दीनदयाल बंदरगाह प्राधिकरण
Deendayal Port Authority

DEENDAYAL PORT AUTHORITY

MECHANICAL ENGINEERING DEPARTMENT

TENDER NO. EL/AC/2039-II

Refurbishment of Power Supply of AO Building

Executive Engineer (Electrical)

Electrical Division

Deendayal Port Authority

6, Ground Floor,

Port & Custom Building,

New Kandla – 370210.

Phone No. (02836) 270209/270342

Mobile No. 9825227048

Fax No. (02836) 270184/271010

NOTICE NO.EL/AC/2039-II

<table>
<tr><td>Name of work</td><td>Refurbishment of Power Supply of AO Building</td></tr>
<tr><td>Estimated cost put to tender</td><td>₹ 2,82,63,130.00</td></tr>
<tr><td>Tender fee :</td><td></td></tr>
<tr><td>EMD</td><td>Rs. 5000 + 900 (GST) Present rate of GST is 18%
Through on line transfer in PNB bank account no. 2177000100022538 - Deendayal Port Authority - (IFSC code PUNB0217700). Scanned copy of RTGS no. and date of transfer may be uploaded on (n) procure website.
In case of Micro and Small Enterprise (MSEs) holding valid certificate issued by any agencies/organization under The Ministry of Micro, Small and Medium Enterprises indicating the list of activity related to the subject tender as per National Industrial Classification-2008 mentioned in the table below only shall become eligible for exemption from payment of Tender fee/EMD. Such bidder shall upload the scanned copy of valid certificate in preliminary bid.
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</table>
</td></tr>
<tr><td>Last date of downloading</td><td>_04/_08/2023 up to 15:00</td></tr>
<tr><td>Last date and time of submission of E-tender</td><td>_04/08/2023 up to 15:30 only on website https://kpt.nprocure.com:</td></tr>
<tr><td>Pre-bid meeting</td><td>Not Applicable</td></tr>
<tr><td>Date and time for opening of E-tender</td><td>_04/08/2023 at 16:00 Hrs.</td></tr>
<tr><td>Downloading websites</td><td>https://kpt.nprocure.com, http://www.deendayalport.gov.in as well as http://www.eprocure.gov.in.</td></tr>
<tr><td colspan="2">Corrigendum, if any, will be placed on websites only.</td></tr>
</table>

Executive Engineer (E)
Deendayal Port Authority

NOTICE INVITING ONLINE TENDER

Department Name	Mechanical Engineering Department
Circle/ Division	Electrical Division, Deendayal Port Authority, Ground Floor, Port & Customs Building, New Kandla, Kutch – 370210.
Tender Notice No.	EL/AC/2039-II
Name of Project	Refurbishment of Power Supply of AO Building
Name of Work	Refurbishment of Power Supply of AO Building
Estimated Contract Value (INR)	₹ 2,82,63,130.00
Period of Completion (in Months)	Six months from the date of issue of Work Order
Bidding Type	Open
Bid Call (Nos.)	One
Tender Currency Type	Single
Tender Currency Settings	Indian Rupee (INR) (₹)
Qualifying Criteria:	The Bidders shall fulfill the following pre-qualification criteria: (a) Average annual financial turnover during the last three years ending 31st March of the previous financial year should be at least ₹84,78,939.00 as certified by the Chartered Accountant. (b) Experience of having successfully completed similar works during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following: (1) Three similar completed works each costing not less than the amount equal to ₹1,13,05,252.00. OR (2) Two similar completed works each costing not less than the amount equal to ₹1,41,31,565.00. OR (3) One similar completed work costing not less than the amount equal to ₹2,26,10,504.00 Lakh. **IMPORTANT:** (1) In case a work is started prior to 07 (seven) years, ending last of month previous to the one in which tender is invited, but completed in last 07 (seven) years, ending last day of month previous to the one in which tender is invited, the completed work shall be considered for fulfilment of credentials.

(2) If a work is physically completed and completion certificate to this extent is issued by the concerned organization but final bill is pending, such work shall be considered for fulfilment of credentials.

(3) If a part or a component of work is completed but the overall scope of contract is not completed, such work shall not be considered for fulfilment of technical credentials even if the cost of part completed work/component is more than required for fulfilment of credentials.

(4) In case a work is considered similar in nature for fulfilment of technical credentials, the overall cost of that work shall be considered and no separate evaluation for each component of that work shall be made to decide eligibility.

(c) Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid value.

The available bid capacity will be calculated as under:
Assessed Available Bid capacity = A x N x 2 –B,
Where,
"N" = Number of years prescribed for completion of the subject contract.
"A" = Maximum value of works executed in any one year during last seven years (at current price level).
"B" = Value at current price level of existing commitments and on-going works to be completed in the next 'N' years.

Note: For bringing value of works to current level, multiplying factor to be indicated in tender with reference to escalation based on WPI.

Financial Year	2021-22	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16
Index	139.4	123.4	121.8	119.8	114.9	111.6	109.7
Multiplying Factor	1.00	1.13	1.14	1.16	1.21	1.25	1.27

The Bidder shall furnish statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works preferably countersigned by the Nodal Office or his nominee-in charge.

IMPORTANT:

a) The value of annual turnover is not to be considered towards "A" as mentioned in the formula.
b) The information may be provided as per the format given at Section-IX.

(d) In Case the similar work has been issued for any private body, the bidder will be required to produce the tax deducted at source (TDS) certificate indicating the income tax deducted by the client for that work, which will form the basis for assessing the value of completed work.

<table>
<tr><td></td><td>IMPORTANT:

(1) The particular row in the TDS certificate (Form 16 or Form 26A), which indicates the credit of the payment received from the client, should be highlighted.

(2) Along with the TDS certificate, a declaration on the letter head of a Chartered Accountant should be submitted giving details such as the name of bidder, the name of the client for which the bidder has carried out the work, name of work, work order no. and date, gross amount of the payment, net amount received from the client, TDS amount. The statement should be signed by the Chartered Accountant.

(3) In case any discrepancies between the TDS (Form 16 or Form 26A) and the declaration given by the Chartered Accountant with regard to payment received from the client, it should be explained.

(e) The contractor shall have valid electrical contractor’s license for carrying out electrical work of nature involved in this tender obtained from the competent authority of their respective states without which the tender shall not be accepted. Contractor shall submit certificate and copy of the license in lieu of the same for consideration.</td></tr>
<tr><td>Definition of Similar work</td><td>Similar work means “Supply, installation, testing and commissioning of HT Switchgear, Distribution Transformer and LT Switchgear” executed for Government or Public Sector Undertaking or any reputed Industrial Organization in private sector.</td></tr>
<tr><td>Joint Venture</td><td>Not Allowed</td></tr>
<tr><td>Rebate</td><td>Not applicable</td></tr>
<tr><td>Bid Document Fee:</td><td>₹ 5000 + 900 (GST) Present rate of GST is 18%

Through on line transfer in PNB bank account no. 2177000100022538 - Deendayal Port Authority - (IFSC code PUNB0217700). Scanned copy of RTGS no. and date of transfer may be uploaded on (n) procure website.

In case of Micro and Small Enterprise (MSEs) holding valid certificate issued by any agencies/organization under The Ministry of Micro, Small and Medium Enterprises indicating the list of activity related to the subject tender as per National Industrial Classification-2008 mentioned in the table below only shall become eligible for exemption from payment of Tender fee/EMD. Such bidder shall upload the scanned copy of valid certificate in preliminary bid.
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Division – 35	ELECTRICITY, GAS, STEAM AND AIRCONDITION SUPPLY	
Group - 351	Electric power generation, transmission and distribution	
Class – 3510	Electric power generation, transmission and distribution	
Sub Class - 35109	Collection and distribution of electric energy to households, industrial, commercial and other users n.e.c.	

Bid Document Fee Payable To:

Through on line transfer in PNB bank account no. 2177000100022538 - Deendayal Port Authority - (IFSC code PUNB0217700). Scanned copy of RTGS no. and date of transfer may be uploaded on (n) procure website.

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Bid Security/ EMD (INR) :

₹2,82,631.00/-

Through on line transfer in PNB bank account no. 2177000100022538 - Deendayal Port Authority - (IFSC code PUNB0217700). Scanned copy of RTGS no. and date of transfer may be uploaded on (n) procure website.

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<tr><td>Bid documents download start date</td><td>14/07/2023</td></tr>
<tr><td>Bid documents download end date</td><td>04/08/2023 up to 15:00 Hrs.</td></tr>
<tr><td>Date and place of pre Bid Meeting</td><td>Not Applicable</td></tr>
<tr><td>Last date and time for Receipt of Bids</td><td>04_/08_/2023 @ 15:30 Hrs.</td></tr>
<tr><td>Bid Validity Period</td><td>120 Days</td></tr>
<tr><td>Condition</td><td>(1) Tender Fee shall be submitted through on line transfer in PNB bank account no. 2177000100022538 - Deendayal Port Authority - (IFSC code PUNB0217700). Scanned copy of RTGS no. and date of transfer may be uploaded on (n) procure website.

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(3) Integrity Pact agreement duly signed by the bidder and two witnesses (witness sign also to be obtained by the bidder) is also required to be submitted in preliminary bid.

	NOTE: Accordingly, offer of those bidders shall only be opened whose EMD, Tender Fee and Integrity pact (duly signed by bidder and witnesses) are received electronically.
Remarks	Bidder has to upload the scanned copy of EMD & Tender fee (MSME certificate in case of exemption) and Integrity pact duly signed by bidder and witnesses in preliminary bid submission and without which technical bid will not entertained. The hard copies should reach to the Electrical Division within 07 days from the dateof opening of preliminary bid.
Bid Opening Date	**(Not Applicable)**
Documents required to be submitted by scanning through online	Documents in support of fulfilling Qualifying Criteria as indicated above. Tender fees plus GST: As indicated above. EMD: As indicated above. Integrity pact duly signed by authorized person and witnesses. Documents Mentioned in Eligibility Criteria.
Officer- Inviting Bids:	Executive Engineer (E), Electrical Division, Port & Custom Building, Ground Floor, New Kandla, Kutch – 370210
Bid Opening Authority :	Executive Engineer (E)
Address:	Executive Engineer (E), Electrical Division, Port & Custom Building, Ground Floor, New Kandla, Kutch – 370210
Contact Details :	Executive Engineer (E), Electrical Division, Port & Custom Building, Ground Floor, New Kandla, Kutch – 370210, Phone: 02836-270209, 270342. Fax No. 02836 270184.

(n) code Solutions-A division of GNFC Ltd.,

(n)Procure Cell 403, GNFC Info tower, S.G. Road, Bodakdev, Ahmedabad – 380054 (Gujarat)

Contact Details:
Airtel: +91-79-40007501, 40007512, 40007516, 40007517, 40007525
BSNL: +91-79-26854511, 26854512, 26854513 (EXT: 501, 512, 516, 517, 525)
Reliance: +91-79-30181689 Fax: +91-79-26857321, 40007533
E-mail:nprocure@gnvfc.net
TOLL FREE NUMBER: 1-800-233-1010 (EXT: 501, 512, 516, 517,525)

Signature & Seal of Contractor

Executive Engineer (E)
Deendayal Port Authority

SECTION – I

INSTRUCTION TO BIDDERS

A. GENERAL

1. Scope of Bid

1.1 The Executive Engineer (Electrical), Deendayal Port Authority invites bids by E-Tendering from the interested eligible bidder for the work as mentioned in the notice inviting online tender. All bids shall be completed and submitted on-line in accordance with instruction to the bidders.

1.2 The successful bidder will be expected to complete the works by the intended completion period.

2. Source of funds

2.1 The employer has arranged the funds from the internal resources and will have sufficient funds in India Currency for execution of the work.

3. Eligible Bidders

Only eligible bidders fulfilling all the requirements as mentioned in the Notice Inviting Online Tender may participate in the subject Tender. Successful completion of "Similar Works" only shall be considered for evaluation of eligibility criteria.

3.1 The invitation for Bids is open to all eligible bidders meeting the eligibility criteria as defined in clause regarding Eligibility Criteria.

3.2 All bidders shall fill the forms provided in Section – IV- Part – I "To be submitted by Bidders with their Bids".

3.3 Government-owned enterprises may participate if they are legally and financially autonomous, operate under commercial law and are not a dependent agency of the employer subject to fulfilment of Minimum Qualifying criteria.

3.4 Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the employer.

4. Eligibility Criteria:

4.1 The Bidders shall fulfill the following pre-qualification criteria:

FINANCIAL		
Sr. No.	Particulars	Supporting documents
(A)	Average annual financial turnover during the last three years ending 31st March of the previous financial year should be at least ₹84,78,939.00	Certificate should be issued by the Chartered Accountant.

TECHNICAL		
(B)	Experience of having successfully completed similar works during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following: (1) Three similar completed works each costing not less than the amount equal to ₹1,13,05,252.00. OR (2) Two similar completed works each costing not less than the amount equal to ₹1,41,31,565.00. OR (3) One similar completed work costing not less than the amount equal to ₹2,26,10,504.00.	a) A copy of the completion certificate in respect of the successfully completed similar work. b) A copy of work order should also be submitted for which the bidder is submitting the completion certificate. Such completion certification should be issued on the letter head of the client and invariably reflect the following details: (1) Name of Contractor, (2) Name of Work, (3) No. of work order/agreement and date, (4) Contract value, (5) Contract period, (6) Date of commencement of work, (7) Date of completion, (8) Value of Work executed during the contract period/original contract period, (9) Date of issue of completion certificate. **IMPORTANT:** (1) In case a work is started prior to 07 (seven) years, ending last of month previous to the one in which tender is invited, but completed in last 07 (seven) years, ending last day of month previous to the one in which tender is invited, the completed work shall be considered for fulfilment of credentials. (2) If a work is physically completed and completion certificate to this extent is issued by the concerned organization but final bill is pending, such work shall be considered for fulfilment of credentials. (3) If a part or a component of work is completed but the overall scope of contract is not completed, such work shall not be considered for fulfilment of technical credentials even if the cost of part completed work/component is more than required for fulfilment of credentials. (4) In case a work is considered similar in nature for fulfilment of technical credentials, the overall cost of that work shall be considered and no separate evaluation for each component of that work shall be made to decide eligibility.
	Definition of Similar Work	Similar work means "Supply, installation, testing and commissioning of HT Switchgear, Distribution Transformer and LT Switchgear" executed for Government or Public Sector Undertaking or any reputed Industrial Organization in private sector.
(C)	Assessed Available Bid capacity = A x N x 2 –B, Where, "N" = Number of years prescribed for completion of the subject contract.	

<table>
<tr><td></td><td>"A" = Maximum value of works executed in any one year during last seven years (at current price level).
"B" = Value at current price level of existing commitments and ongoing works to be completed in the next 'N' years.
Note: For bringing value of works to current level, multiplying factor to be indicated in tender with reference to escalation based on WPI.
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<tr><td>Financial Year</td><td>2021-22</td><td>2020-21</td><td>2019-20</td><td>2018-19</td><td>2017-18</td><td>2016-17</td><td>2015-16</td></tr>
<tr><td>Index</td><td>139.4</td><td>123.4</td><td>121.8</td><td>119.8</td><td>114.9</td><td>111.6</td><td>109.7</td></tr>
<tr><td>Multiplying Factor</td><td>1.00</td><td>1.13</td><td>1.14</td><td>1.16</td><td>1.21</td><td>1.25</td><td>1.27</td></tr>
</table>
The Bidder shall furnish statements showing the value of existing commitments and ongoing works as well as the stipulated period of completion remaining for each of the works preferably countersigned by the Nodal Office or his nominee-in charge.
IMPORTANT:
(a) The value of annual turnover is not to be considered towards "A" in the formula.
(b) The information may be provided as per the format given at Section-XI.</td></tr>
<tr><td>(D)</td><td>In Case the similar work has been issued for any private body, the bidder will be required to produce the tax deducted at source (TDS) certificate indicating the income tax deducted by the client for that work, which will form the basis for assessing the value of completed work.
IMPORTANT:
(1) The particular raw in the TDS certificate (Form 16 or Form 26A), which indicates the credit of the payment received from the client, should be highlighted.
(2) Along with the TDS certificate, a declaration on the letter head of a Chartered Accountant should be submitted giving details such as the name of bidder, the name of the client for which the bidder has carried out the work, name of work, work order no. and date, gross amount of the payment, net amount received from the client, TDS amount. The statement should be signed by the Chartered Accountant.
(3) In case any discrepancies between the TDS (Form 16 or Form 26A) and the declaration given by the Chartered Accountant with regard to payment received from the client, it should be explained.</td></tr>
<tr><td>(E)</td><td>The contractor shall have valid electrical contractor's license for carrying out electrical work of nature involved in this tender obtained from the competent authority of their respective states without which the tender shall not be accepted. Contractor shall submit certificate and copy of the license in lieu of the same for consideration.</td></tr>
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4.2 All bidders shall scan and forward the following information and documents with their bids.

(a) Copies of original documents defining the constitution or legal status, place of registration, and principal place of business, written power of attorney of the signatory of the Bid to commit the Bidder.

(b) Total monetary value of similar works performed for each of the last seven years ending last day of month previous the one in which applications are invited.

(c) Experience in works of a similar nature and size for each of the last seven years, and details of works underway or contractually committed, and Employers who may be contacted for further information on those contracts.

(d) Reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past three years ending 31st March of the previous financial year.

(e) Duly filled Forms mentioned in Section – IV- Part – I.

(f) PAN, Registration with GST, Provident Fund Authorities.

(g) Valid Electrical Contractor License issued by respective State.

(h) EMD: Through on line transfer in PNB bank account no. 2177000100022538 - Deendayal Port Authority - (IFSC code PUNB0217700). Scanned copy of RTGS no. and date of transfer may be uploaded on (n) procure website. In case of Micro and Small Enterprise (MSEs) holding valid certificate issued by any agencies/organization under The Ministry of Micro, Small and Medium Enterprises indicating the list of activity related to the subject tender as per National Industrial Classification-2008 mentioned in the **table below only shall become eligible for exemption** from payment of Tender fee/EMD. Such bidder shall upload the scanned copy of valid certificate in preliminary bid.

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(i) Tender fee: Through on line transfer in PNB bank account no. 2177000100022538 - Deendayal Port Authority - (IFSC code PUNB0217700). Scanned copy of RTGS no. and date of transfer may be uploaded on (n) procure website. In case of Micro and Small Enterprise (MSEs) holding valid certificate issued by any agencies/organization under The Ministry of Micro, Small and Medium Enterprises indicating the list of activity related to the subject tender as per National Industrial Classification-2008 mentioned in the **table below only shall become eligible for exemption** from payment of Tender fee/EMD. Such bidder shall upload the scanned copy of valid certificate in preliminary bid.

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(j) Information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned, and disputed amount.

(k) A certificate by the bidder that they have not been banned / black listed by any govt. Agency.

(l) Power of attorney (duly accompanied by resolution of Board in case of company).

(m) Qualifications and experience of key site management and technical personnel proposed for the contract.

(n) The proposed methodology and program of work, 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 as per milestones.

(o) The completion certification should invariably mention the reference no. of work order, the date of completion and contract value.

(p) The copy of the work order should also be submitted for which the bidder is submitting completion certificate.

(q) In case the similar work has been executed for any private body, the bidder will be required to produce the tax deducted at source (TDS) certificate indicating the income tax deducted by the client for that work, which will form the basis for assessing the value of completed work.

(r) Bidders should give an undertaking letter duly stating that the documents submitted by them in support of their credentials are genuine and DPA is at liberty to take any action against the bidder if the said documents are found to be non-genuine.

(s) Bidders should give an undertaking that they will comply to the specifications of the work including terms and conditions in total without any deviation.

4.3 Even though the bidder meets 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, non – completion of the contract.

5. One Bid per Bidder

5.1 Each bidder shall submit only one bid. A bidder who submits more than one Bid will cause all the proposals with the Bidder's participation to be disqualified and the bidder can be disqualified for bidding of any contract with DPA for a period of 03 years.

6. Joint Venture: (Modified as per Clause No. 1 of Special Conditions, Section – III)

In case of association in the form of consortium or joint venture agreement, the members of the association shall nominate one of the members as "lead partner" for participating in the tender and signing all the documents related therewith up to signing of agreement and execution of all the contractual obligations there after (in case of award of contract). All the partners of the association must also, jointly and severally, be responsible for satisfactory execution and performance of the contract. The firms with at least 26% equity holding each are allowed to jointly meet the legibility criteria.

7. Cost of Bidding

7.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid and employer will in no case be responsible and liable for those costs regardless of the conduct or outcome of the bidding process.

8. Site Visit

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

B. Bidding Documents

9. Content of Bidding Documents

9.1 The set of bidding documents comprises the documents listed in the below and addenda issued in accordance with clause 9:

Invitation for Bids (NIT)

Bid Reference No. EL/AC/2039-II

- NIT : Invitation for Bids
- Section I : Instruction to Bidders
- Section II : General Conditions of Contract
- Section III : Special Conditions of Contract
- Section IV : Forms of Bid
- Section V : Scope of Work & Technical Specifications
- Section VI : Bill of Quantities
- Section VII : Drawings
- Section VIII : Approved Make list of Electrical items
- Section IX : Format for submitting information for bid capacity
- Section X : Integrity Pact agreement {duly signed by the bidder and two witnesses (witness sign also to be obtained by the bidder) is also required to be submitted in preliminary bid}

9.2 The bidding documents shall be downloaded. The documents should be completely filled and submitted through on line E – Tendering process.

9.3 The bidder is expected to examine carefully all instructions, conditions of contract, forms, terms, technical specifications, bill of quantities, in the bid document. Failure to comply with the requirements of the bid document shall be at the bidder's own risk. Bids which are not substantially responsive to the requirements of the tender documents shall be rejected.

10. Clarifications of the Bidding Documents (Not Applicable)

10.1 A prospective bidder requiring any clarification of the bidding documents may notify the employer in writing. The employer may respond to any request for clarification which are received within seven days prior to date of pre-bid meeting. The clarifications shall be uploaded on Website https://kpt.nprocure.com, www.deendayalport.gov.in and www.eprocure.gov.in.

10.2 **Pre–Bid meeting (Not Applicable)**

10.2.1 The bidder or his official representative may attend pre-bid meeting to be held on XX/XX/2023 @ 15:00 hrs in the Old Board Room, A.O Building, Gandhidham. The bidders/representative of bidders who wish to attend the Pre-Bid meeting shall furnish the authority letter on the letter head of Bidder, for attending the Pre-Bid Meeting on behalf of bidder at the time of Pre-Bid Meeting.

10.2.2 The purpose of the meeting will be to clarify issues related to work and tender conditions.

10.2.3 Pre – Bid clarifications will be uploaded in https://kpt.nprocure.com, www.deendayalport.gov.in and www.eprocure.gov.in website without disclosing source of enquiry.

10.2.4 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

10.2.5 At any time prior to the deadline for submission of Bids, employer may, for any reason, whether at its own initiative or in response to a clarification sought by any prospective bidder, modify the bidding documents by amendment / addendum.

10.2.6 Those bidders who download the tender document from the website shall be solely responsible to check the web site for the amendment issued in shape of Corrigendum and/or Addendum.

11. Language of Bid

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

12. Documents comprising the Bid

The bid submitted by the bidder shall comprise the following:

a) Technical Bid:

(1) EMD , Tender Fees and Integrity pact duly signed by bidder and witnesses

(2) Qualification information in accordance to clause of **Eligibility Criteria** shall be submitted.

b) Financial Bid:

(1) Bill of Quantities duly filled and digitally signed by bidder.

13. Bid Prices

13.1 The rates and prices quoted by the bidder shall be fixed for the duration of the

contract and shall not be subject to adjustment on any account.

13.2 The prices shall be quoted inclusive of all Taxes, (except GST), Duties, and other incidentals charges like Transportation, Loading, Unloading, Boarding & Lodging, insurance etc. and should remain firm till completion of work.

14. Currencies of Bid and Payment

The unit rates and the prices shall be quoted by the bidder in Indian Rupees only.

15. Bid Validity

15.1 Bids shall remain valid for a period of 120 days from the date of opening of the Technical Bid. A bid valid for a shorter period shall be rejected by the employer as Non-responsive.

15.2 In exceptional circumstances, prior to expiry of the original time limit, the employer may request the bidders to extend the period of validity for additional period. The request and the bidders' responses shall be made in writing. A bidder may refuse the request for which EMD, if any, will not be forfeited.

15.3 A bidder agreeing to the request will not be permitted to modify his bid.

16. Bid Security (Earnest Money Deposit - EMD)

16.1 EARNEST MONEY DEPOSIT (EMD) = ₹2,82,631.00

The tender shall be accompanied by Earnest Money Deposit of ₹2,82,631 (Rupees two lac eighty two thousand six hundred thirty one only). The tender not accompanied with EMD shall not be considered & their technical and price bid will be returned un-opened. Through on line transfer in PNB bank account no. 2177000100022538 – Deendayal Port Authority (IFSC code PUNB0217700). Scanned copy of RTGS no. and date of transfer may be uploaded on (n) procure website. In case of Micro and Small Enterprise (MSEs) holding valid certificate issued by any agencies/organization under The Ministry of Micro, Small and Medium Enterprises indicating the list of activity related to the subject tender as per National Industrial Classification-2008 mentioned in the **table below only shall become eligible for exemption** from payment of Tender fee/EMD. Such bidder shall upload the scanned copy of valid certificate in preliminary bid.

Level	Description
Section – D	ELECTRICITY, GAS, STEAM AND AIRCONDITION SUPPLY
Division – 35	ELECTRICITY, GAS, STEAM AND AIRCONDITION SUPPLY
Group - 351	Electric power generation, transmission and distribution
Class – 3510	Electric power generation, transmission and distribution
Sub Class - 35109	Collection and distribution of electric energy to households, industrial, commercial and other users n.e.c.

It may be noted that exemption certificate issued by any other authority will not be entertained. Earnest money in the form of Bank Guarantee will not be accepted under any circumstances.

a. EMD

(i) The EMD of successful Bidder will be refunded on submission of performance guarantee (in *Form 11)* as per the tender clause and executing the agreement (in *Form 8)* as per tender clause. The EMD of unsuccessful bidders other than L1 & L2 be refunded immediately after ranking of Bids. Earnest Money of L2 bidder shall be refunded immediately after entering into agreement with L1 and acceptance of Performance Guarantee from L1.

(ii) EMD will be refunded Suo-motto without any application from the Bidders.

(iii) The EMD of successful bidder will be discharged (refunded) after he has signed the Agreement and furnished the required Performance Guarantee.

(iv) Earnest Money Deposit will not carry any interest.

b. Necessary action shall be taken to disqualify the bidder from bidding process of any contract with DPA for a period of 03 years, if:

(i) The bidder withdraws the Bid after Bid opening during the bid validity;

(ii) The bidder does not accept the correction of the Bid-Price, pursuant to any arithmetic errors;

(iii) The successful Bidder fails within the specified time limit to

a) Sign the Agreement or

b) Furnish the required performance Guarantee

(iv) The bidder submits more than one bid

17. Alternative Proposals by Bidders

17.1 Conditional offer or Alternative offers will not be considered in the process of tender evaluation.

18. Format and Signing of Bid

18.1 The Price Bid to be submitted on-line shall be signed digitally by a person or persons duly authorized to sign on behalf the Bidders.

19. Amendment of Bidding Documents

19.1 Before the deadline for submission of bids, the Employer may modify the bidding documents by using addenda.

19.2 Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing or by cable to all the purchasers of the bidding documents. Prospective bidders shall acknowledge the receipt of each addendum by cable to the Employer.

19.3 To give prospective bidders reasonable time in which to take an addendum in to account in preparing their bids, the Employer shall extend as necessary the deadline for submission of bids.

C. <u>Submission of Bids</u>

20. Submission of Bids

Bidders who wish to participate in the tender will have to procure/should have legally valid Digital Certificate, as per Information Technology Act-2000, using which they can sign their electronic bids. The bidders can procure the Digital Certificate from (n) code

solutions a division of GNFC Ltd, who are licensed certifying authority by Government of India. All bids should be digitally signed. For details regarding Digital signature certificate and related matters, the bidder may contact the following address:

(n) Code Solutions,

A Division of GNFC,

301 GNFC Info tower,

Bodakdev, Ahmedabad.

Tel. 91 79 26857316/17/18

Fax: 91 79 26857321

Mobile: 9327084190 / 9898589652.

E-mail: nprocure@gnvfc.net.

Bid reference No. EL/AC/2039-II

Name and address of the bidder.

The accompaniments to the tender documents as described under Clause 4.2 shall be Scanned and submitted On-Line along with Tender documents. **However, the originals/attested hard copies along with tender documents (except Price Bid), signed on bottom of each page in token of acceptance of Tender Conditions** and shall have to be forwarded subsequently so as to reach the office of EE (E) within 7 days before opening of the tenders.

The envelopes shall be addressed to:

(a) Executive Engineer (E)
Deendayal Port Authority
Electrical Division,
Room No. 6,
Port & Customs Building,
New Kandla – 370210.
Gujarat-State.
(b) bear the following identification:

"Refurbishment of Power Supply of AO Building"

Bid reference No. EL/AC/2039-II

Name and address of the bidder.

21. Deadline of Submission of the Bids

21.1 Bids must be received by the employer in On-Line System at websites https://kpt.nprocure.com not later than 04/08/2023 up to 15:30 Hrs.

21.2 At the time of submission of the tender document, the Bidder shall give an undertaking that no changes have been made in document. The uploaded version of the Port Tender Document at https://kpt.nprocure.com websites 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 Bidder, the conditions mentioned in the Port's uploaded document on https://kpt.nprocure.com websites shall prevail.

21.3 The employer may extend the deadline for submission of bids by issuing an amendment on DPA website as well as on https://kpt.nprocure.com in which case all rights and obligations of the employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

21.4 In case of tender documents being downloaded from the web site, at the time of submission of (the hard copy of) the tender document, the tenderer shall give an undertaking that no change have been made in document. Any discrepancy is noticed at any stage between the port's tender document uploaded on https://kpt.nprocure.com and the one submitted by the tenderer, the conditions mentioned in the port's tender document uploaded on https://kpt.nprocure.com shall prevail. Besides, the tenderer shall be liable for legal action for the lapses.

22. Late Bids

22.1 After the deadline of submission of bid, the bids cannot be submitted in the On-Line System.

23. Modification and Withdrawal of Bids

23.1 Bidders may modify or withdraw their bids before the deadline of submission of bid or extension if any.

23.2 No Bid can be modified after the last date for submission of Bids.

23.3 Withdrawal or modification of a Bid between the deadline for submission of bids and the expiration of the original period of bid validity including extension, if any, may result in disqualification of the bidder from bidding process of ay contract with DPA for a period of 03 years.

D. <u>Bid Opening and Evaluation</u>

24. Bid Opening

24.1 On the due date and time, the employer will first open Technical bids of all bids received including modifications.

24.2 In the event of the specified date for Bid opening being declared a holiday by the employer, the Bids will be opened at the appointed time on the next working day at the same time.

24.3 If any Bid contains any deviation from the Bid documents and / or if the same does not contain Bid security i.e., EMD in the form of Bid security declaration form and tender fees in the manner prescribed in the Bid documents, then that Bid will be rejected and the Bidder will be informed accordingly.

24.4 The bids which are technically qualified, their financial bids will be opened. The date of opening of financial bid will be declared in the https://kpt.nprocure.com and www.deendayalport.gov.in .

24.5 The price bid i.e., BOQ will be opened only those bids qualify technically.

25. Clarification of Bids

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

25.2 No Bidder shall contact the employer on any matter relating to his bid from the time of the bid opening to the time the contract is awarded.

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

26. Examination of Bids and Determination of Responsiveness

26.1 Prior to detailed evaluation of Bids, the employer will determine whether each Bid

(a) Has been properly digitally signed,

(b) Meets the eligibility criteria defined,

(c) Is accompanied by the required Bid Securing Declaration Form and tender fees,

(d) Is responsive to the requirements of the Bidding documents,

(e) GST number to be quoted invariable by bidder.

26.2 A substantially responsive Technical and Financial Bid is one which conforms to all the terms, conditions and specification of the Bidding documents.

26.3 If a Technical Bid is not substantially responsive, it will be rejected by the employer, and may not subsequently be made responsive by correction or withdrawal of the non-confirming deviation or reservation.

27. Evaluation and Comparison of Bids

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

27.2 In evaluating the Bids, the employer will determine for each Bid the evaluated Bid price by adjusting discounts, if any.

27.3 If in the opinion of Engineer in Charge, the rate quoted by successful bidder is abnormally high/low compared to the estimated cost of the work, the employer may ask the bidder to produce detailed price analysis for all items of the bill of quantities.

E. <u>Award of Contract</u>

28. Award Criteria

The employer will award the work to the bidder whose bid has been evaluated to be techno-commercially responsive and the lowest evaluated amount bid subject to submission of agreement and performance security.

The employer, if so required, reserves the right to:

a) Split the work and award the work in favour of more than one firm,

b) Award the work separately as supply, execution, Operation & Maintenance/Operation/Maintenance as applicable.

29. Employer's Right to accept any Bid and to reject any or all

Notwithstanding Clause 28, the Employer reserve the right to accept or reject any bid without assigning any reason and to cancel the bidding process and reject all bids, at any time prior to the award of contract, without thereby incurring and liability to the affected bidder or bidders of the grounds for Employer's action.

30. Letter of Intent

The Chief Mechanical Engineer will issue the Letter of Intent (Form No. 6) intimating the successful bidder about the proposed pre-acceptance of tender.

31. Notification of Award and Signing of Agreement

31.1 The Bidder who's Bid has been accepted will be notified for the award by the employer prior to expiration of the Bid validity period by confirmation in writing. In this letter (hereinafter and in the Conditions of Contract called the "Letter of Intent") the contract amount, completion period of the work, etc. will be mentioned in line with

the tender conditions.

31.2 The notification of award will constitute the formation of the Contract subject to the furnishing of a performance security in accordance with the provisions of tender condition.

31.3 The Agreement will be submitted by successful Bidder within 14 days (National Bid) 28 days (Global Bid) of issue of the notification of award (Letter of Intent). The agreement will incorporate all correspondence between the employer and the successful bidder.

32. Contract Agreement

32.1 The agreement on stamp paper shall be furnished by the Contractor as per the following guidelines within 14 days (National Bid) 28 days (Global Bid) from the date of issue of Letter of Intent.

i) The successful Bidder will be required to execute an agreement at his expense on Three Hundred Rupees (₹300/-) Non-Judicial Stamp Paper in the proper departmental format (Form 7) for the due and proper fulfilment of the contract within 14 days (national Bid) 28 days (Global bid) from the date of Letter of Intent.

32.2 Pending preparation and execution of the contract agreement as above, the tender submitted by the Contractor together with Chief Mechanical Engineer's letter/fax accepting the tender shall constitute a binding contract between the Board and the Contractor.

32.3 The contract period shall be reckoned from the date of issue of work order to commence the work.

i. The original agreement as per the format attached with the tender should be executed on a stamp paper of appropriate value (at present ₹300/-).

ii. The Agreement should be submitted in duplicate and the date of execution is to be kept blank.

iii. Each page of the document is to be signed by the Contractor/ his authorized representative by indicating his full name.

iv. If the Contractor is a partnership firm, then a copy of the Partnership Deed and in case it is a Company, a copy of Memorandum and Articles of Association along with Registration Certificate is to be submitted.

v. If the agreement is signed by a Partner/ a Director/ an authorized person of the firm, in such case, a certified true copy of the power of attorney/ letter of authority given by the firm/ company to the signatory of the Contractor firm is to be submitted.

vi. The entire agreement should be in type written form/ computer printed form.

vii. Leaving blanks and insertion of some contents of the agreement with hand writing should be avoided.

viii. All corrections/ additions made in the agreement are to be initialed.

33. Performance Security

"Security Deposit" shall consist of two Parts: a) Performance Guarantee to be submitted after issue of LOI, and b) Retention money to be recovered from Running bills.

33.1 Performance Guarantee shall be 10% of contract price, of which 5% of the contract price should be submitted as Performance Guarantee in form of Bank Guarantee or Demand Draft within 21 days, on receipt of Letter of Intent and balance 5% to be recovered as Retention money from running bills. Recovery of 5% retention money to commence from the 1st RA bill onwards @ 5% of the bill value from each bill. Retention money will be refunded within 14 days from the date of payment of final bill. Balance SD will be refunded immediately not later than 14 days from completion of defect liability period.

33.2 Successful bidder has to submit the Performance Security @ 5% of the contract price within 21 days of receipt of Letter of Intent, failing which the work will not be awarded and the bid security i.e. EMD will be forfeited.

33.3 The Port Authority will also be at liberty to deduct from performance guarantee or from any sums of money due or that may become due under any contract with the contractor that may become due to the employer. This is without prejudice to the rights of the employer under the terms of the contract. The Bank Guarantee is required to be dispatched by the issuing bank directly to The Employer by Registered AD Post.

33.4 The performance guarantee will be accepted in the form of bank guarantee if issued by any nationalized/scheduled bank (except co-operative bank) having is branch at Gandhidham.

33.5 The Port Authority may at their option forfeit the Performance Guarantee cum Security Deposit if the contractor fails to carry out the work or perform or observe the conditions of contract.

33.6 The balance Performance Guarantee cum Security Deposit will be released after successful completion of guarantee period.

33.7 The documentary evidence (copy of paid challan in government treasury) of welfare cess @1% of work done or as amended by statutory authority from time to time, paid on final bill shall be submitted before releasing the performance guarantee.

34. Issue of Work Order

Work order will be issued indicating the Contract value, completion period etc. after submission of Performance Security Deposit and Contract Agreement on Non-Judicial Stamp Paper by the successful bidder as per Tender Conditions.

35. Time Schedule

The Contract shall be effective from the date of issue of Work Order and the work shall be completed within Six months from the date of Work Order.

36. Corrupt or Fraudulent Practices

36.1 The employer requires that Bidders/Suppliers/Contractors under this contract, observe the highest standard of ethics during the procurement and execution of this contract. In pursuance of this policy, the employer:

(a) Defines the following for the purpose of these provisions:

(i) "Corrupt Practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and

(ii) "Fraudulent Practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the employer, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the employer of the benefits of free and open competition.

(b) Will reject a proposal for award of work if he determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.

(c) Will declare a Bidder ineligible, either indefinitely for a stated period of time, to be awarded a contract/contracts if he at any time determines that the Bidder has engaged in corrupt or fraudulent practices in competing for or in executing, the contract.

Signature & Seal of Contractor

Executive Engineer (E)
Deendayal Port Authority

SECTION – II

GENERAL CONDITIONS OF CONTRACT

GENERAL CONDITIONS

1. Definitions

In the Contract (as hereinafter defined) the definition of the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:

a. "**Employer**" means Board of Authorities of Deendayal Port, a body corporate under the Major Port Authority Act 1963, by notification issued by the Government of India, acting through its Chairman, Dy. Chairman or Chief Mechanical Engineer or any other officers so nominated by the Board.

b. "**Contractor"** means the person or persons, firm, corporation or company whose tender has been accepted by the employer and includes the Contractor's servants, agents and workers, personal representatives, successors and permitted assigns.

c. **"Contract"** means and includes Tender Documents, Instructions to Bidders, General Conditions of Contract, Drawings, Specifications, and Schedules etc., any amendments thereto, Bid, Letter of Intent, Contract Agreement and the work order.

d. **"Contract Price"** means the total sum of money to be paid by the employer to the contractor on timely completion of the contract work as per Contract including payment for extra work, i.e. as per defined and applicable items of the terms of payment, including any taxes, except GST, and duties to be paid to state or central Government.

e. **"Specifications"** means the specification referred to in the tender documents and any modifications thereof or additions thereto or amendments thereto as may be from time to time be furnished or approved in writing by the employer.

f. **"Chief Mechanical Engineer"** shall mean the Chief Mechanical Engineer of DEENDAYAL PORT AUTHORITY.

g. **"Work" or "Works"** shall mean the whole of the plant and materials to be provided and work to be done executed or carried out by the contractor under the contract.

h. The **"Site"** shall mean the whole of the premises, buildings and grounds in or upon which the system or works is or are to be provided, executed, erected, done or carried out.

i. The **"Schedule"** shall mean the schedule or Schedules attached to the specifications.

j. The **"Drawings"** shall mean the drawings, issued with the specification which will ordinarily be identified by being signed by the Chief Mechanical Engineer and any further drawing submitted by the contractor with his tender and duly signed by him and accepted or approved by the Chief Mechanical Engineer and all other drawings supplied or furnished by the contractors or by the Chief Mechanical Engineer in accordance with these contract conditions.

k. **"Trials" and "Tests"** shall mean such trials and tests as are provided for in these conditions of contract and described in the specification and shall include all other tests to be carried out as per the requirement of the 'employer'.

l. **"Approved" or "Approval"** shall mean approval in writing.

m. **"Engineer-in-charge/Nodal officer"** shall mean any officer/Engineer authorized by Chief Mechanical Engineer for purpose of this contract.

n. **"Day"** are calendar days, **"months"** are calendar months.

o. **"Equipment"** is the contractor's machinery and vehicles brought temporarily to the site to construct the works.

p. **"Material"** are all supplies, including consumables, used by the contractor for incorporation in the works.

q. **"Plant"** is any integral part of the works which is to have mechanical, electrical, electronic or chemical or biological function.

2. Use of Contract Document:

The Contractor shall not, without prior consent, make use of any document except for the purpose of performing this contract.

3. Change Orders:

At any time during the execution of the contract, by a written notice to the Contractor, changes may be made in the general scope of contract. The Engineer In-charge (EIC), with due approval of competent authority, may make any changes in the quality and/or quantity of the work or any part thereof that may, in his opinion, be necessary and for that purpose the Engineer In-charge shall have the power to order the Contractor to do and the Contractor shall do any of the following:

a. Increase or decrease or split the quantity of work included in the contract,

b. Omit any such work,

c. Change the character, quality or kind of any such work,

d. Change the dimensions of any such work,

e. Change in Location

f. Execute additional work of any kind necessary for completion of the work under the contract, and no such change shall in any way vitiate or invalidate the contract but the cost, if any, arising out of all such changes shall be taken into account in ascertaining the total amount of the contract price. Where the rate is available in the contract and the same is applicable to the additional work, in the opinion of the EIC, the cost of the additional work shall be determined as per this available rate. But, if the rate for additional work is not available in the contract, the same shall be determined by the EIC taking into account the market rate and labour cost at the site for similar works and shall be final.

g. Deviations from the specifications as contained in the tender agreement including the make / model, shall not be accepted. In case of any such deviation, payment shall not be made for that part of the work / item, even if it is meeting the functional requirements and has been accepted by the purchaser. The payment for such portion of the work / item can only be released if the contractor makes good the deviations before the expiry of the warranty period so as to meet the specifications of the tender agreement in all respects.

4. Resolution of Dispute

4.1 The Board and the Contractor shall make every effort to resolve amicably by direct informal negotiations, any disagreement or dispute arising between them in connection with the contract. However, in case of failure of negotiation between the Board and the Contractor, the parties shall refer their present and future disputes relating to the contract itself or arising out of or concerning or in connection with or in consequence of the contract to the Chairman, DPA whose decision shall be final and binding on both the parties. The contract shall be governed by the Indian Contract Act, 1872.

4.2 Jurisdiction of Courts:

All such disputes, which could not be settled at the intervention of Chairman, DPA, shall be subjected to the jurisdiction of the courts at Gandhidham.

5. Force Majeure

5.1 In the event that the Contractor is delayed in performing its obligations in the contract, and such delay is caused by force majeure including war, civil resurrection, strikes (other than the strike solely by the Contractor's men), fire, flood, epidemics, earthquakes, extremely adverse climatic conditions, such delay may be excused and the period of such delay may be added to the time of performance of the obligations without any addition to the contract price.

5.2 If a force majeure situation arises, the Contractor shall promptly notify the Board in writing of such condition and the cause thereof, ***but not later than 7 days from its occurrence***. Unless otherwise directed by the Board in writing, the Contractor shall continue to perform its obligations under the contract as far as reasonably practicable. The Contractor shall demonstrate to the Board's satisfaction that it has used its best endeavor to avoid or overcome such causes of delay and the parties will mutually agree upon remedies to mitigate or overcome such causes of delay without having any right to any claim on account of such force majeure.

5.3 In any other situation, which is beyond the reasonable control of the Contractor in the opinion of the Engineer In-charge, and where the Contractor has promptly notified the Board in writing about such situation, it may be considered as "Force Majeure" situation.

6. Compliance with Statutes, Regulations:

The Contractor shall comply in all respects, with all statutes and regulations as may be necessary, including clearance from State/Central Govt. authorities, Pollution Control Boards, labour enforcement and local authorities. The Contractor shall, at all times during the continuance of the contract, so far as it may be necessary, comply with all the existing enactments including Central and State legislation as well as any by-laws of any local authorities regarding labour, particularly the Minimum wages Act, Factories Act, Workmen's Compensation Act, Employees' Provident Fund and Family Pension Fund Act, Employees' State Insurance Act, Contract Labour (Regulation and Abolition) Act, Payment of Wages Act, Maternity Benefit Act, National and Festival Holidays Act, Shop and Establishment Act, The Apprentice Act and keep DPA indemnified against any loss or claim arising out of contravention of the provisions of the above said enactments by the Contractor. The price quoted by the Contractor in the Bill of Quantity shall be deemed to include all expenses whatsoever the Contractor may be required to incur for the compliance with the provisions of the above said

legislation. The Contractor shall make necessary arrangements for DPA to witness the payment made by the Contractor to his staff and labour.

7. Payment Terms (Modified as per Clause No. 2 of Special Conditions, Section – III)

All payments shall be made in Indian rupees unless specifically mentioned.

i. 70% of supply item rate against receipt of material at site in good condition after obtaining insurance cover as per tender condition (if TPI appointed then after inspection & certification of the same by Third Party Inspection Agency).

ii. 20% of supply item rate after completion of erection, installation, testing and commissioning, etc. (if TPI appointed then after inspection & certification of the same by Third Party Inspection Agency)

iii. 90% of item rate covers only laying/fixing/installation.

iv. Remaining 10% will be released after successful completion of whole work (if TPI appointed then after inspection & certification of the same by Third Party Inspection Agency).

NOTE:

The payment shall be made through RTGS /NEFT and the Contractor should be furnished following details:

Bank Payment Agreement Form

a. Name of Party

b. Account No.

c. Branch Name

d. Branch Station

e. IFSC code of the bank

f. MICR code

g. Accepted for : NEFT payment or RTGS payment

Declaration by the party

I/We hereby declare that the above information furnished by me is correct and DPA is requested to pay my / our dues to this account for this work is concerned.

Signature of the party with the seal

Declaration by the bank

It is hereby informed that the details mentioned by the party is correct as per our records and any payment made by DPA to this account will be accepted either by RTGS/NEFT.

Signature of the bank manager with the seal.

8. Insurance

8.1 The contract shall provide in the joint names of the employer and the contractor, insurance cover from the start date to the end of guarantee period for the following events which are due to the contractor risk:

1. Loss of or damage to the works, plan and materials
2. Loss of or damage to equipment
3. Loss of or damage of property (except the works, plant, materials and equipment) in connection with contract, and
4. Personal injury or death

8.2 Policies and certificates for insurance shall be delivered by the contactor to the engineer in charge or his nominee before the commencement of work. All such insurances shall provide for compensation to be payable to the types and proportions of currencies required to be rectify the loss or damage incurred.

8.3 Alterations to the terms of insurance shall not be made without the approval of the engineer in charge or his nominee,

8.4 All the materials shall stand insured from the time of arrival at site till commencement of erection against fire, pilferage, damage and against natural calamities for the value of 90% of each item.

8.5 During erection and till the work is completed and satisfactory taken over by the D.P.T after testing the materials shall stand covered by suitable erection insurance also for the value of 110% of the item. The charges for the insurance shall be borne by the Contractor.

9. Time Extensions

The Contractor may claim extension of the time limits in case of;

(i) Changes ordered by DEENDAYAL PORT AUTHORITY.

(ii) In case work is delayed on DPA's Account, i.e. due to delay in approval of drawings, non-availability of site clearance or any other reason, DPA will consider time extension of merit. However, no compensation will be paid to the Contractor if work is delayed on DPA's account. The Contractor shall submit the request for extension, within 30 days of occurrence of such delay, clearly indicating the justification for such extension.

(iii) Force Majeure.

(iv) All the incidents of delay should be entered in the hindrance register which will be base for granting any extension.

10. Time is the essence of the contract

Time is the essence of the contract and the Contractor shall ensure that all the obligations under the contract are completed within the agreed time schedule. The Contractor shall be solely responsible for all the delays including the delays caused by its vendors. In case of delay in progress of the works, DEENDAYAL PORT AUTHORITY reserves the right to withhold the payment, cancel the contract unilaterally or complete the work departmentally.

11. Liquidated Damages

11.1 In case of delay in completing the contract, liquidated damages (LD) may be levied at the rate ½% of the contract value per week of delay or part thereof subject to a maximum of 10% of the contract price.

11.2 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 LD. In the event of extension of time at its discretion with LD the employer will be entitled without prejudice to any other right or remedy available in that be half percent (½%) of the contract value of the works for each week or part of the week subject to the ceiling 10% of contract value.

11.3 The employer, if not satisfied that the works can be completed by the contract, 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.

11.4 The employer, if not satisfied with the progress of the contract and in the event of failure of the contract to recoup the delays in the mutually agreed time frame, shall be entitled to terminate the contract.

11.5 In the event of such termination of the contract as described in clauses (11.3) or (11.4) or both, the employer shall be entitled to recover LD up to ten percent (10%) of the contract value and forfeit the security deposit made by the contract besides getting the work completed by other means at the risk and cost of the contractor.

11.6 In case part/portion of the work can be commissioned and port operates the portion for commercial purpose, the rate of LD will be restricted to the uncompleted value of work, the maximum LD being on the entire contract value.

12. Variations

12.1 Variation in Conditions of Contract:

In case of any variation in Instructions to Bidders (ITB), General Conditions of Contract (GCC) and the Special Conditions of Contract – if any special conditions of contract shall prevail. But in case of any requirement/condition specified in the Scope of Work, it shall prevail over all other conditions.

12.2 Variation in Quantities of Schedule – B

The overall as well as individual variations shall be ± 30% in quantity for which the rate quoted by the bidder and accepted by the employer shall be applicable.

13. Acceptance

Upon completion of work under this contract, the Board may accept the works and/or services after installation, if defects or shortcomings are not considered essential and, the Contractor agrees to make good the deficiencies in confirmation with this contract. No work shall be accepted before the Contractor clears the site of scraps, unused materials, work shed, equipment and all such materials which were used for execution of the work and not required any more at the work site. Also, the Contractor has to submit all the documents and final “as built” drawings as per the contract agreement without which no work shall be treated as complete.

Completion Certificate shall be issued by the employer after satisfactory completion of work as per tender and after taking trial.

14. Guarantee (Modified as per Clause No. 3 of Special Conditions, Section – III)

14.1 The warranty period shall be valid up to six/twelve months (6 months for repairs and 12 months for new works including supplied items) with effect from the date of acceptance of the work and/or services, unless otherwise specified in the scope of work/Special Conditions of Contract (SCC).

14.2 The Contractor shall warrant the Board that the goods and services under this contract will comply strictly with the contract, shall be first class in every particular case and, shall be free from defects. The Contractor shall further warrant the Board that all materials, equipment and the supplies furnished by him will be new and fit for their intended purposes.

14.3 The Board shall promptly notify the Contractor in writing of any claim arising under this Warranty. Upon receipt of such notice, the Contractor shall promptly repair or replace the defective goods and/or services at no cost to the Board.

14.4 If the Contractor, having been notified, fails to rectify the defects in accordance with the contract, the Board may proceed to take such remedial action as may be necessary, at the Contractor's risk and cost.

15. Taxes

GST Clause:

The contractor shall quote the price exclusive of GST. The contractor shall quote prevailing GST rate separately, which shall be reimbursed by DPA after ascertaining necessary compliance as per Goods & Service Tax, 2017.

All other duties, taxes, cesses applicable if any, shall be borne by the contractor.

Deduction of Income-Tax & GST:

Income-Tax deductions and surcharge & GST + TDS as applicable thereon shall be made good while making payments due to the contractor for carrying out the work and only net amount shall be paid as directed by the Central Board of Direct Taxes, Ministry of Finance, Government of India.

Tax: The rates quoted by the contractor shall be deemed to be inclusive of the taxes, duties etc. (except GST) which the contractor will have to pay for the performance of this contract. The employer will perform such duties in regard to the deduction of such taxes at sources as per applicable law.

16. Deduction:

16.1 Deduction of taxes/income tax at source shall be made from the any bill of the Contractor in accordance with the prevailing rules of Govt.

16.2 While performing under the contract, the damages caused by the Contractor or his workers to any of the Port Authority property shall be promptly made good by the Contractor at his own cost. In case the Contractor fails to repair/replace the damage, DEENDAYAL PORT AUTHORITY shall have the right to take steps to make good the damages and all the cost on this account shall be recovered from the bills of the Contractor or any money due to the Contractor from this contract or any other contract or any other transaction. In determination of the damage, the opinion of the

Engineer-In-charge (EIC) shall be conclusive.

16.3 Any dues arising out of failure on the part of the Contractor to carry out any obligation under the contract shall be deducted from the bills of the Contractor or from any money due to the Contractor from this contract or any other contract.

17. Subcontracts

The Contractor shall not be allowed to engage any sub-contract for all or any part of this contract.

18. Idle Charges

All efforts shall be made for timely supply of materials and/or equipment where it is included in the scope of Deendayal Port. However, the Contractor shall not be entitled to any idle charges for delay in supply of materials and/or equipment by the Port Authority. Further, in case of any delay due to stoppage of work ordered by the Port Authority to avoid interruption in other important activities of Port Authority or any other reason, the Contractor shall not claim any idle charges.

19. Personal Protective Equipment (PPE)

The Contractor shall be solely responsible, at his own cost, for the supply of required PPE to his workers and staff and he shall also ensure the use of PPE such as helmets, nose masks, hand gloves etc. by his staff at site.

20. Conduct

The Contractor, at all times during the tenure of contract, shall take all measures to prevent any unlawful, riotous or disorderly conduct by or amongst his staff at the site and for the preservation of peace and protection of persons and property at the work site as well as in the enactment of the works.

21. Accident

The Contractor shall, within 24 hours of the occurrence of any accident, at or about the work site or in connection with execution of the contract, report such accidents to the Engineer-In-Charge giving all the details in writing. He shall also provide additional information about the accident as requested by the EIC.

22. Watch and ward

During the execution of the contract, it shall be the responsibility of the Contractor to arrange watch and ward of the work including the raw materials, machine/equipment/system used for the work at his own cost till the date of acceptance of the work by DEENDAYAL PORT AUTHORITY.

23. Termination

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

(i) if the Contractor fails to execute the work within the period as specified in the contract or any extension granted by the Board;

(ii) if the Contractor fails to perform any other obligation under the contract and if the contractor does not cure the same after receipt of a notice of default, the nature of default as well as the time within which the default has to be cured by

the Contractor.

23.2 In the event of Board's termination of the contract in whole or in part, the Board may execute the remaining work or procure goods similar to those undelivered by the Contractor and the Contractor shall remain liable to the Board for any excess cost for such works or goods and risks, if any.

23.3 The Board will pay the Contractor, for all the items that are completed and ready for delivery, within 30 days after termination. The payment shall be made only after all the afore-mentioned goods are supplied to and accepted by DEENDAYAL PORT AUTHORITY. The amount so decided by the Engineer-in-Charge in this regard shall be final and binding.

23.4 In case of termination of contract for default by the Contractor, the Board may not permit the Contractor to participate in any of the future tender of DEENDAYAL PORT AUTHORITY for a period decided by DPA.

23.5 The employer may terminate the contract if Contractor causes a fundamental breach of the contract.

23.6 Fundamental breaches of contract include, but shall not be limited to the following:

a) The contractor stops work for 28 days and the stoppage has not been authorized by the Engineer-in-Charge or his nominee.

b) The contractor becomes bankrupt.

c) The contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined in the contract data and

d) If the contractor, in the judgment of the employer has engaged in corrupt or fraudulent practices in competing for or in the executing the contract.

e) For the purpose of this paragraph: "corrupt practice" means the offering, giving receiving or soliciting of anything of value to influence the action or public officials in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the employer, and includes collusive practice. Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the employer of the benefits of free and open competition".

f) If the contract is terminated the Contractor shall stop work immediately, make the site safe and secure and leave the site as soon as reasonably possible.

g) Any material lying at site will not be removed without the prior written permission of Engineer in Charge.

24. Arbitration Clause:

24.1 Except where otherwise provided in the contract, all questions and disputes relating to the meaning of the specifications, designs, drawings and instructions herein 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 any other thing whatsoever, in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders, or to the conditions or otherwise concerning the work or regarding the execution or failure to execute the same whether arising during the

progress of the work or after the completion thereof as described hereinafter shall be referred to the Chairman for sole arbitration by himself or by any officer appointed by him.

24.2 It will be no objection to any such appointment that the arbitrator is an employee of the Board or the Government, that he had to deal with the matters to which the contract relates and that in the course of his duties as an employee of the Board of the Government, he had expressed views on all or any of the matters in dispute or of difference.

24.3 The arbitrator, who has been dealing with the arbitration case, being transferred or vacating his office or in the event of his death or being unable to act for any reason, the Chairman then holding the office shall arbitrate himself or appoint any officer to act as arbitrator.

24.4 It is also a term of this contract that no person other than the Chairman himself or any officer appointed by him shall act as arbitrator.

24.5 It is a term of this contract that only such questions and disputes as were raised during the progress of other work till its completion and not thereafter shall be referred to arbitration. However, this would not apply to the questions and disputes relating to liabilities of the parties during the guarantee period after completion of the work.

24.6 It is a term of the contract that the party invoking arbitration shall give a list of disputes with amount of claim in respect of each said disputes along with the notice seeking appointment of arbitrator.

24.7 It is also a term of the contract that if the Contractor does not make any demand for appointment of arbitrator in respect of any claims/disputes in writing, as aforesaid, within 120 days of receiving the intimation from the Engineer –in-charge that the final bill is ready for payment, the claim of the Contractor shall be deemed to have been waived and absolutely barred and the Port Authority shall be discharged and released of all liabilities under the contract in respect of these claims.

24.8 It is also a term of the contract that the arbitrator shall adjudicate only such disputes/claims as referred to him by the appointing authority and give separate award against each dispute/claim referred to him. The arbitrator will be bound to give claim wise detail and speaking award and it should be supported by reasoning.

24.9 The award of the arbitrator shall be final, conclusive and binding on all the parties to Contractor.

24.10 The arbitrators from time to time, with the consent of both the parties, enlarge the time for making & publishing the award.

24.11 Arbitration shall be conducted in accordance with the provisions of Indian Arbitration Act, 1996 or any statutory modifications or enactment thereof and rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.

24.12 It is also a term of the contract that if any fees are payable to the arbitrator, this shall be pied equally by both the parties.

24.13 It is also a term of a contract that the arbitration shall be deemed to have been entered on the reference on the date he issues the first notice to both the parties calling them to submit their statement of claims and counter statement of claims.

24.14 Venue of the arbitration shall be such place as may be fixed by the arbitrator at his sole discretion.

25. Indemnification

The Contractor shall indemnify, protect and defend at its own cost, DEENDAYAL PORT AUTHORITY and its agents & employees from & against any/all actions, claims, losses or damages arising out of

(a) any violation by the Contractor in course of its execution of the contract of any legal provisions or any right of third parties;

(b) Contractor's failure to exercise the skill and care required for satisfactory execution of the contract.

26. Engineer-in-Charge or his nominee's Decisions

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

27. Delegation

The Engineer-in-Charge 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.

28. Communications

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).

29. Personnel:

29.1 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 the Engineer-in-Charge. The Engineer-in-Charge will approve any proposed replacement of Key personnel only if their qualifications, abilities, and relevant experience are substantially equal or better than those of the personnel listed in the Schedule.

29.2 If the Engineer-in-Charge asks the Contractor to remove a person who is a member of the Contractor's staff of 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.

30. Employer's Obligation

30.1 Electricity, water and land for execution of the work at site shall be provided on payment of applicable tariff of the employer subject to availability. If DPA is unable to provide electricity and water the same will be arranged by the contractor at his own cost.

30.2 The employer will not provide Port Authority Quarters, during the tenure of contract.

30.3 Administrative support only, for obtaining clearance from any statutory authority, shall be provided by the employer.

30.4 On successful completion of all the obligations under the contract and on the request

of the Contractor, the employer shall issue a "Completion Certificate with the approval of the Chief Mechanical Engineer, the employer.

31. Queries about the Technical Data

The Engineer-in-Charge or his nominee will clarify queries on the Technical Data.

32. Approval by the Engineer-in-Charge or his nominee.

The Contractor shall submit the makes of material, equipments, specifications and drawings for proposed Work to the Engineer-in-Charge or his nominee, who is to approve them subject to compliance with the Technical specifications and drawings.

The Engineer-in-Charge or his nominee's approval shall not alter the Contractor's responsibility for the work.

All drawings prepared by the contractor for the work if any, are subject to prior approval by the Engineer in Charge or his nominee before procurement/execution.

33. Discoveries

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 employer or his nominee of such discoveries and carry out the instructions of employer or his nominee for dealing with them.

34. Access to the site

The contractor shall allow the Engineer in charge or his nominee and any person authorized by him access to the site 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 work.

35. Instructions

The contractor shall carry out all instructions of the engineer or his nominee which comply with applicable laws where the site is located.

36. Safety

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

Quality Control

37. Identification of Defects

The Engineer-in-Charge or his nominee shall check the work carried out by Contractor and notify the Defects found if any. The Engineer-in-Charge or his nominee may instruct the Contractor to rectify the Defect.

38. Correction of Defects

38.1 The Engineer-in-Charge or his nominee shall give notice to the Contractor of any Defects before the end of the Defects Liability Period (Guarantee 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.

38.2 Every time notice of a Defect is given the Contractor shall correct the notified Defect within the length of time specified by the Engineer-in-Charge or his nominee's notice.

39. Uncorrected Defects

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

40. Employer's right of Rejection

The employer shall reserve the right to reject a part portion or consignment thereof within a reasonable time after actual delivery thereof at the place of destination, if consignment is not in all respects in conformity with terms & conditions of the contract whether on account of any loss, deterioration or damage before dispatch or delivery or during transit or otherwise whatsoever.

41. Removal of Rejected goods

Rejected goods shall under all circumstances lay at the risk of the contractor from the moment of rejection and if such goods are not removed by the contractor within 21 days from the date of intimation from the Engineer-in-Charge. Engineer-in-Charge may either return to the contractor at the risk and cost of the contractor by such mode of transport as the Engineer-in-Charge may select or dispose of such material at the contractor's risk on his account and retain such portion of the sale proceeds as may be necessary to recover any expenses incurred in such disposals.

42. Use of Contract Document

The Contractor shall not, without prior consent, make use of any document except for the purpose of performing this contract.

43. Memorandum of Settlement

The Contractor shall not sign any memorandum of settlement with any agency such as Trade Unions etc. in any form at any level without the prior written permission of the employer in relation to any work under taken by him in the Port premises.

44. Deviations

The bidder must read the tender document carefully and prepare the bid for submission. It is important to note that deviations, if any, must be brought out clearly in the technical offer, which shall be examined by DEENDAYAL PORT AUTHORITY. If the deviation statement submitted by the bidder does not contain any item, then it shall be construed that the bidder has accepted the same and no request from the Contractor, for any change, shall be accepted by DPA at a later stage. In any case, no change in specifications given in the tender agreement shall be permitted. However, only in unavoidable circumstances, DEENDAYAL PORT AUTHORITY may consider such requests from the Contractor, provided the Contractor submits it's request with adequate justification.

45. Approvals

The Engineer-in-Charge shall give specific approval in writing within 7 Days to Contractor after written submission regarding Makes of Material to be used for the Contract and Drawings, if any to be furnished by the Contractor to Engineer-in-Charge for approval. Any corrections to be suggested by Engineer-in-Charge in drawings, the days taken for rectification in drawings shall be in account of the Contractor.

46. Third Party Inspection

The Third Party Inspection Agency shall be arranged by DPA and cost of Third Party Inspection mentioned below shall be borne by DPA.

(i) The Third Party Inspection Agency will carry out approval of drawings if any, material inspection at manufacturer's works/site, dispatch clearance from manufacturer's work, certification for releasing stage payments as per payment terms of contract for all the material as per schedule/work till taken over by DPA.

(ii) The Third Party shall carry out inspection of work as per tender specification/relevant standard.

(iii) The above stage payment shall be released after certifying by the third party and copy of the same shall be produced by Contractor for releasing the stage payment as per **Payment Terms.**

47. Bar Chart

The Contractor shall submit a bar chart, before signing the agreement, clearly indicating the plan for timely execution of the work. The bar chart must indicate the individual activities and commencement and completion dates of each activity. The bar chart shall be used for monitoring the progress of the work.

48. Engagement of Labour

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.

49. Police verification of Contract Labour

The Contractor who has been awarded the job through Work Order shall furnish necessary Police Clearance Certificate in respect of character and antecedents of all Contract Labourers engaged by them, before commencing the work at site.

This will be a part of Contractual Agreement, as entire Cargo Jetty, Oil Jetty area has been declared as **"Prohibited Area".** Contractor who would be awarded contract is required to comply with the above requirements.

Contractor shall obtain such Police Clearance Certificate from Police available against a nominal fee per Certificate and they will submit this Certificate giving Work Order reference on it, to the Office of the Engineer in Charge of respective Divisions, to be forwarded to Commandant, CISF which our Security Department along with request for issuance of Entry Passes.

The Contractor shall, if required by the Engineer-in-Charge, deliver to the Engineer-in-Charge a return in detail, in such form and at such intervals as the Engineer-in-Charge may prescribe, showing the staff and 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-in-Charge may require.

a) Submission of Labour Reports by Every Fortnight:

The contractor shall submit, by the 4th and 19th of every month, to the Engineer-in-Charge a true statement showing, in respect of the second half of the preceding month and the first half of the current month respectively.

(1) The number of labourers employed by him on the work.

(2) Their working hours.

(3) The wages paid to them.

(4) The accidents that occurred during the said fortnight showing the circumstances under which they happened and the extent of damage and injury caused by them, and

(5) The number of female workers who have been allowed Maternity Benefit, according to clause 19 F and the amount paid to them, failing which, the Contractor shall be liable to pay to Government a sum not exceeding Rs. 200/- for each default or materially incorrect statement. The decision of the Engineer-in-Charge shall be final in deducting from any bill due to the contractor the amount levied as fine and be binding on the contractor.

b) No Labour Below 14 Years:

No labour below the age of 14 (fourteen) years shall be employed on the work.

50. Registers to be maintained at site

(1) Site order Book:

A site order book is to be maintained by the contractor at the site. The work orders and instructions written in the site order book shall be deemed to have been legally issued to the contractor shall sign each entry in the site order book as a token of his having seen the same. The site order book shall be property of the Board and shall be handed over to the Engineer-in-charge of the work in good condition on the completion of the work or whenever required by the Engineer-in-charge or his authorized representative.

(2) Hindrance Register:

Every type of hindrance arising during the execution of work should be invariably recorded in the hindrance register. The Hindrance Register is to be maintained by the Engineer in Charge at the site. The contractor shall sign each entry in the hindrance Register as a token of his having seen the same. The Hindrance Register shall be property of the Board.

51. No damage, hindrance or interference to the Port activities:

The contractor shall be required to execute the work in such a manner as not to cause any damage, hindrance or interference to the Port activities and the work going on in the area. The contractor shall have to make good the loss at his own cost and risk all damages caused by his workmen to Port property and no extra payment shall be made to him on that account.

52. Tools & Tackles

All the tools, tackles, bricks, cement, ladders etc. for executing the work will have to be arranged by the contractor at his own cost. Arrangement for storing the materials, tools etc. will also have to be made by him. The EMPLOYER shall not be responsible for any theft/loss of any materials, tools, etc. stored/brought by the contractor for execution of work within the Port area.

53. Hot work:

In case of carrying out any hot work such as gas cutting and welding necessary regulations, prevailing at DEENDAYAL PORT AUTHORITY for such works shall be observed by the tenderer and necessary fire watch permit and No Objection Certificate shall be obtained from the concerned authorities of the port and necessary

charges at the scale of rate prevailing in the port at that time shall be paid by the contractor.

54. Indian Dock Safety Regulations

Necessary Indian Dock Safety Regulations for the safety purpose shall be adhered to by the contractor and he will be held responsible for any violation of the same.

55. Valid Electrical Contractor License and Electrical Supervisor Certificate (Modified as per Clause No. 8 of Special Conditions, Section – III)

The contractor shall have valid electrical contractor's license for carrying out electrical work of nature involved in this tender obtained from the Commissioner of Electricity, Energy & Petrochemical Department, (Inspection wing), Block No. 18, 6th floor, Sector No. II, Udyog Bhavan, Gandhinagar, Government of Gujarat without which the tender shall not be accepted. Contractor shall submit certificate and copy of the license in lieu of the same for consideration.

The contractor shall also have a valid Electrical Supervisor's certificate of competency, issued from the Commissioner of Electricity, Energy & Petrochemical Department, (Inspection wing), Block No.18, 6th floor, Sector No. II, Udyog Bhavan, Gandhinagar, Government of Gujarat or equivalent authority from the other states/central Govt.

56. Action where no Specifications are specified

The work shall be carried out in all respects in accordance with the instructions and requirements of the Engineer-in- Charge.

57. Undertaking by the Contractor

Having understood all the terms and conditions of the tender document and having assessed the site conditions, we hereby confirm that the price offered by us is a firm price and includes all the taxes (excluding GST), duties, fees, Cess etc. and all incidental charges.

58. Labour License:

The contractor will have to obtain necessary License from Assistant Labour Commissioner (ALC), Gopalpuri, Gandhidham (Kutch), in case he is engaging ten or more workers on any day during execution of work.

59. Fraudulent documentation by bidders:

Submission of fraudulent documents shall be treated as major violation of the tender procedure and in such cases the Port shall resort to forfeiture of EMD, if any/SD/BGof the bidder, apart from blacklisting the firm for the next 3 years.

60. If applicable, the contractor shall be registered under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service)Act, 1996.

Signature & Seal of Contractor

Executive Engineer (E) Deendayal Port Authority

SECTION – III

SPECIAL CONDITIONS

(These special conditions will supersede the General Condition and ITB wherever applicable)

1. Clause No. 6 of Instructions to Bidders (ITB), Section – I is not applicable.

2. The Clause No. 7 of General Condition of Contract (GCC), Section – II is modified and shall be read as under:

Payment Terms:

All payments shall be made in Indian rupees unless specifically mentioned.

(1) 70% payment (subject to deductions as per tender conditions) will be released after receipt of material at site in good condition, after obtaining insurance cover as per tender condition (If TPI appointed then after inspection & certification of the same by Third Party Inspection Agency) and after inspection & acceptance of material by DPA.

(2) 20% of item rate (subject to deductions as per tender conditions) after completion of erection, installation, testing and commissioning etc. and 90% of item rate for item covers only laying/fixing/removal etc. (If TPI appointed then after inspection & certification of the same by Third Party Inspection Agency).

(3) 10% (subject to deductions as per tender conditions) will be released after successful completion of whole work (If TPI appointed then after inspection & certification of the same by Third Party Inspection Agency) and handing over to DPA.

(4) The payment from 2nd bill to pre-final bill, shall be released, subject to the condition that the documentary evidence (copy of paid challan in government treasury) of the welfare cess @ 1% of work done or as amended by statutory authority from time to time, paid to concerned authority is submitted for the previous bill.

NOTE:

The payment shall be made through RTGS /NEFT and the Contractor should be furnished following details:

Bank Payment Agreement Form

(a) Name of Party
(b) Account No.
(c) Branch Name
(d) Branch Station
(e) IFSC code of the Bank
(f) MICR No.
(g) Accepted for: NEFT payment or RTGS payment

Declaration by the party

I/We hereby declare that the above information furnished by me is correct and DPA is requested to pay my / our dues to this account for this work is concerned.

Signature of the party with the seal

Declaration by the bank

It is here by informed that the details mentioned by the party is correct as per our records and any payment made by DPA to this account will be accepted either by RTGS/NEFT.

Signature of the bank manager with the seal

3. The Clause No. 14 of General Condition of Contract (GCC), Section – II is modified and shall be read as under:

Guarantee:

The guarantee period shall be for a period of one year from the date of handing over of entire work except for LED Flood Light fittings for which a warranty period of 5 years is specified as per the technical specification of the material.

The Contractor shall give guarantee to the Board that the goods and services under this contract will comply strictly with the contract, shall be first class in every particular case and, shall be free from defects. The Contractor shall further give guarantee to the Board that all materials, equipment and the supplies furnished by him will be new and fit for their intended purposes.

The Board shall promptly notify the Contractor in writing of any claim arising under this guarantee. Upon receipt of such notice, the Contractor shall promptly repair or replace the defective goods and/or services at no cost to the Board.

If the Contractor, having been notified, fails to rectify the defects in accordance with the contract, the Board may proceed to take such remedial action as may be necessary, at the Contractor's risk and cost.

4. **Integrity Pact:**

The Integrity Pact duly signed by authorized person(s) with witnesses are to be submitted by the bidders along with tender fee and EMD in preliminary bid failing which the bid will be treated as non- responsive.

Bidders are required to sign the integrity pact (Provided in Section X along with the tender document), failing which their bid shall be liable for rejection. The "principal" means "Deendayal Port Authority" and "Counter party" means "Vendor / Supplier / Contractor".

If a Counter party commits a violation of its Commitments and Obligations under the Integrity Pact Program during bidding process, their entire Earnest Money Deposit, would be forfeited and in addition, they may be blacklisted from the DPA business in future.

In case of violation of the Integrity Pact by Counter party after award of the Contract, DPA shall be entitled to terminate the contract. DPA would forfeit the Security Deposits; encase the Bank Guarantee(s) and other payments to counter party in such cases.

5. Contractor / Service provider / Supplier etc. has to ensure timely and proper filling of GSTRI so that Deendayal Port Authority can avail input tax credit in timely manner.

In case DPA not allowed Input tax credit due to failure on part of the contractor / service provider / Supplier etc. it will be a financial loss to DPA and therefore same shall be recovered from the payment / deposit o the contractor / service provider / Supplier.

6. The contractor shall be registered under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

7. The contractor shall supply the materials of only the particular bands/Make specified in the tender. If none of the make/brands are available in the market, then the department will accept the equivalent make/brand subject to the contractor producing a letter of non-availability from the manufacturer only. The EIC will ascertain the veracity of that letter directly from the manufacture. Such material will be accepted after obtaining the approval of the authority who approved the tender.

8. The clause no. 55 of GCC of Section – II is modified and shall be read as under:

   The contractor shall have valid electrical contractor's license for carrying out electrical work of nature involved in this tender obtained from the competent authority of their respective states without which the tender shall not be accepted. Contractor shall submit certificate and copy of the license in lieu of the same for consideration.

Signature & Seal of Contractor

Executive Engineer (E) Deendayal Port Authority

SECTION IV

FORMS OF BID

PART – I

To be submitted by Bidders with their Bids

Form No.	Name of forms/format
1	Form of application
2	Pre-qualification of bidders
3	Format for declaration
4	Letter of authority for submission of bid
5	Exceptions & Deviations

PART – II

To be used by successful Bidder

Form No.	Name of forms/format
6	Letter of intent
7	Agreement form
8	Specimen bank guarantee of Performance Guarantee/Security Deposit
9	Letter of authority from ban for all BGs
10	Format of Extensions (Part – I)
11	Format of Extension (Part-II)

Form -1

SPECIMEN OF APPLICATION

(To be executed on bidder's letter head)

To

The Superintending Engineer (Electrical)

DEENDAYAL PORT AUTHORITY

(Address _____)

_____

Pin Code: _____

Dist. Kutch (Gujarat)

We, the undersigned, declare that:

(a) We have examined and have no reservations to the tender documents, including addenda and clarifications issued vide **…….**

(b) We offer to execute the work in conformity with the tendering documents and in accordance with the delivery schedules specified in the schedule of requirements in accordance with the tender document bearing no. **(EL/AC/2039-II)**

(c) Our tender shall be valid for the period of 120 days**,** from the date fixed for the tender submission deadline and it shall remain binding upon us and may be accepted at any time before the expiration of that period or any extended period.

(d) If our tender is accepted, we commit to submit a performance guarantee for the due performance of the contract, as specified in specimen form for the purpose.

(e) No Joint Venture / Joint Venture.

(f) Our firm, its affiliates or subsidiaries- including any subcontractors or contractors for any part of the contract – has not been declared ineligible by the port, under laws of India or official regulations.

(g) We understand that this tender, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract agreement is prepared and executed.

i. We understand that you are not bound to accept the lowest evaluated tender or any other tender or you can also split the work that you may receive.

ii. We also make a specific note clause of [ITB, NIT] under which the contract is governed.

Signed: [insert signature of person whose name and capacity are shown]

In the capacity of [insert legal capacity of person signing the form of tender]

Name: [insert complete name of person signing the form of tender]

Duly authorized to sign the tender for and on behalf of: [insert complete name of tenderer]

Dated on_____ day of _____, _____(insert date of signing)

Form – 2

Specimen format for Pre-qualification of bidders

The information to be filled in by the bidder in the following pages will be used for purposes of pre-qualification as provided for in the instructions to Tenderer.

1. Only for individual bidders

1.1 Constitution of legal status of Bidder (Attach copy)

- Place of registration:
- Principal place of business:
- (power of attorney of signatory of Bid (Attach):

2. Turnover of the Firm

Description	Year	Turn over
(insert the year as per PQC)	2019-20	
i.e. last three financial years ending 31st march of the previous year	2020-21	
	2021-22	

Attachment: financial reports for the last three years: balance sheet, profit and loss statements, auditor's reports (in case of companies/corporation) etc. List them below and attach copies.

Attested Copy of Annual Turnover during Last Three Year Ending on **March 2022**

3. Similar works

Particulars	Year	No. of Woks	Value
Total value of completed Similar work as defined in the tender document during last 07 years.	2016-17		
	2017-18		
	2018-19		
	2019-20		
	2020-21		
	2021-22		
	2022-23		

Attachments: Supporting documents, viz., Successful completion certificate from clients, other documentations to substantiate the similarity of work as per definition of "Similar Work". Employer reserves the right to verify the information:

4. Information on bid capacity (works for which bids have been submitted and works which are yet to be completed) as on the date of this bid.

(A) Existing commitments and on-going works.

Description of work	Place & State	Contract No. & Date	Name & Address	Value of Contract in Rs.	Stipulated Period of Completion	Value of remaining	Anticipated date of completion

			of Port or Dept.			to be completed	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**

(B) Works for which bids already submitted

Description of work	Place & State	Name & Address of Port or Dept.	Value of Contract in Rs.	Stipulated Period of Completion	Date when decision is expected	Remarks if any
1	**2**	**3**	**4**	**5**	**6**	**7**

Attach attested certificates.

5. Information on litigation history in which the bidder is involved

Other party(ies)	Port	Cause of dispute	Amount	Remark involved showing present status.

6. Additional information bidder may like to submit

Duly authorized to sign this authorization on behalf of: (insert complete name of Tenderer)

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

SPECIMEN FORMAT FOR DECLARATION

(To be executed on bidder's Letter Head)

To. _____

(Project title)

Ref: _____

The undersigned, having studied the pre-qualification submission for the above mentioned project, hereby states:

(a) The information furnished in our bid is true and accurate to the best of my knowledge.

(b) That, in case of being pre-qualified, we acknowledge that the Employer may invite us to participate in due time for the opening of Price bid of the Tender on the basis of provisions made in the Tender Documents to follow.

(c) When the call for Tenders is issued, if the legal, technical or financial conditions, or the contractual capacity of the firm changes, we commit ourselves to inform you and acknowledge your sole right to review the pre-qualification made.

(d) We enclose all the required pre-qualification data format and all other documents and supplementary information required for the pre-qualification evaluation.

(e) We also state that no changes have been made by us in the downloaded tender formats and understand that in the event of any discrepancies observed, the tender hoisted on website of procure is full and final for all legal/contractual obligations.

(f) We also declare that, our firm has not been banned / de-listed by any government or PSUs**.**

(g) We also give an undertaking that, we 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 PC Act in connection with the bid.

Date: _____Place: _____

Name of Applicant: _____
Represented by (Name & capacity) _____

SPECIMEN LETTER OF AUTHORITY FOR

SUBMISSION OF BID

(To be executed on ₹ 300/- non Judicial Stamp Paper)

To

The

Dear Sir,

We---------- do hereby confirm that Shri …… (Name, designation and Address) is/are authorized to represent us to bid, negotiate and conclude the agreement on our behalf with you {copy of board resolution attached (in case of company)} for tender no. ---------- for the work of _____ and his specimen signature is appended here to ..

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

We understand that the communication made with him by the employer/Board shall be deemed to have been done with us in respect of this Tender.

[*Specimen signature]*

Yours faithfully,

Signature:

Name & Designation:

For & on behalf of:

Form-5

EXCEPTIONS AND DEVIATIONS

As pointed out in the Tender Call Notice, Bidder may stipulate here exceptions and deviations to the bid conditions, if considered unavoidable.

Sr. No.	Page No. of Bid Document	Clause No. of Bid Document	Subject Deviation

Note: however, the Bidders may note that unacceptable deviations, if any, the bid shall be liable for rejection. Bidder is discouraged to deviate from bid conditions, specifications, delivery schedules, and commercial terms as per the tender document.

Duly authorized to sign this authorization on behalf of: [insert complete name of Tenderer]

Date on _____day of _____, _____ [insert date of signing]

Form-6

LETTER OF INTENT FORMAT

No: _____ Date: _____

To_____

(Name and Address of the Contractor)

Sub: Tender No. EL/AC/2039-II

(Name of Work)

Ref: Your bid dated

And (list the correspondence with the Bidder)

Dear Sirs,

With reference to your above offer and subsequent correspondences on the subject, we are pleased to inform you that your offer has been accepted by the competent authority and you are hereby requested to initiate actions for fulfilment of all necessary formalities, as indicated in the tender document for the above said work, at the earliest.

The Engineer-In-Charge for this work shall be Mr._____. Agreed Schedule date of commencement of the work is _____ and Schedule date of completion of the work is _____. Total Contract Price is ₹_____.

You are requested to sign the Agreement and fulfil other formalities as per the Tender conditions.

Yours Faithfully,

(Signature of the controlling Officer)

CHIEF MECHANICAL ENGINEER

DEENDAYAL PORT AUTHORITY

Form-7

SPECIMEN CONTRACT AGREEMENT

(To be executed on ₹300.00 non-judicial stamp paper)

[The successful tenders shall fill in this form in Accordance with the instructions indicated]

This agreement made of this _____ day of _____ Two Thousand between the Board of Deendayal Port Authority a body corporate under Major Ports Act, 1963 have its Administration Office Building at Gandhidham (Kutch) (hereinafter called the 'Board' which expression shall unless excluded by or repugnant to the context , be deemed to include their successors in office) of the one part and _____ (Name and address of all the partners if a partnership with all their address) hereinafter called the 'Contractor' which expression shall unless excluded by or repugnant to the context be deemed to include his / their heirs, executors , administration , representatives and assignees or successors in office of the other part.

WHERAS the Board is desirous to carrying out the work of _____ _____ And whereas the Contractor has offered to execute and complete such work.

WHERAS the Contractor has deposited a sum of Rs. _____ (Rupees _____ only) as security deposit in the form of _____ Bank Guarantee/Demand Draft

NOW THIS AGREEMENT WITHINESS AS FOLLOWS:

1. In this agreement words and expression shall have the same meaning as are respectively assigned to them in the general condition (including special conditions, if any) of contract hereinafter referred to.
2. The following documents shall be deemed to form and read as construed part of this agreement viz.:

i) Notice inviting tender.

ii) Technical specifications.

iii) Special conditions of contract.

iv) Tender submitted by the Contractor.

v) The Board's "Drawing".

vi) The schedule items of work with quantities and rates.

vii) Any correspondence made between the Superintending Engineer (E) and the Contractor after opening of the cover – I as regards to contain clarifications/details called for vice versa.

viii) Common terms and conditions offered to Contractor and their acceptance including confirmation to withdrawal of their own terms and conditions offered with the tender i.e. 'Cover – I'.

ix) Bank Guarantee for security deposit.

3. The Contractor hereby covenants with the Board to complete the work of _____ in conformity in all respects, with the provisions of the contract.

4. The Board hereby covenants to pay the Contractor in consideration of such completion of the works, the contact price of ₹_____ (Rupees _____ only) at the time and in the manner prescribed of the contract.

IN WITHNESS WHERE of the parties here unto have set their hands and seals the day and year first above written signed and sealed by the Contractor in the presence of:

Witness

1. Name & Address_____ Signature of Contractor

Seal

2. Name & Address_____

Seal

Signed, sealed and delivered by Shri _____on behalf of the Board in presence of

1. _____

2. _____ (Chief Mechanical Engineer)

Deendayal Port Authority

The common seal of the Board of Deendayal Port of Kandla affixed in the presence of:

1. _____ Secretary

2._____ Deendayal Port Authority

Form-8

SPECIMEN BANK GURANTEE TOWARDS PERFORMANCE

GUARANTEE/SECURITY DEPOSIT

(To be executed on ₹300/- non-judicial Stamp Paper)

To,

The Board of Deendayal Port Authority,

DEENDAYAL PORT AUTHORITY

A.O.Building, P.O.Box No.50,

Gandhidham-Kutch.

1. In consideration of the Board of Deendayal Port Authority [insert name of port] incorporated by the Major Port Authority Act, 2021 (hereinafter called "The Board" which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include the Board of Deendayal port of [insert name of port], its successors and assigns) having agreed to exempt _____ (hereinafter called the "contractor") (Name of the contractor/s) from the demand under the terms and condition of the contract, vide _____(Name of the Department)'s letter No._____ Date _____ made between the contractors and the Board for execution of _____covered under Tender No._____ dated _____ (hereinafter called "the said contract") for the payment of Security Deposit in cash or Lodgment of Government Promissory Loan Notes for the due fulfillment by the said contractors of the terms and condition of the said contract, on production of a bank Guarantee for Rs._____(Rupees_____)only we, the (Name of the Bank and Address) _____hereinafter referred to as "the Bank") at the request of the contractors do hereby undertake to pay to the Board an amount not exceeding Rs._____ (Rupees_____) only against any loss or damage caused to or suffered by the Board by reason of any breach by the contractors of any of the terms and conditions of the said contract.

2. We, _____(Name of Bank) (Name of Branch), do hereby Undertake to pay the amount due and payable under this guarantee without any demur merely on a demand from the Board starting that the amount claimed is due by way of loss or damage caused to or which would be caused to or suffered by the Board by reason of the contractors failure to perform the said contract. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to any amount not exceeding Rs. _____ (Rupees_____) only.

3. We, _____(Name of Bank and Branch), undertake to pay to the Board any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto our liability

under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.

4. We, _____(Name of Bank and Branch), further agree with the Board that the guarantee herein contained shall remain in full force and effect during the period that would be taken for performance of the said contract and that it shall continue to be enforceable till all the dues of the Board under or by virtue of the said contract have been fully paid and its claims satisfied or discharged or till the _____ (Name of the user department) of the said certifies that the terms and conditions of the said contract have been fully and properly carried out by the said Contractors and accordingly discharge this guarantee. PROVIDED HOWEVER that the Bank shall at the request of the Board but at the cost of the Contractors, renew or extend this guarantee for such further period or periods as the Board may require from time to time.

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

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

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

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

9. Notwithstanding anything contained herein:

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

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

(c) We are liable to pay the guarantee amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before _____ (date of expiry of Guarantee)."

10. (i) Name of Beneficiary's Bank is State Bank of India, Gandhidham.

(ii) IFSC No. of Beneficiary's Bank is SBIN0060239.

(iii) Bank Account No. of Beneficiary is 10316591671.

Date _____ day of _____ 23

For (Name of Bank)

(Name)
Signature

Form – 9

SPECIMEN LETTER OF AUTHORITY FROM BANK

FOR ALL BGs

(To be executed on Bank's Letter Head)

Date:

To,

The Board of Deendayal Port Authority [insert port],

Dear Sir,

Sub: Our Bank Guarantee No._____

dated_____ for ₹_____ favoring yourselves issued on a/c of

M/s._____

(Name of contractor)

We confirm having issued the above mentioned guarantee favoring yourselves, issued on account of M/s. _____validity for expiry upto date_____and claim expiry date up to_____ We also confirm 1) _____ 2) _____ is/are empowered to sign such Bank Guarantee on behalf of the Bank and his/their signatures is/are binding on the Bank.

Name of signature of Bank Officer

Form – 10

DEENDAYAL PORT AUTHORITY

Form of application by the Contractor for seeking extension of time

Part – 1

1. Name of Contractor
2. Name of work as given in the agreement
3. Agreement No.
4. Estimated amount put to tender
5. Date of commencement of work as per agreement
6. Period allowed for completion of work as per agreement
7. Date of completion stipulated in agreement
8. Period for which extension of time has been given previously:

   (a) 1st extension vide EE's No. Dated Month Days

   (b) 2nd extension vide EE's No. Dated Month Days

   (c) 3rd extension vide EE's No. Dated Month Days

   (d) 4th extension vide EE's No. Dated Month Days

   Total extension previously given.
9. Reasons for which extensions have been previously given (Copies of the previous application should be attached)
10. Period for which extension is applied for
11. Hindrance on account of which extension is applied for with dates on which hindrances occurred and the period for which these are likely to last.
    (a) Serial No.
    (b) Nature of hindrance
    (c) Date of Occurrence
    (d) Period for which it is likely to last
    (e) Period for which extension required for this particular hindrance
    (f) Overlapping period if any, with reference to item……
    (g) Net extension applied for
    (h) Remarks, if any.

    Total period on account of hindrance mentioned above……

    Month……Days
12. Extension of time required for extra work
13. Details of extra work and amount involved:
    (a) Total value of extra work
    (b) Proportionate period of extension of time based on estimated amount put to tender on account of extra work.
14. Total extension of time required for 11 & 12

Submitted to the Sub-Divisional Officer…….

Signature of Contractor

Date: _____

Form – 11

DEENDAYAL PORT AUTHORITY

APPLICATION FOR EXTENSION OF TIME

PART II

(To be filled in by the Sub-Divisional Office)

1. Date of receipt of application from …… Contractor for the work of…….. in the Sub-Divisional Office.
2. Acknowledgement issued by S.D.O. vide his No……..dated
3. Remarks of S.D.O.

   (on the reasons given by the contractor are correct and what extension, if any, is recommended by him. If he has not recommended the extension, reasons for rejections should be given.)

Signature of Divisional Officer

Date:

(To be filled in by the Executive Engineer)

1. Date of receipt in the Divisional Office.
2. Executive Engineers remarks regarding hindrances mentioned by the Contractor.
   (1) Serial No.
   (2) Nature of hindrance
   (3) Date of occurrence
   (4) Period for which hindrance is likely to last
   (5) Extension of time applied for by the contractor
   (6) Overlapping period, if any, giving reference to Items which overlap.
   (7) Net period for which extension is recommended
   (8) Remarks as to why the hindrance occurred And justification for extension recommended.
3. Executive Engineer's recommendations:

   (The present progress of the work should be stated and whether the work is likely to be completed by the date up to which extension has been applied for. If extension of time is not recommended, what compensation is proposed to be levied under clause 2 of the agreement?)

Signature of Executive Engineer

Date

Dy. HOD/SE's recommendations

Signature of Superintending Engineer

Date

HOD's recommendations/approval.

Signature of Chief Mechanical Engineer

Date

SECTION V

SCOPE OF WORK

Deendayal Port Authority (DPA) is one of the Major Port in India. The scope of work consists of Supply, installation, testing & commissioning of HT RMU Panel, LT Power Distribution Panels, Hybrid APFC Panel, Distribution Transformers & Feeder Pillar Panels, Supply, installation & commissioning of Octagonal Street light Poles, FRP Post top Poles, LED Street Light fittings, LED Post Top fittings light, LED Flood Light fittings & LED Bulkhead fittings, Supply & laying of HT & LT armoured XLPE Cables, shifting & commissioning of existing AMF Panel and Design, supply, installation, testing and commissioning of Facade Lighting. The work includes removal of existing GI/RCC lighting pole, existing 11kV four-pole structure and existing rooftop floodlights along with its associated cabling. The work shall be executed to the satisfaction of the Engineer in Charge.

TECHNICAL SPECIFICATION

Technical Specification No. 1:

The item includes supply, installation, testing and commissioning of Double Pole structure with 11kV A.B. Switch & D.O. Fuse on 11m RSJ Pole. The Double pole structure shall be firmly installed at site. Poles shall be painted with 1st coat of aluminium paint over one coat of RO priming and then 2nd coat of aluminium paint over 1st coat. The aluminium paint & RO priming shall be used of reputed make. Double pole structure shall be solidly earthed from two points with individual earthing and a 'Danger' sign board shall be provided on the Double Pole structure as instructed by Engineer in Charge.

The table provided below shows tentative items (but not limited) to be used for double pole structure installation:

Sr. No.	Particulars	Unit	Qty.
1	RSJ Pole (116×110, 11m)	No.	2
2	M.S. Angle, Top Febri. 65×65×6mm, 2750mm	No.	2
3	M.S. Angle, 11kV A.B. Switch, Febri. 65×65×6mm, 2750mm	No.	4
4	M.S. Angle, Febri. 65×65×6mm, 2750mm for cross bracing	No.	4
5	11kV A.B. Switch 400 Amp	Set	1
6	Side Clamps for mounting A.B. Switch (M.S. Flat of size 50×6mm)	No.	16
7	Anchor rod: 1 No.	No.	4
8	Turn Buckle: 1 No.	No.	4
9	Eye Bolt: 1 No. (16mm×590mm Round Bar)	No.	4
10	Stay wire: 7/12	kg	13.60
11	HT Guy Insulator: 1 No.	No.	4
12	Guy Clamp: 1 Set	Set	4
13	GI wire 8 SWG, from Pole top to Earthing Coil	kg	2.72

14	Rigid PVC Pipe: 20mm dia (1.5m)	No.	2
15	Earthing Bolt	No.	2
16	Earthing Coil (8 SWG GI Wire)	No.	2
17	11kV Porcelain Disc Insulator	No.	12
18	11kV Disc Hardware	Set	6
19	11kV Composite Polymeric D.O. Fuse	No.	3
20	M.S. Bolts & Nuts: 65×16mm	kg	7.20
21	M.S. Bolts & Nuts: 180×16mm	kg	2.49
22	P.G. Clamp for Weasel or Rabbit	No.	9
23	HT Binding tape for jumpering	m	20
24	Aluminium Binding wire	kg	0.5

The work includes loading, forwarding, insurance, transportation & unloading of material at site of work and required labour, tools & tackles for installation, testing and commissioning of Double Pole structure.

Technical Specification No. 2:

The item includes dismantling of existing old four pole structure with relevant accessories after installation and charging of newly erected double pole structure. The dismantled old deteriorated material viz. RSJ Pole, AB Switch, DO fuse unit and other relevant accessories shall be removed from the site of work as directed by the Engineer in Charge. The item includes required labour, tools & tackles as directed by Engineer in charge.

Technical Specification No. 3:

This item includes supply at site 3 Core, 95 Sq. mm (E), 11kV grade aluminium conductor XLPE insulated armoured cable confirming to IS: 7098 (Part-II) 1988 with latest amendments with ISI mark. The cable shall have marking/embossing at an interval of every meter showing its progressive length. The contractor shall submit type test certificate at the time of supply of Cable at site. The type test certificate shall not be more than 3 years old. The rate shall be inclusive of all taxes (excluding GST), packing, forwarding, insurance, transportation, and unloading at site of work.

Technical Specification No. 4:

(a) The item includes laying of single length cable of size 3 Core, 95 Sq. mm (E), 11kV grade aluminium conductor XLPE insulated armoured cable in the existing RCC cable trench. The cable shall be laid after opening of RCC trench by removing its cover. Before laying of cable, the RCC cable trench shall be cleaned properly including removal of garbage, dust, etc. from the trench line without damaging other existing cables laying in the trench. After laying of the cable, cable trench shall be properly covered with its existing covers as per original. The item work includes required labour, tools & tackles.

(b) The item includes laying of single length cable of size 3 Core, 95 Sq. mm XLPE Insulated aluminium conductor XLPE insulated armoured cable of 11kV grade in the existing Substation cable trench. The cable shall be laid after opening of trench by removing the MS chequered plates. After laying of the cable, cable trench shall be properly covered with

the existing chequered plates as per original. The item includes required material and labour as directed by Engineer in charge. The item work includes required labour, tools & tackles.

Technical Specification No. 5:

The Gas insulated RMU switchgear shall comply with the requirement stated in the following standard & specification amended up to date.

Metal Enclosed Switchgear	IEC 62271-200/ IEC20 298/IS 12729:1988
Medium Voltage Switch	IEC 265
Alternation Current Dis-connector (Load Break Isolator & Earthing switch)	IEC 60129/ IEC 62271 - 102/ IS 9921
Specification of Alternation Current Breakers	IEC 62271-100/IEC/60056/IS:13118:1991
Panel Design , SF-6 Circuit Breakers	IEC 62271-1/IEC 60694
Current Transformer	IEC 60044-1/IEC 60185/IS 2705:1992
HV switches	IEC 60265/IS 19920:1981
Filling of SF-6 in RMU	IEC 376
Pressure of SF6 gas	1.4 bars at 20 °C
Cable bushings	DIN 47636
Temperature class	-25 °C - +40 °C Indoor
Degree of Protection: - SF6 tank: IP 67 - Front cover: IP 2X - Cable cover:	IEC 60273/IS 13947 (P-1) IP 67 IP 2X IP 3X
Bus bars	240 mm2 Cu
Earth bar (external):	120 mm2 Cu - Bolt dimension: M10
Colour Front Cover Side & Cable Cover	 RAL 7035 RAL 7035

- **General Requirement:**

The Ring Main Unit shall be installed at existing New 11/0.433 kV Substation, A.O. Building. The RMU shall be extensible. One Circuit Breaker for incoming cable and three Circuit breaker for outgoing feeder, shall be enclosed in the main tank using SF6 gas as insulating and vacuum as arc quenching medium or SF6 gas as both insulating and arc quenching medium. The main tank shall be stainless steel sheet of minimum 3mm thickness

and robotically welded with a pressure relief arrangement. Incomer as well as Outgoing feeder shall be provided with Energy Meters.

The cable entry shall be from bottom and the end terminations shall be done on front side.

Inner enclosure (Main tank)

The tank shall be robotically welded stainless steel sheet of minimum 3mm thickness. The tank shall be sealed and no handling of gas should be required throughout the 25 years of service life. However, the SF6 gas pressure inside the tank shall be constantly monitored by a temperature compensating gas pressure indicator offering a simple go, no-go indication. The gas pressure indicator shall be provided with green pressure and red pressure zones. There shall be one Non - return valve to fill up the gas. The manufacturer shall give guarantee for maximum leakage rate of SF6 gas will be lower than 0.1% per Year. An absorption material such as activated alumina in the tank shall be provided to absorb the moisture from the SF6 gas to regenerate the SF6 gas following arc interruption. The degree of protection of the inner enclosure shall be IP 67.

The compact RMU Unit shall be provided with a suitable pedestal made up of M.S. Angle to mount the unit. The height of the bottom of cable box shall be minimum 310 mm to provide the turning radius for the HT cable termination.

- **BUS BARS:**

Three nos. of continuous Bus bars made up of EC grade electrolytic copper of rating current 630A shall be provided. The Short time rating current shall be 20kA for 3 seconds for 11kV. The Bus bar connections shall Anti - oxide greased.

ELECTRICAL DATA:

- 12 kV - 28kV - 1min
- Nominal voltage: 11 kV
- Rated frequency: 50 Hz
- Rated current bus bars: 630 A
- Rated current cable switch dis-connector: 630 A
- Short time withstands current:
    - Cable switch dis-connector with interface C (400-bolt) bushing: 21 kA RMS 3 Seconds
    - Vacuum circuit breaker with interface C (400-bolt) bushing: 21 kA RMS 3 Seconds
- Rated current for transformer T-off: 630 A
- Impulse withstands voltage: To earth and between phases: 95 kV
- Insulation level: - Power frequency 1 min: 28 kV.

Relay & Protection Scheme:

Numerical Relay with Control Supply 24V DC, 50Hz. Phase current input Relay shall be suitable for 1A and %A CT secondary (selectable at site). Relay shall be suitable for protection core CT connection. Metering core shall be connected to measuring instruments separately. Ground current input Relay shall be suitable for residually connected CT input. The relay shall have

provision for digital inputs, speed switch inputs. The Communication System of the relay shall be equipped with RS485 for remote communication or for connection to DCS, SCADA or PLC. The relay shall be suitable for port for connection to Laptop & PC preferably of front side. Relay shall support Modbus Protocol. Relay shall be ABB REF615 / Siemens 7SR.

- **Front Plate:**

The front shall include a clear mimic diagram which indicates different functions. The position indicators shall give a true reflection of the position of the main contacts and shall be clearly visible to the operator. The lever operating direction shall be clearly indicated in the mimic diagram. The manufacturer's plate shall include the switchboard's main electrical characteristics.

- **Danger Board:**

The danger Board plate as per relevant IS shall be riveted on the front plate of the RMU in Languages viz. Gujarati, Hindi, English.

TYPE and ROUTINE TESTS:

Type tests:

The equipment offered in the tender should have been successfully type tested at NABL Laboratories in India or ERDA or equivalent international laboratories for the tests in line with the relevant standard and technical specification and manufacture to submit the valid type test certificates.

Following Type Test must have been carried out:

- Short time current withstand test and peak current withstand test.
- Lightening Impulse voltage withstand test.
- Temperature rise test.
- Short Circuit current making and breaking tests.
- Power frequency voltage withstand test (dry).
- Mechanical operation test.
- Checking of degree of protection of main tank and outer enclosure.
- Checking of partial discharge on complete unit.

- **ACCEPTANCE & ROUTINE TESTS:**

All acceptance and routine tests as stipulated in the respective applicable standards amended up to date for all the equipment shall be carried out by the contractor in the presence of DPA representative & TPIA without any extra cost to DPA before dispatch.

The routine tests are as follows:

1) Conformity with drawings and diagrams,
2) Measurement of closing and opening speeds,
3) Measurement of operating torque,
4) Checking of filling pressure,
5) Checking of gas-tightness,
6) Dielectric testing and main circuit resistance measurement,
7) Power frequency voltage,

8) Resistance test for the circuit,
9) Mechanical operation tests.

The contractor, in the presence of representative of DPA & TPIA, shall carry out all above acceptance and routine tests. The contractor shall give at least 15 days advance intimation to DPA to enable to depute representative for witnessing the tests.

The DPA reserves the right for carrying out any other tests of a reasonable nature at the works of the supplier/laboratory or at any other recognized laboratory/research institute in addition to the above mentioned type, acceptance and routine tests at the cost of the DPA to satisfy that the material complies with the intent of this specification.

- **DRAWINGS:**

All drawings shall conform to relevant IEC Standards Specification. All drawings shall be in ink.

The Contractor shall submit dimensional general arrangement drawings of the equipment, illustrative and descriptive literature in triplicate for various items in the RMUs, which are all essentially required for future automation.

i) Schematic diagram of the RMU panel
ii) Instruction manuals
iii) Catalogues of spares recommended with drawing to indicate each items of spares
iv) List of spares and special tools recommended by the supplier.
v) Copies of Type Test Certificates as per latest IS/IEC.
vi) Drawings of equipment, relays, control wiring circuit, etc.
vii) Foundation drawings of RMU.
viii) Dimensional drawings of each material used for item (vi).
ix) Actual single line diagram of RMU with or without extra combinations shall be made displayed on the front portion of the RMU so as to carry out the operations easily.

The following should be supplied by contractor:

Copies in triplicate of printed volumes of operation, maintenance and erection manuals in English along with the copies of approved drawings and type test reports etc. sets of the manuals as above shall be supplied to the Engineer-in-Charge along with a soft copy of the all Technical and Drawing.

- **NAME PLATE:**

Each RMU and its associated equipments shall be provided with a nameplate legible and indelibly marked with at least the following information.

- Name of manufacturer
- Type
- Serial number
- Voltage Current
- Frequency
- Symmetrical breaking capacity
- Making capacity
- Short time current and its duration
- Purchase Order number and date

- Month and Year of supply

TRAINING:

The contractor shall provide training to Operational Staff and Engineers of DPA. In case of training at manufacturer's works is required, necessary expenses towards boarding, lodging & traveling for the deputed Engineers of DPA shall be borne by DPA.

- **PERFORMANCE GUARANTEE:**

All equipment supplied against this specification shall be guaranteed for a period 12 months from the date of commissioning. However, any engineering error, omission, wrong provision, etc. which do not have any effect on the time period, shall be attended to as and when observed/pointed out without any financial implication on DPA.

The contractor shall supply at site 11 kV, 630 Amp, Indoor Compact Switchgear (Gas Insulated), Extensible on One Side, Motor Driven Spring Charging having 4 nos. Circuit Breaker Modules mentioned as under:
Module No. 1 as 11 kV Incomer along with PT, Module 2 & 3 as Circuit Breaker Module suitable for Distribution Transformer and Module No. 4 as spare 11 kV outgoing feeder suitable for Distribution Transformer.

The Circuit breaker modules shall be supplied with three position isolator/earthing switch, bus bars, interlocking, earth bar and stored spring energy mechanism.

Qty. for each module	**Details of Module No. 1**
1	Stored energy mech. For manual and Motor Driven Spring Charged operation
1	PT for incomer for metering purpose 11 kV/110 V, Class 0.5
1	Multifunction Energy Meter with RS485
1	Circuit breaker 12 kV, 630 A
1	Control voltage, trip coil 24 V DC
1	Protection system: Relay must be Numeric type with following features: a) Self-Powered OC+EF Protection Relay b) Control voltage, 24 V DC c) Interference RS-485, RS232 port d) Equivalent to CAG 37 for Instantaneous Over Current e) Equivalent to CTUM 15 for short Circuit protection, Inst. Earth fault f) Instantaneous definite time & inverse type protection of over current.
1	Set of three ring core metering & protection CTs: CTs of 300-200/1-1A, 5P10, 2.5VA for protection and 300-200/1-1A CL 0.5, 2.5VA for metering (considering the cable size 3Cx 300 sq. mm HT XLPE cable)

1	Breaker ON(red)/OFF(green)/TRIP(amber) LED Indication
1	Capacitive voltage indication fixed type
1	Suitable Power Pack for Auxiliary DC Power supply for Relays

Qty. for each module	**Details of Module No. 2, 3 & 4**
1	Stored energy mech. for manual and Motor Driven Spring Charged operation
1	Multifunction Energy Meter with RS485
1	Circuit breaker 12 kV, 630 A
1	Control voltage, trip coil 24 V DC
1	Self-Powered OC+EF Protection Relay
1	Set of three ring core metering & protection CTs: CTs of 150-100/1-1A, 5P10, 2.5VA for protection and 150-100/1-1A CL 0.5, 2.5VA for metering (considering the cable size 3Cx 300 sq. mm HT XLPE cable)
1	Set of Transformer Protection Annunciation Scheme comprising of: 1 no. Master Trip Relay (24VDC) 6 no. Aux. Relays (24VDC) 1 no. 8-Window Annunciator & Hotter Suitable for providing facility for Buchholz/OTI/WTI Alarm/Trip Indication,
1	Breaker ON(red)/OFF(green)/TRIP(amber) LED Indication
1	Capacitive voltage indication fixed type
1	Suitable Power Pack for Auxiliary DC Power supply for Electro-Mechanical Aux Relays and Master Trip Relays

In addition to above following material to be supplied by Contractor for each panel.

Qty.	Material to be supplied by Contractor with each panel
3	Set of Terminal Protector boots for covering cable-termination.
1	Manometer installed on RMU for Gas Pressure indication.
2	Operating handle

Note: The contractor shall provide 5 Years warranty against the low pressure of pre-filled SF6 gas in the RMU from the date of commissioning of RMU.

Technical Specification No. 6:

This includes installations, testing and commissioning of supplied RMU panel at exiting New 11/0.433 kV Substation, A.O. Building.

All the RMU Panel application shall be erected by using suitable size of M.S. channel (to be supplied & erected by contractor, as per each module approved foundation drawing) foundation bolts including grouting of the bolts of each Module RMU panel. The RMU panel shall be connected with two separate and distinct earthing system. After installation of RMU panel, necessary test and trial shall be carried out for proper functioning of safety, devices, relay etc. and before charging RMU Panel, all the tests required under relevant ISS and IEC – Rules 1956 shall be carried out and the result shall be in conformity with specifications and copies of test results shall be furnished to Engineer-in-Charge. The work includes supply & fixing of required length of insulated Rubber Mat having withstand capacity up to 22 kV, the Rubber Mat shall be laid in such a way, near the panel for operation of RMU.

The complete work shall be carried out as directed by Engineer in Charge. The work includes required labour & material for installations, testing and commissioning of RMU as directed by Engineer in Charge.

Technical Specification No. 7:

(a) This include supply at site outdoor type heat shrink end termination kit for 3 core, 95 Sq. mm HT armored aluminium conductor XLPE Cable of 11 kV grade as per the approved make list.
(b) This include supply at site indoor type heat shrink end termination kit for 3 core, 95 Sq. mm HT armored aluminium conductor XLPE Cable of 11 kV grade as per the approved make list.

Technical Specification No. 8:

This include fixing of following type heat shrink end termination kit of 3 Core, 95 Sq. mm size of HT armored aluminum conductor XLPE Cable of 11 kV grade. The joint shall make in such a way that joined section can be reeled without sagging and the joint shall be electrically and mechanically permanent. This includes all required material, tools & tackles and labour as directed by Engineer in charge.

a) Outdoor type end termination,
b) Indoor type end termination.

Technical Specification No. 9:

The item includes supply at site 3 Star rating, 500 kVA, 11/0.433 kV indoor type, three phase, 50 Hz, core type double copper wound oil immersed distribution transformer with on load tap changer, accessories etc. as mentioned below:

The transformer shall confirm to IS 2026 (Part I, II & III): 1977 / IS 1180 (Part 1): 2014 as applicable and transformer oil shall confirm to IS 335 with up to date amendment. The transformer shall have three Star Rating of BEE.

(i) Capacity : 500 kVA

(ii) H.V. : 11000 Volts

(iii) L.V. : 433 Volts

(iv) Supply System : 3 phase, 50 Hz

(v) H.V. winding : Copper wound delta connected

(vi) L.V. winding : Copper wound star connected having Neutral separately brought out on porcelain bushing for connecting the same to earth.

(vii) Type of cooling : ONAN (Oil immersed with natural air cooled)

(viii) Vector group : Dyn11

(ix) Impedance : Below 5%

(x) Conservator : With sump, drain valve, cover plate and magnetic oil level gauge including minimum oil filling level marking and low level alarm contacts.

(xi) On load tap : Tap changer shall be changer unidirectional type for voltage variation of +5% to -15% on HT winding in equal step of 1.25% (17 step). The on load tap changer shall have independent chamber and attached to transformer with first fill of transformer oil manually operated with counter.

(xii) The transformer shall be provided with the following accessories:

(a) Oil drain valve with plug

(b) Filter valve with plug

(c) Thermometer pocket

(d) Two nos. earthing terminals

(e) Silica gel dehydrating breather

(f) Air release plug

(g) Explosion vent

(h) 4 nos. bidirectional flat rollers

(i) Lifting lugs for main tank and for all items to be handled independently

(j) Rating and terminal marking plate

(k) Buchholz relay, double float type with testing and sampling cocks

(l) 150 mm dial, winding temperature gauge with maximum reading pointer, alarm and trip contacts

(m) 150 mm dial, oil temperature gauge with maximum reading pointer, alarm and trip contacts

(n) Marshalling box

(o) Base channel with towing holes.

(xiii) Temperature rise in oil/winding shall be 50/55 °C above ambient temperature of 45°C.

(xiv) CRCA pressed sheet radiator bank complete with air release plug, drain plug and isolating valve at points of connections with tank.

(xv) Painting:

(a) Internally with oil resisting varnish paint and,

(b) Externally with two coats of zinc rich primer followed by two coats of colour epoxy paint shade no. 631 of IS 5.

Special Conditions for 500 kVA Transformer

- Maximum Losses at 50% loading at 75ºC (Watts): 1510
- Maximum Losses at 100% loading at 75ºC (Watts): 4300
- Normal Flux Density (at rated voltage and frequency): 1.6 T
- Maximum flux density (Increase of +12.5% combined voltage and frequency variation from rated voltage and frequency: 1.9 T (Max.)
- Maximum current density (A/mm²): 2.8
- Metering CT for LV side : 800/5
- Accuracy Class for metering CT: 0.5 Burden : 20 VA

(1) The transformer shall be double wound, copper coil, oil immersed, naturally cooled (ONAN) and non-sealed type with plain rectangular tank.

(2) The transformer shall be suitable for service with fluctuations in supply voltage up to plus 12.5% to minus 2.5%.

(3) The transformer and accessories shall be designed to facilitate operation, inspection, maintenance and repairs. The design shall incorporate every precaution and provision for the safety of equipment as well as staff engaged in operation and maintenance of equipment.

(4) All outdoor apparatus, including bushing insulators with their mountings, shall be designed so as to avoid any accumulation of water.

2. Core

- The core shall have low loss and good grain properties. It should be coated with hot oil proof insulation, bolted together with frames to prevent vibration and noise.
- The core thickness should be 0.23mm or less and grade should be M3 or better.
- All core clamping bolts (if any) shall be effectively insulated.
- Only one grade and one thickness of core shall be accepted and mixing of different grades shall not be allowed.
- The complete design of the core must ensure maximum permanency of the core losses without continuous working of the transformers.

- The value of the maximum flux density allowed in the design and grade of lamination used shall be clearly stated. The vendor shall submit the calculations in support of the same.
- The transformer shall be suitable for continuous service without damage under 'over fluxing' where the ratio of voltage over frequency exceeds the corresponding ratio at rated voltage and rated frequency up to 12.5% and the core shall not get saturated.
- The No Load current shall not exceed 2% of the Full Load current and shall be measured by energizing the transformer at rated voltage and frequency. Increase of 12.5% of rated voltage shall not increase the no - load current by 5% maximum of full load current.
- The bidder shall be required to submit the following documents in regard to procurement of core material:

  1. Invoice of supplier
  2. Mill's test certificate
  3. Packing list
  4. Bill of landing
  5. Bill of entry certificate by custom
  6. Description of material, electrical analysis, physical inspection certificate for surface defects, thickness and width of material.

3. The contractor shall offer the core for inspection and approval of DPA during the manufacturing stage. Penalty or black listing shall be imposed on the bidders using defective CRGO sheets.

4. CT terminal box of suitable size made up of Mild Steel and with theft proof locking arrangement for secondary of CT shall be provided on the side of transformer.

5. Box shall be provided with 12 Stud Type terminal blocks (10 + 2 spare) with shorting link.

6. 10 core multi-stranded PVC wire (2.5 sq.mm Cu FRLS PVC stranded panel wires) shall be used to terminate connections from CTs at LV side to the CT terminal box.

7. Plastic ferrules engraved with black letters shall be used to mark the wires coming from CTs.

8. Plastic ferrules engraved with black letters shall be used to mark the wires in the terminal box.

9. Suitable holes with glands to be provided on bottom side of this box as incoming and outgoing for 10 core 2.5 sq.mm cable.

10. CT terminal box shall have IP 55 protection.

11. SURFACE PREPARATION AND PAINTING

The equipment shall be designed & painted for saline weatherproof & should be guaranteed for any type of damage due to harsh climatic condition for 10 Years.

12. RADIO INTEREFENCE

When operated at voltages up to 12.5% in excess of the normal system rating, transformers shall be substantially free from partial discharges (i.e. corona discharges in either internal or external insulation) which are likely to cause interference with radio or telephone communication.

13. OVERLOAD CAPACITY

The transformer shall be suitable for loading as per IS 6600.

RAW MATERIAL/EQUIPMENT	**Make**
Copper	M/S Sterlite, M/S Hindustan Copper, M/S Hindalco
Core:	M/S AK Steels/POSCO/ Kawasaki/ JFE/Nippon Steel
Insulation paper:	Raman Boards - Mysore,/ Senapathy Whiteley – Bangalore
Transformer Oil:	Savita/ Apar/ Gandhar
Gaskets & Corks:	Nu Cork/ Anchor Corks
Steel For Tank:	M/S TISCO/M/S SAIL/ M/S ISSCO/ M/S RINL/ M/S Jindal Steel/ JSW

Bidder has to provide all test certificates from original manufacturers & relevant sourcing documents.

The bidder shall have valid BEE certification having Type Test Report (TTR) issued by CPRI/ERDA/International Accredited Laboratory. The type tests report shall be submitted to the Engineer in charge of the same design.

The contractor shall conduct all routine tests as specified in IS 2026 on the transformer at his own cost at the manufacturer's works in presence of TPIA/representative of DPA and shall submit test report to the Engineer-in-Charge.

Technical Specification No. 10:

This item includes installation, testing and commissioning of 500 kVA, 11/0.433 kV indoor type distribution transformer at electrical substation as mentioned below:

The transformer shall be installed on prepared pedestal in the substation. Before charging the transformer all the tests shall be carried out as per relevant IS specifications and IE Rules 1956. The transformer shall be properly leveled on foundation including suitable stoppers. The transformer oil shall be tested before transformer is charged and dielectric strength acidity, Sulphur contents shall be in accordance with IS 335 with latest amendments. This includes all material, labour, tools & tackles as directed by Engineer-In-charge.

Technical Specification No. 11:

(a) This item includes design, manufacture, testing & supply at site 10 Way, 1250 Amp, LT Power Distribution Panel suitable for 415V, 3 Phase 4 Wire, 50Hz AC supply system including Switchgears and internal wiring complete in all respect. The LT panel shall be extensible on one side.

The Panel shall be dust and vermin proof, free standing, compartmentalized made from 14 SWG, indoor type, and fabricated from CRCA sheet on robust angle iron frame painted with two coats of Zinc rich primer paint and two coats of colour pigmented epoxy paint shade no. 631 of IS: 5. Before painting the panel, the surface treatment shall be carried out by 7 tank process including degreasing etc.

LT distribution panel shall have Bus-bars which shall be made of high conductivity aluminum alloy of E91E grade, Bus bar joints shall be complete with high tensile steel bolt and washers and nuts bus bar of 1250 Amp rating for three Phases and Half the size of Neutral including and PVC sleeving. All the bus bar shall be supported on hylem/epoxy insulator. The Bakelite sheet of 12 mm (Minimum) thickness shall be provided in side enclosure of panel and wherever it is found necessary under relevant IS specification and IER 1956.

The panel shall be provided with metallic engraved/Radium film labels on front for identification of Incoming & Outgoing feeders.

The neoprene gaskets shall be provided on the periphery of the doors of all feeders.

The sleeved electrolytic copper bus-bars with epoxy insulators with Bakelite support and separators shall be provided with colour code.

All power cables shall enter the switchboard from the bottom on the back of the panel. Sufficient space shall be provided for ease of connection and termination of cables.

Any other electrical component for which details not mentioned but required for operational point of view is to be also considered.

The panel shall be complete in all respect with cable glands, lugs for incoming & outgoing cables along with 2 nos. of earthing terminals.

The panel shall be comprised with following accessories:

1) <u>Main Incomer (1 No.)</u>

The Main Incomer Feeder shall be provided with 1 no. 1250 Amp, 50 kA, 415 Volt, Triple Pole – MDO (Draw out type) ACB (Air Circuit Breaker) with Microprocessor released over current, Short circuit and Earth fault relay with Shunt Trip & under Voltage Coil.

The Digital Multi-Function Energy Meter (accuracy class 0.5) with LCD display shall be provided with parameters like kWh, MD, Voltage of each phase, Line current for each Phase, PF of each Phase, P.F average, Instantaneous kW, Frequency & Date & Time. The Energy Meter shall have RS485/RS232/Ethernet communication port for output.

The LED Indication lamps 6 nos. for R, Y, B, ON, OFF and trip indication shall be provided.

The 3 Nos. CTs having ratio of 1250/5 Amps, class 1 tape wound, shall be provided for metering on each feeder and 4 nos. control fuses / neutral links are to be provided with incomer & the control wiring shall be done with copper wire.

2) <u>DG Set Incomer (1 No.)</u>

The AMF DG Set Incomer Feeder shall be provided with 1 no. 1000 Amp, 50 kA, 415 Volt, Triple Pole – MDO (Draw out type) ACB (Air Circuit Breaker) with Microprocessor released over current, Short circuit and Earth fault relay with Shunt Trip & under Voltage Coil.

The Digital Multi-Function Energy Meter (accuracy class 0.5) with LCD display shall be provided with parameters like kWh, MD, Voltage of each phase, Line current for each Phase, PF of each Phase, P.F average, Instantaneous kW, Frequency & Date & Time. The Energy Meter shall have RS485/RS232/Ethernet communication port for output.

The LED Indication lamps 6 nos. for R, Y, B, ON, OFF and trip indication shall be provided.

The 3 Nos. CTs having ratio of 1000/5 Amps, class 1 tape wound, shall be provided for metering on each feeder and 4 nos. control fuses / neutral links are to be provided with incomer & the control wiring shall be done with copper wire.

3) <u>OUTGOING FEEDERS (10 Nos.):</u>

The Outgoing Feeders shall be provided with (1) 5 Nos. TPN MCCB, 250 Amp, 415 Volt, 36 kA breaking capacity with Microprocessor based for each feeder, (2) 4 Nos. TPN MCCB, 125 Amp, 415 Volts, 25 kA breaking capacity with Microprocessor based for each feeder and (3) 1 Nos. TPN MCCB, 63 Amp, 415 Volt, 25kA.

Each feeder shall have Digital Multi-Function Energy Meter, Accuracy Class 0.5 for measurement of energy consumption of the feeder with RS485/RS232/Ethernet communication port for output. The LED Indication lamp 1 no. for ON indication shall be provided on each feeder. The control wiring & power wiring shall be done with copper wire properly and the power wiring shall be brought up to the Power terminal block of suitable ampere capacity.

The LT Panel shall be tested as per the relevant IS standard. Before Manufacturing the LT Panel, the relevant test certificate in support of LT distribution panel manufacturing, along with design & drawing shall be submitted to DPA for approval and also all Electrical accessories shall be used as per approved Make List of DPA.

The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

(b) This item includes design, manufacture, testing & supply at site 10 Way, 1250 Amp, LT Power Distribution Panel suitable for 415V, 3 Phase 4 Wire, 50Hz AC supply system including Switchgears and internal wiring complete in all respect. The LT panel shall be extensible on one side.

The Panel shall be dust and vermin proof, free standing, compartmentalized made from 14 SWG, indoor type, and fabricated from CRCA sheet on robust angle iron frame painted with two coats of Zinc rich primer paint and two coats of colour pigmented epoxy paint shade no. 631 of IS: 5. Before painting the panel, the surface treatment shall be carried out by 7 tank process including degreasing etc.

LT distribution panel shall have Bus-bars which shall be made of high conductivity aluminum alloy of E91E grade, Bus bar joints shall be complete with high tensile steel bolt and washers and nuts bus bar of 1250 Amp rating for three Phases and Half the size of Neutral including and PVC sleeving. All the bus bar shall be supported on hylem/epoxy insulator. The Bakelite

sheet of 12 mm (Minimum) thickness shall be provided in side enclosure of panel and wherever it is found necessary under relevant IS specification and IER 1956.

The panel shall be provided with metallic engraved/Radium film labels on front for identification of Incoming & Outgoing feeders.

The neoprene gaskets shall be provided on the periphery of the doors of all feeders.

The sleeved electrolytic copper bus-bars with epoxy insulators with Bakelite support and separators shall be provided with colour code.

All power cables shall enter the switchboard from the bottom on the back of the panel. Sufficient space shall be provided for ease of connection and termination of cables.

Any other electrical component for which details not mentioned but required for operational point of view is to be also considered.

The panel shall be complete in all respect with cable glands, lugs for incoming & outgoing cables along with 2 nos. of earthing terminals.

The panel shall be comprised with following accessories:

1) Main Incomer (1 No.)

The Main Incomer Feeder shall be provided with 1 no. 1250 Amp, 50 kA, 415 Volt, Triple Pole – MDO (Draw out type) ACB (Air Circuit Breaker) with Microprocessor released over current, Short circuit and Earth fault relay with Shunt Trip & under Voltage Coil.

The Digital Multi-Function Energy Meter (accuracy class 0.5) with LCD display shall be provided with parameters like kWh, MD, Voltage of each phase, Line current for each Phase, PF of each Phase, P.F average, Instantaneous kW, Frequency & Date & Time. The Energy Meter shall have RS485/RS232/Ethernet communication port for output.

The LED Indication lamps 6 nos. for R, Y, B, ON, OFF and trip indication shall be provided.

The 3 Nos. CTs having ratio of 1250/5 Amps, class 1 tape wound, shall be provided for metering on each feeder and 4 nos. control fuses / neutral links are to be provided with incomer & the control wiring shall be done with copper wire.

2) OUTGOING FEEDERS (10 Nos.):

The Outgoing Feeders shall be provided with (1) 1 No. TPN MCCB, 400 Amp, 415 Volt, 36kA breaking capacity with Microprocessor based (2) 4 Nos. TPN MCCB, 250 Amp, 415 Volt, 36 kA breaking capacity with Microprocessor based for each feeder, (2) 4 Nos. TPN MCCB, 125 Amp, 415 Volts, 25 kA breaking capacity with Microprocessor based for each feeder and (3) 1 Nos. TPN MCCB, 63 Amp, 415 Volt, 25kA.

Each feeder shall have Digital Multi-Function Energy Meter, Accuracy Class 0.5 for measurement of energy consumption of the feeder with RS485/RS232/Ethernet communication port for output. The LED Indication lamp 1 no. for ON indication shall be provided on each feeder. The control wiring & power wiring shall be done with copper wire properly and the power wiring shall be brought up to the Power terminal block of suitable ampere capacity.

The LT Panel shall be tested as per the relevant IS standard. Before Manufacturing the LT Panel, the relevant test certificate in support of LT distribution panel manufacturing, along

with design & drawing shall be submitted to DPA for approval and also all Electrical accessories shall be used as per approved Make List of DPA.

The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

(c) Feeder Pillar Panel (Type – 1):

This item includes design, manufacture, testing & supply at site outdoor type Feeder Pillar Panel with double door, top canopy, handle with locking arrangement (pad lock 5 level with keys).

- Feeder Pillar panel shall be fabricated from Stainless Steel sheet of 2.00 mm thick, 304 Grade Stainless Steel.
- The Board shall be enclosed by stainless sheet steel of minimum 2 mm thickness smoothly finished & level, door & covers shall be made 1.6 mm thick stainless sheet steel. Adequate stiffeners shall be provided wherever necessary.
- Feeder Pillar panel shall be dust & vermin proof having Protection Class of IP 54.
- Feeder Pillar panel shall have bottom Cable entry.
- All panel edges and door edges shall be reinforced against distortion. Cut outs shall be true in shape and devoid of sharp edges.
- The complete structure shall be rigid, self-supporting free from vibration, twists & bends.

  The Feeder Pillar Panel shall be specious for easy maintenance and shall be provided with following electrical items:

1) 125 Amp TPN MCCB, 415 Volt, 25 kA breaking capacity with Microprocessor based: 1 No. for Incomer
2) 32 Amp TPN MCB, 415 Volt, 10kA: 5 Nos. as Outgoing feeder (One Outgoing feeder shall be through digital timer switch)
3) 40A, 415V, 3 phase contactor with coil voltage 215-240 V: 1 No.
4) Digital Timer switch for switching, single phase operated: 1 No.
5) Digital Multi-Function Energy Meter, Accuracy Class 0.5 with RS485: 1 No. for Incomer
6) 125/5 Amp CT (Class 0.5): 3 Nos.
7) Phase R, Y & B Indication Lamp: 3 Nos.

Main Bus & Taps:

The board shall be provided with three phase and neutral bus-bar. Bus-bars shall be of uniform cross section throughout the length of the board and up to the incoming terminals of feeder circuit breaker/switch. The bus-bars shall be made of high conductivity aluminum alloy of E91E grade, Bus bar joints shall be complete with high tensile steel bolt and washers and nuts. Bus-bars shall be thoroughly cleaned at the joint locations and suitable contact grease shall be applied just before making a joint, separate supports shall be provided for each phase of the bus-bars. If a common support is provided for all three phase, anti-tracking

barriers shall be incorporated. Bus-bars shall be adequately supported and braced to withstand the stresses due to the specified short circuit currents. Bus bar supports shall be made of hylum sheets; glass reinforced moulded plastic material or cast resin.

All these components shall be mounted/erected in the Feeder Pillar Panel by means of suitable cadmium passivated hardware. The Panel shall be complete in all respects with heavy duty cable terminals, cable glands, lugs for incoming and outgoing cables including interconnection with PVC insulated cable single core, standard copper conductor of 650/1100V grade. Panel shall be provided with 2 Nos. SS terminals for earthing connection.

The Feeder Pillar Panel shall be tested as per the relevant IS standard. Before Manufacturing the Feeder Pillar Panel, the relevant test certificate in support of Panel manufacturing, along with design & drawing shall be submitted to Engineer in Charge for approval and also all Electrical accessories shall be used as per approved Make List of DPA.

The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading as directed by Engineer-in-Charge.

(d) <u>Feeder Pillar Panel (Type – 2)</u>:

This item includes design, manufacture, testing & supply at site outdoor type Feeder Pillar Panel with double door, top canopy, handle with locking arrangement (pad lock 5 level with keys).

- Feeder Pillar panel shall be fabricated from Stainless Steel sheet of 2.00 mm thick, 304 Grade Stainless Steel.
- The Board shall be enclosed by stainless sheet steel of minimum 2 mm thickness smoothly finished & level, door & covers shall be made 1.6 mm thick stainless sheet steel. Adequate stiffeners shall be provided wherever necessary.
- Feeder Pillar panel shall be dust & vermin proof having Protection Class of IP 54.
- Feeder Pillar panel shall have bottom Cable entry.
- All panel edges and door edges shall be reinforced against distortion. Cut outs shall be true in shape and devoid of sharp edges.
- The complete structure shall be rigid, self-supporting free from vibration, twists & bends.

  The Feeder Pillar Panel shall be specious for easy maintenance and shall be provided with following electrical items:

1) 125 Amp TPN MCCB, 415 Volt, 25 kA breaking capacity with Microprocessor based: 1 No. for Incomer
2) 32 Amp TPN MCB, 415 Volt, 10kA: 5 Nos. as Outgoing feeder (Three Outgoing feeder shall be through digital timer switch)
3) 100A, 415V, 3 phase contactor with coil voltage 215-240 V: 1 No.
4) Digital Timer switch for switching, single phase operated: 1 No.
5) Digital Multi-Function Energy Meter, Accuracy Class 0.5 with RS485: 1 No. for Incomer
6) 125/5 Amp CT (Class 0.5): 3 Nos.

7) Phase R, Y & B Indication Lamp: 3 Nos.

Main Bus & Taps:

The board shall be provided with three phase and neutral bus-bar. Bus-bars shall be of uniform cross section throughout the length of the board and up to the incoming terminals of feeder circuit breaker/switch. The bus-bars shall be made of high conductivity aluminum alloy of E91E grade, Bus bar joints shall be complete with high tensile steel bolt and washers and nuts. Bus-bars shall be thoroughly cleaned at the joint locations and suitable contact grease shall be applied just before making a joint, separate supports shall be provided for each phase of the bus-bars. If a common support is provided for all three phase, anti-tracking barriers shall be incorporated. Bus-bars shall be adequately supported and braced to withstand the stresses due to the specified short circuit currents. Bus bar supports shall be made of hylum sheets; glass reinforced moulded plastic material or cast resin.

All these components shall be mounted/erected in the Feeder Pillar Panel by means of suitable cadmium passivated hardware. The Panel shall be complete in all respects with heavy duty cable terminals, cable glands, lugs for incoming and outgoing cables including interconnection with PVC insulated cable single core, standard copper conductor of 650/1100V grade. Panel shall be provided with 2 Nos. SS terminals for earthing connection.

The Feeder Pillar Panel shall be tested as per the relevant IS standard. Before Manufacturing the Feeder Pillar Panel, the relevant test certificate in support of Panel manufacturing, along with design & drawing shall be submitted to Engineer in Charge for approval and also all Electrical accessories shall be used as per approved Make List of DPA.

The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading as directed by Engineer-in-Charge.

(e) <u>Street Light Feeder Pillar Panel</u>:

This includes design, supply at site outdoor type Street Light Feeder Pillar Panel with double door, top canopy and handle with locking arrangement.

- Panel board frame shall be fabricated from Heavy Duty CRCA sheet steel minimum 2.5 mm thick, pressed & shaped.
- The Board shall be enclosed by sheet steel of minimum 2 mm thickness smoothly finished & level, door & covers shall be made 1.6 mm thick sheet steel. Adequate stiffeners shall be provided wherever necessary.
- Dust & vermin proof Protection Class: IP 54.
- Bottom Cable entry.
- All panel edges and door edges shall be reinforced against distortion. Cut outs shall be true in shape and devoid of sharp edges.
- The complete structure shall be rigid, self-supporting free from vibration, twists & bends.
- The Panel shall be painted with two coats of zink rich primer paint and two coats of colour pigmented epoxy paint.
- Finished painted appearance of equipment shall present an aesthetically, pleasing appearance, free from dents and uneven surfaces.

The Street Light Feeder Pillar Panel shall be specious for easy maintenance and shall be provided with following electrical items:

1) 63 Amp TPN MCCB, 415 Volt, 25 kA breaking capacity with Microprocessor based: 1 No. for Incomer
2) 32 Amp TPN MCB, 415 Volt, 10kA, C Curve: 2 Nos. as Outgoing feeder
3) 70A, 415V, 3 phase contactor with coil voltage 215-240 V: 1 No.
4) Digital Timer switch for switching, single phase operated: 1 No.
5) Digital Multi-Function Energy Meter, Accuracy Class 0.5 with RS485: 1 No. for Incomer
6) 60/5 Amp CT (Class 0.5): 3 Nos.
7) Phase R, Y & B Indication Lamp: 3 Nos.

Main Bus & Taps:

The board shall be provided with three phase and neutral bus-bar. Bus-bars shall be of uniform cross section throughout the length of the board and up to the incoming terminals of feeder circuit breaker/switch. The bus-bars shall be made of high conductivity aluminum alloy of E91E grade, Bus bar joints shall be complete with high tensile steel bolt and washers and nuts. Bus-bars shall be thoroughly cleaned at the joint locations and suitable contact grease shall be applied just before making a joint, separate supports shall be provided for each phase of the bus-bars. If a common support is provided for all three phase, anti-tracking barriers shall be incorporated. Bus-bars shall be adequately supported and braced to withstand the stresses due to the specified short circuit currents. Bus bar supports shall be made of hylum sheets; glass reinforced moulded plastic material or cast resin.

All these components shall be mounted/erected in the Panel by means of suitable cadmium passivated hardware. The Panel shall be complete in all respects with heavy duty cable terminals, cable glands, lugs for incoming and outgoing cables including interconnection with PVC insulated cable single core, standard copper conductor of 650/1100V grade. Panel shall be provided with 2 Nos. SS terminals for earthing connection.

The Street Light Feeder Pillar Panel shall be tested as per the relevant IS standard. Before Manufacturing the Panel, the relevant test certificate in support of Panel manufacturing, along with design & drawing shall be submitted to Engineer in Charge for approval and also all Electrical accessories shall be used as per approved Make List of DPA.

The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading as directed by Engineer-in-Charge.

(f) <u>Timer Distribution Board</u>:

This item includes supply at site of Timer Distribution Board with locking arrangement. The Timer DB shall be made from special grade of CRCA sheet and powder coated. The DB shall have IP54 degree of protection. The DB shall be suitable for wall mounting. The Timer DB shall be supplied with pre-wired with one 32A, 10kA, TPN MCB, one 40A, 415V, 3 phase contactor with coil voltage 215-240 V, one Digital Timer switch and incoming & outgoing cable terminals. The Timer DB shall be provided with both Auto & Manual Function. The rates shall

be inclusive of all the taxes (excluding GST), insurance, transportation, unloading as directed by Engineer in charge.

(g) Hybrid APFC Panel:

This item includes design, manufacture, supply at site Hybrid APFC Panel for 380kVA Load at Substation, A.O. building. The APFC Panel shall correct power factor of two supplied & installed LT Distribution Panels. The APFC system shall operate even with highly fluctuating loads. The APFC system shall assure unity power factor operation at all time, even under the unbalanced load. The APFC System shall compensate negative sequence part of the load current, to maintain balance between three-phase input currents. The output current of APFC System shall be sinusoidal and free from harmonics, even when the significant voltage harmonics are present at the incomer. The System shall operate at high switching frequencies for precise and faster operation, with ripple and noise free operation. The System shall have an integrated 7-inch TFT touch-screen to set/display the all the electrical parameters in real-time. The specifications are as below:

Sr. No.	Description	Specification
1	System voltage (RMS)	350-480V
2	System frequency (Hz)	50 ± 5%
3	Operating temperature range	0 to 45° C (Non-condensing)
4	Semiconductor devices	IGBTs (3-Level Topology)
5	Maximum Reactive Power Output @480V	125kVAR
6	Step-less compensation range	-100kVAR to +125kVRA
7	Rated RMS current output	150A
8	Configuration	3P3W
9	Power Factor Correction	Unity
10	Load Current Balancing	Yes, Negative Sequence
11	CT Requirement	3CTs with 5A Secondary
12	CT Position	Load Side / Source Side
13	Internal Thermal Losses	<2%
14	Color	Black
15	Integrated Short-Circuit Protection	Yes
16	Controller	ARM based MCU
17	Control method	Adaptive Artificial Neural Network based
18	Dynamic Response Time	100 microseconds
19	Correction Time	10 milliseconds
20	Parallel Operation	Up to 50 modules per CT set
21	Parallel Communication	Mini-USB/CAN Bus
22	Paralleling Options	Master-Slave / Multi-Master
23	Noise Level	<65dB
24	Display	7” TFT Touch Screen Display
25	CT Connections between modules	Daisy Chain Type

The APFC Panel shall be tested as per the relevant IS standard. Before Manufacturing the Panel, the relevant test certificate in support of APFC Panel manufacturing, along with design & drawing shall be submitted to Engineer in Charge for approval and also all Electrical accessories shall be used as per approved Make List of DPA.

The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

Technical Specification No. 12:

(a) & (b) This item includes installation, testing and commissioning of supplied 10 way LT Power Distribution Panel in new Substation of A.O. Building. The work includes end termination, connection of cables laid between Transformer's LT side and the LT Power distribution panel including earth connection. This includes necessary mounting hardware for bolting/welding down the base frame to the foundation. All alignment, leveling, grouting, anchoring adjustments shall be carried out in accordance with manufacturer's instruction or as directed by Engineer in charge. The work includes termination of the laid Cables along with providing suitable size of lugs, glands and necessary earth linking connection. All connections in Distribution Panel shall be completed, checked and adjusted to ensure safety and satisfactory operation of the equipment. After installation of the Distribution Panel testing and commissioning shall be done as directed. The work includes all material, labour, tools & tackles as directed by Engineer in charge.

(c) & (d) This item includes installation, testing & commissioning of Feeder Pillar Panel. Feeder Pillar shall be installed on base frame with four leg made of Stainless Steel (Grade SS 304) equal angle of size 50mm×5mm with leg length 800mm. The panel shall be erected on CC foundation of suitable size having height of 300mm above ground level and shall be grouted 500 mm below ground level by providing reinforced foundation of suitable design. The grouting portion shall be such that the height of the base frame should be 600mm above ground level. This work also includes termination of the incoming & outgoing Cable along with providing suitable size of lugs, glands & PVC shroud and necessary earth linking connection. The work includes all labour and material as directed by Engineer in-charge.

(e) This item includes installation, testing and commissioning of supplied Street Light Feeder Pillar Panel in new Substation of A.O. Building. The Panel shall be installed on base frame with four leg made of structural steel equal angle of size 50mm×5mm with leg length 600mm. This includes necessary mounting hardware for bolting/welding down the leg of base frame to the foundation. All alignment, leveling, grouting, anchoring adjustments shall be carried out as directed. This work also includes termination of the incoming & outgoing Cable along with providing suitable size of lugs, glands & PVC shroud and necessary earth linking connection. After installation of the Panel, testing and commissioning shall be done as directed. The work includes all material, labour, tools & tackles as directed by Engineer in charge.

(f) This item includes installation, testing & commissioning of supplied Time Distribution Board on wall/structure as directed. The DB shall be fixed rigidly on wall through suitable size of nut bolts/anchor fasteners/cemented wooden gutties as directed. This work includes termination of the incoming & outgoing Cable along with providing suitable size of lugs, glands and necessary earth linking connection. The work includes all material, labour, tools & tackles as directed by Engineer in charge.

(g) This item includes installation, testing and commissioning of supplied Hybrid APFC Panel in Substation of A.O. Building. The work includes end termination, connection of cables including earth connection. This includes necessary mounting hardware for bolting/welding down the base frame to the foundation. All alignment, leveling, grouting, anchoring adjustments shall be carried out in accordance with manufacturer's instruction or as directed by Engineer in charge. The work includes termination of the laid Cables along with providing suitable size of lugs, glands and necessary earth linking connection. All connections in APFC Panel shall be completed, checked and adjusted to ensure safety and satisfactory operation of the equipment. After installation of the APFC Panel testing and commissioning shall be done as directed. The work includes all material, labour, tools & tackles as directed by Engineer in charge.

Technical Specification No. 13:

This item includes supply at site 1.1 kV grade, following size of aluminium conductor XLPE insulated armoured cable confirming to IS: 7098 (Part-I) 1985 with up to date amendments, having ISI mark and of approved make. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The size of LT armoured XLPE aluminium conductor cable are:

a) 4 Core, 400 Sq.mm,
b) 4 Core, 300 Sq.mm,
c) 4 Core, 185 Sq.mm,
d) 4 Core, 70 Sq.mm,
e) 4 Core, 10 Sq.mm,
f) 4 Core, 6 Sq.mm.

The contractor shall submit type test certificate at the time of supply of Cable at site. The type test certificate shall not be more than 3 years old. The rate shall be inclusive of all taxes (excluding GST), packing, forwarding, insurance, transportation, and unloading at site of work.

Technical Specification No. 14:

This item includes laying of cable of size 4 core, 400 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable trench of new Substation. The cable is required to be laid between Transformer & LT distribution panel. The cable shall be laid after opening of trench by removing the MS chequered plates. After laying of the cable, cable trench shall be properly covered with existing chequered plates as per original. The item includes required material and labour as directed by Engineer in charge.

Technical Specification No. 15:

(a) This includes laying of double length cable of size 4 core, 300 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in hard/soft Soil between DG Set Room and New Substation. The trench shall be excavated of 600 mm width & 1 meter depth. The bed of 50mm of river sand shall be provided at the bottom of the excavated trench. The cable shall be laid over the bed of river sand. The cable shall be protected by providing and laying bricks both the sides lengthwise parallel to the cable & the gaps shall be filled with river sand. The cable shall be covered by keeping two bricks over the side bricks. The filling of the trench shall be done with the excavated stuff &

should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and spreaded in low laying area as directed. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(b) This item includes laying of double length cable of size 4 core, 300 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable trench of new Substation. The cable shall be laid after opening of trench by removing the MS chequered plates. After laying of the cable, cable trench shall be properly covered with existing chequered plates as per original. The item includes required material and labour as directed by Engineer in charge.

Technical Specification No. 16:

(a) This item includes laying of eight run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the existing cable trench of Substation. The cable is required to be laid from LT Power distribution panel. The cable shall be laid after opening of trench by removing the MS chequered plates. After laying of the cable, cable trench shall be properly covered with existing chequered plates as per original. The work includes required material and labour as directed by Engineer in charge.

(b) This item includes laying of six run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable tray installation. The cable shall be properly dressed in such a manner that crossing of cables shall be minimized. The cable shall be clamped with suitable clamps/thick PVC straps at every 1 m distance in cable tray. All cables shall be laid in parallel in side-by-side as directed by Engineer in Charge. After laying of cable, the tray shall be covered with the supplied tray cover with the fasteners. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(c) This includes laying of six run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in hard/soft Soil. The trench shall be excavated of 1800 mm width & 1 meter depth. The bed of 50mm of river sand shall be provided at the bottom of the excavated trench. The cable shall be laid over the bed of river sand. The cable shall be protected by providing and laying bricks both the sides lengthwise parallel to the cable & the gaps shall be filled with river sand. The cable shall be covered by keeping two bricks over the side bricks. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and spreaded in low laying area as directed. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(d) This includes laying of six run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in Paver floor in separate HDPE DWC pipes having strength of 10kg/sq.cm. The Paver blocks in the cable route shall be removed and the trench shall be excavated of 900 mm width & 1 meter depth from the floor level. The suitable size of six length of HDPE DWC pipes shall be laid in the excavated trench and all six run of cable shall be passed through separate HDPE DWC pipe. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position along with the removed Paver Blocks. The excess excavated stuff

shall be disposed off from the site of work and spreaded in low laying area. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

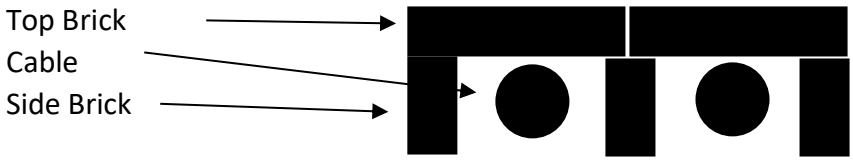
(e) This item includes laying of six length cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through Road Crossing by using Horizontal Directional Drilling (HDD) method by providing suitable diameter HDPE DWC pipes having strength of 10kg/sq.cm. The contractor shall arrange machine for excavation, water for drilling, dewatering pump, HDD equipment at his own cost. The cable shall be passed through HDPE DWC pipe buried at minimum depth of 1m. All six run of cable shall be passed through separate HDPE DWC pipe. Backfilling & dressing of excavated trenches shall be done as per its original position. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(f) This includes laying of four run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in hard/soft Soil. The trench shall be excavated of 1200 mm width & 1 meter depth. The bed of 50mm of river sand shall be provided at the bottom of the excavated trench. The cable shall be laid over the bed of river sand. The cable shall be protected by providing and laying bricks both the sides lengthwise parallel to the cable & the gaps shall be filled with river sand. The cable shall be covered by keeping two bricks over the side bricks. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and spreaded in low laying area as directed. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(g) This item includes laying of two run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable tray installation. The cable shall be properly dressed in such a manner that crossing of cables shall be minimized. The cable shall be clamped with suitable clamps/thick PVC straps at every 1 m distance in cable tray. All cables shall be laid in parallel in side-by-side as directed by Engineer-in-Charge. After laying of cable, the tray shall be covered with the supplied tray cover with the fasteners. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(h) This item includes laying of two run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in hard/soft Soil. The trench to be excavated of 600 mm width & 1 meter depth. The bed of 50mm of river sand shall be provided in the bottom of the excavated trench. The cable shall be laid over the bed of river sand. The cable shall be protected as per Sketch shown below by providing and laying bricks both the sides lengthwise parallel to the cable & the gaps shall be filled with river sand. The cable shall be covered by keeping two bricks over the side bricks shown in the sketch. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and spreaded in low laying area as directed. This includes all labour and material as directed by Engineer in charge.

Sketch



(i) This item includes laying of two run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through Road Crossing by using Horizontal Directional Drilling (HDD) method by providing suitable diameter HDPE DWC pipes having strength of 10kg/sq.cm. The contractor shall arrange machine for excavation, water for drilling, dewatering pump, HDD equipment at his own cost. The cable shall be passed through HDPE DWC pipe buried at minimum depth of 1m. Both two run of cable shall be passed through separate HDPE DWC pipe. Backfilling & dressing of excavated trenches shall be done as per its original position. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(j) This item includes laying of two run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through RCC floor crossing in the trench to be excavated of 400 mm width and 1 meter deep by providing of two separate 150 mm diameter G.I. Class C pipe. The one run of cable shall be passed through one GI pipe. Refilling of the trench shall be done with excavated stuff properly in layers and the RCC floor position shall be properly re-done to its original position. The contractor shall obtain necessary permission for floor cutting from the Civil Department. The excess excavated stuff shall be disposed off from the site of work and spreaded in low laying area. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(k) This item includes laying of two run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the existing RCC trench. The cable shall be laid after opening of RCC trench by removing its cover. Before laying of cable, the RCC cable trench shall be cleaned properly including removal of garbage, dust, etc. from the trench line without damaging other existing cables laying in the trench. After laying of the cable, cable trench shall be properly covered with its existing covers as per original. The work includes required labour, tools & tackles.

(l) This includes laying of two run cable of size 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in Paver floor crossing in separate HDPE DWC pipes having strength of 10kg/sq.cm. The Paver blocks in the cable route shall be removed and the trench shall be excavated of 600 mm width & 1 meter depth from the floor level. The suitable size of double length of HDPE DWC pipes shall be laid in the excavated trench and both two run of cable shall be passed through separate HDPE DWC pipe. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position along with the removed Paver Blocks. The excess excavated stuff shall be disposed off from the site of work and spreaded in low laying area. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 17:

(a) This item includes laying of two run cable of size 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable trench of Substation. The cable is required to be laid from LT Power distribution panel. The cable shall be laid after opening of trench by removing the MS chequered plates. After laying of the cable, cable trench shall be properly covered with existing chequered plates as per original. The work includes required material and labour as directed by Engineer in charge.

(b) This item includes laying of two run cable of size 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the existing RCC trench. The cable shall be laid after opening of RCC trench by removing its cover. After laying of the cable, cable trench shall be properly covered with its existing covers as per original. The work includes required labour, tools & tackles.

(c) This item includes laying of two run cable of size 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable tray installation. The cable shall be properly dressed in such a manner that crossing of cables shall be minimized. The cable shall be clamped with suitable clamps/thick PVC straps at every 1 m distance in cable tray. All cables shall be laid in parallel in side-by-side as directed by Engineer-in-Charge. After laying of cable, the tray shall be covered with the supplied tray cover with the fasteners. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(d) This item includes laying of cable of size 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable tray installation. The cable shall be clamped with suitable clamps/thick PVC straps at every 1 m distance in cable tray. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(e) This item includes laying of cable of size 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through Road Crossing by using Horizontal Directional Drilling (HDD) method by providing suitable diameter HDPE DWC pipe having strength of 10kg/sq.cm. The contractor shall arrange machine for excavation, water for drilling, dewatering pump, HDD equipment at his own cost. The cable shall be passed through HDPE DWC pipe buried at minimum depth of 1m. The run of cable shall be passed through the HDPE DWC pipe. Backfilling & dressing of excavated trenches shall be done as per its original position. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 18:

This item includes laying of 4 core, 185 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in hard/soft Soil. The trench shall be excavated of 300 mm width & 1 meter depth. The bed of 50mm of river sand shall be provided at the bottom of the excavated trench. The cable shall be laid over the bed of river sand. The cable shall be protected by providing and laying bricks both the sides lengthwise parallel to the cable & the gaps shall be filled with river sand. The cable shall be covered by keeping two bricks over the side bricks. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and spreaded in low laying area as directed. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 19:

This item includes supply at site hot dip galvanized steel ladder type tray & cover of following size along with its accessories:

Cable Tray	(a)	(b)

Width (W)	450 mm	200 mm
Thickness (T)	3 mm	3 mm
Length (L)	2500 mm	2500 mm
Side Channel Height (H)	100 mm	100 mm
Run Width	50 mm	50 mm
Run Height	20 mm	20 mm
Run C to C	250 mm	250 mm

Cable Tray Cover	(a)	(b)
Width (W)	Suitable for 450 mm (w) cable tray	Suitable for 200 mm (w) cable tray
Thickness (T)	2 mm	2 mm
Length (L)	2500 mm	2500 mm
Height (H)	30 mm	30 mm

Cable Tray and Tray Cover shall be galvanized to relevant standards applicable to galvanization of fabricated steel structures. The minimum thickness to galvanizing should be 85 microns. The Cable Tray & Tray Cover shall be inspected at site and if damage to galvanization is noticed or the thickness of any section with inadequate thickness of galvanization is noticed the same will have to be replaced to the satisfaction of Third Party Inspection agency or Engineer in Charge. Site galvanization or site repairs will not be permitted. Jointing plate, fasteners & other cable tray accessories shall be galvanized. The Cable Tray manufacturing & galvanizing unit shall be preferably ISO 9001: 2000 & ISO 14001 certified to ensure consistent quality & environmental protection.

The rate shall be inclusive of all the taxes (excluding GST), insurance, packing, forwarding, transportation, unloading at site as directed by Engineer in Charge.

Technical Specification No. 20:

(a) This item includes providing cantilever bracket support for 450mm width cable tray on the wall/column structure. The cantilever bracket shall be horizontal strut wall bracket type. The base plate dimension shall be 200mm (H) × 50mm (W) × 3mm (T). The size of bracket shall be minimum 450mm (Length) × 40mm (Width & Height) × 3mm (Thickness). Cantilever bracket shall be galvanized to relevant standards applicable to galvanization of fabricated steel structures. The minimum thickness to galvanizing should be 85 microns. The Cantilever bracket shall be inspected at site and if damage to galvanization is noticed or the thickness of any section with inadequate thickness of galvanization is noticed the same will have to be replaced to the satisfaction of Third Party Inspection agency or Engineer in charge. Site galvanization or site repairs will not be permitted. The galvanizing unit shall be preferably ISO 9001: 2000 & ISO 14001 certified to ensure consistent quality & environmental protection. The contractor shall take prior approval of drawing from

Engineer in Charge before supply of cantilever bracket supports. The cantilever bracket supports shall be rigidly fixed on wall/structure with minimum two nos. of suitable size of heavy duty anchor fasteners as directed by Engineer in Charge. This includes all material, labour, tools & tackles as directed by Engineer-in-Charge.

(b) This item includes providing cantilever bracket support for 200mm width cable tray on the wall/column structure. The cantilever bracket shall be horizontal strut wall bracket type. The base plate dimension shall be 200mm (H) × 50mm (W) × 3mm (T). The size of bracket shall be minimum 200mm (Length) × 40mm (Width & Height) × 3mm (Thickness). Cantilever bracket shall be galvanized to relevant standards applicable to galvanization of fabricated steel structures. The minimum thickness to galvanizing should be 85 microns. The Cantilever bracket shall be inspected at site and if damage to galvanization is noticed or the thickness of any section with inadequate thickness of galvanization is noticed the same will have to be replaced to the satisfaction of Third Party Inspection agency or Engineer in charge. Site galvanization or site repairs will not be permitted. The galvanizing unit shall be preferably ISO 9001: 2000 & ISO 14001 certified to ensure consistent quality & environmental protection. The contractor shall take prior approval of drawing from Engineer in Charge before supply of cantilever bracket supports. The cantilever bracket supports shall be rigidly fixed on wall/structure with minimum two nos. of suitable size of heavy duty anchor fasteners as directed by Engineer in Charge. This includes all material, labour, tools & tackles as directed by Engineer-in-Charge.

Technical Specification No. 21:

(a) This item includes installation of supplied hot dip galvanized ladder type tray of 450mm width along with accessories on the cantilever brackets. The installation shall be in accordance with equipment manufacturer's instructions, and with best workmanship & best industrial practice to the satisfaction of Engineer in Charge. This includes all material, labour, tools & tackles as directed by Engineer-in-Charge.

(b) This item includes installation of supplied hot dip galvanized ladder type tray of 200mm width along with accessories on the cantilever brackets. The installation shall be in accordance with equipment manufacturer's instructions, and with best workmanship & best industrial practice to the satisfaction of Engineer in Charge. This includes all material, labour, tools & tackles as directed by Engineer-in-Charge.

Technical Specification No. 22:

This item includes supply at site single arm detachable type 7 meter height GI Octagonal Pole at site. The pole shaft shall be made from sheet steel confirming to BSEN 10025 S355. The pole shaft shall have octagonal cross section and shall be continuously tapered with single longitudinal welding. There shall not be any circumferential welding. The welding of pole shaft shall be done by Submerged Arc Welding (SAW) process. Octagonal pole shaft shall be provided with the rigid flange plate manufactured from MS FE410 confirming to IS: 2062 with provision for fixing 4 foundation bolts. This base plate shall be fillet welded to the pole shaft at two locations i.e. from inside and outside. The Octagonal Pole shall be in single section.

The Octagonal Pole shall have door of approximate 500 mm length at the elevation of 500 mm from the Base plate. The door shall be vandal resistance and shall be weather proof to ensure safety of inside connections. The door shall be flush with the exterior surface and shall have suitable locking arrangement. There shall also be welded a cleat of size 40 x 40 x 4mm for the purpose of Earthing. The pole shall be adequately strengthened at the location of the door to compensate for the loss in section.

The poles shall be hot dip galvanized as per BSEN ISO 1461 standard with minimum average coating thickness of 85 micron. The galvanizing shall be done in single dipping.

The Octagonal Poles shall be bolted on a pre-cast foundation with a set of four foundation bolts for greater rigidity.

The pole shall be provided on top with the detachable type canopy having galvanized single arm emerging from the canopy pipe at an angle of 105 degrees with respect to vertical top pipe. The side arm shall be of 1500 mm and made from approx. 75 mm OD and minimum 2 mm thickness. The octagonal canopy shall be of suitable size with respect to top of Pole. The arm pipe shall have suitable nipple for receiving 70 watt LED Street Light fitting.

The base compartment shall have provision to fix up the small Bakelite wooden board of suitable size to mount one of 6A SP MCB, terminal connector & service connections etc. The contractor shall supply the bakelite wooden board.

The dimensions of the Octagonal Pole shall be as below:

1.	Total Height	:	7000 mm
2.	Top A/F	:	70 mm
3.	Bottom A/F	:	130 mm
4.	Sheet Thickness	:	3 mm
5.	Base Plate size	:	220 mm × 220 mm × 12 mm
6.	PCD	:	210 mm
7.	Size of Foundation Bolt	:	4 Nos. M20 × 600 mm J Bolt

All MS parts including hardware shall be hot dip galvanized as per BSEN-ISO1461 or equivalent. The Pole manufacturer shall have ISO 9001, ISO 14001 and ISO 45001 certification for Pole manufacturing.

The rate shall be inclusive of all the taxes (excluding GST), insurance, packing, forwarding, transportation, unloading at site as directed by Engineer in Charge.

Technical Specification No. 23:

The contractor shall prepare foundation for octagonal pole as per drawing provided at Section – VII. The foundation of Pole shall be prepared at the location as directed by Engineer In-Charge. The work includes necessary excavation of required size in hard/soft soil after removal of Paver as the case may be. After casting of foundation, proper curing shall be done. Also, after completion of foundation work, the pavers/soil shall be arranged/leveled to its original condition nearby the pole foundation.
The Octagonal Pole shall be erected on the constructed RCC foundation with a set of four foundation bolts for greater rigidity. For cable entry & exit, suitable size & length of two HDPE Pipe shall be kept in the center of Pole foundation during its casting as shown in the drawing. This item also includes passing of supplied 4 core, 10 Sq.mm XPLE aluminum conductor Cable

through provided HDPE Pipe in the Pole foundation and end termination of 4 core, 10 Sq.mm XPLE aluminum conductor Cable with suitable size of cable glands & lugs in the Pole. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 24:

The contractor shall supply at site 70 Watt energy efficient LED Street Light fitting. The Technical Specification of 70 Watt LED Street Light fitting is as below:

SR. NO.	DESCRIPTION	SPECIFICATION
1	Input Power	70 Watt
2	Input voltage AC	120-270 V AC
3	Input Frequency	50 Hz +/-1 Hz
4	Life	50,000 burning hours @ L70B50, Ta 35°C Outdoor
5	Mounting type	Suitable for wall mounting with bracket
6	Total Harmonic Distortion	<10% maximum
7	Working Temperature	0°C to +45°C
8	Working Humidity	10% to 90% RH
9	Temperature	5700K
10	Colour rendering index	>70
11	Efficacy	≥ 110 Lumen/Watt
12	Finishing	Corrosion resistant powder coating
13	Power factor	Not less than 0.95
14	Warranty	5 Years from the date of successful commissioning. It is clarified that during Warranty Period, if the material is found to be defective or has poor performance or has lumen depreciation beyond permissible limit as per LM80 report, the contractor shall promptly, Replace the material against manufacturing defects /Rectify the material, on receiving the instruction from Engineer in Charge at contractor's cost. The contractor shall have final & total single point responsibility for performance of the LED light fitting supplied.
15	Construction	The housing should be of non-corrosive powder coated pressure die-cast aluminum frame with heat resistant toughened clear glass fixed with SS screw. The LED Street Light shall have its make embossed/engraved on the Fitting.
16	Surge Protection	The Luminaire should have a 10kV SPD duly bolted inside the Luminaire. The SPD should be able to sustain a minimum 15 hits of 5kA rating i.e. Total

		of 45 hits across all the three modes as per IEC 61000.
17	Electrical Protection	The Luminaire should be capable of withstanding voltage stress of 440V phase to phase for 8 hrs at 50 degree Celsius and should have low voltage protection as 100V for 48 hours & high voltage cut-off above 325 VAC and should have an auto restart feature.
18	Impact Resistance	IK07
19	Driver Construction	The Drivers should be a potted driver not a printed circuit board without casing, mounted inside the luminaire. The Driver shall be of constant current type and shall have Over voltage, Over current, Over temperature & Short circuit Protection. The driver efficiency shall be more than 85%. List of make of Driver: PHILLIPS Xitanium/ MEANWELL/ OSRAM/ BAG/ SOSEN/ INVENTRONICS. Manufacturers can use their own make LED driver and the LED Driver shall be BIS certified and shall meet the specifications and comply with Safety requirements (IEC 61347-1, IEC 61347-2-13), EMC requirements (CISPR 15/ EN 55015, IEC/EN 61547, IEC/EN 61000-3-2, IEC/EN 61000-3-3).
20	Driver shall safety compliance	As per IEC 61347-1/ IS 15885 (Part2/ SEC13)/BIS certified
21	Ingress Protection Level of LED Light Fitting	IP 65 or more
22	Optics	Asymmetric Wide or Wide Beam Angle
23	Material of optics	PC lens with toughened glass cover. The LEDs should be provided with UV resistant lens/glass cover for avoiding yellowing of the lense/glass cover. Or Exposed lensed PC Lens plate, the LEDs should be provided with anti-dust, UV resistant exposed lens for avoiding any dust & dirt accumulation on the fixtures and yellowing of the lenses.
24	Makes of LEDs	Osram, Cree, Lumileds, Nichia, Seoul.
25	Specification of LED	SMD type with wattage of each LED should be > 1 Watt and ≤ 3 Watt.
26	Certificate/Report	(1) Type test reports for LED fitting & LED Driver. (2) Should comply to IESNA LM-79 (Approved method for the Electrical and Photometric Measurements of Solid-State Lighting Products). LM79 report from any NABL accredited laboratory.

		(3) The LEDs used should comply to LM-80 standards (IESNA: Approved Method for Measuring Lumen Maintenance of LED Light Sources and LED lumen depreciation time to L70 based on LM-80 data). (4) BIS Certificate for LED Driver. (5) BIS Certificate for LED Luminaire. Contractor shall submit all the above certificate/report including BIS certificate for the Luminaire at the time of supply of fittings.

The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

Technical Specification No. 25:

This item includes fixing & commissioning of supplied 70W LED Street Light fitting. The fitting shall be fixed on nipple of GI pipe bracket on the Octagonal Pole. This includes supply of one No. of 6 Amp SP MCB, terminal connector suitable for 4 core, 10 Sq.mm size cable and 3 Core 1.5 Sq. mm flexible copper Cable for connection between the Street Light fitting to the 6A SP MCB. This work also includes necessary wiring, connections & necessary earth linking connections with all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 26:

(a) This item includes laying of cable of size 4 core, 10 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable on existing Wall/Structure with saddles & clamps. The G.I. Saddle set with Base & Clamps shall be provided of suitable size (with respect to cable outer diameter) made from G.I. flat of size 25mm x 3mm with G.I. Nut bolts/heavy duty screws for clamping. The base shall be fixed on wall at 0.5m interval & the cable shall be laid on 3mm thick GI saddle base on wall/structure and clamped rigidly by GI screwing/bolting of clamps. The cable shall be laid uniformly for better appearance. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(b) This item includes laying of cable of size 4 core, 10 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in Paver floor in HDPE DWC pipe having strength of 10kg/sq.cm. The Paver blocks in the cable route shall be removed and the trench shall be excavated of 300 mm width & 1 meter depth from the floor level. The suitable size of HDPE DWC pipes shall be laid in the excavated trench and the cable shall be passed through laid HDPE DWC pipe. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position along with the removed Paver Blocks. The excess excavated stuff shall be disposed off from the site of work and spreaded in low laying area. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 27:

This item includes preparation of Pole earthing with GI earth rod of 20mm diameter and 1.5 meter length. The Earth rod shall be installed nearby the Lighting Pole into the ground as directed. The connection between the earthing stud inside pole and the earthing rod shall be

done with two runs of 8 SWG GI wire with necessary clamps and nut bolts. The work includes all labour and material as directed by Engineer in charge.

Technical Specification No. 28:

The contractor shall supply at site 200 ±5% Watt energy efficient LED Flood Light fitting. The Technical Specification of 200 ±5% Watt LED Flood Light fitting is as below:

SR.NO.	DESCRIPTION	SPECIFICATION
1	Input Power	200 ±5% Watt
2	Input voltage AC	120-270 V AC
3	Input Frequency	50 Hz +/-1 Hz
4	Life	50,000 burning hours @ L70B50, Ta 35°C Outdoor
5	Mounting type	Suitable for wall mounting with bracket. The thickness of bracket of fitting shall be minimum 4mm with 360 degree rotatable.
6	Total Harmonic Distortion	<10% maximum
7	Working Temperature	0°C to +45°C
8	Working Humidity	10% to 90% RH
9	Temperature	5700K to 6500K
10	Colour rendering index	>70
11	Efficacy	≥ 110 Lumen/Watt
12	Finishing	Corrosion resistant powder coating
13	Power factor	Not less than 0.95
14	Warranty	5 Years from the date of successful commissioning. It is clarified that during Warranty Period, if the material is found to be defective or has poor performance or has lumen depreciation beyond permissible limit as per LM80 report, the Contractor shall promptly, Replace the material against manufacturing defects /Rectify the material, on receiving the instruction from Engineer in Charge at contractor's cost. The contractor shall have final & total single point responsibility for performance of the LED light fittings supplied.
15	Construction	The housing should be of non-corrosive powder coated pressure die-cast alluminium frame with heat resistant toughened clear glass fixed with SS screw. The LED flood light fitting shall not be of modular type.

		The LED Flood Light shall have its make embossed/engraved on the Fitting.
16	Surge Protection	The Luminaire should have a 10kV SPD duly bolted inside the Luminaire. The SPD should be able to sustain a minimum 15 hits of 5kA rating i.e. Total of 45 hits across all the three modes as per IEC 61000.
17	Electrical Protection	The Luminaire should be capable of withstanding voltage stress of 440V phase to phase for 8 hrs at 50 degree Celsius and should have low voltage protection as 100V for 48 hours & high voltage cut-off above 325 VAC and should have an auto restart feature.
18	Impact Resistance	IK08
19	Driver Construction	The Drivers should be a potted driver not a printed circuit board without casing, mounted inside the luminaire. The Driver shall be of constant current type and shall have Over voltage, Over current, Over temperature & Short circuit Protection. The driver efficiency shall be more than 85%. List of make of Driver: PHILLIPS Xitanium/ MEANWELL/ OSRAM/ BAG/ SOSEN/ INVENTRONICS. Manufacturers can use their own make LED driver and the LED Driver shall be BIS certified and shall meet the specifications and comply with Safety requirements (IEC 61347-1, IEC 61347-2-13), EMC requirements (CISPR 15/ EN 55015, IEC/EN 61547, IEC/EN 61000-3-2, IEC/EN 61000-3-3).
20	Driver shall safety compliance	As per IEC 61347-1/ IS 15885 (Part2/ SEC13)/BIS certified
21	Ingress Protection Level of LED Light Fitting	IP 65 or more
22	Optics	LED Flood Light fitting: Asymmetric wide or Wide beam Angle
23	Material of optics	PC lens with toughened glass cover. The LEDs should be provided with UV resistant lens/glass cover for avoiding yellowing of the lense/glass cover. Or Exposed lensed PC Lens plate, the LEDs should be provided with anti-dust, UV resistant exposed

		lens for avoiding any dust & dirt accumulation on the fixtures and yellowing of the lenses.
24	Makes of LEDs	Osram, Cree, Lumileds, Nichia, Seoul.
25	Specification of LED	SMD type with wattage of each LED should be > 1 Watt and ≤ 3 Watt.
26	Certificate/Report	(1) Type test reports for LED fittings & LED Driver. (2) The luminaire should be tested as per IEC 60598 standards and following test reports should be submitted: Thermal Test, Ingress Protection Test, Electrical / Insulation Resistance Test, Endurance Test, Humidity Test. The luminaire should be tested for 'Drop test' as per IEC 60068-2-31/IS9000 Part 7 / Sec 3 standards. The luminaire should be tested for 'Vibration test' as per ANSI/IEC 68-2-6 standards. (3) Should comply to IESNA LM-79 (Approved method for the Electrical and Photometric Measurements of Solid-State Lighting Products). LM79 report from NABL accredited laboratory. (4) The LEDs used should comply to LM-80 standards (IESNA: Approved Method for Measuring Lumen Maintenance of LED Light Sources and LED lumen depreciation time to L70 based on LM-80 data). (5) The LEDs shall comply with photo biological safety norms as per IEC 62471/EN 62471/IS:16108 under Risk Group 1 (Low Risk). (6) BIS Certificate for LED Driver. (7) BIS Certificate for LED Luminaire. Contractor shall submit all the above certificate/report including BIS certificate at the time of supply of fittings.

The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

Technical Specification No. 29:

This item includes fixing of supplied 200 ±5% Watt LED Flood Light fitting on rooftop/wall/structure of the Office building at the locations as directed. The mounting of the fitting shall be done with the fasteners as per the details given in instruction sheet of the fitting and as directed by Engineer in Charge. This includes necessary wiring & connections by providing 3 core, 1.5 Sq.mm flexible copper cable from the junction box to luminaire & necessary earth linking connections with all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 30:

(a) This item includes supply at site FRP Junction Box of size 300 mm × 200 mm × 150 mm (L×W×D) along with one SP MCB of 6 Amp, 6 nos. of 32A capacity terminal connector duly mounted on DIN rail channel with suitable size of two gland holes for 4 core 10 Sq.mm XLPE aluminum conductor Cable. The Junction Box shall have ingress protection of IP65. The size of the Junction Box mentioned is tentative and minimum. The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in Charge.

(b) This item includes supply at site FRP Junction Box of size 300 mm × 200 mm × 150 mm (L×W×D) along with one SP MCB of 6 Amp, 6 nos. of 32A capacity terminal connector duly mounted on DIN rail channel with suitable size of two gland holes for 4 core 6 Sq.mm XLPE aluminum conductor Cable. The Junction Box shall have ingress protection of IP65. The size of the Junction Box mentioned is tentative and minimum. The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in Charge.

Technical Specification No. 31:

(a) This item includes fixing of supplied FRP Junction Box on rooftop/wall/structure of the Office building at the locations as directed. A suitable mounting bracket shall be provided and installed for fixing the Junction Box. This work also includes providing and fixing suitable size of two glands for 4 core 10 Sq.mm XLPE armoured aluminum conductor Cable. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(b) This item includes fixing of supplied FRP Junction Box on rooftop/wall/structure of the Office building at the locations as directed. A suitable mounting bracket shall be provided and installed for fixing the Junction Box. This work also includes providing and fixing suitable size of two glands for 4 core 6 Sq.mm XLPE armoured aluminum conductor Cable. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 32:

This item includes laying of cable of size 4 core, 10 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable on rooftop/wall structure of the Office building with saddles & clamps. The G.I. Saddle set with Base & Clamps shall be provided of suitable size (with respect to cable outer diameter) made from G.I. flat of size 25mm x 3mm with G.I. Nut bolts/heavy duty screws for clamping. The base shall be fixed on rooftop/wall structure at 1m interval & the cable shall be laid on 3mm thick GI saddle base on wall/structure and clamped rigidly by GI screwing/bolting of clamps. The cable shall be laid uniformly for better appearance. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 33:

This item includes supply at site 10 Watt LED Bulkhead fitting. The Technical Specification is as below:

Sr. No.	Description	Specification
1	Input Power	10 Watt

2	Input voltage AC	120-270 V AC
3	Input Frequency	50 Hz +/-1 Hz
4	Life	50,000 burning hours @ L70B50, Ta 35°C Outdoor
5	Mounting type	Suitable for wall mounting
6	Total Harmonic Distortion	≤ 10%
7	Working Temperature	0°C to +45°C
8	Working Humidity	10% to 90% RH
9	Temperature	6500K
10	Colour rendering index	≥ 70
11	Efficacy	≥ 110 Lumen/Watt
12	Finishing	Corrosion resistant powder coating
13	Power factor	≥ 0.9
14	Construction	Pressure die cast housing
15	Surge Protection	The Luminaire should have a 2.5kV SPD duly bolted inside the Luminaire.
16	Impact Resistance	Minimum IK08
17	Electrical Insulation	Class 1
18	Diffuser material	Polycarbonate
19	Ingress Protection Level of LED Light Fitting	IP 65 or more
20	Makes of LEDs	Osram, Cree, Lumileds, Nichia, Seoul.
21	Specification of LED	SMD type with wattage of each LED should be > 1 Watt and ≤ 3 Watt.
22	Certificate/Report	(1) Type test reports for LED fittings & LED Driver. (2) BIS Certificate for LED Driver. (3) BIS Certificate for LED Luminaire. Contractor shall submit the above certificate/report at the time of supply of fittings.

The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

Technical Specification No. 34:

This item includes fixing of supplied 10 Watt LED Bulkhead fitting under canopy of Parking of the Office building at the locations as directed. The mounting of the fitting shall be done with the fasteners as per the details given in instruction sheet of the fitting and as directed by Engineer in Charge. This includes necessary wiring & connections by providing 3 core, 1.5 Sq.mm flexible copper cable from the junction box to luminaire & necessary earth linking connections with all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 35:

(a) This item includes laying of 4 core, 6 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in hard/soft Soil. The trench to be excavated of

300 mm width & 1 meter depth. The bed of 50mm of river sand shall be provided in the bottom of the excavated trench. The cable shall be laid over the bed of river sand. The cable shall be protected by providing and laying bricks both the sides lengthwise parallel to the cable & the gaps shall be filled with river sand. The cable shall be covered by keeping two bricks over the side bricks. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and spreaded in low laying area as directed. This includes all labour and material as directed by Engineer in charge.

(b) This item includes laying of 4 core, 6 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable on wall/under canopy of Parking Shed with saddles & clamps. The G.I. Saddle set with Base & Clamps shall be provided of suitable size (with respect to cable outer diameter) made from G.I. flat of size 25mm x 3mm with G.I. Nut bolts/heavy duty screws for clamping. The base shall be fixed on rooftop/wall structure at 0.5m interval & the cable shall be laid on 3mm thick GI saddle base on wall/structure and clamped rigidly by GI screwing/bolting of clamps. The cable shall be laid uniformly for better appearance. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(c) This item includes laying of 4 core, 6 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through Road/RCC crossing in the trench to be excavated of 300 mm width and 1 meter deep by providing of 100 mm diameter G.I. Class C pipe. The run of cable shall be passed through the GI pipe. Refilling of the trench shall be done with excavated stuff properly in layers and the Road/RCC position shall be properly re-done to its original position. The contractor shall obtain necessary permission for floor cutting from the Civil Department. The excess excavated stuff shall be disposed off from the site of work and spreaded in low laying area. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(d) This item includes laying of 4 core, 6 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable on under canopy of Parking Shed (Green Fiber Shed) with saddles & clamps. The G.I. Saddle set with Base & Clamps shall be provided of suitable size (with respect to cable outer diameter) made from G.I. flat of size 25mm x 3mm with G.I. Nut bolts/heavy duty screws for clamping. The base shall be fixed at under canopy of the Parking Shed at 0.5m interval & the cable shall be laid on 3mm thick GI saddle base on wall/structure and clamped rigidly by GI screwing/bolting of clamps. The cable shall be laid uniformly for better appearance. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 36:

This item includes supply at site 3m height FRP decorative Pole with inbuilt Junction Box for LED post top fitting. The minimum thickness of FRP sheet shall be 3 mm. The OD size of the round pipe shall be 75mm. The Junction Box shall have provision for mounting one 6A SP MCB, terminal connectors. A general arrangement drawing of the decorative Pole shall be submitted to Engineer in Charge for approval. The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

Technical Specification No. 37:

This item includes fixing & erection of supplied 3m height FRP decorative Pole on foundation to be prepared by excavation of suitable size pit after carrying out necessary excavation at the locations as directed. The Pole shall be bolted on RCC foundation with a set of four foundation bolts for greater rigidity. At the bottom of pit 100mm of sand layer shall be

provided and over that 100m CC of 1:4:8 mix shall be provided and then foundation bolt of given size shall be buried in the CC and thereafter pit shall be filled with 1:2:4 CC mix of cement sand and 20mm graded metal course aggregate concrete. For cable entry & exit, suitable size & length of two HDPE Pipe shall be kept in the center of Pole foundation during its casting as directed. This item also includes passing of supplied 4 core, 10 Sq.mm XPLE aluminum conductor Cable through provided HDPE Pipe in the Pole foundation and end termination of 4 core, 10 Sq.mm XPLE aluminum conductor Cable with suitable size of cable glands & lugs in the Pole. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 38:

This item includes supply at site 45 Watt LED Post Top fitting. The Technical Specification is as below:

Sr. No.	Description	Specification
1	Input Power	45 Watt
2	Input voltage AC	120-270 V AC
3	Input Frequency	50 Hz +/-1 Hz
4	Life	50,000 burning hours @ L70B50, Ta 35°C Outdoor
5	Mounting type	Suitable for Pole mounting
6	Total Harmonic Distortion	≤ 10%
7	Working Temperature	0°C to +45°C
8	Working Humidity	10% to 90% RH
9	Temperature	5700K
10	Colour rendering index	≥ 70
11	Efficacy	≥ 110 Lumen/Watt
12	Finishing	Corrosion resistant powder coating
13	Power factor	≥ 0.9
14	Construction	Pressure die cast housing and UV protected diffuser
15	Surge Protection	The Luminaire should have a 5kV SPD duly bolted inside the Luminaire.
16	Electrical Protection	The Luminaire should have high voltage cut-off above 325 VAC and should have an auto restart feature.
17	Impact Resistance	Minimum IK08
18	Electrical Insulation	Class 1
19	Diffuser material	Polycarbonate
20	Ingress Protection Level of LED Light Fitting	IP 65 or more
21	Makes of LEDs	Osram, Cree, Lumileds, Nichia, Seoul.

22	Specification of LED	SMD type with wattage of each LED should be > 1 Watt and ≤ 3 Watt.
23	Certificate/Report	(1) Type test reports for LED fittings & LED Driver. (2) BIS Certificate for LED Driver. (3) BIS Certificate for LED Luminaire. Contractor shall submit the above certificate/report at the time of supply of fittings.

The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

Technical Specification No. 39:

This item includes fixing & commissioning of supplied 45W LED Post Top fitting. The fitting shall be fixed on nipple of FRP decorative Pole. This includes supply of one No. of 6 Amp SP MCB, terminal connector suitable for 4 core, 10 Sq.mm size cable and 3 Core 1.5 Sq. mm flexible copper Cable for connection between the LED Post Top fitting to the 6A SP MCB. This work also includes necessary wiring, connections & necessary earth linking connections with all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 40:

This item includes preparation of Pole earthing with GI earth rod of 16mm diameter and 1 meter length. The Earth rod shall be installed nearby the decorative Pole into the ground as directed. The connection between the earthing stud inside pole and the earthing rod shall be done with two runs of 8 SWG GI wire with necessary clamps and nut bolts. The work includes all labour and material as directed by Engineer in charge.

Technical Specification No. 41:

(a) This item includes laying of 4 core, 10 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in hard/soft Soil through HDPE DWC pipe having strength of 10kg/sq.cm. The trench to be excavated of 300 mm width & 1 meter depth. The suitable size of HDPE DWC pipe shall be laid in the excavated trench and cable shall be passed through the HDPE DWC pipe. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and spreaded in low laying area as directed. This includes all labour and material as directed by Engineer in charge.

(b) This item includes laying of size 4 core, 10 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through excavation in Paver floor in HDPE DWC pipe having strength of 10kg/sq.cm. The Paver blocks in the cable route shall be removed and the trench shall be excavated of 300 mm width & 1 meter depth from the floor level. The suitable size of HDPE DWC pipes shall be laid in the excavated trench and the cable shall be passed through laid HDPE DWC pipe. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position along with the removed Paver Blocks. The excess excavated stuff shall be disposed off from the site of work and spreaded in low laying area. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(c) This item includes laying of 4 core, 10 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable on existing Wall/Structure with saddles & clamps. The G.I. Saddle set with Base & Clamps shall be provided of suitable size (with respect to cable outer diameter) made from G.I. flat of size 25mm x 3mm with G.I. Nut bolts/heavy duty screws for clamping. The base shall be fixed on wall at 0.5m interval & the cable shall be laid on 3mm thick GI saddle base on wall/structure and clamped rigidly by GI screwing/bolting of clamps. The cable shall be laid uniformly for better appearance. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(d) This item includes laying of 4 core, 10 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through Road Crossing by using Horizontal Directional Drilling (HDD) method by providing suitable diameter HDPE DWC pipe having strength of 10kg/sq.cm. The contractor shall arrange machine for excavation, water for drilling, dewatering pump, HDD equipment at his own cost. The cable shall be passed through HDPE DWC pipe buried at minimum depth of 1m. The run of cable shall be passed through the HDPE DWC pipe. Backfilling & dressing of excavated trenches shall be done as per its original position. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 42:

(a) This item includes supply at site 8 Way double door SPN Distribution Board with IP42 degree of protection. The DB shall be made from special grade of CRCA sheet and powder coated. The DB shall be fitted with Bus bar, DIN Rail and neutral link. The rates shall be excluding the cost of MCBs.

(b) This item includes supply at site 4 Way double door TPN Distribution Board with IP42 degree of protection. The DB shall be made from special grade of CRCA sheet and powder coated. The DB shall be fitted with Bus bar, DIN Rail and neutral link. The rates shall be excluding the cost of MCBs.

Technical Specification No. 43:

(a) This item includes fixing & commissioning of supplied 8 Way double door SPN DB on wall/ structure of Substation as directed. The DB shall be fixed rigidly on wall through suitable size of nut bolts/anchor fasteners/cemented wooden gutties as directed. This includes necessary wiring, connections & earth linking with all material, labour tools & tackles as directed by Engineer-In-charge.

(b) This item includes fixing & commissioning of supplied 4 Way double door TPN DB on wall/ structure of Substation as directed. The DB shall be fixed rigidly on wall through suitable size of nut bolts/anchor fasteners/cemented wooden gutties as directed. This includes necessary wiring, connections & earth linking with all material, labour tools & tackles as directed by Engineer-In-charge.

Technical Specification No. 44:

(a) This item includes supply of DIN Rail mounted 'C' Series 63 Amp, 415 Volts, 50 Hz Triple Pole Neutral (TPN) MCB with 10kA Breaking Capacity. The supplied MCB shall conform to IS 8828 or IEC 60898-1.

(b) This item includes supply of DIN Rail mounted 'C' Series 32 Amp, 415 Volts, 50 Hz Triple Pole Neutral (TPN) MCB with 10kA Breaking Capacity. The supplied MCB shall conform to IS 8828 or IEC 60898-1.

(c) This includes supply of DIN Rail mounted 'C' Series 32 Amp, 415 Volts, 50 Hz Single Pole (SP) MCB with 10kA Breaking Capacity. The supplied MCB shall conform to IS 8828 or IEC 60898-1.

Technical Specification No. 45:

This item includes fixing & commissioning of supplied TPN/SP MCB in existing TPN double door DB on wall / structure. The MCB shall be fixed on DIN Rail provided in existing DB. This includes necessary wiring, connections, distribution & earth linking of DB with all material, labour tools & tackles as directed by Engineer-In-charge.

Technical Specification No. 46:

This item includes providing & fixing surface wiring for three phase sub-circuit from the Distribution Board/MCBs to the Distribution Board/MCBs with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS: 694/1990 of size 4 sq. mm. for phase & 2.5 Sq.mm for neutral wire and continuous stranded copper conductor wire for earth to be laid through PVC Oval Pipe with IS: 9537 (Part-III) of size 32 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make as directed by Engineer in Charge. The PVC Oval conduit shall be fixed rigidly on wall/ceiling with suitable size heavy duty PVC saddle set with base, clamp & screw at the interval of 0.5 meter. Complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer in Charge.

Technical Specification No. 47:

This item includes providing & fixing surface wiring for single phase sub-circuit from the Distribution Board/MCB to the switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS: 694/1990 of size 2.5 sq. mm. for phase & neutral wire and 1.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Oval Pipe with IS: 9537 (Part-III) of size 25 mm Diameter of Medium Mechanical Strength (MMS) type/oval shape PVC conduit pipe of 25mm and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make as directed by Engineer-in-Charge. The PVC oval conduit shall be fixed rigidly on wall/ceiling with suitable size heavy duty PVC saddle set with base, clamp & screw at the interval of 0.5 meter. Complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 48:

This item includes providing & fixing surface wiring for light/tube light point from switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS 694: 1990 of size 1.5 sq. mm for phase & neutral wire and 1.0 Sq. mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe with IS 9537 (Part-III) of size 20 mm Diameter of Medium Mechanical Strength (MMS) type /20mm oval shape PVC conduit pipe of 20 mm and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make as directed by Engineer-in-Charge. The PVC round /oval conduit shall be fixed rigidly on wall /ceiling with suitable size heavy duty PVC saddle set with base, clamp & screw at the interval of 0.5 meter. The work consists of providing & fixing of Bell Push /Flush type SP switch 6A, 240V semi modular Anchor Nova type or equivalent with ISI mark and to meet specifications of IS 3854 & 3 plate Ceiling Rose /Angle Holder made from polycarbonate on suitable size of PVC box with cover. The PVC box shall be rigidly fixed with

cemented wooden gutties on the wall and the switches shall be fixed on cover of the box. The complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 49:

The item includes providing & fixing surface wiring for Power point with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS 694: 1990 of size 2.5 Sq. mm for phase & neutral wire and 1 Sq. mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe with IS 9537 (Part-III) of size 20 mm Diameter of Medium Mechanical Strength (MMS) type /20mm oval shape PVC conduit pipe and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make as directed by Engineer-in-Charge. The PVC round /oval conduit shall be fixed rigidly on wall /ceiling with suitable size heavy duty PVC saddle set with base, clamp & screw at the interval of 0.5 meter. The work consists providing & fixing of 20 A & 10 A, 5 in 1 combined Unit 240V, 50Hz with switch, socket, fuse & indicator with ISI mark. The Combined unit shall be rigidly fixed with cemented wooden gutties on the wall as directed. The complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 50:

The item includes providing & fixing half point in existing switch board with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS: 694/1990 of size 1.5 sq. mm. for phase, neutral & earth. The work consists providing & fixing of Flush type SP switch 6A, 250V semi-modular type or equivalent with ISI mark and to meet specifications of IS: 3854, and 2 in 1 socket 6A, 250V made from polycarbonate on existing switchboard. The complete work consist necessary wiring connections and earth linking with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 51:

This item includes supply at site energy efficient 18W LED tube fixture complete with batten. The Technical Specification is as below:

Sr. No.	Description	Specification
1	Input Power	18 Watt
2	Input voltage AC	120-270 V AC
3	Input Frequency	50 Hz +/-1 Hz
4	Life	50,000 burning hours @ L70B50, Ta 35°C Outdoor
5	Mounting type	Suitable for Suspension/Surface mounting
6	Total Harmonic Distortion	≤ 10%
7	Working Temperature	0°C to +45°C
8	Working Humidity	10% to 90% RH
9	Temperature	6500K
10	Colour rendering index	≥ 80
11	Efficacy	≥ 120 Lumen/Watt

12	Ripple	< 5%
13	Power factor	≥ 0.95
14	Construction	Polycarbonate Extrusion
15	Surge Protection	The Luminaire should have a 5kV SPD duly bolted inside the Luminaire.
16	Electrical Protection	The Luminaire should have high voltage cut-off above 325 VAC.
17	Impact Resistance	Minimum IK08
18	Electrical Insulation	Class 1
19	Ingress Protection Level of LED Light Fitting	IP 65 or more
20	Makes of LEDs	Osram, Cree, Lumileds, Nichia, Seoul.
21	Specification of LED	SMD type with wattage of each LED should be > 1 Watt and ≤ 3 Watt.
22	Certificate/Report	(1) Type test reports for LED fittings & LED Driver. (2) BIS Certificate for LED Driver. (3) BIS Certificate for LED Luminaire. Contractor shall submit the above certificate/report at the time of supply of fittings.

The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

Technical Specification No. 52:

This item includes installation of supplied 18W LED tube fitting with suspension mounting accessories in the substation as directed. The light fitting shall be hung from the ceiling by two stainless steel suspension cable of 3m length and anchor fasteners. The work includes necessary connection from existing ceiling rose with 3 core, 1.5 Sq.mm flexible Cable. This includes all material, labour, tools & tackles as directed by Engineer-in-Charge.

Technical Specification No. 53:

This item includes supply of heavy duty wall mounting industrial fan of size 30 inch (750mm) sweep fitted with heavy duty grease filled double ball bearing that ensures noiseless performance and long lasting smoother life of fan suitable for single phase 230 Volts A.C. 50Hz with separate speed regulator operated at 230V AC supply. The guards shall be powder coated & blades of fan shall be Aluminum alloy powder coated. The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer-in-Charge.

Technical Specification No. 54:

This item includes fixing of supplied wall mounting industrial fan 2.5 meter from floor or at suitable height as directed. The fan shall be fixed with suitable size of anchor fastener bolts as directed. The work includes necessary connection from existing ceiling rose with 3 core, 1.5 Sq.mm flexible Cable. This includes all material, labour, tools & tackles as directed by Engineer-in-Charge.

Technical Specification No. 55:

This item includes supply at site 1200 mm sweep Ceiling Fan fitted with heavy duty grease filled double ball bearing that ensures noiseless performance and long lasting smoother life of fan suitable for single phase 230 Volts A.C., 50Hz. The fan should be 5 star ISI mark. The Fan blades shall be aerodynamically balanced to ensure maximum air delivery at lower power consumption & the blades shall be made of 'heavy gauge' aluminum sheet so as to retain the blade's angel over a longer period. The Fan motor shall be made of superior grade copper wire and impregnated in special varnish for long life operation. The motor shall be totally enclosed and low-loss-silicon steel stampings ensure minimum power consumption with high optimum output. The Fan shall be coated with a special anticorrosive enamel paint that makes them rust free and ensures a classic appearance and longer life. The supplied fan shall confirm to IS specifications. The fan shall be supplied along with all accessories such as down rod 600 mm length, PVC Bobbin, Stainless Steel Nut Bolt with cotter pin, capacitor etc. of approved make and as per IS specification as directed by Engineer in Charge. The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer-in-Charge.

Technical Specification No. 56:

This item includes fixing of supplied Ceiling Fan along with its accessories on existing cross pipe bracket. The work includes necessary connection from existing ceiling rose with 3 core, 1.5 Sq.mm flexible Cable. This includes all material, labour, tools & tackles as directed by Engineer-in-Charge.

Technical Specification No. 57:

The item includes providing & fixing surface wiring for Fan point from switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS 694: 1990 of size 1.5 sq. mm for phase & neutral wire and 1.0 Sq. mm continuous stranded copper conductor wire for earth to be laid through 20 mm oval shape PVC conduit pipe and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make as directed by Engineer-in-Charge. The PVC oval conduit shall be fixed rigidly on wall /ceiling with suitable size heavy duty PVC saddle set with base, clamp & screw at the interval of 0.5 meter. The work consists of providing & fixing of Flush type SP switch 6A, 250V semi modular Anchor Nova type or equivalent with ISI mark and to meet specifications of IS 3854, five Step cut electronic fan regulator of socket size with rotary steps & 3 plate Ceiling Rose made from polycarbonate on suitable size of PVC box with cover. The PVC box shall be rigidly fixed with cemented wooden gutties on the wall and the switches shall be fixed on cover of the box. The complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer in Charge.

Technical Specification No. 58:

This item includes supply at site, exhaust fan of size 300 mm with capacitor start and run type motor, continuously rated, totally enclosed fitted with heavy duty grease filled double ball bearing that ensures noiseless performance and long lasting smoother life of fan suitable for single phase 230 Volt AC 50Hz. The impeller shall be used in an Exhaust Fan shall be of the propeller type & both hub and impeller shall be dynamically balanced, frames and arms mounted on rubber bushings, to avoid vibrations.

Technical Specification No. 59:

This item includes fixing of supplied 300mm sweep exhaust fan on existing exhaust hole. The grouting of the fan is to be done by suitable size of anchor fastener bolts, and by providing metallic mesh/louvers as directed to other side so that birds can be restricted in the passage. This includes connections with 3 core flexible copper cable from nearest source of supply & necessary connections & earth linking with all material and labour and as directed by Engineer in Charge.

Technical Specification No. 60:

The contractor shall supply at site 70 Watt energy efficient LED flood light fitting. The Technical Specifications of 70 Watt LED Flood Light fitting is as below:

SR. NO.	DESCRIPTION	SPECIFICATION
1	Input Power	70 Watt
2	Input voltage AC	120-270 V AC
3	Input Frequency	50 Hz +/-1 Hz
4	Life	50,000 burning hours @ L70B50, Ta 35°C Outdoor
5	Mounting type	Suitable for wall mounting with bracket
6	Total Harmonic Distortion	≤ 10%
7	Working Temperature	0°C to +45°C
8	Working Humidity	10% to 90% RH
9	Temperature	3000K
10	Colour rendering index	>70
11	Efficacy≥	≥ 120 Lumen/Watt
12	Finishing	Corrosion resistant powder coating
13	Power factor	≥ 0.95
14	Warranty	5 Years from the date of completion of work. The contractor shall have final & total single point responsibility for performance of the LED light fitting supplied.
15	Construction	The housing should be of non-corrosive powder coated pressure die-cast alluminium frame with heat resistant toughened clear glass fixed with SS screw. The LED Flood Light shall have its make embossed/engraved on the Fitting.
16	Surge Protection	The Luminaire should have a 10kV SPD duly bolted inside the Luminaire. The SPD should be able to sustain a minimum 15 hits of 5kA rating i.e. Total of 45 hits across all the three modes as per IEC 61000.
17	Electrical Protection	The Luminaire should be capable of withstanding voltage stress of 440V phase to phase for 8 hrs at

		50 degree Celsius and should have low voltage protection as 100V for 48 hours & high voltage cut-off above 325 VAC and should have an auto restart feature.
18	Impact Resistance	IK07
19	Driver Construction	The Drivers should be a potted driver not a printed circuit board without casing, mounted inside the luminaire. The Driver shall be of constant current type and shall have Over voltage, Over current, Over temperature & Short circuit Protection. The driver efficiency shall be more than 85%. List of make of Driver: PHILLIPS Xitanium/ MEANWELL/ OSRAM/ BAG/ SOSEN/ INVENTRONICS. Manufacturers can use their own make LED driver and the LED Driver shall be BIS certified and shall meet the specifications and comply with Safety requirements (IEC 61347-1, IEC 61347-2-13), EMC requirements (CISPR 15/ EN 55015, IEC/EN 61547, IEC/EN 61000-3-2, IEC/EN 61000-3-3).
20	Driver shall safety compliance	As per IEC 61347-1/ IS 15885 (Part2/ SEC13)/BIS certified
21	Ingress Protection Level of LED Light Fitting	IP 65 or more
22	Optics	Asymmetric Wide or Wide Beam Angle
23	Material of optics	PC lens with toughened glass cover. The LEDs should be provided with UV resistant lens/glass cover for avoiding yellowing of the lense/glass cover. Or Exposed lensed PC Lens plate, the LEDs should be provided with anti-dust, UV resistant exposed lens for avoiding any dust & dirt accumulation on the fixtures and yellowing of the lenses.
24	Makes of LEDs	Osram, Cree, Lumileds, Nichia, Seoul.
25	Specification of LED	SMD type with wattage of each LED should be > 1 Watt and ≤ 3 Watt.
26	Certificate/Report	(1) Type test reports for LED fitting & LED Driver. (2) Should comply to IESNA LM-79 (Approved method for the Electrical and Photometric Measurements of Solid-State Lighting Products). LM79 report from any NABL accredited laboratory. (3) The LEDs used should comply to LM-80 standards (IESNA: Approved Method for Measuring Lumen Maintenance of LED Light

		Sources and LED lumen depreciation time to L70 based on LM-80 data). (4) BIS Certificate for LED Driver. (5) BIS Certificate for LED Luminaire. Contractor shall submit all the above certificate/report including BIS certificate for the Luminaire at the time of supply of fittings.

The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

Technical Specification No. 61:

This item includes fixing of 70W LED Flood Light fitting on wall/structure of Substation as directed. This work includes providing & fixing of necessary fasteners for fixing of LED flood light fitting. This work includes necessary wiring & connections by providing 3 core, 1.5 Sq.mm flexible copper cable from nearby junction box to the LED fitting. This work includes required material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 62:

This item includes laying of 4 core, 6 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable on Wall/Structure with saddles & clamps. The G.I. Saddle set with Base & Clamps shall be provided of suitable size (with respect to cable outer diameter) made from G.I. flat of size 25mm x 3mm with G.I. Nut bolts/heavy duty screws for clamping. The base shall be fixed on wall at 0.5m interval & the cable shall be laid on 3mm thick GI saddle base on wall/structure and clamped rigidly by GI screwing/bolting of clamps. The cable shall be laid uniformly for better appearance. This work includes required material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 63:

This item includes supply at site heat shrink straight through joint kit for 1.1kV grade, 4 Core, 185 to 300 sq. mm XLPE aluminum conductor cable. The cable joint kit shall be of approved make list.

Technical Specification No. 64:

This includes fixing of heat shrink straight through joint kit to 1.1kV grade, 4 Core, 185 to 300 sq.mm XLPE aluminum conductor cable. The joint shall be made in such a way that joined section can be reeled without sagging and the joint shall be electrically and mechanically permanent. This item includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 65:

This item includes removal, shifting, installation and commissioning of existing AMF Panel of 400kVA DG Set from DG Set Room to New Substation. The work includes necessary mounting hardware for bolting/welding down the base frame to the foundation. All alignment, leveling, grouting, anchoring adjustments shall be carried out in accordance with best workmanship & best industrial practice to the satisfaction of Engineer in Charge. The work includes termination of the laid Cables along with providing suitable size of lugs, glands and necessary earth linking connection. All connections in AMF Panel shall be completed, checked and adjusted to ensure safety and satisfactory operation of the equipment. After installation of

the AMF Panel, testing and commissioning shall be done as directed. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 66:

(a) This item includes removing existing 7 m height GI pole installation at A.O. building. The work includes removal of existing old one LED light fitting fixed on the pole. The removed old GI Pole and old LED light fitting shall be handed over to store at AO Building. This includes required labour, tools & tackles as directed by Engineer in Charge.

(b) This item includes removing existing 7 m height RCC pole installation at A.O. building. The removed old RCC Pole shall be shifted at location at AO Building as directed by Engineer in Charge. This includes required labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 67:

This item includes removing old 19 nos. of existing flood lights at rooftop of the Office building and its associated existing cabling. The removed old material shall be handed over to in – charge of Electrical Section, A.O. Building. This includes required labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 68:

This work includes design, supply, installation, programming, testing and commissioning of facade lighting system at A.O. building, Gandhidham. The contractor shall demonstrate a sample facade lighting for approval from Engineer in Charge. The Engineer in Charge in his sole discretion may reject the sample facade lighting demonstrated, if it is found to be of inferior quality & performance. After approval of the sample facade lighting demonstration by Engineer in Charge, the contractor shall proceed for commencement of facade lighting system at A.O. building at the location as directed.

(a) This item includes supply, installation, testing & commissioning of surface mounted RGBW DMX exterior rated Integral LED Linear Wall Grazer Luminaire designed for wall washing and grazing architectural lighting applications. Luminaire should be AC powered with integral driver and should have Beam Angle as per Site Requirement. Luminaire shall have lumen output of not less than 3300 lumens/m. Power consumption shall be maximum 80W/m. Minimum System Efficacy shall be 40 lm/W for RGBW versions. CRI of White LEDs shall not be less than 80 with White SDCM≤4. Luminaire shall have provision of Tilting angle +15° to -90°. Luminaire shall have beam angle option of 17°/ 30°. Luminaire shall be IP66 degree of Ingress Protection level and Impact Resistance of IK06. Luminaire shall be made from Extruded aluminum housing with die-cast aluminum end caps. Life of Luminaire shall be 50,000 burning hours L70B50. Luminaire should be suitable to operate up to 50°C. Luminaire shall be supplied with Glare Shield. Tentative dimensions of Luminaire shall be 1000 to 1200mm x 60 to 75mm x 50 to 60mm. Complete with all the accessories like Leader and Jumper cables. Tentative L: 1000mm W: 65mm H: 53mm. Contractor shall submit BIS certificate for both luminaire and driver along with LM79 report from any NABL accredited laboratory. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(b) This item includes supply, installation, testing & commissioning of Circular shaped DMX RGBW exterior rated architectural LED floodlight. Luminaire shall be AC powered with integral driver and shall have multiple option of beam angles 8/15/30/40/60 degree. Luminaire shall have lumen output of not less than 5500 lumens with 110W Power

consumption. Minimum System Efficacy shall be 50 lm/W for RGBW versions. CRI of White LEDs shall not be less 80 with White SDCM≤4. Luminaire shall have provision of Tilting angle +90° to -90°. Luminaire shall have degree of Ingress Protection level IP66 and Impact Resistance IK08. Luminaire shall be made of pressure die cast aluminum housing. Life of Luminaire shall be 50,000 burning hours L70B50. Luminaire shall be suitable to operate up to 50°C. Luminaire shall be supplied with Glare Shield. Complete with all the accessories like Leader and Jumper cables. Contractor shall submit BIS certificate for both luminaire and driver along with LM79 report from any NABL accredited laboratory. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(c) This item includes supply, installation, testing & commissioning of surface mounted RGBW exterior rated Integral LED linear DMX wall grazer luminaire designed for wall washing and grazing architectural lighting applications. Luminaire shall be AC powered with integral driver and shall have Beam Angle as per Site Requirement. Luminaire shall have lumen output of not less than 1850 lumens/meter with 50W/meter Power consumption. Minimum System Efficacy shall be 37 lm/W for RGBW versions. CRI of White LEDs should not be less than 80 with White SDCM≤4. Luminaire shall have provision of Tilting angle +15° to -90°. Luminaire shall have beam angle option of 30 / 50 / 25X40 Degree. Luminaire shall be IP66 degree of Ingress Protection level and Impact Resistance of IK06. Luminaire shall be made from Extruded aluminum housing with die-cast aluminum end caps. Life of Luminaire shall be 50,000 burning hours L70B50. Luminaire shall be suitable to operate up to 50°C. Luminaire shall be supplied with Glare Shield. Tentative dimensions of Luminaire shall be 1000 to 1200mm x 60 to 75mm x 50 to 60mm. Complete with all the accessories like Leader and Jumper cables. Tentative L: 1000mm W: 45mm H: 55mm. Contractor shall submit BIS certificate for both luminaire and driver along with LM79 report from any NABL accredited laboratory. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(d) This item includes supply, installation, testing and commissioning of leader cable connecting from controller to DMX device or luminaire having minimum length of 15m.

(e) This item includes supply, installation, testing and commissioning of jumper cable connecting from luminaire to luminaire having minimum length of 2m.

(f) This item includes supply, installation, testing and commissioning of Male Female End Cap.

(g) This item includes supply of DMX Controller for controlling RGBW Luminaires for powerful show storage and shall work as a playback device capable of delivering light. Each shows to installations with up to 8 DMX512 universes. The key features for the controller shall be as below:

Housing Steel: Aluminum

IEC Classification: Class III

Input Voltage: 12VDC

Communication Protocols: DMX512

Control Versions: DMX512

Power Consumption: 8W

Number of Universes: DMX512

Humidity Range: 10 to 90% (no condensation)

Protection Rating: IP20

Certifications: CE, CB, CQC

(h) This item includes supply, installation, testing & commissioning of IP20 DMX addressing device for fast and convenient address writing and testing tool for DMX512 luminaires. The device shall support internal test animation for DMX512 addresses verification. The device shall automatically write address to a whole group of interconnecting luminaires within minutes. The device shall have miniature industrial design, compact size and touch screen. It shall be powered by a power bank with a Micro-B type USB port for on-site programming and testing after installation. The device shall have Compact size, Compatible with multiple types DMX512 chips, Built-in test animation effects, SD card slot to store animation and scenes, Support standard RDM protocol, Support searching for RDM luminaires and static detection, Color-pick functions, shall be powered by Micro-B type USB power supply. Input Voltage 6-24V DC, Output Port - 5Ports. software support for lighting scenes & control shall be same make of fixture as required terminal, Supported Luminaires fixture shall be installed in proper foundation bolts along with safety canopy duly approved by Engineer in Charge. Type DMX512/RDM. Addressing Kit DMX, OSRAM/Schreder or its equivalent make with similar specifications. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(i) This item includes supply, installation, testing & commissioning of DMX Amplifier based on the standard DMX512/RDM protocol and designed for signal shaping and amplification for long distance transmission. Signal amplifier shall support magnetic isolation protection, protect the controllers and ensures that the DMX signal can be normally transmitted to various luminaires, improving the reliability and stability of the entire control system. The device shall have Compact design, Low power consumption (1-2Watt), Magnetic isolation for signal input and output, DMX512/RDM versions, Rated IP66 IP protection for outdoor installation, amplify the signal for up to maximum 100m or Maximum 64 DMX512 luminaires. Software support for lighting scenes & control shall be same make of fixture as required. Fixture shall be installed in proper foundation bolts along with safety canopy duly approved by Engineer in Charge. Make: Philips/Osram/Schreder or its equivalent make with similar specification. The work includes all material, labour, tools & tackles as directed by Engineer in Charge.

(j) This item includes Programming, Testing and Commissioning of the Facade Lighting at A.O. Building to the satisfaction of Engineer in Charge. The programming shall be done as per instruction of Engineer in Charge. This facade lighting shall have warranty for a period of five years from the date of its commissioning. The contractor shall promptly, Replace the material against manufacturing defects / Rectify the material, on receiving the instruction from Engineer in Charge at contractor's cost. The contractor shall have final & total single point responsibility for performance of the LED facade lighting system.

Technical Specification No. 69:

(a) This item includes preparation of maintenance free earth station by providing 80mm diameter, 3 meter, 100 micron hot dipped GI chemical electrode with back fill compound including accessories & masonry work. A cement concrete (ratio 1:4:8) chamber of at least 300 mm × 300 mm shall be prepared and a CI cover of suitable size shall be provided for the chamber. The work shall be carried out to entire satisfaction of Engineer in charge. This work includes all material, labour, tools & tackles as directed by Engineer-In-Charge.

(b) This item includes preparation of maintenance free earth station by providing 50mm diameter, 3 meter, 100 micron hot dipped GI chemical electrode with back fill compound including accessories & masonry work. A cement concrete (ratio 1:4:8) chamber of at least

300 mm × 300 mm shall be prepared and a CI cover of suitable size shall be provided for the chamber. The work shall be carried out to entire satisfaction of Engineer in charge. This work includes all material, labour, tools & tackles as directed by Engineer-In-Charge.

Technical Specification No. 70:

This item includes preparation of maintenance free earth station by providing 80mm diameter, 3 meter, 250 micron Copper bonded chemical electrode with back fill compound including accessories & masonry work. A cement concrete (ratio 1:4:8) chamber of at least 300 mm × 300 mm shall be prepared and a CI cover of suitable size shall be provided for the chamber. The work shall be carried out to entire satisfaction of Engineer in charge. This work includes all material, labour, tools & tackles as directed by Engineer in Charge.

Technical Specification No. 71:

This item includes supply at site, laying, fixing and connecting of Copper strip of size 50x5 mm from earth station to Distribution Transformer as directed. The copper strip shall be laid from earth station to Distribution and shall be clamped suitably on wall/floor or buried in the ground/ trench as directed. This work includes all material, labour, tools & tackles as directed by Engineer-In-Charge.

Technical Specification No. 72:

(a) This item includes supply at site, laying, fixing and connection of GI strip of size 25x6 mm from earth station to Feeder Pillar as directed. The GI strip shall be laid and clamped suitably on wall/floor/structure or buried in the ground as directed. This work includes all material, labour, tools & tackles as directed by Engineer-In-Charge.

(b) This item includes supply at site, laying, fixing and connection of GI strip of size 50x6 mm from earth station to HT RMU Panel/ Distribution Transformer/ LT Distribution Panel/ LT Load Point Panel as directed. The GI strip shall be laid and clamped suitably on wall/floor/structure or buried in the ground as directed. This work includes all material, labour, tools & tackles as directed by Engineer-In-Charge.

Signature & Seal of Contractor

Executive Engineer (E) Deendayal Port Authority

SECTION VI

Bill of Quantity

Name of Work: Refurbishment of Power Supply at Administrative Office Building, Gandhidham.

Sr. No.	Description	Qty.	Unit	Rate	Amount
1	Supply, erection, testing & commissioning of Double Pole Structure with A.B. Switch, DO Fuse & accessories as per Technical Specification No. 1	1	No.		
2	Removal of existing Four Pole Structure as per Technical Specification No. 2	1	No.		
3	Supply at site 11kV grade HT armoured aluminium conductor XLPE cable of size 3 core, 95 Sq. mm as per IS: 7098 (Part - II) 1988 & as per Technical Specification No. 3	340	m		
4	Laying, Testing & Commissioning of 3 core, 95 Sq. mm, 11kV grade, XLPE cable through following as per Technical Specification No. 4				
a	Existing RCC Cable Trench	270	m		
b	Existing Substation Cable Trench	60	m		
5	Supply at site 4 way, 11kV Gas Insulated RMU as per Technical Specification No. 5	1	No.		
6	Installation, testing & commissioning of 4 way, 11kV Gas Insulated RMU as per Technical Specification No. 6	1	No.		
7	Supply at site following type of Heat shrink end termination kit for 3 core, 95 Sq. mm size 11kV XLPE aluminium cable as per Technical Specification No. 7				
a	Outdoor Type	1	No.		
b	Indoor Type	5	No.		
8	Fixing of following type of Heat shrink end termination kit for 3 core, 95 Sq. mm size 11kV XLPE aluminium cable as per Technical Specification No. 8				
a	Outdoor Type	1	No.		
b	Indoor Type	5	No.		
9	Supply at site 3 Star rating 500kVA, 11/0.433kV, Dyn11, ONAN Indoor type Distribution Transformer as per Technical Specification No. 9	2	No.		
10	Installation, Testing & Commissioning of 3 Star rating	2	No.		

	500kVA, 11/0.433kV, Dyn11, ONAN Indoor type Distribution Transformer as per Technical Specification No. 10				
11	Supply at site following type of LT panel as per Technical Specification No. 11				
a	Distribution Panel (10 way) (Type 1)	1	No.		
b	Distribution Panel (10 way) (Type 2)	1	No.		
c	Feeder Pillar Panel (Type 1)	1	No.		
d	Feeder Pillar Panel (Type 2)	1	No.		
e	Street Light Feeder Pillar	1	No.		
f	Timer Distribution Board	4	No.		
g	Hybrid APFC Panel	1	No.		
12	Installation, Testing & Commissioning of following type of LT panel as per Technical Specification No. 12				
a	Distribution Panel (10 way) (Type 1)	1	No.		
b	Distribution Panel (10 way) (Type 2)	1	No.		
c	Feeder Pillar Panel (Type 1)	1	No.		
d	Feeder Pillar Panel (Type 2)	1	No.		
e	Street Light Feeder Pillar	1	No.		
f	Timer Distribution Board	4	No.		
g	Hybrid APFC Panel	1	No.		
13	Supply at site 4 Core, LT armoured aluminum conductor XLPE cable of 1.1kV grade of following type & size as per Technical Specification No. 13				
a	400 Sq.mm	120	m		
b	300 Sq.mm	200	m		
c	185 Sq.mm	3100	m		
d	70 Sq.mm	700	m		
e	10 Sq.mm	2800	m		
f	6 Sq.mm	400	m		
14	Laying of LT armoured aluminum conductor XLPE cable of 1.1kV grade 4 core, 400 Sq.mm through Existing Substation Trench as per Technical Specification No. 14	120	m		
15	Laying of 4 Core, 300 Sq.mm size LT armoured aluminum conductor XLPE cable of 1.1KV grade through following type between DG Set Room and New Substation and in New Substation Trench as per Technical Specification No. 15				
a	2 Run, Hard/Soft Soil	60	m		
b	2 Run, Existing Substation Trench	40	m		
16	Laying of LT armoured aluminum conductor XLPE cable of 1.1kV grade 4 core, 185 Sq.mm through following type as per Technical Specification No. 16				
a	8 Run, Existing Substation Trench	25	m		
b	6 Run, Existing Cable Tray	150	m		
c	6 Run, Hard/Soft Soil	120	m		
d	6 Run, Paver floor Crossing	5	m		
e	6 Run, Road Crossing	5	m		

f	4 Run, Hard/Soft Soil	40	m		
g	2 Run, Existing Cable Tray	230	m		
h	2 Run, Hard/Soft Soil	100	m		
i	2 Run, Road Crossing	10	m		
j	2 Run, RCC Floor Crossing	10	m		
k	2 Run, Existing RCC Trench	100	m		
l	2 Run, Paver floor Crossing	15	m		
17	Laying of LT armoured aluminium conductor XLPE cable of 1.1kV grade 4 core, 70 Sq.mm through following type as per Technical Specification No. 17				
a	2 Run, Existing Substation Trench	20	m		
b	2 Run, Existing RCC Trench	200	m		
c	2 Run, Existing Cable Tray	65	m		
d	1 Run, Existing Cable Tray	80	m		
e	1 Run, Road Crossing	10	m		
18	Laying of 4 Core, 185 Sq.mm size LT armoured alluminium conductor XLPE cable of 1.1KV grade through Hard/Soft Soil between Old Substation and New Substation as per Technical Specification No. 18	440	m		
19	Supply of hot dip galvanized ladder type tray and tray cover of following size along with its accessories as per Technical Specification No. 19				
a	450 mm (W)	150	m		
b	200 mm (W)	380	m		
20	Providing cantilever bracket support for following size cable tray as per Technical Specification No. 20				
a	450 mm (W)	150	No.		
b	200 mm (W)	380	No.		
21	Installation of hot dip galvanized ladder type tray of following size along with its accessories as per Technical Specification No. 21				
a	450 mm (W)	150	m		
b	200 mm (W)	380	m		
22	Supply at site 7 meter height single arm Octagonal type Pole as per Technical Specification No. 22	54	No.		
23	Erection of 7 meter height single arm Octagonal type Pole as per Technical Specification No. 23	54	No.		
24	Supply of Energy Efficient 70W LED Street Light fitting as per Technical Specification No. 24	54	No.		
25	Fixing of 70W LED Street Light fitting with all accessories as per Technical Specification No. 25	54	No.		
26	Laying of 4 Core, 10 Sq.mm LT armoured aluminium conductor XLPE cable of 1.1kV grade through following types as per Technical Specification No. 26				

a	Wall/structure through saddles & clamps	1010	m		
b	Paver Floor through HDPE DWC Pipe	160	m		
27	Preparation of Pole earthing with 20mm diameter GI Rod as per Technical Specification No. 27	54	No.		
28	Supply at site 200 ±5% Watt LED Flood Light fitting as per Technical Specification No. 28	40	No.		
29	Fixing of 200 ±5% Watt LED Flood Light fitting as per Technical Specification No. 29	40	No.		
30	Supply of following type of FRP Junction Box as per Technical Specification No. 30				
a	FRP Junction Box (Type 1)	40	No.		
b	FRP Junction Box (Type 2)	66	No.		
31	Fixing of following type of FRP Junction Box as per Technical Specification No. 31				
a	FRP Junction Box (Type 1)	40	No.		
b	FRP Junction Box (Type 2)	66	No.		
32	Laying of 4 Core, 10 Sq.mm size LT armoured aluminum conductor XLPE cable of 1.1kV grade on wall/roof structure through saddles & clamps as per Technical Specification No. 32	900	m		
33	Supply at site 10W LED Bulkhead fitting as per Technical Specification No. 33	60	No.		
34	Installation of 10W LED Bulkhead fitting as per Technical Specification No. 34	60	No.		
35	Laying of 4 Core, 6 Sq.mm size LT armoured aluminum conductor XLPE cable of 1.1kV grade through following type as per Technical Specification No. 35				
a	Hard/Soft Soil	20	m		
b	Wall/roof structure through saddles & clamps	68	m		
c	Road/RCC Crossing (excavation)	62	m		
d	Parking Shed Structure	120	m		
36	Supply at site 3m height FRP decorative Pole as per Technical Specification No. 36	45	No.		
37	Erection & Installation of 3m height FRP decorative Pole as per Technical Specification No. 37	45	No.		
38	Supply at site 45W LED Post Top fitting as per Technical Specification No. 38	45	No.		

39	Installation of 45W LED Post Top fitting as per Technical Specification No. 39	45	No.		
40	Preparation of earthing system with 16mm diameter GI Rod as per Technical Specification No. 40	45	No.		
41	Laying of 4 Core, 10 Sq.mm size LT armoured alluminium conductor XLPE cable of 1.1KV grade through following type as per Technical Specification No. 41				
a	Hard/Soft Soil (through HDPE DWC)	620	m		
b	Paver Floor	25	m		
c	Wall Clamping	60	m		
d	Road Crossing	5	m		
42	Supply of following type of Distribution Board as per Technical Specification No. 42				
a	SPN Double Door IP 42 DB 8 ways	2	No.		
b	TPN Double Door IP 42 DB 6 ways	1	No.		
43	Fixing of following type of Distribution Board as per Technical Specification No. 43				
a	SPN Double Door IP 42 DB 8 ways	2	No.		
b	TPN Double Door IP 42 DB 6 ways	1	No.		
44	Supply of following type of MCB as per Technical Specification No. 44				
a	63A TPN MCB with 10kA Breaking Capacity	1	No.		
b	32A TPN MCB with 10kA Breaking Capacity	5	No.		
c	32A SP MCB with 10kA Breaking Capacity	8	No.		
45	Fixing of TPN/SP MCBs with 10kA Breaking Capacity as per Technical Specification No. 45	14	No.		
46	Providing & fixing surface wiring with 4 x 4 sq.mm copper conductor (three phase and neutral) for three phase sub-circuit from the DB/ MCBs to the DB/MCBs as per Technical Specification No. 46	30	m		
47	Providing & fixing surface wiring with 2 x 2.5 sq.mm copper conductor (single phase and neutral) for single phase sub-circuit from the DB/MCBs to the switch board as per Technical Specification No. 47	100	m		
48	Providing and fixing surface wiring with 1.5 sq. mm copper conductor for light /tube point with PVC insulated single core standard	44	No.		

	copper conductor wire as per Technical Specification No. 48				
49	Providing and fixing surface wiring for 20A & 10A, 240 Volt, 50Hz Power point as per Technical Specification No. 49	5	No.		
50	Providing and fixing 5 pin, 5/6A, 250V half plug point as per Technical Specification no. 50	3	No.		
51	Supply at site 18 Watt LED Tube light luminary complete with batten as per Technical Specification No. 51	32	No.		
52	Installation of 18 Watt LED Tube light luminary complete with batten as per Technical Specification No. 52	32	No.		
53	Supply of wall mounting industrial fan oscillating type of 30 inch (750mm) sweep size as per Technical Specification No. 53	2	No.		
54	Fixing of wall mounting industrial fan oscillating type of 30 inch (750mm) sweep size as per Technical Specification No. 54	2	No.		
55	Supply at site 1200mm sweep Ceiling Fan with complete accessories as per Technical Specification No. 55	4	No.		
56	Fixing of 1200mm sweep Ceiling Fan with complete accessories as per Technical Specification No. 56	4	No.		
57	Providing and fixing surface wiring for Fan point with PVC insulated single core standard copper conductor wire & step-cut electronic fan regulator as per Technical Specification No. 57	4	No.		
58	Supply at site 300mm sweep exhaust fan as per Technical Specification No. 58	10	No.		
59	Fixing of 300mm sweep exhaust fan as per Technical Specification No. 59	10	No.		
60	Supply at site 70 Watt LED Flood Light fitting as per Technical Specification No. 60	6	No.		

61	Fixing of 70 Watt LED Flood Light fitting as per Technical Specification No. 61	6	No.		
62	Laying of 4 Core, 6 Sq.mm size LT armoured alluminium conductor XLPE cable of 1.1KV grade on wall/roof structure through saddles & clamps as per Technical Specification No. 62	90	m		
63	Supply at site heat shrink straight through Joint Kit for 4 Core, 120 to 185 sq. mm 1.1kV grade XLPE aluminum conductor Cable as per Technical Specification No. 63	10	No.		
64	Fixing of heat shrink straight through Joint Kit for 4 Core, 120 to 185 sq. mm 1.1kV grade XLPE aluminum conductor Cable as per Technical Specification No. 64	10	No.		
65	Removal, Shifting, Installation & Commissioning of DG Set AMF Panel from DG Set Room to New Substation as per Technical Specification No. 65	Complete Job	Lump sum		
66	Removing existing following type of pole as per Technical Specification No. 66				
a	GI Pole with Luminary	6	No.		
b	RCC Pole	3	No.		
67	Removing existing flood lights of rooftop and its associated cabling as per Technical Specification No. 67	Complete Job	Lump Sum		
68	Supply, installation, programming, testing and commissioning of following items for facade lighting system at A.O. building as per Technical Specification No. 68				
a	Supply, installation, testing & commissioning of surface mounted RGBW DMX exterior rated Integral LED Linear Wall Grazer Luminaire	28	No.		
b	Supply, installation, testing & commissioning of Circular shaped DMX RGBW exterior rated architectural LED floodlight	10	No.		
c	Supply, installation, testing & commissioning of surface mounted RGBW exterior rated Integral LED linear DMX wall grazer luminaire	14	No.		
d	Supply, installation, testing and commissioning of leader cable	4	No.		

e	Supply, installation, testing and commissioning of jumper cable	5	No.		
f	Supply, installation, testing and commissioning of Male Female End Cap	1	No.		
g	Supply of DMX Controller for controlling RGBW Luminaires	1	No.		
h	Supply, installation, testing & commissioning of DMX addressing device	1	No.		
i	Supply, installation, testing & commissioning of DMX Amplifier	2	No.		
j	Programming, Testing and Commissioning of the Facade Lighting	Complete Job	Lump Sum		
69	Preparation of earthing system with following size GI chemical electrode & back fill compound as per Technical Specification No. 69				
a	80mm diameter, 3m electrode	10	No.		
b	50mm diameter, 3m electrode	2	No.		
70	Preparation of earthing system with copper chemical electrode & back fill compound for transformer earthing as per Technical Specification No. 70	2	No.		
71	Supply, Laying, connecting of Copper Strip of 50×5 mm size between earth station to neutral of Transformer as per Technical Specification No. 71	20	m		
72	Supply, Laying, connecting of GI Strip of size of following size between earth station to the equipment as per Technical Specification No. 72				
a	25×6 mm	20	m		
b	50×6 mm	150	m		
				Total	

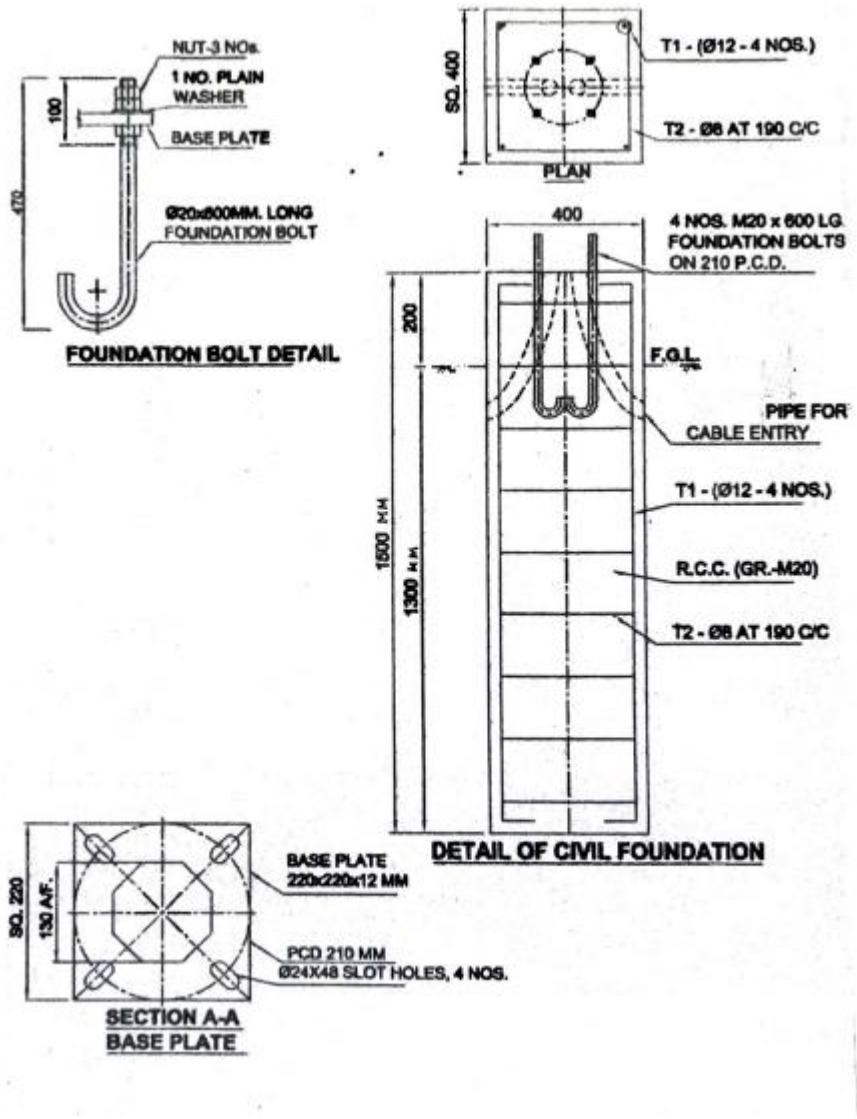
(In words Rupees _____ only)
(NOTE: The rates should be inclusive of all taxes, duties, fees, cess etc and all incidental charges; but exclusive of GST).

Signature & Seal of Contractor

Executive Engineer (E)
Deendayal Port Authority

SECTION – VII

(1) Civil Foundation for Octagonal Pole:



Signature & Seal of Contractor

Executive Engineer (E)
Deendayal Port Authority

SECTION – VIII

Approved Make List of Electrical Items		
Sr. No.	**Description**	**Recommended Makes**
1	HV VCB	SIEMENS/CROMPTON GREAVES/ABB/Schneider
1(a)	HV Gas Insulated Breakers	SIEMENS /Schneider/ABB
2	POWER TRANSFORMERS	VOLTAMP/CROMPTON GREAVES /BHARAT BIJLEE/ BHEL/ SIEMENS/ABB/ Schneider/T&R
3	DISTRIBUTION TRANSFORMERS	EMCO/KIRLOSKAR/PATSON/VOLTAMP/ABB/Schneider/T&R
4	RESIN CAST TRANSFORMERS	
	A) RESIN CAST IMPREGNATED	VOLTAMP / KIRLOSKAR / EMCO
	B) DRY CAST	VOLTAMP/KIRLOSKAR/EMCO
5	HT XLPE CABLES	POLYCAB/ TORRENT/ RPG ASIAN/ GLOSTER/ UNISTAR
6	LT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/ RALLISON/PRIMECAB/ HAVELLS/ UNISTAR/AVOCAB/ALLCAB/ADCAB
7	LT ACB	SIEMENS/L&T/SCHNEIDER/C&S
8	PROTECTION RELAYS	AREVA/L&T/SIEMENS/ABB/C&S
9	LT PANEL	CPRI APPROVED
10	CHANGE OVER SWITCH	SIEMENS/L&T/ABB/C&S/SCHNIDER/ LEGRAND / INDOASIAN
11	SFU FOR MAIN LT DISTRIBUTION PANELS	SIEMENS/L&T/ABB/C&S
12	SFU FOR DISTRIBUTION PANELS & FEEDER PILLERS	SIEMENS/L&T/ABB/C&S/ SCHNEIDER/ LEGRAND/ INDOASIAN/HAVELLS
13	MCCB FOR MAIN LT DISTRIBUTION PANELS	SIEMENS/L&T/ABB
14	MCCB FOR DISTRIBUTION PANELS AND FEEDER PILLERS	SIEMENS/L&T/ABB/C&S/ SCHNIDER/ LEGRAND/ INDOASIAN/HAVELLS
15	MCB/ELCB/RCCB/ RCCBO FOR MAIN LT DISTRIBUTION PANELS	SIEMENS/HAGER L&T/ABB
16	MCB FOR DISTRIBUTION PANELS AND FEEDER PILLERS	SIEMENS/L&T/ABB/C&S/ SCHNEIDER/ LEGRAND/ INDOASIAN/ HAVELLS/ STANDARD

17	MCB DISTRIBUTION BOARD	STANDARD / HENSEL/LEGRAND / INDOASIAN / HAVELLS
18	MULTI FUNCTION DIGITAL METER FOR MAIN LT DISTRIBUTION PANELS/DIGITAL KWH METERS	L&T/ENERCON/SECURE/L&G/ RISHABH
19	ANALOG VOLT/AMPARE METER FOR DISTRIBUTION PANELS AND FEEDER PILLERS	RISHABH/AE/ENERCON/L&T
20	SLECTOR SWITCH FOR VOLTMETER/AMPARE METER	L&T/SIEMENS/C&S
21	POWER CONTACTOR & OVER LOAD RELAYS	L&T/SIEMENS/ABB
22	QUARTZ TIME CLOCK SWITCH	L&T/INDOASIAN/SIEMENS
23	PVC WIRE WITH COPPER CONDUCTOR	RRKABEL/KEI/POLYCAB/MILEX/GUJCAB/ STANDARD/ FINOLEX/ ANCHOR
24	FLUSH TYPE SWITCHES, SOCKETS, HOLDERS AND CEILING ROSES & ELECTRONIC REGULATORS	ANCHOR/MK/NORTHWEST/VINAY/PANAMA/HAVELLS
25	DOOR BELLS/CALL BELLS	ANCHOR/LEGEND/MK/NORTHWEST
26	MODULAR SWITCHES, SOCKETS, PLATES & BOXES	ANCHOR / MK / NORTHWEST / LEGRAND /HAVELLS/ INDOASIAN/ SIEMENS
27	PVC CONDUIT/OVAL CONDUIT & CASSING CAPPING AND ACCESSORIES	PRECISION/VULCAN/FINOLEX/ GARWARE/ RESTOPLAST/ SWASTIK/ BPI
28	GLS LAMPS & FLUORESCENT LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI /GE
29	HPSV, HPMV & METAL HELIDE LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI /GE
30	IGNITORS FOR HPSV, METAL HELIDE LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI /GE
31	LUMINARIES	PHILIPS/BAJAJ/WIPRO/CROMPTON GREAVES / OSRAM / SURYA ROSHNI /GE
31a	LED Luminaries	Philips/Bajaj/Wipro/CG/Surya/Pyrotech/Syska/Nessa/Halonix/Havells having surge Protection ≥10KV for fittings & internal Surge protection for Driver of≥4KV, LED Chip only

		OSRAM/CREE/Philips Lumileds/Citizen/Nicia with LM-79,80 CERTIFICATION
32	CEILING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
33	WALL MOUNTING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
34	EXHUAST FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
35	HEAVY DUTY INDUSTRIAL WALL MOUNTING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
36	WATER COOLER	VOLTAS/SHRIRAM USHA/BLUE STAR
37	AIR CONDITIONERS	VOLTAS/CARRIER/BLUESTAR/USHA/ HITACHI/LG/ SAMSUNG/ONIDA
38	REFRIGERATORS	VOLTAS/CARRIER/BLUESTAR/USHA/ HITACHI/LG/ SAMSUNG/WHIRLPOOL
39	VOLTAGE STABILIZER	VEELINE / CAPRI
40	INVERTERS	SUKAM / MICROTEK
41	D.G. SETS (a) ENGINE (b) ALTERNATOR	CUMMINS/GREAVES/KIRLOSKAR/ CATERPILLAR/ ASHOK LEYLAND/VOLVO STAMFORD/CROMPTON GREAVES /JYOTI/ KIRLOSKAR ELECTRIC
42	ELECTRIC MOTOR	ALSTOM/CROMPTON GREAVES /SIEMENS/ KIRLOSKAR/ABB
43	WATER PUMPS	SWASTIK / KSB
44	WATER GEYSER	BAJAJ/USHA / CROMPTON GREAVES / SPHEREHOT / RACOLD
45	LUGS & CABLE GLANDS	DOWELLS / JAINSON / BRACO

SECTION – IX

Format for submitting information for Bid Capacity

Annexure - A

Sr. No.	Financial Year	Value of work undertaken	Multiplying factor	Value updated to the price level of the year (Col 3 x col 4)
A	B	C	E	F
1				
2				
3				
4				
5				
6				
7				

Annexure - B

Sr. No.	Name of client	Name of work	Work order no. and date	Schedule period of completion as per work order with start date	Contract value	Value of work done	Remaining value of work done	Anticipated date of completion	Remaining value of work done for 06 months from the date of opening of preliminary bid of opening of preliminary bid

Signature & Seal of Contractor