISP shall be responsible for collection of billing data for all Smart Meters within a week of the scheduled periodic collection/ end of the billing period.

5.12 Duties of Utility and AMISP during Operations and Maintenance Phase

The table in this section provides a summary definition of the roles and responsibilities of the AMISP and the Utility during operation and maintenance phase of the AMI Project.

5.12.1 Legend:

- This indicates who has primary responsibility to perform this function
- A : This indicates who will provide assistance
- F : Feedback

Item	Task	CoPA	AMISP
<b>1.0</b>	<b>Problem Identification</b>		
<b>1.1</b>	Root cause analysis to determine whether the fault is attributable to Hardware or Software.	F	•

1.2	Resolution of problems involving third party maintainer where there is uncertainty whether the root cause is hardware or software.	A	•
2.0	<b>Software Problem Resolution</b>		
2.1	Report problem and assist with problem identification	F	•
2.2	Provide or recommend corrections, temporary patches, work arounds or other fixes to system problems	F	•
2.3	Install and test corrections, temporary patches, work arounds or other fixes to system problems	F	•
3.0	<b>Routine Software (including MDM ,HES, Utility Interface, Consumer app/portal) Support</b>		
3.1	Build and maintain database, displays and reports	F	•
3.2	Perform system back-ups	F	•
3.3	Restore or reinstall software from back-ups	F	•
3.4	Monitor system logs(part of remote monitoring service)	F	•
3.5	Maintain system logs	F	•
3.6	Maintain user accounts	A	•
4.0	<b>Hardware (including meter, DCUs, routers, network operation and monitoring center etc.)Problem Resolution</b>		
4.1	Report problem and assist with defining problem	A	•
4.2	Trouble shoot problem to diagnose if it is software-related or hardware-related	F	•
4.3	Identify failed component, replace failed components in the system using parts from spares inventory. (Smart meters will be provided by CoPA)	F	•
4.4	Restore operation of repaired/replaced equipment	A	•
5.0	<b>Hardware Spare Parts</b>		
5.1	Manage local spares inventory ( SMART Meters by CoPA)	F	•
5.2	Replenish local spares inventory ( SMART Meters by CoPA)	F	•
6.0	<b>Integration and Database Work at NOMC End</b>		
6.1	Field Device Integration	A	•
6.2	Other System Integration	A	•
7.0	<b>Cyber Security Monitoring</b>		
7.1	Patch Updates	F	•
7.2	Cyber Security Monitoring including conducting Mock Drill as per CEA Regulations	F	•
7.3	Annual Audits	F	•

7.4	Implementation of Recommendations during Audit	F	•
8.	<b>Manual Meter Read Through HHU In Case of Non-Communication of Smart Meters</b>	A	•

5.13 The AMISP may suggest more parameters as per the requirement.

**Table**

Sr.	Use Case Activity Description	Source	Destination	Info Exchanged
1.	<b>Scheduled Meter Read Automatically from Consumer Premises</b>			
1.1	At scheduled frequency meter sends data to HES. Consumption details including non-critical events will be in 15 min block data, and data could be incremental to what was sent by Meter in preceding instance	Meter	HES	Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-critical Event Code/Date
1.2	At scheduled frequency meter sends billing Data to HES	Meter	HES	Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF
1.3	Scheduled meter data reaches MDM	HES	MDM	Meter Number, reading date & time, kW, kVA, kWh, kVAh, PF, Non-Critical Event Code/Date
2.	<b>Remote Meter disconnection/reconnection</b>			
2.1	Meter re-connect/disconnect operation command	MDM	HES	Meter Number, group of meters, instruction to Close switch
2.2	Consumer meter re-connection/disconnection	HES	Meter	Meter number, action (reconnect/disconnect)
2.3	Connection Status Update	Meter	HES	Meter Number, switch status
2.4	Connection Status Update	HES	MDM	Meter Number, group of meters, switch status
3.	<b>Utility detects tampering at consumer site</b>			
3.1	High priority events captured by Meter sent to HES as and when occurred	Meter	HES	Meter Number, event date & time, event Code /description
3.2	High priority events reach MDM for further action.	HES	MDM	Meter Number, event date & time, event Code /description
3.3	Notify utility personnel for site inspection	MDM	Email/SMS Gateway	Consumer number, Meter Number, Tamper code, address

3.4	On analysis and detection of valid tamper event or malfunction, connection is disconnected.	MDM	HES	Consumer number, meter number, action to be triggered (disconnect), Action date & time
3.5	HES sends disconnect command to meter	HES	Meter	Meter Number, action (disconnect)
3.6	Tamper event shared with CIS. Billing determinants are updated for tamper invoicing	MDM	CIS/ Billing Determinants	Meter Number, event date & time, event Code /description
3.7	Meter re-connection order once tamper issue is resolved	MDM	HES	Meter number, action (re-connect)
3.8	HES sends re-connect command to meter	HES	Meter	Meter Number, action (re-connect)
4.	<b>Missed interval readings</b>			
4.1	On identifying missed interval, HES will re- acquired data for the missing period from meter	HES	Meter	Meter Number, from date & time, to date & time (for which data is missing)
4.2	On receiving data request command, meter will send data to HES	Meter	HES	Meter Number, reading Date & time, kW, kVA, kWh, kVAh
4.3	Missed Interval and Reads Data acquired by MDM	HES	MDM	Meter Number, readings with date & time
5.	<b>Consumer connection outage/ restoration event</b>			
5.1	Outage/restore event recorded by meter is sent to HES as and when Event occurs	Meter	HES	Meter Number, Outage/ restoration Date / Time, Power On or Off count
5.2	Outage/Restoration Notification	HES	MDM	Meter Number, Outage/ restoration Date / Time, Power On or Off count
5.3	Sharing Outage/Restoration Notification	MDM	OMS/CIS- CRM	Meter Number, Outage/ Restoration Date/Time, Power On or Off count
5.4	Meter read request from OMS to identify service outage / restoration	OMS	MDM→ HES	Meter Number,
5.5	Meter responds to event poll from HES	Meter	HES	Meter number, Status (live/dead)
6.	<b>Remote firmware upgrades/ meter configuration changes</b>			
6.1	Remote firm ware upgrade	MDM→ HES	Meter	Firmware
6.2	Configuration Commands: Change tariff parameters, Synchronize clock, Registers reset(status, max, tampering)	MDM→ HES	Meter	Meter number, tariff parameters, registers status, event type and priority
6.3	Status update of Firm ware/ Configuration	Meter	HES→ MDM	

7.	<b>Load monitoring at demand side</b>			
7.1	When there is a load violation Event recorded in the meter, the information is sent to the CC	Meter	HES→ MDM	Meter Number, max demand, date & time of load violation
8.	<b>Time synchronization</b>			
8.1	Synchronising RTCs of meters/ DCUs/ACP	HES	DCU/Meter	Time Setting
9.	<b>Metering network changes</b>			
9.1	Change/new installation in Meter/ DCU Network Hierarchy	Meter/ DCU	HES	Network identification info including DCUs
9.2	Change/new installation in Meter/ DCU Network Hierarchy	HES	MDM	Network identification info including DCU
10.	<b>New consumer connection</b>			
10.1	Receive pre & post-paid new consumer requests	CIS-CRM	MDM	Consumer name, address. Connection request etc.
10.2	Verify new consumer has paid as Per regulation	Billing	MDM	Consumer connection request, Payment details
10.3	Generate meter installation order	MDM	CIS-CRM /WFM	Consumer ID & details
10.4	Receive meter installation report	WFM	MDM	Meter number, DT no, Feeder & reading
10.5	Requesting instant, Interval & events data from meters	MDM	HES→ Meter	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
10.6	Acquire instant, interval/events data from meter by HES which then reaches MDM system.	HES	MDM	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
10.7	Once new meter remote read verification is over, confirm new connection with other Applications	MDM	Billing / CIS-CRM	Consumer ID, Consumer address, Meter Number, initial reading etc.
11.	<b>Migrate post-paid consumer to prepaid mode</b>			
11.1	Receive migration request	CIS-CRM	MDM	Migration request for post-paid consumer with profile
11.2	Get billing attributes	Billing	MDM	Billing attributes
11.3	Setup prepaid consumer profile in prepaid engine. If no change in meter is required, skip next two steps	MDM	Prepaid Engine	Prepaid consumer profile
11.4	Generate prepaid meter Installation order if required	MDM	CIS-CRM/ WFM	Consumer ID & details
11.5	Receive meter installation report	WFM	MDM	Meter number, DT no, Feeder & reading

11.6	Enable prepaid mode in meter	Prepaid engine	HES→ Meter	Engineering token
11.7	Receive activation confirmation	HES	MDM	Activation status
11.8	Request instant, interval & events data from meter	MDM	HES→ Meter	Meter Number, Reading date & time, reading Params (kWh, kVAh, kW etc.)
11.9	Acquire instant, interval/events data from meter by HES which then reaches MDM system.	HES	MDM	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
11.10	Once meter remote read verification is over, share migration request completion detail with other modules	MDM	Billing / CIS-CRM	Prepaid consumer profile
12.	<b>Migrate prepaid consumer to post-paid mode</b>			
12.1	Receive migration request	CIS-CRM	MDM	Migration request for prepaid consumer with profile
12.2	Request meter data	MDM	HES→ Meter	Meter Number, Consumer ID
12.3	Acquire instant, interval/events data from meter by HES which then reaches MDM system.	HES	MDM	Meter Number, Reading date & time, reading Params (kWh, kVAh, kW etc.) with balance credit
12.4	Send meter disconnect command	MDM	HES→ Meter	
12.5	Receive connection status	HES	MDM	Disconnect status
12.6	Enable post-paid mode in meter	MDM	HES→ Meter	Engineering token
12.7	Receive activation of post-paid mode	HES	MDM	Activation Status
12.8	Request instant, interval& events data from meter	MDM	HES→ Meter	Meter Number, Consumer ID
12.9	Acquire instant, interval/events Data from meter by HES which Then reaches MDM system.	HES	MDM	Meter Number, Reading Date & time, reading Params (kWh, kVAh, kW etc.)
12.10	Once meter remote read verification is over, share migration request completion Detail with other modules	MDM	Billing / CIS-CRM	Post-paid consumer profile and meter data along with credit balance
13.	<b>Consumer Registration in Consumer Portal/App</b>			
13.1	Consumer clicks on new user on consumer portal/ App, provides RMN or email ID and submits data	Portal/ App	MDM	Request for registration with RMN/email ID

13.2	Utility receives request for registration and sends OTP after verification	MDM	Email/Mess age Gateway	OTP
13.3	Consumer submits OTP	Portal/ App	MDM	
13.4	Consumer receives registration detail	MDM	Email Gateway	Login ID and default password
13.5	Consumer submits first login request	Portal/ App	MDM	
13.6	System seeks password change	MDM	Portal/App	
13.6	Consumer changes default password	Portal/ App	MDM	
14.	<b>Consumer Access to Consumption, Billing &amp; Profile Data</b>			
14.1	Consumer logs into Portal/App	Portal/App	MDM	
14.1	Consumer Profile for Portal/ App	CIS-CRM	MDM →Portal/ App	Name, Account, Address, Service Points, K Number
14.2	Consumption Data	MDM	Portal/App →UI	Consumption profile
14.3	Billing(post-paid)/Credit Balance (prepaid)	Billing→ MDM	Portal/App	Post-paid Billing history/ Current Bill, Prepaid Recharge history
15.	<b>Prepaid Consumer Recharge</b>			
15.1	Consumer logs into Portal/ Mobile App	Mob App/ Portal	UI	Login
15.2	Consumer fills-in required detail in UI and requests recharge	UI→ Prepaid App	Payment Gateway	Consumer ID, Recharge amount
15.3	Consumer selects payment method	Payment Gateway	Net banking /Credit Card /Wallet etc.	
15.4	Consumer receives payment acknowledgement	Payment Gateway	Prepaid App→ Porta l→ UI	
15.5	Calculate credit balance for Prepaid consumer & update prepaid meter	Prepaid App	HES→ Meter	Consumer credit balance (virtual token)
15.6	Notify credit balance to consumer	Prepaid App	Email/SMS Gateway	Credit Balance
16.	<b>Post-Paid Consumer Bill Payment</b>			
16.1	Consumer logs into Portal/ Mobile App	Mob App/ Portal	UI	Login
16.2	Consumer is presented with Billing history and current Outstanding Bill	Billing→ MDM	Portal/ App→ UI	Out standing Bill
16.3	Consumer requests bill payment. Option to download bill	UI→ Billing	Payment Gateway	

16.4	Consumer selects payment method	Payment Gateway	Net banking /Credit Card /Wallet etc.	
16.5	Consumer receives payment acknowledgement	Payment Gateway	Billing→ Portal/ App→ UI	
16.6	Payment acknowledgement Through email/SMS	Billing	Email/SMS Gateway	Payment acknowledgement
17.	<b>Consumer Service Request</b>			
17.1	Consumer logs into Portal/App	Portal/ App	MDM	
17.2	Consumer requests for service	UI	MDM	Service request
17.3	System assigns SRN & sends acknowledgement	MDM	Portal/ App→ UI, Email/SMS Gateway	
17.4	System resolves request& updates consumer records	MDM	Portal/ App→UI, CIS/CRM	
17.5	System closes SRN	MDM	Email/SMS Gateway	
18.	<b>Consumer Complaints</b>			
18.1	Consumer logs into Portal/App	Portal/ App	MDM	
18.2	Consumer registers complaint	UI	MDM	Specific complaint
18.3	System assigns CRN & sends acknowledgement	MDM	Portal/ App→UI, Email/SMS Gateway	
18.4	System assigns resolution based On nature of complaint	MDM	CIS/OMS/ WFM	
18.5	Target system reports completion of complaint	OMS / WFM	MDM	
18.6	System updates records and closes CRN	MDM	CIS, Email/SMS Gateway	
19.	<b>Demand read of meters from consumer premises</b>			
19.1	Requesting instantaneous, interval, load profile & events data from meters	MDM	HES→Meter	Meter Number, Reading date & time, reading params (kWh, kVAh, kW etc.)
19.2	Acquire instant, interval, load profile & events data from meters By HES which then reaches MDM system.	Meter→ HES	MDM	Meter Number, Reading date & time, readingParams (kWh, kVAh, kW etc.)
20.	<b>Staff User Access to Utility Portal</b>			
20.1	User logs into Portal	Portal	MDM	Login with appropriate credentials
20.2	User selects available functions	MDM	Portal→UI	

20.3	User logs out	Portal→ UI	MDM	
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- The MDM shall also support device lifecycle management from device registration, installation, provisioning, operations and maintenance to decommissioning etc. The MDM shall generate exceptions for meter or modules not delivering the correct meter data after installation.
- The MDM shall provide a reconciliation report that identifies the meters that have been installed but not communicating for a designated (configurable) period. MDM shall generate reports on the number of meters installed in comparison to the number of meters successfully communicating.

#### 5.14 Meter Data

- 1) The MDM shall accept input, process, store, and analyze Meter data from HES and meter data collected through handheld meter reading instruments and manual meter reads. In case of manual reads, provision should be there to insert associated notes such as assessed energy, etc. It would responsibility of AMISP for manual meter reading in case of any communication failure, etc. with seven (7) days of such failure.
- 2) The MDM should accept input, process, store, and analyze non-billing meter data such voltage and power quality data (such as under/over voltage, out of band frequency, etc.) as they are available from HES. The MDM should also support schedule and on-demand meter reads and pinging of meter energized states by authorized users and by other utility systems.
- 3) The MDM shall provide storage and retrieval of all collected Meter Data, events and alarm. It shall have capacity of storing 5 years data or more (as required by the utility) via archiving. The archiving of data should be done at regular basis
- 4) Correctly track & resolve energy usage across meter changes with no loss of individual meter data.
- 5) Provide complete history and audit trail for all data collected from meters including commands sent to meters and other devices for 30 days (configurable period)
- 6) Execute on-demand read processes.
- 7) Handle special metering configurations such as net metering / pre-paid metering/group net metering, Virtual net metering , Gross metering , multiple meters at same premises.
- 8) Handle the RE generation data from SMART meters provided at Prosumer premises and generate RCO /RPO audit report.
- 9) The MDM shall have the ability to manage at a minimum 5-minute interval data.
- 10) The AMISP shall ensure data integrity checks on all metered data received from data collection systems.

#### 5.15 Data Validation, Estimation, and Editing (VEE)

- a) The validation and estimation of metered data shall be based on standard estimation methods (such as max/avg. of past three days, max/avg. of past X number of similar weekdays, max/avg. of similar blocks of past X numbers of similar weekdays, etc.). The MDM should also support and maintain following data-
  - i. Registered Read Data including register reads, daily billing cycle, as well as derived billing determinants such as TOU
  - ii. Interval Data channels with variable intervals and variable units of measure
  - iii. Calculated Data that is derived or computed such as billing determinants and aggregated loads.
  - iv. Event data storage of all collected event and alarm data from meters, network equipment, and MDM itself
- b) MDM shall flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in the cumulative (“CUM”) register reads
  - i. CUM decrements within a billing cycle (except net-metering)
  - ii. CUM reads increments more than configurable threshold

- iii. Future or old read dates
- iv. Number of digits exceeds number of meter dials
- c) MDM shall detect, flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in Time of Use (TOU) register reads
  - i. Register decrements (except net-metering)
  - ii. Resets (to zero) (except net-metering)
  - iii. CUM reads increments more than configurable threshold
  - iv. Future or old read dates
  - v. Erratic compared to CUM read (sum of TOU reads minus CUM read)
- d) MDM shall detect, flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in Demand register reads
  - i. Do not reset on cycle
  - ii. Do not reset coincident with consumer move-out or move-in
  - iii. Reset off cycle inappropriately
  - iv. Too high
- e) All data shall be transferred to billing system after meter data validation and estimation including transformer / feeder station wise/ injection pint wise / energy audit and RCO audit..
- f) MDM shall estimate usage for non-metered service points such as streetlights, farm lights, traffic signals, etc.
- g) The MDM shall maintain both the original received raw data in a non- manipulated state, in addition to VEE data.
- h) Notwithstanding the latency of data collection via the AMI system, once the MDM receives meter read data, the VEE process occurs in real-time and the post-VEE data is then immediately available to user or external systems.
- i) The MDM shall be able to automatically flag data changes from manual edits, VEE (Validating, Editing and Estimating) rules and data source corrections and electronically generate audit trail with timestamps and user-ids.

#### 5.16 Billing Determinants Calculations

##### The MDM-

- a) Shall allow configuring multiple TOU options (e.g. the number and duration of TOU rate periods) by consumer type, tariffs and day type (weekend, weekdays, and holidays) and by season.
- b) Shall support the processing of interval data into billing determinants to include the following at a minimum:
  - i. Total Consumption
  - ii. Consumption in different time blocks for ToU billing
  - iii. Maximum Demand (in kW and kVA)
  - iv. Number of tamper counts
  - v. Average power factor
- c) Shall process interval data and frame it into the appropriate TOU periods for consumption and demand; for example, roll up 15/30-minute data intervals into hourly data.
- d) Shall have the ability to properly account for special metering situations such as check metering, sub metering, prepaid metering , ABT metering and net metering , gross metering, VNM, GNM when calculating billing determinants and sending them to billing

and other systems.

- e) Shall have the ability to properly account for special situations including, but not limited to, curtailment requests, demand response scenarios when calculating billing determinants and sending them to billing software.
- f) Shall have the ability to facilitate implementation of automatic compensation payments by Utility to consumers for sustained outages when requested. Compensation calculations would require cross checking with billing and consumer balance information to ensure that disconnection is not construed as a no supply event.

#### 5.17 Prepaid functionality

The MDM with the help of the corresponding HES, should be able to switch the Smart Meter between prepaid and post-paid modes by a simple change in configuration of the Smart Meter firmware remotely. The following prepaid functionality shall apply

- a) MDM shall use consumer attributes from Consumer Care System (CCS) and/or Utility Billing system to,
  - i. enroll and setup new prepaid/ post-paid consumers
  - ii. migrate existing post-paid consumers to prepaid mode and vice versa
- b) The MDM should support pre-payment metering capability through interface with a pre-payment application engine.
- c) The prepayment system shall ensure that payment and connection parameters are stored centrally, and the details are updated to MDM and consumer portal/ app. Information required by consumer's Mobile App and web portal are shared in near real time.
- d) Prepaid consumers shall be provided facility to recharge their account by logging on to the consumer portal/app.
  - i. The user interface shall be integrated with the present online payment gateway of the utility. Additional payment gateways shall be implemented if required
  - ii. The payment gateways shall facilitate payments through on-line banking, credit cards and payment wallets
- e) A prepaid mobile application functionality shall be provided as a recharge option for android OS and iOS. The consumer portal/ app, shall enable consumers to recharge as well as view recharge history, existing balance, daily usage etc.
- f) In addition to billing determinants, the MDM shall share, consumer recharge and credit updates with the utility Billing system. Any re-reconciliation shall be carried out in the Billing System and the same shall be shared with the MDM for use by the prepayment application.
- g) The system shall periodically monitor the energy consumption of prepaid consumer and decrease the available credit based on consumption. For this purpose, the MDM shall fetch billing data (kWh/kVAh consumption and MD) at configured intervals<sup>4</sup> from the prepaid meter. The raw billing data shall be subjected to standard VEE rules before being used to update recharge balance with the help of applicable tariff slabs. The credit balance is updated into meter daily and at re-charge time.
- h) The prepayment application shall use determinants such as minimum fixed charges, TOU tariffs, slab rates, duties, surcharge and fuel surcharge while calculating consumer credit/balance. Fixed charge shall be deducted on daily basis irrespective of the consumption, even after disconnection of supply and adjusted in the next transaction.
- i) The prepayment application should be able to automatically apply different TOU tariffs for future date lines, while calculating consumer credits.
- j) The system should send connect/disconnect command based on of available credit as per notified rules & regulations.

- k) The system should send low-credit notifications to the consumer when their balance approaches a pre-configured threshold. Alerts shall initiate on every recharge, low credit and load connection/disconnection. The alerts shall be posted on the consumer web Portal/ App in real time and sent through SMS and email. Consumer should also be alerted through other mechanisms such as one-time alarm / beep from the meter, LED blinking, message, etc.
- l) It shall be possible to configure an “emergency” credit limit in INR as well as day terms. This emergency credit shall be used as reserved amount that is consumed when consumer credit is exhausted. The credit amount shall be adjusted in next recharge transaction.
- m) It shall be possible to configure certain prepaid consumers where auto- disconnections shall not happen due to negative credit.
- n) MDM shall also have a facility to configure arrear recovery mechanism to recover arrears from a consumer. Some of the indicative mechanism to recover the same can be recovery of [X]% from every recharge amount while the rest goes as charging amount till all the arrears are recovered. Alternately the arrears may be settled in next [X] instalments as decided by utility such that not more than 50% of any instalment shall be adjusted towards arrear.

#### 5.18 Net Metering

MDM shall flag, alarm and trigger an estimating process including but not limited to when the following events occur:

- a) CUM decrements of forward energy within a billing cycle
- b) Register decrements for Time of Use (ToU) of forward energy
- c) Power generated(exported) by any net-metering consumer more than the installed capacity of solar PV rooftop system
- d) Energy exported in any given day by any net-metering consumer more than the programmable threshold value Like billing for post-paid meters, the billing for net-meters shall take place in the utility Billing server.

#### 5.19 Exception Management

- a) Ability to capture and log data exceptions, problems and failures and to generate management reports, provide trend analysis, automate generation of service requests and track corrective actions.
- b) Ability to group, prioritize, filter and send system generated alarms and events to predetermined email addresses, cellular text messages to phone numbers/SMS/consumer care etc.
- c) Exception Generation - MDM shall generate exceptions based on configurable business rules including but not limited to the following:
  - i. Meter tamper alerts
  - ii. Communication module health alerts for meter/DCU
  - iii. If the consumption is less/more than pre-defined average consumption
  - iv. Negative Consumption (not for net-metering)
  - v. Power outage indications received from the Smart Meter

#### 5.20 Service Orders

- d) The MDM shall generate service orders based on configurable rules for various events and alarms such as stop meter, tampers, problem in communication networks, etc.
- e) MDM shall send service orders via SMS, email, etc. with the email addresses / phone numbers being configurable. MDM shall receive feedback on action taken on the service order and track the status of service orders until resolution.
- f) Service order tickets could be generated by MDM but processed and closed under jurisdiction of

the HES-NMS combine. If the utility already has a separate Workforce Management System (WFM), then the service order tickets can be routed from the MDM and the NMS to the WFM for completion of the tasks and reporting

#### 5.21 Utility User Interface

User interface for utility shall have ability for at least the following functionality:

- a) The interface is to be Payment Card Industry (PCI) compliant
- b) Compare total energy costs on one rate schedule vs. one or many alternative rates.
- c) Enable the user to see how different options within a rate affect costs.
- d) Enable the user to see how adjusting load or consumption levels or shifting them to different time periods influences costs.
- e) Display meter data at a user defined configurable cycle that allows authorized users to view energy usage patterns and the data behind them for selected consumers.
- f) Allow authorized users to view metered data, initiate and view reports, modify configurations, and initiate and update service requests.
- g) Display the energy usage profile for a single meter or group of meters. The load profile shall illustrate energy consumption and peak demand in user defined intervals for a user-specified time period.
- h) Display the energy usage profile for a single meter or group of meters according to Time of Use (ToU) tariff.
- i) The UI shall support a configurable utility dashboard for Operations and Utility Management
- j) Access to a minimum of three (3) years of historical energy usage and meter reads through the UI.
- k) Clearly and visually distinguish between metered, estimated, allocated and substituted data.
- l) User management with roles and access rights
- m) GUI to provide role-based access based on user identity and user role. Shall have following types of users:
  - i. Administrator
  - ii. Operator
  - iii. Field staff
  - iv. Viewer/Guest
- n) Configure the look, feel, and functionality of the MDM in accordance with business needs, business processes, and business conventions. (E.g. GUI, content, look and feel of screens, validation rules, exception handling, etc.).
- o) Ability to set up alarm and event notifications that can be directed to a combination of configurable email addresses, cellular text messages.
- p) UI shall enable viewing of the credit amount updated in MDM for prepaid consumers.
- q) Option to send marketing messages and notification to select consumers or selected category of consumers
- r) Facility to enable or disable existing functionalities/sections of App/Portal for consumers use.
- s) Consumer views to be available to Utility consumer Service Executive also except payment card/bank information.
- t) Authorised representative to be enabled for consumer engagement analytics. The analytics to be configurable/ generated with minimal database skill and nil programming requirements.
- u) Representative to be able to generate various reports at different intervals the various reports. It shall be also possible to export the report data in multiple formats such as XLS, CSV format, etc.

- v) Provide consumer interactions history to enable efficient consumer complaints and queries resolution with consumer information in single screen.

## 5.22 Consumer Portal/ App

Consumer portal and mobile application shall cover all consumer categories and category specific features as applicable prior to operational Go-Live. These apps shall have provision to enable features required to facilitate consumer participation in Demand Response programs which the utility may choose to roll out in future. The consumer web portal and the mobile application (for smartphone and tablet devices using latest and commonly available browsers and operating systems and platforms) shall provide consumers, ready access to features extended by MDM. The Solution shall integrate via a user-friendly graphical interface. It shall provide for self service capabilities such as usage management, billing, service requests, participation in energy efficiency programs etc. Following features shall be supported by Portal / Mobile app:

- a) The mobile app and web portal shall support all device form factors such as mobile, tablet, desktop etc. by recognising the device details automatically.
- b) It shall be OS agnostic to operating system and devices (iOS, Android, etc.)
- c) The interface is to be Payment Card Industry (PCI) compliant
- d) It shall work on all standard browsers such as Internet Explorer (IE), Chrome, Safari, Firefox etc.
- e) The application should be modular and scalable a COTS product.
- f) The application should be native for better user experience.
- g) It shall support multiple languages viz Hindi, English and local language(s). Also, notifications should be sent to consumers in local languages.
- h) The user experience of the citizen on the Portal and App shall be similar in terms of look and feel, navigation, menu and access to preferences and other data.
- i) Menu should have navigation options, not limited to, Home, Settings, Recharge, notification preferences, usage rates, change password, terms and conditions, privacy policy, sign out.
- j) It shall have search functionality across all the pages.

Software patches, updates, and minor version upgrades, when they become available for general release, should be part of ongoing support and maintenance services.

## 5.23 Functional Requirements of Consumer Portal/ App

Web portal and Mobile app for consumers should have minimum following functionalities:

- a) The consumer portal/app shall have a landing Home page. This page shall provide a brief description about the Utility, any promotional features or advertisement for special programs can be placed in this page. Login Component is provided, and registered users may login using their username and password. New Users can also register by clicking on the First Time Users Register link. The Forgot Password link helps the user to retrieve their password. New users can register by providing their personal information and setting up of security answers. Forgot passwords can be retrieved or reset using OTP through registered mobile number or through email address. The registered users can change their password and account information as well as registered mobile number through OTP feature.
- b) The consumer portal/app shall provide consumers with access to consumer ID, meter ID, meter type and name plate details, besides other account information such as account name, address, balance, due, status etc. Any status message pertaining to the account/s viz. alerts/actions shall be displayed here. It shall also provide current and historical consumption in graphical formats for at least 12 months. A more detailed analysis can be provided in a tabular format listing meter reading date, reading, consumption, charges, selected period etc. Consumers shall be able to view interval data, outage flags, voltage, power quality indications, existing tariffs and incentives for selected period. Information about different consumer engagement programs shall also be displayed here.

- c) The portal/app shall have the ability to provide option for registering in\ online/paper billing to the consumer. There shall be a bill summary page that shall display bill information in summary and also option for detailed view and download in pdf format if required by consumer. The user shall be able to pay bill for single and multiple accounts.
- d) The portal/app shall be integrated with existing helpdesk of the utility and have the ability to provide option for recording service requests/complaints lodged by the consumer as new connection, disconnection, load change, category change meter shifting etc. The user can view the service request status. The user can register complaints viz. power failure, faulty meter, streetlight outage etc. Option to track status of service requests and send the notification through SMS, online messaging platforms such as WhatsApp, Email and IVR and should support multiple languages – English / Hindi / regional languages.
- e) Mobile App and Web Portal shall facilitate Chat-bot functionality. The portal/ App shall support communication preferences for notification via email/ SMS/ message/ automated call (through utility IVRS), of configured alarms & events to selected users.
- f) The information on consumer identification no., meter ID, name plate details, make, type i.e. 1 Phase or 3 Phase, etc. (as per requirement of Utility) shall be updated in HES, MDM, and the consumer portal/app.
- g) The consumer Portal/ App shall have the ability to provide the consumer near real time online views of both usage and cost differentiating high energy usage periods, helping consumers to understand electricity usage and cost information, alerts and notifications and energy savings tips with different levels of detail. The Portal/ App shall support the view for past electricity usage, last week's, yesterday's, current days or other period etc. as per selection as well as voltage and power quality indications. The portal/ app shall provide user friendly access to consumer for their data via graphs and charts and can download the data into a spreadsheet.
- h) The portal/app shall provide option to the consumer to view/download online bill. There shall be a bill summary page that shall display bill information in summary and option for detailed view and download in pdf format. The user shall be able to pay bill for single and multiple accounts.
- i) The portal/app shall also provide platform for implementation of peak load management functionality by providing existing tariff & incentives rates, participation options etc. The portal/app shall also can provide consumers with interval data, flags, voltage, power quality indications etc. Show outage information in map view.
- j) There should be different UI and landing pages for different type of consumers as per the need of utility.
- k) User interface to consumer Portal/ App to access consumer's data from MDM for all authorized consumers shall have ability for at least the following functionality:
  - i. View metered data, monthly average usage, current monthly consumption, maximum demand and other reports
  - ii. View data according to Time of Use (ToU), day, week, month, year and season etc.
  - iii. Update profile information such as mobile number/email etc.
  - iv. Guest user account/multi-user account access facility for consumer convenience
  - v. Initiate request for connection/disconnection
  - vi. Initiate request to switch between pre-paid and post-paid mode
  - vii. Initiate service requests for maximum demand updating, meter checking etc.
  - viii. Initiate complaints such as Meter not working, supply off etc.
  - ix. In case on net-metering consumers, user can view data for both import & export data
  - x. Can view recharge history, present balance, next possible recharge date and amount etc.
  - xi. Historical energy consumption and energy charges during the desired time period

xii. Facility to recharge their account through the payment gateway facilitated by the utility.

#### 5.24 System Software Requirements

This section describes the standards and characteristics of system software such as operating system, database and support software (compilers, DBMS, display development, network utilities, report generation, diagnostics and backup utilities) provided by AMISP and the original software manufacturer as necessary to support the functioning of AMI Applications systems. All the system software to be used for the present scope of work shall have valid license(s).

#### 5.25 Software Standards

All software provided by the AMISP under this tender, including the operating system, database and support software, shall comply with the industry-accepted software standards. In areas where these organizations have not yet set standards, the software shall comply with those widely accepted de-facto open standards put forth by industry consortiums, such as Open Software Foundation (OSF) and X/Open. The AMISP shall commit to meet the "open systems" objective promoted by industry standards groups.

#### 5.26 Design and Coding Standards for AMI Applications and Utilities

These provisions are applicable for both software applications and operating systems and would address program features that must be contained in software for the product to meet the standards.

##### 5.26.1 Applications

All components of AMI application system shall be maintainable by owner using the supplied software utilities and documentation. Software shall be dimensioned to accommodate the size of AMI application system

The operating system of all the equipment of AMI application system including\ network equipment shall be latest version released up to six months prior to FAT In order to facilitate cyber security requirements including patch management, common operating system is preferable to be used by all server nodes within the AMI application including MDM/HES servers.. All licenses for Operating System and other application software shall be supplied by the AMISP and shall be valid throughout the contract period.

##### 5.26.2 Time and Calendar Feature

The AMI application & other servers shall maintain time and calendar for use by various software applications. The internal clocks of all servers and workstation consoles shall be automatically synchronized on Network Time Protocol (NTP) protocol. The calendar shall be customizable for working hours, holidays, weekends etc. The holidays, including type of days, shall be entered for each year at the beginning of the year and shall be recognized by all applications.

##### 5.26.3 Remote Diagnostic

Remote Diagnostic facility with necessary hardware as required shall be provided for communication between the AMI application system at the cloud data centre and the NOMC for the diagnosis of hardware & software problems. The login shall be protected by a username & password entry. An automatic logging and intimation shall be provided to inform authorized person from AMISP/utility on such events of remote access and diagnosis.

#### 5.27 Physical works at site:

Maintain all the existing Smart Meters. Arrangements shall be done to repair the existing meters. Coordination shall be done with OEM Service centers, Dispatch of Defective Meters to Service center, coordinate the repair & collect back the repaired meters. Replace the Smart Meter if found not repairable. A Register shall be maintained at the site for all the Meter replacement / Repair activities.

1. SIM Communication shall be made healthy with the SIM Cards. Appoint SIM Provider and Coordinate with them in SIM related issues. Register shall be maintained at site for SIM Cards usage.

2. Installation/ Removal of Smart Meters by both Physical and software means as and when required. The Meter Stock Register shall be maintained.
3. Mobile App shall be provided for Consumers and for the Port personals with suitable level of access / control.

#### 5.28 Network Security :

The Network shall have adequate cyber security measures not limited to the measures as described below. The network security would be extended to all the interfaces also. Secure Access Controls: The System shall include mechanisms for defining and controlling user access to the operating system environment and applications. Best practices from enterprise security including password strength, password aging, password history, reuse prevention etc. must be followed for access control. Authorization Controls: A least-privilege concept such that users are only allowed to use or access functions for which they have been given authorization shall be available. Logging: Logs must be maintained for all attempts to log on (both successful and unsuccessful), any privilege change requests (both successful and unsuccessful), user actions affecting security (such as password changes), attempts to perform actions not authorized by the authorization controls, all configuration changes etc. Additionally, the access to such logs must be controlled in accordance to the least-privilege concept mentioned above, so that entries may not be deleted, accidentally or maliciously. Malicious Software Prevention: Implementation of anti-virus software and other malicious software prevention tools shall be supported for all applications, servers, data bases etc. Network Security: The network architecture of the HES must have provision to secure with firewalls and encryption. The system shall also allow host-based firewalls to be configured, as an additional layer of security if the network firewall were to fail.

### 6 Performance Levels

AMI system includes the communications links provided by Network Provider /third parties such as telecommunications companies and AMI Implementing Agency (AIA) has to ensure the desired performance level. These performance levels shall apply to the complete AMI system

- 6.1 The performance levels are average performance levels over the period of a year and exclude force majeure events.

The following are the required performance levels –

- 6.1.1 Performance levels for collection of daily meter readings (as per IS 16444(Part 1)/15959 Part 2)

The following are the performance levels required for the daily collection of the previous day's interval energy data and total accumulated energy:

- a) All interval data from 95% of meters within 8 hours after midnight; and
- b) All interval data from 99.9% of meters within 24 hours after midnight.

- d) Performance levels for remote reads of individual meters if data is not received on daily basis

- 6.1.2 The performance level of an individual read applies to the collection of seven days of interval energy data and the current total accumulated energy from a particular AMI meter whose data is not being received on daily basis. The performance level required shall be:

- a) Action performed at 90% of meters within 1 Hour;
- b) Action performed at 99% of meters within 2 hours; and
- c) Action performed at 99.9% of meters within 6 hours.
- e) Performance level for remote load control commands for selected consumers,

- 6.1.3 The performance level required for individual meters shall be:

- a) Action performed at 95% of meters within 5 minutes;

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- b) Action performed at 99% of meters within 10 Minutes Performance level for remote connect/disconnect for selected consumers,

6.2 The performance level required for selected individual meters shall be:

- a) Action performed at 90% of meters within 10 minutes;  
 b) Action performed at 99% of meters within 1 hour; and  
 c) Action performed 99.9% of meters within 2hours.

6.2.1 Performance levels shown below shall be made equal to the that as per SBD

- a) Performance levels for Meter loss of supply and outage detection  
 b) Alarms to be received within 5 minutes for 90% of meters.

6.2.2 Performance levels for remotely altering settings in meter/ firmware upgrade

The performance level required for individual meters shall be:

- a) Action performed at 99% of meters within 24 hours; and  
 b) Action performed at 99.9% of meters within 36 hours.

Performance levels to remotely read events logs

6.2.3 Performance level required for reading the full event log that pertains to an individual meter shall be:

- a) Action performed at 90% of meters within 30 minutes;  
 b) Action performed at 99% of meters within 1 hour; and  
 c) Action performed at 99.9% of meters within 6 hours.

6.2.4 To read the event logs pertaining to all meters:

The data pertaining to 99.5% of meters with in 1 day;

6.2.5 Performance levels for updating of data on consumer portal/ app

The performance level of updating of individual consumer data on portal/ app after receiving the data in MDM shall be :

- a) Action performed for 90% of consumers within 1 hour after receiving the data in MDM;  
 b) Action performed at 99.5% of meters within 6 hours after receiving the data in MDM.

6.2.6 The performance levels regarding meter discovery time line after installation, on demand reading of meter data for operational purposes, outage restoration enquiry response time etc. would also be declared by the bidder.

Additionally, the Disaster Management timelines in terms of Recovery Time Objective (RTO) and Recovery Point Objective (RPO) of HES have to be defined by the bidder.

### 6.3 PERFORMANCE REQUIREMENT FOR USER INTERFACE

The user interface performance testing shall be done as per following criteria

No.	User Interface Requirements	Response Time
1	Any real time display and application display on workstation Within 2 sec console along with data values shall appear on screen.	Within 2 sec
2	Manual data entry of the new value appears on screen.	Within 2 sec
3	Display Update rate	2 sec for 4 displays together
4	Response time for display of Alarm and event after receipt in system	Within 1 sec of receipt in system

## 7 TECHNICAL OBSOLESCENCE

The systems including communication technologies, which are at a risk of technical obsolescence over the next few years and over the operating life of the system should be identified and reported. This may also include end-of-sale and end-of-support policies governing the proposed technologies. The compatibility between the various elements of the system need to be considered and mitigation options, not be limited to periodic update from OEM/System supplier, shall be indicated in detail.

## 8 OPERATION & MAINTENANCE

### 8.1 Man Power

The AMI Contractor shall depute the requisite manpower at appropriate levels across the project area for upkeep of the Advanced Metering Infrastructure installed at sites for a period of 5 years.

The AMI Contractor has to deploy the requisite manpower at appropriate levels for maintenance of the software system, for a period of 5 years for undertaking change requests, report generation etc.

### 8.2 Qualification required for the Site Engineer as per BoQ

A site Engineer having the following qualification shall be posted in the Work site for 5 years to take care of all the requirements of maintaining the AMI system installed.

- a) B.Tech Degree in Electrical & Electronics Engineering
- b) At least 1 year experience in Operation & Maintenance of AMI system

### 8.3 Service Reports

The AMI Contractor shall prepare a sample monthly service report consisting of required performance levels and the same shall get approved by the Engineer in Charge before commencing the Operation and maintenance. Properly filled in service reports in the approved format, signed by the Site engineer /authorized signatory shall be submitted to CoPA for claiming the half yearly payment and payment will be released only on the certification of the CoPA Engineer in Charge.

### 8.4 Others

- a) The AMI Contractor shall manage all the Infrastructure with the desired uptime and maintain high availability of the same during the contract period.
- b) The AMI Contractor has to maintain and continually monitor the assets installed and see to that all the infrastructure is working for providing seamless data acquisition.
- c) The AMI Contractor has to impart training to the COCHIN PORT officers for using the application as and when required by COCHIN PORT during the O&M period of 5 years.
- d) The AMI Contractor has to provide all the user manuals and documentation with respect to the project to utility. The training and user manuals shall also be made available online in the Web application and shall be updated as when the system is updated or changed.
- e) Any additional reports required during the tenure of contract shall be developed and made available online.

## 9 DATA POLLING FREQUENCY FROM DIFFERENT TYPE OF METERS

Parameters	LT CT Meters	3P WC Consumers	Single Phase Meters
Instantaneous	Hourly	Hourly	Hourly
Load Profile Data	Daily	Daily	Daily
Billing Data	Monthly	Monthly	Monthly

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Midnight Data	Daily	Daily	Daily
Critical Events as Alarm	On Occurrence/ Restoration	On Occurrence/ Restoration	On Occurrence/ On Restoration
All Events as Info	Daily	Daily	Daily
Events Snapshot	Daily	Daily	Daily
Programmable Parameters	On-Demand	On-Demand	On-Demand
Connect/ Disconnect	Not Applicable	On-Demand	On-Demand
Time Sync (where T shall be configurable)	Difference < T seconds	Difference < T seconds	Difference < T seconds

Note:

Instantaneous parameters for the data polling shall be:

- o Voltage (All Phases / Between Phases)
- o Current (All Phases)
- o Power Factor Load Profile Data parameters
- o Active Consumption (KWh)
- o Apparent Consumption(KVAh)
- o KVAh (lag)
- o KVAh(lead)
- o Voltage (All Phases / Between Phases)
- o Current (All Phases)
- o Power Factor

Midnight Data

- o Active Consumption (KWh)

Critical Events as Tamper Events

- o Current Reversal
- o Current Bypass
- o Earth Leakage
- o Cover Open

All Events as info

- o Power Failure
- o Low Voltage
- o Missing Potential

## 10 AMI FEATURES REQUIRED

Sl No	Module	Features Required As per CEA Guide lines	Existing System	Proposed System	Compliance Y/N
1	Basic Functions of AMI	a) Remote Meter data reading at configurable intervals(push/pull)	YES	YES	
2		b) Time of day (TOD)/TOU metering	YES	YES	
3		c) Pre paid functionality	YES	YES	
4		d) Net Metering/Billing	YES	YES	

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5		e) Alarm/Event detection, notification and reporting	YES	YES	
6		f) Remote Load Limiter and connection/disconnection at defined/on demand conditions	YES	YES	
7		g) Remote firmware upgrade	No	YES	
8		h) Integration with other existing systems like IVRS, Billing & collection software, GIS mapping, consumer indexing, new connections & disconnection, analysis software, Outage Management System etc.	YES	YES	
9		i) Import of legacy data from existing modules/ MDAS of RAPDRP where ever possible. The extent and modalities of integration with the existing system including RAPDRP has to be worked out by the bidder.	No	YES	
10		j) Security features to prevent unauthorized access to the AMI including Smart meter & meter data etc. and to ensure authentication of all AMI elements by third party	YES	YES	
11		Mobile app: Shall provide a mobile app through which consumer shall be able to log in through mobile app to see information related to his/ her energy consumption.	YES	YES	
12		Mobile app: Shall provide a mobile app through which Officers shall be able to log in through mobile app to see information related to all energy consumption.	YES	YES	
13		Mobile app: Connect/Disconnect using Mobile Application	YES	YES	
14	Head End System (HES)	• Acquisition of meter data on demand & at user selectable periodicity	YES	YES	
15		• Two way communication with meter	YES	YES	
16		• Signals for connect & disconnect of switches present in end points like meter	YES	YES	
17		• Audit trail and Event & Alarm Logging	YES	YES	
18		• Encryption of data for secure communication	YES	YES	
19		• Maintain time sync with meter	YES	YES	
20		• Store raw data for defined duration	YES	YES	
21			• Handling of Control signals / event messages on priority	YES	YES
22		Setting of Smart meter configurable parameters	No	YES	
23		Communication device status and history	No	YES	

24		Critical and non-critical reporting functionality. The suggestive critical events may be alarms and event log for meter events like tamper/ power failures etc., if data is not received from DCU/Meter, if relay does not operate for connect / disconnect or there is communication link failure with Meter or network failure while non critical events may be retry attempts on communication failure, periodic reading missing and failure to connect etc.	No	YES	
25	Meter Data Management System (MDM)	The Meter Data Management System shall support storage, archiving, retrieval & analysis of meter data	YES	YES	
26		Validation & verification algorithms.	YES	YES	
27		It shall act as a central data repository.	YES	YES	
28		MDM shall have capability to import raw or validated data in defined formats and export the processed and validated data to various other systems sources and services in the agreed format.	YES	YES	
29		It shall provide validated data for upstream systems such as billing, consumer Information system, customer care, analytics, reporting, Network planning & analysis, load analysis/ forecasting, Peak Load Management, Outage management etc.	No	YES	
30	Configuration	HES shall facilitate programming of following meter parameters:			
31		• Load profile capture period	No	YES	
32		• Demand integration period	No	YES	
33		• Setting of parameters for time of day (TOD/TOU) billing	No	YES	
34		• Prepaid function	No	YES	
35		• Net metering	YES	YES	
36		• Billing date	YES	YES	
37		• Clock setting/time synchronization	YES	YES	
38		• Load curtailment limit	YES	YES	
39		• Event setting for connect/disconnect	YES	YES	
40		• Number of auto reconnection attempt	YES	YES	
41		• Time interval between auto reconnection attempt	YES	YES	
42		• Lock out period for relay	No	YES	
43		• Remote firmware upgrade	No	YES	
44		• Password setting	No	YES	
45	• Push schedule	No	YES		

46		<ul style="list-style-type: none"> <li>Setting threshold limits for monitored parameters</li> </ul>	No	YES	
47	Integration	HES shall preferably interface with MDM on standard interfaces and the data exchange models and interfaces shall comply with CIM / XML / IEC 61968 or any other open standard. The solution shall be Service Oriented Architecture (SOA) enabled	YES	YES	
48	Asset Management	The MDM shall maintain information and relationships between the current installed meter location (apartment, shop, industry/ address etc.), Consumer information (Name etc.), Consumer account no, Meter ID, Type of Meter (type of consumer, 1 phase/3phase, with or without relay, etc.), Meter configuration ( Demand integration period, Load profile capture period etc.), GIS supplied information (longitude, latitude , connection with feeder/ transformer/ pole etc.) etc.	YES	YES	
49		<ul style="list-style-type: none"> <li>The software should support tracking the status of meters and communication equipment from the date when they are installed in the field. The history of in-service asset location is maintained throughout the device life with start and end dates associated with each in-service location reference.</li> </ul>	No	YES	
50	AMI Installation Support	The MDM shall also support device lifecycle management from device registration, installation, provisioning, operations and maintenance to decommissioning etc.	YES	YES	
51		The MDM shall generate exceptions for meter or modules not delivering the correct meter data after installation.	No	YES	
52		The MDM shall provide a reconciliation report that identifies the meters that have been installed but not communicating for a designated (configurable) period. MDM shall generate reports on the number of meters installed in comparison to the number of meters successfully communicating.	YES	YES	
53		MDM shall generate reports on the number of meters installed in comparison to the number of meters successfully communicating.	No	YES	

54	Meter Data Processing	<ul style="list-style-type: none"> <li>The MDM shall accept input, process, store, and analyze Meter data from HES and meter data collected through hand held meter reading instruments and manual meter reads. In case of manual reads, provision should be there to insert associated notes like assessed energy, etc.</li> </ul>	YES	YES	
55		<ul style="list-style-type: none"> <li>The MDM should accept input, process, store, and analyze non-billing meter data such voltage and power quality data ( like under/over voltage etc) as they are available from AMI Head End Systems. The MDM should also support schedule and on-demand meter reads and pinging of meter energized states by authorized users and by other utility systems.</li> </ul>	YES	YES	
56		<ul style="list-style-type: none"> <li>The MDM shall provide storage of all collected Meter Data, events and alarm. It shall have capacity of storing 5 years data or more via archiving.</li> </ul>	YES	YES	
57		<ul style="list-style-type: none"> <li>Correctly track &amp; resolve energy usage across meter changes with no loss of individual meter data.</li> </ul>	No	YES	
58		<ul style="list-style-type: none"> <li>Provide complete history and audit trail for all data collected from meters including commands sent to meters and other devices for monthly / quarterly and annually (configurable period).</li> </ul>	No	YES	
59		<ul style="list-style-type: none"> <li>Execute on-demand read processes.</li> </ul>	YES	YES	
60		<ul style="list-style-type: none"> <li>Handle special metering configurations like net metering/multiple meters at same premises.</li> </ul>	YES	YES	
61		<ul style="list-style-type: none"> <li>The MDM shall have the ability to manage at a minimum 15 minute interval data.</li> </ul>	YES	YES	
62		<ul style="list-style-type: none"> <li>Data Integrity- Shall ensure data integrity checks on all metered data received from data collection systems</li> </ul>	YES	YES	
63		Data Validation, Estimation, and Editing (VEE)	The validation and estimation of metered data shall be based on standard estimation methods. The MDM should also support and maintain following data		
64	a. Registered Read Data including register reads, daily billing cycle, as well as derived billing determinants like TOU		YES	YES	
65	b. Interval Data channels with variable intervals and variable units of measure		No	YES	
66	c. Calculated Data that is derived or computed such as billing determinants and aggregated loads.		No	YES	

67	d. Event data storage of all collected event and alarm data from meters, network equipment, and MDMS itself	YES	YES	
68	<ul style="list-style-type: none"> <li>• MDM shall flag, alarm and trigger an estimating process including when the following anomalies occur in the cumulative (“CUM”) register reads <ul style="list-style-type: none"> <li>o CUM Decrements within a billing cycle (except net-metering)</li> <li>o CUM reads increments more than configurable threshold</li> <li>o Future or old read dates</li> <li>o Number of digits exceeds number of meter dials</li> </ul> </li> </ul>	No	YES	
69	<ul style="list-style-type: none"> <li>• MDM shall detect, flag, alarm and trigger an estimating process including when the following anomalies occur in Time of Use (TOU) register reads <ul style="list-style-type: none"> <li>o Register Decrements (except net-metering)</li> <li>o Resets (to zero) (except net-metering)</li> <li>o CUM reads increments more than configurable threshold</li> <li>o Future or old read dates</li> <li>o Erratic compared to CUM read (sum of TOU reads minus CUM read)</li> </ul> </li> </ul>	No	YES	
70	<ul style="list-style-type: none"> <li>• MDM shall detect, flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in Demand register reads <ul style="list-style-type: none"> <li>o Do not reset on cycle</li> <li>o Do not reset coincident with customer move-out or move-in</li> <li>o Reset off cycle inappropriately</li> <li>o Too high</li> </ul> </li> </ul>	No	YES	
71	• All data shall be transferred to billing system after meter data validation and estimation including transformer / feeder station wise , voltage wise and grid input point wise energy audit.	No	YES	
72	• MDM shall estimate usage for non-smart meter service points such as street lights, farm lights, traffic signals, etc.	No	YES	
73	• The MDM shall maintain both the original received raw data in a non-manipulated state, in addition to VEE data.	No	YES	
74	• Notwithstanding the latency of data collection via the AMI system, once the MDM receives meter read data, the VEE process occurs in real-time and the post-VEE data is then immediately available to user or external systems.	No	YES	

75		<ul style="list-style-type: none"> <li>The MDM shall be able to automatically flag data changes from manual edits, VEE (Validating, Editing and Estimating) rules and data source corrections and electronically generate audit trail with timestamps &amp; user-ids.</li> </ul>	No	YES	
76	Billing Determinants Calculations	Shall allow configuring multiple TOU/TOD options (e.g. the number and duration of TOU rate periods) by customer type, tariffs and day type (weekend, weekdays, and holidays) and by season	No	YES	
77		Shall allow calculation of TOD options by considering load survey data	No	YES	
78	Exception Management	Exception Generation - MDM shall generate exceptions based on configurable business rules including but not limited to the following:			
79		<ul style="list-style-type: none"> <li>Meter tamper alerts</li> </ul>	No	YES	
80		<ul style="list-style-type: none"> <li>Communication module health alerts for Meter/DCU</li> </ul>	No	YES	
81		<ul style="list-style-type: none"> <li>If the consumption is less/more than pre-defined average consumption</li> </ul>	No	YES	
82		<ul style="list-style-type: none"> <li>Negative Consumption (not for net-metering)</li> </ul>	No	YES	
83		<ul style="list-style-type: none"> <li>Power outage indications received from the Smart mete</li> </ul>	No	YES	
84	Reporting	Daily data collection report	YES	YES	
85		<ul style="list-style-type: none"> <li>Usage exceptions</li> </ul>	No	YES	
86		<ul style="list-style-type: none"> <li>VEE validation failures</li> </ul>	No	YES	
87		<ul style="list-style-type: none"> <li>Missing interval Read date and times (on hourly, daily, weekly &amp; monthly basis)</li> </ul>	Yes	YES	
88		<ul style="list-style-type: none"> <li>Physical meter events (install, remove, connect, disconnect) &amp; meter reset report</li> </ul>	Yes	YES	
89		<ul style="list-style-type: none"> <li>Meter flags</li> </ul>	Yes	YES	
90		<ul style="list-style-type: none"> <li>Meter inventory</li> </ul>	Yes	YES	
91		<ul style="list-style-type: none"> <li>defective meters</li> </ul>	Yes	YES	
92		<ul style="list-style-type: none"> <li>AMI performance measurements</li> </ul>	Yes	YES	
93		<ul style="list-style-type: none"> <li>Threshold Exception</li> </ul>	No	YES	
94		The MDM shall enable the Utility to deliver reports in standard digital format such as PDF, Excel, etc.	YES	YES	
95	User Interface for Consumer	User interface for all authorized consumers shall have ability for at least the following functionality:			
96		<ul style="list-style-type: none"> <li>View metered data, initiate and view reports</li> </ul>	YES	YES	

97		o View data according to Time of Use(ToU) tariff	YES	YES	
98		o Can make request for connection/disconnection	YES	YES	
99		o User can update mobile number/email	No	YES	
100	Integration with other Systems	MDM shall interface with other systems on standard interfaces and the data exchange models and interfaces shall comply with CIM / XML / IEC 61968/IS15959/ Indian Companion Specification/ any other open standard. MDM solution shall be Service Oriented Architecture (SOA) enabled.MDM integration with other systems shall include following:			
101		• HES for data exchange from other AMI solutions	No	YES	
102		• Utility Administration	No	YES	
103		• IVR system, CRM, Consumer Portal	No	YES	
104		• Billing and collection system	YES	YES	
105		• GIS Systems integration with CIS and with MDM system	No	YES	
106		Support of interface with HHU or manual reading system etc	No	YES	

**COCHIN PORT AUTHORITY****Section V****1. PREAMBLE TO BILL OF QUANTITIES****1. General Instructions****1.1. General**

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

**1.2. GeM Price Bid submission**

Tenders are invited through Government e- Market Place (GeM portal) in Single Stage Two Cover bidding procedure [Technical Bid and Financial Bid], the Price Bid shall be submitted separately only at the provision made in the GeM portal.

**For GeM Custom Bid, the bidders to submit the split-up rates in Excel format along with the Price bid, exactly matching BoQ structure.**

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

**COCHIN PORT AUTHORITY**  
**Section V**  
**BILL OF QUANTITIES**

**To be attached in Price Bid**

<b>SITC OF AMI SYSTEM FOR THE SMART METERS INSTALLED AT COCHIN PORT AUTHORITY AND O&amp;M FOR 5 YEARS</b>					
Sl.No	Description of Item	Qty	Unit	Rate (Rs.)	Amount(Rs.)
1	Implementation of AMI Software : Design and Development of AMI Software , Integration of the same with existing Smart meters ,SAP-ISU module of CoPA, NFMS etc and commissioning of the whole system as per Scope of work detailed in Section IV- Scope of work	1	LS		
2	Providing Operation and Maintenance of the AMI system for 5 years with effect from the date of successful commissioning of the system, including providing one site Engineer to take care of the system, having sufficient qualification and experience as per Clause 39 detailed in Section IV- Scope of works  (SIM Charges for 1500 smart meters (upto 2000 meters in future) to be included in the O&M charges. SIM card Charges from the next month onwards after successful transfer of 100% SIM cards by CoPA to the AMISP are to be paid by the contractor)	1	LS		
	NPV value @ discount rate of 7% will be taken for evaluation				
	Year -1	1	LS		
	Year -2	1	LS		
	Year -3	1	LS		
	Year -4	1	LS		
	Year -5	1	LS		
	Total including GST				

The Bid can be submitted by a Sole Bidder as an individual entity who are eligible to participate in tenders for public procurement in India in accordance with Applicable Laws including the guidelines issued in Order No. F/No.6/18/2019-PPD by Ministry of Finance, Department of Expenditure, Public Procurement Division dated 23 July 2020, Order No No.9/16/2016-Trans-Part (2) dated 18 November 2020, latest Government of India Guidelines for Make in India, Domestically manufactured products, Atmanirbhar Bharat and circulars DIPP Office Memorandum No. P-45021/2/2017-PP (BE-II) date: 16th Sept. 2020, MeitY Circular No.1(10)/2017-CLES dated 06.12.2019 and Order No. 11/05/2018-Coord. by the Ministry of Power dated 17 September 2020 including any amendments or modifications to the same from time to time.

Contractor signature and seal