

SYAMA PRASAD MOOKERJEE PORT, KOLKATA
(Formerly Kolkata Port Trust)
HALDIA DOCK COMPLEX



श्यामा प्रसाद मुखर्जी पोर्ट, कोलकाता
SYAMA PRASAD MOOKERJEE PORT, KOLKATA
Formerly Kolkata Port Trust

ENGINEERING DEPARTMENT INVITE E-TENDER

[E-Tender -SDM (P&E)/ T / 03 /2021-2022]

FOR

**Upgradation of 11kV/415V Substations & allied equipment along with 5years manning
and comprehensive maintenance at residential areas of Haldia Township under Haldia
Dock Complex, SMP, Kolkata**

June– 2021

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SYAMA PRASAD MOOKERJEE PORT, KOLKATA
(FORMERLY KOLKATA PORT TRUST)
HALDIA DOCK COMPLEX
SHORT E-TENDER NOTICE

E-Tender No. SDM (P&E)/ T / 03 /2021-2022.

Online e-tenders are invited for the work of **“Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata”.**

Date of Pre-Bid meeting: **27.07.2021**, 11:00 Hrs. onwards.

Closing date & time of online submission of e-tender: **11.08.2021**, up to 15:00 Hrs.

For details of tender and any corrigendum / addendum, please visit **RailTel’s e-Nivida Portal’s** [e-portal <https://kopt.enivida.in>].

General Manager (Engineering)
Haldia Dock Complex
SMP, Kolkata

**SYAMA PRASAD MOOKERJEE PORT, KOLKATA
(FORMERLY KOLKATA PORT TRUST)**

**HALDIA DOCK COMPLEX
NOTICE INVITING E-TENDER**

(E-Tender No. SDM (P&E)/ T / 03 /2021-2022.)

E-Tenders, under single stage two part system [Part I: Pre-qualification & Techno-commercial Bid and Part II: Price Bid] are invited on behalf of Haldia Dock Complex (HDC), Syama Prasad Mookerjee Port, Kolkata (SMP,Kolkata), from the intending bidders, fulfilling the “**Minimum Eligibility Criteria (MEC)**” and complying with the “Other documents” for the work of “**Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata**”

2.1 MINIMUM ELIGIBILITY CRITERIA (MEC):

- 2.1.1** The average annual financial turnover of the bidder, during the last three (3) years, ending 31st March 2020, must be at least **Rs 4,86,41,175.00** Auditor's Report of the bidding firm, certified by Chartered Accountant (CA), for the years 2017-18, 2018-19 and 2019-20 including relevant Audited Balance Sheets and Profit & Loss Accounts, should be made available.

Note: The bidder upload the scanned copies of Annual Financial Turnover Statement (certified by CA) for the years 2017-18, 2018-19 and 2019-20 along with Balance Sheets and Profit & Loss Accounts. ***In case the bidder fails to submit Audited Balance Sheets and Profit & Loss Accounts for the year 2019-20, Audited Balance Sheets and Profit & Loss Accounts for the year 2016-17 would be considered for calculation of average annual financial turnover.***

- 2.1.2** The bidders must have experience of having successfully completed “Similar Works” [defined below] during last seven (7) years, ending last day of month previous to the one in which tenders are invited, and the experience must be either of the following :-
- a) Three similar completed works of contract value not less than **Rs 6,48,54,900.00** each.
 - Or
 - b) Two similar completed works of contract value not less than **Rs 8,10,68,624.50** each.
 - Or
 - c) One similar completed work of contract value not less than **Rs 12,97,09,799.00**

The term “*similar works*” means –

- i) Firms having experience in “Supply, Installation, Testing & Commissioning of HT **switchgear**, Transformer, cables **including construction / repairing of building** (Work value: - 80% electrical work and not more than 20% **civil work of estimated cost put to tender**) at Central Govt. /State Govt. /Port sector/PSU or any reputed organization.”

or

- ii) Joint Venture / Consortium having experience in Supply, Installation, Testing & Commissioning of HT **switchgear**, Transformer, cables **including construction /**

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

repairing of building (Work value: - 80% electrical work and not more than **20% civil work of estimated cost put to tender**) at Central Govt./ State Govt. /Port sector/PSU or any reputed organization.

Note: The bidder(s) will upload the scanned copies of work order(s) for similar works, successful completion certificates (with performance) from clients indicating the date of completion, value of work done, etc.

- 2.1.3** a) The Bidder for pre-qualification may be a single entity or a group of entities (Joint Venture / consortium), coming together to implement the Project. However, no bidder applying individually or as a member of a Consortium, as the case may be, can be member of another Bidder. The term Bidder used herein would apply to both a single entity and a Joint Venture / consortium.

- b) **Guidelines for participation of a single entity who had previously participated in any work of similar nature as one of the member of a Joint venture.**

When the bidder is a single entity, who had previously participated in any work of similar nature as one of the member of a Joint venture, uses the credential of that particular work to justify his/her technical eligibility criteria for the instant tender, then the value of the completed work shall be reckoned only to the extent of the concerned member's share in that JV firm for the purpose of satisfying his/her compliance to the technical eligibility criteria in the instant tender.

- 2.1.4** Two or more bidders may form a "Joint Venture / consortium" among themselves or by including some other firms having required expertise/ experience and submit the offer in the name of "Joint Venture / consortium". If the offer is made in the name of "Joint Venture/ consortium" the details and composition shall be clearly spelt out in the Technical bid. If a joint venture firm/ consortium is pre-qualified, the responsibility for execution of works and operations and maintenance shall be in accordance with the Joint Venture/consortium agreement and no deviation from the terms of the JV / consortium agreement will be permitted without prior approval of the Engineer. Tenders submitted by a joint venture / consortium of two or more firms, as partners shall comply with the following requirements:

- a) Companies/contractors may jointly undertake the contract. Each entity would be jointly and severally responsible for completing the task as per the contract, however declaration of Lead member to be indicated by the bidders in their MOU. The firms with at least 26% equity holding each be allowed to jointly meet the eligibility criteria.
- b) The tender, and in case of a successful tender, the Form of Agreement, shall be signed so as to be legally binding on all partners.
- c) One of the partners shall be nominated as being In-charge (Lead Partner); and this authorization shall be evidenced by submitting a Power of Attorney signed by legally authorised signatories of all the partners;
- d) The partner In-charge (Lead Partner) shall be authorised to incur liabilities and receive instructions for and on behalf of any or all of the partners of the joint venture and the entire execution of the contract including payment shall be done exclusively with the partner in charge;
- e) All partners of a joint venture shall be jointly and severally liable for execution of the contract in accordance with the contract terms, and a relevant statement

to this effect shall be included in the authorization mentioned under (b) above as well as in the Tender Form and the Form of Agreement (in case of a successful tender); and

- f) A certified copy of the agreement entered into by the members of the joint venture/consortium shall be submitted with the tender.
- g) Value of a completed work done by a Member in an earlier JV Firm shall be reckoned only to the extent of the concerned member's share in that JV firm for the purpose of satisfying his/her compliance to the above mentioned technical eligibility criteria in the tender under consideration, if applied as a JV / consortium for this particular work.

2.2 DOCUMENTS

2.2.A. ESSENTIAL DOCUMENTS:

The bidder should also upload scanned copies of the following documents along with bids;

- a) Scanned copies of **Audited Balance Sheets and Profit & Loss Accounts for the years 2017-18, 2018-19 and 2019-20 or 2016-17, 2017-18 and 2018-19 as the case may be.**
- b) Scanned copies of work order(s) for similar works, successful completion certificates (with performance) from clients indicating the date of completion, value of work done, etc. Work Experience as a sub-contractor or supply contractor shall not be considered as requisite qualification.
- c) Scanned copy of **Power of Attorney (if applicable).**
- d) Valid Electrical Contractor's License issued by competent authority of State / Central Govt. in line with The Indian Electricity Rules, 1956 or Central Electricity Authority Regulation 2010.

Note: The bidders upload scanned copy of valid Electrical Contractor's License.

2.2. B. OTHER DOCUMENTS:

- i. Goods and Services Tax (GST) Registration Certificate, issued by Government of India.
- ii. Valid **Profession Tax Clearance Certificate (PTCC) or Up-to-date Profession Tax payment challan**, if applicable. If this is not applicable, the bidder must submit [upload] a declaration in this regard.
- iii. Certificate for allotment of **Employees' Provident Fund (EPF) Code No. [Latest challan is to be submitted (uploaded)]**, if applicable. If this is not applicable, the Bidder should submit [upload] a declaration (in the form of Affidavit), in this regard.
- iv. Registration certificate of **Employees' State Insurance (ESI)** authority, if applicable.
- v. If this is not applicable, necessary document(s) [to establish Non-applicability], along with **affidavit, affirmed before a first-class Judicial Magistrate** to that effect, are to be submitted [uploaded]. Moreover, such bidder(s) shall have to submit a declaration, confirming that they will obtain registration certificate of ESI authority, if required, and they will indemnify Syama Prasad Mookerjee Port, **Kolkata** against all damages & accident occurring to their labourer (including that of sub-contractor's labourers), in

connection with the instant contract, in case they become a Successful Bidder.

- vi. PAN Card, issued by Income Tax Department, Government of India.
- vii. Certificate of **MSME** / Micro & Small Enterprises (MSEs) / DIC / SSI / National Small Industries Corporation (NSIC) to get benefit in this regard.

2.3 The bidders are required to submit bid as per the instructions of the instant bidding documents (including Notice Inviting e-Tender). Bid will be considered rejected if any of the essential documents as mentioned in Clause no. 2.2.A is not submitted by the bidder. Essential documents means papers related to “Minimum Eligibility Criteria (MEC)”, including Bid Document fee, Earnest Money Deposit/ Bid security Declaration and Power of Attorney.

2.4 AVAILABILITY OF THE BIDDING DOCUMENTS:

The bidding documents (in full) would be available in the following websites:-

- <https://eprocure.gov.in/eprocure/app> of **Central Public Procurement Portal**.
- <http://www.kolkataporttrust.gov.in> of **SMP, Kolkata [Formerly Kolkata Port Trust]**.
- <https://kopt.enivida.in> of **E-Nivida Portal**.

Corrigenda, Addenda, Queries & Clarifications, if any, would also be available in the aforesaid websites.

2.5 PARTICIPATING IN THE BIDDING PROCESS:

- The bidders will have to participate in the electronic bidding process through the website of <https://kopt.enivida.in> of **E-Nivida** only.

General Manager (Engineering)
Haldia Dock Complex
SMP, Kolkata

SCHEDULE OF TENDER (SOT)

E-Tender No. SDM (P&E)/ T / 03 /2021-2022.

3.1.	Name of work	::	Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata
3.2.	Tender Inviting Authority	::	General Manager (Engg.), Haldia Dock Complex, SMP, Kolkata
3.3.	Mode of Tender	::	e-Procurement System. Online (Part I: Pre-qualification & Techno-commercial Bid and Part II: Price Bid) through https://kopt.enivida.in of e-Nivida. No physical tender is acceptable by Haldia Dock Complex, SMP, Kolkata.
3.4.	Estimated Cost	::	Rs 16,21,37,249.00 (excluding GST).
3.5.	i) Bid Document Fee (Cost of bidding documents)	::	The intending bidders should deposit Rs 2,950.00 (Indian Rupees: Two thousand nine hundred and fifty) only [including GST @ 18%] , as Bid document Fee (non-refundable), to Haldia Dock Complex, through DD/Banker Cheque in favour of Syama Prasad Mookerjee Port, Kolkata on any Scheduled/Nationalized Bank payable at Haldia, otherwise their offer will be summarily rejected. Copy of the DD/Banker's Cheque should be uploaded. In case the aforesaid Bid Document fee [non-refundable] is not deposited by the Bidder, the respective bid will be summarily rejected, treating the same as non-responsive. For exemption of Bid Document Fee:- Bidders to upload the scanned copy of the certificate from MSME / Micro & Small Enterprises (MSEs) / DIC / SSI / National Small Industries Corporation (NSIC) or any empowered Central / State Govt. authority is required in electronic format.
	ii) Earnest Money Deposit (EMD)	::	No Earnest Money is required to be deposited to Haldia Dock Complex, SMP, Kolkata. All bidders shall upload a "Bid security Declaration" as per format attached as Annexure-B of Bidding form V.
			NOTE :: i) Bid Document Fee/ Exemption of Bid Document fee and Bid security Declaration [as per format attached as Annexure-B of Bidding form V] are to be physically deposited at the office of Tendering Authority [Sr. Dy. Manager (P&E)], Haldia Dock Complex, Operational Administrative Building(1st floor), Chiranjibpur, Haldia, PIN 721604, separately in a single sealed envelope, mentioning Tender no. with proper marking. Demand Draft /Banker's Cheque against cost of bidding

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

			document, should be submitted/deposited on any scheduled/ nationalized Bank, by the bidder in favour of Syama Prasad Mookerjee Port, Kolkata payable at Haldia before opening of the tender, as specified in the Tender Document.
	iii) RailTel Tender Processing Fee (Non refundable)		<p>a) Mode of Payment: - E-payment only through Debit / Credit Card or Net Banking.</p> <p>b) Tender Processing Fee (TPF) - 0.1% of estimate cost (Minimum 750/- and Maximum 7,500/-) plus GST @ 18%.</p> <p>c) Registration Charges: Rs 2,000/- + Applicable GST per Year.</p> <p>Note:</p> <p>1. The bidders, who are not yet to be registered with RailTel, are advised to get themselves registered with RailTel, at least 72 (seventy-two) hours prior to bid submission.</p> <p>2. Bidders are required to ensure that their corporate email id provided is valid and updated at the stage of registration of vendor with RailTel's e-Nivida Portal (i.e. Service Provider).</p>
3.6.	Completion Period	::	12 months
3.7.	Bid Validity	::	180 days.
3.8.	Performance Bank Guarantee / Security Deposit	::	<p>(i) 3 % of the Contract Value excluding GST during guarantee period of 24 months for complete project.</p> <p>(ii) 3 % of Maintenance contract value excluding GST for a period of 36 months after completion of 24 months' guarantee period for complete project.</p>
3.9.	Guarantee Period	::	24 months for complete projects.
3.10.	Date, time and venue of Pre-Bid Meeting (off-line).	::	<p>27.07.2021 at 11:00 Hrs (IST).</p> <p>Office of Sr. Dy. Manager (P&E); Chiranjibpur; P.O. Haldia, Dist. Purba Medinipur; PIN: 721 604; West Bengal; India.</p>
3.11.	i) Publish date of e-Tender at https://kopt.enivida.in	::	29.06.2021.
	ii) Closing date & time of submission of e-Tender at https://kopt.enivida.in	::	11.08.2021 up to 15:00 Hrs. (IST).
	iii) Date & time of opening of Part-I (Techno-commercial Bid)	::	11.08.2021 up to 15:30 Hrs. (IST) onwards.
	iv) Date & time of opening of Part-II (Price Bid)	::	Shall be informed separately.

3.12.	Address of the Employer	::	Syama Prasad Mookerjee Port, Kolkata (Formerly Kolkata Port Trust) 15 Strand Road, Kolkata – 700 001, West Bengal, India.
3.13.	Address of Engineer	::	General Manager (Engineering), Haldia Dock Complex, Syama Prasad Mookerjee Port, Kolkata. <u>Address:</u> Engineering Department Jawahar Tower Complex ; P.O. Haldia Township; Dist. Purba Medinipur ; PIN: –721607, West Bengal, India. Telephone no. : + 91-3224-264496 E. mail : aganesan.hdc@kolkataporttrust.gov.in
3.14.	Address of the Engineer's representative	::	Shri R.N.Roy, Sr. Dy. Manager (P&E), Haldia Dock Complex, Operational Administrative Building (1 st floor), Chiranjibpur; P.O. Haldia, Dist. Purba Medinipur; PIN: 721 604; West Bengal; India. Telephone no. : + 91-3224-252526 Mobile no. : + 91 94340 74411 E. mail : rnroy.hdc@kolkataporttrust.gov.in

General Manager (Engineering)
Haldia Dock Complex
Syama Prasad Mookerjee Port

SECTION – IV

INSTRUCTIONS FOR ONLINE BID SUBMISSION

4.1 Introduction:

- 4.1.1** Bidders are requested to use internet Browsers Firefox version below 50 / Internet Explorer version 8 or above, and Java 8 Update 151 or 161.
- Further, bidders are requested to go through the following information and instructions available on the RailTel , <https://kopt.enivida.in>, before responding to this e-tender :
- Bidders Manual Kit
 - Help for Contractors
 - FAQ
- 4.1.2** The intending bidders are requested to go through the “**Instructions To Bidders (IB)**” and contents of this bidding document, including all terms & conditions and Technical Specifications, before submitting online tender. Bidders who do not comply with the requirements / conditions, with documentary proof (wherever required), will not qualify in the tender.
- 4.1.3** **SPECIAL NOTE:**
- THE PRE-QUALIFICATION & TECHNO-COMMERCIAL BID AND PRICE BID SHALL HAVE TO BE SUBMITTED ON-LINE AT <https://kopt.enivida.in> only.**
- 4.1.4** Possession of valid Digital Signature Certificate (DSC) and Registration of the intending bidder with RailTel are pre-requisites for the instant e-Tendering.
- 4.1.5** The online tender should be submitted strictly as per the terms and conditions and procedures laid down in the website <https://kopt.enivida.in>.
- 4.1.6** All entries in the tender should be entered in online Technical & Commercial formats, without any ambiguity.
- 4.1.7** The e-Tender platform shall remain open from the pre-announced date & time and for as much duration as mentioned in the Schedule of Tender (SOT).
- 4.1.8** E-tender cannot be accessed after the closing date and time of e-Tender, mentioned in the Schedule of Tender (SoT) of the instant bidding documents.
- 4.1.9** The intending bidders are requested to submit their bids, keeping sufficient time in hand.
- 4.1.10** In case of any clarification regarding online submission of bids, the intending bidders are requested to contact HDC / RailTel, well in advance, keeping sufficient time in hand.

4.1.11 Contact person (Haldia Dock Complex):

- (i) Shri R.N.Roy,
Designation: Sr. Dy. Manager (P&E),
Mobile No. + 91 94340 74411
Landline: + 91-3224-252526
E-mail : rnroy.hdc@ **kolkataporttrust.gov.in**
- (ii) Sri D.Dey,
Designation: Asst. Manager
Mobile No. + 91 94340 33492
Landline: + 91-3224-252577
e-mail : djdey.hdc@ **kolkataporttrust.gov.in**

Contact persons (RailTel Portal):

- (i) Shri Siddharth Ghosh
Mobile No.: + 91 9355030604
E-mail : ewizardsiddharth@gmail.com
- (ii) Shri Deepak Jha
Mobile No.: +91 8448288981
E-mail : ewizarddipak@gmail.com

4.1.12 Bidding in e-tender:

- (i) The bidders must upload all the documents required as per the instant bidding documents (including Notice Inviting e-Tender). Any other document uploaded, which is not required as per the instant bidding documents (including Notice Inviting e-Tender), shall not be considered.
- (ii) Details of cost of e-tender paper remitted should be entered by the participating bidder in the space provided in the e-tender as indicated hereunder:
 - a) Name of remitting bidder :
 - b) Tender No. :
 - c) Amount remitted :
 - d) Date of remittance :
 - e) DD/BC No.:
- (iii) Details of Earnest money remitted should be entered by the participating vendor/contractor in the space provided in the e-tender as indicated hereunder:
 - a) Name of remitting bidder :
 - b) Tender No. :
 - c) Amount remitted :
 - d) Date of remittance :
 - e) DD/BC No.:
- (iv) Micro & Small Enterprises (MSEs) shall submit the relevant documents for availing themselves waiver of EMD and cost of tender documents.
Micro and Small Enterprise registered with the authorities as mentioned in the Govt. of India gazette Notification dated 26.03.2012 shall be exempted from payment of Cost of Tender Document and depositing Earnest Money for which copies of valid MSE's Certificate along with the certificate of the authority as mentioned in the Govt. gazette with list of items registered must be submitted with tender.

- (v) Unit of Measure (UOM) is indicated in the e-Tender platform. Rate to be quoted should be in Indian Rupees, as per UOM indicated in the e-Tender platform or in the bidding documents.
- (vi) The bidders should quote their offered prices appropriately, only in the Price Bid link. Price indicated anywhere else, in any other form or manner, will not be considered for evaluation of Price Bid.

4.2 Other Instructions related to e-Procurement:

- 4.2.1** The Techno-commercial Bid and the Price Bid shall have to be submitted online at <https://kopt.enivida.in> Tenders will be opened electronically on specified date and time as given in the Tender.
- 4.2.2** All entries in the tender should be entered in online Technical & Commercial Formats without any ambiguity.
- 4.2.3** Information about tenders /corrigendum uploaded shall be sent by email only during the process till finalization of tender. Hence the vendors are required to ensure that their corporate email I.D. provided is valid and updated at the time of registration of vendor with <https://kopt.enivida.in>. Vendors are also requested to ensure validity of their DSC (Digital Signature Certificate).
- 4.2.4** E-tender cannot be accessed after the due date and time mentioned in NIT.
- 4.2.5** Bidding in e-tender :
 - a) Vendor(s) need to submit necessary EMD and Tender fees to be eligible to bid online in the e-tender. Tender fees are non refundable. No interest will be paid on EMD. EMD of the unsuccessful vendor(s) will be refunded by the tender inviting authority.
 - b) The process involves Electronic Bidding for submission of Technical and Commercial Bid.
 - c) In all cases, vendor should use their own ID and Password along with Digital Signature at the time of submission of their bid.
 - d) During the entire e-tender process, the vendors will remain completely anonymous to one another and also to everybody else.
 - e) The e-tender floor shall remain open from the pre-announced date & time and for as much duration as mentioned above.
 - f) All electronic bids submitted during the e-tender process shall be legally binding on the vendor. Any bid will be considered as the valid bid offered by that vendor and acceptance of the same by the Buyer will form a binding contract between Buyer and the Vendor for execution of supply.
 - g) It is mandatory that all the bids are submitted with digital signature certificate otherwise the same will not be accepted by the system.
 - h) Buyer reserves the right to cancel or reject or accept or withdraw or extend the tender in full or part as the case may be without assigning any reason thereof.
 - i) No deviation of the terms and conditions of the tender document is acceptable. Submission of bid in the e-tender floor by any vendor confirms his acceptance of terms & conditions for the tender.
- 4.2.6** Any order resulting from this tender shall be governed by the terms and conditions mentioned therein.
- 4.2.7** No deviation to the technical and commercial terms & conditions are allowed.
- 4.2.8** The tender inviting authority has the right to cancel this e-tender or extend the due date of receipt of bid(s) without assigning any reason thereof.
- 4.2.9** Vendors are requested to read the vendor guide and see the video in the page kopt.enivida.in to familiarize them with the system before bidding.

- 4.2.10** No deviation of the terms and conditions of the tender document is acceptable. Submission of bid in the e-tender floor by any bidder confirms his acceptance of terms & conditions for the tender.
- 4.2.11** The bidders must upload all the documents required as per terms of NIT. Any other document uploaded which is not required as per the terms of the NIT shall not be considered.
- 4.2.12** The bid will be evaluated based on the filled-in technical & commercial formats.
- 4.2.13** The documents uploaded by bidder(s) will be scrutinized. In case any of the information furnished by the bidder is found to be false during scrutiny, EMD of defaulting bidder(s) will be forfeited. Punitive action including suspension and banning of business can also be taken against defaulting bidders.
- 4.2.14** Necessary addendum/ corrigendum (if any) of tender would only be hosted in the e-tendering portal of RailTel.
- 4.2.15** Due date of submission of tender will not be extended under any situation.

4.3 RailTel Tender Processing Fee (Non refundable)

Mode of Payment:- E-payment Only through Debit/Credit Card or Net Banking.

Tender Processing Fee (TPF)- 0.1% of estimate cost (Minimum 750/- and Maximum 7,500/-)

plus GST @18%.

Registration Charges: Rs. 2,000/- + Applicable GST Per Year

SECTION – V

INSTRUCTIONS TO BIDDERS (ITB)

A. GENERAL

5.1 Definition and interpretations :

- (a) the term “in writing” means communicated in written form (i.e. by mail, e-mail, fax, telex, etc.) and delivered against receipt;
- (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular;
- (c) “day” means calendar day; and
- (d) “Procurement” means the entire work requirements, as specified in **Section VI Technical Specification**.

5.2 Fraud and corruption

5.2.1 It is the policy of **SMP, Kolkata (Formerly KoPT)** to require that bidders, Contractors, Sub-contractors, and Consultants, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, **SMP, Kolkata :**

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) “**corrupt practice**” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;
 - (ii) “**fraudulent practice**” means a misrepresentation or omission of facts, in order to influence a public procurement process or the execution of a contract;
 - (iii) “**collusive practice**” means a scheme or arrangement between two or more bidders, designed to establish Bid Prices at artificial , non-competitive levels;
and
 - (iv) “**coercive practice**” means harming, or threatening to harm, directly or indirectly, persons or their property to influence their participation in procurement process or affect the execution of a contract;
- (b) will reject a proposal for award, if it determines that the bidder, recommended for award, has, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the contract in question;
- (c) Will terminate contract, if it determines at any time that representatives of SMP, Kolkata engaged in corrupt, fraudulent, collusive, or coercive practices during the procurement or the execution of that contract ;
- (d) will sanction a firm or individual, including declaring them ineligible, either indefinitely or for a stated period of time, to be

awarded a contract if it at any time determines that they have, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for, or in executing, a contract;

and

- (e) will have the right to require that a provision be included in Bidding Documents and in contracts, requiring bidders, contractors, subcontractors, and consultants to permit SMP Kolkata to inspect their accounts and records and other documents relating to the bid submission and contract performance.

5.2.2 Furthermore, bidders shall be aware of the provision stated in GCC.

5.3 Eligible bidders

5.3.1 A Bidder, and all parties constituting the Bidder, **should have the nationality of any country**. A Bidder shall be deemed to have nationality of a country if the Bidder is a citizen or is constituted, incorporated, or registered and operates in conformity with the provisions of the laws of the country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or contractors for any part of the contract, including related services

5.3.2 A Bidder shall not have a conflict of interest. Any Bidder found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this bidding process, if the Bidder and one or more parties :

- (a) Submit more than one bid in this bidding process.

Or

- (b) are or have been associated in the past, with a firm or any of its affiliates which have been engaged by **SMP, Kolkata** to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the goods to be purchased under the instant Bidding Documents.

5.3.3 Participating by a Bidder in more than one bid shall result in the disqualification of all bids, in which such Bidder is involved.

5.3.4 A Bidder that is under a declaration of ineligibility by **SMP, Kolkata**, in accordance with **ITB Clause No.5.2**, at the date of contract award shall be disqualified.

5.4 Authority in signing the bid / offer

5.4.1 In case the bid is submitted by a **Proprietorship Firm**, the same should be signed either by the **Proprietor** or other person(s), holding a valid **power of attorney / authorisation** from the proprietor, in connection with this bidding process. The signature of such power of attorney holder(s) / authorised person(s) should be attested by the proprietor. Such **power of attorney / authorisation** should be uploaded along with **Techno-commercial Bid [Part I]**.

5.4.2 In case the bid is submitted by a **Partnership Firm**, the same should be signed either by the partner(s), holding valid **power of attorney** from the partners or other person(s), holding valid **authorisation** from

such power of attorney holder(s) , subject to approval of the partner(s) in the matter of giving such authorization, in connection with this bid. The signature of such **power of attorney holder(s) / authorised person(s)** should be attested by the **partners or power of attorney holder**, as the case may be. Such **power of attorney / authorisation** should be uploaded along with **Techno-commercial Bid [Part I]**.

5.4.3 In case the bid is submitted by a **Limited Company**, the same should be signed by the person(s) holding valid **power of attorney / authorisation**, executed in his / their favour (in connection with this bid) and the signature of such **power of attorney holder(s) / authorised person(s)** should also be attested, in accordance with the constitution of the Limited Company. Such **power of attorney / authorisation** should be uploaded along with **Techno-commercial Bid [Part I]**.

5.4.4 Such **power of attorney holder(s) / authorised person(s)** should put his / their signature identical with the attested one, in the relevant documents submitted / uploaded, in connection with the instant bidding process [including “**Techno-commercial Bid**”]. In case of putting different signatures in different documents / offers, all such signatures should be attested by the same person in line with the above.

B. CONTENTS OF BIDDING DOCUMENTS

5.5 Sections of Bidding Documents

5.5.1 The contents of the **Bidding Documents** as detailed at “TABLE OF CONTENTS” should be read in conjunction with any addendum / corrigendum issued in accordance with **ITB Clause No. 5.7**.

5.5.2 The Employer (SMP, Kolkata) is not responsible for the completeness or correctness of the bidding documents and their Addenda, if they were not obtained directly from the source indicated in Notice Inviting e-Tender.

5.5.3 The bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents. Failure to furnish all information or documentation required by the Bidding Documents [considering all addenda / corrigenda issued] may result in the rejection of the bid.

5.6 Pre-Bid Meeting

5.6.1 A prospective bidder requiring any clarification of the instant Bidding Documents shall contact **Sr. Dy. Manager (P&E), HDC**, in writing, or raise their enquiries during the **Pre-bid meeting**.

The **prospective bidders** are requested to submit their queries / observations / suggestions / requests for clarification, in connection with the instant Bidding Documents, in advance, to enable **SMP, Kolkata** to prepare response / clarifications and make pre-bid meeting meaningful.

5.6.2 As indicated in the Schedule of Tender, pre-bid meeting will be conducted off-line on behalf of HDC, SMP, Kolkata. The purpose of this pre-bid meeting will be to clarify issues and to answer questions on any matter (in connection with the instant Bidding Documents only) that may be raised at that stage.

Authorised representative(s) of the prospective bidders will be allowed to attend the **Pre-bid meeting**, which will be held on the date, time & at the venue stipulated in the **Schedule of Tender (SoT)**.

The **designated representative(s)**, who will be deputed to attend the **pre-bid meeting**, should submit their authorization in this regard. The signature of such designated person(s) should be attested by the authorized signatory of the prospective bidders. Otherwise, the designated person should have to submit the proof of his identity through other means.

5.6.3 The prospective bidders are advised to attend the pre-bid meeting. However, non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

5.6.4 Unless otherwise notified, **all the queries / observations / suggestions / requests for clarification** (related to the instant Bidding Documents only) [including the **queries / observations / suggestions / requests for clarification raised during pre-bid meeting**], received till the date of **pre-bid meeting**, will be considered. **SMP, Kolkata's** response / clarifications (including description of queries / observations / suggestions / requests for clarifications, but without identifying its source), in this regard, will be communicated to all the known prospective bidders (i.e. who would **attend pre-bid meeting** or **submit queries / observations / suggestions or requested for clarification**), in writing, well in advance to the last date of submission of bids. The aforesaid **queries / observations / suggestions / requests for clarification** and **SMP, Kolkata's** response / clarifications will also be hosted in the websites, as specified in the **Notice Inviting e-Tender**.

Any modification to the Bidding Documents, which may become necessary as a result of the **SMP, Kolkata's response / clarifications**, so issued, shall be made through the issue of an addendum / corrigendum, pursuant to **ITB**.

5.6.5 The Bidder shall be deemed to have **examined** thoroughly the instant Bidding Documents, in full, [considering all addenda / corrigenda issued (if any)], **visited the site & surroundings** and to have **obtained all necessary information in all the matters** whatsoever that might influence while carrying out the job as per the conditions of the instant **Bidding Documents** [considering all addenda / corrigenda issued (if any)] and to satisfy themselves to sufficiency of their bid, etc. If they shall have any issue to be clarified, the same should be brought to the notice of **SMP, Kolkata**, in writing, as set out in **ITB**.

The bidders are advised to acquaint themselves with the job involved at the site, like availability of labour, means of transport, communication facilities, laws and bye laws in force from Government of West Bengal & Government of India and other statutory bodies from time to time. The Bidder shall be deemed to have examined and collected all necessary information as to risk, contingencies and other circumstances, which may be necessary for preparing the Bid.

Visiting the site shall be at the bidder's own expense. Failure to visit to site will no way relieve the Contractor (successful Bidder) of any of their obligation in performing the work and liabilities & responsibilities thereof, in accordance of the contract.

5.6.6

Necessary Gate Pass/Dock Entry Permit, for entering into the Dock area, will be issued to the designated representative(s) of the prospective bidders, on chargeable basis [as per the extant “Scale of Rates” of SMP, Kolkata, available at <http://www.kolkataporttrust.gov.in> / of SMP, Kolkata (Formerly Kolkata Port Trust)], to visit the site, for the purpose of inspection only, on receipt of a formal written request. The signature of such designated person(s) should be attested by the authorized signatory of the prospective bidders. Otherwise, the designated person(s) should have to submit proof of his/their identity through other means.

However, during the pre-bid meeting, if the prospective bidders are willing to enter into the dock area, they will be allowed through VIP Pass of HDC free of cost.

Such prospective bidder will be fully responsible for any injury (whether fatal or otherwise) to its designated representative(s), for any loss or damage to property, or for any other loss, damage, costs and expenses whatsoever caused, which, but for the granting of such permission, would not have arisen.

The prospective bidder will be liable to indemnify SMP, Kolkata against any loss or damage to the property of SMP, Kolkata or neighbouring property which may be caused due to any act of prospective bidder or their designated representative(s).

5.7 Amendment of Bidding Documents

5.7.1 At any time, prior to the last date for submission of bids, **SMP, Kolkata** may, for any reason whether at its own initiative or in response to the **queries/ observations/suggestions/requests for clarification**, amend and modify the bidding documents by issuing Addenda/Corrigenda. Such Addenda/Corrigenda will be hosted in the websites, as specified in the **Notice Inviting e-Tender**.

5.7.2 Any Addendum/Corrigendum, thus issued, shall be part of the bidding documents and shall be communicated, in writing, to all the known prospective bidders (i.e. who would attend Pre-bid Meeting or submit queries / observations / suggestions or request for clarification), in writing, well in advance to the last date of submission of bids.

5.7.3 To give prospective bidders reasonable time to take the Addendum / Corrigendum into account in preparing their bids, SMP, Kolkata may, at their discretion, extend the last date for submission of the bids, prior to the closing date & time of e-Tendering.

C. PREPARATION OF BIDS

5.8 Cost of bidding

The Bidder shall bear all costs associated with the preparation and submission of their bid, and **SMP, Kolkata** shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

5.9 Language of Bid

The Bid, as well as all correspondence and documents relating to the bid, exchanged by the Bidder and SMP, Kolkata, shall be written in the **English language only**. If the supporting documents and printed literature, that are part of the bid, are in another language, they must be accompanied by an accurate

translation of the relevant passages in the English language, in which case, for purposes of interpretation of the bid, such translation shall govern.

5.10 Documents comprising the Bid

5.10.1 The Bid shall comprise of the following :-

(a) Pre-qualification and Techno-commercial Bid:

The Pre-qualification & Techno-commercial Bid comprises all documents [including the Bidding Forms (provided in these bidding documents), duly filled in, signed and stamped] required to be submitted as per the Notice Inviting e-Tender, Schedule of Tender (SOT), Instructions To Bidders (ITB) and any other relevant clause(s) of these bidding documents.

(b) Price Bid:

The Price Bid comprises the prices only and the same are to be submitted electronically, through the website of <https://kopt.enivida.in> only.

5.11 Form of Tender

The bidder shall have to submit (upload) the “**FORM OF TENDER**”. This form **must be completed without any alterations** to its format, and no **substitutes shall be accepted**. All blank spaces shall be filled in with the information requested. Such **duly filled in “FORM OF TENDER”** should be uploaded.

5.12 Price Schedule

5.12.1 The Bidder shall quote their price on-line (**through e-Nivida Portal only**) as per the **Price Schedule** (Bill of Quantities) in the Price bid (Part-II), without any condition or deviation. Price indicated anywhere else, in any other form or manner, will not be considered for evaluation of Price Bid.

5.12.2 The Bidder should submit (upload) the **unpriced** format [Bidding Form VI : **PRICE SCHEDULE**], of the instant Bidding Documents, duly filled in the GST rates at appropriate places and signed & stamped as token of acceptance.

5.13 Bid Prices

5.13.1 The prices are to be quoted by the Bidder **through e-Nivida Portal**, considering the work requirements, as detailed in **Section VI (Technical Specification)** and other terms & conditions of the Bidding Documents (considering all addenda / corrigenda issued).

5.13.2 Except where otherwise expressly provided, the contractor shall have to provide all materials, labour, plant and other things necessary in connection with the contract, although everything may not be fully specified, and although there may be errors and omissions in the specifications.

5.13.3 The prices and rates entered (electronically through e-Nivida Portal) **as per the Price Schedule** (Bill of Quantities), in the Price bid (Part-II), by the **Bidder**, shall include, inter alia, all costs and expenses involved in or arising out of the following:

(a) Supply, delivery, inspection, transportation (including insurance), handling, receipt and storage of all required materials [in line

with Technical Specification (Section VI)] and equipment at site.

- (b) The provision, storage, transport, handling, use, distribution & maintenance of all materials, equipment, machinery and tools, including all costs, charges, dues, demurrage or other outlays involved in transportation.
- (c) The provisions & maintenance of all their staff & labour and their payment, accommodation, transport, fares and other requirements.
- (d) All required first aid, welfare and safety requirements.
- (e) Damage caused to the work and /or construction, plant, materials and consumable stores caused by weather.

5.13.4 Tools, Tackles, lifting machineries, scaffolding, temporary lighting, different vehicular transport etc. required for execution of the whole work will have to be arranged by the Contractor, at their own risk, cost & arrangement, which may be considered, while submitting their rates in the offer.

5.13.5 Rates & amounts quoted by the bidders in the “PRICE SCHEDULE”, include all incidental charges [excluding Goods and Services Tax (GST)], as applicable, and charges for packing, forwarding, loading, handling, carrying to any lead, stacking, transportation, permits, overheads & profit, etc. necessary for the complete services as described in this Bidding Document.

GST, as applicable, shall be paid extra against proper invoice submitted by the Contractor.

The contractor will be required to submit GST compliant invoice with all required details and also be required to file timely and proper return so as to enable SMP, Kolkata to get due credit against GST paid.

In case of any failure on the above account, GST amount, even if paid by SMP, Kolkata, shall be recoverable from the Contractor.

5.13.6 All quoted rates will remain firm during the validity period of the bid / offer, including any / all extension thereof, agreed by the bidder.

However, changes **in statutory taxes & duties [other than GST] will be adjusted** (within the scheduled completion period), based on documentary evidence.

5.13.7 The Bidder should clearly understand that they shall be strictly required to conform to all terms & conditions of the instant Bidding Documents [considering all addenda / corrigenda (if any) issued], as contained in each of its clauses and **plea of “Customs Prevailing”** will not be, in any case, admitted as excuse on their part, for infringing any of the terms & conditions.

No request for change or variation in rates or terms & conditions of the contract shall be entertained on the ground that the successful Bidder has not understood the work envisaged in the instant contract.

5.14 Currencies of Bid

The **Bidders** should quote the prices in **Indian Rupees (Rs)** only.

5.15 Period of validity of bids

5.15.1 Bids shall remain valid for the period of 180 days after the bid submission deadline date (considering extension thereof, if any) as prescribed in ITB. A bid, valid for a shorter period, shall be rejected by SMP, Kolkata, treating the same as non-responsive.

5.15.2 In exceptional circumstances, prior to the expiration of the bid validity period, **SMP, Kolkata** may request the bidders to extend the period of validity of their bids. The request and the responses shall be made in writing.

A Bidder may refuse the request, without forfeiting their **Earnest Money Deposit (EMD)**. A Bidder granting the request shall not be required or permitted to modify its bid, except when option to do the same has been specifically granted by **SMP, Kolkata**, in writing.

5.16 Earnest Money Deposit (EMD)/ Bid security declaration

5.16.1 The intending bidders should upload bid security declaration in lieu of EMD as specified in the **Schedule of Tender (SOT)**, as all bidders are exempted from submission of **Earnest Money Deposit (EMD)**, in accordance with the procedure mentioned therein.

D. SUBMISSION OF BIDS AND OPENING OF BIDS (EXCEPT PRICE BID)

5.17 Submission of bids

5.17.1 Bidders shall have to submit their bids [both **Pre-qualification & Techno-commercial Bid** and **Price Bid**] on-line through **e-Nivida Portal** only.

5.17.2 The Bidder should submit (upload) the scanned copies of all the relevant and required documents, statements, filled up formats, certificates, etc. [in accordance with **ITB**], in the aforesaid portal, in support of their **Pr-qualification Criteria and Techno-commercial Bid**.

5.17.3 Before scanning the aforesaid documents, all pages are to be signed by a person duly authorised to sign on behalf of the bidder, pursuant to **ITB**, and are to be embossed with their official seal, owing responsibility for their correctness / authenticity. All pages of the aforesaid documents should be serially marked.

5.17.4 Any inter-lineation, erasures, or overwriting, in the aforesaid scanned & uploaded documents, shall be valid only if they are signed by the aforesaid authorised person.

5.17.5 The Bidder will have to produce the original documents or any additional documents, if asked for, to satisfy **Haldia Dock Complex, SMP, Kolkata (Formerly Kolkata Port Trust)**.

5.17.6 The **Price Bid** comprised the prices only and the same are to be submitted electronically, through the website of <https://kopt.enivida.in> only. *No **hardcopy of priced “Price Schedule” is required to be uploaded.***

5.18 Techno-commercial offer

5.18.1 No techno-commercial deviation and variation will be considered by SMP Kolkata, except where the Techno-commercial terms and conditions, will be found as impossible and irrelevant to the bidder.

5.18.2 If the Bidder deliberately gives wrong information or conceals any information / fact in their bid, which shall be favourable for acceptance of their bid, fraudulently, then the right to reject such bid at any stage of execution, without any financial liability, is reserved by **SMP, Kolkata**.

5.19 Priced offer

The Bidder should quote the offered rate appropriately in the PRICE BID, electronically, through the website of **e-Nivida** only. *Price indicated anywhere else, in any other form or manner, would not be considered for evaluation of Price Bid.*

5.20 Deadline for submission of bids

5.20.1 Bids must be submitted within the closing date & time **indicated in the Schedule of Tender (SOT)**.

5.20.2 **SMP, Kolkata** may, at its discretion, *extend the deadline for the submission of bids, prior to the closing date & time of e-Tendering*, by amending the Bidding Documents, in accordance with **ITB**, in which case all rights and obligations of **SMP, Kolkata** and bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

5.21 Late Bids

This e-Procurement System would not allow any late submission of bid, after the closing date & time, as per the **Schedule of Tender (SOT)** or extension, if any.

5.22 Withdrawal of bids

5.22.1 A Bidder may withdraw, substitute, or modify their bid on the e-Procurement System, before the closing date and time specified, but not beyond.

5.22.2 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the bidder on the “**FORM OF TENDER [for Techno-commercial (un-priced) Bid]**.” Or any extension thereof. Modification / Withdrawal of the bid sent through any other means shall not be considered by **SMP, Kolkata**.

5.22.3 Withdrawal of bid during the interval between such closing time on due date and expiring of the bid validity period, may result in forfeiture of EMD in accordance with **ITB**.

5.23 Bid opening [except Price Bid]

5.23.1 The bids [**except Price Bids**], will be opened at the date & time, indicated in the **Schedule of Tender (SOT)**.

5.23.2 The on-line bid-opening event may be viewed by the bidders at their remote end, by logging on to the e-Procurement System. A copy of the bid opening record shall be made available on the e-Procurement System.

E. EVALUATION OF BIDS

5.24 Confidentiality

5.24.1 Information relating to the evaluation of bids and recommendation of contract award shall not be disclosed to bidders or any other persons not officially concerned with such process until publication of the

contract award.

5.24.2 Any attempt by a Bidder to influence SMP, Kolkata in the examination, evaluation and comparison of the bids, or contract award decisions may result in the rejection of their bid & forfeiture of **EMD**.

5.24.3 Notwithstanding **ITB Clause No. 5.24.2**, from the time of bid opening to the time of contract award, if any Bidder wishes to contact SMP Kolkata on any matter related to the bidding process, they should do so in writing.

5.25 Clarification of bids

To assist in examination, evaluation & comparison of the bids and qualification of the bidders, the Employer (SMP, Kolkata) may, at their discretion, ask any bidder for a clarification of their bid. The Employer (SMP, Kolkata) may also ask any bidder to withdraw any terms/conditions mentioned by them in their offer, which are not in conformity with the terms & conditions specified in the bidding documents. In case any bidder fails to submit required clarification within the time stipulated by the Employer (SMP, Kolkata), in this regard, the tender would be processed in absence of the clarifications, which may result in disqualification of the corresponding bidder for the instant tender. Any clarification submitted by a bidder, which is not in response to a request by the Employer (SMP, Kolkata), shall not be considered. The Employer's (SMP, Kolkata's) request for clarification and the response shall be in writing.

No change in the prices or substance of the bid shall be sought, offered or permitted, nor will the bidder be permitted to withdraw their bid before expiry of the validity period of the bid.

5.26 Deviations, reservations and omissions

During the evaluation of bids, the following definitions apply:

- (a) "Deviation" is a departure from the requirements specified in the bidding documents ;
- (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the bidding documents ; and
- (c) "Omission" is the failure to submit part or all of the information or documentation required in the bidding documents.

5.27 Responsiveness of bids

5.27.1 Responsiveness of a bid would be determined on the basis of the contents of the bid itself, and clarification(s) in accordance with **ITB**.

5.27.2 A substantially responsive bid is one that meets the requirements of the Bidding Documents without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

- (a) if accepted, would
 - i) affect in any substantial way the scope, quality, or performance of the work specified in the Contract; or
 - ii) limit in any substantial way, inconsistent with the Bidding Documents, SMP Kolkata's rights or the bidder's obligations under the proposed contract; or
- (b) if rectified, would unfairly affect the competitive position of other bidders presenting substantially responsive bids.

5.27.3 Bidders shall not contain the following information / conditions to consider them responsive :

- (a) Either direct or indirect reference leading to reveal the prices of the bids in the Techno-commercial offers;
- (b) Adjustable prices, other than the provisions stated in **ITB**.

5.27.4 If a bid is not substantially responsive to the requirements of the bidding documents, it shall be rejected by SMP Kolkata and may not subsequently be made responsive by the bidder, by correction of the material deviation, reservation, or omission.

5.28 Nonconformities, errors and omissions

5.28.1 During examination, evaluation & comparison of the bids and qualification of the bidders, the Employer (SMP Kolkata) may, at their discretion, ask any bidder for submitting any document(s) [in case of shortfall in required documents (relating to capacity or otherwise)]. In case any bidder fails to submit required documents within the time stipulated by the Employer (SMP Kolkata), in this regard, the tender would be processed in absence of the documents, which may result in disqualification of the corresponding bidder for the instant tender.

Any document submitted by a bidder, which is not in response to a request by the Employer (SMP, Kolkata), shall not be considered. The Employer's (SMP, Kolkata's) request for submission of further document(s) shall be in writing.

5.28.2 **SMP, Kolkata** shall examine the bids [including the further documents / clarifications received in accordance with **ITB**] to confirm that all documents requested in **ITB** have been provided and to determine the completeness of each document submitted.

5.28.3 Provided that a bid is substantially responsive, **SMP, Kolkata** may waive any nonconformities or omissions in the bid that do not constitute a material deviation.

5.29 Examination of Pre-qualification Criteria

5.29.1 At first, the contents of the documents, submitted in support of the Pre-qualification Criteria [including the further documents / clarifications received in accordance with **ITB**] will be scrutinized and evaluated.

5.29.2 SMP, Kolkata may, at their discretion, seek any other detail(s)/ document(s), in subsequent course, to ascertain and get confirmed about the competence of the bidder. In case any bidder fails to submit required detail(s)/ document(s) within the time stipulated by the Employer (SMP, Kolkata), in this regard, the tender would be processed in absence of the documents, which may result in disqualification of the corresponding bidder for the instant tender. While evaluating Pre-qualification Criteria, regard would be paid to National Defence and Security considerations of the Indian Government.

5.29.3 In case it is found that the Pre-qualification Criteria has not been fulfilled by the bidder or otherwise their participation has not been found acceptable to **SMP, Kolkata**, the respective bid will be treated as non-responsive and "Price Bid" of the respective Bidder will not be considered further.

5.30 Examination of Techno-commercial offer

- 5.30.1** After scrutiny of the **Pre-qualification Criteria, Techno-commercial Bids** of the Pre-qualified bidders [as indicated above] will be scrutinized & evaluated.
- 5.30.2** **SMP, Kolkata** shall examine the bid to confirm that all terms and conditions specified in the **Technical Specification (Section VI), GCC (Section VII)** and **SCC (Section VIII)** have been accepted by the bidder without any material deviation or reservation or omission.
- 5.30.3** If on examination of the “**Techno-commercial Bid**” of pre-qualified bidders, it is found that they have not accepted all Techno-commercial terms & conditions of the Bidding Documents [considering all addenda / corrigenda, issued], “**Price Bid**” part of such bidder(s) will not be opened. “**Price Bid**” part of other bidder(s) will be opened subsequently as per procedure. Decision of **SMP, Kolkata** on this matter shall be final.
- 5.30.4** **The evaluation is also subject to compliance of Department for Promotion of Industry and Internal Trade Order No. P – 45021/2/2017-B.E. – II dated 15.06.2017; Order No. P – 45021/2/2017-B.E. – II dated 28.05.2018; Order No. P – 45021/2/2017-B.E. – II dated 29.05.2019 & Order No. P – 45021/2/2017-B.E. – II dated 04.06.2020 issued pursuant to Rule 153(iii) of the General Financial Rules 2017 in respect of public procurement (Preference to Make in India), order 2017.**

Bidders are advised to go through the same to appreciate its implication in the instant tender and furnish documents alongwith their techno-commercial offer, if applicable.

5.31 Opening of Price Bid

PRICE BIDS of the bidders, who qualifies in the “Pre-qualification & Techno-commercial Bid”, will be opened on a later date, upon due intimation to the concerned bidders at their address furnished by them in their bid.

The on-line price-bid opening event may be viewed by the bidders at their remote end, by logging on to the e-Procurement System. A copy of the price-bid opening record shall be made available on the e-Procurement System

5.32 Comparison & Evaluation of Price-Bid and selection of Successful Bidder

- 5.32.1** While evaluating the Price Bids, the Price quoted by the Bidders against all items of the **Price Schedule** shall be taken into account and the **TOTAL PRICE**, which would be arrived at, by adding quoted prices of all items of the **Price Schedule**, will be considered for evaluation. Selection of the successful bidder will be made on the basis of the “**lowest TOTAL PRICE**” thus arrived.
- 5.32.2** In case it is found that the quoted “**TOTAL PRICE**” is same for two or more bidders and their bids become the lowest, the respective bidders will be given chance to submit their fresh Price Bid, subject to the condition that the fresh rate so quoted must be less than the rate quoted by the respective bidders earlier. Selection of the successful bidder will be made on the basis of the revised “**lowest TOTAL PRICE**” thus obtained.

5.33 SMP, Kolkata’s right to accept any bid and to reject any or all bids

- 5.33.1** **SMP, Kolkata** reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to

contract award, without thereby incurring any liability to Bidders.

F. AWARD OF CONTRACT

5.34 Subject to **ITB Clause No. 5.33.1, SMP, Kolkata** shall award the contract to the Bidder whose offer has been determined to be the lowest evaluated bid [as per **ITB Clause No. 5.32**] and is substantially responsive to the Bidding Documents.

5.35 Notification of award

Prior to the expiration of the period of bid validity or extended validity in accordance with **ITB, SMP, Kolkata** shall notify the **Successful Bidder**, in writing, that their bid has been accepted. The notification letter (hereinafter called the “**Letter of Acceptance**”) will be treated as “**Order Letter**” and will constitute the formation of the contract. Such order letter shall specify the “**Contract Price**” in line with **SCC Clause No. 11.1.4 a**).

5.36 Signing of contract agreement

5.36.1 After placement of order, **contract agreement** [as per the form furnished in **Section- XI**] should be executed between **Syama Prasad Mookerjee Port, Kolkata** and the **Contractor (Successful Bidder)**. In this respect, within a week of receipt of intimation regarding acceptance of their bid, the successful bidder shall have to submit, at their cost, required **Stamp Paper** [Non-judicial Stamp Paper of worth not less than **Rs 50.00**] & **dummy papers** (for three sets).

Immediately after receipt of the above papers & documents, **SMP, Kolkata** will send three sets of **contract agreement form** [one set printed on Stamp Paper & dummy papers and two sets printed on dummy papers], photocopy of **one set of documentary transactions between them and SMP, Kolkata** (till finalisation & award of the Contract) and **Contract Documents** [incorporating all accepted changes and addenda / corrigenda issued, if any], duly signed by the representative of **SMP, Kolkata** at appropriate places on each pages.

Within a week, thereafter, the Contractor (Successful Bidder) shall have to return **Contract Agreement forms** (three sets) [after affixing their common seal], the set of **documentary transactions** and **Contract Documents**, duly signed by them at appropriate places on each page.

5.36.2 The **contract agreement form & Contract Documents** should be signed by the authorized persons of the Contractor, authorized in this respect.

5.36.3 After receipt of the **contract agreement forms** (three sets), duly signed by authorised person of **SMP, Kolkata** & authorized person of the Contractor (Successful Bidder), the same shall be kept under **SMP, Kolkata**’s custody, after affixing the Common Seal of **SMP, Kolkata**.

One copy of such **executed contract agreement** (on dummy paper), along with one photocopy of signed **documentary transactions** and **Contract Documents** will be handed over to the Contractor for their record & future reference.

5.36.4 Until such contract agreement is executed, the other documents referred to the definition of the term “Contract” [**GCC Clause**], shall collectively be the contract.

5.37 Performance Guarantee / Security Deposit

- 5.37.1** Within **twenty-eight (28) days** of issuance of “**Letter of Acceptance**” by SMP Kolkata, the Successful Bidder shall provide the Performance Bank Guarantee in accordance with the Special Conditions of Contract, using the form furnished in Section XI.
- 5.37.2** Failure of the successful bidder to submit the above-mentioned Bank Guarantee for **Performance Guarantee / Security Deposit or sign the contract agreement** shall constitute sufficient grounds for the annulment of the award and forfeiture of the EMD in accordance with ITB.
- 5.37.3** All costs, charges & expenses, including Stamp Duty, shall be borne by the Successful Bidder.
- 5.37.4** **No interest / charge**, of whatsoever nature, shall be paid by SMP, Kolkata on the amount of Performance Guarantee / Security Deposit, held by them (as per SCC) at any stage.

5.38 Preference to Make in India

- 5.38.1** By Office Memorandum No. F. No. 6/18/2019-PPD dated 23.07.2020, Ministry of Finance, Department of Expenditure, Public Procurement Division has inserted sub-rule (xi) to amend Rule 144 of the General Financial Rules 2017 as under in respect of public buying:

“Notwithstanding anything contained in this Rules, Department of Expenditure may, by order in writing, impose restrictions, including prior registration and / or screening, on procurement from bidders from a country or countries, on grounds of defence of India, or matters directly or indirectly related thereto including national security, no procurement shall be made in violation of such restrictions.”

- 5.38.2** Also, by Office Memorandum No. P-45021/112/2020-PP (BE-II) (E-43780) dated 14.10.2020, the Government of India, Ministry of Commerce and Industry, Department for Promotion of Industry and Internal Trade (Public Procurement Section) has revised the format for registration of bidders from countries sharing land border with India. The said Memorandum alongwith enclosures is appended after this chapter under Section IV – B of this tender document for necessary compliance including any amendment thereof by the bidders for participation in the instant tender, as required.
- 5.38.3** The evaluation is also subject to compliance of Office Memorandum No. P – 45021/2/2017-B.E. – II dated 16.09.2020 issued by GoI, Ministry of Commerce and Industry, Department of Promotion of Industry and Internal Trade (Public Procurement Section) pursuant to Rule 153 (iii) of the General Financial Rules 2017 in respect of public procurement (Preference to Make in India), order 2017. Bidders are, accordingly, advised to go through the same including subsequent amendment, if any, thereof to appreciate its implication in the instant tender and act accordingly. Submission of necessary documents, if any, by bidders concerned in this regard is imperative.
- 5.38.4** Office Memorandum of the Ministry of Commerce and Industry, GoI on registration of bidders from countries sharing land border with India attached as ANNEXURE - D

TECHNICAL SPECIFICATION

Part-I Electrical Works

1.0 GENERAL

1. The works will be executed to comply with the General Specifications for Electrical works and conforming to the Indian Electricity Act & rules, BIS & direction of Engineer.
2. The items of work shall be executed as per detailed technical specifications and scheme. In case of contradiction between schedule of work with its Additional Specification and the General Specification, the former shall prevail.
3. The work will be executed as per general arrangement drawing and detailed fabrication drawings duly approved by the Engineer. The various items of equipment will be ordered only after the drawings are approved and quantities in detail of various items are ascertained as per actual requirements. Therefore the actual quantities / measurement may vary from the stipulated quantities, which are only estimate.
4. The contractor/agency will engage suitable qualified/experienced/ licensed engineering supervisor for the work and suitable skilled personnel with required license for doing the erection work. Required special tools to be operated in the execution of the job.
5. The work will be performed as per the day to day instruction and approval of the engineer. All materials/ equipment will be used after taking approval of the Engineer.
6. Equipment will be duly inspected in the manufacturer's works / premises by Engineer/TPI Agency before despatch to the site.
7. The work will be executed as per the programme of completion of the project. The delivery & erection schedule of various materials/ equipment will be as per approval of Engineer.
8. The contractor holds responsibility for the entire job as per relevant specifications. If any item is left out within the schedule of work but if it is considered essential for the completion of the job, the contractor has to carry out the items as extra substituted item.
9. The contractor shall have to make arrangements, at his own risk and cost, for transportation of materials from the point of issue of stores to site of work, if any.
10. The contractor shall ensure that the staff employed by him for execution of the electrical work, possess the valid electrical license issued by competent authority. Consequences arising due to the default of the contractor in not complying with the above condition shall be the entire responsibility of the contractor.

11. All concealed work and earthing shall be done in the presence of the Engineer or his authorized representative.
12. The schematic diagram/dimensional drawings of the various electrical cubical panels shall be got approved from the Engineer before fabrication and shall comply with specifications and Indian Electricity Rules. The panels shall conform to IS: 8623/1993.
13. All panels/DB shall be suitable for 45°C ambient temperature.
14. The MCB shall be of the same make as that of MCB DB's. Contractor shall obtain approval of the Engineer before procurement of MCB DB's. All DB's shall be double door type confirming to minimum IP-54 degree of protection.
15. Miniature Circuit Breaker shall comply with IS –8828-1996 / IEC 898. Miniature Circuit Breakers shall be quick make and break type for 230 / 415 V A.C., 50Hz application with magnetic thermal release for over current and short circuit protection. The breaking capacity shall not be less than 10KA at 415V A.C. The MCB shall be DIN mounted. The MCB shall be current limiting type (Class – 3).
16. MCB shall be as per their tripping characteristics curves defined by the manufacturer. The MCB shall have the minimum power loss (watts) per pole defined as per the IS / IEC and the manufacturer shall publish the values.
17. The MCB housing shall be heat resistant and having high impact strength. The terminal shall be protected against finger contact to IP20 degree of protection.
18. All model of modular accessories required for the work shall be got approved from the Engineer among the approved makes. The base plate shall be preferably in sheet steel or otherwise in unbreakable polycarbonate. The cover plates shall be screw less type in shade approved by the Engineer. The GI box shall be of the same make as the modular accessories.
19. Contractor shall have to check the site order Book for any instructions of Engineer or his authorized representative and sign the site order book. He shall be bound to ensure compliance with the instructions recorded therein.
20. All the MCCB's shall have microprocessor based trip unit for reliable protection and accurate measurement. The rated Service breaking capacity (kArms) shall be 100% of Ultimate breaking capacity (kArms). All MCCB's shall be current limiting type with features as per relevant IS codes and specification. There has to be total discrimination between the incoming and outgoing MCCB's and MCB's, as required, at the MDB's and DB's level.
21. MCCB's shall be used with rotary handle and terminal spreaders and all terminals shall be shrouded to avoid direct contact.
22. All measuring CT's, unless otherwise specified shall be cast resin CT's with class 0.5 accuracy. All digital measuring meter shall be with class 0.5 accuracy unless specified otherwise.
23. Mechanical Castle key interlock shall be provided among the incomer MCCB's, wherever, as applicable, two different incomer sources are provided in the panel as

per the directions of the Engineer. The same is deemed included in the scope of work.

24. All measuring and indicating instruments shall be protected through MCB's of 0.5 Amps rating.
25. General arrangement drawing of the switchboard, LT/HT switchgear shall be got approved by the Engineer before commencement of manufacturing.
26. Conduit layout as per switching arrangement shall be prepared by contractor and got approved from the Engineer before slab casting. At all expansion joints in the building suitable arrangement shall be ensured during conduiting.
27. Ratings, sizes and quantities shall be checked and considered for satisfactory operation of electrical system complete in all respect.
28. Conduits, Switchboards, Sockets to be provided on walls shall be open type unless specifically approved by Engineer.
29. Conduits on ceiling in existing system may be provided on surface and in new construction shall be open type.
30. All measuring and indicating instruments shall be protected through MCB's and isolating switches.
31. Breaker shall have LCD display to show the metering and protection parameters.
32. Equipment are to be inspected in the respective manufacturer works before dispatch and test reports as applicable as per BIS standards shall be provided for each equipment to Third Party Inspection (TPI) Agency. The TPI Agency is appointed by the port and cost of TPI Agency is borne by the Port.
33. The firm shall deploy only licensed personnel as required under IE Rules, for execution of the electrical works. The firm shall be liable to submit the list of such personnel along with the attested copy of the licenses at the time of execution.
34. It is important that every equipment is tested fully before dispatch.
35. All materials for the work shall be supplied from approved list of manufacturer and any item, not covered in approved list, shall be supplied after getting approval from Engineer or his authorized representative.
36. Any materials brought for work which is not matching with specification will be rejected and the rejected materials shall be removed from site on the same day.
37. All fees payable to concerned authorities and other local bodies if any shall be paid by the contractors.
38. Any part or whole of the system which requires approval of the Central Electricity Authority, or any other statutory body, should be arranged by the Contractor at his cost. It is the responsibility of the Contractor to submit the system drawings with all details to the Electrical Inspectorate and obtain their approval.

39. Contractor shall obtain permit/approval from concerned authorities before commencement of work. All documents/drawings required for such permit/ approval shall be prepared by the contractor.
40. Contractor shall have a valid electrical contract licence with HT installation issued by appropriate authorities.
41. Test certificates both type test and routine tests wherever required shall be furnished along with supply for all Electrical/Mechanical items.
42. Inspection / acceptance, in no way shall absolve the contractor from supplying material as per standards / codes and warranty or other obligations under the contract.
43. The contractor shall arrange the testing/measuring equipment by own cost to carry out pre-commissioning test of all equipment at site as per IER.
44. All electrical works shall be tested by the contractor in the presence of Engineer/TPI Agency and to the entire satisfaction as per IE Rules.
45. Data to be furnished by the bidder after award of order
 - a) The contractor shall submit detail shop/fabrication/layout drawings for equipment.
 - b) **Five** Set of copies of installation, operation and maintenance manuals, descriptive bulletins etc, shall be furnished prior to / at the time of despatch of all materials. Manuals shall include the following aspects:
 - i) Outline dimension drawing showing relevant cross sectional views, earthing details and constructional features including foundation drawing.
 - ii) Rated voltage, current, duty cycle and all other technical information which may be necessary for correct operation of the switchgear.
 - iii) Storage details for prolonged duration.
 - iv) Unpacking.
 - v) Handling at site.
 - vi) Erection
 - vii) Pre-commissioning test.
 - viii) Operating procedure.
 - ix) Maintenance procedures.
 - x) Precaution to be taken during operation and maintenance work.
 - c) Test Certificates
The contractor supply equipment from the Manufacturers, who are having type test certificate issued by CPRI / ERDA. Also, the contractor shall furnish the type test certificate issued by CPRI / ERDA to the manufacturers of similar rating during approval of above equipment.
 - d) On completion of work the contractor shall submit all drawings, manuals and test certificates, etc. for all equipment / materials ordered and as specified by the Engineer

2.0 SCOPE OF WORK

SUB-STATIONS AT HALDIA TOWNSHIP.

Equipment, as mentioned hereunder, shall be erected / installed inside existing Sub-station building as per approved layout plan.

(a) Electrical Works (Supply, Installation Testing & Commissioning) at Sub-station of Haldia Township.

- 1) 11/0.415 kV, 500kVA Oil type Transformer as per Table -I
- 2) 11/0.415 kV, 800kVA Oil type Transformer as per Table-I
- 3) 11 kV, 630A, VCB Panels of 26.3KA for 3sec. as per Table-I
- 4) 11kV (E) XLPE, 3C X 185Sq.mm. Screened, Aluminium, armoured cables along with heat shrinkable cable end terminations.
- 5) LT Panel, 1600A,1250A,630A as per Table-II
- 6) LT APFC (Microprocessor Based) capacitor panels with capacitor bank of 150 KVAR rating each.
- 7) 1.1kV aluminium armoured XLPE cables along with cable end terminations
- 8) Dismantling of existing HT and LT Switchgear/Panels, LT Cables etc.
- 9) St. through & End terminations of existing LT cables in LT panels as mentioned above.
- 10) 48V Battery Bank, battery chargers and DCDB for Control supply of HT Panel and LT Panels.
- 11) Feeder Pillar Box.
- 12) Indoor/outdoor illumination by LED fittings.
- 13) Ceiling fans/pedestal fans/exhaust fans.
- 14) Emergency lights.
- 15) Plate Earthing of all Electrical Installations and Electrical Equipment.
- 16) Fixing of GI cable trays of suitable size.
- 17) Wiring, cabling work at sub-station.
- 18) SCADA system at SS-3 Sub-station of HDC.
- 19) 12C /8C Copper control cable.

(b) Civil Works

Following civil works are in the scope of the contractor.

1. Supply of Panel mounting channels of 75mm x 40mm x 6mm as per approved drgs.
2. Chequered Plate for covering cable trench.
3. Existing floor level and the cable trench level in the substations to be increased to +500 mm.

(c) Salient Points.

- a. Equipment installation layout shall be submitted by the contractor before erection of equipment at site after approval by HDC, SMP,Kolkata. Contractor shall arrange for all necessary means for erection / installation equipments as per manufacturer's guidelines.
- b. During execution of the work, if any damage takes place in the existing utility, the same will have to be mended good by the contractor, at their risk, cost and arrangement. Otherwise, the same will be repaired/ replaced by HDC, either departmentally or through

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

outside agency and the cost of repairing/ replacement will be recovered from the contractor, with departmental charges.

- c. For the purpose of application (by HDC, SMP, Kolkata) for obtaining necessary approval/ clearance from the Regional Inspectorial Organization, Central Electricity Authority / Statutory Authority, the contractor would have to submit/ deposit required documents, drawings, test certificates/ reports etc. to HDC, SMP, Kolkata. The contractor along with the required documents, drawings, test certificates/ reports etc. would also have to be present during inspection by the Regional Inspectorial Organization, Central Electricity Authority / Statutory Authority.
- d. The contractor should clearly understand that though the application would be made by HDC, SMP, Kolkata to the Regional Inspectorial Organization, Central Electricity Authority / Statutory Authority, for obtaining necessary approval/ clearance from them, it is the responsibility of the contractor concerned to obtain the approval/ clearance from the Regional Inspectorial Organization, Central Electricity Authority / Statutory Authority against the work executed by the contractor.

3.0 **HT & LT CABLE.**

3.1 **Scope**

Supply, laying, inspection, testing, commissioning and making terminations of 11 kV (UE) grade XLPE insulated power cables.

3.2 **Codes & Standards**

The design, construction, manufacture and performance of cables shall comply with all currently applicable statutes, regulations and safety codes of the locality where cables shall be installed. Nothing in this specification shall be construed to relieve the successful BIDDER of his responsibility.

All the cables shall conform to the latest applicable IS/IEC standards.

3.3 **Power Cable**

Power cables should be multicore earthed 11 kV grade aluminium stranded conductor colour coded, extruded XLPE insulated, extruded semi-conducting screened over each core and insulation, extruded inner sheathed, common extruded inner sheathed for multi core cable, galvanised steel strip armoured and overall extruded sheath conforming to IS-7098 Part II. Armouring of multicore cable shall be of single layer, galvanised steel round wire or flat strip. HT/LT Cable outer sheathed colour:-BLUE.

The Cables shall be suitably designed for variation in power supply as follows:

The voltage variation $\pm 10\%$

Freq. variation $\pm 5\%$

Following cable size shall be supplied by the bidder:

- i. 3Core, 185 Sqmm., HT Cable, 11 kV (UE) grade, XLPE, U.G. Alu. Screened Cable, Strip armoured, PVC ST2 type inner sheathed and PVC ST2 type outer sheathed, FR cable.
- ii. 3.5Core, 400 Sqmm LT Cable, 1.1 kV grade, XLPE U.G. Alu. Cable, PVC ST2 type inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- iii. 3.5Core, 240 Sqmm LT Cable, 1.1 kV grade, XLPE U.G. Alu. Cable, PVC ST2 type inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- iv. 3.5Core, 150 Sqmm LT Cable, 1.1 kV grade, XLPE U.G. Alu. Cable, PVC ST2 type inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- v. 3.5Core, 70 Sqmm LT Cable, 1.1 kV grade, XLPE U.G. Alu. Cable, PVC ST2 type inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.

- vi. 1Core, 1000 Sqmm LT Cable, 1.1kV (E) grade, XLPE U.G. Alu. Screened Cable, PVC ST2 type inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- vii. 12C/8C Copper EPR insulated unarmoured control cable.

3.4

Laying of Cables.

For laying cables along building steel structures and technological structures the cable shall be taken by clamping with **Aluminium** saddles screwed to the GI flats welded to the structure. **The** flats are of **hot dip** galvanised after fabrication.

For laying cables along concrete walls, ceilings etc. the cables shall be taken by clamping with **Aluminium** saddles screwed to the **hot dip GI** flat welded on to the inserts. Where inserts are not available the saddles shall be directly fixed in the walls using metallic anchor fasteners and **GI** flat spacers of minimum 6 mm thick.

The **Aluminium** saddles shall be placed at an interval of not less than 500 mm both for horizontal and vertical runs. However, at the bends it shall be placed within 300 mm and where terminating to the equipment/junction box the cable shall be clamped immediately before such termination.

Cable Net Work shall include Power Cables, which shall be laid in buried trenches/ cable trays / through GI Pipes & Hume Pipes, rising main etc. whichever is applicable.

Cable routing shall be checked in the field to avoid interference with structures, heat sources, drains, piping etc. as far as possible and minor adjustments shall be done to suit the field conditions, wherever deemed necessary without any extra cost.

The HT cables while laying will have to be separated from existing HT, LT, Telecommunication, OFC Cables by adequate spacing or running through independent pipes, trenches or cable trays, as applicable.

All cable routes shall be carefully measured and cables cut to the required lengths leaving sufficient lengths for the final connections of the cables to the terminal of the equipment.

The various cable lengths cut-off from the cable reels shall be carefully selected to prevent undue wastage of cables. The quantity indicated in the Bill of Quantity is only approximate. The Contractor shall ascertain the exact requirement of cable for a particular feeder by measuring at site and avoiding interference with structure, foundation, pipelines or any other works as far as possible. Before starting Cable Laying, Cable Drum Schedule shall be prepared by contractor and get that approved by competent authority.

Cable as far as possible shall be laid in complete, uncut lengths from one termination to other. Cable shall be neatly arranged in the trenches/ trays/ pipes in such a manner so that crisscrossing is avoided and final take- off to the equipment/switch gears is facilitated.

Arrangement of cables within the trenches/ trays/ pipes shall be the responsibility of the contractor.

Removal of concrete covers for purposes of cable laying and reinstalling them in their proper positions after the cables are laid shall be done by the contractor at no extra cost. Cable shall be handled carefully during installation to prevent mechanical injury to the cables. During laying of cables, Cable Drum Lifting Jacks, sufficient numbers of Cable Rollers and other materials etc. as necessary must be used to avoid any

mechanical injury to the cables. Directly buried cable shall be laid underground in Cable Trenches duly excavated by the contractor as shown in the enclosed Drawing No. SK- 334.

The width of the trench shall vary depending upon the number of cables and diameter of each cable. Width of the Cable Trench should be such that all cables should be correctly spaced and arranged. The cables shall be laid in trenches as shown in the enclosed sketch. Before cables are placed, the bottom of the trench shall be leveled and filled with a layer of silver sand as shown in the Drawing No. SK- 334. This sand shall be leveled and the cables shall be laid over it. Bricks are to be placed at both sides of the cable. Then the cable inside the brick walls to be covered with sand up to the height of walls and sand shall be pressed lightly. A protective covering of Bricks shall be placed on top of protective Bricks placed at both sides of Cable. The remainder of the trench shall then be back filled with soil rammed and leveled. After laying of the cables in the trench and before placement of protective covering by brick, every cable shall be given an insulation test in presence of site engineer/ authorized representative. Also after back filling the trench with soil, rammed and leveled, insulation test of the cable shall be carried out in presence of Site Engineer/Authorized representative.

All wall openings/Pipe Sleeves shall be effectively sealed after installation of cables to avoid seepage of water inside buildings/lined trench. At road/drain/pavements crossing, suitable sizes of GI Pipes are to be used. After the cables are installed and all testing is complete, the conduit/pipe sleeve ends shall be plugged with a suitable weatherproof plastic compound/ PUTTI, for sealing purpose. The cost of the same shall be deemed to have been included in the installation of cable laying through pipe sleeves/conduits and no separate payment shall be made. When cables pass through foundation walls, or other underground structures, if necessary, ducts or opening shall have to be provided by the contractor.

However, shall it become necessary to cut holes in the existing foundations or structures, the contractor shall determine their locations and obtain approval from competent authority before cutting is done. Cutting, if necessary and mending good of any cut portion should be done by contractor without any extra cost. At Road Crossing and other places where cables enter pipe sleeves, adequate bed of sand shall be given so that the cables do not stack and get damaged by pipe ends. Drum number of each cable from which it is taken shall be recorded against the cable number in the cable schedule. All GI Pipes shall be laid as per site requirements. The open ends of the pipes shall be suitably plugged after they are laid in final position. Laying of the cable will be as per the enclosed Drawing No. SK- 334. The contractor will have to submit the detailed cable route diagram, with detailing of the Hume Pipes & GI Pipes used, position of the straight through cable joints etc. for checking at our end and subsequent approval of the same. As built drawing (in triplicate) of the above cable route will have to be submitted after completion of the above work.

MEASUREMENT:

Cable length should be measured jointly prior to giving clearance for earth back filling etc. Distance between Socket of one end and Socket of other end of the laid cable to be considered for payment against both supply & laying of cable.

3.5 Laying of Cables in Exposed/Embedded GI Pipes/Hume pipe Road Crossing, Railway Crossing, Drains, Culverts or any similar concrete structure etc.

GI Pipes /Hume pipe for drawing cables in plant buildings shall be of **Heavy Duty**, galvanised, electric resistance welded, screwed type conforming to IS: 1239 (Part-I). GI Pipe/Hume pipe of the following sizes shall be used:

- a) 150 mm nominal bore GI pipe
- b) 150 mm dia. Heavy duty NP-4 Hume pipe.

For installation of cables in GI Pipe /Hume pipe. Complete system shall be installed first without cables but having suitable pull wires laid in the pipes to facilitate cable pulling.

Ends of GI pipe shall be cut square and the threads out in the field shall have the same effective length and the same dimensions and taper as specified for factory out threads. Ends of pipe shall be reamed to remove burrs and sharp edge after threads are cut. Exposed GI pipes shall run parallel or perpendicular to column lines or building lines so as to match with the architectural arrangement of the building. Concealed GI pipes shall run in direct lines with minimum bends.

Laying of Reinforced Concrete Pipe and Galvanized Mild Steel Tubes should be done wherever necessary, such as at Road Crossing, Railway Crossing, Drains, Culverts or any similar concrete structure etc. The scope includes cutting of road, Railway Crossing, Excavating of Trenches, etc. including mending good work. The depth of laying of the pipes should have to be matched with the underground cable trench, as far as possible and practicable. Making jointing between collars and pipes, with cement mortar (1 cement: 2 medium sand) and cutting the Reinforced Concrete Pipe to the required length, if necessary, to be done by the contractor at their own cost and arrangement. Cutting of Galvanized Pipe to required length and threading, bending, jointing by Socket as required, supply and fixing of support clamps/ brackets should be under the scope of contractor. Re-filling of the trench after laying the reinforced concrete pipes and galvanized mild steel tubes are also to be done by the contractor. Rates are to be quoted accordingly.

3.6 Depth of laying

Sl.No.	Cable	Laying Type	Depth of laying (Average)
1	HT Cable	Open cut excavation with brick protection	1500 mm
		Boring through GI pipe	2000 mm
		Open cut excavation through Hume / GI pipe	1500 mm
		Through existing RCC trench / Hume pipe / GI Pipe.	As per available depth.
2	LT Cable	Open cut excavation with brick protection	850 mm
		Boring through GI pipe	2000 mm
		Open cut excavation through Hume / GI pipe	1500 mm
		Through existing RCC trench / Hume pipe / GI Pipe.	As per available depth.

Note: Road level to be considered as reference level.

3.7

Bricks

Crushing strength, efflorescence shall conform to class designation 10 (as per IS 1077, 1986) and as per the specification, given below:

- i) The brick shall have clear ringing sound.
- ii) The average size of the bricks shall be in the range of 250 mm (± 4 mm) x 125 mm (± 2 mm) x 75 mm (± 2 mm).

3.8

Cable Termination (Heat Shrinkable type)

Termination of aluminium conductor power cables shall be by means of compression method using compression type lugs.

The **End** termination for use on the cables shall be suitable for the type of cables offered.

The accessories shall be supplied in kit form and each component of the kit shall carry manufacturer's mark of origin.

The kit shall include all stress grading, insulating and sealing materials apart from conductor fittings and consumable items. The instruction pamphlet shall also be included in each kit.

The contents of the kits shall be suitable for storage without deterioration under the climatic conditions given in the specification with shelf life exceeding 5 yrs.

3.9

Cable Straight through Jointing. (Heat Shrinkable type)

The contractor shall submit cable route plan and tentative location of straight through joints for approval to Competent Authority. No straight through joints are allowed in RCC Cable trench.

Additional length (Loop) of 5 mtrs. (approx.) cable should be kept at each end of the cables near the straight through cable joints. It is required to measure the insulation resistances of the cables before and after straight through cable jointing. This scope includes supply of all required materials including complete straight through cable jointing kits, with ferrules and all other accessories.

The accessories shall be supplied in kit form and each component of the kit shall carry manufacturer's mark of origin.

The kit shall include all stress grading, insulating and sealing materials apart from conductor fittings and consumable items. The instruction pamphlet shall also be included in each kit.

The contents of the kits shall be suitable for storage without deterioration under the climatic conditions given in the specification with shelf life exceeding 5 yrs.

3.10

Cable Tags

All cables will be identified close to their termination points by cable nos. Cable numbers will be punched on Aluminium strip/ PVC Strip {2mm. thick (approx.)} securely fastened to the cable and wrapped around it. Alternatively, Cable Tags shall be circular in construction to which cable number can be conveniently punched.

Cable designations are to be punched with letter/number punches and the tags are to be tied to cables with piano wires of approved quality and size. Tags shall be tied inside

the panels beyond the glanding as well as below the glands at cable entries. Along trays tags are to be tied at all bends.

Each underground cable shall be provided with Identification Tags (made of PVC) securely fastened at every 30 Mtrs. distance if the continuous length is more than 50 Mtrs. of its underground length. At least one tag at each end before the cable enters the ground will have to be provided. In unpaved areas, Cable Trenches shall be identified (by means of cable markers). These shall be placed at location of changes in the direction of cables and at intervals of not more than 30 Mtrs. and at Cable Joint Locations.

3.11 **Packing and Markings**

The cable shall be wound on a steel drum conforming to relevant BIS standard and packed. The ends of the cable shall be sealed by means of non-hygroscopic sealing material.

The cable drum shall carry the following information stencilled on the drum:

- i) Manufacturer's Name and Trademark
- ii) Type of cable and voltage grade.
- iii) No. of cores
- iv) Nominal cross-sectional areas of conductor
- v) Cable code
- vi) Length of cable on drum
- vii) No. of lengths on the drum if more than one
- viii) Direction of rotation of Drum
- ix) Gross weight
- x) Weight of Drum with Ballens (if any)
- xi) Weight of cable
- xii) Reference of any Indian standard
- xiii) ISI Marking on the drum
- xiv) Year of Manufacturing

3.12 **Tests & Test Reports**

Type test certificate for similar type & Rating of Cables be submitted by successful bidder.

The Routine and acceptance tests specified in the applicable standards shall be arranged by the Contractor and carried out on **Cables** as per latest relevant IS Standards in presence of **Engineer/Third Party Inspection(TPI) Agency appointed by HDC at the manufacturer's works & at site respectively. The cost of the TPI Agency is borne by Port.** The Certified copies of test certificates shall be submitted before despatch.

4.0 **OIL TYPE TRANSFORMERS**

A Electrical Design

- i) Generally as per IS 2026 – Part 1, 2 & 4 of 1977 and Part 3 of 1981.
- ii) 3 phase, core type, oil filled
- iii) Rated output, voltage ratio, vector group shall be provided as specified in technical particulars for design.
- iv) Rated frequency 50 Hz, + 3%, -3%.
- v) Insulation level shall be designed according to the voltages specified below.

Sl. No	Description	11kV System	415V System
1.	Nominal system voltage (kV)	11	415
2.	Max. system voltage (kV)	12	435
3.	One minute power frequency withstand voltage (kV)	28	3
4.	Peak impulse test withstand voltage (kV)	75

- vi) Transformers shall be capable of delivering rated current at an applied voltage up to 105% rated voltage without exceeding the temperature limits.
- vii) Overload capacity of the transformer shall be as per IS 6600 - 1972 unless specified otherwise.
- viii) Shall be operable at its rated capacity at any tap with voltage variation of $\pm 10\%$ of corresponding to voltage of the particular tap.
- ix) Permissible maximum temperature at rated output and principal tap at the ambient temperature of 50°C

Top oil (by thermometer)	85°C
Windings (by resistance method)	95°C
Maximum Hot Spot Temperature	105°C

- x) Transformers shall be designed to withstand the thermal and dynamic stresses due to short circuits at its terminals or symmetrical/ asymmetrical faults on any winding. Short circuits withstand capacity for the bolted fault at the terminals shall not be less than 5 second duration with respect to fault level specified. Design calculation to be submitted for concurrence.
- xi) The maximum temperature at the end of the specified duration shall not be more than 250°C with the temperature prior to short circuit corresponding to maximum permissible overload.
- xii) Transformer shall be designed for minimum no-load and load losses within the economic limit.
- xiii) Designed for suppression of harmonics especially 3rd and 5th.

B Magnetic Circuit

- i) Low loss CRGO silicon steel shall be used.
- ii) Laminations shall be annealed in a non-oxidizing atmosphere to relieve stresses and restore the original magnetic properties of CRGO sheets after the cutting and punching operations.
- iii) CRGO sheets shall be coated with insulation varnish compatible with the sealing liquid.
- iv) Insulation to withstand annealing temperature as high as 850 Deg. C and shall reduce eddy current to minimum
- v) Ducts to be provided to ensure adequate cooling.
- vi) Core, framework and clamps arranged and tightened to securely hold laminations in order to prevent any settling or displacement in case of heavy shocks during transport, handling or short circuits.
- vii) Flux density under specified over voltage or frequency conditions shall be within the maximum permissible for the laminations. However, it shall not exceed 1.6 tesla at rated voltage & rated frequency.

- viii) Transformers shall be designed to withstand 110% over fluxing corresponding to rated voltage.
- ix) Magnetising current shall be maximum 1% of the rated current.

C Windings

- i) Material shall be electrolytic grade work hardened copper of high proof stress with more numbers of radial support.
- ii) Shall be pre-compressed, press board, pre-stabilization of coil & shall be subjected to shrinkage treatment.
- iii) Completed core and winding to be vacuum dried in full vacuum and impregnated immediately.
- iv) Shall be braced to withstand shocks due to rough handling and forces due to short circuit, switching or other transients.
- v) Permanent current carrying joints in winding and leads shall be brazed. Connections to bushings & OLTC shall be crimped.
- vi) Coils shall be supported using dried and high-pressure compressed wedge type insulation spacers, blocks & cylinders.
- vii) Insulating materials shall be compatible with transformer liquid under all service conditions.
- viii) Leads to the terminal board and bushings shall be rigidly supported.

D Insulation

Inter turn and inter coil insulation shall be designed such that dielectric stress is uniformly distributed throughout the windings under all operating conditions.

E Tank

- i) Welded thick gauge low carbon steel grade plates stiffened and reinforced to withstand without deformation all stresses applied during transport and operation or short circuit conditions.
- ii) Oil tight welds and joints shall be provided.
- iii) Fully assembled transformer with its radiators, conservator and other fittings shall withstand for one hour a pressure corresponding to twice the normal head of liquid or to the normal pressure plus 35 kN/sq.m, whichever is lower, measured of the base of the tank.
- iv) Plates shall be protected internally against corrosion due to insulating liquid.
- v) Provided with inspection opening and cover/with handling equipment) to provide access to bushing connections.
- vi) Form of cover shall be such as to prevent any stagnant water deposit and to drain gas bubbles towards the buchholz relay
- vii) Tank (with radiators when welded to tank) shall be capable of withstanding 250 mm of mercury vacuum.
- viii) Tank shall be suitably designed to suppress harmonics available in the system as well as generated by transformer.

F Conservator and Breather

- i) Conservator mounted on frame, integral with tank in such a manner that under all conditions and the lowest oil level the bushings remain under the head of liquid.
- ii) Conservator volume shall be sufficient to maintain oil seal from ambient to oil temperature of 90°C

- iii) Oil filling hole with cap and a drain valve to drain the oil completely shall be provided. One end of the conservator shall be bolted into position so that it can be removed for cleaning purposes.
- iv) Silica gel breather with inspection window and oil seal shall be mounted at 1.4 m from ground level and connected to conservator.
- v) Prismatic type oil level gauge with maximum and minimum levels marked.
- vi) One no. 150 mm dia. dial type magnetic oil level gauge with alarm & trip contacts shall also be provided.

G Oil

- i) The oil shall be as specified in IS: 335 and shall be suitably treated, free from moisture and have uniform quality throughout.
- ii) Oil shall be supplied for the first fill of oil and 10% excess in non-returnable drums.

H Pressure release device

- i) Adequate number of Pressure release device shall be provided on tank at suitable locations. This shall operate at static pressure less than hydraulic test pressure of tank. This should have one potential free contact for alarm/trip and should be wired to Marshalling box.
- ii) Discharge of Pressure release device shall be taken through pipes away from transformer and prevented from spraying on tank.

I Buchholz Relay

- i) Double float relay as per IS 3677 - 1985.
- ii) Shut off valves on either sides of the buchholz relay
- iii) Pot cocks at the top and bottom of relay drain plug, inspection window, calibrated scale, terminal box with oil tight double compression type brass gland.
- iv) Potential free, self reset independent alarm and trip contacts, rated to make, break and carry minimum 2 amps at 48 V DC. No auxiliary relay shall be used to multiply the contacts. Contacts are to be wired to the marshalling box.

J Cooling General

The cooling system provided is as follows.

ONAN - Oil Natural, Air Natural

K Radiators

Radiators shall be detachable type directly mounted or separately mounted. Flanged, gasketed and bolted connections shall be used for connecting the radiators to the tank.

The following accessories shall be provided for each radiator/radiator bank

- i) Top and bottom shut off valves and blanking plates.
- ii) Bottom drain plug and top filling plug.
- iii) Lifting lugs
- iv) Thermometer pockets with thermometers in the inlet and outlet pipes (for separately mounted radiator banks).
- v) Top and bottom filter valves (for each separately mounted radiator bank).
- vi) Air release devices.
- vii) Provision for earthing

L Valves And Connections

- i) Valves of sluice type with hand wheels
- ii) All valves including radiator valves shall be made of gun metal only.
- iii) Clear indication of open and closed position
- iv) Provided with blanking plates or screwed plugs
- v) Padlocking facility to lock in closed/open position.

M Terminations

It shall be possible to withdraw the transformer easily after disconnecting the connections without disturbing the cable terminations.

- i) For cable termination
 - a) Air insulated cable end box suitable for the type and number of cables specified.
 - b) Air insulated disconnection chamber with inspection opening
 - c) Compressed type brass cable glands with tinned copper lugs.
 - d) Bolted type gland plates (non-magnetic material wherever specified).
 - e) Sealing kits with associated accessories like stress relieving cones, insulating tape, trifurcating boot, HT insulating tape.
- ii) For bus duct termination
 - a) When bus duct termination is specified, flanged throat shall be provided to suit termination of bus duct. Flange ends and inspection openings shall have weatherproof gaskets.

N Bushings

- i) Conforming to IS 3347 and IS 2099 for HT and IS 7421 for LT system.
- ii) Minimum rated current of line and bushings shall be 1.5 times rated current of the corresponding windings
- iii) Clamps and fittings made of steel or malleable iron shall be hot dip galvanized.
- iv) Bushings rated 400 Amps and above shall have non-magnetic clamps and fittings only.
- v) Bushing shall be solid porcelain type for LT system, solid porcelain / oil communicating type for voltage class upto 36 kV.
- vi) Porcelain shall be homogenous and free from cavities
- vii) Oil filled condenser type bushings should have the following:
 - Oil level gauge
 - Oil filling pipe and drain valve (if not hermetically sealed)
 - Tap for capacitance and tan delta test.
- viii) All clamps and fittings shall be hot dip galvanized.
- ix) No arcing horns should be provided on bushings
- x) Neutral bushings shall be provided as required for earthing of neutral point. This shall be connected to brass / tinned copper bar and brought to ground level through porcelain insulators.

O Bushing Current Transformers (Where applicable)

- i) CTs for back up earth fault shall be provided on the neutral end.
- ii) Removable at site without opening transformer tank cover/active parts.
- iii) Secondary leads shall be brought to a weatherproof terminal box and from there to the marshalling box with 4 sq.mm copper armoured cable.

P Oil Temperature Indicator

150 mm dial type thermometer with manual reset maximum reading pointer. There shall also be two potential free contacts for alarm and trip signals. The alarm and trip settings shall be independently adjustable. The temperature-

sensing element mounted in a pocket of oil, shall be connected to the indicator through capillary tubing. Contact rating at DC shall be minimum 0.5 amps.

Temperature indicator dials shall have linear gradations to clearly read at least every 2⁰C. Accuracy shall be better than +/- 1.5%.

Q Winding Temperature Indicator

- i) Local winding temperature indicator (WTI) for each winding, shall have a 150-mm diameter dial type indicator with a manual reset maximum reading pointer. There shall be two potential free contacts for alarm and trip signals. For transformers with forced cooling, another set of contacts shall be provided to start/stop the forced cooling system automatically. The settings for closing/opening of each contact shall be independently adjustable. Contact rating at DC11, 48 V DC shall be minimum 0.5 amps. The device shall be complete with lamp, sensing element, image coil, calibration device, auxiliary CTs etc. as required.
- ii) Temperature indicator dials shall have linear gradations to clearly read at least every 2⁰C. Accuracy shall be better than +/- 1.5%.
- iii) Remote winding temperature indicator with resistance type temperature detector shall be provided additionally.

R Marshalling Box

- i) All outgoing connections from the transformer i.e. buchholz relay, temperature indicators, level indicators, CT secondary, fault contacts for annunciation etc. shall be wired to a marshalling box.
- ii) Degree of protection of enclosure shall be IP 55.

S Off-Circuit Tap Switch

- i) Externally hand operated with easily accessible links.
- ii) Designed for sustained over current of at least 150% of the rated current of the winding.
- iii) Shall not occupy any intermediate position between clearly marked tap positions.
- iv) Capable of repeated operation and withstanding short circuit forces.
- v) Tap position indication diagram
- iv) Inspection and/or repair shall not require removal of transformer core from tank.

A solid state facia window type annunciation system shall be provided for this purpose, with the following features:

- i) On incidence of fault – A hooter comes ON & window lamp starts flashing.
- ii) On acceptance of fault – Hooter stops, Lamp becomes ready.
- iii) On pressing RESET button – Lamp goes OFF if fault is removed.

Lamp continues to glow if fault persists.

The required alarm / trip contacts shall be wired to the marshalling box for connection to the annunciation system.

T Earthing

- i) All metal parts of the transformer with the exception of individual core laminations, core bolts, and clamping plates shall be maintained at fixed potential by earthing.

- ii) Two tinned copper earthing terminals with nuts, washers etc. to be provided at diagonally opposite corners suitable to connect 75x12 GI strip.
- iii) One end of bushing CTs shall be earthed.

U List of Fittings and Accessories

- i) Identification plate
- ii) Rating and diagram plates.
- iii) Valve schedule plate (For Power transformers)
- iv) First fill of oil as per IS-335, 1993 with 10% excess in non-returnable drums
- v) Cooling system complete with accessories (as specified)
- vi) Off-circuit tap switch (as specified)
- vii) OLTC (as specified)
- viii) Conservator with oil level gauge and drain plug.
- ix) Oil filling pipes with flange and dummy cover on conservator for filling/topping up of oil.
- x) Suitable number of dehydrating breathers.
- xi) Double float Buchholz relay with alarm and trip contact and shut off valves on either sides.
- xii) Oil filter valves at top and bottom of tank
- xiii) Drain off valve at lowest location to allow complete draining
- xiv) Oil sampling device at top and bottom
- xv) Explosion vent with double diaphragm and oil level gauge between 1st & 2nd diaphragm (for distribution transformers).
- xvi) Pockets for thermometers for oil temperature and winding temperature indicators.
- xvii) Dial type magnetic oil level gauge with low level alarm contacts.
- xviii) HV, LV and neutral bushings.
- xix) Dial type winding temperature indicator with maximum reading pointer and alarm and trip contacts
- xx) Dial type oil temperature indicator with maximum reading pointer and alarm and trip contacts
- xxi) Lifting lugs and jacking pads. For transformers with bell tank design, lifting lugs shall be provided on core and winding also.
- xxii) Earthing terminals and lugs
- xxiii) Inspection cover
- xxiv) By-directional rollers with locking arrangement (for distribution transformers)
- xxv) Marshalling box.
- xxvi) Haulage holes.
- xxvii) Bushing CTs as specified.
- xxviii) Flat base & foundation bolts.

TRANSFORMER 800 kVA/500kVA, 11 / 0.415 kV

Supply of 800 kVA/500kVA, 11 / 0.415 kV Oil type indoor distribution Transformers with tap Links, manufactured as per relevant IS. The transformer shall be designed for the specification given below:

Technical particulars (Distribution Transformer)

Sl. No.	Particulars		800 kVA/500kVA, 11/0.415kV
1.	Specification		IS 2026, Part I - 1977 Part II - 1977 Part III - 1981 Part IV - 1977
2.	Type		Three phase, core type, oil filled
3.	Duty		Indoor
4.	Voltage HV/LV		11/0.415 kV
5.	Frequency		50 Hz
6.	No. of phase		3
7.	Continuous rating		800 kVA/500kVA
8.	Conductor		Copper
9.	Insulation class		Class A
10.	Cooling		ONAN
11.	Winding connection		Delta / Star
12.	Vector group		Dyn 11
13.	Neutral grounding		Solidly earthed
14.	System earthing	HV	Solidly earthed
		LV	Solidly earthed
15.	Percentage impedance		4.5%
16.	Termination	HV	Cable end box suitable for termination of 4 no. 3C x 185 mm ² XLPE cable
		LV	Cable end box suitable for termination of 4 no. 1C x 1000 mm ² XLPE cable
17.	Temperature rise over 50°C ambient temp		
	a) Top oil (measured by Thermometer)		35°C
	b) In winding (measured by Resistance method)		45°C
	c) Hot Spot temp		55°C
18.	Bushing mounted CT's		
	a) LV Neutral bushing CT for EF class PS		-
	b) LV Neutral bushing CT for standby E/F protection class 10P15.		1
19.	Tap changer		Off Circuit (Rotary type)
	a) Range		±5%
	b) Total tap positions		5

Sl. No.	Particulars	800 kVA/500kVA, 11/0.415kV
	c) Taps above nominal voltage	2
	d) Taps below nominal voltage	2
	e) Voltage per step variation	2.5 %
	f) Tap change controls	Manual
20.	Impulse test withstand voltage	As per IS 2026, Part III – 1981
21.	One minute dry and wet power frequency withstand voltage	- do -
22.	Withstand time without injury for 3 phase short circuit at terminals	5 Secs.
23.	Auxiliary supply voltage	240 V AC/220V DC
24.	Parallel operation	Suitable for parallel operation with transformers of similar ratings
25.	Overload capacity	As per IS 6600 –1972
26.	Radiators	Detachable type on the tank
27.	Flux Density	1.6 tesla (Max.)
28.	Magnetizing current	1% of rated current
29.	Paint	Epoxy
30.	Buchholz relay	yes
31.	Paint shade	Shade 632 as per IS – 5
32.	Short circuit level on HV side	450MVA
33.	Neutral Bushing	02Nos.

5.0 **OUTDOOR PACKAGE SUBSTATION:**

Scope of work includes design, manufacture, supply, installation, testing and commissioning of package substation suitable for marine atmosphere.

The prefabricated package substation shall be designed for compactness, fast installation, maintenance free operation and maximum safety for operator / workers. The package substation with all accessories, fittings and auxiliary equipment in an enclosure shall consist of:

- a) HT Panel (SF6 encapsulated VCB along with 3nos. Load break switches)
- b) 11 / 0.415 kV Dry type Resin Cast Transformer
- c) LT Panel / Switchgear
- d) APFC (Microprocessor Based) Capacitor Panel

The panels shall be manufactured as per relevant latest IEC/IS standard and the design and operational features will comply with the provision of latest version of Indian Electricity Act, Indian Electricity Rules and Fire Insurance Regulation.

The specification covers technical and constructional details of outdoor type Package Substation Unit which shall be capable of performing satisfactorily in open atmosphere/heavy dust atmosphere with high relative humidity. The Package

Substation Unit shall be compact in size, transportable, light weight rugged and of robust construction and capable to withstand rough use in highly humid areas and suitable for use in outdoor location. It shall be installed and overall dimension shall be kept to minimum as far as practicable.

The Package Substation Unit shall be manufactured at original equipment manufacturer's factory and shall have outdoor enclosure of hot dip galvanised sheet steel 2.5 mm thick with 4 mm thick base, dust and vermin proof and suitable for outdoor installation and shall be provided with lifting hooks. The partition between the compartments shall be 2.5 mm thick. The steel and iron parts which go into the assembly will undergo a complete pre-treatment and anticorrosive coat before a final coat of approved shade. To prevent the enclosure from rusting / corrosion welding should be avoided.

Doors shall be provided with pad locking arrangement. Internal lighting with door operated switch shall be provided for each compartment separately and safety notices shall be provided.

All enclosures / metal frames of package substation, HV switchgear, transformer, LT switchgear and capacitor panel are to be connected to the earth system. Continuity of the earth system shall be ensured taking into account the thermal and mechanical stress caused by the current it may have to carry. Highest degree of protection to equipment and persons shall be provided. Labels for warning and operating instructions etc. shall be provided.

All equipment and material shall be designed, manufactured and tested in accordance with latest IEC Standards. The high / low voltage prefabricated package substation shall comply with and tested as per IEC 61330/62271-202

The switchgear components shall be capable of withstanding mechanical and thermal stress of short circuit without any damages or deterioration of materials.

For continuous operation of specified ratings temperature rise of various switchgear components shall be limited to permissible values stipulated in the relevant standards/codes and this specification.

Earthing arrangement shall be provided for earthing of each cable, glands, neutral bus bar, chassis & framework of the cubicle with separate earthing terminals at two ends. Earthing Strip shall be of hot dip Galvanized of size 50mmx6mm for Body & of Copper 50mmx6mm for Neutral protected against corrosion and readily accessible. The strip shall be connected to earthing terminals with Stainless Steel nut – bolts. Separate Earthing for Body and Neutral shall be provided (Two each)

The Package Substation Unit will comprise of the following major parts as per single line diagram.

- a) Incoming cable entry provision
- b) SF6 encapsulated VCB for primary control of Transformer with over current, short circuit and earth leakage protection.
- c) Outdoor type Double wound copper dry type Resin Cast transformer
- d) HT side of transformer to HT switchgear shall be connected with 11 kV

XLPE cable of size suitable for short circuit current.

- e) Switchboard with ACBs on LT side of Transformer
- f) Weather proof sheet steel enclosure with skid base, provision for lifting arrangement.
- g) Measuring instruments with CTs & PTs.
- h) Frame earthing arrangement, outgoing cable termination arrangement, indicating devices etc.
- i) LT side of transformer shall be connected with LT switchgear with suitably rated aluminium bus bar suitable for short circuit current.
- j) Enclosure shall be IP: 23 for transformer compartment and IP: 54 for HT and LT switchgear compartments.
- k) To avoid entry of rodent in the transformer compartment, stainless steel mesh shall be provided from inner side of louvers.
- l) Adequate ventilation shall be provided.
- m) Current transformers shall be of dry type.
- n) CSS enclosure shall be type tested for 21 KA/ 1 Sec

5.1

HT Panel

HT panel shall be modular design, panel type suitable for mounting on a common under base with SF6 encapsulated Vacuum circuit breaker, suitable cable entry box arrangement for XLPE cable. Necessary control Protection and metering circuits are completely assembled, wired and enclosed in a weather and dust proof cubicle. The equipment shall be suitable for outdoor installation in highly humid area.

The HT Panel shall be the integral part of the Outdoor Package Substation Unit and shall be sheet steel enclosed, dust and vermin proof, suitable for outdoor use. This shall be suitable to receive power at 11/3.3 kV, 50 Hz, 3 phase AC and shall be complete in all respects with all equipment fittings and accessories for efficient and trouble free operation.

- a) 11 kV, 630A SF6 encapsulated VCB with self-tripping mechanism with numerical relay with IDMT, over current, earth fault and Instantaneous protection including TVM. Self-Powered Relay, Ashida-make is also acceptable for use in RMU for O/C & E/F protection having Modbus Communication over RS 485 port.
- b) 11KV $\sqrt{3}$ / 110/ $\sqrt{3}$ V PT of suitable VA along with HRC Fuses.
- c) 02Nos. 630A load Break switches / Isolator shall be provided for ring main system (one for incomer and one for outgoing).
- d) 11KV CTs of suitable ratio with suitable VA burden and accuracy class 1.0 for metering, 5P10 for protection conforming to IEC 60185.
- e) Incoming cable entry box shall be provided for the required cable entry.

f)	System rated voltage	11 kV
g)	System maximum voltage	12 kV
h)	Frequency	50Hz
i)	Insulation level	
	i) 1.2/50 microsecond Impulse withstand voltage	75 kV peak
	ii) One minute power frequency withstand voltage	28 kV rms
j)	Rated current	
	i) Continuous	
	- Bus bar	630 A
	- Incoming circuit breaker	630 A
	ii) Short time current for 3 seconds	21 kA rms
k)	Circuit breaker	
	i) Quantity	One
	ii) Rated breaking capacity Symmetrical.	21 KA / 3 Sec.
	iii) Rated making capacity	52.5 KA
	iv) Total breaking time	7 cycles maximum
	v) Operating sequence	As per IS/IEC
l)	Potential transformers	
	i) Quantity	One on each feeder
	ii) Voltage ratio	$11000/\sqrt{3} : 110/\sqrt{3}$ or $3300/\sqrt{3} : 110/\sqrt{3}$
	iii) Reference Standard	As per IS-3156
	iv) Over voltage factor	As per IS-3156
	v) Accuracy class	1.0

vi)	Insulation Level	75 kV Peak / 28 KV rms
vii)	Voltage Factor	1:2
viii)	Rated Burden	50 VA
m)	Current Transformer	
i)	For Relay	5P10/2.5 VA (Min)
ii)	For Metering	2.5VA, Class-0.5
iii)	Insulation Level	75 kV Peak / 28 KV rms
iv)	Insulation Class	F
v)	Reference Standards	IS:2705
vi)	Ratio	50/1/1A

The panel shall be provided with two earthing terminal , necessary inter-connection, control wiring and shall be complete with finishing paint etc. & conform to relevant IS.

5.2 Transformer

One No. of specified rating, double wound dry type **Resin Cast** transformer complete with all fittings and accessories. The input to the Transformer for specified kV shall be by means of **Three Core 1 run of 95Sq.mm Copper, unarmoured, rubber cable) with** end terminations (heat shrinkable) and output of the Transformer for specified kV to the LT panel shall be by **4 Nos. 800A Silver Plated Copper bus bar (P+N)**. A common underbase on which the above HT cubicle, Transformer and LT panel are assembled and inter connection made as mentioned above. The underbase shall be provided with steel base and fitted with lifting and haulage lugs.

The equipment covered by this specification shall, unless otherwise stated to be designed, constructed and tested in accordance with latest revisions of relevant Indian standards / IEC publications.

IS 1271	-	Classification of Insulating Materials.
IS 2026	-	Power transformers (part I - V)
IS 2099	-	Bushing for alternating voltages above 1000 V
IS 2705	-	Current transformers
IS 3202	-	Code of practice for climate proofing
IS 3639	-	Power transformer fittings and accessories
IS 4257	-	Porcelain bushings for transformers
IS 11171	-	Dry type Transformer
IS 8478	-	Application guide for tap-changers
IS 10028	-	Code of practice for selection, installation and maintenance of transformers.

The transformer shall be dry type Resin Cast only.

The transformer shall be suitable for operation at full rated power on all tapings without exceeding the applicable temperature rise.

It shall be possible to operate the transformer satisfactorily, with the loading guide specified in IS-6600. There shall be no limitations imposed by bushings, tap changers, auxiliary equipment to meet this requirement.

The transformer shall be designed to be capable of with-standing, without injury, the thermal and mechanical effects of short-circuits between phases or between phase and earth at the terminals of any winding with full voltage applied across the other winding for periods given in relevant standards. There shall be no limitations imposed by any part/component of the transformer/off load tap links to meet the short circuit level Specified.

The transformer shall be designed for minimum no-load and load losses within the economic limit and shall be able to have minimum loss at the rated load condition.

All electrical connections and contacts shall be of ample cross sections for carrying the rated current without excessive heating.

The transformer shall be capable of continuous operation at full load rating.

The transformer shall be dry type Resin Cast, AN cooled suitable for Outdoor Package Substation Unit application.

The core-clamping frame shall be provided with lifting eyes having ample strength to lift the complete core and winding assembly.

Off circuit tapings shall be provided on the HV windings. Tap changing is done by means of off-circuit links accessible through openings provided.

The lifting lugs shall be provided. A winding temperature scanner shall be provided and shall be actuated by means of resistance temperature detectors embedded in LV windings of all three phases. It shall have alarm and trip contacts at a specified temperature.

The transformer shall be installed in the transformer compartment of Outdoor Package Substation Unit having IP: 23 protection class.

The winding insulation shall be of Class 'F' and temperature rise limit to Class B i.e. 130 deg. C

Windings shall be of electrolytic copper conductors (circular in shape) of high conductivity and 99.9% purity. Windings shall be designed to withstand the specified thermal and dynamic short circuit stresses. The windings shall be duly sectionalised. Accessible joints brazed or welded and finished smooth shall connect similar sections. No corona discharge shall result on the winding upon testing the transformer for induced voltage test as specified in IS.

The end turns of the high voltage windings shall have reinforced insulation to take care of the voltage surges likely to occur during switching or any other abnormal condition.

The high voltage and low voltage winding are shall be made of copper Conductors.

Output in kVA	:	500 kVA double copper wound.
Rated No load voltage ratio	:	11kV/433 Volts / 3.3kV/433Volts.
No. of phase	:	03
Rated frequency	:	50 Hz
Connections	:	Primary – Delta Secondary – Star with Neutral
Vector Group	:	DYn11
Tapings on HV Side	:	±5% in steps of 2.5%
Type of Tap changer	:	Off circuit tap links on HV side.
Cooling	:	Naturally cooled (AN)
Termination	:	HT Side - Suitable for cable LT Side - Suitable for Bus bar
Fittings	:	2 Nos. earthing terminals, rating & diagram plate, winding temperature scanner.
Temp. Rise winding over ambient temp	:	80°C
Insulation Class	:	F
Percentage Impedance	:	5%

Transformer losses:

The transformer shall be so designed it should have losses as per IS and type test reports shall be submitted by the contractor.

5.3 LT Panel /Switchgear

LT switchgear panel shall complete in all respects with all equipment fittings and accessories including internal wiring for efficient and trouble free operation as required.

Air Circuit Breakers (ACB) shall be with fault level of 50 kA for 1 Sec., copper bus bar, spring charging operating mechanism, microprocessor based overload, short circuit and earth fault protection releases with wide setting range, LED displays, alarm display for microprocessor fault, interlocking, etc. complete as required.

Moulded case circuit breakers shall be fixed type, microprocessor release having adjustable O/L & S/C settings with trip-free, manually closing mechanism, accommodated in a Moulded housing of robust and vermin-proof construction matching with switchboards. All MCCBs shall be designed and tested to IS - 13947 Part II to breakers shall be provided with an inverse time delay electronic over current trip device. The trip device shall be direct acting

The LT Panel shall be the integral part of the Package substation Unit and suitable for outdoor use. This shall be suitable to receive power at 433 V, 50 c/s, 3 phase AC and restricted earth neutral system.

Incomer

Transformer: 1 No. 800A, 4P, 50 kA ACB with microprocessor based over current, short circuit and earth fault release, MFM, indicating lamps and ON/OFF push buttons.

Outgoing

Type1: For 11kV Package Sub-station

- a) 250A MCCB, TP, 35 kA for 1 sec.-07Nos.
- b) 400A MCCB, TPN, 35 kA for 1 sec.-01No.

Type2: For 3.3kV Package sub-station

- a) 250A MCCB, TPN, 35 kA for 1 sec.-05Nos.
- b) 400A MCCB, TPN, 35 kA for 1 sec.-03Nos.

All outgoing feeders shall have phase indicating led lamps and **Multifunction Meter**.

5.4 150 kVAR APFC Capacitor Panel:

The capacitor panel shall be an integral part of package substation.

The Capacitors control panel shall be of automatic switching type with facilities for manual control. Single Phase CT sensing APFC relay as per approved make list of tender. The switch units, contactors, etc. shall be selected to suit Capacitor ratings. The panel shall be capable of switching ON/ switching OFF capacitor bank in stages with on delay timer. The APFC relay provided in the panel shall be three phase sensing power factor on 433V bus and there upon switch ON/switch OFF.

The panel shall be freestanding and provided with separate compartments for incoming outgoing control switches and the capacitor banks. A continuous earth bar shall be provided to which the individual capacitor banks shall be connected. All main bus bar connection shall be of Copper. Panel shall be painted with Epoxy primer and Epoxy paint after an accepted metal treatment process.

The switching of capacitor bank by a re-strike free breaker shall not cause first peak of transient over voltage not to exceed $2\sqrt{2}$ times the applied voltage (rms) for maximum duration of 1/2 cycle and shall be suitable for performing 5000 switching operation/year under these conditions.

LT capacitor banks shall be provided on the LT buses in proposed sub-station to improve the power factor from 0.8 to 0.98 and above lagging.

LT Capacitor banks of suitable rating shall be provided at incoming side of incomer breakers for LT panel to compensate the reactive load of transformers and to maintain power factor above 0.98 even when no motor is in operation. Contractor shall furnish the calculation for suitability of capacitor bank.

The rated voltage of 3 phase capacitor bank shall be 433 V (Phase to Phase) and 230 V (Phase to Ground). Capacitors shall be Self Healing MPP Heavy Duty type confirming to IEC 60831.

Capacitors banks are to be built up from individual single phase units suitably interconnected and housed in a metal enclosure to form a single 3 phase bank Capacitor. Capacitors having low Loss/kVAR shall be preferred.

Capacitors shall be suitable for operation at power frequency voltage level and for power frequency plus harmonics such that current does not exceed the values specified in clause 6.2 Annex C & E of IS 13585.

Capacitor modules shall be provided with in-built fuses to isolate individual faulty units from the total bank.

Capacitors shall be provided with directly connected discharge device suitable to reduce the residual voltage from crest value of the rated voltage to 50 volts or less within 1 min after the same is disconnected from the supply.

For enabling the metal container to carry fault current in the event of breakdown of container, this container shall be provided with a connection capable of carrying the fault current.

Relay shall be suitable for operation at low load and current sensitivity shall be equivalent to 1%.

The capacitor should be of rating, shall be finalized during detail engineering, it shall provide for a gradual increase in KVAR ratings in steps.

Type tests certificate for similar type & rating of capacitors in accordance with IS 13585 shall be submitted by the successful Bidder.

The routine and acceptance test shall also be performed as per the relevant standards

5.5 Moulded Case Circuit Breaker

The Moulded case circuit breaker (MCCB) shall conform to latest IEC-60 947-2/ IS13947- 2. The circuit breaker shall comply with the isolation function requirement of IEC 60 947-2 section 7.1.2 to marked as suitable for isolation/ disconnection to facilitate safety of operating personnel while the breaker is in use.

Moulded case circuit breakers shall be fixed type, microprocessor release having adjustable O/L & S/C settings with trip-free, manually closing mechanism, accommodated in a Moulded housing of robust and vermin-proof construction matching with switchboards. All MCCBs shall be designed and tested to IS - 13947 Part II to breakers shall be provided with an inverse time delay electronic over current trip device. The trip device shall be direct acting.

The MCCB shall have rated operating voltage = 690V with min. Insulation voltage = 750V and rated impulse withstand voltage = 8 kV.

MCCB shall be provided with Class II insulation between front cover & internal power circuits to avoid any accidental contact with live current carrying path with the front cover open.

The tripping devices shall be ambient temperature compensated type. The insulating case and cover shall be made of high strength heat resistant and flame retardant thermosetting insulating material.

They shall have line load reversibility. 3-phase breakers shall be designed to break all the poles simultaneously and they shall have a single mechanism.

They shall have auxiliaries and accessories whenever required for signalling, interlocking, shunt trips, under voltage release, castle lock, etc.

All the circuit breakers used shall have guaranteed breaking capacities sufficient for the maximum short circuit duties that could possibly be imposed on the different breakers. The MCCBs fixed in main switchboard shall have breaking capacity of 35KA for 1sec. **All Spreaders shall be made of silver plated copper.**

MCCB shall have $I_{cs}=I_{cu}$ for the entire range as per BOQ and rated at ambient 50°C.

MCCB's shall be used with terminal spreaders, phase barrier and all terminals shall be shrouded to avoid direct contact.

5.6 Miniature Circuit Breakers (MCB)

MCBs shall be hand operated, air break, quick make, quick break type conforming to applicable standards.

MCB shall be provided with overload/short-circuit protective device for protection under overload and short-circuit conditions. The minimum breaking capacity of MCBs shall be 10 kA r.m.s. at 415V AC. It shall comply to Class III energy limiting class. MCB shall comply with IS – 8828 – 1996/IEC 898. MCB shall have minimum power loss (watts) per pole defined as per IS/IEC and the manufacturer shall publish the values.

The MCB housing shall be heat resistant and heavy a high impact strength. The terminal shall be protected against finger contact to IP 20 degree of protection.

5.7 Measuring Instruments, Metering & Protection

5.7.1 General

Direct reading electrical instruments shall be in conformity with IS-1248. The accuracy of all measuring instruments shall be as specified in the BOQ. The errors due to variations in temperature shall be limited to a minimum. The meter shall be suitable for continuous operation between -10 degree Centigrade to + 50 degree Centigrade. All meters shall be of flush mounting type of 96mm square pattern. The meter shall be enclosed in a dust tight housing. The housing shall be of steel or phenolic mould. The design and manufacture of the meters shall ensure the prevention of fogging of instruments glass. Instruments meters shall be sealed in such a way that access to the measuring element and to the accessories within the case shall not be possible without removal of the seal.

The specifications herein after laid down shall also cover all the meters, instrument and protective devices required for the electrical work.

5.7.2 Multi-Function Meter

It shall be suitable for measuring, saving and supervision of electrical parameters in low and medium voltage mains. viz. kVA, kW, I, V, Pf, f, KWh, MD etc.

The Meter shall have following Features.

- Clear LCD Display
- Visualization of all the three phase grid parameters along with Min / Max/ Measured/average.
- The meter shall have communication port of RS 485 and shall be compatible with SCADA System.
- It shall come along with the software for data acquisition.
- It shall be compatible with PLC.
- The accuracy class shall not be more than 0.5%.

5.7.3 Current Transformers

Current transformers shall be in conformity with IS: 2705 (part I, II & III) in all respects. All current transformers used for medium voltage applications shall be rated for 1kv. Current transformers shall have rated primary current, rated burden and class of accuracy as required. However, the rated secondary current shall be 5A unless otherwise specified.

Current transformers shall be capable of withstanding without damage, magnetic and thermal stresses due to short circuit fault of the system. Terminals of the current transformers shall be marked permanently for easy identification of poles. Separate CT shall be provided for measuring instruments and protection relays. Each C.T. shall be provided with rating plate.

Current transformers shall be mounted such that they are easily accessible for inspection, maintenance and replacement. The wiring for CT's shall be done with minimum 2.5 sq. mm copper wires with proper termination lugs and wiring shall be bunched with cable straps and fixed to the panel structure in a neat manner.

5.8 Miscellaneous

Control switches shall be of the heavy duty rotary type with escutcheon plates clearly marked to show the operating position. They shall be semi-flush mounting with only the front plate and operating handle projecting.

Indicating lamps shall be of the LED type.

Push buttons shall be of the momentary contact, push to actuate type fitted with self reset contacts & provided with integral escutcheon plates marked with its functions.

5.9 Cable Terminations

Cable entries and terminals shall be provided in the Distribution Boards to suit the number, type and size of aluminium conductor power cables and copper conductor control cable specified.

Provision shall be made for top or bottom entry/exit of cables as required. Generous size of cabling chambers shall be provided, with the position of cable gland and terminals such that cables can be easily and safely terminated.

Barriers or shrouds shall be provided to permit safe working at the terminals of one circuit without accidentally touching that of another live circuit.

Cable risers shall be adequately supported to withstand the effects of rated short circuit currents without damage and without causing secondary faults.

5.10 Push Buttons

Push buttons shall be:

- of the momentary contact, push to actuate type rated to carry 10A at 240V AC and 1A (inductive breaking) at 220V DC.
- fitted with self-reset, 2 NO and 2 NC contacts.
- provided with integral escutcheon plates marked with its function.

'Start', 'Open', 'Close' push buttons shall be green in colour.

'Stop' push buttons shall be red in colour.

All other push buttons shall be black in colour.

Emergency stop' push buttons shall be of the lockable in the pushed position type and shall be shrouded to prevent accidental operation. Key shall not be required for the operation of the push button.

5.11 Internal wiring

Wiring inside the switchgear/panel shall be carried out with 1.1 kV grade, zero halogen FR stranded conductor wires. Control ckt for LV shall be 2.5 mm sq for CT Ckt , 2.5 mm sq for control ckt & 4 mm for earthing.

Engraved identification ferrules, marked to correspond with the wiring diagrams shall be fitted to each wire. Ferrules shall be of yellow colour with black lettering.

Wires forming part of a tripping circuit of circuit breaker shall be provided with an additional red ferrule marked 'T'.

Spare auxiliary contacts of all equipment forming part of the switchgear shall be wired up to the terminal blocks.

Spare and unassigned modules shall be complete with internal wiring.

Wiring shall be terminated on screw less terminal blocks upto 4 sq. mm size.

Not more than two connections shall be made on any one terminal.

5.12 Terminal Blocks

Terminals for circuits with voltage exceeding 125 V shall be shrouded. Terminal blocks shall be grouped depending on circuit voltage. Different voltage groups of terminal blocks shall be segregated.

Terminal blocks shall be adequately rated to carry the current of the associated circuit. Minimum rating of the terminal block is 10A.

Terminals shall be numbered for identification.

Terminal blocks shall be arranged with at least 100mm clearance between two sets of terminal blocks.

Screw less, cage clamp type terminal blocks shall be used for cable sizes upto 6 sq. mm. **Bus Bar** type terminal blocks shall be used for cables above 6 sq. mm.

Terminals for CT secondary leads shall be disconnecting link type and shall have provision for shorting.

5.13 Earthing

Each Panel shall be provided with an earth bus bar running along the entire length of the board. Material and size of the earth bus bar shall be as per IS. At either end of the earth bus, one (1) clamp type terminal with nuts, bolts and washers shall be provided for bolting the earthing conductor of size and material indicated in data sheets. In case the earth bus is provided near top of the switchgear, one down comer at either end shall be provided for connection to the earthing conductor.

Earth bus bars shall be supported at suitable intervals.

Positive connection between all the frames of equipment mounted in the switchboard and earth bus bar shall be provided by using insulated copper wires/bare bus bars of cross section equal to that of the bus bar, or equal to half the size of circuit load current carrying conductor, whichever is smaller.

All instrument and relay cases shall be connected to the earth bus bar using 650 V grade, 2.5 sq. mm stranded, copper ZHFR, earthing conductor.

5.14 Labels

Labels shall be anodised aluminium with white engraving on black background shall be provided for each incoming and outgoing feeder of Distribution Boards. Labels shall be properly secured with fasteners.

5.15 Test At Manufactures Work

Type test certificate for similar type & Rating of Outdoor Package Substation Unit manufactured as per IEC 61330/62271-202 be submitted by the successful tenderer.

The Routine and Field test shall be arranged by the Contractor and carried out on Outdoor Package Substation as per latest relevant IEC / IS Standards in presence of **Third Party Inspection Agency, appointed by HDC, at the manufacturer's works & at site respectively. The cost of the TPI Agency would be borne by HDC.** The Certified copies of test certificates shall be submitted before despatch.

5.16 Testing and Commissioning

Commissioning checks and tests as per IS/BIS shall be included all wiring checks and checking up of connections. Primary injection tests for the relays adjustment/ setting shall be done before commissioning in addition to routine megger test. Checks and tests shall include the following.

- a) Operation checks and lubrication of all moving parts.
- b) Interlocking function check.
- c) Continuity checks of wires, fuses etc. as required.
- d) Insulation test: Testing shall be as per IS specification.
- e) Trip tests & protection gear test.

5.17 Foundation

RCC foundation as per attached drgs shall be executed at site. Outdoor Package substation shall be placed at least +800mm above road level.

6.0

VCB PANEL

i) Codes and Standards:

The switchboards and the mounted equipment shall conform to the latest revisions of the following Indian standards:

IS:12729	General requirements for switchgear and control gear for voltages exceeding 1000 V.
IEC 62271-1	Common Specifications for Switchgear & Control gear
IEC 62271-100	Circuit Breakers
IEC 62271-200	A.C. metal-enclosed switchgear and control gear for rated voltages above 1kV and up to and including 72kV and the IEC Code herein referred
IEC 60129	Alternating current disconnectors (isolators)
IEC 60255	Electrical relays
IEC 60529	Classification of degrees of protection provided by enclosures
IS:13118	General requirement for circuit breakers for voltages above 1000 V.
IS:3427	Metal-enclosed switchgear and control gear for voltages above 1000 V but not exceeding 11000 V.
IS:5082	Material for data for aluminium bus bars.

IS:9920	Switches and switch isolators for voltages above 1000V.
IS:9921	AC disconnectors (isolators) and earthing switches for voltage above 1000 V.
IS:9046	AC contractors of voltage above 1000V upto and including 1100 V.
IS:12661	HV motor starters.
IS:13703	Low voltage fuses.
IS:2705	Current transformers.
IS:3156	Voltage transformers.
IS:1248	Electrical indicating instruments.
IS:722	Integrating meters.
IS:3231	Electrical relays for power system protection.
IS:6875	Control switches and push buttons.
IS:694	PVC-insulated cables for working voltages voltage upto and including 1100 V.
IS:2544	Porcelain post-insulators for systems with nominal voltage greater than 1000 V.
IS:11353	Guide for uniform system of marking and identification of conductors & apparatus terminals.
IS:5578	Guide for marking of insulated conductors.
IS:3618	Phosphate treatment of iron and steel for protection against corrosion.
IS:6005	Code of practice of phosphating of iron and steel.
IS:5	Colours for ready mixed paints and enamels.

Wherever Indian Standards are not available, relevant IEC standards shall be applicable.

ii) General Requirement

Indoor Switchgear and control gear fully type tested according to IEC 62271-200 standards. The Circuit Breaker shall confirm to IEC-62271-100. Switchgear shall be type tested for internal arc 25kA for 1 sec. Switchgear shall also be tested for Seismic zone IV and type test report shall be furnished.

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

The switchgear shall be of metal clad, single bus bar/Double bus bar as applicable, self-standing, dust proof construction, indoor cubicle type fitted with vacuum circuit breakers in fully draw out execution.

Circuit breakers shall be withdraw-able Vacuum type of cassette design. The complete assembly of interrupters contact pressure springs and HV terminals (top and bottom) shall be type tested for compatibility of design.

The Circuit Breaker shall be suitable for E2, M2 & C2 (Single capacitor Bank) class duty. The offered circuit breaker should have valid type tests to support the afore-mentioned duty class & other GTP parameters

VCB should be tested for Humidity test as per IEC 62271-100. As per IEC62271-200, the switchgear should be compliant to Partition Class Metallic (PM). It should be tested for Internal Arc compliancy for 1 second for all individual compartment

The VCB shall be horizontally isolated, horizontally drawn-out type, truck mounted and ground operated.

The circuit breakers shall be suitable for following duties

- ⇒ To withstand inrush magnetizing currents of transformers and capacitor bank 'ON' and 'OFF' operation.
- ⇒ Transient surge produced by one CB due to severe chopping during rapid interruptions of inductive current e.g. motors, shall be within limits allowable for overhauled motors according to IEC34 part 1 otherwise suitable surge absorber shall be provided.
- The controls, indicating lamps, relays and meters shall be mounted on separate control & relay panel.
- Operation counter, close/open mechanical indications spring charged/discharged indication shall be provided.
- All circuit breakers shall have motor operated spring charged mechanism for closing and shunt tripping coil (48V DC). Closing coil shall be suitable to operate between 85% to 110% of rated voltage and tripping coil between 70-110% of rated voltage. Spring charging motor shall operate between 85-110% of rated AC. Voltage.
- Jumpers in the cubicle also shall be of same current rating as that of the breaker. Only the jumpers connected to CT shall be rated according to CT rating.
- A manually operated device to enable charging of closing springs.
- Manual / Mechanical tripping arrangement for emergency tripping of CBs.
- All circuit breaker truck shall have service, test and draw out positions. Test position shall engage only the auxiliary (control) contacts to close the CB during testing.
- Panel door switch shall be provided for illumination inside panel.
- Anti pumping feature shall be provided.
- All live parts shall be insulated by heat shrinkable sleeve only.
- The cubicle shall be provided with a position changing gear arrangement in such a way that by engaging detachable device from outside the front door, it shall be possible to move the breaker truck and change position without opening the cubicle door. Facilities for pad locking in each position shall be provided.
- Each cubicle shall have mimic diagram with metal strip.
- Each cubicle shall be of compartmentalized construction and shall have separate compartments for bus bars, CTs and outgoing cables, metering and protection devices.
- To ensure the integrity of the arc fault containment requirement, the operations must be carried out with the switchgear doors closed i.e. circuit breaker for opening and closing, racking of circuit breaker (or withdraw able voltage transformer) between service and test position.
- All circuit breaker trucks of same rating shall be identical in all respects (except metering and protective devices) and shall be interchangeable with similar breaker panel.
- Continuous earth bus shall be provided throughout the board.

- The position of various control switches, push buttons, and levers, etc. requiring manual operation shall be at a height not less than 450 mm and shall not exceed 1850 mm from the finished floor level.
- The switchgear shall have integral making type earth switch.
- Offered switchgear should be supplied with factory fitted exhaust duct for evacuation of plasma, arising out of an internal flash over.
- Switchgear should have provision for real time thermal monitoring for all the probable hotspots inside the switchgear. A minimum of 6 hot spot monitoring has to be offered for individual switchgear vertical. Display of the temperature can be done on a independent flush mounted HMI.

- iii) In the design of the switchgear the following positive interlocking shall be provided.
1. It shall not be possible to move the truck from the isolated to the Service Position unless low voltage plug and socket connections have been made.
 2. An electro-mechanical device shall be provided to ensure the auxiliary circuits have been securely connected between the fixed and moving portions of the switchgear, before allowing closing operation of the circuit breaker. The voltage rating of the device shall be the same as the voltage used for the closing circuit.
 3. It shall not be possible to disconnect the low voltage plug and socket as long as the circuit breaker truck is in service position.
 4. It shall not be possible to withdraw the truck without disconnecting the low voltage plug and socket.
 5. It shall not be possible to move the truck from the service to the isolated position or vice-versa with the circuit breaker in the 'ON' position.
 6. It shall not be possible to switch on the circuit breaker when the truck is in between the isolated and the service positions (except in test position).
 7. The switchgear shall have integral making type earth switch.
 8. The circuit breaker truck shall ensure earthing in both connected and disconnected positions.
 9. It shall be possible to switch on the earthing switch only when the truck is in the isolated position, wherever an integral earth switch is provided.
 10. It shall not be possible to open the circuit breaker enclosure when the breaker is ON or to have access to any part of the draw out assembly which is live when the circuit breaker is in the service position.
 11. Shutters shall be lockable in closed position.
 12. Where local/remote selector switches are called for , it shall be ensured that:
 - * The breaker can be closed locally only if the breaker truck is in the test position and the local/remote selector switch is in local position.
 - * The breaker can be operated from remote panel (in shop) only when the breaker truck is in service position and the local/remote selector switch is in remote position.
 - * The breaker can be tripped locally regardless of the position of the breaker truck.

iv) Earthing Mechanism

The operating mechanism parts shall be designed to give longer life, trouble free operation and require minimum maintenance.

The material and components shall have chopping current limited to minimum.

v) Insulation Levels

Insulation levels corresponding to the rated voltage shall be as follows:

Nominal voltage (kV)	11
Highest system voltage (kV)	12
One minute power frequency withstand voltage (kV)	28
1.2/50 micro sec impulse withstand voltage (kV)	75
Clearance in air	As per IEC

vi) Short Circuit Strength

- Rated short time withstand current shall not be less than the system short circuit level specified for the stipulated duration.
- Rated peak withstand current shall not be less than 2.5 times the system short circuit level.

vii) Auxiliary Buses for Control & Protection

1. Control supply buses for AC & DC.
2. Signaling supply.
3. PT secondary voltage.
4. Spare buses.

viii) Provision of surge suppressor

In case of breakers like VCB that give rise to over voltage surges due to current chopping phenomenon, surge suppressors to be provided at the load side terminals of the breakers to limit the switching surges to value limited for as per IEC.

ix) Annunciation Schemes

- Flag indications for all faults for which individual protective relays have been specified.
- Warning signalling (as applicable) on individual panels:
 - a) All transformer warning / signalling conditions (group signal from corresponding transformer control panel / sub-station
 - b) Loss of trip circuit supply
 - c) Earth fault.
 - d) Control supply failure
 - e) PT fuse failure / MCB tripping
- Emergency signalling for tripping of HT breakers on fault
- One common signal for warning and one signal for emergency from each panel to be wired to a common annunciation panel of the switchboard, where specified.
- Annunciators for warning and emergency signaling condition on individual panels of solid state facia window type. Common audio signaling with Accept, Reset, and Test push buttons for the switchboard where common annunciation panel is not specified. Audio signaling to have distinct tones for warning and emergency.

x) Bus Bar and Connections

- Power buses shall be of EC grade aluminium alloy equivalent to E91E WP as per IS-5082-1981 or Copper. Both rectangular and Round busbar are acceptable. The busbars shall be tinned /silver plated at joints.
- The continuous rating of the main horizontal bus shall not be less than the rating of the incomer specified.
- *The vertical bus rating shall be as follows:-*

incomer	:	Not less than that of horizontal bus
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or outgoing	:	Not less than that of the outgoing breaker, irrespective of relay setting.
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- Design ambient temperature shall be 50°C & final operating temperature under continuous operation in enclosure shall be as per IEC 62271-200.
- Both horizontal and vertical bus bars to be designed and supported to withstand the thermal and dynamic stress corresponding to rated short time and peak withstand current specified.
- Cross-section of main horizontal bus to be uniform throughout the switchboard and continuous in one transport unit.
- Bus bar arrangement as per IS 375.
- Phase identification by colour in each panel.
- Bus bars (horizontal as well as vertical) shall be provided with heat shrinkable, non tracking, low absorption type sleeving conforming to international standards for full voltage for 33 kV, 11kV & 3.3kV switchboards.
- Bus bar support insulators of non-hygroscopic material having high impact and dielectric strength with an anti tracking contour.

xi) Internal Control Wiring

- Control wiring shall be carried out by 1100V grade PVC insulated; single core multi stranded copper wire of minimum cross section 2.5 sq. mm. Similarly, for CT circuits minimum cross section of 2.5 sq. mm shall be used.
- Flexible wire of 2.5 sq.mm shall be used from CT chamber to relay chamber and shall have protection against heat and mechanical damage due to flash over. Use of heatproof sleeves and rigid conduit shall be made to run the control wires from back to front.
- Wiring and terminal arrangement for all panels shall be carried out as per approved scheme.
- Flexible wires protected against mechanical damage for wiring to door mounted devices.
- Wires identified at each end in accordance with schematic diagrams by interlocked type ferrules. These shall be firmly located so that these do not move.
- *Colour code for control wiring*

<u>AC – Black</u>	Earth wire – Green
DC – Light grey	Trip circuit – Red

- All telemetering signals shall be wired to terminal strips.

xii) External Terminations

Control Terminations

- 650V grade multi-way open type terminal blocks of non-tracking moulded plastic complete with insulated barriers, stud type terminals, washers, nuts and lock nuts and identification strips.
- All terminals going out of the switchboard shall be brought to a separate terminal board marked "External Termination". These will be easily accessible.
- External terminal block shall be provided in the relay chamber with proper clamping facilities for cable dressing.
- Control terminals shall be suitable to receive two numbers 2.5 sq. mm copper conductor.
- 20% spare terminals in each control terminal block. Terminal blocks in separate groups shall be provided for DCS/PLC, remote control panels, transformer marshalling boxes, local push button stations, etc.

- Gland plate for control cables shall be of adequate size to accommodate and to facilitate glanding of all the control cables coming from external equipment.
- Terminal blocks shall be placed separately for internal looping and external looping.

xiii) Power Terminations

- Suitable for accepting cable/bus trunking as specified.
- Sufficient space and support arrangement inside each panel to accommodate HT cable termination kits and sealing kits suitable for the size and number of XLPE cables. Dummy panels to be provided adjacent to the switch panel, where the required number cable terminations cannot be accommodated in the cabling chamber of the main panel. Rear extension not acceptable.
- Where more than one cable has to be terminated per unit, the arrangement shall permit connection and disconnection of cables separately without disturbing other cables.
- Push – ON type/Heat-shrinkable type cable end terminations / straight-through jointing kits shall be used wherever required.
- Where specified the following cable termination accessories, suitable for the type, size and number of cables to be terminated, to be supplied with switchboard.
 - ⇒ Cable sockets with all HT terminals(sockets set at such an angle that cable tails can be brought up for termination with minimum bending and setting)
 - ⇒ HT cable termination and sealing kits
 - ⇒ Power cable termination facilities shall be designed to facilitate easy approach to CTs.
 - ⇒ Double compression type brass cable glands and crimping type tinned heavy duty copper lugs for HT, LT power and control cables.

xiv) Protection and Measurement

a) Electrical Protection

Selection of protective scheme will be based mainly on reliability, sensitivity, selectivity. All main protections shall be fast acting type in order to clear the faulty system from the healthy system in earliest possible time to minimise damage to equipment and ensure continuity of power supply.

b) Protective scheme requirement

- All the main protective relays shall be microprocessor based numerical and communicable type.
- Auxiliary relays, timers switches, etc. required to make the scheme complete shall be considered as part of the scope of work.
- All CT-PT shall be suitable for the relay-meter requirement - lead burden
- All CT-PT wires shall be brought to test terminal blocks before connecting to circuits.
- The circuits of various protections (coming from other panels) shall be connected to master trip relays through auxiliary relays (flag indicated).
- VAA type auxiliary relays shall be provided for each transformer fault. Connection of the relay shall be through links to facilitate maintenance.
- Relay ranges and scale of meters shall be finalized during drawing approval stage.
- Contact arrangement, number of poles/ways in control/selector switches shall be as per the requirement/approved scheme.
- ICTs whenever considered necessary shall be included in the scope

- For control supply distribution, panel to panel separate set of terminal blocks shall be provided at top of the panel. All items / accessories required for above in each panel and in incoming panels shall be provided by the supplier.
- All relays shall be hand/self-reset type with flag indication. NO/NC contacts for relays shall be as per the requirement of approved protection, annunciation and interlock schemes. Wherever required supplier shall provide auxiliary relays for contact multiplication.
- Annunciation facia shall be mounted on Incomer switchgear panels and details shall be finalized during drawing approval stage.
- Centre line of switches, lamps, meters shall be matched to give uniform appearance and mounting height of switches shall be between 1.1 - 1.8 m.

xv) Current Transformer (Panel Mounted)

- Separate sets of current transformers shall be used for differential protection and separate cores shall be used for, over current protection and measurement purposes. CT's on incomer side shall be mounted before incomer breaker and CT's for outgoing feeder shall be mounted after the breaker.
- Short time ratings and insulation level of CT's shall be similar to rating of associated breaker.
- CT ratios specified are provisional. Where outputs and accuracy are not specified, these shall be such as may be required by the circuits in which they are used. Generally, the protection CT's and metering CT's shall have 5P20 and 0.5 class respectively.
- CT's shall be bar/ window primary type.
- CT's shall have shorting link on secondary side to facilitate insertion of meters on secondary side without opening CT circuits.
- CT Ratio shall be as marked on the Single Line Diagram attached with this Specification.

xvi) Potential Transformers

- Fixed type line PT mounted in separate panel shall be acceptable. However, if line PT is located in incomer breaker panel, draw out type PT shall be considered.
- High voltage side of PTs shall have fuses and MCCB's on low voltage side
- Low voltage star winding shall have all three phase and neutral connections brought out to terminals and one phase shall be earthed.
- Insulation levels shall be similar to rating of associated board.
- Accuracy class 1.0 shall be used.
- VA burden shall be selected based on meters and relays connected with the PT.

xvii) Relays

- Relays shall be Microprocessor based numerical and communicable type. Protocol for communication shall be IEC 61850.
- All relays shall be flush mounted in dust proof cases and shall be mounted on front side of cubicle.
- The module shall be either draw-out/Fixed type with withdrawable cards and there should be CT shorting facility. Galvanic isolation between field connection and relay hardware should be there. The relays should be housed in a robust metal case suitable for panel mounting conforming to IP 51 or higher (Front face). The relay shall have Web HMI feature.
- The relay shall have a second Ethernet port for providing connectivity of any

other Ethernet device to an IEC 61850 station bus inside a switchgear bay.

- The relay must support, besides native IEC 61850, simultaneous communication using one of the following communication protocols: Modbus® (RTU-ASCII/TCP), IEC 60870-5-103 or DNP3 (serial/TCP).
- Major relays are as indicated in the specification or single line diagram.
- Master trip relay shall be hand reset and shall have 3 NO and 3 NC contacts in addition to those required by the protection/control scheme.
- All timers and protection relays shall have flag indicators.
- Relay ranges, exact type, number of aux. relays, timers shall be finalized during drawing approval stage.
- All instantaneous current protection relays shall be of 3 pole type.
- All PCB used in relays should have harsh environmental coating as per standard IEC 60068 (HEC) to increase the particle repellence and thereby increasing the life of relay or it should be tested as per IEC60068 to operate under extreme harsh environmental conditions given in G3. Test report needs to be submitted on request. IED shall be manufactured using lead-free components.
- The relay shall be provided with suitable security (Password protection) against unauthorised WRITE ACCESS for change in relay setting. However, it should be possible to view metering, protection settings, status and event data as READ ONLY without password protection. The security should be available for change in relay settings locally from relay HMI as well as when relay is accessed remotely through manufacturer software / remote HMI.
- The relay should have time synchronization through SNTP / IRIG-B
- **Fault record:** The relay shall have the facility to store at least 8 last fault records with information on cause of trip, date, time, trip values of electrical parameters.
- **Event record:** The relay shall have the facility to store at least 250-time stamped event records with 1 ms resolution.
- **Disturbance records:** The relay shall have capacity to store at least 50 disturbance record waveforms. The relay shall have a disturbance recorder supporting a sampling frequency of 32 samples per cycle and featuring up to 12 analog and 50 binary signal channels.
- Event log, trip log and disturbance record should go in history. The relay settings shall be provided with adequate password protection with 4 alternative setting groups.
- The numerical relays shall be provided with 1 set of common support software compatible with both Windows 98/ NT 4.0/ 2008/ Windows 7/ Windows 10 or higher, which will allow easy settings of relays in addition to uploading of event, fault, disturbance records, measurements and troubleshooting purposes.

xviii) Indicating Instruments

- All indicating instruments shall conform to IS: 1248-1983 and IS - 2419-1979.
- Shall be capable of withstanding system fault current taking into account CT saturation.
- Shall be back connected.
- Shall be located in the upper part of the panel.
- Shall have 96 sq. mm square flush case, non-reflecting type, clearly divided and indelibly marked scales, sharply out lined pointers and zero adjusting device.
- The minimum scale reading shall not be more than 10%. Maximum reading shall be 150% full load for transformers panels.
- Each voltmeter shall be calibrated with coil hot. The scale shall be open between

- 60% to 125% of normal volts and shall be suppressed below 60% of normal volts.
- Class of accuracy shall be 1.0 or better.
- The full load reading of each ammeter shall occur at the most prominent part of the scale. The minimum scale reading shall not be more than 10%. Maximum reading shall be 150% full load for transformer panels and 600% full load for motor panels.

xix) Annunciators

- Shall be of static type.
- Hooter and bell for trip and alarm indication respectively.
- Shall be suitable to work on DC supply as specified.
- Test, accept and reset facilities (with push button) shall be provided on each panel.
- Suitable audio - visual indication shall be provided on DC failure. Audio alarm with reset facility shall be provided. Visual indication shall be panel- wise.
- Spare annunciation points shall be wired upto terminal blocks. 20% spare facias shall be provided.
- Each point shall have two bunch LEDs in parallel.
- All trip points facia shall have red colour and non trip points white colour.
- The cover plate of facia shall be flush with panel
- Shall be capable to receive simultaneous signals
- Shall be capable to receive signal during testing mode
- Scope of supply includes all interconnections, bell hooter, buzzer, alarm facility, push button etc. required to achieve complete function of above scheme.
- Sequence shall be as follows:

	Visual	Audio
On occurrence of fault	Lamp flashing	on
On acceptance	Lamp steady "on"	off
On reset	Off	off
On test	Lamp flashing	on

- Annunciation in the switchboard shall have following provisions:
 - Each transformer & other feeder shall have 12-way uniform facia.
 - Each bus PT shall have 12-way uniform facia.
- Bus coupler or tie shall have sufficient facia (for each feeder to indicate tripping +20% spare)
- One common point shall be provided to indicate operation of annunciation system of the complete board (in case of any trouble in the board in tie feeder, bus coupler, incomer etc.)
- All auxiliary relays of transformer feeders shall have 4 NO contacts all master trip relays shall have 2 NO contacts for remote/DCS/PLC indication for repeat annunciation in addition to contacts required for scheme under scope of works.

xx) Control supply

- Control supply buses shall run throughout the switchgear.
- Two DC feeders shall be taken in each board controlled by MCCB's.
- In each panel for controlling of its DC supply MCCB (DC duty) shall be used. DC auto changeover and manual changeover facility shall be provided. Failure of DC supply shall be monitored in the switchboard as well as at remote.
- 240V AC shall be taken from station aux. board.
- Each section shall have separate feed with automatic change over scheme.
- Each panel shall have one MCB for controlling its AC supply.

- Sub circuits shall be protected with HRC fuses/ MCB in each panel for indication lamps, closing & tripping circuits.

xxi) Earthing Devices

- Either integral earthing switch or a separate earthing switch shall be provided to facilitate earthing of busbars and any feeder circuit.
- Earthing truck (if included) shall have PT and alarm provision. (Separate trucks shall be provided for feeder and bus earthing through bus PT panel in each switchboard). One no. earthing truck for feeder earthing and one no. for busbar earthing shall be provided for each board. It shall not be possible to use bus-earthing truck for feeder earthing and vice-versa.
- Rating of earthing device shall be in line with associated board.
- Interlock provision shall be there so that incomer cannot be closed if bus-earthing device is connected.
- In case feeders are having integral earth switch, earthing trucks may not be required.

xxii) Control and Selector Switches

- Control switches for circuit breaker ON/OFF control - 3 position spring return to neutral with lost motion device and pistol grip handle.
- Other control and selector switches - stay put type with wing type knobs.
- Ammeter selector Switches- 4 position, make before break.
- Voltmeter selector switches- 7 positions as required.
- Colour : Black
- Contact Rating:

Continuous	10 amps
AC11	4 amps, 240V
DC11	0.5A, 48V, L/R- 40ms.

xxiii) Push buttons

Contact Rating

Continuous	10 amps
AC11	4 amps, 240V
DC11	0.5A, 48V, L/R- 40ms.

Color:

ACCEPT	BLUE
RESET	BLACK
TEST	YELLOW

xxiv) Control Circuit Fuses:

HRC link type confirming to IS 9224-1979.

xxv) Protective Earthing

- Continuous earth bus of minimum size 50x6 mm of copper or equivalent aluminum/galvanized steel section, designed to carry the peak short circuit and short time fault current as specified.
- Provided at the bottom extending throughout the length of the board, bolted/brazed to the frame work of each panel with an earthing terminal at each end for terminal at each end for terminating external earth conductor.
- Vertical earth bus for earthing individual functional units.
- Hinged doors earthed through flexible earthing braid.
- Looping of earth connection resulting in loss of earth connection to other devices

when the loop is broken not permitted.

- Withdrawable units provided with self aligning, spring loaded, silver plated copper scrapping earth contacts of make before/break after type, ensuring earth continuity from service to the test position.

xxvi) Test and Maintenance Equipment

Each board to be supplied with 1set of test plugs.

xxvii) Constructional Features

Mechanical Design

- The switchgear and control gear panels shall be of the fully arc proof, free standing, floor mounting, flush fronted, withdraw able type, consisting of separate panels assembled into one or more sections to form a single structure with a common bus-bar assembly. All 3 compartments (Busbars, Circuit breaker & Cable compartment) shall be tested for Internal arc for the said rating.
- Internal arc should be valid also at the rear side of cubicle.
- The panels shall be constructed from prime quality folded and riveted CRCA /Aluminium Zinc coated steel sheet or pre-galvanized sheets of 2 mm thickness. Load bearing members to be constructed using sheets of 2.5 mm. Only doors and end covers shall be painted with paint shade as specified.
- The observation window on the CB compartment door shall be made of special toughened/ laminated glass substantiated in type test reports as proving it arc proof. Observation window shall be of same material and construction as the type tested design/construction as specified in IEC.
- The design of the panels shall be such that no permanent or harmful distortion occurs either when being lifted by eyebolts or when moved into position by rollers or trans-pallets.
- Each cubicle shall be equipped with anti-condensation heater controlled by thermostat.
- Sheet steel clad, compartmentalized, floor mounted, free standing design.
- Doors shall be provided with lock and key arrangement
- Degree of protection shall be IP5X.
- Assembled on base channel of structural steel ISMC 75 painted black.
- Operating height shall be between 450 to 1800 mm. Switchboard height not to exceed 2500 mm.
- Earthed metallic barriers between compartments and between vertical sections.
- Seal off bushings wherever bus bars pass through metallic partition.
- Lockable front doors with concealed hinges with door not forming part of the draw-out truck.
- Panels shall be extensible on both sides.
- Removable sheet steel covers shall be provided at rear.
- Control cables entry shall be from front side.
- CTs shall be located in such a way that that they are easily accessible.
- Panel door switch shall be provided for illumination inside the panel.
- All live parts shall be insulated by taping, supported by suitably designed insulators. Proper insulation of bus bars, upper and lower contacts of breakers and sealing of opening of bushings shall be provided to eliminate accidental contacts.
- Screw wire mesh in the power cable chamber of incoming feeder is to be provided.
- Metal cubicles shall be divided in the following compartments.
 1. Bus bar compartment
 2. Circuit breaker compartment
 3. Cable compartment

4. LV compartment

- The switchboard shall have passed internal arc faulted containment testing for each compartment for 1 second at the rated fault current of 25 kA
- Each HV compartment should have individual exhaust channel / pressure relief flaps to let out over-pressurized hot gases at the top of the switchboard in the event of an internal fault. Suitable factory fitted arc duct arrangement shall be provided for venting out the arc out of the switchgear room.

INDOOR 11kV HT VCB PANEL

This includes, Design, fabrication, supply, installation, testing and commissioning of HT panel indoor 12 kV, 630 Amps, 3 phase, 50Hz, 25kA VCB for 3sec.

Incoming Feeder with PT:

This includes supply at site, Vacuum Circuit Breaker, suitable for 12kV, 25kA, 630A, 500MVA, 3 Phase, 50 HZ effectively earthed, neutral system comprising of proper housing of breaker, safety shutters, isolating plugs and socket, Cassette type VCB trolley with 3 nos. Vacuum Interrupters with safe aligning finger type, isolating contacts suitable for vertical/horizontal isolation and horizontal draw out. Necessary control Protection and metering circuits are completely assembled, wired and enclosed in a weather and dust proof cubicle. 01 No. (one) Breaker handling trolley at each substation shall be provided.

The HT Panel shall be made of sheet steel enclosure, dust and vermin proof, suitable for indoor use. This shall be suitable to receive power at 11 kV, 50 Hz, 3 phase AC with all equipment fittings and accessories for efficient and trouble free operation.

- a) 11kV, 630A VCB The self-tripping mechanism with numerical relay with IDMT, over current, earth fault and Instantaneous protection including TVM, MFM and all others panel's indications lamps.
- b) Incoming cable entry box shall be provided for the required cable entry.
- c) Insulation level
 - i) 1.2/50 microsecond Impulse withstand voltage 75 kV peak
 - ii) One minute power frequency withstand voltage 28 kV rms
- d) Rated current
 - i) Continuous
 - Bus bar 630 A
 - Incoming/outgoing circuit breaker 630 A
 - ii) Short time current for 3 seconds 25 kA rms
- e) Circuit breaker
 - i) Rated breaking capacity Symmetrical. 25 kA / 3 Sec.
 - ii) Rated making capacity 62.5 kA
 - iii) Total breaking time 7 cycles maximum
 - iv) Operating sequence As per IS/IEC
- f) Type of charging: Manual as well as motorized mechanism with 230V AC operated motor.
- g) Make: As per the list of makes enclosed herewith.
- h) Shunt trip coil : 48 V DC
- i) Closing coil : 48 V DC
- j) Busbar chamber with Copper busbars, heat shrinkable PVC sleeved/ powder coated with colour code. The busbars shall be of high conductive electrolyte copper.
- k) 230VAC space heaters with ON-OFF switch and thermostat.

- l) 1phase, resin cast with fuse unit, draw out, line connected PT ratio of 11000/ $\sqrt{3}$ /110/ $\sqrt{3}$ Volts of 100VA burden to meet with auxiliary power requirement of metering and protection. Having accuracy of 0.5/3P.
- m) Epoxy cast resin CTs with 15VA burden, STR of 25 kA for 1 sec., metering accuracy class 0.5 and protection accuracy 5P20 and having of CTR 400-200/1-1A (**to be finalised during detail engineering**).
- n) The Trivector meters shall be digital type of approved make and it should display Amps, Volts, kVA, kW, kWhr, kVAR, PF and MD etc. The meter shall provide with external port for remote monitoring.
- o) The Multi-Function Meter (MFM) shall be digital type of approved make and it should display Amps, Volts, kVA, kW, kWhr, kVAR, PF, Frequency and etc. The meter shall provide with external port for remote monitoring.
- p) Breaker ON-OFF LED indicating lamp.
- q) Circuit trip/healthy indicating LED lamp with pushbutton.
- r) Breaker spring charged LED lamp indication.
- s) TNC (Trip Neutral Close) switch.
- t) Numerical relays consist of IDMTL + Inst 3 O/C + Inst E/F relay.
Trip circuit supervision & master trip. All relays shall be SCADA enabled with event/data logging features.
Operating handle, spring charging handle & other required accessories shall be supplied.
- u) Cable box suitable for receiving single length of 4Rx 1C x 1000 Sq. mm HT XLPE cable.
- v) Hand held lamps for panel internal illumination shall be provided with 240V AC source.
- w) Hooter for tripping.
- x) 30V DC external supply shall be provided for control circuit of complete breaker operation.
- y) Bus bar support insulator:-Non hygroscopic, track resistant, high strength insulator. (Calculation for validating dynamic force withstands capability to be submitted during drg. Approval)
- z) Thermostat controlled space-heaters to be provided in bus bar, CB and Cable compartments.

- **Outgoing Feeder (without PT):**

Technical Specification same as Incoming feeder but without PT.

Numerical relays consist of IDMTL + Inst 3 O/C + Inst E/F relay.

Trip circuit supervision & master trip. All relays shall be SCADA enabled with event/data logging features.

The Multi-Function Meter (MFM) shall be digital type of approved make and it should display Amps, Volts, kVA, kW, kWhr, kVAR, PF, Frequency and etc. The meter shall provide with external port for remote monitoring. Trivector meter not required. However, Outgoing feeders of SS-1 & SS-5 would have trivector meter.

Epoxy cast resin CTs with 15VA burden, STR of 25 kA for 1 sec., metering accuracy class 0.5 and protection accuracy 5P20 and having of CTR 400-200/1-1A (**to be finalised during detail engineering**)

- **Outgoing Feeder (Transformer):**

Technical Specification same as Incoming feeder but without PT.

Numerical relays consist of IDMTL + Inst 3 O/C + Inst E/F relay.

Trip circuit supervision & master trip.

All relays shall be SCADA enabled with event/data logging features.

The auxiliary relay for transformer feeder shall be provided.

Job includes providing 8/12C copper control cable from transformer -WTI/OTI, Buchholz, NCT etc. to HT panel.

The Multi-Function Meter (MFM) shall be digital type of approved make and it should display Amps, Volts, kVA, kW, kWhr, kVAR, PF, Frequency and etc. The meter shall provide with external port for remote monitoring. Trivector meter not required.

The VCB shall be complete with necessary interconnection with fine feruled wiring, foundation bolts, earthing, etc. The VCB shall be supplied to conform to relevant IS, amended up to date, along with manufacturers test certificate. Required no. of Danger board /Stickers of HT voltage in two languages English/Hindi is to be provided on the panel.

Epoxy cast resin CTs with 15VA burden, STR of 25 kA for 1 sec., metering accuracy class 0.5 and protection accuracy 5P20 and having of CTR 200-100/1-1A **(to be finalised during detail engineering)**.

The necessary approval of the drawing of VCB panel shall be obtained from HDC before fabrication. Panel shall be connected with earthing as per IER.

Earthing truck :-

Earthing truck shall have PT and alarm provision. (Separate trucks shall be provided for feeder and bus earthing through bus PT panel in each switchboard). One no. earthing truck for feeder earthing and one no. for busbar earthing shall be provided for each board.

INSTALLATION OF INDOOR HT VCB PANEL:

This includes installations, testing and commissioning of VCBs at 11kV sub-station VCB with P.T. as incomer and without PT as outgoing feeder.

All the VCB's shall be erected by using suitable size of M.S. channel foundation bolts including grouting of the bolts of each VCB panel. Each panel shall be connected with separate and distinct Earthing. After installation of VCB panel, necessary test and trial are to be carried out for proper functioning of safety, devices, relay etc. and before charging VCB 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 EIC. The work includes all Labour & materials required for installation & commissioning of VCB and shall be done as directed by Engineer.

Tentative layout:-

a) Substation-5:

O/G- SS-1	SP	I/C-1 From new source	O/G- Tr-1	Bus- coupler	O/G- Coast Guard	O/G- BPCL	I/C-2 From SS-1
1	2	3	4	5	6	7	8

b) Substation-1:

SP	I/C-1 From SS-5	O/G- Tr-1	Bus-coupler	O/G- SS-5	O/G- Tr-2	I/C-2 From SS-2
1	2	3	4	5	6	7

c) Substation-2:

SP	I/C-1 From CSS	O/G- Tr-1	Bus-coupler	SP	O/G- Tr-2	I/C-2 From SS-1
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Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

1	2	3	4	5	6	7
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d) Substation-3:

SP	I/C-1 From OH line (Commercial) at Helipad	O/G- Tr-1	Bus- coupler	O/G- Tr-2	I/C-3 From Solar Plant	O/G- CSS	I/C-2 From OH line (Industrial) at Helipad
1	2	3	4	5	6	7	8

e) Substation-Anchorage Camp:

SP	I/C-1 From SS-2	O/G- Tr-1	O/G- Coast Guard
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f) Substation-3rd Oil Jetty:

SP	I/C-1 OH line (Industrial) at Helipad	O/G- Tr-1	O/G- Tr-3	Bus- coupler	O/G- Tr-2	O/G- Tr-4	I/C-2 From CSS
1	2	3	4	5	6	7	8

I/C-Incomer, O/G-Outgoing, SP-Spare, CSS-Compact Sub-station,

7.0 LT Panel

7.1 Scope

This specification covers manufacture, assembly factory test, supply, delivery, field test and installation of LT distribution board of voltage not exceeding 1000 V AC complete in all respect with all equipment fittings and accessories for efficient and trouble free operation as required herein under.

7.2 Codes & Standards

The design, construction, manufacture and performance of equipment shall conform to latest applicable standards and comply with all currently applicable statutes, regulations and safety codes in the locality where the equipment shall be installed. Nothing in this specification shall be construed to relieve the BIDDER of this responsibility.

Equipment shall conform to the latest applicable Standards as mentioned. In case of conflict between the Standards and this specification, this specification shall govern.

IS: 13947 (Part 2&5), 1993 -Low voltage switchgear & control gears

IS: 2147, 1966-Degree of protection

IS: 13947 (Part 4, Sec.I), 1993

BS: 60947-4-1, 1992: IEC: 158-Contactor for voltage not exceeding 1000V AC.

IS: 375, 1993-Marking and arrangement of bus bars
IS: 694, 1990 & IS: 8130, 1984-PVC Insulated cables and aluminium conductor
IS: 1248, 1991-Direct acting electrical indicating instruments
IS: 13703, 1991 -Low voltage fuses
IS: 13118 (All parts), 1991 -Alternating current circuit breakers
IS: 2705 (Part 1 to 4), 1992-Current transformers
IS: 3156 (Part 1 to 3), 1992-Voltage transformers

7.3 **Power Supply System**

The incomer power supply shall be 415V, 3 phase, 4wire, 50 Hz, effectively earthed AC system. The fault level for the switchgear shall be as per single line diagram. Variation of voltage and frequency from their rated values shall be as per IE rules.

7.4 **Ambient Conditions**

The following site conditions shall be considered for the design: -
Reference temperature: 50°C

7.5 **Sheet Metal Work**

The switchgear frame shall be fabricated using suitable mild steel structural sections or pressed and shaped cold rolled sheet steel of thickness not less than **2.5 mm**.

Frames shall be enclosed by sheet steel of thickness not less than **2.5 mm** cold rolled, smoothly finished, levelled, and free from flaws. Doors and covers shall be made of sheet steel of thickness not less than **2.0 mm** cold rolled. Stiffeners shall be provided wherever necessary.

All panel edges and door edges shall be reinforced against distortion by rolling, bending or by the addition of welded reinforcement members.

Cut-outs shall be true in shape and avoid of sharp edges.

The complete structure shall be rigid, self-supporting, free from vibration, twists and bends.

7.6 **Painting**

All sheet steel work shall be phosphated in accordance with the following procedure and in accordance with applicable standards.

Oil, grease and dust shall be thoroughly removed by emulsion cleaning.

Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.

After phosphating, thorough rinsing shall be carried out with clean water, followed by final rinsing with dilute dichromate solution and oven drying.

A smooth coat of powder coating to be provided of approved colour.

Finished painted appearance of equipment shall present an aesthetically pleasing appearance like light grey, free from dents and uneven surfaces.

7.7 **Constructional Features**

Switchgear panel shall be:

- a) of the metal enclosed, indoor, floor mounted modular type
- b) made up of the requisite vertical sections

- c) of dust and vermin proof construction
- d) provided with a degree of protection of IP-52
- e) easily extendable on both sides by the addition of vertical sections after removing the ends covers.
- f) provided with a metal sill frame made of structural steel channel section properly drilled for mounting the Switchgear along with necessary mounting hardware. Hardware shall be zinc plated and passivated.
- g) provided with labels on the front indicating the switchgear designation.
- h) of uniform height of not more than 2450 mm
- i) of single front execution
- j) provided with neoprene gaskets all round the perimeter of adjacent panels, panel and base frame, removable covers and doors.
- k) provided with aluminium bus bars running at the top or bottom, as required, all along the length of the switchgear in a separate sheet steel enclosure.
- l) Feeder pillars/kiosk should be fabricated from 2.5 mm thick CRCA steel and conform to IP: 54 degree of protection.

Operating devices shall be incorporated only in the front of the Switchgear.

The switchgear shall be provided in distinct vertical sections each comprising:

- a) A completely metal enclosed bus bar compartment running horizontally.
- b) Individual feeder modules arranged in multi-tier formation. It is essential that the modules are integral multiples of the basic unit size to provide for flexibility in changes, if any, at site.
- c) Enclosed vertical bus bars serving all modules in the vertical section. For safety isolation of the vertical bus bars, insulating barrier with cut-outs shall be provided to allow the power stab contacts to engage with vertical bus bars
- d) A vertical cable alley covering the entire height. The cable alley shall be minimum 200 mm wide for motor control modules and 500 mm wide for circuit breaker controlled modules.
- e) A horizontal separate enclosure for all auxiliary power and control buses, as required, shall be located so as to enable easy identification, maintenance and segregation from the main power buses. Tap-off connections from these buses shall be arranged separately for each vertical section.
- f) Each outgoing feeder compartment having 3-pole MCCB shall have neutral link of suitable rating at the MCCB compartment.

Each vertical section shall be equipped with space heaters with thermostat, CFL lamp and power socket.

One metal sheet shall be provided between two adjacent vertical sections running to the full height of the switchgear except for the horizontal bus bar compartment. However, each shipping section shall have metal sheets at both ends.

All equipment associated with a single circuit shall be housed in a separate module compartment of the vertical section. The compartment shall be sheet steel enclosed on all sides and the rear, with the withdrawable units in position or removed, except on the cable alley side. A plate cover with a slot to permit wiring connections shall be provided on the side corresponding to the cable alley. The front of the compartment shall be provided with a hinged door.

For draw out type, ACB modules, only the handles of control and selector switches, push buttons, knobs and cut-outs for lamps and meters shall be arranged on the front doors of the respective compartments to permit operation without opening the door. On circuit breaker controlled circuits, protective relays shall be mounted on the front door of the compartment. All other equipment pertaining to a circuit shall be mounted on the withdrawable chassis. All cut-outs shall be provided with gaskets for the purpose of dust-proofing. Control circuit must have separate compartment and separated from power circuit.

Current transformers shall be mounted with suitable base and shall not be directly mounted on the buses. Current transformers on circuit breaker controlled circuits shall be mounted on the fixed portion of the compartment. **The Control cable shall be 2.5 Sq.mm.**

In breaker compartments, suitable barriers shall be placed between circuit breakers and all control, protective and indication circuit equipment including instrument transformers. External cable connections shall be carried out in separate cable compartments for power and control cables.

The withdrawal chassis shall move on suitable guides and plated steel or stainless steel rollers or balls to facilitate easy withdrawal.

Cable alleys shall be provided with suitable hinged doors. Adequate number of slotted cable support arms shall be provided for dressing the cables.

All doors shall be provided with concealed type hinges and captive screws with padlocking arrangement, suitably earthed with 2.5 sq.mm copper conductor flexible cable.

The withdrawal chassis housing circuit breakers shall be of the fully drawout type.

The withdrawal chassis housing feeder control and motor control equipment not incorporating circuit breakers shall be of the fully fixed or *drawout* type.

7.8

Interchangeability

All identical equipment and corresponding parts including chassis of draw out modules of the same size shall be fully interchangeable, without having to carry out

modifications. For trouble free interchange ability, the draw out arrangements shall be designed such that normal dimensional variations are taken care of by self-aligning feature of the modules.

Components and equipment that are not fully interchangeable are liable for rejection. BIDDER shall replace all such equipment by fully interchangeable equipment at his cost.

The draw-out contacts shall be only between copper/copper alloy faces, which are silver or tinned. The contact design shall be such that there should be no arcing/deformation under associated peak short circuit currents.

Switchgear shall be designed in such a way that all component equipment and bus-bars operate satisfactorily without exceeding their respective maximum permissible rise in temperature under ambient temperature conditions prevailing within the switchgear cubicle, with reference ambient temperature outside the switchgear cubicles.

All dummy cubicles necessary to meet the requirements of this specification shall be included in the Bidder's scope.

No equipment/devices associated with a particular circuit shall be mounted in any other circuit module.

7.9

Main Buses & Tape

Switchgear shall be provided with three phase bus bars and neutral.

Bus bars shall be of uniform cross section throughout the length of the switchgear

The bus bars shall be made of EC grade Copper, suitable to withstand a fault current as specified in BoQ and SLD.

Bus bars shall be provided with at least the minimum clearances in air as per applicable standards for a 500V, 3 phase, 4 wire system.

All bus-bars, bus-taps shall be insulated with close fitting sleeve of hard, smooth, dust and dirt free plastic insulation of high dielectric strength (450 V/mil) to provide a permanent high dielectric non-ageing and non-tracking protection; impervious to water, tropical conditions and fungi. The insulation shall be non-inflammable and self-extinguishing and in fast colours to indicate phases. The joints shall be insulated in such a way as to provide for accessibility of contact bolts for maintenance. Bus bar shall be adequately supported and braced to withstand the stresses due to the specified short circuit currents for the associated switchgear. Bus bar supports shall be made of glass reinforced moulded plastic material (DMC).

Separate supports shall be provided for each phase of the bus bars. If a common support is provided for all three phases, anti-tracking barriers shall be incorporated.

Bus bar joints shall be complete with high tensile steel bolts, 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.

Auxiliary Buses

Auxiliary buses for control power supply, space heater power supply or any other specified service shall be provided. These buses shall be insulated, adequately supported and sized to suit specific requirements. The material of control power supply buses shall be electrolytic copper. The material for space heater power supply buses shall be same as that for the main power buses. Supply transformer(s), auxiliary bus bars and necessary connections to the supply transformers and associated circuits shall be in the Bidder's scope.

7.10

Air Circuit Breakers (ACBs)

The ACBs shall comply to IEC 60947 Part I & II and IS 13947 II and shall be suitable for operation on 415 Volts, 50 Hz 3 Phase system.

The breaker shall comply with Isolation function requirements of IEC 60947, Part-II, section 7.1.2 and shall be clearly marked as “Suitable for Isolation/ Disconnection” to ensure safety of operating personnel. The ACB shall have rated operational voltage = 440 V, rated insulation voltage = 1000 V and rated impulse withstand voltage = 12/8 KV and utilization category ‘B’.

7.11

Circuit Breakers

Circuit breaker shall be:

- of the air break type
- of the shunt trip type
- provided with mechanically operated targets to show 'Open', 'Closed', 'Service' and 'Test' positions of the circuit breaker.
- provided with mechanically operated, red 'trip' push button, shrouded to prevent accidental operation.
- provided with locking facilities in the 'Service', 'Test', and 'Isolated', positions. In test position the breaker shall be tested without energising the power circuits. The breaker shall remain fully housed inside the compartment in the test position.
- provided with minimum 6 NO and 6 NC potential free auxiliary contacts, rated 10A at **240V A.C.**
- The cubicle compartment of the ACB in the LT panel shall be provided with 'red', 'green' and 'amber' indicating lamps to show 'closed', 'open' and 'Auto-trip' conditions of the circuit breaker when breaker operation is controlled by a control switch.
- The ACB panel shall be provided with mechanical indicator (ready to close) on the front facia to facilitate safety of the operator before closing the ACB.
- Circuit breakers shall be provided with the following interlocks.
- It shall not be possible to plug-in a closed circuit breaker, or to draw out a circuit breaker in the closed position.
- It shall not be possible to operate a circuit breaker unless it is in the fully plugged-in, test, or fully isolated position.
- Circuit breaker closing and trip coils shall be rated for satisfactory operation on a control supply 48V DC

Operating Mechanism

- The spring charging motor shall be rated at 240V AC.
- The closing action of the circuit breaker shall charge the tripping spring ready for tripping.
- Speed of closing of contacts shall be independent of the speed with which the handle is operated.
- All stored energy mechanisms shall be provided with mechanical indicators to show the 'charged' and 'discharged' conditions of the spring.
- Circuit breakers provided with stored energy operating mechanisms shall be provided with the following interlocks.
- The circuit breaker shall not close unless the spring is fully charged.
- Shocks, vibrations, or failure of springs shall not operate the breaker or prevent intended tripping.

- Mechanical contact wear indicator shall be mounted directly on the moving contacts to indicate the degree of erosion of the contacts.

Protection coordination

The Microprocessor based release shall be an integral part of ACB provided on circuit breaker for short circuit, over load, instantaneous and earth fault protection with adjustable current & time settings along with LCD display for displaying of instantaneous value of 3 phases, neutral currents.

The release shall incorporate microprocessor to offer accurate, faster and versatile protection with complete flexibility and shall offer complete over current protection to the electrical system in the following zones.

- i) Overload or long time protection with adjustable time delay
- ii) Short circuit or short time protection with adjustable time delay.
- iii) Instantaneous protection with no intentional delay.
- iv) Ground fault protection with time delay.
- v) Release shall have facility of online changing of current and overload setting.

The microprocessor based trip units shall be provided with following features also:-

1. Designed to withstand tough industrial environments i.e. high ambient temperatures, switching surges, electromagnetic interferences.
2. Reliably self-powered by built in current transformers.
3. LED display indication of each of over load, short circuit and earth fault.
4. Testing of release shall be possible without tripping the breaker through integrated test button which shall check the healthiness of trip unit electronics and associated CT circuits without tripping the breakers.
5. LED alarm display for microprocessor fault.

All ACB's must be rated ambient temp 50°C.

7.12

Moulded Case Circuit Breaker

The Moulded case circuit breaker (MCCB) shall conform to latest IEC-60 947-2/ IS13947- 2. The circuit breaker shall comply with the isolation function requirement of IEC 60 947-2 section 7.1.2 to marked as suitable for isolation/ disconnection to facilitate safety of operating personnel while the breaker is in use.

Moulded case circuit breakers shall be fixed type, microprocessor release having adjustable O/L & S/C settings with trip-free, manually closing mechanism, accommodated in a Moulded housing of robust and vermin-proof construction matching with switchboards. All MCCBs shall be designed and tested to IS - 13947 Part II to breakers shall be provided with an inverse time delay electronic over current trip device. The trip device shall be direct acting.

The MCCB shall have rated operating voltage = 690V with min. Insulation voltage = 750V and rated impulse withstand voltage = 8kV.

MCCB shall be provided with Class II insulation between front cover & internal power circuits to avoid any accidental contact with live current carrying path with the front cover open.

The tripping devices shall be ambient temperature compensated type. The insulating case and cover shall be made of high strength heat resistant and flame retardant thermosetting insulating material.

They shall have line load reversibility. 3-phase breakers shall be designed to break all the poles simultaneously and they shall have a single mechanism.

They shall have auxiliaries and accessories whenever required for signalling, interlocking, shunt trips, under voltage release, castle lock, etc.

All the circuit breakers used shall have guaranteed breaking capacities sufficient for the maximum short circuit duties that could possibly be imposed on the different breakers. The MCCBs fixed in main switchboard shall have breaking capacity as indicated in BoQ & SLD.

MCCB shall have $I_{cs}=I_{cu}$ for the entire range as per BoQ and rated at ambient 50°C.

MCCB's shall be used with rotary handle and terminal spreaders, phase barrier and all terminals shall be shrouded to avoid direct contact.

7.13 **Miniature Circuit Breakers (MCB)**

MCBs shall be hand operated, air break, quick make, quick break type conforming to applicable standards.

MCB shall be provided with overload/short-circuit protective device for protection under overload and short-circuit conditions. The minimum breaking capacity of MCBs shall be 10 kA r.m.s. at 415V AC. It shall comply to Class III energy limiting class. MCB shall comply with IS – 8828 – 1996/IEC 898. MCB shall have minimum power loss (watts) per pole defined as per IS/IEC and the manufacturer shall publish the values.

The MCB housing shall be heat resistant and heavy a high impact strength. The terminal shall be protected against finger contact to IP 20 degree of protection.

7.14 **Measuring Instruments, Metering & Protection** **General**

Direct reading electrical instruments shall be in conformity with IS-1248. The accuracy of all measuring instruments shall be as specified in the BoQ. The errors due to variations in temperature shall be limited to a minimum. The meter shall be suitable for continuous operation between -10 degree Centigrade to + 50 degree Centigrade. All meters shall be of flush mounting type of 96mm square pattern. The meter shall be enclosed in a dust tight housing. The housing shall be of steel or phenolic mould. The design and manufacture of the meters shall ensure the prevention of fogging of instruments glass. Instruments meters shall be sealed in such a way that access to the measuring element and to the accessories within the case shall not be possible without removal of the seal.

The specifications herein after laid down shall also cover all the meters, instrument and protective devices required for the electrical work. The ratings type and quantity of meters, instruments and protective devices shall be as per BoQ.

Analog type Ammeters and Voltmeters

Electrical indicating instruments shall be of minimum 96 mm square size, suitable for flush mounting.

Indicating instruments shall have position for zero adjustment outside the cover.

Instrument dials shall be parallex free with black numerals on a white dial.

Ammeters shall be capable of carrying sustained overloads during fault conditions without damage or loss of accuracy.

Ammeters provided on motor circuits shall be provided with a suppressed extended scale to indicate motor starting current.

Voltmeters shall be provided with fuse of suitable capacity.

Multi-Function Meter

It shall be suitable for measuring, saving and supervision of electrical parameters in low and medium voltage mains. To be provided in incomers.

The Meter shall have following Features.

- Clear LCD Display
- Visualization of all the three phase grid parameters along with Min/Max/Measured/average.
- The meter shall have communication port of RS 485 and shall be compatible with SCADA System.
- It shall come along with the software for data acquisition.
- It shall be compatible with PLC.
- The accuracy class shall not be more than 0.5%

Current Transformers

Current transformers shall be in conformity with IS: 2705 (part I, II & III) in all respects. All current transformers used for medium voltage applications shall be rated for 1kv. Current transformers shall have rated primary current, rated burden and class of accuracy as required. However, the rated secondary current shall be 5A unless otherwise specified.

Current transformers shall be capable of withstanding without damage, magnetic and thermal stresses due to short circuit fault of the system. Terminals of the current transformers shall be marked permanently for easy identification of poles. Separate CT shall be provided for measuring instruments and protection relays. Each C.T. shall be provided with rating plate.

Current transformers shall be mounted such that they are easily accessible for inspection, maintenance and replacement. The wiring for CT's shall be done with minimum 2.5 sq. mm copper conductor, ZHFR wires with proper termination lugs and wiring shall be bunched with cable straps and fixed to the panel structure in a neat manner.

7.15

Miscellaneous

Control switches shall be of the heavy duty rotary type with escutcheon plates clearly marked to show the operating position. They shall be semi-flush mounting with only the front plate and operating handle projecting.

Indicating lamps shall be of the LED type.

Push buttons shall be of the momentary contact, push to actuate type fitted with self reset contacts & provided with integral escutcheon plates marked with its functions.

7.16 **Cable Terminations**

Cable entries and terminals shall be provided in the Distribution Boards to suit the number, type and size of aluminium conductor power cables and copper conductor control cable specified.

Provision shall be made for top or bottom entry/exit of cables as required. Generous size of cabling chambers shall be provided, with the position of cable gland and terminals such that cables can be easily and safely terminated.

Barriers or shrouds shall be provided to permit safe working at the terminals of one circuit without accidentally touching that of another live circuit.

Cable risers shall be adequately supported to withstand the effects of rated short circuit currents without damage and without causing secondary faults.

7.17 **Push Buttons**

Push buttons shall be:

- of the momentary contact, push to actuate type rated to carry 10A at 240V AC and 1A (inductive breaking) at 220V DC.
- fitted with self-reset, 2 NO and 2 NC contacts.
- provided with integral escutcheon plates marked with its function.

'Start', 'Open', 'Close' push buttons shall be green in colour.

'Stop' push buttons shall be red in colour.

All other push buttons shall be black in colour.

Emergency stop' push buttons shall be of the lockable in the pushed position type and shall be shrouded to prevent accidental operation. Key shall not be required for the operation of the push button.

7.18 **Internal wiring**

Wiring inside the switchgear/panel shall be carried out with 1.1 kV grade, zero halogen FR stranded conductor wires. Minimum size of conductor for power circuits is 4 sq mm copper. Control circuits shall be wired with copper conductor of at least **2.5 sq. mm for CT circuits /other control circuits**.

Engraved identification ferrules, marked to correspond with the wiring diagrams shall be fitted to each wire. Ferrules shall be of yellow colour with black lettering.

Wires forming part of a tripping circuit of circuit breaker shall be provided with an additional red ferrule marked 'T'.

Spare auxiliary contacts of all equipment forming part of the switchgear shall be wired up to the terminal blocks.

Spare and unassigned modules shall be complete with internal wiring.

Wiring shall be terminated on screw less terminal blocks upto 4 sq. mm size.

Not more than two connections shall be made on any one terminal.

7.19

Terminal Blocks

Terminals for circuits with voltage exceeding 125 V shall be shrouded. Terminal blocks shall be grouped depending on circuit voltage. Different voltage groups of terminal blocks shall be segregated.

Terminal blocks shall be adequately rated to carry the current of the associated circuit. Minimum rating of the terminal block is 10A.

Terminals shall be numbered for identification.

Terminal blocks shall be arranged with at least 100 mm clearance between two sets of terminal blocks.

Screw less, cage clamp type terminal blocks shall be used for cable sizes upto 6 sq. mm. **Bus Bar** type terminal blocks shall be used for cables above 6 sq. mm.

Terminals for CT secondary leads shall be disconnecting link type and shall have provision for shorting.

7.20

Earthing

Each Panel shall be provided with an earth bus bar running along the entire length of the board. Material and size of the earth bus bar shall be as per IS. At either end of the earth bus, one (1) clamp type terminal with nuts, bolts and washers shall be provided for bolting the earthing conductor of size and material indicated in data sheets. In case the earth bus is provided near top of the switchgear, one down comer at either end shall be provided for connection to the earthing conductor.

Earth bus bars shall be supported at suitable intervals.

Positive connection between all the frames of equipment mounted in the switchboard and earth bus bar shall be provided by using insulated copper wires/bare bus bars of cross section equal to that of the bus bar, or equal to half the size of circuit load current carrying conductor, whichever is smaller.

All instrument and relay cases shall be connected to the earth bus bar using 650 V grade, 2.5 sq. mm stranded, copper ZHFR, earthing conductor.

7.21

Labels

Labels shall be anodised aluminium with white engraving on black background shall be provided for each incoming and outgoing feeder of Distribution Boards. Labels shall be properly secured with fasteners.

DATA SHEET FOR LT PANELS / DISTRIBUTION BOARD

A) SWITCHGEAR PARTICULARS

1. DESIGNATION :

2. BUS BAR MATERIAL : COPPER
3. FP/TPN : 4 POLE/TPN
4. TYPE : INDOOR
5. CABLE ENTRY : FROM BOTTOM

B) SWITCHGEAR AND BUS BAR RATING

1. SUPPLY SYSTEM : 415V, 3-phase, 4W, 50HZ EFFECTIVELY EARTHED
2. MAX SYSTEM VOLTAGE : $433 \pm 10\%$
3. BUS BAR RATING : 1600A/1250A/630A
4. ONE MINUTE POWER FREQUENCY VOLTAGE
 - A) POWER CIRCUITS : 2500 V
 - B) CONTROL CIRCUITS: 1500 V
 - C) AUX. CIRCUITS : 2000 V
 CONNECTED TO SECONDARY OF CTS
5. REFERENCE AMBIENT TEMPERATURE : 50°C
6. MAX. TEMPERATURE OF BUS BARS AND DROPPERS : 85°C
7. SHORT CIRCUIT WITHSTAND
 - A) SHORT TIME (1 SEC) : 50 kA (RMS)
8. FEEDERS DETAIL

TABLE – II

Sub stations	Details of Circuit breakers												Total
	Incoming				Bus coupler		Outgoing					Panel	
	ACB			MCCB	ACB		MCCB			ACB			
	1250 A	630A	1600 A		400 A	1250 A	1600 A	400A	250 A	100 A	800 A		
SS-3	-		2		-	1	1			2	12	Type-A	18
		2					6	4	4			Type-B	16
SS-2	-		2		-	1	1			2	12	Type-A	18
		2					6	4	4			Type-B	16

SS-1	2				1		1			2	12	Type-A	18
		2					6	4	4			Type-B	16
Anchorage Camp	2				1		1			2	12	Type-A	18
SS-5	2				1		1			2	12	Type-A	18
		2					6	4	4			Type-B	16
SS-HoJ-III			2		-	1	1			2	12	Type-A	18
	2						2	4	4	2	4	Type-C	16
Switch Station- Jawahar Tower	2				1		1			2	12	Type-A	18
		2					6	4	4			Type-B	16

C) SWITCHGEAR CONSTRUCTION REQUIREMENTS

1. THICKNESS OF SHEET STEEL (COLD ROLLED)
 - A) FRAME : 2.5 MM
 - B) DOORS : 2.0 MM
 - C) COVERS : 2.0 MM
 - D) GLAND PLATE : 3.0 MM
2. DEGREE OF PROTECTION : **IP-52/54** OF IS-2147, 1966
3. COLOUR FINISH AS PER IS-5)
 - A) INTERIOR : GLOSSY WHITE
 - B) EXTERIOR : LIGHT GREY, SEMI-GLOSSY, POWDER COATING.
4. EARTHING BUS
 - A) MATERIAL : Aluminium/Copper
 - B) SIZE : 50 X 6 MM with stainless steel bolts & Nuts.
5. CLEARANCES IN AIR OF LIVE PARTS
 - A) PHASE TO PHASE : As per relevant IS
 - B) PHASE TO EARTH : As per relevant IS

8.0 BATTERY BANK, BATTERY CHARGER AND DCDB

➤ TECHNICAL SPECIFICATIONS OF BATTERY

The 48V DC Battery Bank should be consisted of 24 Nos., 2 V (Maintenance free, Lead Acid type) for providing 3Hrs. continuous back-up. The **Battery Bank** should be complete in all respect and equipped with all necessary accessories like, **Inter-cell Connectors (Copper)**, **Connecting Leads**, etc. The spares / attachments, which are meant necessary for the smooth

functioning of the equipment and specially are not mentioned here shall be assumed to be included in the scope of supply.

Battery racks suitable for accommodating 24 cells should be supplied & installed by the Contractor. The racks should be made of wood and to be so designed and placed as to permit easy handling of the cells while in operation.

The wooden battery racks should have acid resisting and flame proof coating.

➤ **TECHNICAL SPECIFICATIONS OF BATTERY CHARGER:**

ii) The **Battery Charger**, to be used for charging **48 V Battery Bank**, should be of **Float-cum-Boost Charger** Type , having provision for **auto Changeover** from **Boost to Float** & **vice-versa** and following Technical features:-

- a) Should be suitable for Indoor installation and to be supplied with all accessories.
- b) Should have facility to regulate the Battery Charging current and output voltage as per requirement (to be indicated by the Manufacturer of the Battery Bank) and limiting the total current within the maximum capacity of the charger.
- c) Should have provision for automatic switching to ensure different applications of both 33 kV & 11kV Panels to be installed at the existing Substation at Haldia Township & newly constructed 415V Switch-Station. Suitable control arrangement is to be provided to ensure that output DC voltage is always within the limits specified, even if the cell voltage is high.
- d) Should be suitable for operation in **Manual Mode**, besides the **Auto Mode**. Suitable device is to be provided for adjusting charging current and voltage when the charger is to be operated in Manual Mode.

iii) **Other Technical Particulars :**

a) **Output Voltage:**

Nominal: 48 V DC

b) **Charging Current :**

Maximum continuous output current: 16 Amps

Maximum continuous DC Load: as per requirement.

Maximum Battery Charging Current: to be indicated by the manufacturer of the Battery Bank.

c) **Type:** Solidstate, both Auto & Manual Control.

d) **Input Voltage:** 230 V – 250V A.C., Single Phase.

e) **Input Frequency:** 50 Hz \pm 5%.

iv) **Protection :**

- a) The charger shall be protected against following conditions with provision of delayed protective and / or indicative action as per scheme requirement.
- b) Input Voltage Surge.
- c) Input over / under voltage.

- d) Output over / under voltage / short circuit / over load.
 - e) Earth fault in + ve and – ve D.C. output.
 - f) Battery reverse polarity.
- v) **The Charger shall incorporate the followings :**
- a) MCB for incoming / outgoing supply
 - b) HRC / glass cartridge / semi conductor fuses for different circuits. All fuses shall be properly labelled for proper identification.
 - c) Surge Arrestors.
- vi) **Indication :**
- The charger shall be provided with following LED indications to identify abnormalities through incorporation of suitable scheme.
- a) Mains ON
 - b) Output ON
 - c) Input over / under voltage and power supply fail.
 - d) Output over / under voltage.
 - e) Earth Fault
 - f) Battery reverse polarity
- All indicating LED lamps, switches, control knobs, terminal blocks, etc., shall be properly labelled for easy identification.
- vii) **Meters:**
- Following meters with selector switches shall be provided to measure the following:
- a) Analogue Ammeter. of appropriate scales with Selector Switch for measuring battery float / boost charging current and output current.
 - b) Analogue Voltmeter of appropriate scales with Selector Switch for measuring battery and output voltage.
 - c) Analog Voltmeter for measuring input AC Voltage.
- viii) **Control:**
- Following controlling arrangement shall be provided for different functions of battery charger:
- a) AUTO/MANUAL Selector Switch
 - b) Manual operation controlling device
 - c) Mains ON
 - d) Output ON
 - e) Voltmeter Selector Switch
 - f) Ammeter Selector Switch
- ix) **Enclosure:**
- The chargers shall be enclosed in floor mounted type enclosure with provision for proper ventilation.

- x) **Two sets of Instruction Manuals for Erection, Operation & Maintenance, two sets of Drawings for Equipment Details and two sets of Circuit Diagram** should be submitted along with the above Battery Charger unit.

➤ **DCDB Technical Specification.**

A) Rated Voltage:

Rated voltage for the Distribution Board and its constituent items like Switch Fuse Disconnecter unit, MCBs, busways etc. shall be single phase 2 wire D.C. 48 volts. The supply voltage may vary by $\pm 10\%$ of rated voltage. All the equipment used in the Board shall operate satisfactorily at this voltage variation.

B) General Requirements:

Each Distribution Board shall be free standing floor mounted having compact design. The Board shall be closed, dust protected, weather proof and shall be made vermin proof with a special type lining e.g. Neoprene gasket, around the edges of the doors. The distribution board shall comply degree of protection IP 43. MCBs shall be operating vertically upward for ON/OFF operation. The entire distribution board shall have uniform finish and shall be sturdy. The distribution boards shall be of modular construction with provision for complete compartmentalisation of all feeders. It shall be free-standing, dead front type comprising dust-tight and vermin proof sheet steel cabinets suitable for indoor installation. The doors of cabinets shall be lockable. Handle shall be made of reputed make. The DB shall be provided with double door in front having 2 nos. hinges which should be suitable for movement of 120 degree and 2 no. knobs to be provided on the door corners. All instruments and control devices shall be mounted on the front of cabinets and fully wired to the terminal blocks. All switches provided on the distribution board shall be on front side of the cabinets, operable from outside.

Each Distribution Board shall be made out of at least 2.0 mm thick cold rolled steel sheet, suitably reinforced to provide flat level surface. Size 1000(H) x 750(W) x 300(D) mm. Gland plate shall be 3.0mm thick. No welds, rivets, hinges or bolts shall be visible from outside. The doors shall be fitted with double leaf neoprene rubber gaskets.

All cables shall enter and leave from bottom. Suitable cable terminal blocks with cable lugs shall be provided inside each cabinet for the incoming and outgoing cables. The terminals shall be serially numbered to facilitate installation and maintenance. Main busbars shall be accommodated in busbar chambers and cable alleys arranged by their side. Compression type cable glands shall be provided to hold the cables to avoid any pressure or tension on the terminal block connections. The terminal blocks shall be easily accessible for inspection and checking. Panels shall have cable supports and metallic clips for supporting power and control cables for internal wiring of the panels.

The DC Distribution Board shall have double bus arrangement with change over switch. The Distribution Board shall have provision for one set of +ve and –ve connected to Charger-1 and another set of +ve and –ve connected to Charger-2. Each busbars shall consist of tinned electrolytic copper of cross-sectional area of a minimum of 25mm x 3mm, suitable for carrying their rated continuous current without their temperature exceeding 85 deg C. The busbars shall be continuous throughout each section. The busbars shall have current rating to suit the requirements corresponding to the loads incident thereon under the various operating conditions and shall withstand the applicable voltage and maximum short circuit stress. The busbars shall be insulated from supporting structure by means of durable non-hygroscopic, non-combustible and non-tracking polyester fibreglass material or porcelain. Busbars shall be encased in heat-shrunk sleeves of insulating material which shall be suitable for the operating

temperature of busbars during normal service. The busbar joints shall be provided with removable thermosetting plastic shrouds. The busbars shall be housed in totally enclosed busbar chambers. The incoming connections from the busbar to the various feeders shall be so designed as not to disturb cable connections and to ensure safety to the operating and maintenance personnel and to facilitate working outside any outgoing module without the need for switching off in-feed to the adjacent modules, as far as possible. The busbars shall be of high conductivity, adequate uniform cross section and current density shall not be more than 1.6 Amp/sq. Mm. A cable alley preferably 230 mm wide shall be provided in each vertical section for taking cables into the compartments.

All doors shall be provided with mechanical interlocking arrangements along with keys. The distribution board shall have no door on rear side.

Danger board (Caution Plate) shall be fitted suitably on inner door of the DB.

The DC boards shall be provided with the following equipments wherever applicable:

- i. Double bus arrangement with change over switch with provision for one set of +ve and –ve connected to Charger-1 and another set of +ve and –ve connected to Charger-2. Each busbars shall consist of tinned electrolytic copper of cross-sectional area of a minimum of 25mm x 3mm.
- ii. Terminal arrangement with necessary equipment for connecting the incoming supply.
- iii. Voltage and current measurement in the incomer feeder.
- iv. Outgoing modules with switch / MCB units of adequate capacity for the outgoing feeders and 20% spare feeder units of each rating.
- v. Necessary cable glands and terminal blocks.
- vi. Adequate number of spare terminals on terminal blocks for receiving connections for external connections.
- vii. The number of outgoing feeders from DC boards shall be such that each substation equipment is fed by separate feeder with 20% as spare.

The ventilating louvers should be covered from inside by a perforated sheet.

All sheet metal used for DB shall undergo seven tank mechanical/ chemical cleaning process & painting shall be done using powder coating process. Colour of the Paint shall be admiral gray as per shade no. 632 of IS 5 on exterior and white from interior sides.

C) MAJOR COMPONENTS:

Incoming cables for DCDB shall be terminated on terminal connectors provided at the bottom. Connection between incomer terminals and MCBs shall be with 50 sq. mm copper cable. Outgoing shall be connected with 35 sq. mm copper cable.

For all 32 A rated MCBs, 16 sq. mm. stranded cable shall be used. For all 16A rated MCBs, 10 sq. mm. stranded cable shall be used. DCDB should have 2 sets of Bus Bars in Two separate compartments to facilitate termination of Incomers from two sets of Battery and Chargers. One Change over switch should be provided to facilitate DC supply to outgoing load circuit in the event of failure of anyone of the battery/ Charger. The change over switch should be 2 way 2 position for changing over of both incomer individually.

- I. Incoming circuit:** Two double pole MCBs of 63 Amps capacity shall act as Incoming breaker of load bus. Change over switch of 63 Amps DP is to be provided. Incoming cable for incomer **LT XLPE, 2 C, 120 sq. mm Copper cable** shall be provided.

II. Outgoing Circuits:

Sr. No.	Feeder Rating	Cable size	Source-1	Source-2
1.	Double pole DC MCB 32A,250 V	2 core 16 sq. mm LT PVC cable	04 nos.	04 nos.

2.	DP 16 A MCBs, 250 V	2 core 10 sq. mm LT PVC cable	08 nos.	08 nos.
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Total 24 Nos. outgoing circuits shall be provided as per the details given below.

MCB:-

MCBs shall comply following specifications as per IS 8828/1996.

- Rated voltage & freq. shall be 240V & 50 Hz respectively for DP MCBs.
- Rated current shall be 32A/16 A as mentioned above.
- Rated short circuit capacity shall be min. 6 KA at 0.7 p.f. lag
- Service short circuit capacity shall be 6KA as per table 15 of IS: 8828 /1996.
- MCBs shall have fixed unadjustable time / current characteristics.
- Under voltage release and shunt-trip release coils are not required. Only overload release and short circuit release shall be provided.
- Tripping time shall be as per (clause No. 8.6.1) table 6 of IS: 8828 /1996. Tripping mechanism thermal magnetic type.
- MCBs having precision moulded case and cover of flame retardant high strength thermo plastic material with high melting point, low water absorption, high dielectric strength and temperature with stand capacity shall be capable of carrying out given no. of operation cycles as per clause No. 9.11 of IS: 8828 /1996.
- Limits of temperature rise shall be as per (clause No. 9.8) table 5 of IS: 8828/1996.
- Standard range of instantaneous tripping shall be type 'B' as per (clause No.5.3.5) table 2 of IS: 8828 /1996.

All MCB outgoing terminals shall be terminated on terminal connectors of 10 mm. stud type provided at the bottom.

The enclosure shall be provided with proper earthing arrangement. Earthing arrangement shall consist of 2 G.I. Bolts of 12 mm x 50mm (min.) with 2 spring/ plain washers and 2 check nuts.

PVC cable glands of adequate size shall be provided for all incoming and out going cables.

The moving contacts of all poles of multi-pole circuit breaker shall be so mechanically coupled that all poles, except the switched neutral, if any, make and break substantially together.

Whether operated manually or automatically even if an overload occurs on one protected pole only. Both side terminal should be suitable for direct cabling as well as bus bar connection and should take wire up to cross section area of 25 sq.mm.

Detailed specification is tabulated below:-

Standard	IS:8828:96 & IEC:60898:2002
Type/Series	B&C
Rated Current(DC)	20A for SPN, 36A for DP
Rated Voltage(DC) Volt	48
Rated short circuit breaking capacity kA	10
Ambient temperature(deg C)	-5 to +55
Protection class	IP-20

III. Relay and protection:

- One Mains failure Alarm relay.
- One Earth Fault alarm relay
- One 48 Volt DC Bell to be operated by the Mains failure alarm relay.
- One 48-volt DC Buzzer to be operated by the earth fault alarm relay.

IV.AC/DC Change Over Contacts

Emergency lighting circuit shall be provided by the Bidder such that the lights normally burn on AC 240 Volts, 50 Hz but in case of failure of AC supply, these come up on DC supply with the help of automatic change over contactors and again change over to AC supply with the restoration of AC supply. There shall be two number double pole ON/OFF switches with HRC fuses one each for AC and DC supply.

V. Indicating Instruments:

D.C Ammeter: Ammeter shall comply the following requirements

Class of accuracy	1.0
Range	15 Amps
Mounting	Flush type
Size	96 x 96mm
Type	Analog

D.C Volt Meter: Voltmeter shall comply the following requirements

Class of accuracy	1.0
Mounting	Flush type
Size	96x 96 mm
Range	0-60 volts
Type	DC moving coil

VI. Indicating Lamps:

Indicating lamps shall be panel mounting type 23 mm with rear terminal connections having low wattage LEDs cluster type. Lamps shall have translucent lamp covers to diffuse lights, coloured red for 'DC ON' condition. The lamp cover shall be preferably of screw-on type, unbreakable and moulded from heat resisting fast coloured material. Conventional bulbs are not acceptable. Indication lamp should be suitable to operate on 48 V DC. Necessary wiring shall be provided accordingly.

VII. MARKING

Each compartment shall be provided with legible and indelibly marked/ engraved name plate. Name plates shall be white with black engraved letters. On top of each module, name plates with bold letters shall be provided for feeder designation. Each device shall also suitably marked for identification inside the panels. Name-plates with full and clear inscriptions shall be provided inside the panels for all isolating switches, links, fuse blocks, test blocks and cable terminals. Every switch shall be provided with a nameplate giving its function clearly. Switches shall also have clear inscriptions for each position indication e.g. 'ON' 'OFF' etc.

VIII. Earthing Arrangements:

Two nos. Earthing studs of galvanized M.S. 25 X 6 mm shall be provided for external earth connections at the bottom. These should be complete with plain washer, spring washer, nuts etc. Earthing Bolts must be welded to prevent removal of the same from the cabinet. Flexible stranded copper connector (braided conductor) should be connected of copper equivalent 10 sq. mm. size between door and box enclosure. This flexible braided cable should be terminated using gland and proper size nut/bolts at both ends.

IX. Mounting Clamps:

The DCDB box are to be manufacture with suitable mounting arrangement on wall/steel support by means of 4 nos. 25X6 mm size clamps having hole dia. 14mm, fixed over the body

X. Gland Plate:

The removable gland plate should be provided in the lower portion of the box to accommodate all brass glands (according to requirement) for incoming and outgoing cables.

XI. Control wiring:

Each DCDB shall be furnished completely factory wired up to terminal blocks ready for external connections. All wires shall consist of 1100V grade PVC insulated flexible stranded copper wires with a cross-section of 2.5 sq. Mm suitable for switchboard wiring and complying with the requirement of relevant IS. Each wire shall bear an identifying ferrule or tag at each end or connecting point. Control cables for external connections shall consist of stranded copper wire with 1.5, 2.5, 4.0 sq. Mm or higher cross-sectional areas and shall enter the bottom. All interconnecting/outgoing control wiring shall terminate on stud type terminals on terminal blocks. The terminals shall be marked with identification numbers to facilitate connections. The terminal blocks shall be made of moulded, non-inflammable, plastic material and arranged to provide maximum accessibility for inspection and maintenance. All terminal block shall have transparent plastic cover. The terminals shall be made of hard brass and diameter of not less than 6 mm. The studs shall be securely locked within the mounting base to prevent turning. The terminal blocks shall be provided with twenty(20) percent spare terminals. The terminals shall be suitable for connections through tinned copper crimped lugs. Wiring shall be complete in all respect to ensure proper functioning of the control, protection and monitoring scheme. Each wire shall be identified at both ends with permanent markers bearing wire numbers as per wiring diagram.

TYPE TEST CERTIFICATES: MCBs & other components used in DCDB shall be fully type tested as per relevant IS and this specification.

9.0 CABLE TRAY

GI Cable tray

Cable tray shall be prefabricated Trays should be made of MS Angle of size 50 mm. x 50 mm. x 6 mm. for both side runner with Spans Limited to 2.5 meter(approx.). Cross Support should be of MS Flats of size 450 mm. x 32 mm. x 6 mm. (approx.) welded to Runner Angle at 300 mm. (approx.) apart. After fabrication the same shall be Hot dip galvanised to achieve thickness of galvanisation shall be as per IS.

Perforated cable trays for control wiring shall also be Hot dip galvanised to achieve thickness of galvanisation shall be as per IS.

10. EXTERNAL AND INTERNAL ELECTRICAL WORKS

EXTERNAL ELECTRICAL WORKS

Light Fitting and Accessories

a. Scope

This specification covers the design, material specification, manufacture, testing, inspection and delivery to site and installation & commissioning of lighting fittings and their associated accessories.

b. Standards

The light fittings and their associated accessories such as lamps/tubes, reflectors, housings, ballasts, etc. shall comply with the latest applicable standards as specified. Where no standards are available, the supply items shall be backed by test results shall be of good quality and workmanship & any supply items, which are bought out by the Bidder, shall be procured from approved Bidders acceptable to the Employer.

c. **Light Fittings - General Requirements**

Luminaire housing should be completely made of Pressure / High Pressure Die Cast Aluminium (corrosion resistant). Single / multi pc in construction.

Aerodynamic shape with adequate strength to withstand max wind speed.

Precision optical system for tubular lamp, Optical compartment duly brightened and anodized aluminium & Lamp position adjustable from back without use of tools. The optics should be suitable for adjustment of toe-in/throw and spread to suit different road widths and spacing.

LED Flood light Luminaire (120 W) shall be used for outdoor illumination.

luminaires should be duly chromatised and coated with pure polyester to minimum 45 micron thickness to a shade RAL7035. Alternatively, in specific cases Poly Urethane Coating of other decorative shades as recommended.

Toughened heat resistant glass sealed with gasket and SS toggles.

Choice of self-stopping ignites.

Luminaire conforming to IEC60598.

d. **Earthing**

Each lighting fitting shall be provided with an earthing terminal suitable for connection to the earthing conductor.

All metal or metal enclosed parts of the housing shall be bounded and connected to the earthing terminal so as to ensure satisfactory earthing continuity throughout the fixture.

e. **Painting/Finish**

All surfaces of the fittings shall be thoroughly cleaned and degreased. The fittings shall be free from scale, rust, sharp edges and burrs.

When enamel finish is specified, it shall have a minimum thickness of 2 mils for outside surface and 1.5 mils for inside surface. The finish shall be non-porous and free from blemishes, blisters and fading.

The housing shall be stove-enamelled/epoxy stove-enamelled-vitreous enamelled or anodised as indicated on flameproof fittings is prohibited.

The surface shall be scratch resistant and shall show no sign of cracking or flaking when bent through 90° over ½" dia mandrel.

The finish of the fittings shall be such that no bright spots are produced either by direct light source or by reflection.

f. **Reflectors**

The reflectors shall be made of CRCA sheet steel/aluminium/silvered glass/chromium plated sheet copper as indicated for above mentioned fittings, unless otherwise specified.

The thickness of steel/aluminium shall comply with relevant standards specified. Reflectors made of steel shall have stove enamelled/vitreous enamelled/epoxy coating finish. Aluminium used for reflectors shall be anodized/epoxy stove enamelled/mirror polished. The finish for the reflector shall be as indicated for above mentioned fittings.

Aluminium paint on the reflectors of flame-proof lighting fittings is prohibited.

Reflectors shall be free from scratches or blisters and shall have a smooth and glossy surface having an optimum light reflection coefficient such as to ensure the overall light output specified by the Bidder.

g. **Lamps**

The lamps shall be capable of withstanding small vibrations and the connections at lead in wires and filaments/electrodes shall not break under such circumstances.

Lamps/LED tubes shall conform to relevant standards and shall be suitable for supply voltage and frequency specified.

INTERNAL ELECTRICAL WORKS

a. **Wiring**

Wiring is to be done in the looping system of wiring without any jointing. Phase wires shall be looped in switch control points and neutral shall be **looped at out-let points**. For **Open** conduit system hot dip **GI** Conduit, Aluminum saddles shall be used.

b. **Point Wiring**

Point wiring shall include all works necessary to complete wiring of a switch circuit of any length from the tapping point on the distribution circuit to the following via the switch.

- a) Ceiling rose and connector (in the case of ceiling/exhaust fan points).
- b) Back plate (in case of fluorescent fitting with down rods, etc.).
- c) Socket outlet (in the case of socket outlet points).
- d) Lamp holder (in case of wall brackets, bulk head and similar fittings).

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

- a) Switch
- b) Ceiling rose/connector as required.
- c) Any special or suitable round block for neatly housing the ceiling Rose/connector and covering the fan hook in case of fan point.
- d) Wooden box, bushed conduit, porcelain tubing where cable passes through wall etc.
- e) Hot dip GI Conduit covering upto 1.5 m from floor.
- f) Earth wire from three pin socket outlet point/fan regulator to common earth including earth bus except the earth wire from the first tapping point of live wire to the distribution board.
- g) All wood or metal blocks, boards and boxes, sunk on surface type, including those required for mounting fan regulator but excluding those under the main and distribution switchgear.
- h) All fixing accessories such as clips, rails, screws, phil plugs, wooden plugs, etc. as required.
- i) Looping the same switch board and inter connections between points on the same circuit.
- j) Providing fish wire in conduit while recessed conduit work is undertaken.

c. **Circuit Wiring**

Circuit wiring shall mean wiring from the distribution board upto the 1st nearest tapping point of that circuit.

d. **Submain Wiring**

Submains wiring shall mean wiring from the main/distribution switchgear to another main/distribution switch gear.

e. Load on Circuit

Lights, 5 A sockets and exhaust fans/axial flow fan may be wired on a common circuit. Such circuit shall have 10 points of light, exhaust fan and socket outlets or a load of 800 watt, whichever is less. It shall, however, be ensured that in one switch board, wiring of one circuit is only provided.

f. Size of Conductor

All the wires shall be stranded annealed copper conductor PVC insulated. The smallest copper conductor to be used for lighting circuits shall be 1.5 mm² and for main lighting circuits 2.5 mm², for 15 A sockets circuits 4 sqmm copper conductor shall be used. Wiring shall be done in the 'looping system'. Phase or live conductors shall be looped at the switch box and neutral conductor can be looped from the light, exhaust fan or socket outlet, neutral conductor and earth continuity wire shall be brought to each switch board situated in rooms and halls. These shall be terminated inside the switch boards with suitable connectors and the switch board shall be adequate size to accommodate one number 5 amps socket outlet and control switch in future.

g. Conduit capacity

Maximum number of PVC insulated cable conforming to IS: 694-1977 that can be drawn in one conduit shall be follows:

Nominal cross-sectional area of conductor in sq.mm	Size of Conduit											
	20 mm		25 mm		32 mm		38 mm		51 mm		64 mm	
	S	B	S	B	S	B	S	B	S	B	S	B
1.50	5	4	10	8	18	12	-	-	-	-	-	-
2.50	5	3	8	6	12	10	-	-	-	-	-	-
4	3	2	6	3	10	8	-	-	-	-	-	-
6	2	-	5	4	8	7	-	-	-	-	-	-
10	2	-	4	3	6	5	8	6	-	-	-	-
16	-	-	2	2	3	3	6	5	10	7	12	8
25	-	-	-	-	3	2	5	3	8	6	9	7
35	-	-	-	-	-	-	3	2	6	5	8	6
50	-	-	-	-	-	-	-	-	5	3	6	5
70	-	-	-	-	-	-	-	-	4	3	5	4

- Note : 1. The above table shows the maximum capacity of conduits for a simultaneous drawing of cables.
2. The columns headed 'S' applies to runs to conduit which have distance not exceeding 4.25 m between draw in boxes and which do not deflect from the straight by an angle more than 15 degrees. The columns headed 'B' apply to runs of conduit which deflect from the straight by an angle of more than 15 degrees.

h. Rigid GI Conduit Wiring

In this system of wiring, no bare or twist joints shall be made in through run of cables. If the length of final circuit/submain is more than the length of the standard coil, joints shall be made by means of approved mechanical connectors in suitable and approved junction boxes.

The chase in the wall shall be neatly made and in ample dimensions to permit the conduit to be fixed in the manner desired. In case of buildings under construction, conduits shall be buried in the wall before plastering. These shall be grouted and covered with 1:4 cement and mortar, neatly finished at the plane of the unplastered brick work and scratched for provided key to the plaster and cured. Under no circumstances finished plastered surfaces shall be allowed to be chased for the conduit work. Before taking up chasing of the wall, the routes shall be marked and got approved by the engineer. The horizontal chase shall be avoided as far as possible. In case of exposed brick/rubber masonry work, special care shall be taken to fix the conduit and accessories in position along with the building work.

MS Conduit pipes shall be fixed by heavy gauge saddles secured to suitable wood plug or other approved manner at an interval of not more than one metre but on either side of the coupler of bends or similar fittings. Saddles shall be fixed at a distance of 30cm from the centre of such fittings. The saddles shall not be less than 20 gauge for larger dia.

All conduits after erection shall be tested for electrical continuity.

Fixing of standard bends or elbows in roof slab shall be avoided and all curves maintained by bending the conduit itself with a long radius which will permit easy drawing of conductors.

Suitable junction/inspection boxes according to requirements shall be provided to permit periodical inspections and to facilitate replacement of wires. However, such boxes shall be located and arranged suitably so that they are not in irregular positions. These locations shall also be specifically shown in the conduit layout of the shop drawings and approval shall be obtained before installation.

However, such installations and the number of such boxes shall be minimised. The boxes shall be mounted flush with the wall or ceiling. Minimum 65 mm depth junction boxes shall be used in roof slabs and depth of boxes in other places shall be as per IS:2667-1977. All outlets such as switches, wall sockets, etc. shall be flush mounting type.

i. Internal Illumination

a. General

Illumination system shall consist of lighting switches, power receptacles, distribution boards, sub distribution boards, complete with switch fuses, junction boxes, pull boxes, terminal blocks, glands, conduits and accessories (elbow, tees, crosses, bends, etc.) and supporting and anchoring materials, lighting fixtures complete with fluorescent tubes, incandescent lamps, mercury vapour lamps, sodium vapour lamps and lighting cables. All materials, fittings and appliances used in the electrical installation shall conform to the relevant IS specifications and shall be anticorrosive painted.

b. Illumination Levels

The following minimum levels of illumination shall be provided in the respective areas:

<u>AREA</u>	<u>ILLUMINATION LEVEL</u>
a) Offices	300 Lux
b) Switchgear Rooms	300 Lux
c) Toilet, Staircase	100 Lux
d) Substation - Transformer Room	200 Lux
e) Generator Room	200 Lux
f) Road	25 Lux

a. Lighting Equipment

The specification covers distribution board, fittings, poles, switches, receptacles, conduits, wires, cables and miscellaneous hardware necessary for complete lighting work.

b. Light Fittings/Luminaries

The fixtures/luminaries offered shall conform to IS: 10322 and comply with the following requirement:

- The fixtures shall be suitable for operation on a nominal supply of 240 Volts, single phase, 50 Hz voltage with variation of $\pm 10\%$.
- All other indoor areas shall be illuminated using LED Industrial type fixtures or high bay sodium vapour luminaire complete with reflectors. Office areas shall have LED Industrial type fixtures. The luminaires/fixtures shall conform to IS: 10322.
- Lighting fixture reflector shall generally be manufactured from sheet steel or aluminium. They shall be readily removable from the housing for cleaning and maintenance without disturbing the lamps and without the use of tools.
- Each fixture shall be complete with a four way terminal block for the connection and looping of incoming and outgoing supply cables. Each terminal shall be able to accept two 2.5 sq.mm solid copper conductor and shall be provided with a terminal suitable for earth wire.
- The enamel finish shall be non-porous and free from blemishes, blisters and fading.
- The fixture shall be free from scale, rust, sharp edges and burrs.
- All light reflecting surfaces shall have optimum light reflecting co-efficient such as to ensure the overall light output as specified.

a Receptacle Units

Industrial type receptacle units of approved make of 15 A rating with switches conforming to IS: 3854 and sockets conforming to IS: 1293 shall be supplied. The units shall be suitable for mounting flush on stove enamelled sheet steel boxes generally conforming to IS: 5133 (Part I). The approximate quantities of various types of receptacles are given in the Bill of Quantities.

b Ceiling Fan

Ceiling fan shall be suitable for 230 V, 1 phase, 50 Hz and shall be completed with standard mounting accessories such as suspension rod top and bottom Canopy, electronic regulator, rubber reel etc. The fan shall conform to IS: 374. The electronic type fan regulator shall conform to IS: 11037. The general and safety requirement for fans and regulators shall conform to IS: 12115.

c **Exhaust Fan**

Impeller shall be with blades of an aerofoil design. Blades shall be mounted on streamlined hub. Impeller shall be mounted directly on motor shaft.

Casing shall be of heavy gauge construction properly reinforced for rigidity. It shall be provided with suitable support.

In case of vane axial fans, guide vanes shall be provided on the discharge side.

Motor shall be totally enclosed. The speed of fan shall not exceed 1500 rpm.

Material of Construction

- | | | |
|----|--------------------|---------------------------|
| a) | Casing | Mild Steel |
| b) | Impeller | Mild Steel/Cast Aluminium |
| c) | Inlet/outlet cones | Mild Steel |

d **Earthing**

Each lighting fitting shall be provided with an earthing terminal suitable for connection to the earthing conductor.

All metal or metal enclosed parts of the housing shall be bounded and connected to the earthing terminal so as to ensure satisfactory earthing continuity through the fixture.

e **Switches and Accessories**

Switches

All switches shall be placed in the live conductor of the circuit and no single pole or fuse shall be inserted in the earth or earthed neutral conductor of the circuit.

Single pole switches (other than for multiple control) carrying not more than 15 Amps may be of the piano type and the switch shall be 'ON' when the knob is down.

Lamp holders for use in brackets and the like shall have not less than 1.3 cm Nipple and all those for use with flexible pendant shall be provided with cord grips. All lamp holders shall be provided with shade carriers.

f **Socket Out-lets**

Each socket outlet 5 A and 15 Amps shall be controlled by a switch. The switch controlling socket outlet shall be on live side of the line. In an earthed system, socket outlets shall be 3 pin type with shutter so that unless earth pin contact is made, live pins should not be exposed. All switches shall conform to IS: 3854 and socket outlets to IS: 1293.

g **Switch Boxes/Regulation Boxes/Laminated Sheets**

The switch or regulator box shall be made of metal on all sides, except on the front. In the case of cast boxes, wall thickness shall be at least 3 mm and in case of welded mild steel sheet boxes, the wall thickness shall not be less than 16 gauge for boxes upto a size of 20 cm x 30 cm and above this size, 14 gauge GI boxes shall be used. Except where otherwise stated, 3 mm thick phenolic laminated sheets shall be fixed on the front with aluminium alloy/brass/cadmium plated iron screws as approved by the Purchaser. Clear depth of the box shall be minimum 60 mm and this shall be increased suitably to accommodate mounting of fan regulators in flush pattern.

To facilitate drawing of wires in the conduit, G.I. fish wires of 16 SWG shall be provided with laying of recessed conduit.

11 EARTHING SYSTEM

11.1 General

Only Plate Earthing shall be adopted. The earthing and lightning protective systems shall comply with all currently applicable standards, regulations and safety codes of the locality where the installation is to be carried out. Nothing in this specification shall be construed to relieve the Bidder of this responsibility. Wherever the word GI is used it means that hot Dip GI.

Earthing Strip shall be of **hot dip GI** of size **50mmx6mm**. The strip shall be connected to earthing terminals with Stainless Steel nut – bolts. **The strip shall be clamped with Aluminum saddles and stainless steel nut-bolts. The Cost of Strip and required accessories, labour shall be included in the overall cost (offer).**

The installation work shall conform to the latest applicable Electricity Rules, standards (IS: 3043) and codes of practices.

- After award of the Contract, the Contractor shall, carry out soil resistivity measurements at the site. A detailed earthing design shall be submitted for approval based upon the results of these tests.
- The total resistance of the earth grid shall be less than 1 ohm.
- The earthing & lightning conductors and electrodes shall be supplied. Conductors shall be free from rust, scale and other electrical and mechanical defects and all materials used shall conform to relevant standards or approved by the Employer. The sizes, materials and quantity shall be as listed.
- Copper earthing stranded conductors shall be annealed soft drawn type. Copper earthing rods and flats shall be hard drawn type. Lead coating shall be provided on copper conductors to prevent its corrosion in aggressive environments.
- Steel earthing conductors above ground shall be hot-dip galvanized, unless otherwise stated, to prevent atmospheric corrosion. If painted steel conductors are required they shall be painted with two coats of approved anti-corrosive paint.
- Flexible braids of sizes & materials shall be supplied for earthing of operating handles of isolators and earthing of equipment on moving platforms.
- The links in suitable enclosures shall be supplied for connection between each lightning conductor down comer and earth electrode.
- Cad welding type jointing equipment shall be supplied whenever specifically indicated.

11.2 Scope of Installation Work

The successful Bidder shall install bare/insulated, copper/aluminium conductors, braids, etc., required for system and individual equipment earthing. All work such as cutting, bending, supporting, painting/coating drilling, brazing/soldering/welding, clamping, bolting and connecting onto structures, equipment frames, terminals, rails or other devices shall be in the scope of work. All incidental hardware and consumable such as fixing cleats/clamps, anchor fasteners, lugs, bolts, nuts, washers, bitumastic compound, anti-corrosive paint as required for the complete work shall be deemed to be included as part of the installation work.

The scope of installation of earth conductors in outdoor areas, buried in ground shall include excavation in earth upto 600 mm deep and 450 mm wide, laying of conductor at 600 mm depth (unless stated otherwise), brazing/welding/ cadwelding as reburied of main grid conductor joints as well as risers of 500 mm length above ground at required locations and backfilling. Backfilling material to be placed over buried conductor shall be free from stones and other harmful mixtures. If the excavated soil is found unsuitable for backfilling, the Bidder shall arrange for suitable soil from outside.

The scope of installation of earth connection leads to equipment and risers on steel structures/walls shall include laying the conductors, welding/cleating at specified intervals, welding/brazing to the main earth grids' risers, bolting at equipment terminals and coating welded/brazed joints by bitumastic paint. Galvanized conductors shall be touched up with zinc rich paint where holds are drilled at site for bolting to equipment/structure.

The scope of installation of electrodes shall include installation of these electrodes such as (a) directly in earth, (b) in constructed earth pits, and connecting to main buried earth grid, as per enclosed drawings/relevant standards. The scope of work shall include excavation, construction of the earth pits including all materials required for construction of the earth pits and connecting to main earth grid conductors.

The scope of installation of lightning conductors on the roofs of buildings shall include laying, anchoring, fastening and cleating of horizontal conductors, grouting of vertical rods where necessary, laying, and fastening/cleating/welding of the down comers on the wall/columns of the building and connection to the test links above ground level.

Normally an earth electrode shall not be situated less than 2m from any building. Care shall be taken that the excavations for earth electrodes may not affect the column footing or foundation of the building. In such cases, electrodes may be further away from the building.

The location of the earth electrodes shall be such that the soil has reasonable chances of remaining moist, as far as possible. Entrances, pavements and roadways are definitely avoided for locating the earth electrodes.

The scope of installation of the test links shall include mounting of the same at specified height on wall/column by suitable brackets and connections of the test link to the earth electrode.

11.3 Work Details

Earthing conductors along their run on walls and columns shall be supported by cleating/welding at intervals of 750 mm and 1000 mm respectively.

Wherever earthing conductors cross underground service ducts and pipes, it shall be laid 300 mm below; the earthing conductor shall be bounded to such service ducts/pipes.

Wherever main earthing conductor crosses cable trenches, they shall be buried below the trench floor.

Suitable earth risers approved by the Engineer-in-Charge shall be provided above finished floor/ground level, if the equipment is not available at time of laying of the main earth conductors. The minimum length of such riser inside the building shall be 200 mm and outdoors shall be 500 mm above ground level. The risers to be provided shall be marked in project drawings.

Earth leads and risers between equipment earthing terminals and the earthing grid shall follow as direct and short a path as possible.

Neutral connection shall never be used for the equipment earthing.

Each neutral point of a transformer shall be earthed to two separate earth electrodes for connection with earthing system.

Shield wire in sub-stations shall be connected to the earthing grid through test links at every alternate switchyard portal tower.

A separate earth electrode bed shall be provided adjacent to structures supporting lightning arrestors and coupling capacitors. Earth connections shall be as short and as straight as practicable. For arrestors mounted near transformers, earth conductors shall be located clear of the tank and coolers.

Wherever earthing conductor passes through walls, galvanized iron sleeves shall be provided for the passage of earthing conductor. The pipe ends shall be sealed by the Bidder by suitable water proof compound. Water stops shall be provided wherever earthing conductor enters the building from outside below grade level. Water stops and above mentioned sleeves shall be provided by the Bidder.

11.4 Earthing Connections

All connections in the main earth conductors buried in earth/concrete shall be welded/brazed type. Connection between main earthing conductor and earth leads shall also be of welded/brazed type. Cadwelding type connections shall be done if specifically indicated.

Connection between earth leads and equipment shall be of bolted type, unless specified otherwise or shown in the drawings. Equipment Bidders shall provide earthing terminals on their equipment.

Welding and brazing operations and fluxes/alloys shall be of approved standards.

All connections shall be of low resistance. Contact resistances also shall be minimum.

All bimetallic connections shall be treated with suitable compound to prevent moisture ingress.

Metallic conduits and pipes shall be connected to the earthing system unless specified otherwise.

11.5 Earth Electrode

Electrodes shall be housed in test pits with concrete covers for periodic testing of earth resistivity. Installation of rod/pipe/plate electrodes in test pits shall be convenient for inspection, testing and watering wherever required.

11.6 Plate Earth Electrode

For plate electrode minimum dimension of the electrode shall be as under:-

- i) GI plate electrode 60 cm x 60 cm x 10 mm thick

Heavy duty cast iron frame with cover shall be suitably embedded in the masonry.

Soil, salt and charcoal placed around the electrode shall be finely graded, free from stones and other harmful mixtures. Backfill shall be placed in the layers of 250 mm thick uniformly

spread and compacted. If excavated soil is found unsuitable for backfilling, the Bidder shall arrange for a suitable soil from outside.

11.7 Method of Connecting Earthing Lead to Earth Electrode

In the case of plate earth electrodes, the earthing lead shall be securely bolted to the plate with two bolts, nuts, check-nuts and washers.

All materials used for connecting the earth lead with electrodes shall be GI in case of GI pipe and GI plate earth electrodes and of copper in case of copper pipe / plate electrodes.

The earthing lead shall be securely connected at the other end to the main board.

11.8 Size of Earthing Conductor

The earthing system shall be designed in such a way that over all earth resistance is less than one ohm. The soil resistivity shall be measured at site by the Bidder. If required, number of earth electrodes to be increased by the Bidder to achieve the required earth resistance.

12 APFC Panel:-

Specification of APFC Panel Design, manufacturing, supply, installation, Testing and commissioning of APFC Panel of 150kVAr 10 stages as per following specification: -

General

The 440V APFC Panel shall be metal clad, indoor type floor mounted in Non drawout execution. Fabricated from Sheet steel shall be CRCA of minimum 2.0 mm thickness. Incomer Circuit breaker (MCCB) shall be mounted in a separate compartment and Metering compartment along with APFC Relay etc shall be separate. The position of various control switches, push buttons, louvers etc. requiring manual operation. The operational Height of Panel shall be at a height not less than 300mm and shall not exceed 1850mm from the finished floor level. Name plate for each incoming and outgoing feeder at front.

All equipment of similar rating shall be interchangeable. Insulation Level Rated insulation voltage 1100 V

One minute power frequency withstand voltage: 2.5 kV for power circuits 2 kV for control circuits

Clearance in air (minimum) : Phase to phase - 25 mm Phase to earth - 19.0 mm

Short Circuit Strength Rated short time withstand current not less than 50kA for 1sec.

Busbars made of EC grade aluminium alloy equivalent to E91E WP as per IS 5082, 1981, size adequate for specified rated continuous and SC current.

Three phase, neutral (with at least 50% rating of main buses) and continuous earth bus. Bus bar shall be provided with proper grade & colour of heat shrinkable sleeve.

Rating of horizontal buses shall be same as that of incomer circuit breakers and vertical run shall be same as that of outgoing breaker rating Temperature rise of bus bars shall not be more than 40 deg. C above an ambient of 50 deg. C.

Construction Features (Mechanical Design) Sheet steel clad, floor mounted, free standing design, non-dust proof construction Extension bus links properly spaced for terminating single cables of required size and above as well as for terminating multiple cables of all sizes. The interior of the switchboard shall be finished with OFF WHITE (RAL 7032) paint shade. All panels shall be supplied with base channels. The IP Protection for enclosure shall be IP52 or

better. Necessary Louvers along with cooling fans shall be provided in the panel to ensure the cooling of Panels at the time of excitation of Capacitor Banks and Contactors.

Incomer Circuit Breaker (MCCB)

01. Electrical Features Air break triple pole MCCB of required size and in conforming to IS 13947. Rated continuous current as specified. Symmetrical service breaking capacity of breaker shall not be less than 35kA. Making capacity 2.5 times breaking capacity. Adjustable Over Load and Short Circuit protection
02. Operating Mechanism Manual operated quick make and break trip free mechanism as to ensure high speed closing and tripping independent of the operating forces. Mechanical indication to show: Breaker ON/OFF/TRIP.

Outgoing Feeders

Each Out going feeder shall be provided with required rating of MCCB, Contactor along with the necessary fuses etc , Capacitor Banks along with on/off Push Button and on/off LED Indicating Lights as per following specification :-

- 01.** Air break triple pole MCCB conforming to IS 13947 of adequate continuous current rating as specified. Symmetrical breaking capacity not 35KA.
- 02.** Capacitor Switching Contactors All Capacitor Banks shall be controlled by power contactors, which shall on/off the Capacitor Bank, accordingly these contactors should be suitable to handle the inrush current of capacitor Banks.
- 03.** Capacitor Bank Capacitor Banks shall be suitable for operation at 440V Three phases. The type of capacitor banks shall be self healing MPP type Heavy duty as per IS: 13340-1993 and shall be housed in sheet steel container to ensure the explosion free design. The external discharge resistors shall also be provided. Capacitor Banks shall be suitable for Overloading as 115% for Over Current and 110% for Over Voltage. The Watt Loss shall not be less than 0.5w/kVAr.

Protections:

Combined lightning and surge protection device for three phase should be connected parallel to the output for providing safety from all types of possible surges. The device should safely handle 10/350 surges of 7KA per pole and 8/20 surges of 35KA per pole.

Control Terminations

650V grade multiway terminal blocks of non-tracking moulded plastic complete with insulated barriers, stud type terminals, washers, nuts and lock nuts and identification strips.

Power and control terminals segregated. Control terminals of minimum rating 10 amps suitable to receive 2.5 sq. mm copper conductor. 20% spare terminals in each control terminal block. Measurements and Control

A Digital Multi function meter shall be provided in Incomer feeders to measure and display the following parameters along with APFC Relay of required stages as specified as per following specification.

APFC Relay

The APFC Relay shall be suitable for operation at 415V Power and Auxiliary both and 5A as current measurement. The Relay shall be of 12 stages to improve the P.F at least 0.98. The relay shall be microprocessor based with self diagnostic and setting including C/K ratio.

13 ERECTION OF RAIL POLE:

11Mtrs.to 13Mtrs. Old and used rail pole will be provided to the contractor from the site store of HDC, KoPT on free of cost basis for erection of transmission line towers (Single pole/Double Pole / Four Pole structure).

Transportation of old and used rail to the work site is in the scope of the contractor.

Erection of SP/DP/ FP rail pole structure shall be as per approved drg.

All rail pole FP structure shall be supported by 1/2/3 Nos. rail pole based strut poles for structural stability.

All rail pole DP structure shall be supported by suitable numbers of stay wires for structural stability.

As a thumb rule 1/6th of the erected rail shall be used in the plinth / foundation.

Foundation details for Rail Pole.

Earth excavation:- 600mm x 600mm x 2200mm.

PCC Base-100mm.

After erection of rail Pole concreting work-600mm x600mmx 2400mm.

Plastering work above Ground level-300mm.

Black Bituminous Painting at Bottom of rail Pole -300mm form finished concrete foundation level.

Grade of concrete shall be M15.

Erected Rail pole shall be painted 2coats of red oxide primer and 2coats of Epoxy aluminium paint.

GI ANGLE, CHANNEL, “V” CLAMPS, FLATS, NUTS, BOLTS, WASHERS TO BE USED ON ERECTED RAIL POLE STRUCTURE:

Scope covers supply, fabrication, galvanisation and fixing of angle, Channels, Clamps, Flats, Nuts, Bolts and washers required for commissioning of rail pole structure.

Old and Used 11/12/13Mtrs. Rail Pole in required quantity as per approved drg. will be provided to the contractor on free of cost basis for execution of work.

Transportation of rail pole from sub-store to work site shall be the responsibility of the contractor.

Following are the sizes of GI Angle and channels to be used for fabrication and fixing, on erected rail pole DP and FP structures.

100mm x 50mm x 5mm GI Channel – For holding insulator strings and ACSR Conductors.

100mm x 50mm x 5mm GI Channel – For Four Pole structural supports.

65mm x 65mm x 6mm GI Angle- for cross braising in DP and FP structures.

75mm x 40mm x 5mm GI Angle- for shield wire laying and termination, cable support etc..

65mm x 6mm GI Flats-For making rail clamps,”v” clamps, support clamps, cable support clamps etc.

50mm x 6mm GI Flats for LA earthing, Cable earthing, interconnections between earthing stations and earth spike connection etc.

The material as above shall confirm to IS: 2062.

Nuts, Bolts and washers shall be electro galvanized.

The galvanized surface shall be smooth and free from all irregularities and imperfections. All angle channels and flats shall be Hot Dip Galvanised for minimum coating thickness of 120micron.

All work shall confirm to REC specification and IER. All hardware shall be Hot dip galvanised or Aluminium alloy.

14 LIST OF APPROVED MAKES

Sl.No.	ITEM	Name of Manufacturers
1	Transformer	VOLTAMP / BHARAT BIJLEE/ CGL /SIEMENS /SCHNEIDER/ABB
2	VCB Panel	SIEMENS / ABB / SCHNEIDER
3	HT Cable	FINOLEX / RPG / APAR INDUSTRIES / TORRENT / HAVELLS / UNISTAR /POLYCAB
4	LT Cable (XLPE)	UNISTAR / FINOLEX/ HAVELLS / RPG / APAR INDUSTRIES/POLYCAB /KEI/ TORRENT
5	Outdoor CT	SCHNEIDER / JYOTI / KAPPA / PRAGATHI
6	Outdoor PT	SCHNEIDER / JYOTI / KAPPA / PRAGATHI
7	Volt meter and Ammeter	AE / MECO / YOKINS / NIPPEN
8	LA	OBLUM / LAMCO / ELEKTROLITES
9	Load break switch Panel	A BOND STAND / ELTECH CONTROLS/ MEGAWIN
10	LT Panels	SIEMENS / L&T / SCHNEIDER / ABB
11	Cable St.through jointing / end Termination Kit	3M / RAYCHEM
12	Battery	HBL/EXIDE/AMARON/ AMCO
13	Selector switches, Push buttons, Emergency Switches	KAYCEE / L & T / GE / BCH / LEGRAND
14	HRC Fuses	L & T / GE / SIEMENS / ABB / INDO KOPP
15	Indicating light	AE / KAYCEE / VAISHNAV / L & T /SIEMENS
16	MCB	L & T / LEGRAND / SIEMENS / ABB / SCHNEIDER
17	Sub Distribution Board	L & T / LEGRAND / SIEMENS / SCHNEIDER / HENSEL
18	EL MCB	L & T / SCHNEIDER / LEGRAND / SIEMENS / ABB

Sl.No.	ITEM	Name of Manufacturers
19	PVC insulated copper conductor single/multi core stranded wires of 650/1100 volt grade	HAVELLS / FINOLEX / RPG /UNIFLEX /NICCO /RR Kables
20	Steel Conduit/PVC Conduit	BEC / AKG / NIC
21	Switches, TV & Telephone Socket outlets, Boxes	MK / CLIPSAL / LEGRAND / NORTH WEST /ANCHOR
22	Light Fixtures(LED)	PHILIPS / BAJAJ / WIPRO / CROMPTON/HAVELLS
23	Ceiling fans/Wall bracket fans / Exhaust Fans	HAVELLS / CROMPTON GREAVES / USHA / ORIENTAL
24	Cable lug & Cable Gland	DOWELLS / JHONSON / RAYCHEM
25	Terminal Blocks	WAGO & CONTROLS / PHOENIX CONTACTS / OBO BETTERMANN
26	Lightning Protection	DUVAL MESSIEN / SOUTH ASIAN ENTERPRISE LTD. / OBO BETTERMANN
27	Multi-function Meter	ABB / SIEMENS / L&T / HPL SOCOMEC/CONZERVE (ENERCON)
28	DWC HDPE Pipe	DURA LINE / CARLON / EMTELLE
29	Contactors	L&T / SCHNEIDER / SIEMENS/ABB / BCH
30	MCCB	L&T / SIEMENS / SCHNEIDER / ABB
31	Push Buttons	SIEMENS / ABB / TELEMECANIQUE / L&T / SCHNEIDER
32	Relays	L&T / ABB / SIEMENS / SCHNEIDER/AREVA
33	Timers	L&T / SIEMENS / TELEMECANIQUE/ABB
34	Indicating Light	L&T / SIEMENS / TELEMECANIQUE / ABB / GE
35	Indicating Instruments	AE / MECO / CONZERVE / L&T
36	Panel CTs	L&T / AREVA / JYOTI / KAPPA / PRAGATHI
37	Panel PTs	AREVA / KAPPA / PRAGATHI
38	ACB	SCHNEIDER / SIEMENS / ABB / L&T

Sl.No.	ITEM	Name of Manufacturers
39	Selector Switch	KAYCEE / L&T / SIEMENS / BCH / GE / SALZAR
40	Capacitor Banks	EPCOS / L&T / UNIVERSAL/ABB
41	Trivector Meter (Digital)	L&T / SCHNEIDER / SIEMENS / HPL SOCOMEC
42	Capacitor Panels	ABB / L&T / EPCOS / SCHNEIDER
43	Power Factor Correction Relay	EPCOS / L & T / ABB
44	Elastomeric Mat	PREMIER POLYFILM LTD / POLYELECTROSAFE / CHALLENGER
45	Structure	JINDAL/ SAIL / TISCO
46	MS & GI Conduits Accessories	STEEL MARK / NIC
47	Items not covered above	As per samples approved by the engineer.

15 INSPECTION AND TESTING.

Equipment will be duly inspected in the manufacturer's works / premises by **Engineer/TPI Agency** before despatch to the site. **Cost of TPI Agency will be borne by the Port.**

Inspection of the items to be supplied by the contractor will be carried out by **the Engineer/TPI Agency prior to despatch**, as per the procedure mentioned in the for the relevant Item. Such inspection will be carried out within 10 days from the date of receipt of Inspection Call from the contractor.

The Engineer of the Contract reserves the right to waive inspection at Manufacturer's premises (witnessing tests) and to inspect (physically) the materials at site, after delivery, against Manufacturer's Internal Test Certificate.

The job of installation and commissioning will be inspected by the **Engineer/TPI Agency in different stages** and also after completion of the job. For this, the contractor shall have to submit a **Field Quality Assurance Plan (FQAP)**, which will be subsequently approved by the Engineer and the inspection will be carried out in accordance with the approved FQAP.

Inspection and Testing by the **Engineer/TPI Agency** shall not relieve the successful bidder of their obligation for supplying the items and execution of the entire work in accordance with the **Contract Condition** and relevant **Acts, Rules and Codes of Practice**.

I. **48 V DC Battery Bank:**

The Battery Bank will be inspected at site, after delivery, by **the Engineer/TPI Agency**, based on Manufacturer's Internal Test Certificate.

II. **Battery Charger and DCDB:**

The Battery Chargers will be inspected at site, after delivery, by **the Engineer/TPI Agency**, based on Manufacturer's Internal Test Certificate.

III. HT XLPE Cables :

Following tests will be witnessed by **the Engineer/TPI Agency** at Manufacturer's works before despatch:

- a) **Routine Tests** as per IS:7098-II
- b) **Acceptance Tests** as per IS:7098-II

Manufacturer's Certificate for **Type Test** (as per IS: 7098), for similar type cable, should be made available to **the Engineer/TPI Agency** during the above inspection.

IV. 800 kVA/500kVA, 11 kV/0.415 kV, 3 Phase, 50 Hz Transformer:

- a) **Routine Tests** and **Temperature Rise Test** (as per IS:2026) will be witnessed by **the Engineer/TPI Agency** at Manufacturer's works before despatch
- b) Manufacturer's Certificate for **Type Test** (as per IS: 2026), for any Transformer of at least 11 KV, 630 KVA rating, should be made available to **the Engineer/TPI Agency** during the above inspection. In addition to the above, Radiator Banks, Pressure and Vacuum test of the Transformer tank to be tested as per CBIP Manual during manufacturing and test reports shall be submitted during final inspection.

V. Vacuum Circuit Breaker Panel

Vacuum Circuit Breaker units:

- **Routine Tests** (as per IS: 13118) will be witnessed by **the Engineer/TPI Agency** at Manufacturer's works before despatch.
- Manufacturer's Certificate for **Type Test** (as per IS: 13118), for similar type equipments, should be made available to **the Engineer/TPI Agency** during the above inspection. Following **Type Test reports to be submitted**.
 - Short time and peak withstand current test
 - Temperature rise tests
 - Dielectric tests
 - CB make break duty test
 - Ingress protection test
 - Internal Arc Test for IAC-AFLR 25kA for 1 sec for all three compartments
 - Seismic test for Zone IV
 - Impulse test
 - Making test for in-built earth switch

Current Transformers:

Following tests will be witnessed by **the Engineer/TPI Agency** at Manufacturer's works before despatch:-

- a) **Routine Tests** as per IS: 2705.
- b) **Verification of Terminal Markings and Polarity** as per IS:2705

Manufacturer's Certificate for **Type Test** (as per IS: 2705), for similar type equipment, should be made available to **the Engineer/TPI Agency** during the above inspection.

Potential Transformer:

Following tests will be witnessed by **the Engineer/TPI Agency** at Manufacturer's works before despatch:

- a) **Routine Tests** as per IS:3156
- b) **Verification of Terminal Markings and Polarity** as per IS:3156

Manufacturer's Certificate for **Type Test** (as per IS: 3156), for similar type equipment, should be made available to **the Engineer/TPI Agency** during the above inspection.

Complete VCB Panel:

Inspection will be carried out by **the Engineer/TPI Agency** before despatch. Manufacturers' Test Certificates for the components like **Relays, Ammeter, Voltmeter, Static kWh Meter & Maximum Demand Meter**, should be made available to **the Engineer/TPI Agency** during the above inspection.

VI. LT Panel:

Following tests will be witnessed by **the Engineer/TPI Agency** at Manufacturer's works before despatch:-

- a) **Routine Tests** as per IS: 8623.
- b) Type test certificate for similar type & Rating of LT Panels be submitted by successful tenderer.
- c) Manufacturer's Certificate for **Type Test** (as per IS: 8623), for similar type equipment, should be made available to **the Engineer/TPI Agency** during the above inspection.

VII. LT Cables:

The LT Cables will be inspected at site, after delivery, by **the Engineer/TPI Agency**, based on Manufacturer's Internal routine Test Certificate as per IS:7098-I.

VIII. APFC Panel:

Following tests will be witnessed by **the Engineer/TPI Agency** at Manufacturer's works before despatch:

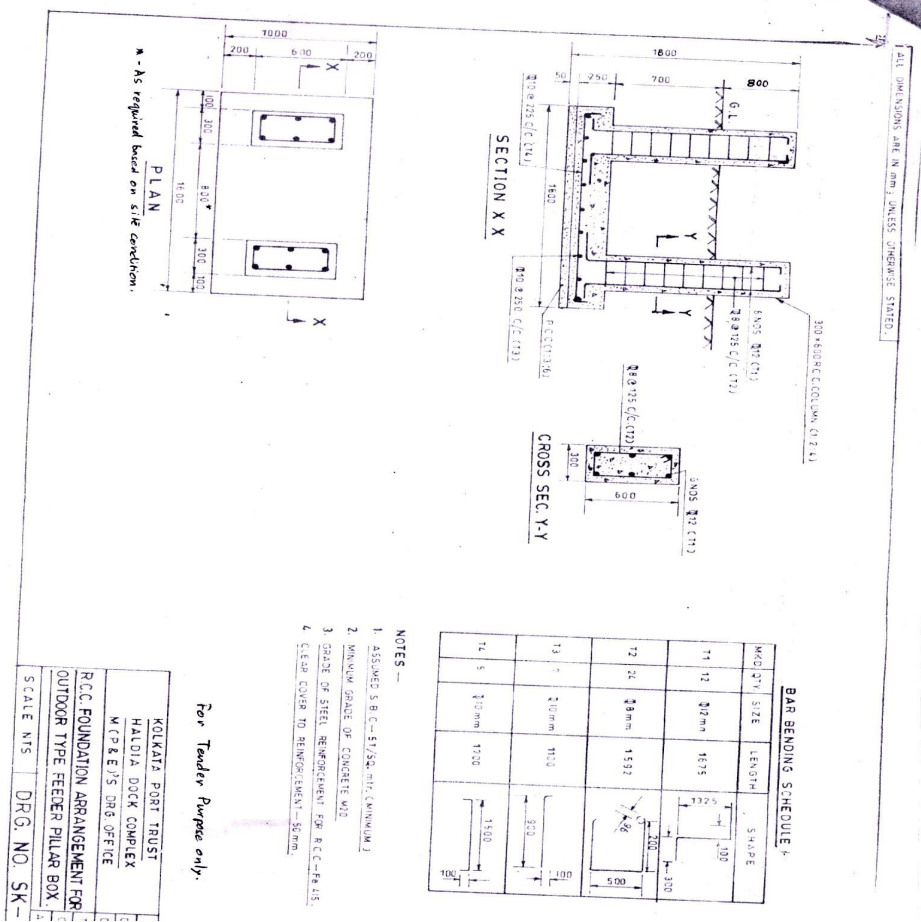
- a) **Routine Tests** as per IS.

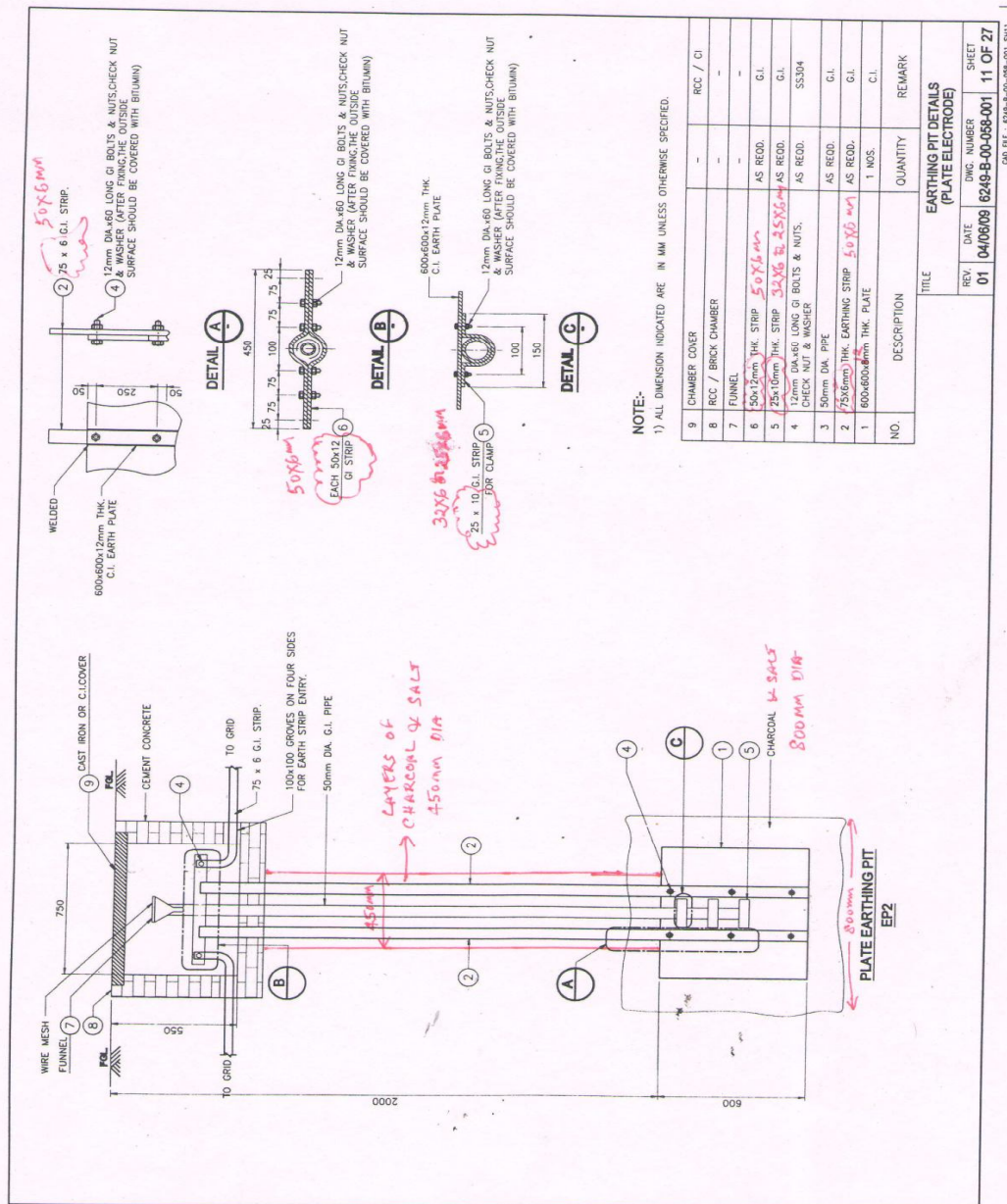
Manufacturer's Certificate for **Type Test**, for similar type equipment, should be made available to **the Engineer/TPI Agency** during the above inspection.

IX. St. through and end termination jointing kits:

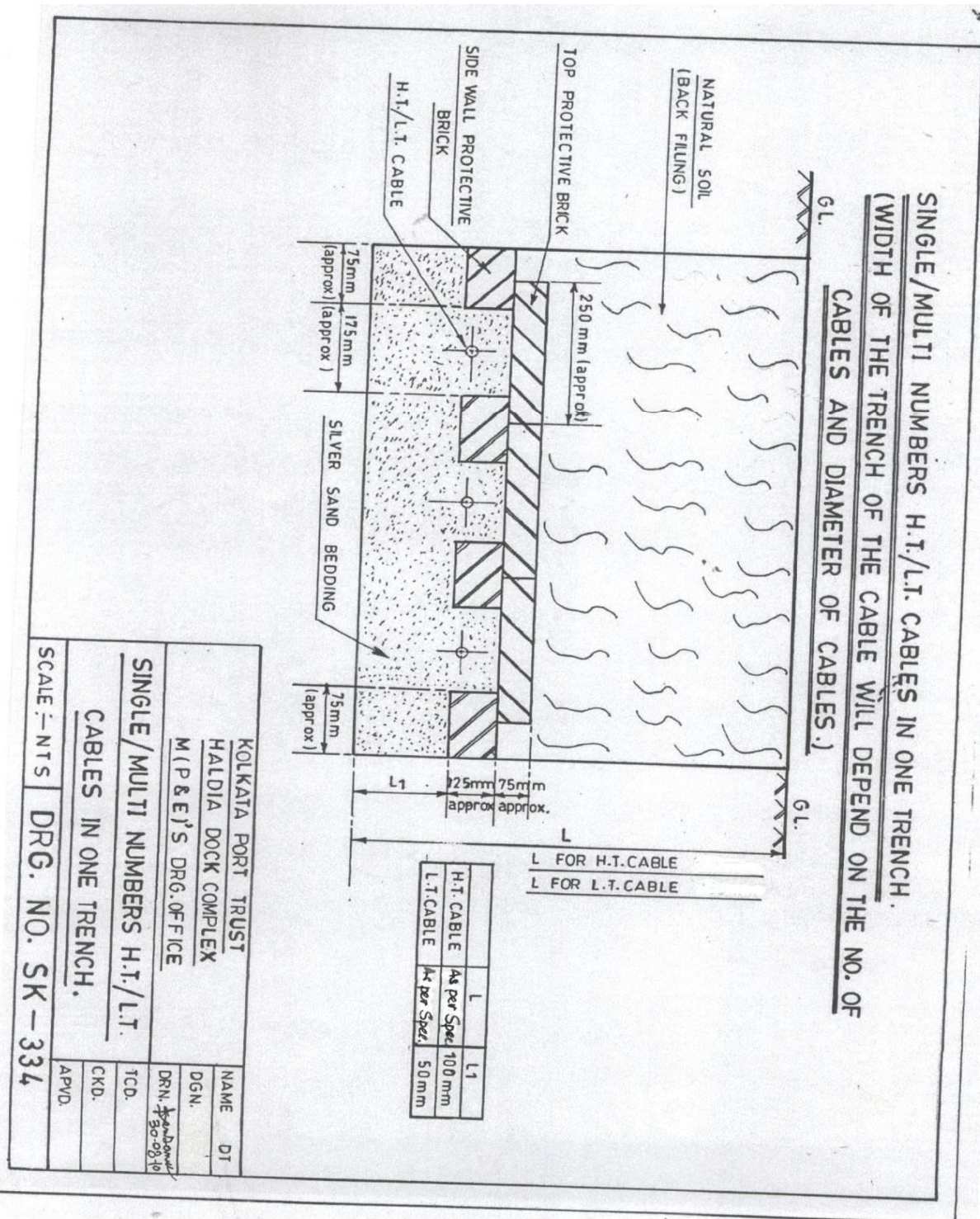
The kits will be inspected at site, after delivery, by **the Engineer/TPI Agency**, based on Manufacturer's Internal routine Test Certificate as per IS: 7098-I.

16 DRAWINGS.

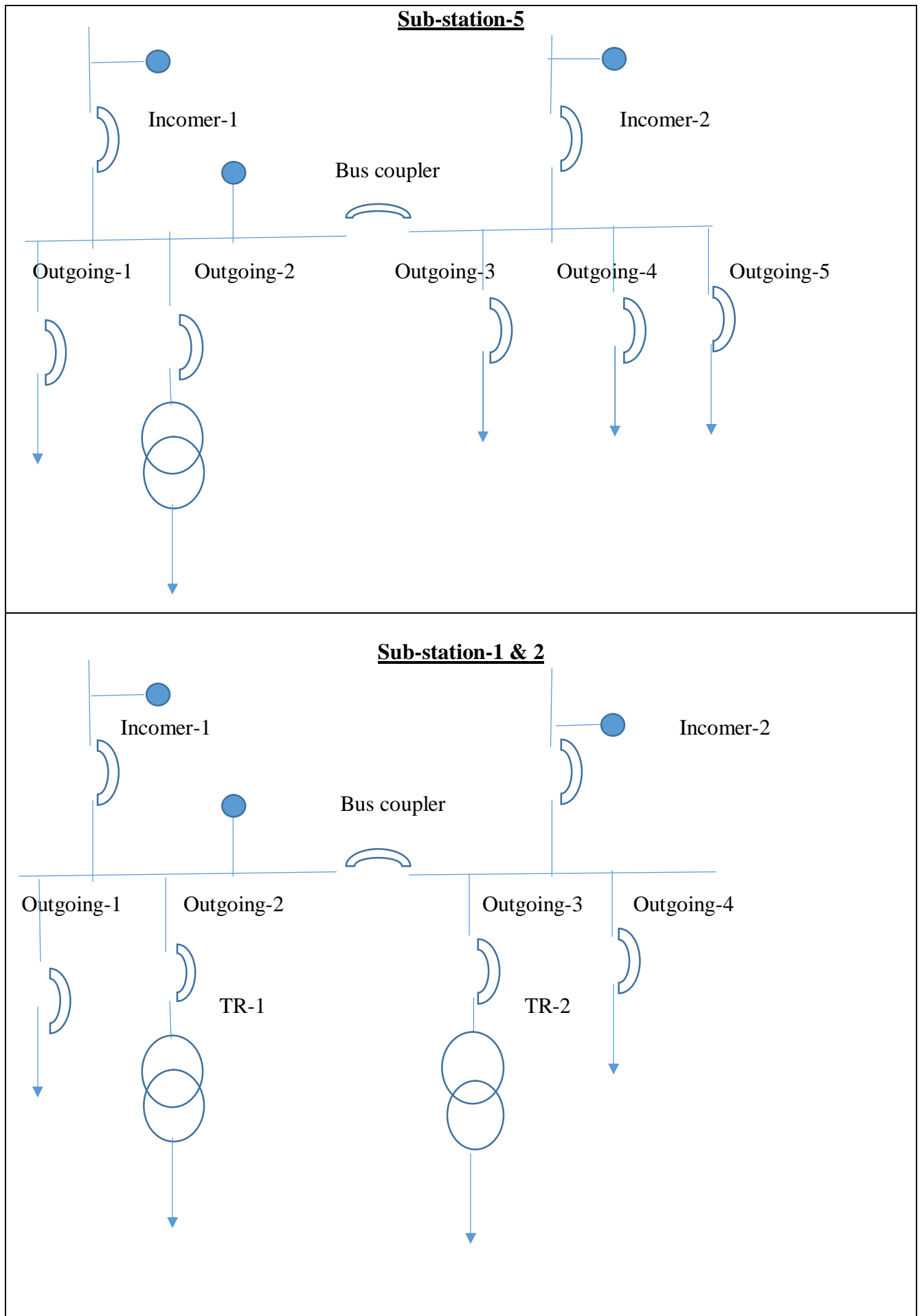




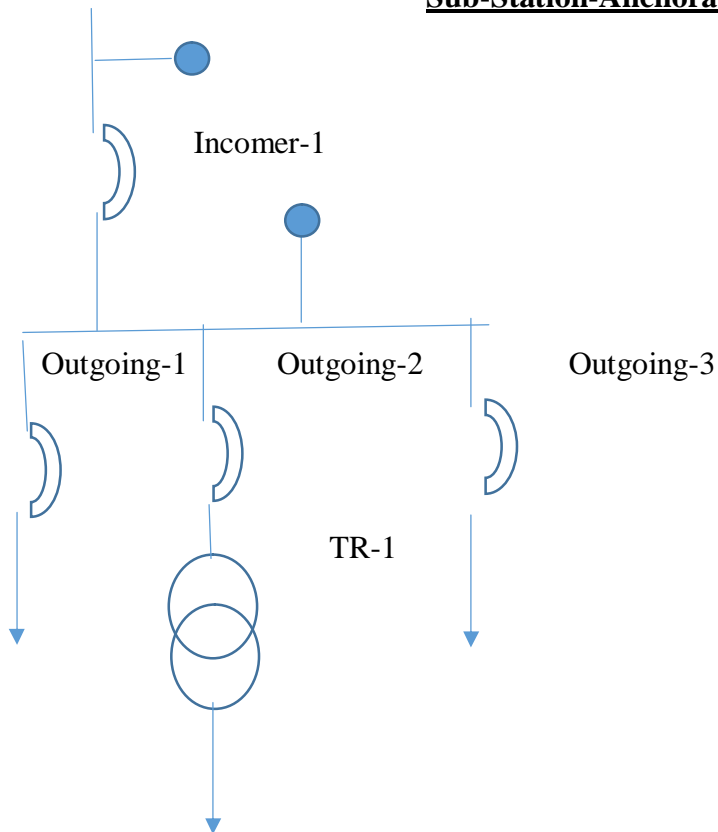
EARTH PIT



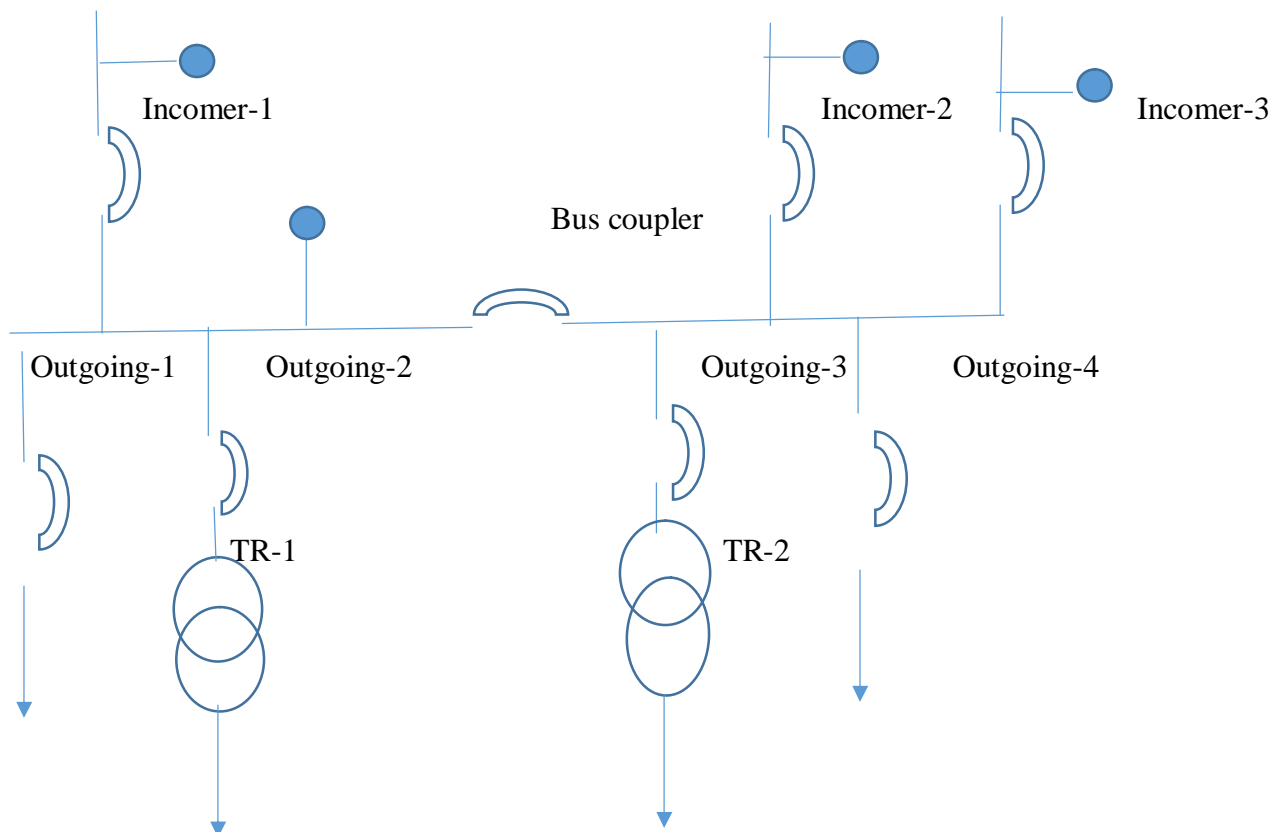
CABLE LAYING



Sub-Station-Anchorage Camp



Sub-station-3



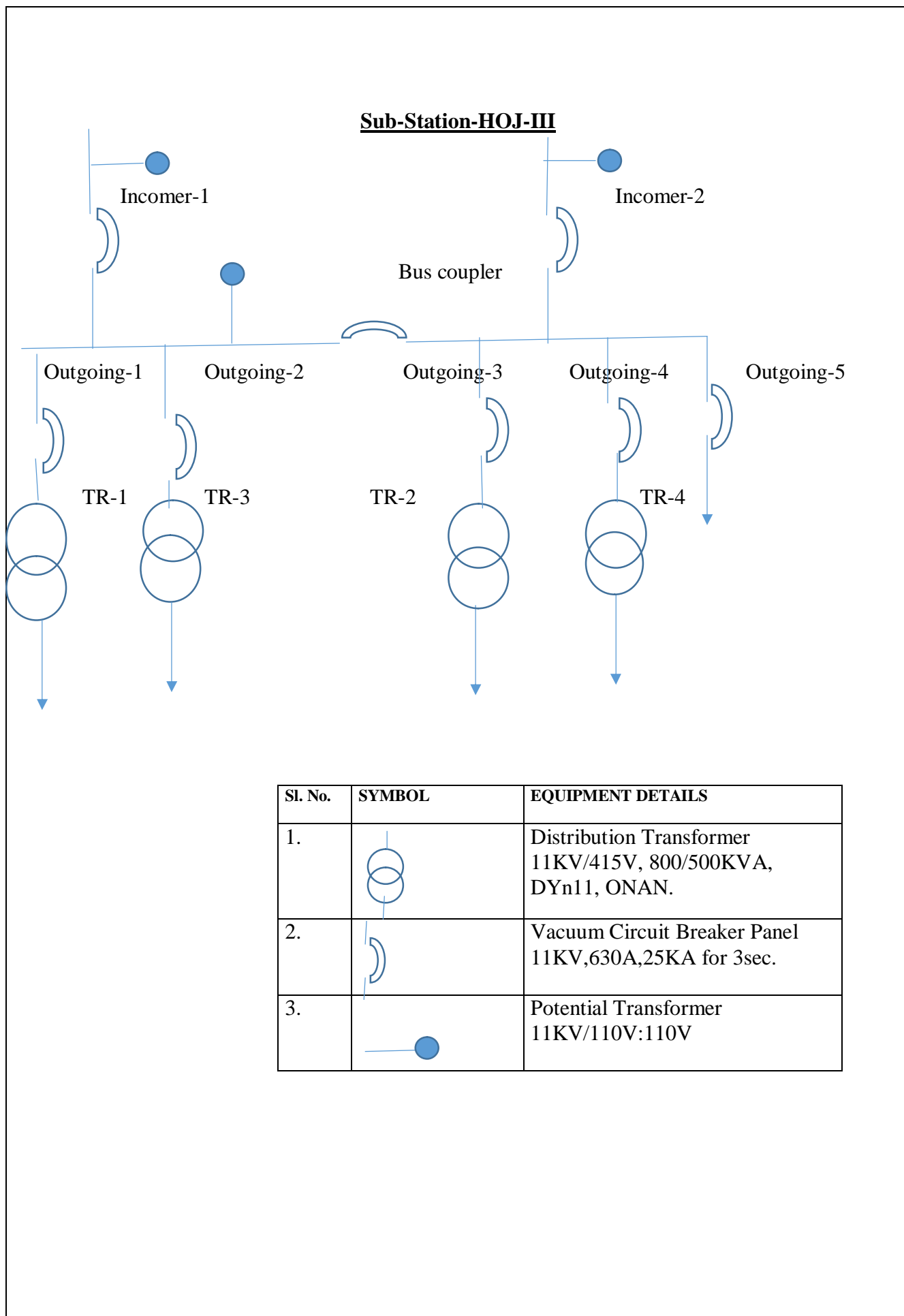


TABLE – I

Sub stations	Transformers	11KV,630A,VCB, Details of Circuit breakers			
		Incoming	Bus coupler	Outgoing	Total no of panels
Substation-3 (SS-3)	2 X 800 kVA	2	1	5	8
Substation-2 (SS-2)	2 X 800 kVA	2	1	4	7
Substation-1 (SS-1)	2 X 500 kVA	2	1	4	7
Substation- Anchorage Camp	1 X 500 kVA	1	0	3	4*
Substation-5 (SS-5)	1 X 500 kVA	2	1	5	8
3rd Oil jetty Sub-station	1 X 500 kVA	2	1	5	8
TOTAL	800 kVA – 4 nos. 500 kVA – 6 nos.	38Panels newly supplied and 4*Nos. Panels relocated from 3 rd Oil jetty sub-station. (Excluding BUS PT Panel).			

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Part-II Civil works

A. Scope of Work:

1.1. Scope of Work includes-

- a) The work comprises of thorough renovation and up-gradation of P&E Sub-Stations along with making new Cable trench & pathway from 3rd Oil Jetty Sub-station to Jawahar Tower Sub-station at Haldia Township, HDC. The scope of work includes thorough renovation and painting of sub-station buildings, raising the bottom level of cable trench and floor height of each sub-station, construction of VAT at each corner of the sub-station building, providing shed over transformer enclosures, replacement of damaged wooden window with aluminium shutters and grill, thorough repairing of rolling shutters, repairing and painting of fencing boundary line, brick soling over adjoining areas inside the premises along with creation of approach roads etc. In terms of items of work, it also involves earthwork, dismantling brickwork/concrete, brickwork, PCC, RCC, Plasterwork, laying of tiles, wood work, installation of aluminium windows, plumbing, sanitary works, Painting etc. with other appurtenant works as set forth in the attached bill of Quantities and all additional and varied works which may hereafter be required for satisfactory completion of the work. Work will be required to be executed at different spells as per direction during the period of contract.
 - b) All completed as set forth in the enclosed “Bill of quantities” including all other appurtenant works as may be required hereafter for successful completion of the work in accordance with the Trustees’ General conditions of contract, special Conditions of contract, Particular Specifications and the Bill of Quantities and all additional and varied works, which may hereafter be requested in accordance with of the Trustees, General Conditions of contract.
 - c) The scope of work also includes all other ancillary and appurtenant works as set forth in the attached Bill of Quantities in accordance with specifications for materials and workmanship as per this tender, relevant BIS codes, specifications as detailed in M.O.R.T.H Specifications and PWD, West Bengal’s Schedule of Rates for Road & Bridge Works and Building Works (Latest editions).
- 1.2. All practical steps shall be taken to prevent danger to persons employed from the risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris of materials as to render it unsafe.
- 1.3. The Contractor shall engage experienced personnel to carry out the works in all respects at their own cost. The Contractor shall supply all necessary labour, tools, tackles, lifting machineries, plants, scaffolding arrangement, different vehicular transport etc. and equipment with fuel & operator required for satisfactory execution of the work, at their own risk, cost and expense.
- 1.4. All necessary personnel safety equipment, as per relevant statutory provisions, should be kept available for the use of the persons employed on the site and the Contractor should take adequate steps to ensure proper use of safety equipment by those concerned.

- 1.5. The ordinary business and work of HDC, SMP Kolkata & others, as being carried out on & in the vicinity of the site, shall be continued during installation, testing & commissioning and maintenance. The execution of the work shall be conducted in such a way as to avoid interference with traffic of every kind by land and with any other work in progress in the vicinity.

B. Detailed Technical Specification:

1.6. General

- (i) All materials to be used in the permanent works shall be of the best quality of the kind and to the approval of the Engineer. They shall comply with the Specifications laid out in the BIS codes (referred to as IS) as revised or modified up to the date one month prior to the Tender Date unless otherwise specifically mentioned in the Tender Documents.
- (ii) Samples of materials to be supplied and used by the Contractor in the works shall be subject to the prior approval of the Engineer. For this purpose, the contractor shall furnish in advance, representative samples in quantities and in the manner as directed by the Engineer for his approval.
- (iii) Materials brought to the site, which in the opinion of the Engineer do not conform to the approved sample, shall, and if so directed by him, be removed by the contractor within 24 hours at his own cost from the site and replaced by materials of approved quality at no extra cost.
- (iv) The contractor shall produce manufacturer's test certificates for the materials procured by him. The Engineer may carry out or order any test on any of the materials as he may decide. The contractor shall, at his cost and expense, supply requisite materials for this purpose and render such assistance to the Engineer as he may require. The cost of testing will be borne by the Contractor. Further, if and as required by the Engineer, the contractor shall get the materials tested from approved laboratories at his expense and produce the test certificates for the inspection of the Engineer.
- (v) If the Engineer is of the opinion that the materials are not suitable for use on the works; he may reject the consignment, notwithstanding the Manufacturer's certificates. The Engineer's decision regarding the suitability of materials brought to site for use in the works shall be final and binding on the contractor, who shall remove the rejected materials from site and replace them with materials of required quality.
- (vi) In spite of approval of the Engineer of any material brought to the site, he may subsequently reject the same if in his opinion the materials has since deteriorated due to long or defective storage or for any reason whatsoever and is thereby considered unfit for use in the permanent works. Any material thus rejected shall be immediately removed from the site at contractor's cost and expense.
- (vii) All materials bought to the site shall be properly stored and preserved to ensure their quality and fitness during the course of their use in work. If the

storage arrangements are not to the Engineer's satisfaction, he may direct the contractor for arranging proper storage to which the contractor shall have to comply. The materials shall be stored in adequate quantities well in advance to meet the construction schedule and shall be guarded in the manner directed by the Engineer and to his satisfaction.

- (viii) All materials used in the works shall be of the best kind and to the approval of the Engineer's Representative. The materials supplied and the workmanship shall satisfy the relevant clauses as given below and in the Bill of Quantities of the tender.
- (ix) **All concreting works shall be Machine mixed and Machine vibrated. Poorly executed concrete have to be demolished and repair will not be allowed.**

1.7. **Materials**

(i) **Cement**

Unless specifically mentioned otherwise the cement to be used in the Works shall be OPC/PPC/PSC of Grade 53/43 conforming to IS: 12269 / IS: 8112 or cement conforming to IS: 455/IS1489 or grades approved by the Engineer. The source of supply shall be subject to prior approval of the Engineer. The Contractor shall endeavour to get approval of at least two makes / sources, so as to have an alternative make / source in hand in case of disruption in supply from the other make / source.

Once the quality and make of cement to be used in the Works is approved the Contractor shall endeavour to obtain further supplies from the same source and make. The Contractor should be prepared to furnish Manufacturer's test certificate as and when required to do so by the Engineer.

For each delivery of cement to the Site the Contractor shall forward to the Engineer a certificate to the effect that such cement was tested and analysed at the Factory and the results of such tests and analysis meet the specifications stipulated in the relevant Indian Standards. The supplier shall also furnish the date of manufacture of the lot from which the contractor has drawn the consignment.

Notwithstanding the provisions of certificate as stated above, each consignment of cement may after delivery on site and at the discretion of the Engineer be subjected to part or whole of the tests and analyses required by relevant IS Codes. Cost of all such tests shall be borne by the Contractor. No cement shall be used in the works until the Engineer has accepted it as satisfactory.

Storage space shall be adequate to store the required quantity of cement to suit the concreting program for the entire work as well as to permit proper storage.

Cement shall be stored in a proper manner in suitable dry and waterproof sheds to prevent damage from weather or improper storage. Where cement in bags are stacked, the stacking shall be at least 10 to 20 cms above the floor with at least a space of 60 cms kept all round between exterior walls and the stacks. The height of the stacks shall not be more than 10 bags.

Further safeguards shall be undertaken in monsoon such as covering the stacks with polythene sheets.

The cement storage at site shall be at Contractor's expense and risk. Damage, if any, occurring to cement due to faulty storage, shall be the liability of the Contractor.

Any consignment or part of a consignment of cement which has deteriorated in any way or which does not otherwise comply with the specifications shall not be used in the Works and shall be removed from the Site by the Contractor at no extra cost to the Employer. Storage of cement shall be such as to permit easy identification of the different consignments stored. Records must be maintained by the Contractor showing the date-wise receipts with consignment numbers, amounts used and the balance.

Removal of cement from storage sheds for use in the Works shall be on "First in, First out" basis.

(ii) **Water**

Water used for mortars, grout, concrete, curing and for other purposes on the Works, shall be clean and free from deleterious materials such as acids, alkalis, salts, vegetable or organic matters in injurious quantities. Potable water, in general, shall be used.

(iii) **Coarse Aggregate**

Stone aggregates required for works or aggregate for cement concrete (Plain or reinforced) shall be hard, of uniform and fine texture, free from faults or planes of weakness and free from weathered faces. These must also be free from loam, clay, free from organic matter or other impurities. The materials shall be stacked at roadside lands or other lands (as directed by the Engineer's Representative) in specified heights without causing inconvenience to traffic and in such a way as to afford maximum facilities of work. Aggregates for Cement concrete work should conform to IS: 383. Physical requirements and grading of aggregates for pavement courses shall be as specified for particular type of work and as described in P.W.D. (Roads) and the job specifications contained in the Bill of Quantities of the tender. Only stones as is available from quarries in Pakur areas will be normally used.

All coarse aggregate for concrete works must be well graded. These shall be screened for removal of dust and if so necessary in the opinion of the Engineer's Representative, shall be washed at the cost and expense of the contractor.

(iv) **Fine Aggregate**

All sand shall be clean, sharp and free from clay, loam, organic or any other foreign matter and shall be obtained from the approved source. The contractor shall get the sample of sand to be used in different kinds of work approved by the Engineer before using the same in work. Sand that in the opinion of the Engineer is dirty must be washed to his satisfaction at the cost and expenses of the contractor. Sand for cement concrete work must be Zone-II sand. The sand shall pass through a mesh, 4.75 mm square measured in the clear. Sand

shall not be used for concrete works if it contains more than 10% of fine grains passing through a 76 mesh sieve as used for cement test, nor should the fineness modulus be less than 2.00 unless specific permission is obtained from the Engineer's Representative, (ii) Medium sand may be used for cement mortar for masonry plaster etc. (iii) Sand filling in bed shall be done with Zone-III brown sand or as specified in the Bill of Quantities. The gradation of sand as per IS-383 is given below:-

IS SEIVES	PERCENTAGE FOR PASSING ZONE-I	PERCENTAGE FOR PASSING ZONE-II	PERCENTAGE FOR PASSING ZONE-III	PERCENTAGE FOR PASSING ZONE-IV
10 mm	100	100	100	100
4.75 mm	90-100	90-100	90-100	95-100
2.36 mm	60-95	75-100	85-100	95-100
1.18 mm	30-70	55-90	75-100	90-100
600 micron	15-34	35-59	60-79	80-100
300 micron	5-20	8-30	12-40	15-50
150 micron	0-10	0-10	0-10	0-15

(v) **Bricks:**

All bricks shall be of approved quality of standard specifications, made of good brick earth, uniform deep red, cherry or copper colour, thoroughly burnt in kiln (machine made) without being vitrified, regular in shape and size, sound, hard, homogeneous in texture, true to shape and of standard dimension and shall be free from cracks, chips, flaws, stones or humps of any kind and shall not show appreciable signs of efflorescence either dry or subsequent to soaking in water. The Bricks shall emit a clear ringing sound on being struck and have minimum crushing strength of 105 kg/sq.cm. All the bricks which absorb water more than 20% of their own dry weight after 24 Hours immersion in cold water shall be rejected.

(vi) **Steel**

All steel shall be clean and free from loose mill scales, dust, loose rust and coats of paints, oil or other coatings. Any scale or loose rust shall be removed before use, even though the same may have been supplied by the Department without any claim for extra charge for the same. No steel excepting those supplied by the Department or approved by the Engineer-in-Charge shall be used in work or brought to site by the contractor.

(vii) **Timber**

All timber shall be of best quality well-seasoned and/or well-treated for preservation and protection against decay etc. It shall be uniform in substance, straight in fibre, free from large or dead knots, sap, flaws, sun cracks, shakes or blemishes of any kind. Any insect damage or splits across the grain shall not be permissible. The colour of the timber shall be uniform throughout, firm and shining with a silky luster when planed and shall not emit dull sound when struck.

(viii) **Glass**

All glasses shall be of the specified type, colour visibility and sound and shall be free from cracks, flaws. Spick bubbles and blemishes and shall not weigh less than 7.4 kg/sqm unless otherwise specified.

(ix) **Paints etc.**

All paints shall be delivered in strong containers, marked with the colour of the paint, brand, volume of paint content in litres and of the best quality of approved make and brand as approved by the Engineer-in-Charge. Under no circumstances shall the paint be diluted with Linseed oil or otherwise. Any paint or enamel although of approved brand, which so hardens in the container that it cannot be readily broken up with a stirrer to a smooth uniform painting consistency, shall be rejected. Any paint or enamel too thick for proper brush application shall be rejected.

1.8. **Storage of Materials**

- (i) (a) All materials shall be stored in accordance with the provisions of given hereunder and other relevant IS Specifications. All efforts must be made to store the materials in proper places so as to prevent their deterioration or contamination by foreign matter and to ensure their satisfactory quality and fitness for the work. The platform where aggregates are stockpiled shall be appropriately made. The area shall have slope and drain to drain off rain water. The storage space must also permit easy inspection, removal and storage of the materials. Aggregates of different sizes shall be stored in partitioned stack-yards. All such materials even though stored in approved godowns must be subjected to acceptance test as per these specifications immediately prior to their use.

(b) **General:-**

All materials may be stored at proper places so as to prevent their deterioration or intrusion by foreign matter and to ensure their satisfactory quality and fitness for the work. The storage space must also permit easy inspection, removal and re-storage of the materials. All such materials even though stored in approved godowns/places, must be subjected to acceptance test prior to their immediate use.

(c) **Aggregate:-**

Aggregate stockpiles may be made on ground that is denuded of vegetation, is hard and well drained. If necessary, the ground shall be covered with 50 mm plank. Coarse aggregates, unless otherwise agreed by the Engineer in writing, 20 mm and downgraded Pakur variety stone chips. Aggregates placed directly on the ground shall not be removed from the stockpile within 30 cm. of the ground until the final cleaning up of the work, and then only the clean aggregate will be permitted to be used.

In the case of fine aggregates, these shall be deposited at the mixing site not less than 8 hours before use and shall have been tested and approved by the Engineer.

(d) **Cement:-**

Cement shall be transported, handled and stored on the site in such a manner as to avoid deterioration or contamination. Cement shall be stored above ground level in perfectly dry and water-tight sheds and shall be stacked not more than eight bags high. Wherever bulk storage containers are used their capacity should be sufficient to cater to the requirement at site and should be cleaned at least once every 3 to 4 months.

Each consignment shall be stored separately so that it may be readily identified and inspected and cement shall be used in the sequence in which it is delivered at site. Any consignment or part of a consignment of cement which had deteriorated in any way, during storage, shall not be used in the works and shall be removed from the site by the Contractor without charge to the Employer.

The Contractor shall prepare and maintain proper records on site in respect of delivery, handling, storage and use of cement and these records shall be available for inspection by the Engineer at all times.

The Contractor shall make a monthly return to the Engineer on the date corresponding to the interim certificate date, showing the quantities of cement received and issued during the month and in stock at the end of the month.

(e) **Water:-**

Water shall be stored in containers/tanks covered at top and cleaned at regular intervals in order to prevent intrusion by foreign matter or growth of organic matter. Water from shallow, muddy or marshy surface shall not be permitted. The intake pipe shall be enclosed to exclude silt, mud, grass and other solid materials and there shall be a minimum depth of 0.60 m of water below the intake at all times.

C. General Requirements :

- 1.9. In connection with the aforesaid work, all materials, will be under the custody of the Contractor, till completion of work and commissioning of the same.
- 1.10. In connection with aforesaid work, transportation and handling of all materials, welding, etc. should be done by the Contractor at their own risk, cost and arrangement.
- 1.11. The Contractor must make their own arrangements for delivery of all materials, as well as for careful and proper unloading at H.D.C.'s site. The responsibility for preventing damage / deterioration to the materials during transit, delivery, unloading at the designated point shall rest with the Contractor. All transit risk will be to Contractor's account.
- 1.12. The Contractor should arrange, at their own cost, all necessary tools, tackles, lifting machineries, scaffolding, temporary lighting, different vehicular transport

etc., required for the execution of total work.

- 1.13. No project surplus material will be taken over by HDC, SMP Kolkata after completion of the work unless otherwise specified.
- 1.14. All materials required for the entire work should be as per latest Indian Standard (IS) issued by Bureau of Indian Standard, as applicable, if not specified otherwise in this Bidding Document.
- 1.15. The supply, installation and commissioning of all items required for this work should be complied with the above Acts & Rules and relevant Code of Practice of the **Bureau of Indian Standard**, if not specified otherwise.
- 1.16. If during execution of work any damage takes place in the property of HDC, the same will have to be mended good by the contractor at their risk, cost and arrangement.
- 1.17. Relevant aspects of following Rules / Code of Practices should also be followed and complied with:
 - Indian Factories Act
 - Dock Workers (Safety, Health & Welfare) Act, 1987
 - The Workmen's Compensation Act, 1923
 - The Minimum Wages Act, 1948
 - The Contract Labour (Regulation & Abolition) Act, 1970
 - Other Local Regulations

Part-III :- NON-COMPREHENSIVE / COMPREHENSIVE MAINTENANCE AND MANNING

SCOPE OF WORK

1.1. Area of work under HDC, Township

- a) Quarters and offices: -2000Nos.(approx..)
- b) Sub-stations: -07Nos.
- c) Hospitals: -01no.
- d) Auditorium: -2Nos.
- e) Guest House: -02Nos.

Existing HT network-24Km (Approx.) and LT network 250Km(approx.).

Battery limit for Maintenance of incoming lines starts from Ranichak, Haldia.

Different Sub-stations viz.Substation-1, Substation-2, Substation-3, Substation-4, Substation-5, HOJ-III Substation & Anchorage Camp Substation at Haldia Township of HDC, SMP are receiving Power Supply from Intake Sub-station at Chiranjibpur, through one feeder at 11 kV level to meet the demand of the Offices, Hospital, Residential Quarters & port users and another Industrial feeder at 11 kV level for HOJ-III, Jawahar Tower Complex & HFTPL.

Existing contract demand of commercial feeder for Residential zone covering Hospital, Residential Quarters, Guest House & Offices is 1.8MVA and demand of Industrial feeder at township is 2.5MVA for HOJ-III Substation, Jawahar Tower Complex & HFTPL at 11kV level.

1.2. The Contractor shall have to provide Highly Skilled / Skilled / Semi-skilled / Unskilled & experienced manpower, round-the-clock, for operation of HT (11 kV) & LT Switchgears (including outdoor Gang Isolators), DG sets, etc. and preventive & breakdown maintenance of various Sub-stations [11 kV / 415 V], HT & LT Power Network (both overhead & underground), Feeder Pillars, etc. of Haldia Dock Complex (HDC), Syama Prasad Mookerjee Port, Kolkata (SMPK), at Haldia Township.

The Contractor shall also provide Skilled / Semi-skilled / Unskilled & experienced manpower, for electrical maintenance of Residential & Non-residential buildings at the Residential Zone of HDC, SMPK, in Haldia Township.

1.3. The scope of work includes, but not limited to, following activities, to be undertaken by the personnel engaged by the Contractor:

- i) Round-the-clock operation, maintenance, repair & servicing of all electrical installations / points including electrical distribution system of HDC, SMPK's Offices & installations at Haldia Township, to ensure minimum interruption, smooth functioning of Offices, Guest House, Port House, DC Bungalow, Port Hospital, Pump Houses, Server Rooms, etc. It includes continuous attending verbal / written complaint made by the occupants / staff / officials with the works related to maintenance of HT Panels, Transformers, LT Panels, Distribution Boards, Sub Distribution Boards, underground / surface laid armoured / un-armoured Cables, Starters, Motors, Circuit Wiring, Light Fittings, Fans, Geysers, Inverters, Diesel Generators, earthings, etc.

- ii) Visual preventive check-up, cleaning & routine maintenance (including Winter and Pre-monsoon Maintenance):

For Distribution Network [separate sets of standard checklists are to be maintained for HT & LT Transmission Network (includes OH & UG Power line, Transformers, HT & LT Breakers, Isolators, Transmission Towers, insulators, LAs, Earth Pits etc. till Feeder Pillars)

and

For Quarters, Offices & other establishments, [standard checklist/ register to be maintained for inventories starting from Feeder Pillars to Energy Meters, SDFUs, Kit-Kat fuses, MCCBs, MCBs, Circuit Wiring, Switch Boards, Switches, Sockets, Regulators, Call Bells, Fans (Ceiling, Cabin, Air Circulators, Exhaust etc.), Lights (conventional, CFL, LED), Geysers, Earth Continuity Conductor, Earth Pits, Starter switch for ACs / Motors, etc.].

In case of any abnormality, the same shall have to be rectified by the personnel engaged by Contractor on immediate basis.

The Checklist / Register format for each kind of inventories or set of equipment / assembly (OH & UG Power line, Transformers, HT & LT Breakers, Isolators, Transmission Towers, insulators, LAs, Earth Pits, Feeder Pillars to Energy Meters, SDFUs, Kit Kat fuses, MCCBs, MCBs, Circuit Wiring, Switch Boards, Switches, Sockets, Regulators, Call Bells, Fans (Ceiling, Cabin, Air Circulators, Exhaust etc.), Lights (conventional, CFL, LED), Geysers, Earth Continuity Conductor, Earth Pits, Starter switch for ACs / Motors, etc.) to be submitted by the Successful Bidder, for approval of the 'Engineer' of his representative.

The successful bidder shall follow the aforesaid Checklist / Register format, duly approved, while performing the preventive & routine maintenance for respective Inventories or set of equipment / assembly on regular interval.

- iii) The Contractor should use calibrated measuring & testing instruments [having Valid Calibration Certificate] and should also ensure revalidation of such calibration as and when required. In this regard, initially the Contractor shall have to submit a list of measuring and testing instruments (mentioning the period of validity of Calibration Certificates) to be used. The photocopies of the Calibration Certificates (including the revalidations) of the said measuring and testing instruments, shall have to be submitted to the 'Engineer', from time to time.

Calibration Certificate of instruments / equipment, used for testing purpose, should be issued by an NABL accredited Laboratory. For testing equipment where NABL accreditation is not available, calibration certificate from educational institutions like IITs, NITs, J.U., C.U., B.H.U. only can be accepted, provided they demonstrate traceability.

- iv) Day to day switching on & off Street Lights, High Mast lights, Area Lights of non-residential buildings, etc. [in case of failure of time-switches].

Fault identification of Street Lights, High Mast lights, Lattice type lighting towers, Area Lights and repairing, rectifying, re-fixing & re-commissioning of Street Light Fittings, Flood Light Fittings, other Luminaries [duly replacing the required spares, including cleaning the reflector, acrylic cover & replacement of gasket etc.], as & when required. In case of advance warning of Cyclone, High Mast Luminaire carriage to be lowered and secured properly at carriage resting position. Luminaire carriage secured properly to avoid any damage to the Mast and subsequent raising of High Mast carriage based on clearance by HDC.

- v) Checking of insulating oil level of transformer and topping up the same, if required to maintain the desired level. Carrying out filtration, testing of acidity and di-electric strength of insulating oil annually preferably during winter. Arrangement of Transformer filtration machine at contractor's risk and cost.
- vi) Attending the cable faults and timely restoration. Proper maintenance of different types and size of cables, cable terminations boxes, cable trays, clamps etc. of the entire cable route.
- vii) Routine patrolling (at least once per day) of substations, feeding power to Haldia Township from Intake Substation and incoming Lines/ cables, inside Haldia Township, under the jurisdiction of HDC, SMPK.
- viii) Visual inspection of switchgear, transformers, relays, battery, battery chargers etc.
- ix) Replacement of spares of switchgear, transformers, relays etc.
- x) Pre & post monsoon inspection and maintenance of switchgear, transformers, relays, battery, battery chargers, lines, in totality.
- xi) Special patrolling on tripping of lines, checking of insulation resistance of switchgears and cables.
- xii) Pruning of trees for smooth flow of power through the Overhead Lines.
- xiii) Carrying out Identification of faulty system, preventive or breakdown maintenance / rectification works required for smooth flow of power through the Overhead Lines, Underground Cables, etc.
- xiv) Cable fault identification testing, Earth excavation, supply of qualified cable Jointer and Rectification of Cable fault(s) for commissioning of the system, till defect liability for the cables supplied by the contractor.
- xv) For existing cables only identification of faulty cables and necessary work for restoration of power supply is in the scope of the contractor.
- xvi) Painting of indoor and outdoor equipment as directed by Dy. Manager (P&E) is in Contractor's scope.
- xvii) Rectification works arising out of incidence of unpredictable nature e.g., structure collapse, foundation failure, etc. Immediately on occurrence of such incidents, the Contractor shall report to Engineer-in-charge and arrange for an immediate joint inspection to assess the rectification works to be carried out.
- xviii) Carrying out electrical maintenance of Residential & Non-residential buildings at the Residential Zone of HDC, SMPK, in Haldia Township
- xix) Carrying out other electrical works of HDC, if there is no specific work (be it preventive or breakdown), as per the instruction of
Dy. Manager (P&E), posted at Township Electrical Maintenance Section.
- xx) Cleanliness and Up-keepment of Sub-station building and its premises is in the scope of the contractor.

1.4. MAN POWER:

The Contractor shall deploy necessary manpower for round-the-clock manning for the aforesaid non-comprehensive / comprehensive maintenance & manning contract, after completion of the upgradation work. The minimum number of manpower, to be provided (round the clock) by the Contractor, for the instant work, should be as specified below:

Sl. No.	Category	Minimum no. of manpower to be provided by the Contractor.
1.	Operator (Electrical) / Supervisor [Highly-skilled category]	01 per shift
2.	Electrician [Skilled category]	02 per shift & 03 per day in General Shift
3.	Helper [Semi-skilled / Unskilled category]	02 per shift & 06 per day in General Shift

Name of the shift	Duration
First (Day/ <u>Morning</u>)	06: 00 Hrs. to 14: 00 Hrs.
Second (Afternoon/ <u>Evening</u>)	14: 00 Hrs. to 22: 00 Hrs.
Third (Night)	22: 00 Hrs. to 06: 00 Hrs.
General	08: 00 Hrs. to 17: 00 Hrs.

Statutory Weekly Roster Off day is to be provided to all workmen. But, required number of relievers are to be made available to compensate against Weekly Roster Off days and for any absence due to leave, sickness, etc. At no stage, shortfall of staff will be accepted, in case of shift manning.

No reliever is required against Weekly Roster Off days with respect to the General Shift manning. However, required numbers of relievers are to be made available to compensate against shortfall of General Shift manning (for absence due to leave, sickness, etc.), with respect to the minimum requirement mentioned above.

The aforesaid deployment of man power shall have to be increased depending upon the prevailing emergency situation without claiming any extra cost.

In case of shift manning, the Contractor may follow the timings of HDC's operational shifts or can maintain their own timings but, the same must cover the whole day round-the-clock. The deployed man power should be capable to cater to any requirement in all three operational shifts round-the-clock on all days of the week, irrespective of holidays. etc.

The qualifications & experiences of the manpower, deployed by the Contractor, would be as follows:

Category	Qualification / Experience [minimum requirement]
Operator (Electrical) / Supervisor [Highly-skilled category]	Diploma in Electrical Engineering and possessing a valid Supervisor's Certificate of Competency (SCC) , issued by the appropriate statutory authority, against the relevant parts, for carrying out such type of job [i.e. at least for 11000 V system].
Electrician [Skilled category]	ITI (NCVT- 02 years) pass and possessing valid Workman's Permit, issued by the appropriate statutory authority, against the relevant parts, for carrying out such type of job [i.e. at least for 11000 V system]. or Class VIII pass, with 05 years experience and possessing valid Workman's Permit, issued by the appropriate statutory authority, against the relevant parts, for carrying out such type of job [i.e. at least for 11000 V system].
Helper [Semi-skilled / Unskilled category]	Class VIII pass, with 02 years work experience in industries.

1.5. **PENALTIES:**

- a) Non availability of minimum strength of man power shall attract a penalty as per the table furnished below:-

Sl. No.	Category	Penalty
1.	Operator (Electrical) / Supervisor [Highly-skilled category]	₹ 1,250.00 per shift per head
2.	Electrician [Skilled category]	₹ 1,110.00 per shift per head
3.	Helper [Semi-skilled / Unskilled category]	₹ 900.00 per shift per head

- b) Non-functioning of High Mast luminaries & Streetlight luminaries, AC point, ICDP, ICTPN, Sheet metal TPN, Sheet metal DP, Fuse / MCB / MCB DB beyond two days from the date of lodging complaint by SMPK official shall attract a penalty of ₹150.00 per day for each item. Non-functioning of light / fan/ plug /call bell at residential or non-residential buildings beyond two days from the date of lodging complaint by SMPK employees shall attract a penalty of ₹ 50.00 per day for each item.

1.6. **RECORDS:**

The Contractor shall maintain and keep the records of day-to-day maintenance activities, i.e. material consumption, work carried out, attendance of workmen, etc. The Contractor

shall also maintain and keep the daily operational report of Major HT / LT Power Distribution Network (including substations) and other Electrical installations [like no. of non-glowing lamps in street light / High Mast / area lights , partly power failure (if any), etc.] and shall have to submit the same to the Dy. Manager(P&E), Township Electrical Maintenance Section, HDC, in specified formats .

The contractor shall have to follow the schedules of maintenance, as will be framed jointly by the representatives of the HDC, SMPK and the Contractor.

The Contractor shall maintain a Complaint Register, mentioning the date of complaint & date of rectification of fault / defect. After rectification of the fault / defect, the same should be countersigned by the persons who lodged the complaint or his / her representative. The aforesaid register should be countersigned by the representative of Dy. Manager (P&E), Township Electrical Maintenance Section, HDC, atleast once in a week.

1.7. MATERIALS FOR MAINTENANCE:

Cost of the spares required for the equipment & installations supplied by the Contractor would be borne by the Contractor. However, spares required for maintenance of other installations would be supplied by HDC on free of cost basis. If such spares are not available with HDC, the Contractor would be informed to supply the same. Cost of such maintenance spares, if supplied by the Contractor, would be reimbursed by HDC, alongwith 6% handling charges.

- 1.8. The contractor shall have to maintain a site store with necessary stock / materials with a view to timely attending the fault in any electrical installations so that down time of the concerned portion of the electrical distribution system can be kept to the minimum.

In case of breakdown leading to interruption of power supply within the jurisdiction of work, immediate action shall be taken from Contractor's end and stop gap or temporary arrangements for resumption of power and functioning of the system is to be made as early as practicable. A qualified & experienced Supervisor shall be present at the work spot. This arrangement will however be allowed only for a week within which period, the original installation / system has to be restored & re- commissioned.

1.9. TOOLS, TACKLES AND CONSUMABLES:

- a) Providing required tools & accessories to the personnel deployed by the Contractor, for the instant work, is under the scope of the Contractor.

The bidder shall include in their bid any special tools and tackles, if any, for maintenance, erection & testing of the transmission line. The list of such special tools and tackles shall be given in the bid and prices for bringing & using such items shall be deemed to be included in the bid price.

Work without proper tools and tackles will not be permitted. Before commencement of the contract, the Contractor shall have to get the approval of tools for maintenance. **After completion of the contract, tools and tackles based on approved list, shall be handed over to HDC, on "as where is basis".**

The minimum tools & tackles, which are required to be made available at site all the time, are given below:

List of tools to be maintained (minimum) is given below:

- i) Trolley Ladder of suitable height for maintenance of 01 no.
Street Light Luminaries/ Poles, Self-Supporting
Aluminium / Wooden Ladder, Extendable
Aluminium Ladder, etc.
- ii) Tool Kit consisting of Screw Driver Set, Nose 02 set
Pliers, Cutting Pliers, Test lamp, Tester, Screw

Driver, Adjustable Spanner, Steel tape, Hacksaw & Frames.

iii) Hammer, Chisel, Pipe Wrench.	02 set
iv) Ring spanner full set	02 set
v) Double handed spanner full set	02 set
vi) Wrench spanner	02 nos.
vii) Hammer	02 nos.
viii) Double end spanner, Box spanner.	01 set
ix) Set of Spanners (Ring and Open).	01 set
x) HT Gloves (11kV and above)	03 set
xi) Allen key spanner set	01 set
xii) Electrical Portable Drilling Machine (including Bits).	01 no.
xiii) Hacksaw	02 nos.
xiv) Cable / conductor crimping tool	01 no.
xv) Mini welding / cutting machine	01 no.
xvi) Digital clamp-on multi-meter.	01 no.
xvii) Insulation Resistance Tester	01 no.
xviii) Earth Resistance Tester.	01 no.
xix) Hydraulic Crimping Tools.	01 no.
xx) Tarpaulin Tent Set.	01 no.
xxi) Crow bar and Axe.	01 set
xxii) Vacuum cleaner.	01 no.
xxiii) Emergency Light.	01 no.

b) The Contractor shall, at their own cost, provide safety gears i.e. Helmet, Insulating Gloves for Electrical Works, Cotton Gloves, Safety Shoes, Rainy Wears, Reflective Jacket, Soap, Sanitizer, Gloves, Masks, etc. to their workmen.

c) The Contractor shall, at their own cost, provide first aid box(s), as per requirement, for their workmen.

d) Consumable materials like Transformer oil, Petroleum jelly, Grease, lubricants, cleaning solvents, insulating tapes, Cable repair-wrap around jackets, cable lugs, Glands, welding electrode, sealing compounds, Distil water etc. would be provided by the contractor against supplied materials only. Consumable for items not supplied by the contractor will be provided by HDC for execution of work on free of cost basis.

1.10. The aforesaid manpower, to be engaged by the Contractor, should possess requisite valid Workman's Permit, as mentioned above, from the appropriate statutory authority. Revalidation / renewal of Workman's Permits are to be obtained by the Contractor / workmen deployed by the Contractor, at their cost & arrangement.

1.11. The Contractor should ensure that no person engaged by them for the instant work, is without possessing the required Workman's Permit.

- 1.12. The Contractor shall obtain at their own cost and expenses, all required licences / permit, as and when required under the existing statutes or central or State enactment that may be in vogue or may be enacted/ enforced during the period of contract for performance of work under this contract. The Contractor shall ensure that the licences / permits and other statutory requirements for this purpose are kept valid during the currency of the contract. The Contractor shall also be responsible for fulfilling all legal and statutory provisions connected with this contract. It is the duty of the Contractor to obtain / renew required licenses / permits / certificates, in connection with the instant contract, at their own cost & arrangement.
- 1.13. The Contractor would be required to arrange regular supervision at the deployment points, at no extra cost.
- 1.14. The personnel engaged by the Contractor must be punctual, disciplined, hard-working, suitably experienced and vigilant in performance of their duty. The Contractor shall submit the list of employees (with Bio data, including qualifications & experience) deployed by the Contractor together, for the instant work and the same should be updated from time to time, in case of any change.
- 1.15. The personnel engaged by the Contractor should be medically / mentally / physically fit to work during the specified working hours. HDC, SMPK, shall have the right to ask for the removal of any person of the Contractor who is not considered to be orderly in discharge of his duties/ role, if found dubious in nature. The persons deployed by the Contractor should be adult, medically & physically fit, having sound health & mind. Employment of child labourer will lead to termination of contract.
- 1.16. The Contractor shall submit the Character & Antecedent verification (certificate issued by Police Authority) of all personnel engaged at HDC, SMPK through this contract and submit the same to HDC, before deployment of their personnel at HDC, SMPK.
- 1.17. If it is found that, any personnel engaged by the Contractor indulged / indulging in illegal & intolerable activities, he will be handed over to the police or any other administrative action, as deemed fit against him, will be taken. The Contractor shall not replace their personnel, without proper substitute & knowledge of HDC.
- 1.18. HDC shall have the powers to issue necessary guidelines covering discipline, decorum, work performance, safety, etc. to the personnel engaged by the Contractor and the persons engaged shall ensure compliance with all such instructions. It shall be the duty of the Contractor to provide supervision and direction to the engaged personnel for satisfactory performance and compliance of all instructions given by HDC.
- 1.19. The Contractor shall be responsible for satisfactory service of their personnel engaged. In the event HDC, SMPK , being not satisfied with the conduct of any personnel provided by the Contractor, the Contractor shall forthwith replace the personnel concerned within 24 hrs on being so advised by the 'Engineer' of the contract or his representative.
- 1.20. If, at any time during the period of contract, it is observed that the services under the provisions of this contract are not being rendered upto the satisfaction of HDC and / or the statutory obligations, in respect to contract, are not being fulfilled by the Contractor, the contract may be terminated in full or in part, after giving 15 days' notice. The decision of Haldia Dock Complex in the matter shall be final and binding on the Contractor.
- 1.21. The personnel engaged by the Contractor shall abide by all safety norms, rules & regulations for working in HT / LT installations, including Lines.
- 1.22. In case of any damage / accident occurs in HT / LT installations, for mishandling, mal-operation, due to negligence of Contractor's personnel, the damages will have to be

mended good by the Contractor at their risk, cost and arrangement. Otherwise, the same will be repaired / replaced by HDC, either departmentally or through outside agency and the cost of repairing / replacement will be recovered from the contractor, along with overhead charges @19.25%.

The contractor should indemnify to Haldia Dock Complex in this regard, in the prescribed format of Haldia Dock Complex, on a non-judicial stamp paper of value not less than ₹ 50.00.

- 1.23. The contractor shall fulfil all legal / statutory obligations in respect of the instant contract. HDC, SMPK, shall not accept any liability whatsoever in the matter.
- 1.24. Photocopies (duly attested by the Contractor) of valid Workman's Permits of the personnel engaged by the Contractor, shall be submitted by the Contractor and the same should be updated from time to time, in case of any change.
- 1.25. The Contractor shall issue Identity Cards to each personnel deployed for the instant work. The Identity Card should bear required details of the personnel viz. name, permanent & residential address, identification mark, age, etc. along with a photograph, duly authenticated by the Contractor.

Photocopies (duly attested by the Contractor) of the aforesaid Identity Cards shall be submitted by the Contractor and the same should be updated from time to time, in case of any change.
- 1.26. All the persons deployed by the Contractor shall wear Safety Helmet, Safety Shoe, Safety Hand Glove and other safety Personnel Protective Equipment (PPEs), alongwith Identity Cards card issued by the Contractor
- 1.27. It shall be the responsibility of the Contractor to provide necessary transport for their workmen and for providing materials, tools & tackles, other accessories, etc. in connection with the instant work, upto SS-3 substation / TSEM premises.

For carrying heavy materials, from the store to the point of use, necessary vehicular support will be provided by HDC, SMPK. However, handling of the materials, including loading / unloading shall be done by the workmen of the Contractor.

In normal circumstances, the workmen shall reach the work spot by their own arrangement. However, in case of emergency or in case of bad weather or any abnormal situation, vehicular support may be provided by HDC, SMPK to the workmen for attending any breakdown / power failure.
- 1.28. No complaint regarding shortage of staff, any other facilities, absence of staff, etc. shall be entertained. It would be the responsibility of the Successful Bidder to protect the deployment points, to carry out assigned functions, as per scope of work.
- 1.29. Administrative and related activities of the personnel, to be deployed by the Contractor, shall be the sole responsibility of the Contractor, at their sole expenses & arrangements.
- 1.30. All personnel engaged or employed by the Contractor shall be the sole liability & responsibility of the Contractor and HDC will have no liability, in this regard. All liabilities towards overtime or extra payment for any person engaged / deployed for more than statutory normal working hours shall be solely borne by the Contractor. The Contractor shall make regular and full payment of wages, salaries, etc. to the persons engaged or employed as required under various regulations and statutory provisions.
- 1.31. The Contractor shall ensure that all personnel engaged or employed by the Contractor get minimum wages and such other benefits, as are admissible under various labour laws applicable in India. They shall provide full information in respect of wages etc., paid to his employees so deployed in conformity with the provisions of contract Labour (Regulation and Abolition) Act, 1970.

- 1.32. The persons deployed by the Contractor for the work shall be the employees of the Contractor for all intents & purposes. It should be understood that there is no “employer – employee”, “master – servant” or “principal – agent” relationship between HDC, SMP, Kolkata and the Contractor and/or the personnel engaged by the Contractor, in any manner whatsoever (accrue implicitly or explicitly).

The Contractor shall indemnify HDC, SMP, Kolkata, from the possible future demand of workers / personnel engaged by them under this contract, for absorption in HDC, SMP, Kolkata. It shall be the responsibility of the Contractor to address & solve such demands, if such a situation arises. HDC, SMP, Kolkata shall have no liability whatsoever in the matter.

- 1.33. The Contractor shall be directly & exclusively responsible for any liability arising due to any dispute or difference between them and the personnel engaged. The Contractor shall be solely responsible for settlement of any claim / dues, in case of any of the personnel engaged under this contract sustaining injury to himself or his property, within the premises / deployment points of HDC. The Contractor shall have to take necessary insurance cover and provide for medical treatment for all their personnel, in this regard, at their own cost and expenses.

- 1.34. The Contractor must have EPF & ESI Code Nos. and they shall pay their contribution (i.e. employer’s contribution) on account of ESI & EPF w.r.t. the personnel, to be deployed by them, as per statutory requirement. The Contractor shall also deduct the contribution of the personnel engaged (i.e., employees’ contribution) on account of ESI & EPF from their wages, as per statutory requirement. The Contractor shall then deposit with the respective authorities, both the aforesaid contributions i.e., the employer’s and employee’s contributions, as statutorily required.

- 1.35. The contractor should obtain required Labour Licenses from appropriate authority before commencement of job.

1.36. **TESTING INSTRUMENTS:-**

Providing following minimum testing instruments at SS-3 sub-station, for the instant work, is under the scope of the Contractor.

i)	Portable digital insulation tester, 500V	02 nos.
ii)	Portable digital insulation tester, 2500V	02 nos.
iii)	Digital Clamp meter cum Continuity tester	03 nos.
iv)	Power analyser	01 No.
v)	Portable Digital/Analog High Voltage testing kit 0-28KV AC.	01 set
vi)	Oil BDV testing machine	01 no.

1.37. **EXCLUSIONS: -**

- a) Time to time checking and validation of safety equipment like Fire extinguishers installed by the contractor at sub-stations.
- b) Cable fault identification testing, Earth excavation, supply of qualified cable Jointer and Rectification of Cable fault(s) after conclusion of defect liability of supplied materials and existing cables.
- c) Rectification of cables in case of any damage by external agency.

1.38. **LIST OF MINIMUM MANDATORY SPARES TO MAINTAINED DURING CONTRACT**

Providing following minimum spares at SS-3 sub-station, for the instant work, is under the scope of the Contractor.

Sl. No.	Item	Qty.
1.	Transformer Gasket	02sets
2.	Transformer radiator, Butterfly valve	02Nos.
3.	Transformer radiator, Drain valve	02Nos.
4.	Buchholz relay	01No.
5.	Transformer HV bushing, 11KV	03Nos.
6.	Transformer LV bushing, 1.1KV	04Nos.
7.	11KV Single phase, Panel Mounted PT	03Nos.
8.	11KV Single phase, Panel Mounted CT	03Nos.
9.	VCB Tulip contacts	02sets
10.	Numerical relay	1set each type.
11.	11KV, 630A, VCB Carriage	1No.
12.	VCB Spring charge motor	1No.
13.	Multifunction meter	1No.
14.	ACB, 1600A/1250A	01No.
15.	ACB, 630A	02Nos.
16.	ACB Tulip contacts	02sets.
17.	MCCB, 400A	02Nos.
18.	MCCB, 250A	03Nos.
19.	Space heaters	03Nos.
20.	Cable repair Wrap around jacket	As required
21.	Heat shrinkable type St. through joints	02Nos.
22.	Heat shrinkable type Indoor/ outdoor Jointing kit	02Nos.
23.	400A SDFU	02Nos.
24.	250A SDFU	02Nos.
25.	Single phase 11KV ,LA	03Nos.

After completion of the contract above spares may be handed over to HDC on free of cost basis.

Part-IV Bill of Quantities

PREAMBLE TO THE BILL OF QUANTITIES

- **The Bill of Quantities must be read with the General Conditions of Contract, the Special Conditions of Contract and the Particular Specifications of Work and the Bidder is deemed to have examined the above documents and to have thoroughly familiarise himself with the total scope of work and its mode of execution.**
- **The quantities given in the Bill of Quantities are approximate only and are given to provide a common basis for tendering. Payment will be made according to the quantities of each item of work actually carried out at the accepted rates as per Order Letter. The measurements of each item of work shall be measured jointly by the Engineer or his Representative.**
- **This being a percentage rate tender, the Bidder shall quote his rates as percentage above / below / at per with the estimated amount put to tender on his own analysis.**
- **Where separate item wise cost of mobilisation, demobilisation, temporary works, mandatory spares, tools and tackles etc., have not been provided in the Bill of Quantities for works required under the Contract, then the cost of such works shall be deemed to have been included in the prices and rates of other items**

The Tender Price thus established would be taken for comparative evaluation of tenders.

Bill of Quantity with estimated cost

Civil Works

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
1	Earth work in excavation in foundation in any soil including disposal of surplus excavated earth within a lead a lead of 100 M include for bailing our subsoil or rain water, if required, all complete and as directed.	1230.00	₹ 119.27	Cu.M.	₹ 146,702.10
2	Earth work in filling in foundation trenches or plinth with good earth, in layers not exceeding 150 mm.including watering and ramming etc. layer by layer complete. (Payment to be made on the basis of measurement of finished quantity of work) (a) With earth obtained from excavation of foundation	350.00	₹ 77.54	Cu.M.	₹ 27,139.00
3	Cleaning compound premises of shrub, plants, jungles etc. by cutting and removing as directed (Specified permission of Engineer - in - charge prior to execution will be necessary).[Payment to be made on area cleaned]	3874.00	₹ 11.00	Sq.M	₹ 42,614.00
4	Labour for taking out old soling/ edging including removing debris	830.00	₹ 9.81	Sq.M.	₹ 8,142.30
5	Taking out of damaged/bulged out cement plaster or skirting of any thickness including raking out of joints and cleans the surface for plastering and dispose off rubbish within a lead of 75 m. Also include for making scaffolding from G.L. to 2nd floor level etc., all complete and as directed.	3600	₹ 19.00	Sq.M.	₹ 68,400.00
6	Dismantle cement brick work by carefully chiselling out as directed. Include for cleaning the serviceable bricks including stacking and return to RZ store for reusing and disposal of unserviceable materials, within a lead of 75 m. etc. all complete and as directed.	52	₹ 447.00	Cu.M.	₹ 23,244.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
7	Dismantling the cement concrete (of any thickness) by carefully chiseling out. Include for removing the debris within a lead of 75 m etc. all complete and as directed.				
	Plane cement concrete	54	₹ 939.00	Cu.M.	₹ 50,706.00
8	Dismantling R.C.C floor, roof, beams, Columns, Chajja etc. including cutting rods and removing rubbish as directed within a lead of 75 m, including stacking of steel bars.	36	₹ 1,956.00	Cu.M.	₹ 70,416.00
9	Chisel out existing damaged cement concrete I.P.S. / Mosaic / Terrazo / Tiles floor surfaces (of any thickness), square up the edges, clean the surfaces thoroughly for laying new concrete. Include for removing the debris within a lead of 100 metres, all complete and as directed.	95	₹ 50.00	Sq.M.	₹ 4,750.00
10	Labour for lowering and stacking after dismantling in parts R.S. joists, channels, angles, tees, plates, pipes etc. complete as directed and return to RZ Store.	10	₹ 197.00	Qntl	₹ 1,970.00
11	Labour for hoisting and placing in proper position departmental R.S. joists, channels, angles. Tees, plates etc. including fitting and fixing same with bolts and nuts, if necessary (but excluding cost of such bolts and nuts)	0.9	₹ 412.00	Qntl.	₹ 370.80
12	Filling in foundation or plinth by silver sand in layers not exceeding 150mm as directed and consolidating the same by thorough saturation with water, ramming complete including the cost of supply of sand. (Payment to be made on measurement of finished quantity.)	520.00	₹ 543.51	Cu.M.	₹ 282,625.20
13	Cleaning of exposed reinforcement preferably upto full diameter by wire brush, applying two coats of polymer based rust removing compound left for 24 hours, removing the coating and then applying two coats of polymer modified anti corrosive protective coating formulated to inhibit the corrosion of reinforcement as per manufacturers specification.	30	₹ 785.00	Sq.M.	₹ 23,550.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
14	Applying epoxy based reactive joining agent for joining the old concrete with fresh concrete to be applied within manufacturer's specified time as per manufacturers specification. (0.4 kg / sq.m of concrete surface.)	640.00	₹ 309.00	Sq.M.	₹ 197,760.00
15	Brick soling with picked jhama bricks including preparation of bed as necessary with brick joints properly filled in and packed with powdered earth and including necessary cushion of similar material below the soling (and in between layers when more than one layer is used) completes as per direction. Single brick flat soling (thickness 75 mm.)	1750	₹ 336.00	Sq. M.	₹ 588,000.00
16	Brick soling with picked jhama bricks including preparation of bed as necessary with brick joints properly filled in and packed with powdered earth and including necessary cushion of similar material below the soling (and in between layers when more than one layer is used) completes as per direction. Soling or dry pavement with one brick-on-edge laid in herring bone pattern (thickness 125 mm.)	2800	₹ 564.00	Sq. M.	₹ 1,579,200.00
17	Brick edging 75 mm wide with picked jhama bricks, laid true to line and level including cutting necessary trench in soil or in hard metal surface, laying the bricks and repacking the trench (on both side of the edging) with spoils and ramming the same thoroughly complete as per direction. with spoils and ramming the same thoroughly complete as per direction. Brick-on-end edging (250 mm) depth.	75	₹ 45.70	Mtr.	₹ 3,427.50
18	Rule pointing to brick soling in cement mortar (1:4) with admixture of pigment to match with colour of brick including racking out joints etc. all complete and as directed.	2800.00	₹ 79.00	Sq.M.	₹ 221,200.00
19	Providing and building of brick work in foundation, plinth & drains in cement and sand mortar 1:6 (1 cement : 6 coarse sand) with 1st class bricks include for chiseling out/cutting teeth etc. in existing walls and floors for proper bonding etc. all complete and as directed.	281.913	₹ 5,198.00	Cu.M	₹ 1,465,383.77

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
20	Providing and building of brick work in cement and sand mortar 1:4 (1 cement : 4 coarse sand) with 1st class bricks include for chiseling out/cutting teeth etc. in existing walls and floors for proper bonding etc. all complete and as directed.				
	b] super structure up to 4th. Floor	48	₹ 5,689.00	Cu.M	₹ 273,072.00
21	Provide and build 125 mm brick work with 1st class bricks in cement mortar 4:1 (4 sand:1 cement) include for chiselling out/cutting teeth etc. in existing walls and floors for proper bonding, all complete and as directed.	47	₹ 712.00	Sq.M	₹ 33,464.00
22	Provide and apply damp proof coating (Two Coats) on the surface of the walls before plastering with approved chemical (Sika Top -77 or equivalent) and as per direction and satisfaction of EIC.	1000	₹ 67.95	Sq.M.	₹ 67,950.00
23	Ordinary Cement concrete (mix 1:3:6) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement,if any, in ground floor as per relevant IS codes.	125	₹ 4,648.00	Cu.M.	₹ 581,000.00
24	Ordinary cement concrete (mix 1:2:4) with graded stone chips (20 mm nominal size) excluding shuttering and reinforcement, if any in ground floor as per relevant IS code.	260	₹ 5,318.00	Cu.M.	₹ 1,382,680.00
25	Providing and laying of ordinary cement concrete Mix (1:1.5:3) with graded stone chips excluding shuttering and reinforcement, if any, upto 3rd floor level as per relevant IS code with Pakur variety stone chips including application of epoxy based reactive joining agent for joining the old concrete with fresh concrete to be applied within manufacturer's specified time as per manufacturers specification (0.4 kg / sqm of concrete surface) etc., all complete and as directed.	132	₹ 5,872.00	Cu. M.	₹ 775,104.00
26	Hire and labour charges for shuttering for building works for floor, beam, lintels, chajjas etc.all complete and as directed.	1120	₹ 324.00	Sq.M	₹ 362,880.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
27	M.S/ Tor reinforcement (TATA/SAIL/RVNL or equivalent) including supply of rods, initial straightening and removal of loose rust, cutting to requisite length, bending, shaping and place in correct position, including welding if necessary.	12434.4	₹ 55.51	Kg	₹ 690,233.54
28	Provide and lay ready mix non-shrink cementious macro concrete, like Sika Rap Micro concrete 4 (High strength polymer modified concrete) manufactured by Sika India Pvt. Ltd or equivalent product manufacture by Fosroc chemical India Ltd. / Pedilite Industries Ltd. / Choksey Chemicals Pvt. Ltd or any other approved by Engineer to the affected RCC, Column, beams, ceiling, lintel, chajja etc where spelling of concrete taken place as per manufacturers instruction or all as specified & directed.	16.00	₹ 30,901.48	Cu. M.	₹ 494,423.68
29	Hire and labour charges for water tight shuttering with laminated ply board for ready mix non shrink cementious micro concrete at column, beam, ceiling lintel, chajja etc.	670.00	₹ 462.53	Sq.M.	₹ 309,893.09
30	Provide and lay cement plaster (1:4) with medium coars sand to surfaces of walls and columns etc. include for necessary curing etc. all complete and as directed. 20 mm thick cement plaster (1:4) (to match with existing plastered surface) all complete and as directed.	1710	₹ 179.00	Sq.M	₹ 306,090.00
31	Providing and laying of cement plaster to exterior surfaces 15 mm to 20 mm thick with (1:4) cement plaster. Include for making scaffolding for working up to 2nd floor level and necessary curing etc., all complete and as directed.	3600	₹ 167.00	Sq.M.	₹ 601,200.00
32	Providing and laying of 10 mm. thick cement plaster (1:4) with medium coarse sand at the ceiling surface Include for necessary scaffolding & curing upto 2nd floor level etc., all complete as directed.	300	₹ 125.00	Sq.M.	₹ 37,500.00
33	Providing and laying of neat cement punning over the plastered surfaces of dado, skirting and floor surfaces etc. all complete and as directed.	2250	₹ 34.00	Sq.M	₹ 76,500.00
34	Provide and lay 25 mm. to 35 mm. thick cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone chips of 12.5 mm nominal size) finished smooth with a floating coat of neat cement including cement slurry, rounding off edges etc. in any floor etc., all complete and as directed.	940	₹ 292.50	Sq.M.	₹ 274,950.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
35	Supplying, fitting and fixing Ceramic tiles of any size having mat finish in walls and floors including borders to match with the existing work set in sand cement mortar (4:1) and 2mm thick cement slurry back side of tiles using cement @ 2.91kg/sqm or using polymerised adhesive as required and finishing the joints with white cement mixed with colouring oxide of required match colour of tiles, fix with polymerised Adhesive and Epoxy grouting materials including spacer 2mm. All complete and as directed.				
	(Payment will be made on the basis of finished area done and accepted).				
	(i) Floor	40	₹ 738.00	Sq.M.	₹ 29,520.00
	(ii) Wall	120	₹ 758.00	Sq.M.	₹ 90,960.00
36	Take out damaged door / window or cupboard frames with shutter and refixing the same after necessary repairing / replacement of frames with new sal wood etc and mending good the damages complete. (Payment for concrete, brick work and wood will be made separately.)	155.00	₹ 119.00	Sq.M	₹ 18,445.00
	a) Upto area 2.5 Sq.m.				
37	Take out & refix damaged door, window shutters dismantling by parts (for repairs replacement of the damaged parts) reassembling and refitting, rehang same with old fittings but new screws as necessary (replacement of the damaged parts will be paid separately).	39.00	₹ 126.00	Sq.M	₹ 4,914.00
38	Easing door & window shutter.	20	₹ 17.00	Each	₹ 340.00
39	Provide & supply Local sal wood frames in door and window frame fitted and fixed in position complete including a protective coat of painting at the contact surface of the frame exluding cost of concrete, Iron Butt Hinges and M.S clamps. (The quantum should be correted upto three decimals).	0.30	₹ 72,954.00	Cu.M.	₹ 21,886.20
40	Renewing with Champ wood panel, rails, styles etc for doors, windows or cupboard shutter (payment will be made on new work only), all complete and as directed.				
	i) 19 mm thick panel (finished)	8.00	₹ 1,118.00	Sq.M	₹ 8,944.00
	ii) Styles & rails 35 mm thick (Approx match with existing work)	7.00	₹ 2,178.00	Sq.M	₹ 15,246.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
41	Provide & fix MS clamp made of 40 mm x 6 mm ms flat & up to 125 mm long or as required at site to the door, window, cupboard frame, all complete and as directed.	84.00	₹ 38.00	Each	₹ 3,192.00
42	Provide & fix oxidised butt hinges (Mowjee make) as per requirement, all complete and as directed.				
	i) 100 mm x 75 mm x 3.5 mm	40.00	₹ 66.00	Each	₹ 2,640.00
43	Supplying, fitting and fixing of anodised aluminium tower bolt of manufacture from extruded section conforming to IS 204/74 fitted and fixed with cadmium plated screw etc., all complete and as directed.				
	150 mm long x 10 mm dia bolt .	15.00	₹ 63.00	Each	₹ 945.00
44	Supply, fit and fix oxidised iron hasp bolt of complete (oxidised) 250 mm long 16 mm dia rod with centre bolt and round fitting, all complete and as directed.	10.00	₹ 159.00	Each	₹ 1,590.00
45	Supply, fit and fix anodised aluminium D - type handle of size 125 mm. X 12 mm. dia rod with continuous plate base (Hexagonal / Round rod) manufactured from extruded section conforming to I.S. specification (IS 230/72) etc., all complete & as directed.	10.00	₹ 103.00	Each	₹ 1,030.00
46	Supply, fit and fix in position iron door ring 50 mm. Dia.etc., all complete & as directed.	10.00	₹ 17.00	Each	₹ 170.00
47	Supplying, fitting and fixing 125mm long wooden buffer block position excluding the cost hinge and other fittings.	10.00	₹ 51.00	Each	₹ 510.00
48	Supply M.S.flat, sq.bar, angle, tee etc. for M.S. grill, gate, chain link fencing etc.(Measurement will be given after fixing of supplied material).	6560	₹ 73.35	Kg	₹ 481,176.00
49	Cutting requisite length or shape departmental R.S. joists, channels, angles, tees, plates etc., all complete and as directed.	5000	₹ 8.00	Sq.Cm	₹ 40,000.00
50	Welding in M.S. structural work gas or electric etc., all complete and as directed. (Continuous weld)	25000	₹ 9.00	Per Cm. Run	₹ 225,000.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
51	Labour for replacement of damaged or broken portion of wove wire or similar net in fencing including cutting and removing the net of the affected bay and restoring the gap with new net and fitting fixing the same in taut condition and also tightening and securing the adjacent affected bays (including the cost of new staples and of labour for fixing such new staples) (Payment to be made on the length of the replaced bay.) (a) Net above 1350 mm. height	170	₹ 17.52	Mtr.	₹ 2,978.40
52	Supplying, fitting, fixing, Chain link fencing (65 mm. x 65 mm. x 6 mm) with R.C.C posts wooden posts or iron posts by means of galvanised "C" clips to grid of horizontal strands of galvanised high tensile spring steel wire of 12 S.W.G which have to be tensioned and fixed to the vertical posts by means of galvanised special clips, bolts and nuts etc.	390	₹ 377.00	Sq.M.	₹ 147,030.00
53	Labour for fitting fencing net tightening and fixing the same to post with staples at every bar including the cost of cutting and lapping joints in the net, the cost of staples, binding wire etc. and of labour for fixing such staples as necessary etc., all complete and as directed. (Payment to be made on the length of net in finished work.) Net above 1350 mm. height.	185	₹ 12.42	Mtr.	₹ 2,297.70
54	Labour for taking out rolling shutter, dismantling by parts for repairing or (replacement of damaged parts only), rehanging and refitting the same in position after necessary repairs. (excluding the cost of supply of new parts).	60	₹ 283.00	Sq.M.	₹ 16,980.00
55	Renewing seam pipe for rolling shutter as per existing size and shape fitting, fixing complete.	18	₹ 210.00	Mtr.	₹ 3,780.00
56	Renewing side split pin for seam pipe for rolling shutter.	22	₹ 26.00	Each	₹ 572.00
57	Oiling and greasing of rolling shutter and repair to inside lock	60	₹ 73.00	Sq.M.	₹ 4,380.00
58	Renewing profile of rolling shutter including fitting, fixing complete as per existing size and shape.	60	₹ 54.00	Mtr.	₹ 3,240.00
59	Renewing spring of rolling shutter including fitting, fixing complete as per existing size and shape.	14	₹ 609.00	Each	₹ 8,526.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
60	Take out the embedded defective guide channel from brick wall/ concrete wall, straighten the same as necessary, cut and weld the extra new guide channel with the existing one and refix the same to the original portion. [Payment will be made on the basis of the length of new guide channel.]	13	₹ 530.46	Mtr.	₹ 6,896.04
61	Supply and fix 3mm thick lock plate with locking arrangement complete (without lock) including taking out old damaged lock plate include for one coat of red oxide zink chromate primer on the lock plate and supplying and fitting angle (30mm X 30mm X 5mm) m.s. flat (20mm X 6mm) & a half cur profile etc. complete.	1.10	₹ 4,565.39	Sq.M	₹ 5,021.92
62	Supply, fit and fix C.I. cleat to interlock the m.s.profile of various sizes of existing rolling shutter	84	₹ 20.47	Each	₹ 1,719.23
63	Supply, fit & fix C.I. wheels of rolling shutter as per existing size and shape all complete as per direction and shape all complete as per direction and satisfaction of E.I.C.	7	₹ 102.32	Each	₹ 716.27
64	Supplying, fitting and fixing steel rolling shutter profile type with 18 B.G. with steel latch section 75mm wide, fitted with coil wire spring to necessitate the fitting of required Nos. of C.I. pulleys on heavy type solid drawn seamless steel tube complete with locking arrangements both inside and outside specially buildup side guide channels including providing a hood for the steel rolling shutter in the room, painting two coats of aluminium paint over a coat of red lead primer complete.	43	₹ 2,170.00	Sq. M.	₹ 93,310.00
	1. (Measurement will be made on the area of opening covered by the rolling shutter corrected upto 2 decimal.)				
	2. Payment of painting to be separately.				

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
65	M.S. structural works in roof trusses with tubular sections conforming to IS: 806-1968 & IS: 1161-1998 connected to one another with bracket, gusset cleats as per design, direction of Engineer-in-charge complete including cutting to requisite size, fabrication with necessary metal arc welding conforming to IS: 816- 1969 & IS: 9595 using electrodes conforming to IS:814- 2004, haulage, hoisting and erection all complete. The rate includes the cost of rolled steel section, consumables such as electrodes, gas and hire charge of all tools and plants and labour required for the work including all incidental charges such as electricity charges, labour insurance charges etc. Payment to be made on the basis of calculated weight of structural tubular members as specified in relevant IS code in finished work. Payment for gusset, bracket, cleat may be made by adding the actual weight of such items with weight of finished structural members. i) For trusses spanning up to 12.00 m	1.15	₹ 59,468.00	M.T	₹ 68,388.20
66	Supplying and fix colour coated Galvalume sheet of 0.45 to 0.5mm approx. thick, supporting over with pipe pulin/ structure on top of the roof shed etc., fitted and fixed with self tapping screws with washer, foam closers, mastic tape, sealant etc. with trims and flushing including 150 mm end lap & one corrugation minimum side lap etc. all complete as directed. (Payment will be made on area of finished work)	250	₹ 348.26	Sq.M	₹ 87,065.00
67	Galvanised or painted wind-tie made of M.S. flats, fitted and fixed complete including cost of necessary fittings. Made with 50 mm. X 6 mm. flats	100	₹ 144.00	Mtr.	₹ 14,400.00
68	Supplying, fitting & fixing of 2-Track / 3-Track Aluminium sliding Window of all Aluminium sections viz. window frame (top,bottom & side frame), shutter (top, bottom, side & interlock member) made of aluminium alloy extrusions conforming to IS 733-1983 & IS 1285-1975, anodised conforming to IS 1868-1983, fitted with all other accessories viz. PVC roller, EPDM gasket, maruti lock, screws etc. including labour charges for fitting & fixing of aluminium 2-track/3-track sliding window with fixing of glass (excluding cost of glass) all complete as per architectural drawings and direction of Engineer-in-charge. 10-12 Micron thickness Anodizing film. Natural white.	690	₹ 448.00	Kg.	₹ 309,120.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
	For 2-Track window : Members for Bottom frame @ 0.875 Kg per Mtr. and for Top and Side frame @ 0.778 Kg per Mtr. and for shutter Bottom and Top member @ 0.472 Kg per Mtr., Style side member @ 0.493 Kg per Mtr. and Interlock member @ 0.612 Kg per Mtr. For 3-Track window : members for Bottom frame @ 1.233 Kg per Mtr. and for Top and Side frame @ 1.067 Kg per Mtr. and for shutter Bottom and Top member @ 0.472 Kg per Mtr., Style side member @ 0.493 Kg per Mtr. and Interlock member @ .612 Kg per Mtr.				
69	Supplying bubble free float glass of approved make and brand conforming to IS: 2835-1987. 5mm thick clear glass.	130	₹ 526.00	Sq.M	₹ 68,380.00
70	Provide, fabricate and placing 8mm thick M.S.chequered plates, angles, channels, joists etc. as required conforming to relevant codes all of latest revision etc complete, as per specification and also as per direction of the Engineer-In-Charge.	14.37	₹ 59,119.00	M.T	₹ 849,540.03
	[Payment will be made on the basis of the calculated weight of structural members/ chequered plates used only unfinished work as per specified weight indicated in the relevant codes. In case of determination of unit weight of M.S. plates & Structural Sections IS 6/1 (latest revision) will be followed while in case of Chequered plate IS 3502 (latest rev.) will be followed.]				
71	Providing and applying of one coat of ready mixed pink or grey primer of approved brand and manufacture to the doors and windows after necessary preparation of surfaces etc., all complete and as directed.	65	₹ 38.00	Sq.M.	₹ 2,470.00
72	Providing and applying of one coat of ready mixed zinc chromate yellow primer of approved brand and manufacture to the grills and gates etc. include for scrapping, brushing, sand papering and cleaning the surfaces smooth before application of primer etc., all complete and as directed.	1330	₹ 29.00	Sq.M.	₹ 38,570.00
73	Providing and applying of paint on old/new wood works with two coats of approved synthetic enamel paint (first quality) of any shed other than white. Include for scrapping and preparation of surface with brushing and cleaning before painting upto 3rd floor level etc., all complete and as directed.	110	₹ 81.00	Sq.M.	₹ 8,910.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
74	Providing and applying of paint on old steel work with two coats of approved synthetic enamel paint of first quality of any shed other than white including scrapping, brushing and cleaning the surfaces if necessary upto 3rd floor level etc., all complete and as directed.	1330	₹ 79.00	Sq.M.	₹ 105,070.00
75	Providing and applying of 2 (two) coats of white wash until white and bright on all interior surfaces (New and Old surfaces) by scrapping, sand papering including necessary repairs to scratches , all complete and as directed.	3160	₹ 18.14	Sq.M.	₹ 57,322.40
76	Colour washing (Two Coat) with any shade with Stainers, as required including cleaning and smoothening surface thoroughly :	535.00	₹ 20.46	Sq.M.	₹ 10,946.10
77	Providing and applying of 1 (one) coat of cement based water proof paint on new surface , of approved brand of required shades to give an even shade on all exterior surfaces of buildings and repairing the uneven surfaces by snowcem putty etc. and making scaffolding upto 4 th. floor level. Include for scrapping of marks, green moss, loose particles and preparing the base by sand papering before application of the cement based paint etc. all complete and as directed	4000	₹ 34.00	Sq.M.	₹ 136,000.00
78	Providing and applying of 1 (one) coat of Asian / Berger /Nero lac / ICI paint make primer suitable for exterior acrylic emulsion paint on old / new concrete / plastered surfaces to receive Asian / Berger / Nero lac / ICI paint exterior acrylic emulsion paint including scaffolding,scrapping,wire brushing and preparing the surfaces thoroughly as per manufacturers specification upto 4 th. floor level etc., all complete and as directed.	5900	₹ 31.40	Sq.M.	₹ 185,260.00
79	Providing and applying of protective Decorative exterior premium 100% acrylic emulsion paint two coats of Asian / Berger / Nero lac / ICI paint make on old / new concrete / plastered surfaces including scaffolding, scraping, wire bruising and preparing the surfaces thoroughly all complete as per manufactures specification.	5900	₹ 84.00	Sq.M.	₹ 495,600.00
	.				

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
80	Application of non toxic polyurethane modified acrylic based single component, solvent-free, cold applied, polyurethane modified elastomeric waterproofing membrane with excellent UV resistant capacity in two coats along with a priming coat and reinforced with 20gsm Geotextile fleece as per manufacturer's specification, in the following method: After preparing the surface by cleaning and repairing roof cracks by cement and sand mortar (1:4), if any, apply two coats along with a priming coat and reinforced with 20gsm Geotextile fleece. The product has to comply with the requirement laid out in ASTM D6083-97a.	1130	₹ 434.72	Sq.M.	₹ 491,233.60
81	Supplying P.V.C water storage tank of 1000 litre capacity of approved quality with closed top with lid (Black)- Multilayer	5	₹ 5,128.00	Each	₹ 25,640.00
82	Supplying, fitting and fixing brass ferrule including connection with P.V.C. pipe of approved make upto 450 mm long with plumbing joint, brass over C.P. coupling at both ends, with cap and lining complete in all respect, including cutting trenches in all sorts of soil and filling up trenches as per direction of the Engineer-in-charge. (i) 25 mm dia.	4	₹ 1,825.00	Each	₹ 7,300.00
83	Supplying, fitting and fixing gunmetal wheel valve of make tested to 21 kg per sq. cm. (for water lines only).				
	i) 40mm dia.	4.00	₹ 1,590.00	Each	₹ 6,360.00
	II) 25mm dia.	4.00	₹ 778.00	Each	₹ 3,112.00
84	Supplying, fitting and fixing 15 mm dia. PTMT Bib/Stop Cock (Prayag or equivalent)	6.00	₹ 154.00	Each	₹ 924.00
85	Supplying, fitting and fixing CP 2-way bib Cock - 15 mm , supplied, fitted and fixed. (Code No.5041 & Model -FLORENTINE of JAQUAR or similar brand).	12.00	₹ 1,269.00	Each	₹ 15,228.00
86	Providing and fixing of CP Pillar Cock Super Deluxe with Aerator - 15 mm . (Equivalent to Code No. 508 & Model No. Tropical / Sumthing Special of ESSCO or similar brand) in position including taking out damaged Pillar Cock and return to store etc., all complete and as directed.	6.00	₹ 592.00	Each	₹ 3,552.00
			-		
87	Supplying, fitting and fixing Chromium plated concealed Stop Cock heavy duty (Equivalent to Code No. 514(A) & Model - Tropical / Sumthing Special of ESSCO or similar brand).	18.00	₹ 674.00	Each	₹ 12,132.00

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
88	Supplying, fitting and fixing Chromium plated Stop Cock heavy duty (Equivalent to Code No. 513(A) & 513(B) & Model - Tropical / Sumthing Special of ESSCO or similar brand).	6.00	₹ 493.00	Each	₹ 2,958.00
89	Supplying,fitting and fixing approved brand 32 mm dia. P.V.C. waste pipe , with PVC coupling at one end fitted with necessary clamps. 900 mm long.	12.00	₹ 75.00	Each	₹ 900.00
90	Supply, fit and fix C.P over brass 25 mm dia. and 600 mm long towel rail with two brackete etc all complete & as directed.	6.00	₹ 430.00	Each	₹ 2,580.00
91	Supplying, fitting and fixing 10 litre P.V.C. low-down cistern conforming to I.S. specification with P.V.C. fittings complete,C.I. brackets including two coats of painting to bracket etc.	6.00	₹ 1,015.00	Each	₹ 6,090.00
92	Supplying,fitting and fixing 32 mm dia. Polythene Flush Pipe Flush Pipe of approved make with necessary fixing materials and clamps complete.	6.00	₹ 155.00	Each	₹ 930.00
93	Supplying, fitting and fixing approved brand P.V.C. CONNECTOR 600 long white flexible, with both ends coupling with heavy brass C.P. nut, 15 mm dia.	12.00	₹ 107.00	Each	₹ 1,284.00
94	Provide and fix 75 mm. dia. PTMT overhead shower (Prayag or equivalent) including taking out damaged shower and return to store etc., all complete & as directed.	6.00	₹ 179.00	Each	₹ 1,074.00
95	Cutting chase upto 125 X 150 mm and subsequent mending of damagaes in brick wall	72.00	₹ 88.00	Mtr	₹ 6,336.00
96	Labour for dismantling 15mm/20mm G.I pipe with fittings.	33.00	₹ 6.00	Mtr	₹ 198.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
97	Supplying, fitting and fixing PVC pipes of approved make of Schedule 80 (medium duty) conforming to ASTM D - 1785 and threaded to match with GI Pipes as per IS : 1239 (Part - I). with all necessary accessories, specials viz. socket, bend, tee, union, cross, elbo, nipple, long screw, reducing socket, reducing tee, short piece etc. fitted with holder bats clamps, including cutting pipes, making threads, fitting, fixing etc. complete in all respect including cost of all necessary fittings as required, jointing materials and two coats of painting with approved paint in any position above ground. (Payment will be made on the centre line measurements of total pipe line including all specials. No separate payment will be made for accessories, specials. Payment for painting will be made separately).				
	a) For exposed work				
	i) 15 mm. dia medium quality.	30.00	₹ 101.00	Mtr	₹ 3,030.00
	ii) 20 mm. dia medium quality .	30.00	₹ 129.00	Mtr	₹ 3,870.00
	iii) 25 mm. dia medium quality (Schedule 80).	42.00	₹ 177.00	Mtr	₹ 7,434.00
	iv) 40 mm. dia medium quality (Schedule 80).	136.00	₹ 292.00	Mtr	₹ 39,712.00
	b) For concealed work				
	i) 15 mm. dia medium quality .	30.00	₹ 137.00	Mtr	₹ 4,110.00
	ii) 20 mm. dia medium quality .	36.00	₹ 158.00	Mtr	₹ 5,688.00
98	Dismantling H.C.I pipe with fittings including melting lead caulked joints 100 mm dia.	50.00	₹ 64.00	Mtr	₹ 3,200.00
99	Constructing Inspection pit of inside measurement 600mm X 600mm X upto 600mm(depth) with 250 mm thick 1st. class brick work in cement mortar (1:4) on all sides, bottom of the pit consisting of 100 mm thick cement concrete (1:3:6) with stone chip over a layer of jhama brick flat soling, 15 mm thick (1:4) cement plaster to inside walls and out-side walls upto G.L. and 20 mm. thick (1:4) plaster to bottom of the pit, providing necessary invert with cement concrete (1:3:6) with stone chips as per direction, neat cement finishing to entire internal surfaces, top of the pit covered with 100 mm thick R.C.C. slab (1:1.5:3) with stone chips and necessary reinforcements upto 1% and shuttering including 6 mm thick cement plaster (1:4) in all external surfaces of the slab and one 560 mm dia. R.C.C. manhole cover of approved make supplied, fitted and fixed in the slab with necessary fittings, necessary earthwork in excavation in all sorts of soil, filling sides of the pit with earth and removing spoils after work complete in all respect with all costs of labour and materials.	12.00	₹ 6,987.00	Each.	₹ 83,844.00
	i) With Pakur variety, (SAIL / TATA / RINL)				

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
100	Construction of septic tank of different capacities as per approved drawing with 1st class brick work in cement mortar (1:4) including two 560 mm dia. R.C.C. manhole cover(heavy type)of approved make supplied, fitted and fixed in the 100mm thick R.C.C (1:1.5:3) top slab with necessary fittings, 20mm thick cement plaster (4 : 1) with neat cement finish to the internal surfaces and 15 mm thick cement plaster (4 : 1) to outside wall upto 200 mm below G.L floor finished with 25 mm thick grey artificial stone over 100 mm thick R.C.C(1:1.5:3) bottom slab including supplying, fitting and fixing all necessary specials, fittings, S.W. tees, C.I. foot rest etc. including excavation earth in all sorts of soil, shoring, bailing out and pumping out water as necessary, ramming, dressing the bed and refilling the sides of the tanks with earth, removing spoils, filling up the chamber with clear water, removing foreign materials from the chamber and including constructing attached inspection pit as per approved drawing and connecting all necessary pipes, joints etc. with internal plaster work and artificial stone flooring is to be done with admixture of water proofing compound @ 0.5% by weight of cement with all costs of labour and materials. Note:- (i) Finished level of Septic Tank should be 400 mm. from Ground Level. (ii) Height of 50 mm. Ventilation pipe & Mosquito proof mesh, should be followed as per IS:2470,Part- I.Payment will be made separately on the basis of actual height based on relevant I.S.Code. (i) For 10 users A) With Pakur variety. (SAIL/TATA/RINL) Each	4.00	₹ 34,634.00	Each	₹ 138,536.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
101	Construction of circular soak well 2.5 metre deep in all types of sandy soils with dry brick work upto 1.6 metre from the bottom having 150 mm intermediate cement brick work (1:4) band all round and cement brick work (1:4) upto 0.90 metre from top with 20mm thick cement plastering (1:4) to inside face upto the depth of cement brick work, 15mm thick cement plaster (1:4) on outer face from top of the well upto G.L. and 6 mm thick cement plaster (1:4) on top of the R.C.C. cover slab including filling bottom 1.00 metre of inside of the well with brick metal (50 mm to 63 mm size) including R.C.C. cover slab of 100 mm thick with cement conc (1:1.5:3) with stone chips with necessary reinforcement and shuttering including one 560 mm dia. R.C.C. manhole cover (heavy type) of approved make supplied, fitted and fixed in the cover slab with necessary fittings, making necessary arrangements for pipe connections, excavation of well including shoring, dewatering and removing the excess earth from the premises as per direction complete in all respect with all costs of labour and materials. With 250 mm thick dry brick work and 250 mm thick cement brick work (1:6) and 1.00m inside dia. (SAIL/TATA/RINL)	4.00	₹ 16,137.00	Each	₹ 64,548.00
102	Taking out rain water down pipe.	55.00	₹ 8.95	Mtr	₹ 492.25
103	Supply,fit and fix single socked 110 mm. dia. of 3.00 M long UPVC pipe granules as specified in IS 13592-1992 as down pipe and fitted with all necessary clamps nails including making holes in walls.	130.00	₹ 292.00	Mtr	₹ 37,960.00
104	Supply, fit & fix UPVC bend /shoe 110 mm dia. etc., all complete & as directed.	40.00	₹ 147.00	Each	₹ 5,880.00
105	Supply, fit & fix UPVC Door Bend 110 mm dia. all complete & as directed.	7.00	₹ 120.00	Each	₹ 840.00
106	Supply, fit & fix UPVC Cowl 110 mm dia. all complete & as directed.	6.00	₹ 33.00	Each	₹ 198.00
107	Supply, fit & fix UPVC Door Tee 110 mm dia. all complete & as directed.	6.00	₹ 195.00	Each	₹ 1,170.00
108	Supply, fit & fix UPVC Tee 110 mm dia. all complete & as directed.	6.00	₹ 85.00	Each	₹ 510.00

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
109	Supplying fitting & fixing approved brand glass shelf of size 600mm.X 125mm. Ordinary type with 5.5mm sheet glass & aluminium guard rails complete.	6.00	₹ 480.00	Each.	₹ 2,880.00
110	Supplying fitting & fixing approved brand best quality indian make mirror 5.5mm thick with silvering as per IS specifications supported on fibre glass frame of any colour, frame size 550mm X 400mm complete.	6.00	₹ 613.00	Each.	₹ 3,678.00
111	Supplying, fitting and fixing E.W.C. in white glazed vitreous chinaware of approved make complete in position with necessary bolts, nuts etc. with 'P' trap.	6.00	₹ 1,421.00	Each.	₹ 8,526.00
112	Supplying, fitting and fixing Plastic (hallow type) white Closet seat with lid and C.P. hinges, rubber buffer and brass screws complete.	6.00	₹ 380.00	Each.	₹ 2,280.00
113	Dismantling Indian W.C./ European type water closet including taking out base concrete as necessary.	3.00	₹ 45.00	Each.	₹ 135.00
114	Supplying, fitting and fixing best quality approved make Wash basin vitreous china of approved make (without fittings) of size 550mm X 400mm , supplied,fitted and fixed in position on 75mm X 75 mm X 75 mm wood blocks and C.I. brackets including two coats of painting of C.I. brackets.	6.00	₹ 1,383.00	Each	₹ 8,298.00
115	Supplying, fitting and fixing best quality flatback Urinal (half stall urinal) in white vitreous chinaware of approved make of size 470mm X 280mm x 340mm in position with brass screws on 75mm X 75 mm X 75 mm wooden blocks complete.	6.00	₹ 945.00	Each	₹ 5,670.00
116	Supplying, fitting and fixing 100 mm C.I. round grating.	12.00	₹ 62.00	Each.	₹ 744.00
117	Supplying,fitting and fixing UPVC plain P-Trap(110mm dia.)	12.00	₹ 281.00	Each.	₹ 3,372.00
118	Supplying, fitting and fixing in position R.C.C. Manhole/ pit cover of with rim(Heavy type). (i) 450 mm dia.	96.00	₹ 276.00	Each.	₹ 26,496.00
119	Painting block letters or digits in Black Japan or equivalent paint as per direction.				
(i)	Size above 12.5 cm. and upto 15 cm.	100	₹ 15.00	Each	₹ 1,500.00

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

Sl. No	Description of work	Quantity	Rate(Rs.)	Unit	Amount (Rs. P.)
(ii)	Size above 15 cm. and upto 20 cm.	300	₹ 16.00	Each	₹ 4,800.00
120	Remove debris / building rubbish / concrete lumps / earth / gravels etc. from scattered area of Haldia Township, Residential Zone, within a lead of 5 K.M. with proper site cleaning, loading, unloading, and levelling at the disposal site etc., all complete and as directed. (Payment will be made after deduction of 16% of volume as voids.)	300	₹ 166.00	Cu.M.	₹ 49,800.00
Sub-Total(Civil works) = Rs..					15,860,571.32

Electrical Works

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]
	Part A: Electrical Works:-					
1.	<u>11KV VCB Panel:-</u> Supply, Installation, Testing & Commissioning of HT 11kV 630A, 26.3kA for 3Sec. Vacuum Circuit Breaker (VCB) panel, as per TABLE – I of “Technical Specification”					
	a)	Supply of Vacuum Circuit Breaker (VCB) panel.				
		For Substation-3,2,1,5 & 3rd oil jetty	Nos.	38	28,886,100.00	28,886,100.00
	b)	Installation, Testing & Commissioning of Vacuum Circuit Breaker (VCB) panel.				-
		For Substation-3,2,1,5 & 3rd oil jetty	Nos.	38	469,361.00	469,361.00
2.	<u>Distribution Transformer:-</u> Supply, Installation, Testing & Commissioning of 11 kV/0.415 kV, DYn11, Oil filled, floor mounted outdoor type Distribution Transformers with Off-load tap switch, as per the details given in TABLE – I of “Technical Specification”					-
	a)	Supply				-
	i)	800 kVA Transformer	No.	4	2,255,700.00	9,022,800.00
	ii)	500 kVA Transformer	No.	6	1,379,700.00	8,278,200.00
	b)	Installation, Testing & Commissioning				-
	i)	800 kVA Transformer	No.	4	36,500.00	146,000.00
	ii)	500 kVA Transformer	No.	6	26,280.00	157,680.00
	c)	RCC Foundation of Transformer				-
	i)	500/800 kVA Transformer	No.	10	94,900.00	949,000.00
3.	<u>HT Cable:-</u> Supply of H.T. 11kV (UE), 3 C x185 Sq.mm. XLPE UG Aluminium ,FR cable as per Technical Specification.					-
	a)	Supply of 3 C x 185 Sq.mm.	KM	10	1,070,019.40	10,700,194.00
4.	<u>Laying of HT Cable:-</u> Laying, testing and commissioning of HT Cable between different Substations and from Sub-stations to Package Outdoor Sub-station. Job includes supply and installation of Hume pipe, GI pipe and HDPE.					-
	a)	By existing RCC trench / Hume pipe/GI pipe/HDPE pipe	Mtrs	50	232.00	11,600.00
	b)	By excavating trench.[1Run]	Mtrs	7050	108.00	761,400.00
	c)	By excavating trench.[2Run]	Mtrs	900	216.00	194,400.00

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]
	d)	By 150mm dia. Hume pipe through excavating.	Mtrs	50	571.00	28,550.00
	e)	By 150NB GI Pipe through excavating	Mtrs	270	540.00	145,800.00
	f)	By 150NB GI Pipe as riser	Mtrs	30	108.00	3,240.00
	g)	By 150NB GI Pipe through Boring	Mtrs	480	386.00	185,280.00
	h)	By 150NB GI Pipe for crossing canal which includes supporting structure at both ends	Mtrs	120	386.00	46,320.00
	i)	By 150NB HDPE through excavation	Mtrs	150	571.00	85,650.00
5	11KV HT Cable End termination:- Supply, Installation, Testing & Commissioning of HT 11kV (UE) 3 C x 185 sq. mm Heat shrinkable type end termination kits suitable for aluminium, XLPE armoured UG cable as per Technical specification.					-
	a)	Supply (indoor /Outdoor type)	No.	32	2,774.00	88,768.00
	b)	End termination, Testing & Commissioning (indoor /Outdoor type)	No.	32	4,345.00	139,040.00
6	LT Cable:- Supply of LT Cable, 1.1 kV grade, XLPE UG Aluminium ST2 sheathed FR Cable as per Technical Specification.					-
	a)	1C x 1000 sq.mm armoured cable	Mtr.	2000	794.00	1,588,000.00
	b)	3.5C x 400sq.mm armoured cable	Mtr.	500	1,497.67	748,835.00
	c)	3.5C x 240 sq.mm armoured cable	Mtr.	6000	937.82	5,626,920.00
	d)	3.5C x 150 sq.mm armoured cable	Mtr.	1500	610.43	915,645.00
	e)	3.5C x 70 sq.mm armoured cable	Mtr.	500	330.05	165,025.00
7	Laying, testing and commissioning of LT Cables :- Laying, testing and commissioning of LT Cables including end termination by double compression brass glands of cable at outdoor feeder pillar panel and Sub-station. Job includes supply and installation of Hume Pipe, GI pipe and HDPE.					-
	a)	By existing RCC trench/Hume pipe/GI Pipe/ Saddling on wall/concrete.	Mtr.	1750	232.00	406,000.00
	b)	By excavating trench. [1Run]	Mtr.	3000	108.00	324,000.00
	c)	By excavating trench. [2Run]	Mtr.	2000	216.00	432,000.00
	d)	By 150mm dia. Hume pipe through excavation.	Mtr.	150	571.00	85,650.00

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]
	e)	By 150NB GI Pipe through excavation	Mtr.	300	540.00	162,000.00
	f)	By 150NB GI Pipe through Boring	Mtr.	1100	386.00	424,600.00
	g)	By 150NB HDPE through excavation	Mtr.	200	571.00	114,200.00
8	1.1 kV Heat shrinkable type Straight through jointing:- Supply & Installation of LT 1.1 kV Heat shrinkable type Straight through jointing kits for XLPE, Aluminum armoured UG cable as per Technical specification.					-
	a)	3.5C x 400 sq.mm	Sets	40	4,970.00	198,800.00
	b)	3.5C x 240/185 sq.mm	Sets	35	3,300.00	115,500.00
	c)	3.5C x 150/120 sq.mm	Sets	15	2,846.00	42,690.00
	d)	3.5C x 95/70sq.mm	Sets	25	2,254.00	56,350.00
	e)	3.5/4C x 50/35/25/16 sq.mm	Sets	35	1,579.00	55,265.00
9	Providing 1.1 kV cable end termination for XLPE, Aluminum armoured UG cable as per Technical specification for Existing LT Cables Job includes removal of existing RCC Slabs inside sub-station relaying of existing cables and termination in newly supplied LT Panels as per Technical specification.					-
	a)	3.5C x 500 sq.mm	No.	10	1,168.00	11,680.00
	b)	3.5C x 400/300 sq.mm	No.	110	1,022.00	112,420.00
	c)	3.5C x 240 sq.mm	No.	95	876.00	83,220.00
	d)	3.5C x 150 sq.mm	No.	150	657.00	98,550.00
	e)	3.5C x 120 sq.mm	No.	65	511.00	33,215.00
10	f)	3.5C x 70 sq.mm	No.	35	401.50	14,052.50
	LT Panel:- Supply, Installation, Testing & Commissioning of the following LT cubicle Distribution Panel with rated EC grade Copper Busbar, floor mounted & with all accessories as per the details given in TABLE – II of “Technical Specification”					-
	Supply					-
	a)	i) 1600 A, LT Distribution Panel [18Way],Type-A	Set	3	2,139,913.00	6,419,739.00
		ii) 1250 A, LT Distribution Panel [18Way],Type-A	Set	4	1,685,992.00	6,743,968.00
		iii) 1250 A, LT Distribution Panel [18Way],Type-C	Set	1	2,026,432.00	2,026,432.00

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]
	iv)	630 A, LT Distribution Panel [16Way],Type-B	Set	5	869,503.00	4,347,515.00
		Installation, testing & Commissioning				-
	i)	1600 A, LT Distribution Panel [18Way],Type-A	Set	3	61,140.00	183,420.00
	ii)	1250 A, LT Distribution Panel [18Way],Type-A	Set	4	41,687.00	166,748.00
	iii)	1250 A, LT Distribution Panel [18Way],Type-C	Set	1	44,466.00	44,466.00
	iv)	630 A, LT Distribution Panel [16Way],Type-B	Set	5	37,055.00	185,275.00
11	Battery with Battery Charger:- Supply, Installation, Testing & Commissioning of 48V DC system with maintenance free batteries of 3-hour backup for substations along with battery chargers as per Technical Specification.					-
	a)	Supply	Set	6	182,929.41	1,097,576.46
	b)	Installation, Testing & Commissioning	Set	6	15,439.00	92,634.00
12	Feeder Pillar Box:- Supply, Installation, Testing & Commissioning of SS316 grade outdoor type IP55, LT FPB Box with 400Amps. EC grade Tinned Copper Bus Bars and 2Nos. TPN SDFU 400Amps each with Fuses in SS Enclosure as per Technical Specification.					-
	a)	Supply	Set	12	197,246.00	2,366,952.00
	b)	RCC Civil foundation ,Installation, Testing & Commissioning	Set	12	23,159.00	277,908.00
13	GI Plate Earthing:- Supply, Installation, Testing & Commissioning of earthing system of Galvanized Iron plate in accordance with BIS 3043 or latest amendment as per Technical specification.					-
	a)	Supply	No.	90	2,555.00	229,950.00
	b)	Installation, Testing & Commissioning	No.	90	618.00	55,620.00
14	DCDB Panel:- Supply, Installation, Testing & Commissioning of wall mounted DCDB Panel as per Technical specification.					-
	a)	Supply	Nos.	6	19,454.00	116,724.00
	b)	Installation, Testing & Commissioning	Nos.	6	2,316.00	13,896.00

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]
15	<u>GI Earthing Flat:-</u> Supply, Installation, Testing & Commissioning of Hot Dip Galvanized (100 micron) flats of size 50mm X 6mm for HT/LT Switchboards, Transformers Overhead line poles, DP etc. with assorted sizes as per Technical specification.					-
	a)	Supply	Mtr	750	372.30	279,225.00
	b)	Laying by aluminium saddling on concrete/wall/underground.	Mtr	750	124.00	93,000.00
16	<u>Automatic power factor correction panel (APFC):-</u> Supply, Installation, Testing & Commissioning of Automatic power factor correction panel (APFC) with 150kVAR capacitors and all accessories as per Technical Specifications.					
	a)	Supply	Nos.	6	200,604.00	1,203,624.00
	b)	Installation, Testing & Commissioning	Nos.	6	23,159.00	138,954.00
17	<u>Control Cable:-</u> Supply, Installation, Testing & Commissioning of Control cables 2.5 sq.mm 12 C, Copper armoured with colour codings as per Technical Specifications.					
	a)	Supply	Mtr.	500	397.00	198,500.00
	b)	Laying Installation, Testing & Commissioning	Mtr.	500	32.12	16,060.00
18	<u>Supply & Installation of safety equipment:-</u> Supply & Installation of safety equipment like HT/LT rubber mats, CO ₂ fire extinguishers, First Aid boxes, Shock treatment chart, Box spanner set, 2.5KV Hand Driven Megger, Clamp meter, Allen Key set etc. as per CEA norms, for all substations.		sets	6	5,110.00	30,660.00
19	Removal / dismantle, Loading / Unloading and Transporting of all existing substation equipment viz. Transformers, HT/LT panels, Battery chargers and Lighting system etc. to site store/Yard of HDC as per Technical Specifications.		LS	1	237,768.00	237,768.00
	a)	11/0.415kVA, 500kVA/750kVA Transformer-10Nos.				
	b)	LT PCC Panel (BOCB)-6Sets				
	c)	HT BOCB Panel-6sets				

Sl. No.	Description Of Item	Quantity		Rate [In Rs]	Amount [In Rs]
20	<u>Package Outdoor Sub-Station :-</u> Design, Supply, Installation, testing and commissioning of 11/0.415kV, 500 kVA, Package Outdoor Sub-Station comprising of 3 No. of 11 KV, 630A, 25 kA, 3 Phase 50 HZ Isolator (two for incoming and one for outgoing) and 1 No. of 11 kV, 630A, 500 MVA, 25kA, 3 Phase 50 HZ Vacuum Circuit Breaker and Transformer compartment of 11 kV/415V, 500 kVA, DYn II, Dry type Resin cast Transformer with standard accessories including LV compartment comprising of 1 No. of 415V, 800A, 4 pole, 50kA, ACB and 1 No. 150 kVAR, APFC unit along With 250A MCCB-08Nos. with standard accessories as per Technical Specification.				
	a) Supply	No.	1	3,404,360.00	3,404,360.00
	b) Installation, Testing & Commissioning	No.	1	46,318.00	46,318.00
	c) Civil Foundation:-Construction of RCC foundation of Outdoor Package sub-station including earth excavation, supply of foundation accessories like cement, reinforcement steel bars, bricks, sand, stone chips, shuttering materials labour required for RCC foundation, refilling of earth up to the existing ground level after curing as per attached drg.	No.	1	231,592.00	231,592.00
21	<u>11kV Over head Line:-</u>				
	a) Transportation and Erection of Rail Pole structure for making [Double Pole / Four Pole] structure.				
	(i) Transportation of Rail Poles [length: above 11.0 m and upto 13.0 m] from HDC's store / yard at Dock Area / Residential Area to work site at Haldia Township Residential Area.	No.	16	5,840.00	93,440.00
	(ii) Erection of Rail Pole [length of Rail Pole: above 11.0 m and upto 13.0 m] structure without fittings, in cement concrete foundation, including excavation & refilling, as required along with Providing and making Rail Pole collar with cement concrete, duly plastering & finishing (net cement). [Rail poles would be supplied by HDC free of cost]				
	Double Pole (D.P.)	Set	3	24,820.00	74,460.00
	Strut pole	Nos.	2	12,410.00	24,820.00
	Four Pole	Set	2	46,318.00	92,636.00

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]
	b)	<u>GI Angle and channels:-</u>				
		i) Fabrication, supply & fixing of GI Channel (100 mm X 50 mm X 6mm) on Rail Pole structure [Double Pole / Four Pole].	Kgs	600	136.00	81,600.00
		ii) Fabrication, supply & fixing of GI Angle (65 mm X 65 mm X 6 mm) on Rail Pole structure [Double Pole / Four Pole].	Kgs	150	136.00	20,400.00
		iii) Fabrication, supply & fixing of GI Channel (75 mm X 40 mm X 6mm) on Rail Pole structure [Double Pole / Four Pole].	Kgs	350	136.00	47,600.00
	c)	<u>GI Clamps:-</u>				
		(i) Fabrication, supply & fixing of GI Clamp (made of 65 mm X 6 mm GI Flat), as 'V' Clamps, on Rail Pole [Double Pole / Four Pole] structure.	LS	1	48,248.00	48,248.00
		(ii) Fabrication, supply & fixing of GI Clamp (made of 65 mm X 6 mm GI Flat), as Support Clamps, on Rail Pole [Double Pole / Four Pole] structure.				
		(iii) Fabrication, supply & fixing of Commander Patti (made of 65 mm X 6 mm GI Flat) on Rail Pole [Double Pole / Four Pole]. structure.				
	d)	Supply & fixing of M.S. Nut Bolt and washers 5/8", 8", 3.5", 2.5" & 2" on Rail Pole [Double Pole / Four Pole] structure.	Kgs.	65	136.00	8,840.00
	e)	Painting (primer & two coats of finished aluminium paints) of Rail Pole [length: above 11.0 m and upto 13.0 m] structure [Double Pole / Four Pole] alongwith strut pole structure & all iron parts.	LS	1	40,143.00	40,143.00
	f)	Providing Lightning Arrestors, insulators, other accessories on Rail Pole structure [Double Pole / Four Pole].				-
		(i) Supply & fixing of Lightning Arrestor (12 kV)	No.	9	12,892.00	116,028.00
		(ii) Supply & fixing of 33 kV Porcelain / Polymer Pin Insulator with G.I Pin	Set	32	2,628.00	84,096.00
		(iii) Supply & fixing of 11 kV Hardware fittings for ACSR PANTHER conductor.	Set	3	657.00	1,971.00
		(iv) Supply & fixing of 11 kV Hardware fittings for ACSR DOG conductor.	Sets	3	657.00	1,971.00
		(v) Supply, fixing, jointing & lapping of ACSR DOG conductor for making connection with cable.	Mtrs.	40	219.00	8,760.00

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]	
	(vi)	Providing Aluminium binding wire for fixing (lapping & jumpering) ACSR DOG conductor , Polymer Pin Insulator, Hardware fittings, etc.	Kgs.	6	29.20	175.20	
	(vii)	Supply & fixing of 11 kV,400A Gang isolator(CR Type) ,25KA for 3sec. for horizontal isolation and mouting on top rail pole structure.	Nos.	2	1,776.00	3,552.00	
	(viii)	Stringing sagging of ACSR Panther/Dog conductor of 50Mtrs span each	set	2	175.20	350.40	
	(ix)	Supply & fixing of Barbed Wire and supply & fixing of Danger Boards on Rail Pole structure [Double Pole / Four Pole].	Set	1	1,853.00	1,853.00	
	g)	Earthing of Rail Pole structure [Double Pole (D.P.)] & Lightning Arrestors.					
		(i)	Construction of Spike Earthing Station, using G.I. Spike of 1853 mm length & 20 mm diameter as Earth Electrodes. The job includes supply and delivery of 2 nos. Earth Electrode and interconnection between Earth Electrodes by supplying G.I. Flat of size 50 mm X 6 mm.	Set	2	4,745.00	9,490.00
		(ii)	Connecting the Rail Pole structure[Double pole (D.P.)] or Lightning Arrestor (LA) to Earthing Station (with bolts, nuts, washers, etc.), including supply & laying of G.I. Strip (Hot Dip) of size 50 mm X 6 mm.	Mtrs.	30	448.00	13,440.00
		(iii)	Supply, laying & fixing of GI (Hot Dip) wire of 6 S.W.G for complete earthing work.	Kgs.	4	73.00	292.00
	h)	Supplying and erection of galvanised stay set for 11 kV overhead lines complete with 19 mm diameter X 1800 mm long stay rod, anchor plate of size 450 mm X 450 mm X 75 mm thick thimble, stay clamps, turn buckle (20 mm X 600 mm), 7/4 mm diameter G.I. stay wire, 11 kV strain insulator, etc., in cement concrete foundation, including excavation, refilling, etc., as required.		Set	2	2,190.00	4380
		(i)	Providing G.I. stay wire (7/4 mm diameter).	Kgs.	30	121.00	3630
		(ii)	Providing Guy insulator for stay Set.	No.	2	80.30	160.6
	22	Removal / dismantle, Loading / Unloading, Transporting relocation of 11KV,630A existing [Alstom make VCB Panels] from 3rd Oil Jetty sub-station to Anchorage Camp sub-station and commissioning of the same.					

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]
	a)	With supply and installation of required spares as detailed in technical specification.	LS	1	46,318.00	46318
23	a)Supply and fixing of GI Chequered plates of 6mm thick for cable trench cover		T	6	120,814.00	724884
	b)Supply, fabrication and fixing of GI Channel[100mm x50mmx6mm] on cable trench and as directed by EIC.		T	6	120,814.00	724884
24	SCADA System:-					
	Providing SCADA System at sub-station-3 for operation, control and condition monitoring of HT,LT switchgears and Transformer using Modbus Protocol with necessary provision for connecting balance 6nos. Sub-station at HDC township in future.					
	a)	Providing SCADA system at main sub-station for monitoring and control of sub-station with Ethernet switches, interposing relay, transducers, network switches.[Job includes SCADA Software and associated Hardware (such as HMI, server, GPS with software, antenna, Laser Printer, Cyber security device Networking equipment , FO cables, Patch Cords, LIU's, Cat-5/Cat-6 Cables, LAN Cable, Twisted cable, 5kVA UPS system, Network switches etc. required for system integration etc.)As per IEC 61850 protocol.	Set	1	4,546,784.57	4,546,784.57
	b)	Providing 1.5Ton spilt type air conditioner.	Nos.	1	35,000.00	35,000.00
25	ACDB Panel:-					
	Supply, Installation, Testing & Commissioning of wall mounted ACDB Panel as per Technical specification.					
	a)	Supply	Nos.	1	19,454.00	19,454.00
	b)	Installation, Testing & Commissioning	Nos.	1	2,316.00	2,316.00
	Sub-Total(Part A)=					10,92,44,861.73
	Part B:Building Electrification and wiring Works:-					
1	Providing wall mounted,IP55, MCCB DB 63A,35KA Panel with 45A Power contactor with Electrcomechanical time switch for switching area lighting of sub-station building and 63A MCB Class-C -02Nos. for sub-station building illumination as per Technical specification.					
	a)	Supply	Nos.	6	38,325.00	229,950.00
	b)	Fixing on Flat iron frame and Installation, Testing & Commissioning	Nos.	6	2,920.00	17,520.00
2	Providing wall mounted, 250A SDFU with HRC Fuses with necessary cable box as per Technical specification.					-
	a)	Supply	Nos.	6	30,733.00	184,398.00

Sl. No.	Description Of Item		Quantity		Rate [In Rs]	Amount [In Rs]
	b)	Fixing on Flat iron frame and Installation, Testing & Commissioning	Nos.	6	6,570.00	39,420.00
3	Celling fan, 1200 mm sweep.					-
	(i)	Supply	Nos.	36	2,847.00	102,492.00
	(ii)	Installation along with all accessories down rod and 3c x 0.75Sqmm PVC insulated & sheathed of about 600 mm.length for connection.	Nos.	36	584.00	21,024.00
3	Exhaust Fan,450 mm sweep.					-
	(i)	Supply with wall cowl.	Nos.	18	3,072.00	55,296.00
	(ii)	Installation using anchor bolts on wall cut outs and using 3c x 0.75Sqmm PVC insulated & sheathed of about 600 mm length for connection.	Nos.	18	618.00	11,124.00
4	2x18-22W Industrial type LED T8 tube light fittings with lamps.					-
	(i)	Supply	Nos.	48	511.00	24,528.00
	(ii)	Installation and connection using 3c x 0.75Sqmm PVC insulated & sheathed of about 600 mm length for connection.	Nos.	48	463.00	22,224.00
5	30-36W Industrial type Outdoor/ st. light type LED fittings with lamps and arm of suitable length.					-
	(i)	Supply	Nos.	48	2,190.00	105,120.00
	(ii)	Installation and connection using using 3c x 0.75Sqmm PVC insulated & sheathed of about 600 mm length for connection.	Nos.	48	584.00	28,032.00
6	BC type Angular holder installed on 3" x 3" base for lamp point along with 7Watt LED lamp					-
	(i)	Supply	Nos.	24	405.00	9,720.00
	(ii)	Installation	Nos.	24	232.00	5,568.00
7	Heavy duty PVC Rigid conduit of 25 mm dia. as per IS:9537 along with Heavy duty, PVC, Rigid, 90° Utility bends suitable for conduit of 25 mm dia. and circular boxes i.e. 1Way, 2Way, 3Way,Fflexible conduit and ceiling rose etc. by wall cutting and mending good damages to wall/ structures.					-
	(i)	Supply	Mtrs	600	39.42	23,652.00
	(ii)	Laying by wall cutting & Installation of 16 SWG GI wire through spare conduit and mending good damage caused due to wall cutting .	Mtrs.	600	43.80	26,280.00

Sl. No.	Description Of Item	Quantity		Rate [In Rs]	Amount [In Rs]
8	1.1KV Grade single core PVC insulated flexible copper wire: Supply, drawing through 25mm PVC Conduit as per serial No.7 above and termination at Switch / Socket / MCB / JB / fan / lights / equipment etc.				-
	(i) 2R x 1.5 Sqmm. PVC flexible Copper wire (Phase +Neutral)	RM	1000	43.80	43,800.00
	(ii) 2R x 1.5 Sqmm. PVC flexible Copper wire (Phase +Neutral) and 1R x 1Sq.mm PVC flexible Copper wire for earth Continuity.	RM	500	58.40	29,200.00
	(iii) 2R x 2.5 Sqmm. PVC flexible Copper wire (Phase +Neutral) and 1R x 1Sq.mm PVC flexible Copper wire for earth Continuity.	RM	500	59.86	29,930.00
	(iv) 2R x 4 Sqmm. PVC flexible Copper wire (Phase +Neutral) and 1R x 1 Sq.mm PVC flexible Copper wire for earth Continuity.	RM	400	77.38	30,952.00
	(v) 2R x 6 Sqmm. PVC flexible Copper wire (Phase +Neutral) and 1R x 1Sq.mm PVC flexible Copper wire for earth Continuity.	RM	250	90.52	22,630.00
9	CRC sheet metal Box for switch board by wall cutting and mending good damages to wall/structures.				-
	(i) Supply and installation of 8" x 10" x 2" CRC sheet metal(16swg) along with bakelite sheet cover of 3 mm thick.	Nos.	30	176.00	5,280.00
	(ii) Supply and installation of 8" x 6" x 2" CRC sheet metal(16swg) bakelite sheet cover of 3mm thick	Nos.	30	176.00	5,280.00
	(iii) Supply and installation of 7" x 4" x 2" CRC sheet metal(16swg) bakelite sheet cover of 3mm thick	Nos.	80	160.00	12,800.00
	(iv) Supply and installation of 4" x 4" x 2" CRC sheet metal(16swg) with bakelite sheet cover of 3 mm thick	Nos.	40	152.00	6,080.00
10	Supply and Installation for switches, sockets, regulators etc. by cutting bakelite sheet cover supplied above (including connection by suitable flexible wire).				-
	(i) 240V,6A Piano type switches	Nos.	125	87.00	10,875.00
	(ii) 240V,16A Piano type switches	Nos.	65	183.00	11,895.00
	(iii) 240V,5A ,6Pin socket outlet	Nos.	60	119.00	7,140.00
	(iv) 240V,16A ,6Pin sockets outlet	Nos.	52	199.00	10,348.00
	(v) 240V,step type fan regulator	Nos.	36	361.00	12,996.00

Sl. No.	Description Of Item	Quantity		Rate [In Rs]	Amount [In Rs]
	(vi) LED type indicator	Nos.	100	88.00	8,800.00
	Sub-Total(Part B)=				1,154,354.00
	Part C: Non-Comprehensive /Comprehensive Maintenance Contract period of 5 years.				
1	Non-Comprehensive/Comprehensive Maintenance Contract with full responsibility of carrying out repair and supply of required original spare parts of supplied equipment only, to keep the system fully operational condition for a period of 5 years, after commissioning of the system with round the clock shift manning at SS-3 Sub-station. Electrical network like office, Hospital, Club, Qtrs., Port House, Auditorium etc. maintenance by general shift with spares provided by HDC, SMP at Free of Cost Basis.				
	a) Non-Comprehensive maintenance during Guarantee period with required shift and general shift maintenance manning 1st Year.	LS	1	6,359,778.00	6,359,778.00
	b) Non-Comprehensive maintenance during Guarantee period with required shift and general shift maintenance manning 2nd Year.	LS	1	6,749,037.00	6,749,037.00
	c) Comprehensive maintenance with required shift and general shift maintenance manning 3rd Year.	LS	1	7,149,552.00	7,149,552.00
	d) Comprehensive maintenance with required shift and general shift maintenance manning 4th Year.	LS	1	7,578,819.00	7,578,819.00
	e) Comprehensive maintenance with required shift and general shift maintenance manning 5th Year.	LS	1	8,040,276.00	8,040,276.00
	Sub-Total (Part C)=				35,877,462.00
	Sub-Total [Electrical(Part A+ Part B) + Part C]=				14,62,76,677.73
	Civil Works Sub-Total=				1,58,60,571.32
	Total [Electrical(Part A+ Part B) + Part C] + Civil Works=				16,21,37,249.00

SECTION VII
GENERAL CONDITIONS OF CONTRACT (GCC)

**Sanctioned by the Trustees under Resolution No. 92 of the 6th Meeting held on 27th
May, 1993**

**Including Addendum Sanctioned by the Trustees under Resolution No. 80 of the
Meeting held on 25th August, 2009**

KOLKATA PORT TRUST
KOLKATA DOCK SYSTEM
& HALDIA DOCK COMPLEX
AUGUST, 2009

GENERAL CONDITIONS OF CONTRACT

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AMENDMENT
TO
GENERAL CONDITIONS OF CONTRACT

❖ *Cl-3.4 THE TENDER /OFFER & ITS PRE-REQUISITES*

Table under sub-clause (a)

PREVIOUS			AS AMENDED		
Estimated Value of Work	Amount of Earnest Money		Estimated Value of Work	Amount of Earnest Money	
	For Works Contract	For Contract of Supplying Materials or Equipment only		For Works Contract	For Contract of Supplying Materials or Equipment only
Up to Rs. 1,00,000=00	5% of the estimated value of work	1% of the estimated value of work	Up to Rs. 10 Crore	2% of the estimated value of work	1% of the estimated value of work
Over Rs. 1,00,000.00	2% of the estimated value of work subject to a maximum of Rs. 20,000/- and minimum of Rs. 5,000/-.	½% of the estimated value of work subject to a maximum of Rs. 10,000/- and minimum of Rs. 1,000/-.	Over Rs. 10 Crore	2% on first Rs. 10 Crore + 1% on the balance	½% of the estimated value of work subject to a maximum of Rs. 10,000/- and minimum of Rs. 1,000/-.

[AMENDMENT SANCTIONED BY THE BOARD OF TRUSTEES VIDE RESOLUTION NO 210 OF THE TRUSTEES' MEETING HELD ON 26.02.2013]

Table under sub-clause (d)

PREVIOUS			AS AMENDED		
Class of Registration	Amount Of Fixed Security	Financial Limit Of Each Tender	Class of Registration	Amount Of Fixed Security	Financial Limit Of Each Tender
A	Rs 10,000/-	Any tender priced upto Rs 2,00,000/-	A	Rs 50,000/-	Any tender priced up to Rs 10,00,000/-
B	Rs 5,000/-	Any tender priced upto Rs 1,00,000/-	B	Rs 25,000/-	Any tender priced upto Rs 5,00,000/-
C	Rs 2,500/-	Any tender priced upto Rs 50,000/-	C	Rs 15,000/-	Any tender priced upto Rs 3,00,000/-

[AMENDMENT SANCTIONED BY THE BOARD OF TRUSTEES VIDE RESOLUTION NO 82 OF THE TRUSTEES' MEETING HELD ON 12.10.2012]

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1. DEFINITIONS

- 1.0 In the contract, as here in after defined, the following words and expressions shall have the meaning herein assigned to them, except where the context otherwise required.
- 1.1 “Employer” or “Board” or “Trustees” means of the Board of Trustees for the Port of Calcutta, a body corporate under Section 3 of the Major Port Trusts Act, 1963, including their successors, representatives and assigns. *Employer*
- 1.2 “Chairman” means the Chairman of the Board and includes the person appointed to act in his place under Sections 14 and 14A of the Major Port Trusts Act, 1963. *Chairman*
- 1.3 “Contractor” means the person or persons, Firm or Company whose tender/offer has been accepted by the Trustees and includes the Contractor’s representatives, heirs, successor and assigns, if any, permitted by the Board/Chairman. *Contractor*
- 1.4 “Engineer” means the Board’s official who has invited the tender on its behalf and includes the Manager (Infrastructure & Civic Facilities) or other official as may be appointed from time to time by the Employer, with written notification to the Contractor, to act as Engineer for the purpose of the Contract, in place of the “Engineer” so designated. *Engineer*
- 1.5 “Engineer’s Representative” means any subordinate or Assistant to the Engineer or any other official appointed from time to time by the Engineer to perform the duties set forth in Clauses 2.4 to 2.6 hereof. *Engineer’s Representative*
- 1.6 “Work” means the work to be executed in accordance with the Contract and includes authorised “Extra Works” and ‘Excess Works” and “Temporary Works”. *Works*
- 1.7 “Temporary Works” means all temporary works of every kind required in or about the execution, completion or maintenance of the works and includes (without thereby limiting the foregoing definitions) all temporary erections, scaffolding, ladders, timbering, soaking vats, site offices, cement and other godowns, platforms and bins for stacking building materials, gantries, temporary tracks and roads, temporary culverts and mixing platforms. *Temporary works*
- 1.8 “Extra Works” means those works required by the Engineer for completion of the Contract which were not specifically and separately included in the schedule of items of the works i.e. (Bill of Quantities) of the tender. “Excess Works” means the required quantities of work in excess of the provision made against any item of the bill of Quantities. *Extra works and Excess works*
- 1.9 “Specifications” means the relevant and appropriate Bureau of Indian Standard’s specifications / International Standard’s Specifications (latest revisions) for materials and workmanship unless stated otherwise in the Tender. *Specification*

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1.10	“Drawings” means the drawings referred to in the Tender and specification and any modification of such drawings approved in writing by the Engineer and such other drawings as may from time to time be furnished or approved in writing by the Engineer.	<i>Drawings</i>
1.11	“Contract” means and includes the General and Special Conditions of Contract, Specifications, Drawings, priced Bill of Quantities, the Tender / Offer, the letter of acceptance of the Tender/Offer, the Contract Agreement, if separately entered into and the Schedule of Rates and Price, if any, adopted by the Trustees at their discretion.	<i>Contract</i>
1.12	“Constructional Plant” means all appliances or things of whatsoever nature required or about the execution, completion or maintenance of the works or temporary works and includes (without thereby limiting the foregoing definition) all machinery and tools but does not include materials or other things intended to form or forming part of the permanent works.	<i>Constructional Plant</i>
1.13	“Site” means the land, waterways and other places, on, under, in or through which the works are to be executed by the Trustees for the purpose of the Contract.	<i>Site</i>
1.14	“Contract Price” means the sum named in the letter of acceptance of the Tender/Offer of the Contractor, subject to such additions thereto and deductions therefrom as may be made by the Engineer under the provisions here in after contained.	<i>Contract Price</i>
1.15	“Month” means English Calendar Month.	<i>Month</i>
1.16	“Excepted Risks” are riot in so far as it is uninsurable, war, invasion, act of foreign enemies, hostilities) whether war be declared or not), Civil War, rebellion, revolution, insurrection or military or usurped power or use or occupation by the Trustees of any portion of the works in respect of which a certificate of completion has been issued (all of which are herein collectively referred to as the excepted risks).	<i>Excepted Risks</i>
1.17	Word importing the singular only, also includes the plural and vice-versa where the context so requires.	<i>Singular/ Plural</i>
1.18	The heading and marginal notes in these General Conditions of Contract shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.	<i>Headings/ Marginal Notes.</i>
1.19	Unless otherwise stipulated the work “Cost” shall be deemed to include overhead costs of the Contractor, whether on or off the site.	<i>Cost</i>
2.0	DUTIES & POWERS OF ENGINEER & ENGINEER’S REPRESENTATIVE.	
2.1	The Contractor shall execute, compete and maintain the works in terms of the contract to the entire satisfaction of the Engineer and Shall comply with the Engineer’s direction on any matter whatsoever.	<i>Engineer’s Authority</i>

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|-----|---|--|
| 2.2 | The Contractor shall take instructions from the Engineer and subject to limitation of Clause 2.5 hereof, from the Engineer's Representative. | <i>Authority of
Engineer's
Representative</i> |
| 2.3 | <p><i>The Engineer shall have full power and authority:</i></p> <ul style="list-style-type: none">(a) to supply to the contractor from time to time during the progress of the works such further drawings and instructions as shall be necessary for the purpose of proper and adequate execution and maintenance of the works and the contractor shall carry out and be bound by the same.(b) to alter or modify the specification of any material and workmanship and to inspect the work at any time.(c) to order for any variation, alteration and modification of the work and for extra works.(d) to issue certificates as per contract.(e) to settle the claims & disputes of the Contractor and Trustees, as the first referee.(f) To grant extension of completion time. | <i>Engineer's
Power</i> |
| 2.4 | <p><i>The Engineer's Representative shall :</i></p> <ul style="list-style-type: none">(i) watch and supervise the works.(ii) test and examine any material to be used or workmanship employed in connection with the work.(iii) have power to disapprove any material and workmanship not in accordance with the contract and the contractor shall comply with his direction in this regard.(iv) take measurements of work done by the contractor for the purpose of payment or otherwise.(v) order demolition of defectively done work for its reconstruction all by the Contractor at his own expense.(vi) have powers to issue alteration order not implying modification of design and extension of completion time of the work and(vii) have such other powers and authorities vested in the Engineer, which have been delegated to him in writing by the Engineer under intimation to the Contractor. | <i>Power of
Engineer's
Representative.</i> |

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- 2.5 *Provided always that the Engineer's Representative shall have no power:*
- Limitation of Engineer's Representative's Power*
- (a) to order any work involving delay or any extra payment by the Trustees,
 - (b) to make variation of or in the works; and
 - (c) to relieve the Contractor of any of his duties or obligations under the Contract.
- 2.6 Provided also as follows:
- Engineer's Overriding Power*
- (a) Failure of Engineer's Representative to disapprove any work or materials shall not prejudice the power of the Engineer thereafter to disapprove such work or materials and to order the pulling down, removal, breaking-up thereof and re-constructing at the contractor's cost and the contractor shall have no claim to compensation for the loss if any sustained by him.
 - (b) If the contractor shall be dissatisfied by reason of any decision of the Engineer's Representative, he shall be entitled to refer the matter to the Engineer who shall thereupon confirm, reverse or vary such decision.
 - (c) Any written instructions or written approval given by the Engineer's Representative to the contractor, within the terms of delegation of power and authority vested in the Engineer to his Representative in writing, shall bind the contractor and the Trustees as though it had been given by the Engineer, who may from time to time make such delegation.
- 3.0 THE TENDER/OFFER AND ITS PRE-REQUISITES
- 3.1 The Contractor shall, before making out and submitting his tender/offer, be deemed to have inspected and examined the site, fully considered all factors, risks and contingencies, which will have direct and indirect impact on his expenses and profit from the work and shall be specifically deemed to have taken the following aspects into consideration:
- The tender must encompass all relevant aspects/issues.*
- (a) The form and nature of the site and its surroundings including their sub-surface, hydrological, tidal and climatic conditions, the means of access to the site and all other local conditions, including the likely charges and costs for temporary way-leave, if any, required for the work.
 - (b) The drawings, specifications, the nature and extent of work to be executed and the quality, quantity and availability of the required materials and labour for the work and the need to execute the work to the entire satisfaction of the Engineer, and also by complying with the General and Special Conditions of Contract.
- Site & Local condition.*
- Drawing/ Specification/ Nature & extent of work to be done.*

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- (c) The accommodation required for the workmen and site office, mobilisation/demobilisation and storage of all plant, equipment and Construction materials. *Accommodation for Contractor's men/materials.*
- (d) The sources and means of procurement of water for drinking, washing and execution of work, and source and availability of electrical power, all at Contractor's cost. *Water for drinking etc. /Electrical power.*
- (e) Payment of taxes and duties and compliance of all applicable statutes, ordinances and law together with the rules made thereunder, the rules, regulations and bye-laws of public bodies or any local or other authority by the Contractor, keeping the Trustees indemnified against penalties and liabilities of every kind arising from the Contractor's failure in such compliance. *Payment of Taxes/duties and observance of all statutes.*
- (f) Payment of all kinds of stamp-duty for executing the agreement or for any legal instrument including Bank Guarantees and Indemnity Bonds. *Payment of Stamp Duty by the Contractor.*

3.2 The Contractor's tender shall be in ink on the Tender Forms supplied by the Trustees, unless stipulated otherwise in the Notice Inviting the Tender and shall be faultless in figures and free from erasing. Corrections, if any, shall only be made by scoring out and initialling of the revised figure.

3.3 If required by the Engineer or the Trustees, the Contractors in their tender or subsequently, shall disclose the names of their owners/partners/share holders at the required points of time. The failure in this regard shall be treated as a breach and a contract, if entered into, shall be liable to be cancelled. *Disclosure of Owner's name.*

3.4 (a) Unless otherwise stipulated in the Notice Inviting Tender / Offer, every tender must be submitted with Earnest Money of the amount calculated as per the following scale. *Earnest Money and Security Deposit.*

Estimated Value of Work	Amount of Earnest Money	
	For Works Contract	For Contract of Supplying Materials or Equipment only
Up to Rs. 1,00,000=00	5% of the estimated value of work	1% of the estimated value of work
Over Rs. 1,00,000=00	2% of the estimated value of work subject to a maximum of Rs. 20,000/- and minimum of Rs. 5,000/-.	½% of the estimated value of work subject to a maximum of Rs. 10,000/- and minimum of Rs. 1,000/-.

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- (b) Earnest Money shall be deposited with the Trustees' treasurer in cash or by Banker's Cheque of any Calcutta Branch of a Nationalised Bank of India drawn in favour of Calcutta Port Trust or in the form of any "Account Payee" Draft of any Nationalised Bank of India drawn in favour of "Calcutta Port Trust" and payable at Calcutta/Haldia, as the case may be, and the receipt granted therefor be kept attached to the Tender/Offer in the Sealed Cover.

*Method of
Paying E.M.*

- (c) Earnest Money of unaccepted tender shall be refunded without any interest through A/c. Payee Cheque drawn on a Nationalised Bank of Calcutta / Haldia.

Refund of E.M.

- (d) The enlisted (registered) Contractors of the Trustees who have deposited fixed Security with the Trustees' FA & CAO / Manager (Finance) according to his Class of Registration, shall be exempt from depositing the Earnest Money, as per the following scale:

*Exemption from
E.M. to Regd.
Firms*

Class of Registration	Amount of Fixed Security	Financial Limit of Each Tender
A	Rs. 25,000/-	Any tender priced up to Rs.5,00,000/-
B	Rs. 10,000/-	Any tender priced up to Rs.2,00,000/-
C	Rs. 5,000/-	Any tender priced up to Rs.1,00,000/-

- (e) (i) Tender submitted without requisite Earnest Money may be liable to rejection.

*Tender with-
out EM liable to
rejection.*

- (ii) If before expiry of the validity period of his Tender/Offer, the tenderer amends his quoted rates or tender/offer making them unacceptable to the Trustees and/or withdraws his tender/offer, the Earnest Money deposited shall be liable to forfeiture at the option of the Trustees.

*Forfeiture of
E.M. before
Acceptance of
offer.*

- (f) The Earnest Money of accepted tender/offer shall be retained by the Trustees as part of the Security Deposit, for which a separate Treasury Receipt shall be issued to the Contractor after cancellation of the previous Receipt of Earnest Money.

*E.M. to be
converted to
part S.D.*

- (g) Balance security for works contract shall be recovered by deduction from all progressive Bill (including final Bill, if necessary) @ 10% of the gross value of work in each such bill, so that the total recovery may not exceed the quantum computed as per the under noted percentages of the total value of work actually done up to the stage of completion.

*Mode of
recovery of
balance S.D.*

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Value of Work	% of Security Deposit for works contract.	% of Security Deposit For contract of supply- ing materials & equipment only.
For works up to Rs.10,00,000/-.	10% (Ten percent)	1% (One percent)
For works costing more than Rs.10,00,000/- and up to Rs.20,00,000/-	10% on first Rs.10,00,000/- + 7½% on the balance.	1% on first Rs.10,00,000/- + ½% on the balance.
For works costing more than Rs.20,00,000/-	10% on first Rs.10,00,000/- + 7½% on the next Rs.10,00,000/- + 5% on the balance.	1% on first Rs.10,00,000/- + ½% on the next Rs.10,00,000/- + ¼% on the balance.

Scale of S.D. recovery.

- (h) Balance Security for Contract of supplying materials and equipment computed in terms of the percentages given above, shall have to be deposited with the Trustees' Treasurer in advance and within 30 days from the date of placement of supply order, either in cash or by A/c. Payee Draft of a Nationalised Bank of India drawn in favour of Calcutta Port Trust and payable at Calcutta/Haldia, as the case may be.

S.D. for supply contracts to be deposited in advance.

- (i) No interest shall be paid by the Trustees to the Tenderer/Contractor on the amount of Earnest Money/Security Deposit held by the Trustees, at any stage.

No interest payable on E.M. /S.D

3.5

- (i) The Security Deposit shall refunded to the Contractor in terms of Clause 9.3 hereinafter and subject to deduction, if any, under the provision of Sub-clause 3.5 (ii) herein below. Id, however, the Contract provides for any maintenance period. 50% of the Security Deposit may be refunded against any of the treasury Receipt for that amount on expiry of half of the maintenance period and the balance deposit on the expiry of the said maintenance period and after the Engineer has certified the final completion of work in Form G.C.2 and the Contractor has submitted his "No Claim" Certificate in Form G.C.3.

Mode of refund of S.D.

- (ii) The Security Deposit/Earnest Money may be liable to forfeiture at the option of the Trustees, if the Contractor fails to carry out the work or to perform/observe any of the conditions of the Contract. The Trustees shall also be at liberty to deduct any of their dues from the Security Deposit, fixed Security, Earnest Money or from any sum due or to become due to the Contractor under any other contract.

Forfeiture of S.D.

- 3.6 If stipulated in the contract as a Special Condition, the contractor shall have to submit to the Engineer a performance Bond in the form of an irrevocable guarantee from Calcutta/Haldia Branch, as the case may be, of any Nationalised Bank of India in the proforma annexed hereto and for the sum and period as mentioned in the letter of acceptance of the Tender/Offer, within 15 days from the date of such letter, failing which the Contract shall be liable to be terminated and the earnest money shall be liable to forfeiture; all at the discretion of the Engineer. The cost of obtaining this or any other Bank Guarantee and/or the revalidation thereof, wherever required, has to be borne by the Contractor and it shall be his sole responsibility to arrange for timely revalidation of such Bank Guarantee, failing which and for non-fulfilment of any contractual obligation by the Contractor, the Engineer and/or the Trustees shall be at liberty to raise claim against the Guarantee and/or enforce the same unilaterally.
- Bank Guarantee in lieu of Cash S.D. in certain cases*
- 3.7 “Every Tenderer/ Bidder shall submit, in respect of a tender value of more than Rs 5 Crore, along with their tender comprising Special Conditions of Contract, General Conditions of Contract, BOQ, Earnest Money, etc. a document called Integrity Pact Agreement duly signed by their authorized representative. The Proforma of the Integrity Pact Agreement shall as specified in the GCC. In case of tender value more than Rs 5 Crore, the Integrity Pact Agreement is an essential part and parcel of bid document to be submitted by each tenderer, without which the tender shall not be considered.”
- 4.0 THE CONTRACT & GENERAL OBLIGATIONS OF CONTRACTOR
- 4.1 (a) The contract documents shall be drawn-up in English language.
- English language to be used*
- (b) The contract shall be governed by all relevant Indian Acts. As applicable only within the jurisdiction of the High Court at Calcutta, India, including the following Acts:
- Applicability of laws on the contract*
1. The Contract Act (India), 1872.
 2. The Major Port Trusts Act, 1963.
 3. The Workmen’s Compensation Act, 1923.
 4. The Minimum Wages Act, 1948.
 5. The Contract Labour (Regulation & Abolition) Act, 1970.
 6. The Dock Workers’ Act, 1948.
 7. The Arbitration and Conciliation Act (1996) (in the case of a definite Arbitration Agreement only).
- 4.2 After acceptance of his Tender/Offer and when called on to do so by the engineer or his representative, the contractor shall, at his own expense, enter into and execute a Contract Agreement to be prepared by him in the form annexed hereto. Until such Contract Agreement is executed, the other documents referred to in the definition of the term ‘Contract’ here-in-before, shall collectively be the Contract.
- Contractor to Execute Contract Agreement.*
- 4.3 Several documents forming the contract are to be taken as mutually explanatory of one another. Should there be any discrepancy, ambiguity, omission or error in the various contract documents, the Engineer shall have the power to correct the same and his decision shall be final and binding on the parties to the Contract.
- Interpretation of contract documents – Engineers’ Power*

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- 4.4 Two copies of the Drawings referred to in the general and special Conditions of Contract and in the Bill of Quantities, shall be furnished by the Engineer to the Contractors free of cost for his use on the work, but these shall remain the property of the Trustees and hence, the Contractor shall return them to the Engineer or his Representative on completion of the work, if not torn or mutilated on being regularly used at site. *All Drawings are Trustees' property.*
- 4.5 The Contractor shall prove and make at his own expense any working or progress drawings required by him or necessary for the proper execution of the works and shall, when required, furnish copies of the same free of cost to the Engineer for his information and/or approval, without meaning thereby the shifting of Contractor's responsibility on the Engineer in any way whatsoever. *Contractor to prepare working / progress drawings*
- 4.6 The Contractor shall not directly or indirectly transfer, assign or sublet the Contract or any part thereof without the written permission of the Engineer. Even if such permission be granted, the Contractor shall remain responsible (a) for the acts, defaults and neglect of any sub-contractor, his agents, servants or workmen as fully as if these were the acts, defaults or neglects of the Contractor himself or his agents, servants or workmen and (b) for his full and entire responsibility of the contract and for active superintendence of the works by him despite being sublet, provided always that the provision of labourers on a "piece rate" basis shall not be deemed to be sub-letting under this clause. *Contractor cannot sub-let the work*
- 4.7 Unless otherwise specified, the Contractor shall be deemed to have included in his Tender/Offer all his cost for supplying and providing all constructional plant, temporary work. Materials both for temporary and permanent works, labour including supervision thereof, transporting to and from the site and in and about the work, including loading, unloading, fencing, watching, lighting, payment of fees, taxes and duties to the appropriate authorities and other things of every kind required for the construction, erection, completion and maintenance of the work. *Contractors' price is inclusive of all costs*
- 4.8 The Contractor shall be solely responsible for the adequacy, stability and safety of all site operations and methods of construction, even if any prior approval thereto has been taken from the Engineer or his Representative. The Contractor shall not be responsible for the correctness of the design or specification of the Temporary and Permanent works formulated by the Engineer; but the Contractor shall be fully responsible for the correct implementation thereof, as also for any design and specification prepared/proposed/used by the Contractor. *Contractor is responsible for all construction process, except for correctness of design and specification formulated by the Engineer*
- 4.9 Whenever required by the Engineer or his representative, the Contractor shall submit to him the details of his (a) programme for execution of the work, (b) proposed procedure and methods of work, (c) proposed deployment of plant, equipment, labour, materials and temporary works. The submission to and/or any approval by the Engineer or his Representative to any such programme or particulars shall not relieve the Contractor of any of his obligations under the contract. *Contractor to submit his programme of work*

If for any reason the contractor be unable to adhere to his earlier programme, he shall submit his revised programme for completion of work within the stipulated time whenever asked to do so.

- 4.10 Necessary and adequate supervision shall be provided by the Contractor during execution of the works and as long thereafter as the Engineer or his representative shall consider necessary during the maintenance period. The Contractor or his competent and authorised agent or representative shall be constantly at site and instructions given to him by the Engineer or his representative in writing shall be binding upon the Contractor subject to limitation in Clause 2.5 hereof. The Contractor shall inform the Engineer or his representative in writing about such representative/agent of him at site.
- Contractor to supervise the works*
- 4.11 The Contractor shall employ in execution of the Contract only qualified careful and experienced persons and the Engineer shall be at liberty to direct the Contractor to stop deployment of any of his staff, workmen or official at site and the Contractor shall within 48 hours comply with such instruction without any demur whenever the Engineer shall feel that the deployment of the person concerned will not be conducive to the proper and timely completion of the work.
- Contractor to deploy qualified men and Engineer's power to remove Contractor's men*
- 4.12 The Contractor shall be responsible for the true and proper setting out of the works in relation to reference points/lines/levels given by the Engineer in writing. The checking of any setting-out or of any alignment or level by the Engineer or his Representative shall not in any way relieve the contractor of his responsibility for the correctness thereof and he shall fully provide protect and preserve all stakes, templates, bench marks, sight rails, pegs, level marks, profile marks and other things used in setting out the works.
- Contractor is responsible for line, level, setting out etc.*
- 4.13 From the commencement of the works till issue of the completion certificate in Form G.C.1, vide Clause 5.12 hereof, the contractor shall take full responsibility for the care thereof. Save for the excepted risks, any damage, loss or injury to the work or any part thereof shall be made good by the Contractor at his own cost as per instruction and to the satisfaction of the engineer, failing which the Engineer or his Representative may cause the same to be made good by any other agency and the expenses incurred and certified by the Engineer shall deem proper. This Clause will not apply to that part of the work, which might have been taken over by the Trustees on partial completion of the work and in such case the Contractor's obligation will be limited to repairs and replacement for manufacturing or construction defects during the Maintenance period (Guarantee Period) as per the directions of the Engineer as also for defects/damages if any caused to the work by the Contractor during such repairs and replacement in the maintenance period.
- Contractor is responsible to protect the work*

- 4.14 The Contractor shall at his own cost protect support and take all precautions in regard to the personnel or structure or services or properties belonging to the Trustees or not which may be interfered with or affected or disturbed or endangered and shall indemnify and keep indemnified the Trustees against claim for injury, loss or damage caused by the Contractor in connection with the execution and maintenance of the work to the aforesaid properties, structures and services and/or to any person including the Contractor's workmen. Cost of Insurance Cover, if any, taken by the Contractor shall not be reimbursed by the Trustees, unless otherwise stipulated in the Contract.
- Contractor is responsible for all damages to other structures / persons caused by him in executing the work.*
- 4.15 The Contractor shall immediately inform the Engineer's Representatives if any fossil, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological importance be discovered at site which shall remain the property of the Trustees and protect them from being damaged by his workmen and arrange for disposal of them at the Trustees' expense as per the instruction of the Engineer's Representative.
- Fossils, Treasure trawois, etc. are Trustees' property*
- 4.16 The Contractor shall be deemed to have indemnified and shall indemnify the Trustees against all claims, demands, actions and proceedings and all costs arising therefrom on account of :
- Contractor to Indemnify the Trustees against all claims for loss, damage, etc.*
- (a) Infringement of any patent right, design, trademark or name or other protected right in connection with the works or temporary work.
 - (b) Payment of all royalties, rent, toll charges, local taxes, other payments or compensation, if any, for getting all materials and equipment required for the work.
 - (c) Unauthorised obstruction or nuisance caused by the contractor in respect of Public or Private or Private road, railway tracks, footpaths, crane tracks, waterways, quays and other properties belonging to the Trustees or any other person.
 - (d) Damage/injury caused to any highway and bridge on account of the movement of Contractor's plants and materials in connection with the work.
 - (e) Pollution of waterway and damage caused to river, lock, sea-wall or other structure related to waterway, in transporting contractor's plants and materials.
 - (f) The Contractor's default in affording all reasonable facilities and accommodation as per the direction of the Engineer or his Representative to the workmen of the Trustees and other agencies employed by or with the permission and/or knowledge of the Trustees on or near the site of work.
- 4.17 Debris and materials, if obtained by demolishing any property, building or structure in terms of the Contract shall remain the property of the Trustees.
- Dismantled materials Trustees' property*

- 4.18 The Contractor's quoted rates shall be deemed to have been inclusive of the following: *Contractor's quoted rates/price must be all inclusive*
- (a) Keeping the site free of unnecessary obstruction and removal from site of constructional plant wreckage, rubbish, surplus earth or temporary works no longer required.
 - (b) Cleaning and removal from site all the surplus materials of every kind to leave the site clean and tidy after completion of the work, without which payment against final bill may be liable to be withheld.
 - (c) Precautionary measures to secure efficient protection of Docks, the River Hooghly and other waterways against pollution of whatever nature during execution and maintenance of the works and to prevent rubbish, refuse and other materials from being thrown into the water by the Contractor's men or those of his agency.
 - (d) Making arrangements for deployment of all labourer and workers, local or otherwise including payment for their wages, transport, accommodation, medical and all other statutory benefits and entry permits, wherever necessary.
 - (e) Making arrangements in or around the site, as per the requirements of local authority or the Engineer or his Representative for preventing (i) spread of any infectious disease like smallpox, cholera, plague or malaria by taking effective actions for destruction of rats, mice, vermin, mosquitoes, etc. and by maintaining healthy and sanitary condition, (ii) illegal storage and distribution of Drugs, Narcotics, Alcoholic liquor, Arms and Ammunitions, (iii) unlawful, riotous or disorderly conduct of the Contractor's or his Sub-Contractor's workmen, (iv) deployment of workmen of age less than 16 years.
- 4.19 Every direction or notice to be given to the Contractor shall be deemed to have been duly served on or received by the Contractor, if the same is posted or sent by hand to the address given in the tender or to the Contractor's Site Office or to the Registered Office of the Contractor. The time mentioned in these conditions for doing any act after direction or notice shall be reckoned from the time of such posting or despatch. *Notice to Contractor.*
- 4.20 The Contractor and his Sub-contractor or their agents and men and any firm supplying plant, materials and equipment shall not publish or caused to be published any photographs or description of the works without the prior authority of the Engineer in writing. *Contractor not to publish photograph or particulars of work*

- 4.21 The Contractor shall at the Trustees' cost to be decided by the Engineer render all reasonable facilities and Co-operation as per direction of the Engineer or his representative to any other Contractor engaged by the Trustees and their workmen to the Trustees' own staff and to the men of other Public Body on or near the site of work and in default the Contractor shall be liable to the Trustees for any delay or expense incurred by reason of such default. *Contractor to provide facilities to outsiders*
- 4.22 The work has to be carried out by the Contractor causing the minimum of hindrance for any maritime traffic or surface traffic. *Work to cause minimum possible hindrance to traffic movement*
- 4.23 All constructional plants, temporary works and materials when brought to the site by the Contractor shall be deemed to be the property of the Trustees who will have lien on the same until the satisfactory completion of the work and shall only be removed from the site in part or in full with the written permission of the Engineer or his Representative. *Trustees' lien on Contractor's Plant & Equipment.*
- 5.0 COMMENCEMENT, EXECUTION AND COMPLETION OF WORK.
- 5.1 The Contractor shall commence the work within 7 days of the receipt of Engineer's letter informing acceptance of the Contractor's tender/offer by the Trustees or within such preliminary time as mentioned by the Contractor in the Form of Tender or the time accepted by the Trustees. The Contractor shall then proceed with the work with due expedition and without delay, except as may be expressly sanctioned or ordered by the Engineer or his Representatives, time being deemed the essence of the contract on the part of the contractor. *Preliminary time to commence work an maintenance of steady rate of progress*
- 5.2 The Contractor shall provide and maintain a suitable office at or near the site to which the Engineer's Representative may send communications and instructions for use of the Contractor. *Contractor's site office*
- 5.3 Unless specified otherwise in the contract or prior permission of the Engineer has been taken, the contractor shall not execute the work beyond the working hours observed by the Engineer's Representative and on Sundays and Holidays observed in the Trustees' system, except in so far as it becomes essential on account of tidal work or for safety of the work. If the progress of the work lags behind schedule or the work has been endangered by any act or neglect on the part of the contractor, then the Engineer or his Representative shall order and the contractor at his own expense shall work by day and by night and on Sundays and Public Holidays. Any failure of the Engineer or his Representative to pass such an order shall not relieve the contractor from any of his obligations. The Engineer's decision in this regard shall be final binding and conclusive. *Contractor to observe Trustees' working hours*

- 5.4 Unless stipulated otherwise in the contract all materials required for the work shall be procured and supplied by the contractor with the approval of the Engineer or his Representative and subject to subsequent testing as may be required by the Engineer or his Representative. The Engineer shall exercise his sole discretion to accept any such materials. *Contractor to supply all materials as per requirement of the Engineer or his representative*
- 5.5 Unless stipulated otherwise in the contract all materials, workmanship and method of measurement shall be in accordance with the relevant Codes (Latest Revision) of the Bureau of Indian Standards and the written instructions of the Engineer or his Representative. Where no specific reference is available in the contract, the material and workmanship shall be of the best of their respective kinds to the satisfaction of the Engineer. *Materials & Works*
- 5.6 Samples shall be prepared and submitted for approval of the Engineer or his representative, whenever required to do so, all at the Contractor's cost. *Contractor to submit samples for approval*
- Unless stipulated otherwise in the contract, the cost of any test required by the Engineer or his representative in respect of materials and workmanship deployed on the work, shall be borne by the Contractor. *Contractor to arrange all testing at his own cost.*
- 5.8 Regarding the supply of any materials by the Trustees to the contractor in accordance with the contract, the following conditions shall apply :
- (a) The Contractor shall, at his own expense, arrange for transporting the materials from the Trustees' Stores, watching, storing and keeping them in his safe custody, furnishing of statement of consumption thereof in the manner required by the Engineer or his representative, return of surplus and empty container to the Trustees' Stores as per the direction of the Engineer or his Representative. *The Contractor shall account for and look after the Trustees' materials*
- (b) Being the custodian of the Trustees' materials, the contractor shall remain solely responsible for any such materials issued to him and for any loss or damage thereof for any reason other than "Excepted Risks", the Contractor shall compensate the Trustees' in the manner decided by the Engineer and shall at no stage remove or cause to be removed any such material from the site without his permission in writing. *Contractor to compensate for loss and damage to Trustees' materials*
- (c) The Trustees' materials will generally be supplied in stages and in accordance with the rate of progress of work but except for grant of suitable extension of completion time of work as decided by the Engineer. The Contractor shall not be entitled to any other compensation, monetary or otherwise, for any delay in the supply of Trustees' materials to him. The Contractor shall, however, communicate his requirement of such materials to the Engineer from time to time. *Delay in supply of Trustees' materials will only entitle the Contractor for extension of completion time of work*

(d) Unless stipulated otherwise in the contract, the value of the Trustees' materials issued to the contractor shall be recovered from the contractor's bills and/or any of his other dues, progressively according to the consumption thereof on the work and/or in the manner decided by the Engineer or his representative and at the rate/s stipulated in the contract. These rates shall only be considered by the contractor in the preparation of his tender/offer and these will form the basis of escalation/variation, if in future the contractor is required to procure and provide any such material on the written order of the Engineer consequent on the Trustees' failure to effect timely supply thereof.

Recovery from Contractor for Trustees' materials under normal circumstances

(e) If the Engineer decides that due to the contractor's negligence, any of the Trustees' materials issued to the contractor has been – (i) lost or damaged, (ii) consumed in excess of requirement and (iii) wasted by the contractor in excess of normal wastage, then the value thereof shall be recovered from the contractor's bills or from any of his other dues, after adding 19 ¼% extra over the higher one of the followings -

Recovery from Contractor for Trustees' materials under other circumstances.

(1) The issue rate of the materials at the Trustees' Stores and

(2) The market price of the material on the date of issue as would be determined by the Engineer.

5.9 The Engineer or his Representative shall have the power to inspect any material and work at any time and to order at any time – (I) for removal from the site of any material which in his opinion is not in accordance with the contract or the instruction of the engineer or his representative, (ii) for the substitution of the proper and suitable materials, or (iii) the removal and proper re-execution of any work which in respect of material and workmanship is not in accordance with the contract or the instructions of the Engineer. The Contractor shall comply with such order at his own expense and within the time specified in the order. If the contractor fails to comply, the Engineer shall be at liberty to dispose any such materials and re-do any work in the manner convenient to the Trustees by engaging any outside agency at the risk and expense of the contractor and after giving him a written prior notice of 7 days.

Contractor to replace materials/work not acceptable to the Engineer or his Representative

5.10 No work shall be covered up and put out of view by the contractor without approval of the Engineer or his Representative and whenever required by him, the contractor shall uncover any part or parts of the work or make openings in or through the same as may be directed by the Engineer or his representative from time to time and shall reinstate or make good those part of works thus affected to the satisfaction of the Engineer, all at the cost of the contractor.

Contractor to seek approval of Engineer or his Representative before covering up any portion of work

The Trustees shall reimburse such cost as determined by the Engineer, if the initial covering up was with prior written order of the Engineer or his Representative.

5.11 On a written order of the Engineer or his Representative, the contractor shall delay or suspend the progress of the work till such time the written order to resume the execution is received by him. During such suspension the contractor shall protect and secure the work to the satisfaction of the Engineer or his Representative. All extra expenses in giving effect to such order shall be considered by the Trustees, unless such suspension is –

Contractor to suspend work on Order from Engineer or his Representative

- (a) otherwise provided for in the contract, or
- (b) necessary by reason of some default on the part of the contractor, or
- (c) necessary by reason of climatic conditions on the site, or
- (d) necessary for proper execution of the works or for the safety of the works or any part thereof.

The Engineer shall settle and determine such extra payment and/or Extension of completion time to be allowed to the contractor, as shall, in the opinion of the Engineer be fair and reasonable, and the same shall be final and binding on the Contractor.

5.11.1 If at any time before or after commencement of the work the Trustees do not require the whole of the work tendered for the Engineer shall notify the same to the contractor in writing and the contractor shall stop further works in compliance of the same. The Contractor shall not be entitled to any claim for compensation for underived profit or for such premature stoppage of work or on account of curtailment of the originally intended work by reason of alteration made by the Engineer in the original specifications, drawings, designs and instructions.

5.12 When the whole of the work has been completed to the satisfaction of the Engineer and has passed any final test prescribed in the contract, the contractor shall, within 21 days of submission of his application to the Engineer, be entitled to receive from him a certificate for completion of work in Form G.C.1, annexed hereto. If any part of the total work having been completed to the satisfaction of the Engineer, be taken over and/or used by the Trustees, the Contractor shall on application be entitled to partial completion certificate in the Form G.C.1 indicating the portion of the work covered by it, so that the Contractor's liability during maintenance period of the contract, if any, shall commence from the date mentioned in such certificate so far as the completed portion of the work is concerned.

Completion Certificate G.C.1.

6.0 TERMS OF PAYMENT:

- 6.1 No sum shall be considered as earned by or due to the Contractor in respect of the work till final and satisfactory completion thereof and until a certificate of final completion in Form G.C.2 has been given by the Engineer.

All interim payments are advances till issue of Certificate in Form G.C.2

On account payments, if any, made prior to issue of the certificate in Form G.C.2, shall all be treated as mere advance, which shall stand recoverable in full or in part, if the Engineer so decides in the context of Contractor's unfulfilled contract condition, if any.

- 6.2 All payments shall be made to the Contractor only on the basis of measurements of actual work done, as recorded in the Trustees' measurement books and at accepted tendered or at agreed rates, as the case may be, except as otherwise provided in the contract and when the Engineer decides any other rate for change in the scope of work or omission, if any, on the part of the Contractor.

Payment on the basis of measurements at agreed rates.

- 6.3 For work of sanctioned tender value more than Rs.50,000/- or having an initially stipulated completion period of 4 months or more, on account payments may be made at the discretion of the Engineer or his Representative at intervals deemed suitable and justified by him. Provided always that subject to execution of work of substantial value in the context of the contract price, the interval of such on account payments shall be decided by the Engineer or his Representative, which shall ordinarily not be less than 1 month in between two payments for on account bill and/or advance.

Limitation for on account payment

- 6.4 Measurement for works done shall be progressively taken by the Engineer's Representative and entered in the Trustees' Measurement Book, at intervals deemed suitable and proper by him and/or the Engineer. The Contractor or his duly accredited Representative or Agent shall remain present at the time of such measurement and assist the engineer's Representative in every manner required by him. After the measurements taken have been entered in the Measurement Book, the Contractor or his Agent shall sign the Measurement Book at the end of such Measurements over the Contractor's Rubber Stamp as a token of acceptance of all such measurements, recorded above and prior to such signature. If the Contractor or his Agent fails to participate even after 3 days written notice from the Engineer's Representative, the measurement shall be taken ex-parte by the Engineer's Representative and those shall be accepted by the Contractor.

Recording of measurements

6.5 Based on the quantum of work and the value thereof computed in the Measurement Book, the Contractor shall type out his bill in the proforma approved by the Engineer and submit the same to the Engineer's Representative in quadruplicate, duly signed by him or his accredited Agent over his Rubber Stamp. The Engineer or his Representative may in his absolute discretion, allow advance payment against such bill to the extent of an amount not exceeding 75% of the "net payable" sum of the said bill, subject to adjustment thereof against the bill at the time of checking and auditing the bill at the Trustees' end. The measurement Book will not be handed over to the Contractor; but he will obtain the abstracts of quantities, amounts and recoveries to type out the bill.

Contractor to prepare and submit his bills

6.6 At the discretion of the Engineer or his Representative and only in respect of accepted offers/where estimated amount put to tender would be Rs.2,00,000/- or more, advance payment may be made to the extent of 75% of the value of any material purchased and brought to the site by the Contractor. Provided always that –

- (i) the materials shall, in the opinion of the Engineer or his Representative be of imperishable nature,
- (ii) the value of such materials shall be assessed by the engineer or his Representative at their own discretion,
- (iii) a formal agreement has been drawn up with the contractor, under which the Trustees secure a lien on the contractor's materials,
- (iv) the materials are safe-guarded by the contractor against losses, shortage and misuse due to the contractor postponing the execution of the work or otherwise,
- (v) in the event of storage of such materials within the Trustees' protected areas in the Docks, the contractor shall submit an Indemnity Bond in the proforma and manner acceptable to Trustees' whereby the contractor shall indemnify the Trustees against all financial loss/damage, on account of loss/damage to such materials for whatever reasons,

Advance payment against Non-perishable materials

- (vi) in the event of storage of such materials outside the Trustees' protected areas the Contractor shall submit to the Engineer an irrevocable Bank Guarantee favouring the Trustees and for the same sum as is being advance, in the proforma and manner acceptable to the Trustees. The Guarantee shall be of a Calcutta/Haldia Branch of any Nationalised Bank or a Schedule Commercial Bank, as the case may be, acceptable to the Trustees and shall remain valid till the anticipated period of consumption of such materials in the work. The Bank Guarantee must bear an undertaking by the issuing Bank guaranteeing automatic payment of the guaranteed sum to the Trustees by the Bank on the date of expiry of the validity of the Guarantee, unless with the prior written approval of the Engineer on behalf of the Trustees, the Bank has extended the validity of the Guarantee.
- (vii) The amount of advance shall be recoverable from the contractor's bills or any other dues, progressively with the consumption of the materials on the basis of quantity consumed. Consequent on full recovery of the advance the Indemnity Bond/Bank Guarantee, vide Sub-clause (v) & (vi) above, shall be returned to the Contractor duly discharged by the Engineer on behalf of the Trustees.

6.7 No certificate of the Engineer or his representative shall protect the Contractor against or prevent the Trustees from obtaining repayment from the Contractor, in case the Engineer or his representative should overcertify for payment or the Trustees should over-pay the Contractor on any account.

Recovery for wrong and over payment

6.8 No claim for interest shall be admissible or payable to the Contractor at any stage and in respect of any money or balance or Bank Guarantee, which may be due to the Contractor from the Trustees, owing to dispute or otherwise or for any delay on the part of the Trustees in making interim or final payment or otherwise.

Interest not admissible to Contractor

7.0 VARIATION AND ITS VALUATION:

7.1 The Quantities set out in the Bill of Quantities of the tender shall be treated as estimated quantities of the work and shall never be deemed as actual or correct quantities of the works to be executed by the contractor in fulfilment of his obligation under the contract.

Quantities in Bill of Quantities of Tender

7.2 The Engineer shall have the power to order the Contractor in writing to make any variation of the quantity, quality or form of the works or any part thereof that may, in his opinion, be necessary and the Contractor upon receipt of such an order shall act as follows:

Engineer's power to vary the works

- 7.2 (a) Increase or decrease the quantity of any work included in the contract.
- (b) Omit any work included in the contract.
- (c) Change the Character or quality or kind of any work included in the contract.
- (d) Change the levels, lines, position and dimensions of any part of the work, and
- (e) Execute extra and additional work of any kind necessary for completion of the works
- 7.3 No such variation shall in any way vitiate or invalidate the contract or be treated as revocation of the contract, but the value (if any) of all such variations evaluated in accordance with the Engineer's sole decision shall be taken into account and the contract price shall be varied accordingly. *Variation by engineer do not vitiate the contract*
- 7.4 Provided always that written order of the Engineer shall not be required for increase or decrease in the quantity of any work upto 15% where such increase or decrease is not the result of any variation order given under this clause but is the result of the quantities exceeding or being less than those stated in the bill of quantities. Provided also that verbal order of variation from the Engineer shall be complied with by the Contractor and the Engineer's subsequent written confirmation of such verbal order shall be deemed to be an order in writing within the meaning of this clause. *Where written order for variation is not needed*
- 7.5 (a) The Contractor shall not be entitled to any claim of extra or additional work unless they have been carried out under the written orders of the Engineer. *Payment for extra or additional, or omitted work or substituted work, Engineer's powers*
- (b) The Engineer shall solely determine the amount (if any) to be added to or deducted from the sum named in the tender in respect of any extra work done or work omitted by his order.
- (c) All extra, additional or substituted work done or work omitted by order of the Engineer shall be valued on the basis of the rates and prices set out in the contract, if in the opinion of the Engineer, the same shall be applicable. If the contract does not contain any rates or prices directly applicable to the extra, additional or substituted work, then the Engineer may decide the suitable rates on the basis of Schedule of Rates (including surcharge in force at the time of acceptance of tender), if any, adopted by the Trustees with due regard to the accepted contractual percentage, if any thereon. In all other cases the Engineer shall solely determine suitable rates in the manner deemed by him as fair and reasonable, and his decision shall be final, binding and conclusive.

- (d) If the nature or amount of any omission or addition relative to the nature or amount of the whole of the contract work or to any part thereof shall be such that, in the opinion of the Engineer, the rate of prices contained in the contract for any item of the works or the rate as evaluated under sub-clauses (b) and (c) of this clause, is by reason of such omission or addition rendered unreasonable or in-applicable, the Engineer shall fix such other rate or price as he deems proper and the Engineer's decision shall be final, binding and conclusive.

8.0 DELAY / EXTENSION OF COMPLETION TIME / LIQUIDATED DAMAGE / TERMINATION OF CONTRACT

- 8.1 Should the quantum of extra or additional work of any kind or delayed availability of the Trustees' materials to be supplied as per contract or exceptionally adverse climatic conditions and natural phenomenon or strikes, lock-outs, civil commotion or other special circumstances of any kind beyond the control of the Contractor, cause delay in completing the work, the contractor shall apply to the Engineer in writing for suitable extension of completion time within 7 days from the date of occurrence of the reason and the Engineer shall thereupon consider the stated reasons in the manner deemed necessary and shall either reject the application or determine and allow in writing the extension period as he would deem proper for completion of the work with or without the imposition of "Liquidated Damage" Clause (No.8.3 hereof) on the Contractor and his decision shall be final and binding on the Contractor. If an extension of completion time is granted by the Engineer without imposition of liquidated damage, from the Clause No.8.3 of the Liquidated damage shall apply from its date of expiry, if the work be not completed within the extended time, unless stated otherwise in the decision communicated by the Engineer, as aforesaid.

Extension of completion time

- 8.2 (a) If the Contractor fails to complete the work within the stipulated dates or such extension thereof as communicated by the Engineer in writing, the Contractor shall pay as compensation (Liquidated Damage) to the Trustees and not as a penalty, ½% (half percent) of the total value of work (contract piece) as mentioned in the letter of acceptance of the tender/offer, for every week or part thereof the work remains unfinished. Provided always that the amount of such compensation shall not exceed 10% of the said value of work. The amount of Liquidated damages shall be determined by the Engineer, which shall be final and binding.

'Liquidated Damage' and other compensation due to Trustees

- (b) Without prejudice to any of their legal rights, the Trustees shall have the power to recover the said amount of compensation/damage in Sub-clause (a) of this clause, from any money due or likely to become due to the Contractor. The payment or deduction of such compensation/damage shall not relieve the Contractor from his obligation to complete the work or from any of his other obligations/liabilities under the contract and in case of the Contractor's failure and at the absolute discretion of the Engineer, the work may be ordered to be completed by some other agency at the risk and expense of the Contractor, after a minimum three days notice in writing has been given to the Contractor by the Engineer or his Representative.

8.3 Without being liable for any compensation to the Contractor, the Trustees may, in their absolute discretion, terminate the contract and enter upon the site and works and expel the Contractor there from after giving him a minimum 3 days' notice in writing, due to occurrence of any of the following reasons and decision of the Trustees in this respect, as communicated by the Engineer shall be final and conclusive:

*Default of the
Contractors
remedies &
powers/Termination
of Contract.*

- (i) The Contractor has abandoned the contract.
- (ii) In the opinion of the Engineer, either the progress of work is not satisfactory or the work is not likely to be completed within the agreed period on account of Contractor's lapses.
- (iii) The Contractor has failed to commence the works or has without any lawful excuse under these conditions has kept the work suspended for at least 15 days despite receiving the Engineer's or his Representative's written notice to proceed with the work.
- (iv) The Contractor has failed to remove materials from site or to dismantle or demolish and replace work for 7 days after receiving from the Engineer or his representative the written notice stating that the said materials or work were condemned and rejected by him under these conditions.
- (v) The Contractor is not executing the works in accordance with the contract or is persistently or flagrantly neglecting to carry out his obligations under the contract.
- (vi) Any bribe, commission, gift or advantage is given, promised or offered by or on behalf of the contractor to any officer, servant or representative of the Trustees or to any person on his or their behalf in relation to the obtaining or to the execution of the contract.
- (vii) The Contractor is adjusted insolvent or enters into composition with his creditors or being a company goes into liquidation either compulsory or voluntary.

- 8.3.1 Upon receipt of the letter of termination of work, which may be issued by the Engineer on behalf of the Trustees, the Contractor shall hand over all the Trustees' tools, plant and materials issued to him at the place to be ascertained from the Engineer, within 7 days of receipt of such letter.
- 8.3.2 In all such cases of Termination of work, the Trustees shall have the power to complete the work through any other agency at the Contractor's risk and expense and the Contractor shall be debited any sum or sums that may be expended in completing the work beyond the amount that would have been due to the Contractor, had he duly completed the work of the work in accordance with the contract.
- 8.3.3 Upon termination of contract, the Contractor shall be entitled to receipt payment of only 90% of the value of work actually done or materials actually supplied by him and subject to recoveries as per contract, provided the work done and materials conform to specifications at the time of taking over by the Trustees. The payment for work shall be based on measurements of actual work done and priced at approved contract rates or other rates, as decided by the Engineer. The payment for materials supplied shall be at the rates as decided by the Engineer, which shall in no case be more than market rates prevailing at the time of taking over by the Trustees. The Engineer's decision in all such case shall be final, binding and conclusive.
- 8.3.4 The Trustees shall have the power to retain all moneys due to the Contractor until the work is completed by other agency and the Contractor's liabilities to the Trustees are known in all respect.

9.0 MAINTENANCE AND REFUND OF SECURITY DEPOSIT

- 9.1 On completion of execution of the work the Contractor shall maintain the same for a period, as may be specified in the form of a Special Condition of the Contract, from the date mentioned in the Initial Completion Certificate in Form G.C.1. Any defect/fault, which may appear in the work during aforesaid maintenance period, arising, in the sole opinion of the Engineer or his representative, from materials or workmanship not in accordance with the contract or the instruction of the Engineer or his representative, shall, upon the written notice of the Engineer or his representative, be amended and made good by the Contractor at his own cost within seven days of the date of such notice, to the satisfaction of the Engineer or his representative, failing which the Engineer or his representative shall have the defects amended and made good through other agency at the Contractor's risk and cost and all expenses, consequent thereon or incidental thereto, shall be recoverable from the Contractor in any manner deemed suitable by the Engineer.

*Contractor's
obligation for
maintenance of
work.*

- | | | |
|---------|---|---|
| 9.2 | <p>The Contractor shall not be considered completed and the work shall not be treated as finally accepted by the Trustees, until a Final Completion Certificate in Form G.C.2 annexed hereto shall have been signed and issued by the Engineer to the contractor after all obligations under the Contract including that in the maintenance period, if any, have been fulfilled by the Contractor. Previous entry on the works or taking possession, working or using thereof by the Trustees shall not relieve the Contractor of his obligations under the contract for full and final completion of the work.</p> | <p><i>Certificate of final completion</i></p> |
| 9.3 | <p>On completion of the contract in the manner aforesaid, the Contractor may apply for the refund of his Security Deposit by submitting to the Engineer (I) The Treasury Receipts granted for the amount of Security held by the Trustees, and (ii) his “No further claim” Certificate in Form G.C.3 annexed hereto (in original), where upon the Engineer shall issue Certificate in Form G.C.2 and within two months of the Engineer’s recommendation, the Trustees shall refund the balance due against the Security Deposit to the Contractor, after making deduction there from in respect of any sum due to the Trustees from the Contractor.</p> | <p><i>Refund of Security Deposit</i></p> |
| 10.0 | <p>INTERPRETATION OF CONTRACT DOCUMENTS, DISPUTES AND ARBITRATION</p> | |
| 10.1 | <p>In all disputes, matters, claims, demands or questions arising out of or connected with the interpretation of the Contract including the meaning of Specifications, drawings, designs and instructions or as to the quality of workmanship or as to the materials used in the work or the execution of the work whether during the progress of the works or after the completion and whether before or after the determination, abandonment or breach of the contract the decision of the Engineer shall be final and binding on all parties to the contract and shall forthwith be given effect to by the Contractor.</p> | <p><i>Engineer’s decision</i></p> |
| 10.2 | <p>If the Contractor be dissatisfied with any such decision of the Engineer, he shall within 15 days after receiving notice of such decision require that the matter shall be referred to Chairman, who shall thereupon consider and give a decision.</p> | <p><i>Chairman’s award.</i></p> |
| 10.3 | <p>If, however, the Contractor be still dissatisfied with the decision of the Chairman, he shall within 15 days after receiving notice of such decision require that within 60 days from his written notice, the Chairman shall refer the matter to an Arbitrator of the panel of Arbitrators to be maintained by the Trustees for the purpose and any such reference shall be deemed to be a submission to arbitration within the meaning of Indian Arbitration Act, 1940 or any statutory modification thereof.</p> | <p><i>Arbitration.</i></p> |
| 10.3.1. | <p>If the Arbitrator so appointed is unable or unwilling to act or resigns his appointment or vacates his office due to any reason whatsoever, another person from panel shall be appointed as Sole Arbitrator and he shall proceed from the stage at which his predecessor left it.</p> | |

- 10.3.2 The Arbitrator shall be deemed to have entered on reference on the date he issues notice to both the parties fixing the date of first hearing.
- 10.3.3 The time limit within which the Arbitrator shall submit his award shall normally be 4 months as provided in Indian Arbitration Act, 1940 or any amendment thereof. The Arbitrator may, if found necessary, enlarge the time for making and publishing the award, with the consent of the parties..
- 10.3.4 The venue of the arbitration shall be either Calcutta or Haldia as may be fixed by the Arbitrator in his sole discretion. Upon every or any such reference the cost of any incidental to the reference and award respectively shall be in the discretion of the Arbitrator who may determine, the amount thereof or by whom and to whom and in what manner the same shall be borne and paid.
- 10.3.5 The Award of the Arbitrator shall be final and binding on all parties subject to the provisions of the Indian Arbitration Act 1940 or any amendment thereof. The Arbitrator shall give a separate award in respect of each item of disputes and respective claim referred to him by each party and give reason for the award.
- 10.3.6 The Arbitrator shall consider the claims of all the parties to the contract – within only the parameters of scope and conditions of the contract in question.
- 10.3.7 Save as otherwise provided in the contract the provisions of the Arbitration Act, 1940 and rules made thereunder, for the time being in force, shall apply to the arbitration proceedings under this Clause.
- 10.4 The Contractor shall not suspend or delay the work and proceed with the work with due diligence in accordance with Engineer's decision. The Engineer also shall not withhold any payment, which, according to him, is due or payable to the Contractor, on the ground that certain disputes have cropped up and are likely to be referred to arbitration.
- 10.5 Provided always as follows:
- [a] Nothing of the provisions in paragraphs 10.3 to 10.3.7 hereinabove would apply in the cases of contracts, where tendered amount appearing in the letter of acceptance of the tender / offer is less than Rs.40,00,000/-.
 - [b] The Contractor shall have to raise disputes or differences of any kind whatsoever in relation to the execution of the work to the Engineer within 30 days from the date of occurrence of the cause of dispute and before the preparation of the final bill, giving detailed justifications, in the context of contract conditions.

- [c] Contractor's dispute if any arising only during the maintenance period, if any, stipulated in the contract, must be submitted to the Engineer, with detailed justification in the context of contract conditions, before the issuance of final completion certificate in Form G.C.-2 *ibid*.
No dispute or difference on any matters whatsoever, the Contractor can raise pertaining to the Contract after submission of certificate in form G.C.3 by him.
- [d] Contractor's claim / dispute raised beyond the time limits prescribed in sub-clauses 10.5[b] and 10.5 [c] hereinabove, shall not be entertained by the Engineer and / or by any Arbitrator subsequently.
- [e] The Chairman / Trustees shall have the right to alter the panel of Arbitrators, vide Clause 10.3 hereinabove, on their sole discretion, by adding the names of new Arbitrators and / or by deleting the names of existing Arbitrators, without making any reference to the Contractor.

(TO BE SUBMITTED WITH COVER- I OFFER)
THE BOARD OF TRUSTEES FOR THE PORT OF KOLKATA
FORM OF TENDER (UNPRICED)

To

The General Manager (Engg.),

Haldia Dock Complex.

I/We _____

having examined the site of work, inspected the Drawings and read the specifications, General & Special Conditions of Contract and Conditions of the Tender, hereby tender and undertake to execute and complete all the works required to be performed in accordance with the Specification, Bill of Quantities, General & Special Conditions of Contract and Drawings prepared by or on behalf of the Trustees and at the rates & prices set out in the annexed Bill of Quantities within _____ months / weeks from the date of order to commence the work and in the event of our tender being accepted in full or in part. I / We also undertake to enter into a Contract Agreement in the form hereto annexed with such alterations or additions thereto which may be necessary to give effect to the acceptance of the Tender and incorporating such Specification, Bill of Quantities, Drawing and Special & General Conditions of Contract and I / We hereby agree that until such Contract Agreement is executed the said Specification, Bill of Quantities, Conditions of Contract and the Tender, together with the acceptance thereof in writing by or on behalf of the Trustees shall be the Contract.

THE TOTAL AMOUNT OF TENDER Rs. **NOT TO BE QUOTED IN COVER I OFFER**

(Repeat in words) **NOT TO BE QUOTED IN COVER I OFFER**

I / We require _____ days / months preliminary time to arrange and procure the materials required by the work from the date of acceptance of tender before I We could commence the work.

I / We have deposited with the Trustees' Manager (Finance), HDC, vide Receipt No. _____ of _____ as Earnest Money.

I / We agree that the period for which the tender shall remain open for acceptance shall not be less than six months.

Dated : (Signature of Bidder with Seal)

WITNESS :

Name : (In Block
Letters)

Address :

Occupation :

Syama Prasad Mookerjee Port, Kolkata
Haldia Dock Complex

FORM G.C.1

Initial completion Certificate

Contractor _____

Address _____

Date of completion:

Dear sir(s),

This is to certify that the following work viz :-

Name of work:
.....

Work Order No......

Allocation.....

Contract No.

which was carried out by you is in the opinion of the undersigned complete in every respect on the _____ day of _____ 2000 in accordance with terms of the Contract and you are required to maintain the work as per Clause 6.2 of the General Conditions of Contract and under provisions of the Contract for a period of _____ weeks / months / years

from the _____ day of _____ 20.. to _____ day of _____ 20.. .

Yours faithfully,

Signature.....
(ENGINEER/ENGINEER'S REPRESENTATIVE)

Name.....

Designation.....

OFFICE SEAL

Syama Prasad Mookerjee Port, Kolkata
Haldia Dock Complex

FORM G.C.2

Certificate of Final Completion.

The Financial Adviser & Chief Accounts Officer
The General Manager (Finance), Haldia Dock Complex.

This is to certify that the following work viz:-

Name of work:

Estimate No. E.E.O.....dt.....
C.E.O.....dt.....

Work Order No.....

Contract No.

Resolution & Meeting No.

Allocation:

which was carried out by Shri/Messrs..... is now complete in every respect in accordance with the terms of the Contract and that all obligations under the Contract have been fulfilled by the Contractor.

Signature.....
(ENGINEER/ENGINEER'S REPRESENTATIVE)
NAME.....
DESIGNATION.....
OFFICE SEAL

Syama Prasad Mookerjee Port, Kolkata
Haldia Dock Complex

FORM G.C.3

(‘NO CLAIM ‘CERTIFICATE FROM CONTRACTOR)

The General Manager (Engg.)
Haldia Dock Complex
Syama Prasad Mookerjee Port, Kolkata
Haldia.
(Attn:.....)

Dear Sir,

I / We do hereby declare that I / we have received full and final payment from the Calcutta Port Trust for the execution of the following work viz:-

Name of work: _____

Work Order No:- _____

Contract No. _____

Agreement No.....Dt.....

and I / we have no further claim against the Calcutta Port Trust in respect of the above-mentioned job.

Yours faithfully,

(Signature of the Contractor)

Dated _____

Name of Contractor.....

Address:.....

(OFFICIAL SEAL OF THE CONTRACTOR)

SECTION – VIII

SPECIAL CONDITIONS OF CONTRACT (SCC)

The following **Special Conditions of Contract (SCC)** shall supplement the **General Conditions of Contract (GCC)**. Whenever there is a conflict, the provisions herein shall prevail over those in the **GCC**.

1.0 PREFACE:

These provisions though given in a separate section are part of the tender documents which must be read as a whole, the various sections being complementary to one another and are to be taken as mutually explanatory. These provisions shall be read in conjunction with the other parts of the tender documents viz. General Conditions of Contract, Notice Inviting E-Tenderers, instructions to Bidder, Particular Specifications, Drawings, Bill of Quantities and other documents forming part of the Contract. In case of any discrepancy or ambiguity in the documents, the order of precedence of the documents as stated below will apply. In particular, these provisions will over ride those in the General Conditions provided there is discrepancy between them.

1.1 CORRELATION AND ORDER OF PRECEDENCE OF TENDER DOCUMENTS:

If the stipulations in the various tender documents be found to be at variance in any respect, one will override others (but only to the extent these are at variance) in the order of precedence as given in the list below, i.e. any particular item in the list will take precedence over all those placed lower down in the list.

- Order letter.
- Bill of Quantities.
- Drawings.
- Particular Specifications of work.
- Special Conditions of Contract.
- General Conditions of Contract.

In case of any dispute, question or difference either during the execution of the work or any other time as to any matter or thing connected with or arising out of this Contract, the decision of the Sr. Dy. Manager (P&E), Haldia Dock Complex, thereon shall be final and binding upon all parties.

1.2 LOCATION:

Haldia Township, Haldia

1.3 ACCESS TO THE SITE:

a. By Road:

All-weather hard top road approachable from N.H. 41 and State Highway exist right up to the area of work.

b. By Rail:

S. E. Railway Branch Line connects Haldia with the Panskura Railway Station.

1.4 INSPECTION OF SITE:

The Bidder shall inspect the site of work and thoroughly familiarise himself with the nature of work, site conditions, and access to the site and location before submission of the tender. He should contact the Sr. Dy. Manager (P&E), Haldia Dock Complex at his office at Chiranjibpur, Haldia for

collecting information about the work and site before submission of the tender. No excuse will be entertained afterwards on the above ground. In case any part of the site cannot be handed over to the successful Bidder in time, No compensation for loss of labour or any other cause nor any claim will be entertained by the Trustees. Suitable extension of time shall, however, be granted to the successful Bidder on that ground if applied for.

1.5 PARTICULARS OF EXISTING WORKS:

Such information as maybe given in the specification as to the existing features and works other than those now under construction as part of the present Haldia Dock Complex given without warranty of accuracy and neither the Trustees nor the Engineer will be liable for any discrepancies therein.

1.6 SAFETY MEASURES:

The contractor shall adhere to safe construction practice, guard against hazardous and unsafe working conditions and follow all safety precautions for prevention of injury or accidents and safeguarding life and property. The contractor shall comply with relevant provisions of Dock Workers (Safety, Health and Welfare) Act – 1986 and Dock Workers (Safety, Health and Welfare) Regulation – 1990 and Safety Officer of the Trustees or Safety Inspectors shall be afforded all facilities for inspection of the works, tools, plant, machineries, equipment etc. wherever so required. The contractor shall further comply with any instruction issued by the Engineer, Trustees' Safety Officer, Safety Inspector in regards to safety which may relate to temporary, enabling or permanent works, working of tools, plants, machineries, equipment, means of access or any other aspect.

The contractor shall provide all necessary first aid measures, rescue and lifesaving equipment to be available in proper condition.

The contractor shall provide PPE's (Personal Protective Equipment) such as, helmet, safety shoe etc. to all workers and shall also provide job specific PPE's e.g. safety belts for working at heights; protective face and eye shield, goggles, hand gloves for welding / gas cutting works; protective foot wear and gloves for hot works; facemasks, gloves and overalls for painting works, mixing and handling materials etc, as directed by the Engineer.

All safety rules shall be strictly followed while working on live electrical systems or installations as stipulated in the relevant safety codes.

Use of hoisting machines and tackles including their attachments, construction tools, machineries and equipment shall comply to the relevant safety codes.

Before allowing workers in sewers, manholes, any duct or covered channel etc, the manhole covers shall have to be kept open and ventilated at least one hour in advance and necessary safety torches / lamps should be inserted first before allowing entry to the worker. Suitable hand gloves and other safety gear will be provided to the worker during handling / removing of slushes / sludge etc. without any extra cost. The contractor shall adopt all the above safety measures at his own cost.

The successful bidder shall also ensure that –

- (i) No damage is caused to plants and vegetations unless the same is required for execution of the project proper.
- (ii) The work shall not pollute any source of water / land / air surrounding the work site so as to affect adversely the quality or appearance thereof or cause injury or death to animal and plant life.

- (iii) His office & labour hutment etc. shall be maintained in a clean and hygienic condition through out the period of their use and different effluents of the labour hutment shall have to be disposed off suitably.

1.7 HOLIDAY OR SUNDAY WORK:

Subject to provisions in local Acts and any statutes of the State, the Contractor shall arrange for working on Holidays and Sundays whenever so desired by the Engineer to expedite progress and complete the works in time.

The Contractor shall not be entitled to any additional payment for taking up works on Holidays and Sundays. The Contractor should be prepared to resort to round-the-clock working by following shift timings for labour.

1.8 KEEPING THE SITE AND WORKING AREA CLEAR:

The Contractor shall at all times keep the site and working areas free from all surplus materials, rubbish and offensive matter all of which shall be disposed off in a manner to be approved by the Engineer's Representative. As the works will be carried out mainly inside of operational buildings of HDC, the Contractor has to make necessary arrangement to clear the rubbishes etc. from the buildings, at the end of day's work at his own cost & risk.

1.9 LABOUR, TOOLS & PLANTS:

The Contractor shall supply all necessary labour, tools and plants required for satisfactory execution of the work.

1.10 ESCALATION / VARIATION ON PRICES:

No Escalation / Variation on the prices on any account will be considered for adjustment / payment.

1.11 CONTRACT LABOUR LAWS:

The Contractor must comply with the provisions of Contract labour (Regulation & Abolition) Act 1970 and Contract Labour (Regulation & Abolition) Central Rules 1971 and the rules framed there under with all modifications/amendments being enforced from time to time.

The Contractor shall indicate maximum number of workmen to be engaged on any day for execution of the work in the appropriate place in the ABSTRACT FORM OF TENDER & he shall have to obtain a regular /permanent license as per sec12(1) of the Contract Labour Act.

The contractor shall inform the Principal Employer the date, time & venue of disbursement to be made by him to his workers.

The successful bidder shall also be required to put up a notice at the site of work mentioning the date, time & venue of disbursement to be made by him to his workers and he or his authorized representative shall have to be present during period of disbursement.

1.12 COMPLIANCE WITH E.P.F & M. P. ACT:

The successful contractor will have to comply with provision of EPF & MP Act –1952 (along with amendments, if any), issued from time to time.

If asked for by the Employer, the contractor will be required to submit photocopy of all payment challans and produce the original for verification to the representative of the principal employer, i.e. Sr. Dy. Manager (P&E).

1.13 INDEMNIFICATION:

The successful bidder shall be deemed to indemnify and keep indemnified the Trustees from and against all actions, claims, demands and liabilities whatsoever under and in respect of the breach of any of the provisions of any law, rules or regulations having the force of law, including but not limited to –

- a) The Minimum Wages Act, 1948.
- b) The Dock Workers (Regulation Of Employment) Act, 1948
- c) The Building And Other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996
- d) The Dock Workers' Safety, Health & Welfare Act , 1986
- e) The Payment of Wages Act, 1936.
- f) The Workmen's Compensation Act, 1923.
- g) The Employees Provident Fund Act, 1952.
- h) The Contract Labour (Regulation and Abolition) Act, 1970; Rules 1971.
- i) The Payment of Bonus Act, 1965.
- j) The Payment of Gratuity Act, 1972.
- k) The Equal Remuneration Act, 1976.
- l) The Employees State Insurance Act, 1948 & Employees State Insurance (Amendment) Act , 1989
- m) Child Labour (Prohibition and Regulation) Act, 1986.
- n) The Maternity Benefits Act 1961
- o) Interstate Migrant Workmen (Regulation of Employment & Conditions of Service) Act, 1979.
- p) Motor Vehicle Act, latest revision.

1.14 DOCK PERMIT:

Dock permits which may be necessary for any purpose related to the work shall be issued against payment at the prevailing rate of HDC.

1.15 TAXES:

The quoted rates should include all other Taxes excluding GST. GST as applicable shall be paid extra against proper invoice submitted by the successful contractor.

The contractor will be required to submit GST compliant invoice with all required details and also to be required to file timely and proper return so as to enable SMP Kolkata to get due input credit against GST paid of.

In case of any failure on the above account, GST amount even if paid by SMP Kolkata shall be recoverable from the contractor, along with applicable interest if any.

1.16 PROVISIONS FOR SITE STAFF OF ENGINEER:

After the issue of Engineer's notice to commence, the contractor shall as soon as possible make available of the following facilities for the staff of the Engineer at the Site of Work, all in accordance with the approval of the Engineer or his Representative and the Contract Price shall be deemed to be inclusive of the provision for all these facilities.

- (a) Office Facilities :- Throughout the period of Contract, office accommodation at site for two rooms with electricity and water supply and adequate ventilation for the sole use of Engineer's Representative and his staff. The room shall be provided and maintained with suitable furniture, peon facility as directed by the Engineer. An independent toilet facility shall have to be provided solely for the use of the client.
- (b) Equipment Facilities: - Provide and maintain all necessary equipment in working condition for use of Engineer's staff such survey, testing of materials and any other instruments, equipment and apparatus as they may require for carrying out the contractual obligations.
- (c) Transport facilities: - Shall make available, maintain and operate one good 4 wheeler vehicle (Jeep/Maruti/Ambassador etc.) having a minimum sitting capacity for 4 persons with driver, fuel, etc for the use of the Engineer or his representative for survey, testing, inspection, measurement etc related to the work on working days from 8:00 A.M to 10:00 P.M during currency of contract. The vehicle shall not be more than 3 [Three] years old. Any failure in supply / sudden withdrawal / stoppage will attract deduction from bills @ HDC's similar operating transport contract. In case of exigency and work during night hours, the car shall be made available for the entire night. The supply of vehicle shall start on 15 th day from the date of work order and shall finish on the date of completion of work including extension of date of completion, if any, excluding non-comprehensive and comprehensive maintenance period.

Clause No. 2.0
Performance
Guarantee /
Security Deposit

Clause No. 2.1

i) **Performance Guarantee / Security Deposit for the materials, installations & workmanship, with respect to the instant work, as a whole:**

Within **28 (twenty-eight) days** of issuance of “Letter of Acceptance (LOA)”, the Contractor shall have to provide an irrevocable and unconditional Bank Guarantee, from a Nationalized Bank/Scheduled Bank in India, in the amount, **3 %** of the contract value excluding GST.

This Performance Bank Guarantee should be kept valid and enforceable till a date, covering **at least 3 (three) months** beyond the date of expiry of the Defect Liability Period of the Contract job [for the materials, installations & workmanship, with respect to the instant work, as a whole] (as specified in **SCC Clause No. 7.1**). In case the actual duration of the aforesaid Defect Liability Period is required to be extended, the validity of this Bank Guarantee shall have to be extended till a date, covering at least 3 (three) months beyond the date of expiry of such extended duration of the Defect Liability Period.

Failure of the Contractor to submit the aforesaid Performance Bank Guarantee and in the manner stated above, shall constitute sufficient grounds for termination of the contract.

Clause No. 2.2

The procedure of release / refund of Performance Guarantee / Security Deposit would be as follows:

i) **Performance Guarantee / Security Deposit for the materials, installations & workmanship, with respect to the instant work , as a whole:**

On submission of Performance Guarantee/Security Deposit [as stated in **SCC Clause No. 2.1**] and on successful completion of the ‘Defect liability period’ (considering extension, if any) of the Contract job [for the materials, installations & workmanship, with respect to the instant work, as a whole] (as specified in **SCC Clause No. 7.1**), the Contractor may apply for release / refund of his Performance Guarantee/Security Deposit [as stated in **SCC Clause No.2.1**] by submitting an application to the Engineer, in this regard, whereupon the Engineer shall issue necessary recommendation for release of the said Performance Guarantee/Security Deposit [as stated in **SCC Clause No. 2.1**] or refund the balance due against the Performance Guarantee/ Security Deposit [as stated in **SCC Clause No. 2.1**] to the Contractor, after making deduction there from in respect of any sum due to the Trustees from the Contractor.

ii) **Performance Guarantee / Security Deposit for maintenance contract:**

On successful completion of the additional Defect Liability Period (considering extension, if any), to the satisfaction of the Engineer, the Contractor may apply for release / refund of his Performance Guarantee / Security Deposit [as stated in **SCC Clause No. 2.2**] by submitting to the Engineer “No Claim Certificate”, as per the form furnished in Section-VII, whereupon the Engineer shall issue “Certificate of Final Completion” [as per the form furnished in Section-VII] . The Engineer shall also issue necessary recommendation for release of the said Performance Guarantee/Security Deposit [as stated in **SCC Clause No. 2.1 i)**] or refund the balance due against the Performance Guarantee/Security Deposit [as stated in **SCC Clause No. 2.1 i)**] to the Contractor, after making deduction

therefrom in respect of any sum due to the Trustees from the Contractor.

Clause No. 3.0
**Use of ground and land /
covered space for
Contractor's
establishment**

Clause No. 3.1

The Contractor shall be allowed to use a suitable land (open space), which in the opinion of SMP, Kolkata may be absolutely necessary for the proper and efficient execution of works. **Rent of such open space shall have to be paid by the Contractor as per “Schedule of Rent of SMP, Kolkata” prevailing at that time will be charged during pendency of the contract and extension thereof, if any.**

Clause No. 3.2

On completion of work or termination of the contract, the Contractor shall have to clear away all their tools, plants, rubbish and other materials, **within a fortnight** and hand over vacant and peaceful possession of the same to SMP, Kolkata, in a tidy and clean condition. **The Rent of such open space will be as per SMP, Kolkata’s “Schedule of Rent”** will be applicable for this additional period (if any) for clearing the space. If the Contractor fails to clear the space and handover the same to the Employer in a clean and tidy condition, within the period mentioned above, SMP, Kolkata’s “Schedule of Rent” will be applicable for the period beyond that.

Clause No. 3.3

The Contractor shall be allowed to erect any temporary structures on this land for **office and / or store and / or workshop**, etc. and make all suitable arrangement for water supply, Electricity supply and sanitary arrangements for the same, at their own cost.

Clause No.3.4

In case the Contractor is interested in taking **covered space, office room**, etc. of SMP, Kolkata for the purpose of making a site office and store in the Dock area, the same may also be allotted subject to availability. The rents for such covered spaces or office room of SMP Kolkata, to be allotted to the Contractor, shall have to be paid by the Contractor, as per the ‘Schedule of Rent of SMP, Kolkata, prevailing at that time. In addition to the rent, **water consumption charges and Electricity consumption charges** (if Electricity / water is supplied from SMP,Kolkata sources) and other applicable charges, as per the notifications of **Tariff Authority of Major Ports (TAMP)**, have to be paid by the Contractor. The Contractor will be responsible for installation, maintenance and calibration of Water Meter and / or Energy Meter also.

Clause No. 4.0

Supply of water and Electricity

Clause No. 4.1

Billing against supply of water will be done on the basis of actual consumption recorded through water meter at the rate **INR 38.65 (including overhead charges @ 19.25%) per KL of Fresh Water** [As directed by **TAMP (Tariff Authority for Major Ports)**], with escalation @ **5% per annum**.

The **water consumption charges** [based on the prevalent rates of SMP Kolkata, as may be amended from time to time] shall have to be paid by the Contractor immediately, on receipt of the bill from the office of the Finance Division, Haldia Dock Complex. All payment on this account should be updated, otherwise the pending bill amount, along with late payment surcharge, will be recovered from the Contractor's bill(s).

Water supply at the **Contractor's site office, store, workshop, assembly/erection yard, actual work (including erection, commissioning & cleaning work) at the site, including the work** required to be carried out at site during the "Defect Liability Period" etc. will be given **on chargeable basis**. For this, the Contractor shall have to make **all arrangements, including installation of Water Meter and laying of pipelines from the source(s) identified by SMP Kolkata, at their cost**. The Contractor will be responsible for maintenance and calibration of such water meter also. Billing against water supply will be done in line with SCC.

SMP, Kolkata do not guarantee uninterrupted supply of water and the Contractor shall not be compensated for any delay or irregularity in supplying water. The Contractor shall have to arrange for the supply of water at his own cost during such periods.

Clause No. 4.2

Supply of Electricity:

Electricity charges will be determined on the basis of **Chargeable Unit (kWh)** [actual **Unit (kWh) consumed** (recorded through Energy Meter) **plus 3%** on actual Unit consumed] and applicable rate of **West Bengal State Electricity Distribution Company Limited (WBSEDCL)**. Billing will be done on the basis of **Electricity charges** and overhead charges @ **19.25%** [on the aforesaid **Electricity charges**] as per the notifications of **Tariff Authority of Major Ports (TAMP)**.

The **Electricity consumption charges** [based on the prevalent rates of **WBSEDCL**, as may be amended from time to time] shall have to be paid by the Contractor immediately, on receipt of the bill from the office of Finance Division, Haldia Dock Complex. All payment on this account should be updated, otherwise the pending bill amount, along with late payment surcharge, will be recovered from the Contractor's bill(s).

Supply of Electricity at the **Contractor's site office, store, workshop, assembly / erection yard, actual work (including erection and commissioning) at the site, including the work** required to be carried out at site during the "Defect Liability Period" etc. will be on **chargeable basis**. The Contractor shall have to make all arrangements, including **installation of Energy Meter and laying of Cables from the source(s) identified by SMP Kolkata, at their cost**. The Contractor will be responsible for maintenance and calibration of such Energy Meter also. Billing against **electricity charges** will be done in line with SCC.

SMP, Kolkata do not guarantee uninterrupted supply of Electricity and the Contractor shall not be compensated for any delay or irregularity in supplying Electricity. The Contractor shall have to arrange for Electricity at his own cost during such periods.

Clause No.5.0

Inspection and testing

Clause No.5.1

The Employer shall appoint a **Third Party Inspection Agency**, at the cost of the Employer, for stage-wise technical inspection and certification of **materials & workmanship**, including **painting, erection, commissioning**, etc. [in connection with the contract job, as a whole]. The relevant Certificates shall be produced by the **Third Party Inspection Agency** to the Engineer or his authorised Representative.

The stage-wise technical inspection will be carried out by the **Third Party Inspection Agency** based on the approved **Quality Assurance Plan (QAP) & Field Quality Assurance Plan (FQAP)** [considering the Technical Specification of the bidding documents].

The Contractor shall have to submit a **Quality Assurance Plan (QAP)** and a **Field Quality Assurance Plan (FQAP)**, based on the Technical Specification and other terms & conditions stipulated in the bidding documents. The **QAP & FQAP** shall be approved by the “**Engineer**”, after the same are duly recommended by the **Third Party Inspection Agency**. The **Technical Inspection & Certification** will be carried out by the **Third Party Inspection Agency**, in accordance with approved **QAP & FQAP**.

In all cases where tests are required, within the purview of QAP & FQAP, whether at the premises of the Contractor or any Sub-contractor or elsewhere, the Contractor, except where otherwise specified, shall provide free of charges such labour, materials, electricity, fuel, water, stores, apparatus and instruments, as may reasonably be demanded, to carry out sufficiently such tests and shall, at all times, facilitate the Engineer or his Representative and the Third Party Inspection Agency, to accomplish such testing.

The cost of all tests and/or analyses, within the purview of QAP & FQAP, effected at the Contractor's or Sub-contractor's works and on the site, shall be borne by the Contractor. The Contractor will be called upon to pay all expenses incurred by the Employer in respect of any work found to be defective or of inferior quality, adulterated or otherwise unacceptable.

If, during inspection by the **Third Party Inspection Agency** [appointed by **SMP, Kolkata**], any material or test [within the purview of QAP & FQAP] fails to fulfil the contract conditions for **more than 2 (two) times**, **any additional amount charged by the Third Party Inspection Agency towards inspection of the same from the 3rd time onwards shall have to be borne by the Contractor**. If the Contractor fails to make such payment to the **Third Party Inspection Agency**, the same shall be deducted from the bill(s) of the Contractor and paid to the **Third Party Inspection Agency**.

Clause No. 5.2 [Taking over of the Contract job]

The Engineer or his authorised Representative, on giving 7 (seven) days' notice, in writing, to the Contractor, setting out any ground of objections, in respect of the work, shall be at liberty to reject all or any material and/or workmanship in the subject of any of the said grounds of objection, which are not in accordance with the contract

Clause No. 5.3

Quality of materials, to be provided by the Contractor under this contract, should be as per the satisfaction of the Engineer. Whenever asked, the Contractor shall have to provide free sample for testing.

Clause No. 5.4

If found necessary, SMP, Kolkata reserves the rights to get the materials inspected from a **Government or Government recognized Laboratory/ Test House**

Clause No. 5.5

In case of sub-letting to other Contractors or manufacturers or suppliers by the Contractor, the Engineer will reserve the right as follows:

- i. that inspection and / or testing will be carried at the Sub-contractor's works; or
- ii. that inspection will be carried out at site; or
- iii. that inspection will be waived, subject to the Contractor furnishing a certificate of compliance with specification by a competent authority recognised by national/international institutes.

Clause No. 5.6

The Employer may appoint a **Third Party Inspection Agency**, as detailed at SCC, at the cost of the Employer, for stage-wise technical inspection and certification of **materials & workmanship**, including **painting, erection, commissioning**, etc. [in connection with the contract job, in part or as a whole]. In that case The relevant Certificates shall be produced by the **Third Party Inspection Agency** to the Engineer or his authorised Representative

Clause No. 5.7

The stage-wise technical inspection will be carried out by the representative of the Engineer [or **Third Party Inspection Agency**] based on the approved **Quality Assurance Plan (QAP) & Field Quality Assurance Plan (FQAP)** [considering the Technical Specification of the bidding documents].

Clause No. 5.8

The Contractor shall have to submit a **Quality Assurance Plan (QAP)** and a **Field Quality Assurance Plan (FQAP)**, based on the Technical Specification and other terms & conditions stipulated in the bidding documents. The **QAP & FQAP** shall be approved by the "**Engineer**".

Clause No. 5.9

In all cases where tests are required, within the purview of QAP & FQAP, whether at the premises of the Contractor or any Sub-contractor or elsewhere, the Contractor, except where otherwise specified, shall provide free of charges such labour, materials, electricity, fuel, water, stores, apparatus and instruments, as may reasonably be demanded, to carry out sufficiently such tests and shall, at all times, facilitate the Engineer or his Representative [and / or the Third Party Inspection Agency] , to

accomplish such testing.

Clause No. 5.10

The cost of all tests and / or analyses, within the purview of QAP & FQAP, effected at the Contractor's or Sub-contractor's works and on the site, shall be borne by the Contractor. The Contractor will be called upon to pay all expenses incurred by the Employer in respect of any work found to be defective or of inferior quality, adulterated or otherwise unacceptable

Clause No. 5.11

If, during inspection by the **Third Party Inspection Agency [if appointed by SMP Kolkata]**, any material or test [within the purview of QAP & FQAP] fails to fulfil the contract conditions for **more than 2 (two) times, any additional amount charged by the Third Party Inspection Agency towards inspection of the same from the 3rd time onwards shall have to be borne by the Contractor**. If the Contractor fails to make such payment to the **Third Party Inspection Agency**, the same shall be deducted from the bill(s) of the Contractor and paid to the **Third Party Inspection Agency**

Clause No. 5.12

Tests on completion:

On **completion of installation**, the contractor shall give a **7 (seven) days'** notice to the Engineer [with a copy to the **Third Party Inspection Agency, appointed by SMP, Kolkata**], in writing (informing the date on which they will be ready to make the tests), before carrying out such tests, in accordance with and in the manner prescribed in the specifications.

If any portion of work fails under the tests to fulfil the contract conditions, tests of the faulty portion shall, if required by the **Third Party Inspection Agency (appointed by SMP, Kolkata)** or the Engineer or by the Contractor, be repeated within reasonable time, upon the same terms and conditions.

If such "**Tests on completion**" cannot be carried out successfully by the Contractor within 1 (one) month after the time fixed by the Contractor and if, in opinion of the Engineer, the tests are being unduly delayed, the Engineer may, in writing, call upon the Contractor, with 7 (seven) days' notice, to make such tests, failing which the Engineer may proceed to make such tests himself, at the Contractor's risk and expense. In the above eventuality, the Employer shall, nevertheless, have the right of using the installations at the Contractor's risk until the "**Tests on completion**" are successfully carried out.

Clause No. 5.13

Notwithstanding the fact that the materials or installations have passed the inspection, the Contractor is not relieved from his obligations to conform to the quality, workmanship, guaranteeing the performance, etc., as per the contract.

Clause No. 6.0

Clause No. 6.1

**Completion
Period**

All the jobs (including submission of As Built Drawings), as per contract, are to be completed within **12 (Twelve) months from the date of** issue of Letter of Acceptance (LOA) [i.e. **award of contract**].

Clause No. 6.2

Taking over of the Contract job

The **Contract job** will be taken over by HDC, SMP Kolkata after completion of the works in accordance with the contract, having passed all the tests under “Tests on completion **SCC clause No.4.12**”.

Clause No. 7.0

Clause No. 7.1

Defect Liability Period (DLP)

i) “Defect Liability Period” of the Contract job:

“Defect Liability Period” of the Contract job [for the materials, installations & workmanship, with respect to the instant job, as a whole] shall mean the Guarantee Period, which starts from the date of taking over the Contract job [as per **SCC Clause No. 5.2** (Taking over of the Contract job by SMP, Kolkata)] and will continue till expiry of **24 (twenty-four) months**, calculated from the date of taking over the Contract job.

Clause No. 7.2

During “**Defect Liability Period**” of the **Contract job** [as specified in **SCC Clause No. 7.1**], the Contractor shall nominate 2 (Two) competent, experienced and responsible technical person, to co-ordinate and execute all works to be attended by the Contractor, as per contractual obligations, without any extra cost to HDC, SMP, Kolkata.

Clause No. 8.0

Clause No. 8.1

Defects after taking over

After the taking over of the Contract job, if the same cannot be used (for the purpose for which it is intended), during any period, by the reason of a defect or damage, the **Defect Liability Period** shall be extended accordingly. If only a **portion** of the **Contract job** is affected, the **Defect Liability Period** shall be extended [in case the defects is not rectified or defective materials is not replaced within 24 (twenty four) hours of its occurrence] only for that portion, provided the other portions of the **Contract job** remains in order, fulfilling contract conditions. In neither case shall the **Defect Liability Period** be extended beyond **36 (thirty-six) months** [from the date of taking over the **Contract job**] for the materials, installations & workmanship, with respect to the instant job, as a whole.

After expiry of the ‘Defect liability period’ (considering extension, if any) of the Contract job [for the materials, installations & workmanship, with respect to the instant work, as a whole] (as specified above), if the LED Luminaires and/or Intelligent smart feeder pillar boxes cannot be put into use, during any period, by the reason of a defect or damage, the additional **Defect Liability Period** (as specified above) shall be extended [in case the defects is not rectified or defective LED Luminaires and/or Intelligent smart feeder pillar boxes are not replaced within 24 (twenty four) hours of its occurrence] only for those LED Luminaires and/or Intelligent smart feeder pillar boxes, provided the other LED Luminaires and/or Intelligent smart feeder pillar boxes remain in order. In this case the **Defect Liability Period** shall not be extended beyond **48 (forty-eight) months** from the date of expiry of the ‘Defect liability period’ (considering extension, if any) of the Contract job [for the materials, installations & workmanship, with respect to the instant work, as a whole.

Clause No 9.0

**Terms of
payment**

Clause No.9.1 (Electrical works)

Payment to the Successful Bidder will be made stage-wise as indicated below :-

a) Against Supply & Delivery :

- i) Payment for 70% amount of **each item** will be made against supply of respective item at site and submission of bills along with Custodian Certificate and other relevant documents like Inspection Reports, Challans, etc.
- ii) Payment for 20% amount of **each item** will be made against installation **respective item** and submission of bills along with Installation Certificate.

b) Against Installation and Commissioning :

- i) Payment for 90% amount of **each item** will be made against installation of the respective item and submission of bills along with Installation Certificate.

Clause No. 9.2 (Civil Works):

On account payment for 90% amount to the Contractor shall be arranged as and when required at the discretion of the Sr. Dy. Manager (P&E) on the basis of measurements of completed works at the quoted rates in the Bill of Quantities. The terms of payment shall be in accordance with Clause-6 of the General Conditions of Contract. The Bills should be submitted by the contractor in quadruplicate to the Sr. Dy. Manager (P&E)'s Office with necessary documents in original.

Subject to the availability and feasibility of system, HDC may make payment directly to the contractor's designated bank account. For this purpose, the contractor will have to indicate (i) name of bank (ii) branch name (iii) branch code and (iv) designated account number in the "Abstract Form of Tender ". In case payment is made directly through bank, the contractor may be required to submit a pre-receipt as per instruction of HDC.

Clause No. 9.3 [Final payment (electrical and civil works)]:

Payment for 10 % amount [electrical and civil works] will be made against Supply & Delivery, Testing, commissioning and taking over the commissioned job by SMP, Kolkata and submission of bills, along with Job Completion Certificate.

Clause No. 9.4 [Against Non-Comprehensive Maintenance/ Comprehensive Maintenance and Manning]:

- a). Payment will be made on pro-rata Quarterly basis on successful maintenance and manning of the system as per approved schedule. Copies of maintenance job card and monthly attendance, duly signed by HDC officials as per schedule, are to be submitted along with Quarterly bills.
 - Normally, the breakdown call is to be attended /commissioned within 48 hours from the date and time of breakdown call.
 - The breakdown call is to be attended /commissioned within 7 days from the date of breakdown call in case, it is not possible to commission the

system due to valid reasons (major fault, replacement of spare parts not readily available etc.) which is to be acceptable to Engineer.

Non acceptance of reasons by Engineer for delay / non-commissioning of equipment within 7 days will attract penalty.

The contractor will have to pay to the trustee @ 0.1% of the Maintenance Contract value / day if delay in commissioning of system from 8th day onwards.

b). Penalty against manning: -

Non availability of minimum strength of man power shall attract a penalty as per the table furnished below:-

Sl. No.	Category	Penalty
1.	Operator (Electrical) / Supervisor [Highly-skilled category]	₹ 1,250.00 per shift per head
2.	Electrician [Skilled category]	₹ 1,110.00 per shift per head
3.	Helper [Semi-skilled / Unskilled category]	₹ 900.00 per shift per head

c). Non-functioning of High Mast luminaries & Streetlight luminaries, AC point, ICDP, ICTPN, Sheet metal TPN, Sheet metal DP, Fuse / MCB / MCB DB beyond two days from the date of lodging complaint by SMPK official shall attract a penalty of ₹150.00 per day for each item. Non-functioning of light / fan/ plug /call bell at residential or non-residential buildings beyond two days from the date of lodging complaint by SMPK employees shall attract a penalty of ₹ 50.00 per day for each item.

Clause No. 10
Force Majeure

Clause No. 10.1

In the event of either party rendered unable by Force Majeure to perform any obligation required to be performed by them under the Contract, relevant obligation of the party affected by such Force Majeure shall upon notification to the other party be suspended for the period which Force Majeure events lasts. The cost and loss sustained by the either party shall be borne by the respective parties.

The term “Force Majeure” as employed shall mean the events as below :

riot (unless solely restricted to or perpetuated by employees of the Contractor or his subcontractors / suppliers or occurring outside India) so far as it is uninsurable;

war, hostilities (whether war be declared or not), invasion, directed to or by India or act of foreign enemies, directed to India;

rebellion, revolutions, insurrection, or military or usurped power, or civil war in India;

Fire, flood, cyclone, hurricane and acts of God.

Time of performance shall be extended by the period of delay, which is directly caused by the Force Majeure. Upon the occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid shall notify the other party in writing immediately but not later than forty eight hours of the alleged beginning and ending thereof, giving full particulars and satisfactory evidence in support of his claim.

Time of performance of the relative obligation suspended by the Force Majeure shall stand extended by the period for which such event lasts and affects the relative obligation directly. Such extension of time shall be without prejudice to the provision that time is essence of the Contract and any other terms and conditions related to time of completion as may provided elsewhere in the Contract.

If the work is affected by Force Majeure lasting for more than 60 days at a stretch, the parties to the Contract shall settle the issue mutually.

Clause No. 11
Settlement of
Dispute

Clause No. 11.1

If a dispute, of any kind whatsoever arises between the Employer and the Contractor in connection with or arising out of the contract or the execution of the works, the same shall be dealt as per relevant provisions of the General Conditions of Contract and THE ARBITRATION AND CONCILITATION (AMENDMENT) ACT, 2015 and any statutory amendment thereof.

Clause No. 13**Deputation of Technical personnel by the Contractor****Clause No. 13.1**

The contractor shall have to depute authorized Technical personnel (as detailed below) to supervise the work during entire project period at his own cost.

The Number of Technical personnel, Qualifications and Experience will be as follows:

Technical Personnel	Number (Minimum)	Experience in Building Construction Work
A. Diploma holder in Civil Engineering	01	Minimum 5 years of Experience in building works.
A. Diploma holder in Electrical Engineering	01	Minimum 10 years of Experience in HT switchgear, transformer, etc. installation work.

Necessary documents pertaining to the qualification and experience of the Technical personnel should be submitted after LOA.

Clause No. 14**Royalty****Clause No. 14.1**

Royalty as applicable from time to time for various materials like sand, stone aggregates etc. obtained by the contractor, his agents/suppliers or sub-contractors from government or private quarry/land for the purpose of this contract work shall be paid by the contractor at prevailing rates. He shall indemnify the Trustees against any claim from the Government / other authorities for short or non-recovery of royalty charges and shall pay such short or non-recovered amount(s) on demand to the appropriate authorities at any time.

Clause No. 15**Insurance****Clause No. 15.1 General requirements for insurances**

The contractor during the contract period shall provide for insurance of 110% of the contract value including manning upto the defect liability period.

SECTION – IX
BIDDING FORMS

BIDDING FORM – I

E-Tender No. SDM (P&E)/ T / 03 /2021-2022.

MINIMUM ELIGIBILITY CRITERIA

[To be filled up and uploaded, duly signed & stamped]

(I) ANNUAL TURNOVER STATEMENT

The annual turnover of(name of the bidding firm), for the years 2017-18, 2018-19 and 2019-20 , based on the **Balance Sheets and Profit & Loss Accounts**, are given below:

Financial years	Turnover (as per Auditor's Report / Balance Sheet)[in Rs]
2017-18	
2018-19	
2019-20	
<i>Total</i>	
<i>Average Annual Turnover</i>	

SIGNATURE OF CHARTERED ACCOUNTANT ::

NAME OF CHARTERED ACCOUNTANT ::

(COMPANY SEAL)

NOTE: Copy of Balance Sheets and Profit & Loss Accounts enclosed with sealed & signed.

(II) TECHNICAL EXPERIENCE

Sl. No.	Contract No. / Order No. and date	Name of the Employer and Place of work	Contract value [in Rs]	Date of completion of work	Page number(s) of reference / supporting document (s), uploaded.

BIDDING FORM-II**E-Tender No. SDM (P&E)/ T / 03 /2021-2022.****OTHER DOCUMENTS**

[To be filled up and uploaded, duly signed & stamped]

Sl. No.	Requirement	Submitted/Not submitted [Put √ if submitted & X if not submitted]	Validity/ For the month of
a)			
i)	GST Registration Certificate.	<input type="text"/> If submitted, Page Number(s):	Not applicable.
ii)	Document in support of non-applicability.	<input type="text"/> If submitted, Page Number(s):	Not applicable.
b)			
i)	Profession Tax Clearance Certificate (PTCC) <u>OR</u> Profession Tax Payment Challan (PTPC)	<input type="text"/> If submitted, Page Number(s):	
		<input type="text"/> If submitted, Page Number(s):	
ii)	Document in support of non-applicability.	<input type="text"/> If submitted, Page Number(s):	Not applicable.
c)			
i)	Certificate for allotment of EPF Code No.	<input type="text"/> If submitted, Code No.: Page Number(s):	Not applicable.
ii)	Latest EPF Payment Challan.	<input type="text"/> If submitted, Page Number(s):	
iii)	Document in support of non-applicability.	<input type="text"/> If submitted, Page Number(s):	Not applicable.
d)			
i)	Registration Certificate of ESI Authority.	<input type="text"/> If submitted, Code No.: Page Number(s):	Not applicable.

ii)	Affidavit, Declaration and Indemnity Certificate.	<input type="text"/>	If submitted, Page Number(s):	Not applicable.
e)	PAN Card	<input type="text"/>	If submitted, PAN No.: Page Number(s):	Not applicable.
f)	MSME / MSE / DIC / SSI / NSIC certificate	<input type="text"/>	If submitted, Page Number(s):	
g)	Power of Attorney	<input type="text"/>	If submitted, Page Number(s):	Not applicable.

BIDDING FORM-III**E-Tender No. SDM (P&E)/ T / 03 /2021-2022.****GENERAL INFORMATION OF THE BIDDER**

[To be filled up and uploaded, duly signed & stamped]

1.	Bidder's Legal Name (IN CAPITAL LETTERS)		
2.	a)	Country of registration.	
	b)	Year of registration.	
	c)	Legal address in country of registration.	
	d)	URL of the bidder.	
3.	Information regarding bidder's authorised representative(s) / contact person(s)		
	a)	Name(s)	
	b)	Address(es)	
	c)	Telephone number(s)/Mob. No.	
	d)	Facsimile number(s)	
	e)	Electronic mail address	
4.	a)	Address of the branch office, if any	
	b)	Name of the contact person at branch office	
	c)	Telephone number(s)	
	d)	Facsimile number(s)	

	e)	Electronic mail address	
5.	Whether the bidder is a Proprietorship Firm or Partnership Firm or Limited Company .		
6.	Details of the Banker(s) :		
	a)	Name of the Banker(s) in full.	
	b)	Address(es) of the Banker(s)	
	c)	Telephone number(s)	
	d)	Facsimile number(s)	
	e)	Electronic mail address	
	f)	Name(s) of the contact person(s)	
7.	Bank details for ECS payment :		
	a)	Bank Account number.	
	b)	Name of the bank.	
	c)	Name of the branch.	
	d)	Address of the branch.	
	e)	RTGS code of the branch.	
	f)	MICR code of the branch.	
8.	Income Tax and Goods & Services Tax (GST) details (if applicable):		
	a)	Permanent Account Number (PAN)	
	b)	GST Registration Number (GSTIN)	
9.	Employees' Provident Fund (EPF) Code No.		
10.	Employees' State Insurance (ESI) Code No.		
11.	Mainlines of business		

FORMAT FOR DECLARATION

[To be printed on the bidder's Letter Head and uploaded after signing]

To,
General Manager (Engg.)
Haldia Dock Complex,
Syama Prasads Mookerjee Port, Kolkata

Name of Work: “Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata”.

E- Tender No. SDM (P&E)/ T / 03 /2021-2022.

I, the authorized signatory of the (Name of the Company /Firm) do hereby declare / confirm that :

* I / We have not been **debarred, banned** or **delisted** by any Government or Quasi-Government Agencies or Public Sector Undertakings in India.

I / we have not made any **addition / modification / alteration** in the **Bidding Documents** (including Bidding Forms & Contract Forms) hosted in the websites.

The prices have been quoted in the Price Bid, electronically, through the website <https://kopt.enivida.in> only and no direct or indirect mention of the prices has been made by me / us anywhere else in my / our bid.

No extraneous conditions (like “Not Applicable”, conditional rebate, etc.), regarding the Price Bid, have been mentioned anywhere in our bid.

**Signature of authorised person of the bidder
(with office seal)**

- In case the **firm** has been debarred or banned or delisted by any Government or Quasi-Government Agencies or Public Sector Undertaking in India, then the same should be declared properly, after modifying the sentence, suitably.

FORM OF TENDER

[To be printed on the bidder's Letter Head and uploaded after signing]

To,
General Manager (Engg.)
Haldia Dock Complex ;
Syama Prasads Mookerjee Port, Kolkata

Name of Work: "Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata".

E-Tender No.: **SDM (P&E)/ T / 03 /2021-2022.**

I/We (Name of the bidder)of
.....(Address of the bidder) Having
examined the site of work, inspected the drawings and read the bidding documents [including all
addenda / corrigenda, issued i.e. {insert Addendum / Corrigendum /
Extension No(s)}], hereby bid and undertake to execute & complete all the work related to
"Design, Supply, Installation, Testing and Commissioning of 25 Nos. 30 M high Hot Dip
Galvanized High Mast Tower with LED fitting and replacement of LED luminaires on 40Nos.
existing 30Mtrs. High Mast along with comprehensive maintenance contract of 5year at Haldia
Dock Complex, SMP, Kolkata (Phase-II)", required to be performed in accordance with the
Technical Specification, General Conditions of Contract (GCC), Special Conditions of Contract
(SCC), etc., at the rates & prices quoted in the Price Bid [*submitted electronically, through the
website <https://kopt.enivida.in>*], withinmonth from the date of order to commence
the work , in the event of our bid being accepted.

I/we also undertake to enter into a Contract Agreement in the form hereto annexed [Section XI]
with such alterations or additions thereto, which may be necessary to give effect to the acceptance
of the bid and incorporating such Technical Specification, General Conditions of Contract (GCC),
Special Conditions of Contract (SCC), etc. and I/we hereby agree that until such contract
agreement is executed, the said Technical Specification, General Conditions of Contract (GCC),
Special Conditions of Contract (SCC), etc. and the bid, together with the acceptance thereof in
writing, by or on behalf of the Employer, shall be the contract.

I / We requiredays preliminary time to arrange and procure the
materials, tools & tackles, etc. required by the work, from the date of acceptance of bid, before
I/we could commence the work.

I / We have submitted Bid Securing Declaration as per attached format attached as **Annexure-B**
in lieu of EMD.

I/We agree that the period for which the bid shall remain open for acceptance, shall not be less

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at
residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

than **Days**, from the last date of submission of bid.

(Signature of authorised person of the bidder)

WITNESS:

Signature:

Name : _____

Name:
(In Block Letters)

Designation : _____

Address:

Date : _____

Occupation:

(Office Seal)

Bid Security Declaration Format
(To be filled on Bidders Letter Head)

E-Tender No. SDM (P&E)/ T / 03 /2021-2022.

To,
General Manager (Engg.)
Haldia Dock Complex;
Syama Prasads Mookerjee Port, Kolkata

I/We. The undersigned, declare that:

I/We understand that, according to your conditions, bids must be supported by a Bid Securing Declaration.

I/We accept that I/We may be disqualified from bidding for any contract with you for a period of three years from the date of notification if I am /We are in a breach of any obligation under the bid conditions, because I/We

- a) have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid during the period of bid validity specified in the form of Bid; or
- b) having been notified of the acceptance of our Bid by the purchaser during the period of bid validity
 - (i) fail or reuse to execute the contract, if required, or
 - (ii) fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid Securing Declaration shall cease to be valid if I am/we are not the successful Bidder, upon the earlier of

- (i) the receipt of your notification of the name of the successful Bidder; or
- (ii) thirty days after the expiration of the validity of my/our Bid.

Signed: (insert signature of person whose name and capacity are shown)

Name: (insert complete name of person signing the Bid Securing Declaration)

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

Corporate Seal:

BIDDING FORM-VI**E-Tender No. SDM (P&E)/ T / 03 /2021-2022.****PRICE SCHEDULE**

[To be filled up and uploaded, duly signed & stamped]

Sl. No.	Item Description	Unit	Qty	Applicable % of GST		
				SGST	CGST	IGST
1.	Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata. As per BOQ of electrical and civil works.	LS	1			

E-Tender No. SDM (P&E)/ T / 03 /2021-2022.

Integrity Pact

Between

Syama Prasad Mookerjee Port,Kolkata (SMP, Kolkata) hereinafter referred to as “**The Principal/ Employer**”.

And

..... hereinafter referred to as “**The Bidder/Contractor**”

Preamble

The Principal intends to award, under laid down organizational procedures, contract/s for The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relations with its Bidder(s) and/or Contractor(s).

In order to achieve these goals, an Independent External Monitor (IEM) appointed by the principal, will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:-

Enabling the PRINCIPAL/EMPLOYER to get the contractual work executed and/or to obtain/dispose the desired said stores/ equipment at a competitive price in conformity with the defined specifications/ scope of work by avoiding the high cost and the distortionary impact of corruption on such work /procurement/ disposal and Enabling BIDDERS/ CONTRACTORS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the PRINCIPAL/EMPLOYER will commit to prevent corruption, in any form, by its officials by following transparent procedures.

Section 1 – Commitments of the Principal/ Employer.

- (1) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - a. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will, in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

- c. The Principal will exclude from the process all known prejudiced persons.
- (2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal Code (IPC)/Prevention of Corruption (PC) Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section-2 –Commitments of the Bidder(s) / Contractor(s)

- (1) The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- a. The Bidder(s) /Contractor(s) will not directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- b. The Bidder(s)/Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contract, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- c. The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly, the Bidder(s)/Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principles, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines, all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" is annexed and marked as Annex-A.
- e. The Bidder(s)/Contractor(s) will when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- (2) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

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

If the Bidder(s)/Contractor(s) before award or during execution has committed a transgression through a violation of Section 2 above, or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as considered appropriate.

Section 4-Compensation for damages

- (1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/Bid Security.
- (2) If the Principal has terminated the contract according to Section 3 or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

Section 5-Previous transgression

- (1) The Bidder declares that no previous transgressions occurred in the last 3 years from the date of signing the Integrity pact with any other Company in any country conforming to the anti corruption approach or with any other Public Sector Undertaking / Enterprise in India, Major Ports/ Govt. Departments of India that could justify his exclusion from the tender process.
- (2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as considered appropriate.

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

- (1) The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
- (2) The Principal, will enter into agreements with identical conditions as this one with all Bidders, Contractors and Sub-contractors.
- (3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7- Other Legal actions against violating Bidder(s)/ Contractor(s)/ Sub Contractor(s)

The actions stipulated in this Integrity pact are without prejudice to any other legal action that may follow in accordance with provisions of the extant law in force relating to any civil or criminal proceedings. .

Section 8 – Role of Independent External Monitor (IEM):

- (a) The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this pact.
- (b) The Monitors shall not be subject to instructions by the representatives of the parties and shall perform their functions neutrally and independently.
- (c) Both the parties accept that the Monitors have the right to access all the documents relating to the contract.
- (d) As soon as the Monitor notices, or has reason to believe, a violation of this pact, he will so inform the authority designated by the Principal and the Chief Vigilance Officer of Kolkata Prot Trust.

(e) The BIDDER/ CONTRACTOR(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the PRINCIPAL including that provided by the BIDDER/ CONTRACTOR. The BIDDER/ CONTRACTOR will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation, if any. The same is applicable to sub-contractors. The Monitor shall be under contractual obligation to treat the information and documents of the Bidder/Contractor/ Sub-contractor(s) with confidentiality.

(f) The Principal/ Employer will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor, the option to participate in such meetings.

(g) The Monitor will submit a written report to the designated Authority of Principal/ Employer/ Chief Vigilance Officer of Kolkata Port Trust within 8 to 10 weeks from the date of reference or intimation to him by the Principal/ Employer/ Bidder/ Contractor and should the occasion arise, submit proposals for correcting problematic situation. BIDDER/ CONTRACTOR can approach the Independent External Monitor (s) appointed for the purposes of this Pact.

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

(i) If the Monitor has reported to the Principal substantiated suspicion of an offence under the relevant IPC/PCA, and the Principal/ Employer has not, within reasonable time, taken visible action to proceed against such offence or reported to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

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

Section 9 – Facilitation of Investigation:

In case of any allegation of violation of any provisions of this Pact or payment of commission, the PRINCIPAL/EMPLOYER or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER/CONTRACTORS and the BIDDER/CONTRACTOR shall provide necessary information and documents **in English** and shall extend all possible help for the purpose of such examination.

Section 10 – Pact Duration:

The pact beings with when both parties have legally signed it and will extend upto 2 years or the complete execution of the contract including warranty period whichever is later. In case bidder/contractor is unsuccessful this Integrity Pact shall expire after 6 months from the date of signing of the contract.

If any claim is made/lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/determined by Chairman, SMP Kolkata.

Section 11 – Other Provisions:

(1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal in Kolkata.

(2) Changes and supplements as well as termination notices need to be made in writing in English.

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

- (2) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- (4) Should one or several provisions of this agreement turn out to be invalid, the reminder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

(For & on behalf of the Principal)

(Office Seal)

(For & on behalf of Bidder/Contractor).

(Office Seal)

Place :

Date :

Witness 1:

(Name & Address)

.....

.....

Witness 2:

(Name & Address)

.....

.....

GUIDELINES FOR INDIAN AGENTS OF FOREIGN SUPPLIERS

- 1.1 There shall be compulsory registration of Indian agents of Foreign suppliers for all Tenders. An agent who is not registered with SMP, Kolkata shall apply for registration in the prescribed Application-Form.
- 1.2 Registered agents will file an authenticated Photostat copy (duly attested by a Notary Public)/Original certificate of the principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/ remuneration/salary/retainer ship being paid by the principal to the agent before the placement of order by SMP, Kolkata.
- 1.3 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.

2.0 DISCLOSURE OF PARTICULARS OF AGENTS/REPRESENTATIVES IN INDIA. IF ANY.

- 2.1 Tenderers of Foreign nationality shall furnish the following details in their offer:
 - 2.1.1 The name and address of the agents/representatives in India, if any and the extent of authorization and authority given to commit the Principals. In case the agent/representative be a foreign Company, it is to be conformed whether it is real substantial Company and details of the same shall be furnished.
 - 2.1.2 The amount of commission/ remuneration included in the quoted price(s) for such agents/ representatives in India.
 - 2.1.3 Confirmation of the Tenderer that the commission/remuneration if any, payable to his agents/ representatives in India, is to be paid by SMP, Kolkata in Indian Rupees only.

2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:

- 2.2.1 The name and address of the foreign principals indicating their nationality as well as their status, i.e. whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents /representatives.
- 2.2.2 The amount of commission/remuneration included in the price(s) quoted by the Tenderer for himself.
- 2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/remunerations, if any, reserved for the Tenderer in the quoted price(s), is to be paid by SMP, Kolkata in India in equivalent Indian Rupees.
- 2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission/remuneration, if any payable to the agents/representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.
- 2.4 Failure to furnish correct and detailed information as called for in paragraph-2.0 above will render the concerned tender liable for rejection or in the event of a contract materializing, the same liable to termination by SMP Kolkata. Besides this there would be a penalty of banning business dealings with SMP Kolkata or damage or payment of a named sum.

Format for Power of Attorney for Lead Member of Consortium & Joint Bidding Agreement**(To be executed before Notary Public on a Non-Judicial Stamp Paper of at least Rs 10)****POWER OF ATTORNEY**

Whereas Haldia Dock Complex, Syama Prasad Mookerjee Port, Kolkata (“the Authority”) has invited tenders from interested parties for “.....” (Tender No.).

Whereas,,, And (collectively the “Consortium”) being members of the Consortium are interested in bidding for the Tender in accordance with the terms and conditions of the Tender Document and other connected documents in respect of the said tender, and

Whereas, it is necessary under the Tender Document for the members of the Consortium to designate one of them as the Lead Member with all necessary power and authority to do for and on behalf of the Consortium, all acts, deeds and things as may be necessary in connection with the Consortium’s bid for the Tender and its execution.

NOW THEREFORE KNOW ALL MEN BY THESE PRESENTS

We, M/s. having our registered office at, M/s. having our registered office at, M/s. Having our registered office at, and M/s. having our registered office at, [the respective names and addresses of the registered office] (hereinafter collectively referred to as the “Principals”) do hereby designate, nominate, constitute, appoint and authorize M/s. Having its registered office at, being one of the members of the Consortium, as the Lead Member and true and lawful attorney of the Consortium (hereinafter referred to as the “Attorney”). We hereby irrevocably authorize the Attorney to conduct all business for and on behalf of the Consortium and any one of us during the bidding process and, in the event the Consortium is awarded the Contract, during the execution of the contract, and in this regard, to do on our behalf and on behalf of the Consortium, all or any of such acts, deeds or things as are necessary or required or incidental to the pre-qualification of the Consortium and submission of its bid(s) for the tender, including but not limited to signing and submission of all applications, bids and other documents and writings, participate in Pre Bid and other conferences/meetings, respond to queries, submit information/ documents, sign and execute contracts and undertakings consequent to acceptance of bid(s) of the Consortium and generally to represent the Consortium in all its dealings with the Authority, and/or any other Government Agency or any person, in all matters in connection with or relating to or arising out of the Consortium’s bid(s) for the tender and/or upon award thereof till the Agreement is entered into with the Authority.

AND hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us / Consortium.

IN WITNESS HEREOF WE HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS
..... DAY OF20**

For

(Name & Title)

For

.....

(Name & Title)

For

.....

(Name & Title)

Witnesses:

1.

2.

.....

(To be executed by all the members of the Consortium)

E-Tender No. SDM(P&E)/T/03/2021-2022

Joint Bidding Agreement

(Refer Clause 2.1.4)

([To be submitted on Non-judicial Stamp Paper of worth not less than INR 100.00])

THIS JOINT BIDDING AGREEMENT is entered into on this the day of 20...

AMONGST

1. Limited, a company incorporated under the Companies Act, 1956/2013[¥] and having its registered office at (hereinafter referred to as the “First Part” which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

2. Limited, a company incorporated under the Companies Act, 1956/2013 and having its registered office at (hereinafter referred to as the “Second Part” which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

3. {..... Limited, a company incorporated under the Companies Act, 1956/2013 and having its registered office at (hereinafter referred to as the “Third Part” which expression shall, unless repugnant to the context include its successors and permitted assigns)}

AND

4. {..... Limited, a company incorporated under the Companies Act, 1956/2013 and having its registered office at (hereinafter referred to as the “Fourth Part” which expression shall, unless repugnant to the context include its successors and permitted assigns)}

The above mentioned parties of the FIRST, SECOND, {THIRD and FOURTH} PART are collectively referred to as the “Parties” and each is individually referred to as a “Party”

WHEREAS,

- A. Syama Prasad Mookerjee Port, Kolkata, established under the Major Port Trusts Act 1963 and having Principal Office at 15, Strand Road, Kolkata – 700001 (hereinafter referred to as the “SMP, Kolkata” which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) has invited bids (the Bids”) by its Bidding Documents No. dated (the “Bidding Documents”) for pre-qualification of bidders for Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata (the “Project”).

[¥] A Bidder who is registered abroad may substitute the words, viz “a company registered under the Companies Act, 1956/2013” by the words, viz “a company duly organised and validly existing under the laws of the jurisdiction of its incorporation”. A similar modification may be made in Recital 2, as necessary.

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

- B. The Parties are interested in jointly bidding for the Project as members of a Consortium and in accordance with the terms and conditions of the Bidding Document and other documents in respect of the Project, and
- C. It is a necessary condition under the Bidding Document that the members of the Consortium shall enter into a Joint Bidding Agreement and furnish a copy thereof with the Bid.

NOW IT IS HEREBY AGREED as follows:

1. Definitions and Interpretations

In this Agreement, the capitalised terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the Bidding Document .

2. Consortium

- 2.1 The Parties do hereby irrevocably constitute a consortium (the “Consortium”) for the purposes of jointly participating in the Bidding Process for the Project.
- 2.2 The Parties hereby undertake to participate in the Bidding Process only through this Consortium and not individually and/ or through any other consortium constituted for this Project, either directly or indirectly or through any of their Associates.

3. Covenants

The Parties hereby undertake that in the event the Consortium is declared the successful Bidder and awarded the Project, it shall enter into a Contract Agreement with the Authority for performing all its obligations as the Contractor in terms of the Contract Agreement for the Project.

4. Role of the Parties

The Parties hereby undertake to perform the roles and responsibilities as described below:

- (a) Party of the First Part shall be the Lead member of the Consortium and shall have the power of attorney from all Parties for conducting all business for and on behalf of the Consortium during the Bidding Process and under the Contract Agreement;
- (b) Party of the Second Part shall be {the Technical Member of the Consortium;}
- {(c) Party of the Third Part shall be the Financial Member of the Consortium; and}
- {(d) Party of the Fourth Part shall be the Operation and Maintenance Member/ Other Member of the Consortium. }

5. Joint and Several Liability

The Parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Project and in accordance with the terms of the Bidding Document and the Contract Agreement.

6. Representation of the Parties

Each Party represents to the other Parties as of the date of this Agreement that:

- (a) Such Party is duly organised, validly existing and in good standing under the laws of its incorporation and has all requisite power and authority to enter into this Agreement with SMP Kolkata;

- (b) The execution, delivery and performance by such Party of this Agreement has been authorised by all necessary and appropriate corporate or governmental action and a copy of the extract of the charter documents and board resolution/ power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Consortium Member is annexed to this Agreement, and will not, to the best of its knowledge:
 - (i) require any consent or approval not already obtained;
 - (ii) violate any Applicable Law presently in effect and having applicability to it;
 - (iii) violate the memorandum and articles of association, by-laws or other applicable organisational documents thereof;
 - (iv) violate any clearance, permit, concession, grant, license or other governmental authorisation, approval, judgement, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or
 - (v) create or impose any liens, mortgages, pledges, claims, security interests, charges or encumbrances or obligations to create a lien, charge, pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as to prevent such Party from fulfilling its obligations under this Agreement;
- (c) this Agreement is the legal and binding obligation of such Party, enforceable in accordance with its terms against it; and
- (d) there is no litigation pending or, to the best of such Party's knowledge, threatened to which it is a party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfillment of its obligations under this Agreement.

7. Termination

This Agreement shall be effective from the date hereof and shall continue in full force and effect until the Financial Close of the Project is achieved under and in accordance with the Contract Agreement, in case the Project is awarded to the Consortium. However, in case the Consortium is either not pre-qualified for the Project or does not get selected for award of the Project, the Agreement will stand terminated in case the Bidder is not pre-qualified or upon return of the Earnest Money by the SMP, Kolkata to the Bidder, as the case may be.

8. Miscellaneous

8.1 This Joint Bidding Agreement shall be governed by laws of India.

8.2 The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the SMP, Kolkata.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED

For and on behalf of
LEAD MEMBER by:

(Signature)
(Name)
(Designation)
(Address)

SIGNED, SEALED AND DELIVERED

SECOND PART

(Signature)
(Name)
(Designation)
(Address)

SIGNED, SEALED AND DELIVERED

For and on behalf of
THIRD PART

(Signature)
(Name)
(Designation)
(Address)

SIGNED, SEALED AND DELIVERED

For and on behalf of
FOURTH PART

(Signature)
(Name)
(Designation)
(Address)

In the presence of:

1.

2.

Notes:

1. The mode of the execution of the Joint Bidding Agreement should be in accordance with the procedure, if any, laid down by the Applicable Law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.
2. Each Joint Bidding Agreement should attach a copy of the extract of the charter documents and documents such as resolution / power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the Consortium Member.
3. For a Joint Bidding Agreement executed and issued overseas, the document shall be legalised by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney has been executed.

SECTION - X

CHECKLIST

E-Tender No. SDM (P&E)/ T / 03 /2021-2022.

Before scanning and upload the following required documents, all pages are to be signed by a person duly authorised to sign on behalf of the bidder, and are to be embossed with their official seal, owing responsibility for their correctness / authenticity. All pages of the aforesaid documents should be serially marked.

*The offered prices would be given in the “**Price Bid (Part-II)**” electronically, through the website of e-Nivida only.*

Sl. No.	Particulars	Submitted/ Not submitted [Put √ if submitted and put X if not submitted]	If submitted, <u>page numbers</u>
1.	Proof of Bid Document Fee . Certificate of getting benefit by MSME / SSI / NSIC for exemption of Bid Document Fee .	<input type="checkbox"/>	<input type="checkbox"/>
2.	Proof of Earnest Money Deposit (EMD)/ Bid Security Declaration : [Annexure-B of Bidding form V]	<input type="checkbox"/>	<input type="checkbox"/>
3.	Valid Electrical Contractor's License.	<input type="checkbox"/>	<input type="checkbox"/>
4.	Audited Balance Sheets and Profit & Loss Accounts for the years 2017-18, 2018-19 and 2019-2020.	<input type="checkbox"/>	<input type="checkbox"/>
5.	Power of Attorney	<input type="checkbox"/>	<input type="checkbox"/>
6.	Bidding Forms		
	i) Bidding Form – I	<input type="checkbox"/>	<input type="checkbox"/>

Sl. No.	Particulars		Submitted/ Not submitted [Put \checkmark if submitted and <u>put X if not submitted</u>]	If submitted, <u>page numbers</u>
	ii)	Bidding Form - II	<input type="checkbox"/>	<input type="checkbox"/>
	iii)	Bidding Form – III	<input type="checkbox"/>	<input type="checkbox"/>
	iv)	Bidding Form - IV	<input type="checkbox"/>	<input type="checkbox"/>
	v)	Bidding Form – V	<input type="checkbox"/>	<input type="checkbox"/>
	vi)	Bidding Form - VI	<input type="checkbox"/>	<input type="checkbox"/>
	vii)	Bidding Form - VII	<input type="checkbox"/>	<input type="checkbox"/>
	viii)	Bidding Form - VIII	<input type="checkbox"/>	<input type="checkbox"/>

SECTION – XI
CONTRACT FORMS

FORM OF AGREEMENT

(To be submitted on Non- judicial Stamp Paper of worth not less than INR 50.00)

CONTRACT NO. : GM(E)/...../...../AGMT/...../.....

TENDER REFERENCE:

E-Tender No.

“Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata”

ORDER REFERENCE: / /O-... dated

This agreement made this day of , Two thousand ,
BETWEEN

The Board of Trustees for the Port of Kolkata, a body corporate -- constituted by the Major Port Trust Act, 1963 (hereinafter called the ‘**Trustees**’, which expression shall unless excluded by or repugnant to the context be deemed to include their successors in office) of the one part
AND

..... (hereinafter called the ‘**Contractor**’, which expression shall unless excluded by or repugnant to the context be deemed to include its heirs, executors, administrators, representatives and assignees or successors in office) of the other part

[Together hereinafter the “Parties”]

WHEREAS

The Trustees are desirous that certain works should be executed by the Contractor, viz. *“Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata”* and have accepted a Bid / offer by the Contractor for execution, completion and maintenance of such works, including remedying any defects therein, during the Defect Liability Period.

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this agreement words expressions shall

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this agreement words and expression shall have the same meanings as are respectively assigned to them in **Conditions of Contract** hereinafter referred to.
2. The following documents shall be deemed to form and be read and construed as part of this agreement :
 - a) The said bid / offer.
 - b) The Letter of Acceptance of the bid /offer [vide Order No./...../O-... dated]
 - c) The Conditions of Contract and **Technical Specification** [all terms and conditions of E-Tender No.].
 - d) Addenda [Please insert Addenda Nos.]
 - e) “Price Comparative Statement”, showing the prices quoted (electronically, through the website <https://kopt.enivida.in>) by the Successful Bidder, in the Price Bid.
 - f) All correspondence, by which the contract is added, amended, varied or modified, in any way, by mutual consent.
3. In Consideration of the payments to be made by the Trustees to the Contractor as hereinafter mentioned, the Contractor hereby covenant with the Trustees to execute, complete & maintain the work, including remedy any defects therein (during the Defect Liability Period”), in conformity with the provisions of the Contract, in all respects.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed the day and year first before written.

The parties hereunto affixed their respective Common Seals (or have hereunto set their respective hands and seals).

For and on behalf of

For and on behalf of

HALDIA DOCK COMPLEX
KOLKATA PORT TRUST

(CONTRACTOR)

(*TRUSTEES*)

SEAL

SEAL

In presence of

In presence of

INDEMNITY BOND

[To be submitted on Non-judicial Stamp Paper of worth not less than INR 50.00, **duly notarised**]

Reference:

Order No.:/...../...../O-... dated For Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata”

**Senior Deputy Manager (P&E),
Haldia Dock Complex,
Operational Administrative Building (1st Floor) ;
Chiranjibpur, P.O.Haldia ; Dist. Purba Medinipur ,
West Bengal, India
PIN : –721 604**

This deed of **Indemnity Bond** made on by Having their office at (hereinafter called “the **Contractor**”).

Whereas the General Manager (Engineering), **Haldia Dock Complex, SMP, Kolkata** , Dist.: Purba Medinipur, West Bengal (hereinafter call “the **Engineer**”) has placed an order, bearing no. /...../O-... dated And some materials, spare parts, components, sub-assemblies, etc. are required to be taken **outside** of **Haldia Dock Complex** premises for some specialized servicing, repairing, overhauling, etc. or **fault diagnosis & remedial measures** by the Contractor, as per the terms & conditions mentioned in the said order, and which have been mutually agreed upon by the parties hereto,

AND

Whereas in consideration of the said contract, the Contractor has agreed to execute an **Indemnity Bond** for the safe custody on receipt of the said materials, spare parts, components, sub-assemblies, etc., from the **Engineer** until the **completion of servicing / overhauling / repairing / remedial work** and returning back to the Engineer as hereinafter appearing.

Now this deed witnessed that in pursuance of the said agreement and in the premises, the Contractor agrees to indemnify Engineer and at all the terms, to hold themselves liable for all the **damages, loss** due to **pilferage / fire** or negligence on the part of the Contractor or their employees, agents and representatives or from whatever cause, with all losses, interest charges and expenses incurred by the said Engineer on account of the material(s) issued to the Contractor,

AND

It is in terms of the said contract and this **Deed of Indemnity**, the material(s) issued free to the Contractor for servicing / overhauling / repairing / **fault diagnosis & remedial work**, thereon shall be deemed to be the **property of the Engineer**.

It is hereby agreed that the Contractor shall be liable for all injury, losses and damages that may be caused to the, from whatever cause and further that the Contractor shall not part with or delivery possession of the said material(s) to any other party or person, save in compliance with and in performance & provision of contract in respect of which this **Indemnity Bond** is executed, the Contractor having undertaken to delivery the said material (s) in all respect in compliance with the terms of the contract.

This bond and the trust hereby created shall remain valid and binding on the Contractor till such time as the above said order has been fully and finally executed and Contractor has delivered the complete thereon to the Engineer under the terms of the contract.

For and on behalf of (name of the Contractor), under the common seal of the company.

WITNESS

(Signature of the authorised person on behalf of the Contractor)

(Signature)

Name :

Name :

Designation

Designation

Signed in my presence and identified by me

BANK GUARANTEE FOR PERFORMANCE GUARANTEE

[To be submitted on Non-judicial Stamp Paper of worth not less than INR 50.00]

To

**The Board of Trustees,
for the Port of Kolkata.**

BANK GUARANTEE NO..... DATE.....

Name of Issuing Bank.....

Name of Branch.....

Address.....

In consideration of the **Board of Trustees for the Port of Kolkata**, a body corporate – duly constituted under the Major Port Trusts Act, 1963 (Act 38 of 1963), (hereinafter referred to as “**The Trustees**”) having awarded to Shri / Messrs, a Proprietary/ Partnership/Limited / Registered Company, having its Registered Office at (hereinafter referred to as “**The Contractor**”, which expression shall unless repugnant to the context or meaning thereof include its successors, administrators, executors and assigns), a **CONTRACT** by issue of Trustees’ Work Order No. //...../O-..... dated For Upgradation of 11kV/415V Substations & allied equipment along with 5years manning and comprehensive maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata

” and the same having been unequivocally accepted by the Contractor resulting in a **CONTRACT** bearing No. **GM (E)/...../..... /AGMT/...../.....** and the Contractor having agreed to provide a **BANK GUARANTEE** from a Nationalized / Scheduled Bank of India, in prescribed format for **Rs. (Indian Rupees)** only, for the faithful and satisfactory performance of the entire contract .

We, ... Branch, Kolkata/Haldia, do, on the advice of the Contractor, hereby undertake to indemnify and keep indemnified the Trustees to the extent of the said sum of **Rs (Indian Rupees)** only. We, Branch, Kolkata/Haldia, further agree that if a written demand is made by the Trustees through any of its officials for honouring the Bank Guarantee constituted by these presents, we, Branch, Kolkata/Haldia, shall have no right to decline to cash the same for any reason whatsoever and shall cash the same and pay the sum so demanded to the Trustees within a week from the date of such demand by an A/c Payee Banker’s Cheque drawn in favour of “Kolkata Port Trust”, without any demur. Even if there be any dispute between the Contractor and the Trustees, this would be no ground for us, (Name of Bank), Branch, Kolkata/Haldia, to decline to honour the Bank Guarantee in the manner aforesaid. The very fact that we, Branch, Kolkata/Haldia, decline or fail or neglect to honour the Bank Guarantee in the manner aforesaid, shall constitute sufficient reason for the Trustees to enforce the Bank Guarantee unconditionally without any reference,

Upgradation of 11kV/415V Substations & allied equipment along with 5 years Manning and Comprehensive Maintenance at residential areas of Haldia Township under Haldia Dock Complex, SMP, Kolkata.

whatsoever, to the Contractor.

2. We, Branch, Kolkata /Haldia, further agree that a mere demand by the Trustees at anytime and in the manner aforesaid, is sufficient for us, Branch, Kolkata /Haldia, to pay the amount covered by this Bank Guarantee in full and in the manner aforesaid and within the time aforesaid without reference to the Contractor and no protest by the Contractor, made either directly or indirectly or through court, can be valid ground for us, Branch, Kolkata /Haldia, to decline or fail or neglect to make payment to the Trustees in the manner and within the time aforesaid.
3. We,..... Branch, Kolkata /Haldia, further agree that the Bank Guarantee herein contained shall remain in full force and effect, during the period that is taken for the due performance of the said contract by the Contractor and that it shall continue to be enforceable till all the dues of the Trustees under and/or by virtue of the terms and conditions of the said contract, have been fully paid and its claim satisfied and/or discharged in full and/or till the Trustees certify that the terms and conditions of the said contract have been fully and properly observed/fulfilled by the Contractor and accordingly, the Trustees have discharged the Bank Guarantee, subject however, that this guarantee shall remain valid upto and inclusive ofday of.....and subject all so that the provision that the Trustees shall have no right to demand payment against this guarantee after the expiry of 6 (six) calendar months from the expiry of the aforesaid validity period upto.....or any extension thereof made by us, Branch, Kolkata..... /Haldia, in further extending the said validity period of this Bank Guarantee on Non-judicial Stamp Paper of appropriate value, as required / determined by the Trustees, only on a written request by the Trustees to the Contractor for such extension of validity of this Bank Guarantee.
4. We, .. Branch, Kolkata .. /Haldia, further agree that, without our consent and without affecting in any manner our obligations hereunder, the Trustees shall have the fullest liberty to vary from time to time any of the terms and conditions of the said contract or to extend the time for full performance of the said contract including fulfilling all obligations under the said contract by the Contractor or to postpone for any time or from time to time any of the powers exercisable by the Trustees against the Contractor and to forebear or enforce any of terms and conditions relating to the said contract and We,.. Branch, Kolkata... /Haldia, shall not be relieved from our liability by reason of any such variation or extension being granted to the Contractor or for any forbearance, act or commission on the part of the Trustees or any indulgence by the Trustees to the Contractor or by any such matter or thing of whatsoever nature, which under the law relating to sureties would, but for this provision, have effect of so relieving us, ... Branch, Kolkata ... /Haldia.
5. We, Branch, Kolkata ... /Haldia do also agree that the Trustees at their option shall be entitled to enforce this Guarantee against us Branch, Kolkata ... /Haldia as principal debtor in the first instance without producing against the Contractor and notwithstanding any security or other guarantee that the Trustees may have in relation to the Contractor's liabilities.
6. We,..... Branch, Kolkata... /Haldia, lastly

undertake not to revoke this Bank Guarantee during its currency except with the previous consent of the Trustees in writing.

SIGNATURE... ..

NAME.....

DESIGNATION.....

(Duly constituted attorney for and on behalf of)

BANK. ,

BRANCH... ..

KOLKATA... .. /HALDIA

(OFFICIAL SEAL OF THE BANK)

ANNEXURE-D

No.P-45021/112/2020-PP (BE-II) (E-43780)
Government of India Ministry of Commerce and Industry
Department for Promotion of Industry and Internal Trade
(Public Procurement Section)

Udyog Bhawan, New Delhi

Dated October 14, 2020

OFFICE MEMORANDUM

Subject: Revised format for registration of bidders from countries sharing land border with India—
regarding.

The undersigned is directed to inform that the format of application for seeking registration for bidders having beneficial ownership in countries which share land border with India in accordance with Department of Expenditure Order no. F. No. 6/18/2019-PPD dated 23.07.2020 has been revised. A copy of the revised format is enclosed herewith. Accordingly, applicants are informed that henceforth the registration application are required to be submitted in updated revised format to the Office of Joint Secretary (MKN), DPIIT, Room No. 236A, Udyog Bhawan, New Delhi in ten hard copies. The pdf copy of the same may also be emailed at dpiit.144@gov.in.

2. The applications already received in this Department, as per earlier prescribed format, are under process and are not required to be submitted again.

3. This issues with the approval of competent authority.

Encl: As above


(D.V.S.P. Varma)

Under Secretary to Govt. of
India
E-
mail:dvsp.varma@nic.in

To

1. All Ministries/Departments
2. All IndustryAssociations
3. DPIIT Website/ CPP Portal/ GeM Portal

Covering Letter Format

To
The Office of JS (MKN)
Chairman Registration Committee
Room No. 236A, UdyogBhawan, New Delhi

Subject: Application for registration of bidders having beneficial ownership in countries which share land border with India in accordance with Department of Expenditure Order no. F. No. 6/18/2019-PPD dated 23.07.2020 - regarding.

We, M/s _____ (Name of the Bidder), hereby submit an application for registration of our Company in accordance with Department of Expenditure Order No. F. No. 6/18/2019-PPD dated 23.07.2020 through its authorized signatory consisting of following documents:

- i. The Covering letter
- ii. Letter of authority in favor of signatory.
- iii. Details of Bidder as per Appendix "A".
- iv. Details of Manufacturer/ Service provider/ Contractor, if different from bidder, as per Appendix "B".
- v. Details of item (goods/ services / works) for which registration is being sought as per Appendix "C".
- vi. Details of Bidder for security clearance as per Appendix "D".
- vii. Details of Manufacturer/ Service provider/ Contractor, if different from bidder, for security clearance as per Appendix "E".

2. We confirm that the application complete in all respects, and duly signed by authorized signatory on all pages, is being submitted in ten hard copies. We also confirm that a soft copy in pdf format has been emailed to dpiit.144@gov.in. We understand that incomplete application will not be processed and summarily ignored.

3. We also confirm that we, M/s _____ (Name of the Bidder), and M/s (Name of Manufacturer/ Service provider/ Contractor, if different from bidder) are not currently debarred/blacklisted/banned by any Government entity in India.

4. We also confirm that signatory of this letter & application form is the authorized signatory of the _____ (Name of the Bidder). A copy of authorization letter is enclosed.

5. We understand that the registration granted by the Registration Committee shall be only for the purpose of bid participation under Rule 144(xi) of General Financial Rules, 2017. We also understand that validity period of Registration shall be 3 years from date of issue of registration letter. However, in case of appointment of new Director(s)/ new shareholders with more than 10% shares/ change in controlling ownership interest or control through other means, the registration shall automatically stand annulled.

(Name and Signature of authorized signatory of bidder
along with telephone number and email Id)

Appendix - A**Bidder's details for registration under Rule 144(xi) of GFR**

1.	Name of Bidder - as defined in the Department of Expenditure Order (Public Procurement No. 1) issued vide No.F.No.6/18/2019-PPD dated 23rd July, 2020	
2.	Type of business entity (Natural Person/ Private Limited Company/ Public Limited Company/ Sole Proprietorship/One Person Company/ Partnership firm/ Limited Liability Partnership/ Joint Venture/ Trust/ NGO/or any other type of entity) In case of incorporated entity - to attach certificate of incorporation.	
3.	Complete address of the Registered Office with contact person name, telephone number and email Id.	
4.	Whether registration is being sought as Manufacturer/ service provider/ contractor for supply of goods/ services / works or As an agent/reseller/distributor/member of consortium/ Branch Office/ Office Controlled by bidder/any subsidy of any artificial juridical person/ any other type of category) Bidder to give details in which category – registration is being sought.	
5.	In case bidder is seeking registration as manufacturer, complete address of the manufacturing premises with name, telephone number and email Id of contact person.	
6.	In case bidder is seeking registration as service provider/ contractor, complete address of the premises from where services are provided may be given with name, telephone number and email Id of contact person.	
7.	In case registration is being sought as an agent/reseller/distributor/Office controlled by bidder/ any other subsidy of any artificial juridical person /any other category other than manufacturers, service provider and contractor of above -the details of manufacturer/ service provider/ contractor may be furnished in Appendix-B.	
8.	The details of items (goods/ services / works) for which registration is sought as per Appendix- C.	

9. **Financial details# of the bidder in INR/ US Dollar** for last five financial years in the following format, duly certified by practicing Chartered Accountant (CA) in India:

Financial year (FY)	Net Sales turnover during the FY	Net Profit during the FY	Net worth at the end of the FY

Refer foot notes at the end of Appendix.

10. **Beneficial owners# of the bidder**, as defined in the Department of Expenditure Order (Public Procurement No. 1) issued vide No. F.No.6/18/2019-PPD dated 23rd July, 2020, in the following format, duly certified by practicing Chartered Accountant (CA) in India:

Beneficial owner details				
Name of the beneficial owner	% beneficial ownership	artificial juridical person/ entity	legal/artificial juridical person/ entity	details of such entities may be furnished and so on.

Refer foot notes at the end of Appendix.

Note:

1. The terminology "Works" in the entire document means "Works including turnkey works/ projects". Similarly, the terminology "Services" means "Consultancy as well as non- consultancy services".
2. Details of all beneficial owners having ownership more than that prescribed in Para 9 of Department of Expenditure Order (Public Procurement No. 1) issued vide No. F.No.6/18/2019-PPD dated 23rd July, 2020 are to be furnished.
3. In case beneficial owner is legal/ artificial juridical person/ entity, beneficial ownership details of such entities to the last natural person are to be furnished.
4. The details at serial number "9" and "10" should be on Chartered Accountant's letterhead indicating name, membership number and UDIN number.

Appendix - B

Manufacturer/ Service provider/ Contractor details for registration under Rule 144(xi) of GFR

(Note: The Appendix-B is to be filled up only in case Manufacturer/ Service provider/ Contractor is other not bidder, whose details have already been provided in Appendix -A)

1.	Name of manufacturer/ service provider/ contractor	
2.	Type of business entity (Natural Person/ Private Limited Company/ Public Limited Company/ Sole Proprietorship/ One Person Company/ Partnership firm/ Limited Liability Partnership/ Joint Venture/ Trust/ NGO/or any other type of entity) In case of incorporated entity - to attach certificate of incorporation.	
3.	Complete address of the Registered Office of manufacturer/ service provider/ contractor with contact person name, telephone number and email Id.	
4.	In case of manufacturer, complete address of the manufacturing premises with name, telephone number and email Id of contact person.	
5.	In case of service provider/ contractor, complete address of the premises from where services are provided may be given with name, telephone number and email Id of contact person.	
6.	Manufacturer/ service provider/ contractor's agreement with the bidder to seek registration under Rule 144(xi) of GFR and participate in public procurement in India, if any. Copy to be attached with the application.	

7. Financial details# of the manufacturer/ Service provider/ Contractor in INR/ US Dollar for last five financial years in the following format, duly certified by practicing Chartered Accountant (CA) in India:

Financial year (FY)	Net Sales turnover during the FY	Net Profit during the FY	Net worth at the end of the FY

Refer foot notes at the end of Appendix.

8. Beneficial owners# of the Manufacturer/ Service provider/ Contractor, as defined in the Department of Expenditure Order (Public Procurement No. 1) issued vide No. F.No.6/18/2019-PPD dated 23rd July, 2020, in the following format, duly certified by practicing Chartered Accountant (CA) in India:

Beneficial owner details				
Name of the beneficial owner	% beneficial ownership	Natural person or legal/ artificial juridical person/ entity	Country of Citizenship / Country of incorporation of legal/ artificial juridical person/ entity.	In case of legal/artificial juridical person/ entity, beneficial ownership details of such entities may be furnished and so on.

Refer foot notes at the end of Appendix.

Note:

1. The terminology “Works” in the entire document means “Works including turnkey works/ projects”. Similarly, the terminology “Services” means “Consultancy as well as non- consultancy services”.
2. Details of all beneficial owners having ownership more than that prescribed in Para 9 of Department of Expenditure Order (Public Procurement No. 1) issued vide No. F.No.6/18/2019-PPD dated 23rd July, 2020 are to be furnished.
3. In case beneficial owner is legal/ artificial juridical person/ entity, beneficial ownership details of such entities to the last natural person are to be furnished.
4. The details at serial number “7” and “8” should be on Chartered Accountant’s letterhead indicating name, membership number and UDIN number.

Appendix – C**Details of items (goods/ services / works) for which registration is sought**

1.	Description of items (goods/ services / works) for which registration is being sought.	
2.	Broad technical specification parameters/ details of items	
3.	Annual Capacity of bidder for each of the goods/ services / works for which registration is being sought.	
4.	Major public procuring entities in India for these items	

5. Details of contracts# received by the bidder in last 05 years from public procuring entities in India in the following format, duly certified by practicing Chartered Accountant (CA) in India:

Sr. No.	Description of goods/ services / works with broad technical parameters	Procuring entity details – Name and complete address of the Organization.	Purchase Order No., date, Qty and value	Status of the Order – Executed successfully/ under execution/ cancelled

Refer foot notes at the end of Appendix.

6. Details of contracts# received by the bidder in last 05 years from private procuring entities in India in the following format, duly certified by practicing Chartered Accountant (CA) in India:

Sr. No.	Description of goods/ services / works with broad technical parameters	Procuring entity details – Name and complete address of the Organization.	Purchase Order No., date, Qty and value	Status of the Order – Executed successfully/ under execution/ cancelled

Refer foot notes at the end of Appendix.

7. Details of outsourced components/goods and subcontracted works and services proposed to be used in execution of contract may be provided in the format given below:

Sr. No.	Details of outsourced components/ goods and subcontracted Works and services	Major technical parameters	Manufactured by /Subcontracted to	Country of Origin

Note:

1. The details at serial number “5” and “6” above are required to be furnished only for those goods/ services / works for which registration is being sought and for the same Manufacturer/ Service provider/ Contractor, whose details have been furnished in Appendix-B, if bidder is not Manufacturer/ Service provider/ Contractor. In case of large number of contracts, the details may be restricted to 20 (twenty) high value contracts.
2. The details at serial number “7” above are required to be furnished only for top 20 high value outsourced components/goods and subcontracted works and services.
3. Bidder can seek registration for multiple items in an application by providing requisite details for each of the item for which registration is being sought.
4. The details at serial number “5” and “6” should be on Chartered Accountant’s letterhead indicating name, membership number and UDIN number.

Details of bidder for security clearance**I. Details in respect of bidding company/person:**

SI No.	Name of company/person	Type of Company (Pvt. Ltd. /Pub. Ltd. /Sole Proprietorship/one person company/ partnership/ LLP/JV/Trust/ NGO etc.)	Country of registration in case of company/ nationality (if holding multiple nationality, all must be mentioned) in case of person	Registration number with date in case of company/pass port nos. and issue date in case of person	Registered office address and correspondence address in case of company/ Contact Address in case of person	Previous Name of the Company, if any	Details of earlier registration, if any (ref no. & date)

II. Details of beneficial ownership of entity:

SI No.	Name of company/individual which/who are the beneficial owner of bidding company	Country of registration, registration number with date in case beneficial owner is a company/nationality, passport number and issue date (if holding multiple nationality, all must be mentioned)in case beneficial owner is an individual	Registered office address and correspondence address in case of company/Contact Address in case of person	Details of intermediary company(s)/ persons between bidder company or person and beneficial owner company /individual	Enclose a chart depicting the link between bidding company/person and the beneficial company/owners along with details such as address, parentage, passport details (in case of individuals) or company registration details (in case of companies)

III. Details in respect of Directors of bidding Company:

SI No.	Full Name of Board of Directors	Present position held with date (since when)	Date of birth	Percentage name of father/mother)	Present & Permanent Address	Nationality (if holding multiple nationality, all must be mentioned)	Passport Nos. and issue date, if any.	Contact Address & telephone number

IV. Details of shareholders of bidding company (all companies/entities/individuals with more than 10% shares or having controlling ownership interest or exercising control through means in case of less than 10% shares):

SI No.	Full Name of individual / company	Parentage (name of father/mother) in case of individuals and registration number in case of companies	Permanent address /present address in case of individuals, and registered and correspondence address in case of companies	Present position held, if any, in the applicant company	Nationality , in case of individual (if holding multiple nationality, all must be mentioned) /country of registration , in case of company	Passport Nos. and date of issue, if any (date of birth, in case passport is not available) for individuals	% of shares held in the company

- V. **Details of tender(s) and specific goods/services/works proposed to be supplied:**
- VI. **Reasons for seeking registration with Registration Committee of DPIIT:** A brief note to be attached
- VII. **Details of nature of activities undertaken by bidding company/person:** A brief note to be attached
- VIII. **Details of nature of activities undertaken by beneficial owner of bidding company/person:** A brief note to be attached
- IX. Details of criminal cases, if any, against the bidding company, its director(s) or person as per annexure

Annexure to Appendix – D

Self-Declaration for bidding company and its director(s)/owners or person

- a. Name & address and registration number of the Company:
- b. Name and address of owners (in case of proprietorship firm)/directors of the company/person :
1. _____
2. _____
3. _____
4. _____
- c. Are the company owners (in case of proprietorship firm)/directors/person listed above, are the subject of any?
1. Preventive detention proceedings under Public Safety Act/National Security Act etc.
: Yes/No
2. Criminal Investigation in which charge sheet has been filed: Yes/No
- d. If, Yes, please provide following details
1. Case/FIR number :
2. Detention/warrant number, if any :
3. Police Station/district/agency:
4. Sections of law under which cases has/have been filed :
5. Name and place of the court:
- e. The above mentioned details are in respect of both India and any other foreign country.

(Signature)

Note: The above self-declaration is required to be filled and signed by the authorized signatory of the Company.

Appendix – E

Details of Manufacturer/Service Provider/Contractor for security clearance

(Note: The Appendix-E is to be filled up only in case Manufacturer/ Service provider/ Contractor is other not bidder, whose details have already been provided in Appendix -D)

I. Details in respect of Manufacturer/Service provider/Contractor:

SI No.	Name of company/ person	Type of Company (Pvt. Ltd. /Pub. Ltd. /Sole Proprietorship/ one person company/ Partnership/LLP /JV/ Trust/NGO etc.)	Country of registration in case of company/ nationality (if holding multiple nationality, all must be mentioned) in case of person	Registration number with date in case of company/passport nos. and issue date in case of person	Registered office address and correspondence address in case of company/ Contact Address in case of person	Previous Name of the Company, if any	Details of earlier registration, if any (ref no. & date)

II. Details of beneficial ownership of Manufacturer/Service provider/Contractor:

SI No.	Name of company/individual which/who are the beneficial owner of bidding company	Country of registration, registration number with date in case beneficial owner is a company/nationality, passport number and issue date (if holding multiple nationality, all must be mentioned) in case beneficial owner is an individual	Registered office address and correspondence address in case of company/Contact Address in case of person	Details of intermediary company(s)/persons between bidder company or person and beneficial owner company/individual	Enclose a chart depicting the link between manufacturing company/ person or service provider or contractor and the beneficial company /owners along with details such as address, parentage, passport details (in case of individuals) or company registration details (in case of companies)

III. Details in respect of Directors of Manufacturing Entity/Individuals/Service Provider/Contractor:

SI No.	Full Name of Directors	Present position held with date (since when)	Date of birth	Percentage (name of father/mother)	Present & Permanent Address	Nationality (if holding multiple nationality, all must be mentioned)	Passport Nos. and issue date, if any.	Contact Address & telephone number

IV. Details of shareholders of Manufacturer/Service provider/Contractor (all companies/entities/individuals with more than 10% shares or having controlling ownership interest or exercising control through means in case of less than 10% shares):

Sl. No.	Full Name of individual /company	Parentage (name of father/mother) in case of individuals and registration number in case of companies	Permanent address /present address in case of individuals, and registered and correspondence address in case of companies	Present position held, if any, in the applicant company	Nationality, in case of individual (if holding multiple nationality, all must be mentioned)/country of registration, in case of company	Passport Nos. and date of issue, if any (date of birth, in case passport is not available) for individuals	% of shares held in the company

- V. **Details of tender(s) and specific goods/services/works proposed to be supplied:**
- VI. **Reasons for seeking registration with Registration Committee of DPIIT:** A brief note to be attached
- VII. **Details of nature of activities undertaken by bidding company/person:** A brief note to be attached
- VIII. **Details of nature of activities undertaken by beneficial owner of bidding company/person:** A brief note to be attached
- IX. Details of criminal cases, if any, against the bidding company, its director(s) or person as per annexure

Annexure to Appendix – E

Self-Declaration for manufacturer/service provider/contractor and its director(s)/owners or person

- a. Name & address and registration number of the Company :
- b. Name and address of owners (in case of proprietorship firm)/directors of the company/person :
- _____
 - _____
 - _____
 - _____
- c. Are the company owners (in case of proprietorship firm)/directors/person listed above, are the subject of any?
- Preventive detention proceedings under Public Safety Act/National Security Act etc. : Yes/No
 - Criminal Investigation in which charge sheet has been filed: Yes/No
- d. If, Yes, please provide following details
- Case/FIR number :
 - Detention/warrant number, if any :
 - Police Station/district/agency:
 - Sections of law under which cases has/have been filed :
 - Name and place of the court:
- e. The above mentioned details are in respect of both India and any other foreign country.

(Signature)

Note: The above self-declaration is required to be filled and signed by the authorized signatory of the Company.