

**SYAMA PRASAD MOOKERJEE PORT, KOLKATA
(ERSTWHILE KOLKATA PORT TRUST)
HALDIA DOCK COMPLEX**



ENGINEERING DEPARTMENT INVITE E-TENDER

[Tender No. SDM (P&E)/T/73/2020-2021

&

E-Tender No. 2020_KoPT_596862_1]

FOR

Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata.

November – 2020

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

HALDIA DOCK COMPLEX

SHORT E-TENDER NOTICE

E-Tender No. 2020_KoPT_596862_1

Online e-tenders are invited for the work of “Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata”.

Date of Pre-Bid meeting: **23.11.2020, 11:00 Hrs. (IST) onwards.**

Closing date & time of online submission of e-tender : **03.12.2020, up to 15:00 Hrs. (IST)**

For details of tender and any corrigendum / addendum, please visit CPPP's e-portal <https://eprocure.gov.in/eprocure/app>

**General Manager (Engineering)
Haldia Dock Complex
SMP, Kolkata**

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

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

(Tender No. SDM (P&E)/T/73/2020-2021)

E-Tender No. 2020_KoPT_596862_1

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 **Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of 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 2,28,26,281.00**. 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.

- 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 3,04,35,041.00** each.
Or
- b) Two similar completed works of contract value not less than **Rs 3,80,43,801.00** each.
Or
- c) One similar completed work of contract value not less than **Rs 6,08,70,082.00**

The term “*similar works*” means –

“Supply, installation, testing and commissioning of HT (not less than 3.3 kv) installations along with allied works at Port Sectors / Central Govt. / State Govt. / PSU / other reputed organisations”.

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** The bidders upload scanned copy of valid Electrical Contractor’s License.

2.2 DOCUMENTS

2.2.A. ESSENTIAL DOCUMENTS:

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

Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata.

- a) Scanned copies of **Audited Balance Sheets and Profit & Loss Accounts for the years 2017-18, 2018-19 and 2019-20.**
- 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) 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 **Kolkata Port Trust** 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 **MSEs registered with NSIC under Single Point Registration scheme/DIC.**

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 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.smpportkolkata.shipping.gov.in> of SMP Kolkata [erstwhile Kolkata Port Trust].

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 CPPP (<https://eprocure.gov.in/eprocure/app>) only.

**General Manager (Engineering)
Haldia Dock Complex
SMP, Kolkata**

Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata.

SCHEDULE OF TENDER (SOT)

(Tender No. SDM (P&E)/T/73/2020-2021)

E-Tender No. 2020_KoPT_596862_1

3.1.	Name of work	::	Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of 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://eprocure.gov.in/eprocure/app of CPPP No physical tender is acceptable by Haldia Dock Complex, SMP, Kolkata.
3.4.	Estimated Cost	::	Rs 7,60,87,603.00 (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, Haldia Dock Complex 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.
	ii) Earnest Money Deposit (EMD)	::	The intending bidders must deposit Rs 15,21,752.00 (Indian Rupees: Fifteen lakh twenty one thousand seven hundred fifty two) only , as Earnest Money, to Haldia Dock Complex, through DD/Banker Cheque in favour of Syama Prasad Mookerjee Port, Kolkata, Haldia Dock Complex on any Scheduled/Nationalized Bank payable at Haldia , otherwise their offer will be summarily rejected. Alternately the intending bidder may deposit an amount of Rs.10,00,000.00 through DD/Banker Cheque in favour of Syama Prasad Mookerjee Port, Kolkata on any Scheduled/Nationalized Bank payable at Haldia, and the balance amount of Rs 5,21,752.00 in the form of Bank Guarantee valid for 180 days with a further claim period of three(3) months.

Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata.

			<p>Copy of the DD/Banker's Cheque/Bank Guarantee should be uploaded.</p> <p>In case the said Earnest Money is not deposited by the bidder, the respective bid will be summarily rejected, treating the same as non-responsive.</p> <p>Account details of HDC, SMP Kolkata for purpose of Bank Guarantee is indicated below.</p> <p>Account No.:-1604050000064</p> <p>Name:-HALDIA DOCK COMPLEX</p> <p>IFSC Code:-UTBIOHDCF75</p> <p>MICR Code:-721027006</p>
			<p>NOTE ::</p> <p>For exemption of Bid Document Fee and EMD to upload the scanned copy of the MSEs registered with NSIC under Single Point Registration scheme/DIC.. But all the NSIC/DIC registered firms are not exempted from depositing Tender Fee and Earnest Money. Only those firms, having documents of such exemption for the entire tendered work (as per the Bill of Quantity) would be exempted. Documentary evidence must be uploaded for claim of such exemption, failing which their tender would be summarily be rejected.</p>
			<p>(ii) Earnest money and cost of tender document are to be physically deposited at the office of Tendering Authority (Sr. Dy. Manager [P&E Div.], 1st floor at Operational Administrative Building of Haldia Dock Complex, Chiranjibpur, Haldia, PIN 721607), separately in a single sealed envelope, mentioning Tender no. with proper marking.</p> <p>Demand Draft / Banker's Cheque against Earnest money and cost of tender document, should be submitted/deposited on any scheduled/ nationalized Bank, by the bidder in favour of Syama Prasad Mookerjee Port, Kolkata, Haldia Dock Complex payable at Haldia before opening of the tender, as specified in the Tender Document.</p>
3.6.	Completion Period	::	9 (nine) months
3.7.	Bid Validity	::	180 days.
3.8.	Performance Bank Guarantee / Security Deposit	::	10 % of the Contract Value (excluding GST) for completion period & guarantee period (24 months) for complete project in the form of Bank Guarantee.
3.9.	Guarantee Period	::	24 months for complete projects.
3.10.	Date, time and venue of Pre-Bid Meeting (off-line).	::	<p>23.11.2020, 11:00 Hrs. (IST) onwards.</p> <p>Office of Sr. Dy. Manager (P&E); Operational Administrative Building, Haldia Dock Complex, SMP, Kolkata</p> <p>Chiranjibpur; P.O. Haldia;</p>

Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata.

			Dist. Purba Medinipur; PIN: 721 604; West Bengal; India.
3.11.	i) Starting date & time of submission of e-Tender at https://eprocure.gov.in/epr/ocure/app	::	25.11.2020 from 11:00 Hrs. (IST).
	ii) Closing date & time of submission of e-Tender at https://eprocure.gov.in/epr/ocure/app	::	03.12.2020 up to 15:00 Hrs. (IST).
	iii) Date & time of opening of Part-I (Techno-commercial Bid)	::	04.12.2020, 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 (Erstwhile 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. Address: 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 K. Mukhopadhyay, Designation : Sr. Dy. Manager (P&E), Operational Administrative Building (1 st floor), SMP, Kolkata, Haldia Dock Complex, Chiranjibpur; P.O: Haldia; Dist. Purba Medinipur; PIN: 721 604; West Bengal; India. Telephone no. : + 91-3224-252713 Mobile no. : + 91 94340 62312 E. mail : koushikm.hdc@kolkataporttrust.gov.in

General Manager (Engineering)
Haldia Dock Complex

Syama Prasad Mookerjee Port, Kolkata

Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata.

SECTION – IV

Important instructions for E-procurement

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.

4.1.2 Further, bidders are requested to go through the following information and instructions available on the CPP Portal <https://eprocure.gov.in/eprocure/app> before responding to this e-tender:

- Bidders Manual Kit
- Help for Contractors
- FAQ

Contact person (Haldia Dock Complex):

- (i) Shri K. Mukhopadhyay,
Designation: Sr. Dy. Manager (P&E),
Mobile No.: + 91 94340 62312
Landline: + 91-3224-252713
E-mail : koushikm.hdc@kolkataporttrust.gov.in
- (ii) Shri M. Maji,
Designation: Asst. Manager (P&E)
Mobile No.: + 91 9800366397
E-mail : mmaji.hdc@kolkataporttrust.gov.in

Contact persons (CPP Portal):

- (i) Shri Nazmush
Mob: +91 95632 51950
E-mail: webhelpdesk@gmail.com
- (ii) **See CPP Portal for contact details.**

- 4.2 4.2.1** All entries in the tender should be entered in online Technical & Commercial Formats without any ambiguity.
- 4.2.2** E-tender cannot be accessed after the due date and time mentioned in NIT. The process involves Electronic Bidding for submission of Tender Document Fee and EMD, Techno-Commercial Bid as well as Price Bid.
- 4.2.3** SMP, Kolkata 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.
- 4.2.4** Any order resulting from this tender shall be governed by the terms and conditions mentioned therein.
- 4.2.5** No deviation to the technical and commercial terms & conditions are allowed.
- 4.2.6** The bidders must upload all the documents required as per terms of tender. Any other document uploaded which is not required as per the terms of the tender shall not be considered.
- 4.2.7** The bid will be evaluated based on the filled-in technical & commercial formats. Price bid must be filled-up in EXCEL Sheet through CPP PORTAL (which is uploaded by SMP, Kolkata).

- 4.2.8** Bidder has fully read and understood the entire Tender Document, GCC, Corrigendum and Addenda, if any downloaded from under the instant e-tender and no other source, and will comply to the said document, GCC, Corrigendum and Addenda” .
A declaration in this regard is to be made by the bidder.
- 4.2.9** (A) Tender will be opened electronically on specified date and time as mentioned in the NIT. Bidder’s can witness electronic opening of Bid.
- (B) Necessary addendum/corrigendum (if any) of the tender would only be hoisted in the CPP Portal.
- (C) EMD & Tender Fee should reach this office physically before opening of Tender document, failing which techno-commercial bid will not be opened.
- (D) EMD & Tender Fee details are to be treated as essential documents should upload with the other essential documents.

4.3 Instructions related to Micro & Small Enterprises (MSEs):

- 4.3.1** **MSEs registered with NSIC under Single Point Registration scheme/DIC are exempted from depositing Tender Fee and Earnest Money. But all the NSIC/DIC registered firms are not exempted from depositing Tender Fee and Earnest Money. Only those firms, having documents of such exemption for the entire tendered work (as per the Bill of Quantity) would be exempted. Documentary evidence must be uploaded for claim of such exemption, failing which their tender would be summarily be rejected.**
- 4.3.2** When splitting of tender quantity is not possible purely on technical ground, Trustees reserve the right not to negotiate price with MSE if their price is within the band of L1+15% in comparison with L1 price of non-MSE for consideration of award of order for 20% of tender quantity against any item as per new public procurement policy.
- 4.3.3** **If Micro & Small Enterprises (MSEs), NSIC under Single Point Registration scheme/DIC intend to participate with respect to items for which they are not registered with NSIC, then they will have to deposit full amount of Bid Document Fee and Earnest Money, in accordance with the Schedule of Tender (SoT). Otherwise, their offer with respect to such items (for which they are not registered with NSIC) will not be considered.**

4.4 Other Instructions related to e-Procurement:

- 4.4.1** All notices and correspondence with the bidder(s) shall be sent by e-mail only during the process till finalization of tender by HDC, SMP Kolkata. Hence, the intending bidders are required to ensure that their e-mail IDs provided are valid and updated at the stage of registration of bidders with CPPP (i.e., Service Provider). The intending bidders are also requested to ensure validity of their DSC (Digital Signature Certificate).
- 4.4.2** In all cases, an intending bidder should use their own ID and Password, along with Digital Signature, at the time of submission of their bid. It is mandatory that all bids are submitted with Digital Signature Certificate (DSC), otherwise the same will not be accepted by the system.
- 4.4.3** Addenda, Corrigenda and Queries & Clarifications (with respect to the instant e-Tender), if any, would be hosted in the e-Procurement portal of CPPP.

Since there is no provision to take out the list of intending bidders downloading the bidding documents from the websites mentioned in the Tender Notice, the intending bidders are requested to check the website of CPPP to ensure that they have not missed

any Addenda, Corrigenda and Queries & Clarifications, uploaded against the instant e-Tender, after downloading the bidding documents. The responsibility of downloading such Addenda, Corrigenda and Queries & Clarifications, if any, will be that of the intending bidders.

- 4.4.4** No deviation/variation of the techno-commercial terms and conditions of the bidding documents will be considered by HDC, SMP Kolkata. Submission of bid in the e-Tender platform by any bidder confirms their acceptance of the techno-commercial terms and conditions of the bidding documents.
- 4.4.5** HDC, SMP Kolkata reserves the right to accept or reject any bid (in full or part) and to annul the bidding process and to reject all bids, at any time prior to contract award, without assigning any reason thereof and without thereby incurring any liability to the bidders.
- 4.4.6** Any order resulting from this open e-Tender shall be governed by the terms and conditions mentioned therein.
- 4.4.7** All electronic bids submitted during the e-Tender process shall be legally binding on the bidders. Any bid will be considered as the valid bid offered by that bidder and acceptance of the same by HDC, SMP Kolkata will form a binding contract, between HDC, SMP Kolkata and the bidder, for execution of the work. Such successful bidder shall be called hereafter the 'CONTRACTOR'.
- 4.4.8** The bids will be evaluated based on the filled-in Technical & Commercial formats and the requisite documents submitted (uploaded) by the bidders.
- 4.4.9** The documents uploaded by bidder(s) will be scrutinized. During scrutiny, in case any of the information furnished by the bidder is found to be false, Earnest Money Deposit of such defaulting bidder(s) will be forfeited. Punitive action, including suspension and banning of business, can also be taken against such defaulting bidder(s).
- 4.4.10** HDC, SMP Kolkata, at its discretion, may extend the closing date & time of e-Tender, prior to the closing date & time of e-Tender mentioned in the Schedule of Tender (SoT). However, the closing date & time of e-Tender will not be extended, under any situation, after the due date is over.

4.5 Opening of Part-I (i.e. Pre-qualification & Techno-commercial Bid) and Part-II (i.e. Price Bid) :

- 4.5.1** **Part I** (Pre-qualification & Techno-commercial Bid) will be opened electronically on specified date and time, as given in the Schedule of Tender (SoT). Bidder(s) can witness electronic opening of bid(s).
- 4.5.2** **Part II** (Price Bid) will be opened electronically of only those bidder(s), who qualify (ies) in the "Pre-qualification & Techno-commercial Bid" [Part I]. Such bidder(s) will be intimated date of opening of Part II (Price Bid), through e-mail, to valid e-mail ID(s) confirmed by them.

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 (erstwhile 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 technical scope of work, 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.smporkolkata.shipping.gov.in/> of SMP Kolkata (erstwhile 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://eprocure.gov.in/eprocure/app> 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 CPP 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 CPP 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 CPP 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)

5.16.1 The intending bidders should deposit an amount specified in the **Schedule of Tender (SOT)**, as **Earnest Money Deposit (EMD)**, in accordance with the procedure mentioned therein.

5.16.2 Failing to deposit the Earnest Money, in accordance with ITB, shall be rejected by the Employer (SMP Kolkata), treating the same as non-responsive.

For exemption of EMD the bidder is required to upload the scanned copy of MSEs registered with NSIC under Single Point Registration scheme/DIC. But all the NSIC/DIC registered firms are not exempted from depositing Tender Fee and Earnest Money. Only those firms, having documents of such exemption for the entire tendered work (as per the Bill of Quantity) would be exempted. Documentary evidence must be uploaded for claim of such exemption, failing which their tender would be summarily be rejected.

5.16.3 Refund of Earnest Money Deposit:

Earnest Money Deposit of the successful bidder shall be retained by SMP Kolkata and Earnest Money Deposit of the unsuccessful bidders [including the bidder(s) whose Price Bid would not be opened in line with **ITB**] shall be refunded, without interest, within 2 (two) months from the date of opening of Price Bids or on finalization/acceptance of tender, whichever is earlier.

In case the bid of the **successful bidder** is found acceptable to **SMP Kolkata** and contract is awarded with them, the **Earnest Money Deposit** of the **successful bidder (Contractor)** shall be retained by **SMP Kolkata** till submission of **Performance Guarantee / Security Deposit** (in accordance with **ITB**) and signing of the **Contract Agreement** by **SMP Kolkata** and the Contractor (in accordance with **ITB**), and shall be refunded thereafter.

In case, the successful bid is not found acceptable to SMP Kolkata, Earnest Money Deposit of the successful bidder shall be refunded after the decision, in this regard, is finalized by SMP Kolkata.

5.16.4 No interest shall be payable on the account of Earnest Money Deposit in any case.

5.16.5 Forfeiture of Earnest Money Deposit :

The EMD may be forfeited

- (a) if a Bidder withdraws their offer within the validity period of the bid / offer; and / or, alters / amends any terms and / or condition and / or quoted rate(s), within the validity period of the offer (excepting when option to do the same has been specifically granted by Kolkata Port Trust, Haldia Dock Complex in writing) making it unacceptable to the Kolkata Port Trust, Haldia Dock Complex;

or,

- (b) if the successful bidder,
- i) fails to submit the Performance Guarantee / Security Deposit (as per SCC) for the specified sum and in the specified form, within the stipulated time;
- and / or,
- ii) fails to carry out the work or to perform / observe any of the conditions of the contract,

For the purpose of this provision, the validity period (of the bid / offer) shall include any / all extension thereof, agreed by the Bidder in writing. SMP Kolkata shall also be at liberty to deduct any of their dues from Earnest Money. It should be however be clearly understood that in case of any default in any terms and or condition of the contract after placement of order but before submission of Performance Guarantee / Security Deposit (as per SCC), the same shall be dealt with in accordance with the relevant provisions of contract, including forfeiture of Earnest Money.

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 CPP 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 (erstwhile 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://eprocure.gov.in/eprocure/app> 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 **CPPP** 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 and 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 , GCC and SCC** 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** During Techno-Commercial evaluation, i.e. evaluation of Part - I of tender, an offer shall be considered **non-responsive** in case :-
- a) Requisite Earnest Money is not deposited
 - b) Requisite Bid Document Fee is not paid.
 - c) Valid NSIC Certificate for MSEs along with DIC's (DISTRICT INDUSTRIES CENTRE)
 - d) Certificate is not submitted, in case of exemption from depositing Bid Document Fee and Earnest Money.
 - e) Any indication of quoted price anywhere in the document(s) uploaded by the bidder.

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 Evaluation criteria and selection of Successful Bidder

Evaluation with respect to Priced Bill of Quantities (BoQ) :

- 5.32.1** While evaluating the Price Bid, the unit rates quoted by the Bidders against all items, including all other charges except GST, shall be considered for evaluation.

The unit rates, quoted by the Bidders, against each item will be multiplied by the respective quantity indicated in the BoQ to obtain the amount against each item.

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.

5.32.3 The total prices will be evaluated based on price quoted at Part A and Part B.

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 **Kolkata Port Trust** 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) along with relevant documents.

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.

SECTION – VI

TECHNICAL SPECIFICATION

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 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 there in.
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. MCCB's shall have double insulation, load line reversibility feature and with positive isolation.
(Very important for personal safety)
23. 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.
24. 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.
25. All measuring and indicating instruments shall be protected through MCB's of 0.5 Amps rating.
26. General arrangement drawing of the switchboard, LT/HT switchgear shall be got approved by the Engineer before commencement of manufacturing.

27. 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.
28. Ratings, sizes and quantities shall be checked and considered for satisfactory operation of electrical system complete in all respect.
29. Conduits, Switchboards, Sockets to be provided on walls shall be open type unless specifically approved by Engineer.
30. Conduits on ceiling in existing system may be provided on surface and in new construction shall be open type.
31. All measuring and indicating instruments shall be protected through MCB's and isolating switches.
32. Breaker shall have LCD display to show the metering and protection parameters.
33. All the HT Panel connected at various locations in the lock gate to be integrated to SCADA, which will be installed tentatively at main substation. The location may be changed as per site requirement. Each switchboard should have Ethernet switch with dual FO Port and each substation needs to be connected through FO Cable in ring topology. It is important that every equipment is tested fully before dispatch.
34. The switchgear housing shall be heat resistant and having high impact strength. The terminal shall be protected against finger contact to IP2X degree of protection.
35. 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 switchgear panels should be compliant to IEC 62271-200. And should be classified as IAC 26.3ka/1 sec, AFLR. Switchgear panels should be complete with factory fitted arc duct for evacuation of hot gases / plasma in the event of an internal arc flash. The offered VCB should be as per IEC 62271-100 and tested for E2, M2, C2 duty cycles. All panels shall be suitable for 45°C ambient temperature.
36. Equipments 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.
37. 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.
38. It is important that every equipment is tested fully before dispatch.
39. 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.
40. 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.

41. All fees payable to concerned authorities and other local bodies if any shall be paid by the contractors.
42. 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.
43. 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.
44. Contractor shall have a valid "A" class electrical contract licence with HT installation issued by appropriate authorities.
45. Test certificates both type test and routine tests wherever required shall be furnished along with supply for all Electrical/Mechanical items as per the relevant standard.
46. Inspection / acceptance, in no way shall absolve the contractor from supplying material as per standards / codes and warranty or other obligations under the contract.
47. 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.
48. All electrical works shall be tested by the contractor in the presence of TPI Agency and to the entire satisfaction as per IE Rules.
49. Data to be furnished by the bidder after award of order
- a) The contractor shall submit detail shop/fabrication/layout drawings for equipments.
 - 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 equipments 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 equipments.

- 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

- 2.0** The scope of work includes supply, installation, testing and commissioning of HT / LT Switch Gears, Transformers, HT / LT Cables with end termination, DC system with maintenance free Battery, earthing system with copper / GI flat, control cable and removal dismantle transit and storage site etc.. The subject work shall be carried out as per IER with relevant IS / BIS standard and also fulfill the requirement of CEA. The successful Contractor shall submit the manufacturer's drawing based on the technical specification and relevant standard for approval from the Engineer for all the above items before commencement of manufacturer / fabrication and supply. Also, HDC engaged the TPI agency for carrying out the stage / final inspection at manufacturer's works / site based on the QAP which is approval by Engineer / TPI agency. The scope also includes that the Contractor shall arrange Central Electricity Authority (CEA) for certification for complete electrical installation and HDC will assist.

- 2.1** The scope of location wise HT cubicle Distribution Panel are tabulated below :

TABLE-I

Location	Nomenclature	Details of VCB/VC						Total
		Incomer		Bus coupler		Outgoing		
		VCB		VCB		VCB		
		1250A	630 A	1250A	630A	1250A	630A	
Lock main substation [power distribution panel)]	HT PCC-1	2		1		8		11
Machinery House MH-1 (outer)	HT PDB-2A		1				3	4
Machinery House MH-2 (intermediate)	HT PDB-2B		2				2	4
Machinery House MH-3 (inner)	HT PDB-2C		1				4	5
Impounding Pump House	PDB-3		2				3	5
	Total	2	6	1		8	12	29

2.2 Tentative LT Feeders Layout : The scope of location wise LT cubicle Distribution Panel are tabulated below :

TABLE - II

Location	Nomenclature	Details of ACB/MCCB/MCB															Total
		Incomer					Bus coupler		Outgoing								
			ACB/MCCB				ACB /MCCB		ACB			MCCB			MCB		
		1600 A ACB	800 A ACB	630A ACB	400 A MCCB	125 A MCCB	1600 A ACB	800 A ACB	630A ACB	800 ACB	630A ACB	400 A	250 A MCCB	125 A MCCB	63 A	32 A	
Lock main substation	PCC-1	2					1			3	12						18
Lock main substation	PDB-1			3					1			8	6	6			24
Machinery House MH-1 (outer)	PDB-2A		2					1			2	8	8	3			24
Machinery House MH-2 (intermediate)	PDB-2B		2					1			2	8	8	3			24
Machinery House MH-3 (inner)	PDB-2C		2					1			2	8	8	3			24
Riverside sub- station	PDB-3			2					1			3	6	6	6		24
Impounding Pump House	PDB-4				1									3	7	3	14
RG-1&3 and PS-1&3	PDB-5					1									4	3	8
RG-9&11 and PS-9&11	PDB-6					1									5	2	8
	Total	2	6	5	1	2	1	3	2	3	18	35	36	24	22	8	168

2.3 LOCK ENTRANCE SUB-STATION :-

Equipments, as mentioned hereunder, shall be supplied, delivered, erected / installed inside sub-station of Lock Entrance as per approved layout plan.

(a) Electrical Works (Supply, Delivery, Installation Testing & Commissioning) at Lock Entrance Sub-station and Machine Houses :

- 1) 2 Nos. 3.3/0.433 kV, 1 MVA Oil type Transformer.
- 2) HT Panels, as per Table-I :
 - a) 1 No. 3.3 kV, 1250A, VCB Panels (11 Sets) (HT PCC-1).
 - b) 4 Nos. 3.3 kV, 630 Amps, VCB Panels (HT PDB-2A, HT PDB-2B, HT PDB-2C & HT PDB-3).

- 3) 3.3kV (UE) XLPE, 1C X 1000 Sq.mm., Screened, Aluminium, armoured cables along with heat shrinkable cable end terminations :
From newly supplied 3.3kV VCB Panel to newly supplied 2 nos. 33/3.3kV, 6MVA transformer as mentioned above (4 Run of 1C x 1000 Sq.mm.).
- 4) 3.3 kV (UE) XLPE, 3C X240 Sq. mm., PVC Sheathed, Aluminium, armoured cables along with heat shrinkable cable end terminations :
From newly supplied 3.3 kV VCB Panel installed at Sub-Station to newly supplied 3.3 kV VCB Panel installed at Machine Houses.
- 5) 3.3 kV (UE) XLPE, 3C X150 Sq. mm., PVC Sheathed, Aluminium, armoured cables along with heat shrinkable cable end terminations :
From newly supplied 3.3 kV VCB Panel installed at one Machine House to newly supplied 3.3 kV VCB Panel installed at another Machine House.
- 6) LT Panels, as per Table-II :
 - a) 1 No. LT Panel, 1600A (PDB-1)
 - b) 3 Nos. LT Panel, 800A (PDB-2A, 2B & 2C)
 - c) 2 Nos. LT Panel, 630 A (PDB-1 & 3)
 - d) 1 No. LT Panel, 400 A (PDB-4)
 - e) 2 No. LT Panel, 125 A (PDB-5 & PDB-6)
- 7) LT APFC (Microprocessor Based) capacitor panels with capacitor bank of 400 kVAR rating at Lock Sub-Station.
- 8) 1.1 kV aluminium armoured XLPE cables along with cable end terminations from newly supplied LT panel, 1600A as mentioned above to newly supplied LT APFC (Microprocessor Based) capacitor panel (Single Core 4 Run of 630 Sq.mm.).
- 9) 2 sets of 4 (four) Runs of Single Core 1.1 kV Grade XLPE Insulated Aluminium Conductor Cable of 630 Amps. Capacity from newly supplied 3.3/0.433 KV, 1 MVA Oil type Transformer (02 Nos.) to LT Panel (Incomer).
- 10) 1.1 kV (UG) XLPE, 3.5C X 240 Sq. mm , 3.5C X 150 Sq. mm & , 3.5C X 95 Sq. mm PVC Sheathed, Aluminium, armoured cables along with heat shrinkable cable end terminations :
From newly supplied LT Panel installed Sub-Station to newly supplied LT Panel installed Machine Houses, Outgoing feeders etc.
- 11) Battery Bank and battery chargers for Control supply to HT Panels.
- 12) Plate Earthing of all Electrical Installations and Electrical Equipment.
- 13) Fixing of GI cable trays of suitable size.

(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.

(c) Salient Points.

- a. Equipment installation layout, SLD of HT/LT panels, Cable schedule 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 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.

(d) Electrical Drawings :-

Submission of following drawings for approval by Engineer prior to site activity:-

- i) Typical Single Line Diagram for all HT & LT Panels.
- ii) Typical Layout for all HT & LT Panels.
- iii) Cable schedule
- iv) Submission of equipment GA, Datasheet, QAP, Catalogue etc.
- vii) Earth pit and Earthing layout.

The “Scope of Work” also includes following work :

- a) The scope of work includes Design, Fabrication, Supply, Installation, Testing and Commissioning of HT Panels including necessary standard protective device as per TABLE-I and LT Panels including necessary standard protective device as per TABLE-II and Installation of the same at the mentioned locations.
- b) Construction of RCC cable trench with removable top cover size 650mmx650mm for HT & LT cable laying in ring main distribution topology between sub-station to machine houses as per enclosed drg. Laying, testing and commissioning of HT Cables from substation to MH Houses etc..Job includes supply and installation of Hume and GI wherever applicable.
- c) Supply, installation ,testing and commissioning of HT straight through and indoor heat shrinkable type end termination kit. Job includes supply and installation of all materials required for execution of the job.
- d) Providing earthing system, using size 600 mm X 600 mm X 3.15 mm Copper flat plate buried in ground in a depth of 2 m. from ground level with alternate layer of charcoal & salt, including supply & fixing of 50 mm dia perforated GI pipe funneling for watering purpose and construction of masonry pit with metal cover, as per IS: 3043 as detailed in 'Technical Specification'. Supply and Installation of Hot Dip Galvanized (100 micron) flats of size 50 X 6 mm for earthing connections.
- e) Supply, installation, testing and commissioning of 12 core Fiber Optic cable for SCADA communication.
- f) Design, supply, installation, testing and commissioning of SCADA or PC BASED VISUALIZATION & CONTROLLING SOFTWARE System for centralized monitoring & Control with limited access control provision at main lock sub-station provided by HDC authority.
- g) All the HT & LT Panels connected at various locations in the lock gate to be integrated to SCADA, which will be installed at main substation. Each switchboard should have Ethernet switch with dual FO Port and each substation needs to be connected through FO Cable in ring

topology. It is important that every equipment is tested fully before dispatch.

- a) Supply and Installation of Hot Dip Galvanized (100 micron) Angle and channels of size 6 mm for repairing existing cable trench supports inside sub-station as per Technical specification. Job includes cutting fabrication as per site condition.
- b) Supply of 2 sets of Megger 2.5kV Hand operated (0-5000Ohms)
- c) Supply & installation of 6 sets of safety equipments like CO2 fire extinguishers, First Aid box, etc. as per CEA norms, for all substations.
- d) Supply & installation of 40 nos. HT (11kV grade) rubber mats [2Mtrs.x 1Mtrs.]
- e) Removal / dismantling, loading / unloading, transporting of existing HT BOCB (21Nos.) & LT Panel (07 sets.), HT isolators 06 (nos.), HT & Cables from existing sub-station and depositing the same at the store of HDC.
- f) Removal / dismantling, loading & unloading, transporting of existing Transformers 3.3KV/0.415kv, 500KVA (02Nos.) and 3.3KV/0.415KV,200KVA (02Nos.) Oil type from existing sub-station and depositing the same at the store of HDC.

DETAILED TECHNICAL DATA

3.0 HT Vacuum Circuit Breaker (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.
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 1000 V 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

The HT Panel should be SCADA compatible of latest model, with basic insulation level (BIL) 95 kV /38 kV and should have correspondingly phase-phase and phase-neutral clearances. Panel manufactured by OEM (original equipment manufacturer) only is **acceptable**. **Panel offered from channel partner or franchise of OEM is not acceptable**. Manufacturer of Vacuum Interrupter, Breaker, Finished Switchgear Panel, Numerical relay should be of same make. Any Partner / Franchise Panel is not acceptable.

- 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.
- The VCB shall be horizontally isolated, horizontally drawn-out type, truck mounted and ground operated.
- . Enclosure shall be conform to the Degree of protection IP-52 as per IEC 60529. The design shall be such that failure of one panel shall not affect the adjacent units. The switchgear panel shall be arc proof version and as per DIN VDE 0670 part 601, IEC 694/IEC -298.
- The incoming & outgoing cable shall be terminated through CBCT of suitable size and also suitable provision shall be made in the HT panel board for extension on either side for future expansions.
- Structural framework with foundation / fixing bolts, etc. at the bottom: slotted for mounting of panels directly on concrete / steel channel base.
- Envelope shall be of CRCA sheet of thickness 2 mm and cable Gland plate of 3 mm thick, removable type and split in the middle.
- Painting: Surface cleaning by seven tank process & emulsion cleaning, pickling with dilute acid, washing and rinsing by water, phosphating and oven drying, one coat of zinc chromate primer, putty application, two coats of synthetic enamel.
- Panel doors and removable covers shall be provided with Neoprene/ EPDM - gaskets all around the edges. All doors shall have padlocking arrangements.
- Each cubicle shall be separated from adjacent one by sheet steel barrier excluding busbar chamber. Bus connection from Main busbar compartment to Individual breaker compartment and cable compartment shall be through resin cast bushing assembly.
- Bus Cubicle doors (if hinge door present at bus chamber) should not get open unless associated switching devices are in OFF position. Mechanical & Electrical indications of switching devices: Mechanical indication of Spring Charged/ Discharged and Breaker ON / OFF shall be provided. Electrical indication for Service (when withdrawn, power and auxiliary circuits connected)/ Test position (when withdrawn, only auxiliary circuits connected).
- Mechanical & electrical safety interlock shall be provided to prevent the circuit breaker from being raked in or out of the service position when the breaker is closed.
- Special tool box shall provide for operation and Maintenance: Complete set [(one set) including multimeter (ENERCON make) , insulation tester (meggar make) & earth tester (meggar make)].
- 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.
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 (30V 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.
- 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.

iii) The switchgear panel shall have following safety features:

- HT Switchgear Panel shall be type tested for Internal Arc 26.3 kA / 1 Second for AFLR-PM with loss of service continuity – LSC (2B).
- Enhanced operator's safety with touch proof dead-front execution with all operations behind closed door.
- Positive Interlocks between all drives, doors, and covers to nullify chances of any faulty operations.
- Breaker Position interlocking with LOTO system shall enhance safety practice and prevent unauthorised access during maintenance.
- Additionally, Remote Control Panel shall be provided for Tripping & Closing operation of Circuit Breaker from remote location.
- All numerical relay shall have Arc flash protection features to trip the

system during arcing in order to minimise the damage of the switchgear panel and isolate the defective feeder at the first instance.

- Switchgear shall be tested for Zone V seismic duty.
- Switchgear shall be Light based arc sensing feature for early detection of internal flashover and subsequent removal tripping of circuit breaker. This arc sensing feature may be offered by an independent relay or integrated in the offered IED

iv) 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. It shall not be possible to disconnect the low voltage plug and socket as long as the circuit breaker truck is in service position.
3. It shall not be possible to withdraw the truck without disconnecting the low voltage plug and socket.
4. 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.
5. 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).
6. 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.
7. 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.
8. Shutters shall be lockable in closed position.
9. 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.

v) **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.

vi) **Insulation Levels**

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

Nominal voltage (kV)	3.3
Highest system voltage (kV)	3.6

vii) **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.

viii) **Auxiliary Buses for Control & Protection**

1. Control supply buses for AC & DC.
2. Signaling supply.

3. PT secondary voltage.
4. Spare buses.

ix) 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.

x) 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.

xi) 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
outgoing	:	Not less than that of the outgoing breaker, irrespective of relay setting.

- Design ambient temperature shall be 50°C & final operating temperature under continuous operation in enclosure limited to 90°C by thermometer method.
- 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.
- Suitable size uniform cross-section bus bar made of Tinned Copper to carry the current indicated in the BOQ to be provided. Colour coded heat shrinkable

sleeves (R, Y, B Colour) of 3.3 KV or higher grade only acceptable. Busbars, links etc shall be with Epoxy-cast resin shrouds only.

- Continuous current rating of the Switchgear shall be based on the name plate rating of the connected equipment with 20% margin, rounded off to the next higher standard rating. The current density shall be 1 Ampere per square mm.
- Safety shutters, phase barriers, busbar seal-off bushing plate, insulators shall be non-flammable high tracking fibre glass/ epoxy insulation system.

xii) 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*

AC – Black	Earth wire – Green
DC – Light grey	Trip circuit – Red

- All telemetering signals shall be wired to terminal strips.

xiii) 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.

xiv) 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.

xv) 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 to 1.8 m.

xvi) 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/ wound 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.

xvii) 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.

xviii) Relays

Relays shall be microprocessor based and communicable type. Protocol for communication shall conform to IEC 61850 amended up to date which cater the following functions :

- The relay must support IEC 61850 Edition 1 and Edition 2.
- The relay must support, besides IEC 61850, simultaneous communication using one of the following communication protocols: Modbus® (RTU-ASCII/TCP), IEC 60870-5-103 or DNP3 (serial/TCP).
- The relay must have an Ethernet port RJ45/USB/RS232 on the front for local parametrization and data retrieval. Necessary connecting cord to be provided.
- The relay must have two fiber-optic/RJ45 Ethernet ports with HSR and PRP-1.
- The relay shall have a third Ethernet port for providing connectivity of any other Ethernet device to an IEC 61850 station bus inside a switchgear bay.
- The relay must support IEC 61850 GOOSE messaging and meet the performance requirements for tripping applications (<10ms) as defined by the IEC 61850 standard.
- All HT & relay operation with feedback at substation including machine houses & Impounding pump house to be incorporated with SCADA. Mobile app minimum 3(three) connection shall be provided for monitoring.
- All relays shall be flush mounted in dust proof cases and shall be mounted on front side of cubicle.
- 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.

xix) 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.

xx) 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.

xxi) 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.

xxii) 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.

xxiii) 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, 30V, L/R- 40ms.

xxiv) Push buttons

Contact Rating

Continuous	10 amps
AC11	4 amps, 240V
DC11	0.5A, 30V, L/R- 40ms.

COLOR:

ACCEPT	BLUE
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RESET	BLACK
TEST	YELLOW

xxv) Control Circuit Fuses:
HRC link type confirming to IS 9224-1979.

xxvi) 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 earthconductor.
- 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.

xxvii) Test and Maintenance Equipment
Each board to be supplied with 1 set of test plugs.

xxviii) Constructional Features

Mechanical Design

- Sheet steel clad, compartmentalized, floor mounted, free standing design.
- Minimum sheet steel thickness: doors and covers - 2 mm cold rolled, other load bearing members - 2.5 mm
- Doors shall be provided with lock and key arrangement
- Degree of protection shall be IP4X.
- 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.
- Explosion vent for each chamber
- 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.

INDOOR 3.3KV, 1250 AMPS, 500 MVA, 26.3KA VCB FOR 3SEC HT VCB PANEL

This includes, Design, fabrication, supply, installation, testing and commissioning of HT panel indoor 3.3 kV, 1250 Amps, 3 phase, 50Hz, 500 MVA, 26.3kA VCB for 3sec, as per Table-1 (HT PCC-1).

- **Incoming Feeder With PT:**

This includes supply at site, Vacuum Circuit Breaker, suitable for 3.3 kV, 26.3 kA, 1250 Amps., 500 MVA, 3 Phase, 50 Hz effectively earthed, neutral system comprising of proper housing of breaker, safety shutters, isolating plugs and socket and 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.

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 3.3 KV, 50 Hz, 3 phase AC with all equipment fittings and accessories for efficient and trouble free operation.

- i) 3.3 kV, 1250 Amps. 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.
- ii) Incoming cable entry box shall be provided for the required cable entry.
- Insulation level
 - i) 1.2/50 microsecond Impulse withstand voltage 75 kV peak
 - ii) One minute power frequency withstand voltage 28 kV rms
- Rated current
 - i) Continuous
 - Bus bar 1250 A
 - Incoming/outgoing circuit breaker 1250 A
 - ii) Short time current for 3 seconds 26.3 kA rms
- Circuit breaker
 - i) Rated breaking capacity Symmetrical. 26.3 KA / 3 Sec.
 - ii) Rated making capacity 62.5 KA
 - iii) Total breaking time 7 cycles maximum
 - iv) Operating sequence As per IS/IEC
- iii) Make : As per the list of makes enclosed herewith.
- iv) Shunt trip coil : 30 V DC
- v) Closing coil : 30 V DC
- vi) Busbar chamber with Copper busbars, heat shrinkable PVC sleeved/ powder coated with colour code. The busbars shall be of high conductive electrolyte copper.
- vii) 230VAC space heaters with ON-OFF switch and thermostat.
- viii) 1phase, resin cast with fuse unit, draw out, line connected PT ratio of 3300/ $\sqrt{3}$ /110 / $\sqrt{3}$ Volts of 100VA burden to meet with auxiliary power requirement of metering and protection. Having accuracy of 0.5/3P.
- ix) Epoxy cast resin CTs with 15VA burden, STR of 26.3 KA for 1 sec., metering accuracy class 0.5 and protection accuracy 5P20/PS and having of CTR 1250- 800/5-5-5A.
- x) 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.
- xi) 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.

- xii) Breaker ON-OFF LED indicating lamp.
- xiii) Circuit trip/healthy indicating LED lamp with pushbutton.
- xiv) Breaker spring charged LED lamp indication.
- xv) TNC (Trip Neutral Close) switch.
- xv) Numerical relays consist of IDMTL + Inst 3 O/C + Inst E/F relay+REF. VAX – 31 Trip circuit supervision.
- xvi) VAJH – 23 master trip. All relays shall be SCADA enabled with event/data logging features.
- xvii) Operating handle, spring charging handle and other required accessories shall be supplied.
- xviii) Cable box suitable for receiving of 3C x 240 Sq. mm HT XLPE cable.
- xix) Hand held lamps for panel internal illumination shall be provided with 240V AC source.
- xx) Hooter for tripping.
- xxi) 30V DC external supply shall be provided for control circuit of complete breaker operation.
- xxii) Type of charging: Manual as well as motorized mechanism with 230V AC operated motor.
- xxiii) Bus bar support insulator:-Non hygroscopic, track resistant, high strength insulator.(Calculation for validating dynamic force withstand capability to be submitted during drg. Approval)

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

Technical Specification same as Incoming feeder but without PT. The auxiliary relay for transformer shall be provided.

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 26.3 KA for 1 sec., metering accuracy class 0.5 and protection accuracy 5P20/PS and having of CTR 630-400/5-5-5A.

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.

- ***Incoming Feeder (Generator feeder):***

Technical Specification same as Incoming feeder but without TVM, U/V function. The Numerical relay for generator protection shall be provided along with electromechanical relay (2 Phase Over current relay + 1Earth fault relay) for back –up protection shall be provided.

Epoxy cast resin CTs with 15VA burden, STR of 26.3KA for 1 sec., metering accuracy class 0.5 and protection accuracy 5P20/PS and having of CTR 400-200/5-5-5A.

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.

INDOOR 3.3KV, 630 AMPS, 500 MVA, 26.3KA VCB FOR 3SEC HT VCB PANEL

This includes, Design, fabrication, supply, installation, testing and commissioning of HT panel indoor 3.3 kV, 630 Amps, 3 phase, 50Hz, 500 MVA, 26.3kA VCB for 3sec, as per Table-1 (HT PDB-2A, HT PDB-2B, HT PDB-2C & HT PDB-3)

- ***Incoming Feeder With PT:***

This includes supply at site, Vacuum Circuit Breaker, suitable for 3.3 kV, 26.3 kA, 630 Amps., 500 MVA, 3 Phase, 50 Hz effectively earthed, neutral system comprising of proper housing of breaker, safety shutters, isolating plugs and socket and 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.

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 3.3 KV, 50 Hz, 3 phase AC with all equipment fittings and accessories for efficient and trouble free operation.

- xxiv) 3.3 kV, 630 Amps. 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.
- xxv) Incoming cable entry box shall be provided for the required cable entry.
- Insulation level
 - i) 1.2/50 microsecond Impulse withstand voltage 75 kV peak
 - ii) One minute power frequency withstand voltage 28 kV rms
- Rated current
 - i) Continuous
 - Bus bar 630 A
 - Incoming/outgoing circuit breaker 630 A
 - ii) Short time current for 3 seconds 26.3 kA rms
- Circuit breaker
 - i) Rated breaking capacity Symmetrical. 26.3 KA / 3 Sec.
 - ii) Rated making capacity 62.5 KA
 - iii) Total breaking time 7 cycles maximum
 - iv) Operating sequence As per IS/IEC

xxvi) Make : As per the list of makes enclosed herewith.

xxvii) Shunt trip coil : 30 V DC

xxviii) Closing coil : 30 V DC

xxix) Busbar chamber with Copper busbars, heat shrinkable PVC sleeved/ powder coated with colour code. The busbars shall be of high conductive electrolyte copper.

xxx) 230VAC space heaters with ON-OFF switch and thermostat.

xxxii) 1phase, resin cast with fuse unit, draw out, line connected PT ratio of 3300/ $\sqrt{3}$ /110 / $\sqrt{3}$ Volts of 100VA burden to meet with auxiliary power requirement of metering and protection. Having accuracy of 0.5/3P.

xxxiii) Epoxy cast resin CTs with 15VA burden, STR of 26.3 KA for 1 sec., metering accuracy class 0.5 and protection accuracy 5P20/PS and having of CTR 630- 400/5-5-5A.

xxxiv) 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.

xxxv) 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.

xxxvi) Breaker ON-OFF LED indicating lamp.

xxxvii) Circuit trip/healthy indicating LED lamp with pushbutton. xiv) Breaker spring charged LED lamp indication.

xvi) TNC (Trip Neutral Close) switch.

xxxviii) Numerical relays consist of IDMTL + Inst 3 O/C + Inst E/F relay+REF. VAX – 31 Trip circuit supervision.

xxxix) VAJH – 23 master trip. All relays shall be SCADA enabled with event/data logging

features.

- xxxix) Operating handle, spring charging handle and other required accessories shall be supplied.
- xl) Cable box suitable for receiving of 3C x 240 Sq. mm HT XLPE cable.
- xli) Hand held lamps for panel internal illumination shall be provided with 240V AC source.
- xlii) Hooter for tripping.
- xliii) 30V DC external supply shall be provided for control circuit of complete breaker operation.
- xliv) Type of charging: Manual as well as motorized mechanism with 230V AC operated motor.
- xlvi) Bus bar support insulator:-Non hygroscopic, track resistant, high strength insulator.(Calculation for validating dynamic force withstand capability to be submitted during drg. Approval)

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

Technical Specification same as Incoming feeder but without PT. The auxiliary relay for transformer shall be provided.

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 26.3 KA for 1 sec., metering accuracy class 0.6 and protection accuracy 5P20/PS and having of CTR 630-400/5-5-5A.

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.

- **Outgoing Feeder (Motor feeder):**

Technical Specification same as Incoming feeder with TVM but without PT, U/V function. TVM shall be communicable type. CBCT & Surge Arrestor to be included in outgoing feeder (Motor feeder) items.

Motor protection relay shall conform to IEC 61850 compatible which caters to the following functions :

- a) Three-phase non-directional overcurrent protection, 2 stages.
- b) Non-directional earth-fault protection, 2 stages
- c) Negative-sequence overcurrent protection for motors
- d) Loss of load supervision
- e) Motor load jam protection
- f) Motor start-up supervision
- g) Phase reversal protection
- h) Thermal overload protection for motors

Epoxy cast resin CTs with 15VA burden, STR of 26.3KA for 1 sec., metering accuracy class 0.5 and protection accuracy 5P20/PS and having of CTR 400-200/5-5-5A.

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

INSTALLATION OF INDOOR HT VCB PANEL:

This includes installations, testing and commissioning of VCBs at 3.3KV 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 E.I.C. If required, civil work pertaining to cutting of floor including foundation shall be under the scope of the contractor.

4.0 HT & LT CABLE.

4.1 Scope

Supply, laying, inspection, testing, commissioning and making terminations of 3.3 KV grade XLPE insulated power cables.

4.2 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.

4.3 Power Cable

Power cables should be multicore earthed 3.3 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 black sheath conforming to IS-7098 Part II. Armouring of multicore cable shall be of single layer, galvanised steel round wire or flat strip. The Cables shall be suitably designed for variation in power supply as follows:

The voltage variation ± 10

% Freq. variation ± 5 %

Following cable size shall be supplied by the bidder:

- i. 3 Core, 240 Sq. mm HT Cable, 3.3 KV (UE) grade, XLPE U.G. Alu. Cable, PVC inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- ii. 3 Core, 150 Sq. mm HT Cable, 3.3 KV (UE) grade, XLPE U.G. Alu. Cable, PVC inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- iii. 1 Core, 1000 Sqmm HT Cable, 3.3 kV (UE) grade, XLPE U.G. Alu. Cable, PVC inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- iv. 1 Core, 630 Sq. mm LT Cable, 1.1 KV grade, XLPE U.G. Alu. Cable, PVC inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- v. 3.5 Core, 240 Sq. mm LT Cable, 1.1 KV grade, XLPE U.G. Alu. Cable, PVC

- inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
- vi. 3.5 Core, 150 Sq. mm LT Cable, 1.1 KV grade, XLPE U.G. Alu. Cable, PVC inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.
 - vii. 3.5 Core, 50 Sq. mm LT Cable, 1.1 KV grade, XLPE U.G. Alu. Cable, PVC inner sheathed and PVC ST2 type outer sheathed, armoured, FR cables.

4.4 *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 HT & LT Power Cables, which shall be laid in buried trenches/ cable trays / through GI Pipes & Hume Pipes, rising main etc. whichever is applicable. Required supply & installation of cable trays , GI & Hume Pipes, as per the site requirement, shall be under the scope of the contractor.

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. If found existing cable trench is filled with soil then the contractor has to be removed / excavated soil thoroughly throughout full cable route and modified / repaired the cable trench to facilitate HT & LT Power cable laying.

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. End termination of newly laid cable to the existing panel / equipment shall be under the scope of contractor. In this regard, the contractor has to comply the direction of Sr. Dy. Manager (P&E) or his authorised representative strictly. Removal / dismantling, loading / unloading, transporting & depositing at HDC's store / yard of existing HT & LT power cable shall also be under the scope of the contractor.

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 Schedule including length & location shall be prepared by contractor and get that approved by competent authority. Drum number of each cable from which it is taken shall be recorded against the cable number in the cable schedule.

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.

Excavation of cable trench for HT & LT Cables, if required as per site requirement, shall be under the scope of the contractor. Decision of Engineer or his authorised representative will be the final and the same has to strictly comply by the contractor. Arrangement of cables within the trenches/ trays/ GI & Hume 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. This method / procedure is applicable for new cable trench as well as for exaction of existing cable trench also.

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. Required supply & installation of cable trays, GI & Hume Pipes, as per the site requirement, shall be under the scope of the contractor without any extra cost.

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.

4.5 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.

Insulated type end bushings shall be used where conductors enter or leave GI pipe. 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.

4.6***Depth of laying***

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

Note: Road level to be considered as reference level.

4.7**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).

4.8***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.

4.9***Cable Straight through Jointing. (HeatShrinkable 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 for HT & LT Power cable. Rates are to be quoted accordingly.

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.

4.10 *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.

4.11 *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
- xiii) Year of Manufacturing

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 **Third Party Inspection 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.

5.0

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	3.3kV System
1.	Nominal system voltage (kV)	3.3
2.	Max. system voltage (kV)	3.6
3.	One minute power frequency withstand voltage (kV)	10
4.	Peak impulse test withstand voltage (kV)	---

- 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 30 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 2°C. 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, 30 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 atleast every 2°C. 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.

2 (two) nos. newly supplied transformer would be installed / erected at exiting location of transformers. Required foundation including civil work, as per site requirement, shall be under the scope of the contractor and hence, rates are to be quoted accordingly.

TRANSFORMER 1000 KVA, 3.3 / 0.433 KV

Supply of 1000 KVA, 3.3 / 0.433 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	1000kVA, 11/0.433kV
1.	Specification	IS 2026, Part I - 1977 Part II - 1977 Part III - 1981 Part IV - 1977

Sl. No.	Particulars		1000kVA, 11/0.433kV
2.	Type		Three phase, core type, oil filled
3.	Duty		Indoor
4.	Voltage HV/LV		11/0.433 kV
5.	Frequency		50 Hz
6.	No. of phase		3
7.	Continuous rating		1000 KVA
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	Solidily earthed
		LV	Solidly earthed
15.	Percentage impedance		6.25%
16.	Termination	HV	Cable end box suitable for termination of 4 no. 1C x 1000 mm ² XLPE cable
		LV	Suitable for Bus duct.
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
	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		5 Secs.

Sl. No.	Particulars	1000kVA, 11/0.433kV
	phase short circuit at terminals	
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.	Paint shade	Shade 632 as per IS – 5
31.	Short circuit level on HV side	450MVA

6.0 LT Panel (PCC-1, PDB-1, PDB-2A, PDB-2B, PDB-2C, PDB-3, PDB-4, PDB-5 & PDB-6)

6.1 Scope

This specification covers manufacture, assembly factory test, supply, delivery, field test and installation of L.T. 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.

6.2 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

IEC 61641 : Internal Arc test.

IEC 60068-3-3 : Seismic Zone.

6.3 *Power Supply System*

The incomer power supply shall be 415V, 3 phase, 4 wire, 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.

6.4 *Ambient Conditions*

The following site conditions shall be considered for the design: -

Reference temperature : 50°C

6.5 *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 **2mm**.

Frames shall be enclosed by sheet steel of thickness not less than **2mm** 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.

6.6 *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.

6.7 *Constructional Features*

Switchgear panel shall be:

- i) of the metal enclosed, indoor, floor mounted modular type
- ii) made up of the requisite vertical sections
- iii) of dust and vermin proof construction
- iv) provided with a degree of protection of IP-52

- v) easily extendable on both sides by the addition of vertical sections after removing the ends covers.
- vi) All the main bus bar and neutral bus bar shall be placed at the top of the panel board.
- vii) 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.
- viii) For operator safety IP2 X (touch proof) protection to be available even after opening the feeder compartment door. The compartmentalization to be achieved by using metal separators, use of PVC sheet / Hylem sheets shall not be allowed.
- ix) provided with labels on the front indicating the switchgear designation.
- x) of uniform height of not more than 2450 mm
- xi) of single front execution
- xii) provided with neoprene gaskets all round the perimeter of adjacent panels, panel and base frame, removable covers and doors.
- xiii) 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.
- xiv) 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.
- g) The switchboards and the associated equipment including switchgear, control gear, Busbar supports, Busbar orientation, Busbar links etc shall be identical in

construction to the assembly which has undergone the type test. The drawings of the type-tested assemblies shall be made available for inspection.

- h) Internal arc withstand of 65kA for 0.4sec.
- i) The panel shall be tested of design as per Seismic Zone 4 of IEC 60068-3-3.
- j) There should be total discrimination and coordination between upstream and downstream switchgear & protection devices i.e. ACBs, MCCBs, MCBs, MPCBs etc. up to the service breaking capacity level as per IEC-60947-2 for better continuity of supply and fault localization

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 with drawable 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 with drawable 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.

6.8 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 interchangeability, 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 tinplated. 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.

6.9 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 high conductivity electrolytic aluminium, 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 (IS/IEC 61439) for a 500V, 3 phase, 4 wire system.

The bus bars shall be supported on non-breakable, non-hygroscopic epoxy resin or glass fibre reinforced polymer insulated supports able to withstand operating temperature of 110°C at regular intervals, to withstand the forces arising from a fault level as stipulated in schedule of quantities. **The material and the spacing of the Busbar support should be same as per the type tested assembly**

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. The dielectric strength and properties shall hold good for the temperature range of 0°C to 90°C.

Bus bar shall be adequately supported (as per type test assembly) 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.

6.10

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 = 8 KV and utilization category 'B'.

6.11

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 30V 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.
- All the ACBs should be rated for 50deg ambient temperature and no deratings should be allowed.
- $I_{cu}=I_{cs}=I_{cw}$ = fault level mentioned in the BOQ/SLD
- ACB Closing time shall be less than or equal to 80 ms

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 4 line 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.
6. It shall be possible to view Percentage loading of three phases at a glance on trip unit via LED or LCD display.

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

6.12

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 & E/F 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.

MCCB with O/L, S/C & E/F protection shall have inbuilt display feature to show the type of fault and interrupted current.

6.13

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.

6.14

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.

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.

6.15

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.

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.

Push buttons shall be:

- of the momentary contact, push to actuate type rated to carry 10A at 240V AC and 1A (inductive breaking) at 220VDC.
- 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.

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.

6.19 **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.

6.20 **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.

6.21 **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 | : | ALUMINIUM |
| 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 |
| 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) |

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 |
| 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 |

6.22 LT BUSDUCT

A) Electrical Design

- i) Electric power supply
 - 433 V, 3 phase 50 Hz system neutral solidly grounded
 - System short circuit level as specified.
- ii) Insulation level

Rated insulation voltage	:	1000
V One minute power frequency voltage	:	2.5kV
* Clearance in air (minimum)		-
Phase to phase (mm)	:	25.4 mm
Phase to earth (mm)	:	19.0 mm
- iii) Short circuit strength
 - * Rated short time withstand current not less than the system short circuit level duration 1 sec for 415 V.
 - * Rated peak withstand current not less than 2.1 times the system short circuit level.
- iv) Rated current
 - * Rated continuous current as specified while in enclosure and at specified ambient temperature with maximum temperature of bus bars limited to 90 deg. C
 - * Neutral bus where specified with rating not less than half the rating of phase bus.

B) General Arrangement

- LT busduct: Rectangular, Non segregated phase (Sandwich Type), totally enclosed type.
- Comprising of following sections, as applicable, to make the installation complete and to match with the terminal equipment :
 - ⇒ Switchgear lead-in section with flexible hood.
 - ⇒ Straight section in standard length
 - ⇒ Matching section (length as required)
 - ⇒ Transformer lead-in section
 - ⇒ Corner sections (horizontal and vertical)
 - ⇒ Phase cross-over section
- Horizontal bends to be avoided by positioning the switchboard incomers at appropriate place.

C) Construction Details

- Degree of protection for enclosure IP 52 or better for indoor installation, and IP55 for outdoor part.
- Enclosure material: Aluminium/ steel sheet, as specified of minimum thickness 2.0 mm.
- Enclosure construction rectangular welded construction.
- Maximum temperature of enclosure under rated operating conditions limited to 75 deg. C
- Bolted covers with gaskets for easy inspection and access to insulators and bus bar joints.
- Gasketed (Neoprene) connections between adjacent sections of metallic enclosure.
- Rubber bellows at each end to take care of vibrations.
- Provision for mounting on brackets.

- Supply of painted MS supporting structures with necessary hardware shall be included in the scope of supply.
- Surface treatment.
- Two coats of epoxy paint for outdoor and synthetic enamel paint for indoor application, preceded by de-rusting, cleaning chemically, degreasing, pickling in acid, cold rinsing, phosphating, passivating and spraying with two coats of zinc oxide primer.
- Shade of paint :

⇒ Interior : Black

⇒ Exterior : Light grey shade 631 of IS-5 (unless otherwise specified)

D) Busbars and connections

- Material EC grade aluminium alloy equivalent to E91E WP conforming to IS 5082, 1981; or high conductivity electrolytic grade copper as per IS-613, 1984.
- Final operating temperature of both bus bars and joints under continuous operation in enclosure limited to 90 deg. C by thermometer method.
- Bus bar arrangement as per IS-375, 1963.
- Phase identification by colour at ends and at regular intervals.
- Busbar joints of bolted type, with zinc bichromated high tensile steel bolts, nuts and spring washers.
- Busbar surfaces to be tinned at joints and coated with oxide inhibiting grease prior to jointing.
- Flexible connections for termination on equipment.
- Expansion joints on straight runs with joints staggered in adjacent phases.
- Bimetallic joints for jointing between dissimilar metals.
- Busbar support insulators of non-hygroscopic material, having high impact and di-electric strength, with an anti-tracking contour.

E) Protective earthing

- Aluminium earth bus of size 50 x 10 mm running throughout the length of the busduct, , Or Integral AL Earth total rated 50% of Phase ba positively connected to the body of the busduct.
- Provision at each end of busduct for terminating external earthconductor.

F) Technical particulars for Design

1.	Application	Indoor
2.	Rated system voltage and frequency	433 V & 50 z
3.	System earthing	Solidly earthed
4.	Rated continuous current as specified ambient conditions (in enclosure)	1600A
5.	Rated short time withstand current (kA.rms) and its duration	50 kA for 1Sec
6.	Rated peak withstand current (peak)	105 kA
7.	Temp rise over ambient of 50 deg. C - Busbars - Enclosure	40 deg. C 25 deg. C
8.	Busbar material	Aluminium
9.	Neutral bus	To be provided
10.	Earth bus material	Aluminium
11.	Earth bus size	50 x 10
12.	Supporting insulators	SMC/ FRP
13.	Busduct enclosure material	Aluminium
14.	Busduct enclosure material thickness	2.5 mm
14.	Busduct support structure	To be provided

7.0 Indoor LT APFC Panel:-

Specification of APFC Panel Design, manufacturing, supply, installation, Testing and commissioning of APFC Panel of 400kVAr 12 stages as per following specification: -

A. 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 equipments 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.

B. 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.

C. 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.

D. 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.

E. 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

F. 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.

8.0 Technical specification for substation control and monitoring system through SCADA :

a) Scope

This specification applies to design, manufacture, supply and testing at works of control and monitoring system and also presents various information pertaining to system requirement as regards the network and also as regards the environment and conditions of installation

The control and monitoring system hereby called system shall at least have the features enlisted below and may have features more than those listed. However, no feature included in the attached document should be compromised / deviated from.

b) General

The system should be interfaced with communicable protection devices and other IEDs in the network in such a way that operator can easily access the essential information regarding the network and control the same so as to ensure availability of electric network at its maximum efficiency giving highest utilization of the installed primary equipments.

Also, the system should be easy to use for engineers and maintenance personnel.

c) Functionality

Following functionalities should be possible from system:

- Dynamic Single line diagram with breaker control
- Bus bar colouring.
- Online Measurements
- Relay parameterization (If available from relays on protocol defined in this specification later)
- DR Upload (If available from relays on protocol defined in this specification later)
- Event and Alarms
- Links to documentation
- System diagnostic

The system should be flexible for future upgradation. I.e. It should be possible to add connectivity to upper level SCADA / ECS with license upgradation without adding hardware to the system.

d) Engineering

For ease of engineering, the engineering tool designed for the system should be based on latest international guideline protocol IEC61850 modeling.

e) Hardware

System processor hardware should be of industrial grade and tested for all relevant EMC / CE / IEC tests. It shall have no moving parts so that it needs minimum maintenance. Minimum configuration shall be as follows:

1.6 GHz, Pentium M, 1 GB flash disk with wide range power supply: 24 – 220V DC, integrated hardware watchdog, suitable for operation temperature range: -25oc to +70oc & operating humidity of max. 95%. Degree of protection shall be IP4x for the enclosure. External hardware interface shall be as below:

- 2 nos. LAN (RJ45 copper)
- 3 nos. RS232 ports
- 1 No. RS485 port
- 4 nos. USB ports
- Audio output for audio alarm

However, it should have provision to optionally include other interface such as additional RS485 or LAN or fiber optic LAN etc.

f) Software

System shall have web server based HMI software. The HMI license should not be dependent on no. of web clients connected. In other words, it should be suitable for unlimited web clients connection to the system without any additional license cost to user.

It should be possible to connect the system to intranet or internet so that the information is accessible anywhere as desired. The system shall have built-in security features for confidentiality, integrity, authentication, authorization, and auditing. Enough security aspects will be ensured such as built in fire wall to defend against virus attack from WAN & encrypted communication to web clients. Also, there should be a possibility to block the control operation over internet.

Software shall have different user accounts with role based access for control and monitoring various functionalities. User accounts and access rights shall be possible to be defined for both the application software and the HMI, and are to be protected with individual passwords. Every user login/logout event shall be recorded.

g) *Communication media and protocols*

Fiber optic communication media should be considered for protection relays communication to system, as information from protection relays is very critical. However, for other data from non-critical IEDs such as meters, temp. scanners can be taken on electrical RS485 network connected in multi drop fashion.

For IEDs, communication hardware should be considered in the bidder's scope / will be free issued by customer / available with customer.

Following protocols should be supported by the system, out of which the protocols that needs to be considered will be selected during engineering:

Process communication protocol (For communication from IED to system)

- IEC 61850-8-1 Client
- IEC 60870-5-103 Master
- MODBUS RTU Master
- LON
- SPA Master

For upper level connectivity to central SCADA, following protocols should be supported:

- IEC 60870-5-101 Slave
- IEC 60870-5-104 Slave
- DNP 3.2 (Serial LAN/WAN)
- External OPC Client
- SPA Router

Connectivity to upper level SCADA is not in scope of this specification, however, bidder needs to specifically confirm the provision of one port for upper level connectivity. Communication protocol for the same will be selected from above mentioned list in future.

9.0

BATTERY BANK AND BATTERY CHARGER:

➤ TECHNICAL SPECIFICATIONS OF BATTERY

The 30 V, 60 AH DC Battery Bank should be consisted of Maintenance free, Lead Acid type batteries with 2 (two) Hours battery backup. 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 15 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 **30 V, 60 AH 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 newly installed 3.3 KV Switchgears. Suitable control arrangement is to be provided to ensure that output D.C. 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: 30 V DC

Maximum: 36 V

DC Minimum: 24
V DC

b) **Charging Current :**

Maximum continuous output current: 16 Amps

Maximum continuous D.C. 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) M.C.B. for incoming / outgoing supply
- b) H.R.C. / 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 L.E.D. 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.

10.0 CABLE TRAY GI Cable tray

Cable tray shall be prefabricated Trays should be made of M.S 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 M.S 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.

FRP Cable tray

Pre-fabricated perforated type trays made of FRP shall be used for laying cables. The trays shall have vertical edge of height not less than 50 mm on both sides. The control/power cable shall be clamped by means of suitable PVC straps both for horizontal to vertical direction and vice-versa and further these straps shall be clamped with Aluminium clamp with stainless steel bolts for every one meter.

Insert plates of suitable sizes shall be fixed in trench / wall for fixing of cable trays, at an interval of 1000 mm apart in horizontal run and 500 mm apart in vertical run and also at each bend/turning.

Suitable covers shall be provided on cable trays to be fixed outside trenches.

11.0 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 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. **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, bituminous 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 up to 600 mm deep and 450 mm wide, laying of conductor at 600 mm depth (unless stated otherwise), brazing / welding/ cad welding 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 bituminous 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 as far as practicable, be embedded below permanent moisture level. 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.

12.0 DISMANTLING

Dismantling of existing 3.3 kV HT Panel, 415 Volts LT Panel, 3.3 kV / 415 Volt Transformer, HT & LT Cables installed at existing main & riverside sub-station, machine houses & impounding pump house.

SL.No.	ITEM	Name of Manufacturers
1	Transformer	VOLTAMP / BHARAT BIJLEE/CGL/SIEMENS/SCHNEIDER
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
5	Outdoor CT	SCHNEIDER / JYOTI / KAPPA / PRAGATHI
6	Outdoor PT	SCHNEIDER / JYOTI / KAPPA / PRAGATHI
7	Volt meter and Ammeter	AE / MECO / YOKINS / NIPPEN
8	LT Panels	SIEMENS / SCHNEIDER / ABB
9	Cable St.through jointing / end Termination Kit	3M / RAYCHEM /DENSON
10	Battery	HBL/EXIDE/AMARON/ AMCO
11	Selector switches, Push buttons, Emergency Switches	KAYCEE / L & T / GE / BCH / LEGRAND
12	HRC Fuses	L & T / GE / SIEMENS / ABB / INDO KOPP
13	Indicating light	AE / KAYCEE / VAISHNAV / L & T /SIEMENS
14	MCB	L & T / LEGRAND / SIEMENS / ABB / SCHNEIDER
15	PVC insulated copper conductor single/multi core stranded wires of 650/1100 volt grade	HAVELLS / FINOLEX / RPG /UNIFLEX /NICCO /RR Kables
16	Steel Conduit/PVC Conduit	BEC / AKG / NIC
17	Cable lug & Cable Gland	DOWELLS / JHONSON / RAYCHEM
18	Terminal Blocks	WAGO & CONTROLS / PHOENIX CONTACTS / OBO BETTERMANN
19	Multi-function Meter	ABB / SIEMENS / L&T / HPL SOCOMEC/CONZERVE (ENERCON)
20	DWC HDPE Pipe	DURA LINE / CARLON / EMTELLE
21	Contactors	L&T / SCHNEIDER / SIEMENS/ABB / BCH

22	MCCB	L&T / SIEMENS / SCHNEIDER / ABB
23	Push Buttons	SIEMENS / ABB / TELEMECANIQUE / L&T / SCHNEIDER
24	Relays	L&T / ABB / SIEMENS / SCHNEIDER/AREVA
25	Timers	L&T / SIEMENS / TELEMECANIQUE/ABB
26	Indicating Light	L&T / SIEMENS / TELEMECANIQUE / ABB / GE
27	Indicating Instruments	AE / MECO / CONZERVE / L&T
28	Panel CTs	L&T / AREVA / JYOTI / KAPPA / PRAGATHI
29	Panel PTs	AREVA / KAPPA / PRAGATHI
30	ACB	SCHNEIDER / SIEMENS / ABB / L&T
31	Selector Switch	KAYCEE / L&T / SIEMENS / BCH / GE / SALZAR
32	Capacitor Banks	EPCOS / L&T / UNIVERSAL/ABB
33	Trivector Meter (Digital)	L&T / SCHNEIDER / SIEMENS / HPL SOCOMEC
34	Capacitor Panels	ABB / L&T / EPCOS / SCHNEIDER
35	Power Factor Correction Relay	EPCOS / L & T / ABB
36	Items not covered above	As per samples approved

13.0 SHUTDOWN FOR EXECUTION OF THE WORK:

The Contractor should take all possible steps to complete the work in most of places without any shutdown. However, if any shutdown is at all required in some places, then shutdown of one hour maximum may be provided at a stretch. In such a case before taking any shutdown, prior approval will have to be taken from the Engineer of Contract or his authorized representative(s).

14.0 Training: The contractor shall arrange training to the technical persons (20 heads) of HDC for operation, troubleshooting and schedule maintenance of newly supplied HT VCB & LT ACB Panel, SCADA etc. for 7 days at Lock Entrance Site of HDC.

15.0 INSPECTION AND TESTING.

Equipment will be duly inspected in the manufacturer's works / premises **by Engineer or his authorized representative(s) or Third Party Inspection Agency (TPIA)** before dispatch to the site. If required, Third Party Inspection Agency (TPIA) would be engaged by HDC and cost of TPI Agency, if engaged by HDC, will be borne by HDC.

Inspection of the items to be supplied by the contractor will be carried out prior to despatch, as per the procedure mentioned 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 (for witnessing tests) and to inspect (physically) the materials at site, after delivery, against Manufacturer's Internal Test Certificate(s), as applicable.

The job of installation and commissioning will be inspected by the **Engineer or his authorized representative(s) or TPIA in different stages** and also after completion of the job. For this, the contractor will 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 said approved FQAP.

Inspection and Testing by the **Engineer or his authorized representative(s) or TPIA** shall not relieve the contractor from their obligation for supplying the items and execution of the entire work in accordance with the **Contract Conditions** and relevant **Acts, Rules and Codes of Practice**.

15.1 Battery Bank & Battery Charger

Battery Bank & Battery Charger will be inspected at site, after delivery, by **the TPI Agency or** the representative of Engineer, based on Manufacturer's Internal Test Certificate.

15.2 HT XLPE Cables :

Following tests will be witnessed by **the TPI Agency or** the representative of Engineer 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 TPI Agency or** the representative of Engineer during the above inspection.

15.3 1000 KVA, 3.3KV / 0.433 KV, 3 Phase, 50 Hz Transformer:

- a. **Routine Tests and Temperature Rise Test** (as per IS:2026) will be witnessed by **the TPI Agency or** the representative of Engineer at Manufacturer's works before dispatch
- b. **Certificate for Type Test** (as per IS: 2026), for any Transformer of at least 3.3 KV / **0.433 KV**, 1000 KVA rating, should be made available to **the TPI Agency or** the representative of Engineer 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.

15.4 Vacuum Circuit Breaker Panel Vacuum Circuit Breaker units:

- 1. **Routine Tests** (as per IS: 13118) will be witnessed by **the TPI Agency or** the representative of Engineer at Manufacturer's works before despatch.
- 2. Manufacturer's Certificate for **Type Test** (as per IS: 13118), for similar type equipments, should be made available to **the TPI Agency or** the representative of Engineer during the above inspection.

A. Current Transformers:

Following tests will be witnessed by **the TPI Agency or** the representative of Engineer 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 equipments, should be made available to **the TPI Agency or** the representative of Engineer during the above inspection.

B. Potential Transformer:

Following tests will be witnessed by **the TPI Agency or** the representative of Engineer 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 equipments, should be made available to **the TPI Agency or** the representative of Engineer during the above inspection.

C. Complete HT VCB Panel:

Inspection will be carried out by **the TPI Agency or** the representative of Engineer before despatch. Manufacturers' Test Certificates for the components like **Relays, Ammeter, Voltmeter, Static KWH Meter & Maximum Demand Meter**, should be made available to **the TPI Agency or** the representative of Engineer during the above inspection.

15.5 LT Panel:

Following tests will be witnessed by **the TPI Agency or** the representative of Engineer at Manufacturer's works before despatch:-

- 1. **Routine Tests** as per IS: 8623.
- 2. Type test certificate for similar type & Rating of LT Panels be submitted by successful tenderer.

Manufacturer's Certificate for **Type Test** (as per IS: 8623), for similar type equipments, should be made available to **the TPI Agency or** the representative of Engineer during the above inspection.

15.6 LT Bus Duct:

The Bus Ducts will be inspected at site, after delivery, by **the TPI Agency or** the representative of Engineer, based on Manufacturer's Internal Test Certificate and fitment certificate.

15.7 LT Cables:

The LT Cables will be inspected at site, after delivery, by **the TPI Agency or** the representative of Engineer, based on Manufacturer's Internal routine Test Certificate as per IS:7098-I.

15.8 APFC Panel:

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

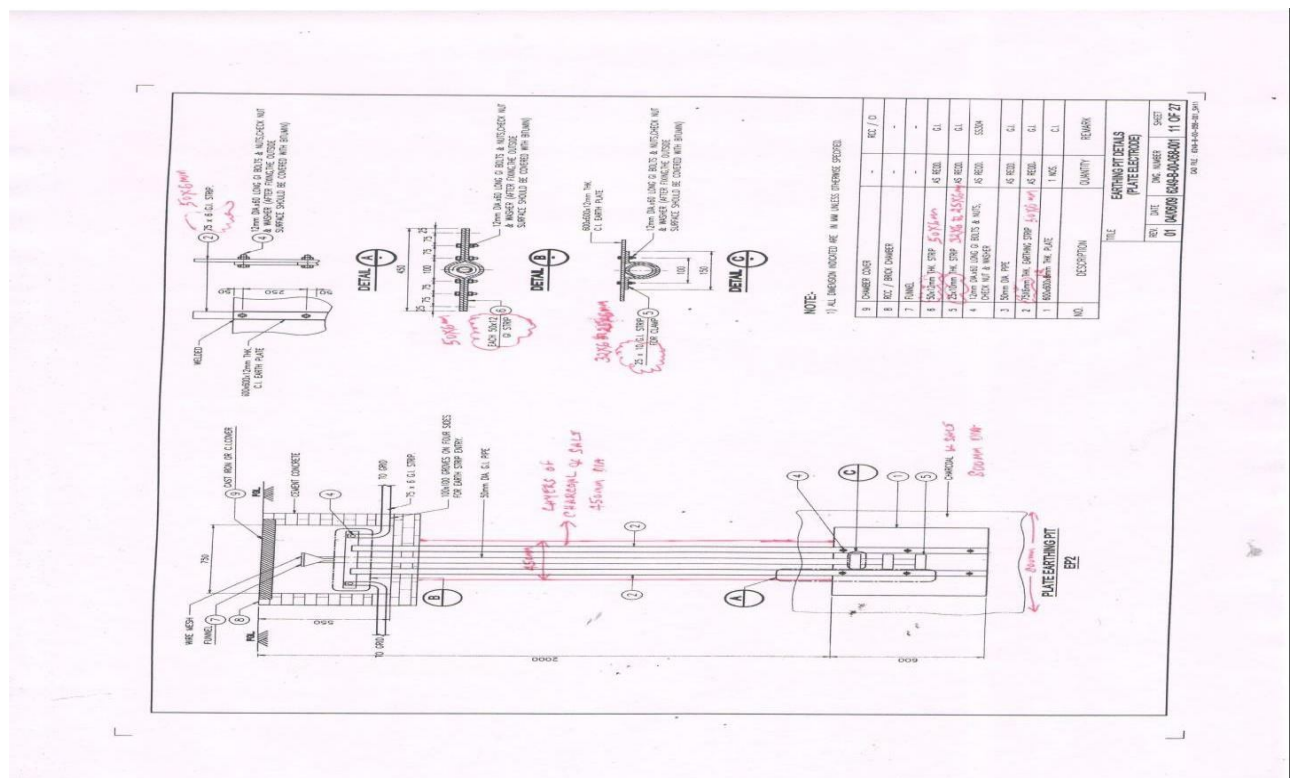
- a) **Routine Tests** as per IS.

Manufacturer's Certificate for **Type Test**, for similar type equipments, should be made available to **the TPI Agency or** the representative of Engineer during the above inspection.

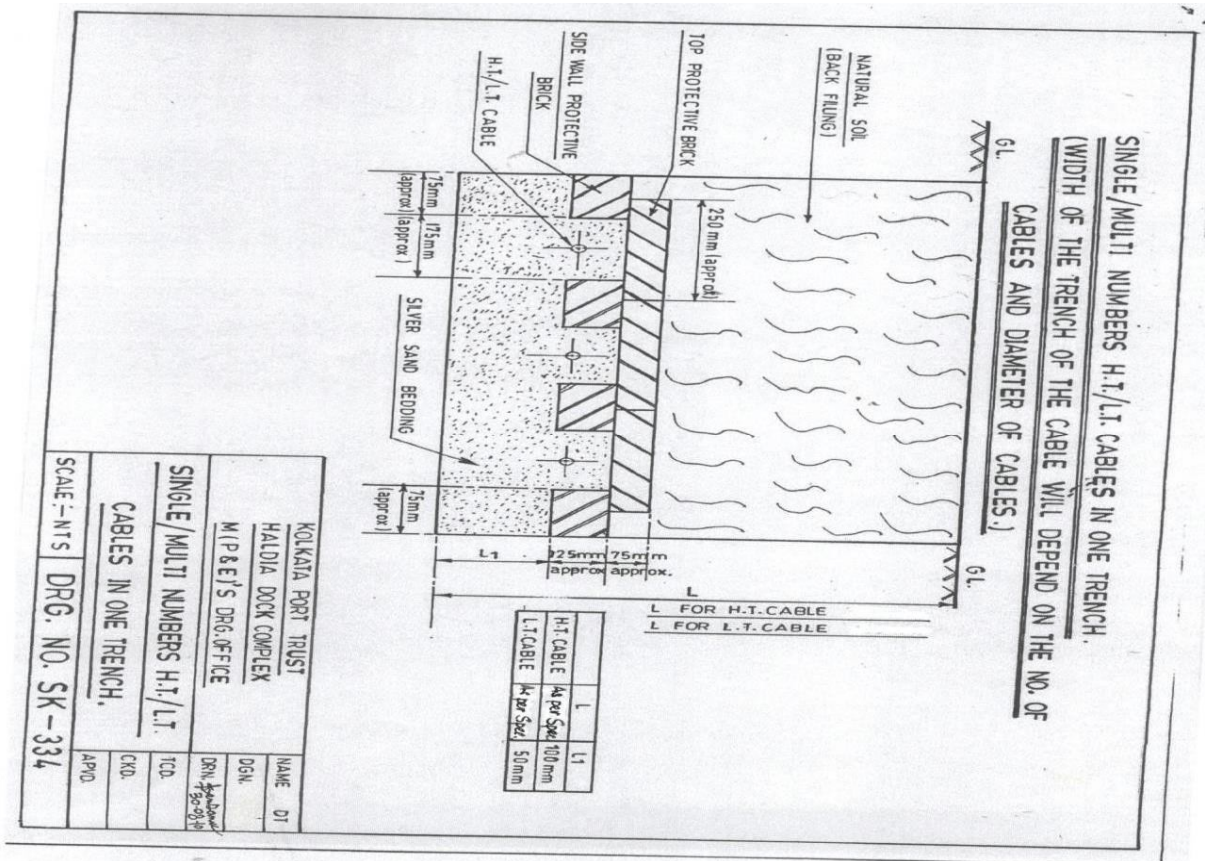
15.9 St. through and end termination jointing kits:

The kits will be inspected at site, after delivery, by **the TPI Agency or** the representative of Engineer, based on Manufacturer's Internal routine Test Certificate as per IS: 7098-I.

15.0 DRAWINGS.



EARTH PIT



CABLE LAYING

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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- “Drawings” means the drawings referred to in the Tender and specification and any modification of such drawings approved in writing
- 1.10 by the Engineer and such other drawings as may from time to time be furnished or approved in writing by the Engineer. *Drawings*
- 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 *Contract*

Agreement, if separately entered into and the Schedule of Rates and Price, if any, adopted by the Trustees at their discretion.

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|------|---|--------------------------------------|
| 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> <p>(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.</p> <p>(b) to alter or modify the specification of any material and workmanship and to inspect the work at any time.</p> <p>(c) to order for any variation, alteration and modification of the work and for extra works.</p> <p>(d) to issue certificates as per contract.</p> | <i>Engineer’s Power</i> |

(e) to settle the claims & disputes of the Contractor and Trustees, as the first referee.

(f) To grant extension of completion time.

2.4 *The Engineer's Representative shall :*

***Power of
Engineer's
Representative.***

- (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.

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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.

Site & Local condition.

(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.

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	Amount of Earnest Money
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of Work	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 without 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/- + 7 ½% 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*

- 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*

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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 *Contractor to supervise the*

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.

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*

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- 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

*Fossils, Treasure
travails, etc. are
Trustees' property*

being damaged by his workmen and arrange for disposal of them at the Trustees' expense as per the instruction of the Engineer's Representative.

- 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

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- 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

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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*

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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 *Contractor to compensate for loss and damage to Trustees' materials*

shall at no stage remove or cause to be removed any such material from the site without his permission in writing.

- (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

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- (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

Contractor to seek approval of Engineer or his Representative before covering up

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.

*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.

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- 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,

Contractor to prepare and submit his bills

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.

- 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*

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- (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*
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- 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" subsequent written confirmation of such verbal order shall *Where written order for variation is not needed*

be deemed to be an order in writing within the meaning of this clause.

- 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.
- (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.

*Payment for
extra or
additional, or
omitted work or
substituted work,
Engineer's
powers*

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- (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

*Extension of
completion time*

by the Engineer, as aforesaid.

- 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*

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- (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.

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- 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

*Contractor's
obligation for
maintenance
of work.*

cost and all expenses, consequent thereon or incidental thereto, shall be recoverable from the Contractor in any manner deemed suitable by the Engineer.

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- 9.2 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. *Certificate of final completion*
- 9.3 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. *Refund of Security Deposit*
- 10.0 INTERPRETATION OF CONTRACT DOCUMENTS, DISPUTES AND ARBITRATION
- 10.1 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. *Engineer’s decision*
- 10.2 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. *Chairman’s award.*
- 10.3 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. *Arbitration.*
- 10.3.1 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.

- 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.

SECTION – VIII

SPECIAL CONDITIONS OF CONTRACT (SCC)

The following **Special Conditions of Contract (SCC)** shall supplement the ITB (Instructions to the Bidder), **General Conditions of Contract (GCC)**. Whenever there is a conflict, the provisions herein shall prevail over those in the ITB & GCC.

The tenderer shall visit the site and get themselves acquainted with the existing facilities. Haldia is linked by road through National High Way 6 & 41 via Mechada and by Rail from Howrah and Kharagpur via Panskura. Lock Entrance is situated inside the Dock Area of Haldia Dock Complex (HDC), Syama Prasad Mookerjee Port (SMP), Kolkata [erstwhile Kolkata Port Trust], 4 Kilo Meters away from the main road.

11.0 Working Facilities :

- a) The following facilities will be provided to the contractor by HDC, SMP, Kolkata under the following terms and conditions :-
 - i) A token License Fee of Rs.100/- per month will be applicable on the open space, to be provided for the purpose of office accommodation, storage of materials and for fabrication work at site, for the period of work. The site office is to be dismantled immediately after the completion period of work and cleared up to the satisfaction of Sr. Dy. Manager (P&E) or his authorized representative.
 - ii) Electrical power for site office will be supplied on chargeable basis as per the SCC, Clause no. 11.15. However power supply for the purpose of execution of work at site will be given free of cost. Necessary length of cable, energy meter and other accessories for the aforesaid proposes shall be arranged by the contractor from the nearest power sources of HDC, at the own risk, cost & arrangement of the contractor.
 - iii) Dock Permit for the contractor and their staff, materials, vehicles, etc. for movement inside the Dock Area, will be provided on chargeable basis.
 - iv) No residential accommodation, transport and canteen facility can be provided by HDC.
 - v) Drinking water supply at the site office of the contractor will be provided on chargeable basis as per SCC clause no. 11.14 However, necessary connection from HDC's water line to be arranged by the contractor from the nearest source of HDC, at the own risk, cost & arrangement of the contractor.

11.1 The tenderer to inform himself fully :

- i) This Tender Document includes all Instructions, General Conditions of Contract, Special Conditions of Contract, Technical Specification & Scope of Work, etc.), considering all addenda (if any) required to be issued subsequently. The Tenderer shall clearly understand that they will be strictly required to conform to all terms & conditions of the Tender Document [considering all addenda (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 of any of the terms & conditions.
- ii) The Tenderer shall be deemed to have examined the Tender Document [including all Instructions, General & Special Conditions of Contract, Technical Specification & Scope of Work, etc.], considering all addenda (if any) issued, visited the site and surroundings and to have obtained all necessary information in all the matters whatsoever that might influence while carrying out the works as per the conditions of the tender and to satisfy themselves to sufficiency of their tender, etc.
- iii) The Tenderer is advised to acquaint them 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 and Govt. of India and other statutory bodies from time to time. The Tenderer shall be deemed to have examined and collected all necessary information as to risk, contingencies and other circumstances, which may influence or affect the tender.

- iv) Failure to comply with the requirement of the Tender submission will be at the Tenderer's own risk.
- v) Failure to visit the site will no way relieve the contractor of any of their obligation in performing the work and liabilities and responsibilities thereof in accordance with the contract.
- vi) Tenderer shall bear all costs associated with the preparation and submission of their tender and HDC will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the tendering process.
- vii) The Tenderers are requested to ensure that the Tender (both Techno-Commercial Bid and Price Bid) are submitted after full consideration/understanding of the work envisaged in the job related to subject project.

11.2 **Price:**

- i) The Offered Rates [in Price Schedule] shall include all taxes & duties of Central / State / Local bodies [excluding Goods and Services Tax (GST)], as applicable, all incidental charges 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 the Price Schedule, Technical Specification & Scope of Work.

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.

- ii) *The quantities given in the "PRICE SCHEDULE" are indicative only [which may vary (both upward & downward) during execution] and are given to provide a common base for tendering and evaluation. However, the payment will be made on the exact quantity to be executed by the Successful Bidder. No surplus materials will be retained by HDC, SMP, Kolkata.*

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

- iv) The offered Rates will remain firm till execution of work is completed.

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

- vi) Tools, Tackles etc. required for execution of the whole work will have to be arranged by the Contractor, at their own risk, cost & arrangement.

11.3 General terms & conditions related to GST:

- i) The contractor to confirm that the GST amount charged in invoice is declared in its returns and payment of taxes is also made.
- ii) The Contractor shall agree to comply with all applicable GST laws, including GST acts, rules, regulations, procedures, circulars & instructions hereunder applicable in India from time to time and to ensure that such compliance is done within the time prescribed under such laws. Contractor should ensure accurate transaction details, as required by GST laws, are timely uploaded in GSTN. In case there is any mismatch between the details so uploaded in GSTN by Contractor and details available with SMP, Kolkata, then payments to Contractor to the extent of GST relating to the invoice/s under mismatch may be retained from due payments till such time SMP, Kolkata is not sure that accurate tax amount is finally reflected in the GSTN to SMP, Kolkata's Account and is finally available to SMP, Kolkata in terms of GST laws and that the credit of GST so taken by SMP, Kolkata is not required to be reversed at a later date along with applicable interest.
- iii) Syama Prasad Mookerjee Port, Kolkata has the right to recover monetary loss including interest and penalty suffered by it due to any non-compliance of tax laws by the contractor. Any loss of input tax credit to SMP, Kolkata for the fault of contractor shall be recovered by SMP, Kolkata by way of adjustment in the consideration payable.
- iv) Supplementary invoices/debit note/credit note for price revisions to enable SMP, Kolkata to claim tax benefit on the same shall be issued by you for a particular year before September of the succeeding Financial Year.
- v) The work order shall be void, if at any point of time you are found to be a black listed dealer as per GSTN rating system and further no payment shall be entertained.

11.4 Evaluation Criteria :

Evaluation with respect to Priced Bill of Quantities (BoQ) is detailed at Clause no. 5.32 of the tender.

11.5 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, equipments 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, equipments, means of access or any other aspect.

The contractor shall provide all necessary first aid measures, rescue and life saving equipment to be available in proper condition.

The contractor shall provide PPE's (Personal Protective Equipments) 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 equipments 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.

11.6 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.

11.7 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.

11.8 Labour, Tools & Plants :

The Contractor shall supply all necessary labour, tools and plants required for satisfactory execution of the work.

11.9 Escalation / Variation on Prices :

No Escalation / Variation on the prices on any account will be considered for adjustment / payment in the contract.

11.10 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.

Further , whenever a contract work has commenced or completed , the contractor has to intimate the same to the Assistant Labour Commissioner(Central) /labour Enforcement Officer (Central) in Form IV-A , within 15 days of such commencement or completion.

The contractor has to obtain a certificate of registration under “Building & Other Construction Workers (Regulation of Employment & Conditions of Service) Act-1996 and Central Rule 1998 and his rate shall include a cess payable @ 1 % of the cost of construction as applicable under “Building & Other Construction Workers Welfare Cess Act -1996 & Welfare Cess Rules 1998.

The contractor has to arrange for displaying the name of the Regional Labour Commissioner (Central), Asst. Labour Commissioner (Central) & Labour Enforcement Officer (Central) at his worksite(s).

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.

11.11 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).

11.12 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.

11.13 **Dock Permit:**

Necessary Gate Pass for entering into the Dock Area would be issued for the personnel, equipment, machineries, materials etc. of the Contractor, in connection with the instant work, on chargeable basis, as per rules then prevailing, on the basis of written request from the Contractor.

11.14 **Supply of water:**

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).

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). All necessary tools and tackles, fixtures and any other arrangements as would be felt necessary by the contractor to carry out the tendered work, shall have to be arranged by them at their own cost and liability.

11.15 **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).

11.16 **Payment Terms :**

Payment to the Successful Bidder will be made stage-wise as indicated below :-

a) **Against Supply & Delivery :**

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.

Payment for 20% amount of each item will be made against installation of the respective item and submission of bills along with Installation Certificate.

Payment for 10 % amount will be made against Testing, successful commissioning, taking over the commissioned job by SMP, Kolkata and submission of bills, along with Job Completion Certificate.

b) **Against Installation and Commissioning :**

Payment for 90% amount of each item will be made against installation of the respective item and submission of bills along with Installation Certificate.

Payment for 10 % amount will be made against Testing, successful commissioning, taking over the commissioned job by SMP, Kolkata and submission of bills, along with Job Completion Certificate.

Payment will be made (at the accepted rates) within 30 days from the date of submission of clear & unambiguous bill, along with relevant documents / certification against the completed work, on the basis of actual measurement of completed work, in line with the “Schedule of items”.

Bills should be submitted, in triplicate, to Sr. Dy. Manager (P&E), 1ST floor, Chirinjibpur operation building, Plant & Equipment Division, Haldia Dock Complex, SMP, Kolkata along with required certification / inspection report.

Payment will be made in Indian Rupees through the banker of the Contractor (i.e. through ECS). During submission of bill(s), the following information must be submitted by the Contractor regarding their banker:

- i) Bank Account number.
- ii) Name of the bank.
- iii) Name of the branch.
- iv) Address of the branch.
- v) MICR code of the branch.

11.17 **Completion Period :**

All the jobs, as per contract, are to be completed within **09 (Nine) months from the date of issue of Letter of Acceptance (LOA) [i.e. award of contract]**.

11.18 **Performance Guarantee / Security Deposit**

Within **twenty-eight (28) 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, **10 %** of the contract value excluding GST, in the form Banker’s Cheque or by Demand Draft of a **Nationalized Bank of India** drawn in favour of ‘Syama Prasad Mookerjee Port Trust, **Kolkata, Haldia Dock Complex**’ and payable at **Haldia** – with Sr. Dy. Manager (Finance), HDC, SMP, Kolkata, which shall be retained as Security Deposit till successful expiry of the guarantee period. In all cases, any dispute regarding Bank Guarantee will be adjudicated under the jurisdiction of Kolkata High Court.

This Security Deposit / 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. 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 and forfeiting the Earnest Money Deposit.

The Security Deposit will be refunded, without interest, after the successful execution of the order and completion of the guarantee period and submission of 'No Claim Certificate'.

11.19 Defect Liability Period (DLP) :

"Defect Liability Period" of the Contract job: "Defect Liability Period" of the Contract job [for the materials, installations & workmanship, with respect to the commissioning of the LT & HT Installations] shall mean the Guarantee Period, which starts from the date of 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.

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.

11.20 Liquidated Damage:

If the event of contractor's failure to complete the work within the stipulated dates (Completion period) 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, as per the following:

In case of handing over the Contract Job after the scheduled completion period, Liquidated Damage @ ½% of the Contract Price [excluding GST] , for every week or part thereof, beyond the scheduled date of completion, will be deducted from the Contractor's bill. Provided always the amount of such compensation shall not exceed 10% of the cost the Contract Price [excluding GST]. The Trustees may, without prejudice to any other method of recovery, deduct the amount of such damages from any money which is due or which may become due to contractor. The payment or deduction of such damages shall not relieve contractor from their obligation to complete the job or from any other of your obligation or liabilities under the contract. GST will be applicable on L.D amount.

11.21 The contractor shall commence the work within 07 (Seven) days after the issuance of LOI.

11.22 Input Tax Credit:

Please indicate present percentage rate of GST, as applicable on quoted price. GST amount will be paid against submission of GST documents only or any other document required by **SMP**,

Kolkata. The contractor shall be required to upload the details of Invoice raised on SMP, Kolkata in GST Return as per Law. In case of any failure, GST, even if paid, shall be recovered from the Contractors.

11.23 Report of Accident :

The contractor shall, within 24 (twenty four) hours of the occurrence of any accident, at or near the site or in connection with the execution of the work under the contract, report the accident to the Engineer or his representative(s) and shall make every arrangement to render all possible assistance to the victim(s) of such accident. The contractor shall also report such accident to the competent authority, whenever such a report is required by law. For any accident occurred within the entire operational area covered under the contract, the contractor shall ensure prompt investigation into the matter through recording of statement of the personnel witnessing the accident. The report containing the findings, along with the statements so recorded, will then be forwarded by the contractor to the Engineer at the earliest. At the first instance, an 'Accident Report' shall be prepared (in triplicate) by the concerned Supervisor / Engineer on duty, engaged by the contractor, and a copy of the same to be forwarded immediately to the Engineer.

11.24 ARBITRATION:

In case of any dispute being referred to arbitration in terms of General Conditions of Contract, same would be held as per provision of Arbitration and Conciliation (Amendment) Act 2015.

11.25 SMP, Kolkata, HDC shall encash the Bank Guarantee in the event of the contractor failing to complete the work as per tender specification, at the order of Engineer or his authorized representative, or when the contractor has defaulted for more than 30 days or when any amount is to be recovered from the Contractor as penalty or deduction and the contractor fails to remit such amount within 30 days after due notice given to him in this regard.

11.26 The Sr. Dy. Manager (P&E), HDC shall have the right to ask for the extension of the above Bank Guarantee till such time the Contractual obligations are fulfilled and the Contractor will be duty bound to extend the same.

11.27 If excess work is required to be carried out in addition to the quantities stipulated in BOQ, the amount will be paid as per unit rate quoted in BOQ as per actual measurement. In case of extra work the same will be paid as per rate of PWD schedule rate/ rate of reputed manufacturer / market rate, as the case may be with justification of rate. Job completion certificate in the form of GC-1 will be issued by the Engineer after successful completion of work, as per tender, including excess & extra, if any.

11.28 The payment will be made on the exact quantity to be executed by the Successful Bidder. No project surplus materials will be retained by HDC, SMP, Kolkata.

11.29 All materials are to be supplied progressively as required at site subject to prior approval of Engineer or his representative.

11.30 **Custodian Certificate:** After delivery at site, the supplied materials are to be inspected / verified by HDC, SMP, Kolkata officials and the custodian certificate is to be issued by the Contractor in this regard, to the Engineer or to his authorised representative (s), for installation of such materials in the instant work. All the supplied materials will be under the custody of contractor till handover of the project.

11.31 The firm /contractor shall at all times, during execution of the contract, including defect liability period, obey and observe all directions and instructions given by the Engineer or his authorized representative.

- 11.32 The contractor shall have to submit program of work in the form of bar chart regarding different activities of the project with tentative date at the beginning of the project. Thereafter, with 15 days interval, the contractor shall have to submit project status thorough mail for monitoring the project to avert delay in project.
- 11.33 Termination of contract and Risk Purchase Clause: Will be applicable as per clause No. 8 of SMP, Kolkata's General Conditions of Contract.
- 11.34 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 Engineer, Syama Prasad Mookerjee Port, Kolkata, thereon shall be final and binding upon all parties.
- 11.35 Good Conduct: If a bidder has had previous history of "defined misconduct"(such as banning from/ by any government sector, premature termination of a contract solely on bidder's fault, criminal case pending against the company or its owner/ current director filed by a government entity etc.), his offer is liable to be rejected.
- 11.36 All other terms and conditions excepting those mentioned separately shall be governed by Syama Prasad Mookerjee Port, Kolkata 's General Condition of Contract.
- 11.37 In addition to the above, a bidder may be disqualified if:-
- i. The bidder provides misleading or false information in the statements and documents submitted.
 - ii. Record of unsatisfactory performance during the last seven years, such as abandoning of work or rescinding of contract for which the reasons are attributable to the non-performance of the contractor or inordinate delays in completion or financial bankruptcy, etc.

The decision of Haldia Dock Complex, Syama Prasad Mookerjee Port, Kolkata in this regard shall be final and binding on the Bidder.

SECTION – IX
BIDDING FORMS

BIDDING FORM – I

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]
2017-2018	
2018-2019	
2019-2020	
<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

OTHER DOCUMENTS

[To be filled up and uploaded, duly signed & stamped]

	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)	<input type="text"/> If submitted, Page Number(s):	
	<u>OR</u> Profession Tax Payment Challan (PTPC)	<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)			

	Requirement	Submitted/Not submitted [Put √ if submitted & X if not submitted]		Validity/ For the month of
i)	Registration Certificate of ESI Authority.	<input type="checkbox"/>	If submitted, Code No.: Page Number(s):	Not applicable.
ii)	Affidavit, Declaration and Indemnity Certificate.	<input type="checkbox"/>	If submitted, Page Number(s):	Not applicable.
e)	PAN Card	<input type="checkbox"/>	If submitted, PAN No.: Page Number(s):	Not applicable.
f)	MSME / MSE / DIC / SSI / NSIC certificate	<input type="checkbox"/>	If submitted, Page Number(s):	
g)	Power of Attorney	<input type="checkbox"/>	If submitted, Page Number(s):	Not applicable.

BIDDING FORM-III

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)	
	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		

BIDDING FORM-IV

FORMAT FOR DECLARATION

[To be printed on the bidder's Letter Head and uploaded after signing]

To,
General Manager (Engg.)
Haldia Dock Complex ;
SMP, Kolkata

Name of Work: “ Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata ”.

Tender No. SDM(P&E)/T/73/2020-2021

E-Tender No. 2020_KoPT_596862_1

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://eprocure.gov.in/eprocure/app> 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 Prasad Mookerjee Port, Kolkata

Name of Work: “ Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata ”.

Tender No. : Tender No. SDM(P&E)/T/73/2020-2021

E-Tender No.: **E-Tender No. 2020_KoPT_596862_1**

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 “
Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels,
3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other
allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock
Complex, SMP, Kolkata ”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://eprocure.gov.in/eprocure/app>], 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 deposited **Rs 15,21,752.00 (Indian Rupees: Fifteen lakh twenty one thousand**
seven hundred fifty two) only only, as Earnest Money, to Haldia Dock Complex, through
DD/Banker Cheque in favour of **Syama Prasad Mookerjee Port, Kolkata, Haldia Dock**
Complex on any Scheduled/Nationalized Bank payable at **Haldia**.

I/We agree that the period for which the bid shall remain open for acceptance, shall not be less 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)

BIDDING FORM-VI**PRICE SCHEDULE**

[To be filled up and uploaded, duly signed & stamped]

Sl. No.	Item Description	Unit	Qty.	Applicable GST%		
				SGST	CGST	IGST
	Part A: Sub-station Equipment:-					
1	<u>HT 3.3KV , 1250A VCB Panel :-</u>					
	Design, fabricate, supply, installation, testing and commissioning of indoor HT 3.3KV VCB Panel 1250A, 3 phase, 50HZ, 26.3KA for 3sec. as per the enclosed SLD & Technical Specification(11 panel).					
i.	Supply	set	1			
ii.	Installation, testing and commissioning	set	1			
2	<u>HT 3.3KV, 630 A VCB along with Vacuum contractor Panel :-</u>					
	Design, fabricate, supply, installation, testing and commissioning of indoor HT 3.3KV, 630A, 3 phase, 50HZ, 26.3KA for 3sec. as per the enclosed SLD & Technical Specification (4 panel).					
i.	Supply	set	2			
ii.	Installation, testing and commissioning	set	2			
3	<u>HT 3.3KV, 630A VCB along with Vacuum contractor Panel :-</u>					
	Design, fabricate, supply, installation, testing and commissioning of indoor HT 3.3KV, 630A, 3 phase, 50HZ, 26.3KA for 3sec. as per TABLE-I & Technical Specification (5 panel).					
i.	Supply	set	2			
ii.	Installation, testing and commissioning	set	2			
4	<u>1MVA Distribution Transformer:-</u>					
	Design, Manufacture, supply, installation, testing and commissioning of following 11/0.433 KV Oil type transformers with off circuit tap changer & marshalling box of make as per the Technical Specification.					
i.	Supply	set	2			
ii.	Installation, testing and commissioning	set	2			
5	<u>1600A, LT Panel (PCC-1):-</u>					
	Design, Manufacture, Supply, installation ,testing and commissioning of 1600A, 18 ways, LT					

	distribution panel as per TABLE-II & Technical Specifications.					
i.	Supply	set	1			
ii.	Installation, testing and commissioning	set	1			
6	800A, LT Panel (PDB- 2A, 2B & 2C):- Design, Manufacture, Supply, installation ,testing and commissioning of 800A, 24 ways, LT distribution panel as per the enclosed SLD & Technical Specifications.					
i.	Supply	set	3			
ii.	Installation, testing and commissioning	set	3			
7	630A, LT Panel (PDB-1 & 3):- Design, Manufacture, Supply, installation ,testing and commissioning of 630A, 24 ways, LT distribution panel as per TABLE-II & Technical Specifications.					
i.	Supply	set	2			
ii.	Installation, testing and commissioning	set	2			
8	400A, LT Panel (PDB-4):- Design, Manufacture, Supply, installation ,testing and commissioning of 400A, 14 ways, LT distribution panel as per TABLE-II & Technical Specifications					
i.	Supply	set	1			
ii.	Installation, testing and commissioning	set	1			
9	125A, LT Panel (PDB-5 & 6):- Design, Manufacture, Supply, installation ,testing and commissioning of 125A, 8 ways, LT distribution panel as per TABLE-II & Technical Specifications					
i.	Supply	set	2			
ii.	Installation, testing and commissioning	set	2			
10	HT Cable:- Supply of 3.3 KV(UE), aluminum, XLPE Insulated, PVC Sheathed, armoured, FR, UG cable.					
i.	Supply of 3.3 KV(UE), 1c x 1000 Sqmm Cable	Mtrs.	300			
ii.	Supply of 3.3 KV(UE), 3c x 240 Sqmm Cable	Mtrs.	2000			
iii.	Supply of 3.3 KV(UE), 3c x 150 Sqmm Cable	Mtrs.	1500			
11	Laying, testing and commissioning including end termination of HT Cables: Laying, testing and commissioning including end termination of HT Cables from substation to MH Houses etc. Job includes supply and installation of Hume and GI pipe.					
i.	By existing RCC trench/Hume pipe/GI Pipe.	Mtrs.	2700			
ii.	By excavating trench.	Mtrs.	800			
iii.	By removal of paver blocks, excavating trench and refixing of the same after laying.	Mtrs.	50			
iv.	By 150mm dia. Hume pipe through excavating.	Mtrs.	50			
v	By 150NB GI Pipe through excavating	Mtrs.	100			

vi	By 150NB GI Pipe through Boring	Mtrs.	100			
12	St. through & End termination HT Cables:					
	Supply, installation ,testing and commissioning of HT straight through and indoor heat shrinkable type end termination kit. Job includes supply and installation of all materials required for execution of the job.					
i.	Supply of st. through jointing kit	sets	25			
ii.	Installation, testing and commissioning of st. through jointing	sets	25			
iii.	Supply of indoor end termination kit	sets	36			
iv.	Installation, testing and commissioning of indoor end termina	sets	36			
13	LT Cable:-					
	Supply of 1.1 KV Grade, aluminum, XLPE Insulated, PVC Sheathed, armoured, FR, UG cable.					
i.	Supply of 1.1 KV grade, 3.5c x 240 Sqmm Cable	Mtrs.	2000			
ii.	Supply of 1.1 KV grade, 3.5c x 150 Sqmm Cable	Mtrs.	750			
iii.	Supply of 1.1 KV grade, 3.5c x 50 Sqmm Cable	Mtrs.	250			
iv.	Supply of 1.1 KV grade, 1c x 630 Sqmm Cable	Mtrs.	500			
14	Laying, testing and commissioning including end termination of LT Cables:					
	Laying, testing, commissioning including end termination of LT Cables from substation to MH Houses, Outgoing feeders etc. Job includes supply and installation of Hume and GI pipe.					
i.	By existing RCC trench/Hume pipe/GI Pipe.	Mtrs.	2500			
ii.	By excavating trench.	Mtrs.	700			
iii.	By removal of paver blocks, excavating trench and refixing of the same after laying.	Mtrs.	50			
iv.	By 150mm dia. Hume pipe through excavating.	Mtrs.	50			
v	By 150NB GI Pipe through excavating	Mtrs.	100			
vi	By 150NB GI Pipe through Boring	Mtrs.	100			
15	St. through of LT Cables:-					
	Supply, installation ,testing and commissioning of LT straight through kit. Job includes supply and installation of all materials required for execution of the job.					
i.	Supply of st. through jointing kit	sets	36			
ii.	Installation, testing and commissioning of st. through jointing	sets	36			
16	Indoor LT APFC Panel for PCC-1:-					
	Design, Supply, installation, testing and commissioning of 400 KVAR, 440V rated indoor LT APFC Panel as per Technical Specification.					
i.	Supply	No.	1			
ii.	Installation, testing and commissioning	No.	1			
17	Earthing station:-					
	Providing earthing system, using size 600 mm X 600 mm X 3.15 mm Copper flat plate buried in ground in a depth of 2m. from ground level with alternate layer of charcoal & salt, including supply & fixing of 50 mm dia perforated GI pipe funneling for watering purpose and construction of masonry pit with metal cover, as per IS:					

	3043 as detailed in 'Technical Specification'.					
i.	Supply	sets	36			
ii.	Installation, testing and commissioning	sets	36			
18	Battery charger with batteries:- Providing Maintenance Free Lead Acid battery of 15Nos. Of 2Volts each for 30V, 60AH Battery Bank with Float cum-Boast Charger as per Technical specifications.					
i.	Supply	sets	5			
ii.	Installation, testing and commissioning	sets	5			
19	GI Earth Flat:- Supply and Installation of Hot Dip Galvanized (100 micron) flats of size 50 X 6 mm for earthing connections, as per Technical specification.					
i.	Supply	Mtrs.	600			
ii.	Laying, Installation, testing and commissioning	Mtrs.	600			
20	Tools tacksels and safety equipments:-					
i.	Supply & installation of safety equipments like CO ₂ fire extinguishers, First Aid box, etc. as per CEA norms, for all substations.	Set	6			
ii.	HT (11kV grade) rubber mats [2Mtrs.x 1Mtrs.]	Nos.	40			
iii.	Special tool box (Taparia Make) for maintenance of VCB Panels .	Set	1			
iv.	Megger 2.5kV Hand operated (0-5000Ohms)	Set	2			
21	Removal / dismantling, loading / unloading, transporting of existing HT BOCB (21Nos.) & LT Panel (07 sets.), HT isolators 06 (nos) & different sizes HT & LT Power Cable from existing sub- station and depositing the same at the store of HDC.	LS	1			
22	Removal / dismantling, loading & unloading, transporting of existing Transformers 3.3KV/0.415kv, 500KVA (02Nos.) and 3.3KV/0.415KV, 200KVA (02Nos.) Oil type from existing sub-station and depositing the same at the store of HDC.	LS	1			
23	SCADA System, as per Technical specification.					
i.	Supply	Set	1			
ii.	Installation, Testing & Commissioning	Set	1			
24	FO Cable as per Technical specification.					
i.	Supply	Mtrs.	1500			
ii.	Installation, Testing & Commissioning through RCC trench	Mtrs.	1500			
	Sub-Total Part A:-					

	Part B:- Civil Works					
1	Construction of RCC cable trench with removable top cover size 650mmx650mm as per enclosed drgs.	Mtrs.	350			
2	<u>GI Chequered Plate:-</u> Supply and Installation of Hot Dip Galvanized (100 micron) flats of size 6 mm Plate for covering existing cable trench inside sub-station, all machine houses & impounding pump house as per Technical specification. Job includes cutting fabrication of plate as per site condition.					
i.	Supply	Kgs.	2500			
ii.	Installation, testing and commissioning	Kgs.	2500			
3	<u>GI Angle & Channel :-</u> Supply and Installation of Hot Dip Galvanized (100 micron) Angle and channels of size 6 mm for repairing existing cable trench supports inside & outside sub-station, all machine houses & impounding pump house etc. as per Technical specification. Job includes cutting fabrication as per site condition.					
i.	Supply	Kgs.	500			
ii.	Installation, testing and commissioning	Kgs.	500			
Sub-Total Part B:-						
Total (Part A + Part B):-						

BIDDING FORM-VII

Integrity Pact

Between

Kolkata Port Trust (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.

- (3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- (4) Should one or several provisions of this agreement 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)

(For & on behalf of Bidder/Contractor).

(Office Seal)

(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.

HDC, SMP, Kolkata

SECTION - X

CHECKLIST

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 **CPPP** only.

Sl. No.	Particulars	Submitted/ Not submitted [Put <input type="checkbox"/> if submitted and put X if not submitted]	If submitted, page numbers
1.	Filled up checklist.	<input type="checkbox"/>	<input type="checkbox"/>
2.	Proof of Bid Document Fee.	<input type="checkbox"/>	<input type="checkbox"/>
3.	Proof of Earnest Money Deposit (EMD).	<input type="checkbox"/>	<input type="checkbox"/>
4.	Certificate of getting benefit by MSME / SSI / NSIC for exemption of Bid Document Fee and Earnest Money,	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
5.	Bidding Forms		
	i) Bidding Form – I	<input type="checkbox"/>	<input type="checkbox"/>
	ii) Bidding Form - II	<input type="checkbox"/>	<input type="checkbox"/>
	iii) Bidding Form – III	<input type="checkbox"/>	<input type="checkbox"/>

Sl. No.	Particulars	Submitted/ Not submitted [Put √ if submitted and <u>put X if not submitted</u>]	If submitted, <u>page numbers</u>
		<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- Stamp Paper of worth not less than INR 50.00)

CONTRACT NO. : GM(E)/...../ /AGMT/...../.....

TENDER REFERENCE:

Tender No. SDM(P&E)/T/73/2020-2021

E-Tender No. 2020_KoPT_596862_1

“ Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of 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. “**Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of 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 Tender No. SDM(P&E)/T/73/2020-2021].
 - d) Addenda [Please insert Addenda Nos.]
 - e) “Price Comparative Statement”, showing the prices quoted (electronically, through the website <https://eprocure.gov.in/eprocure/app>) 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 “ **Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of 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 “**Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of 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,

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)

Syama Prasad Mookerjee Port, Kolkata
Haldia Dock Complex

CERTIFICATE OF COMPLETION OF WORK

(FORM G.C-1)

Contractor : _____

Address : _____

Date of completion : _____

Dear Sir,

Subject : “ Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata ”.

Reference : i) **Work Order No.:**/...../...../O-... dated
ii) **Contract No./ Agreement No. :**/...../...../ AGMT /
...../

This is to certify that the above work which was carried out by you is, in the opinion of the undersigned, complete in every respect on the _____ day of _____ 20____, in accordance with terms of the contract and you are required to maintain the work in accordance with **Clause No. 62** of the General Conditions of Contract and under provisions of the contract.

(Signature of the Engineer/Engineer's Representative)

Name:

Designation:

Date:

(OFFICIAL SEAL)

Syama Prasad Mookerjee Port, Kolkata
Haldia Dock Complex
CERTIFICATE OF FINAL COMPLETION
FORM G.C-2

General Manager (Finance),
Haldia Dock Complex (HDC),
Syama Prasad Mookerjee Port, Kolkata
Jawahar Tower Complex,
P.O: Haldia Township,
Dist.: Purba Medinipur,
PIN – 721 607,
West Bengal, India.

Subject : “ Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata ”

Reference : i) **Work Order No.:**/...../...../O-... dated
ii) **Contract No./ Agreement No. :**/...../...../ AGMT //

This is to certify that the above work, which was carried out by 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 of the Engineer/Engineer's Representative)

Name:

Designation:

Date:

(OFFICIAL SEAL)

Syama Prasad Mookerjee Port, Kolkata
Haldia Dock Complex
(“NO CLAIM CERTIFICATE” FROM CONTRACTOR)

FORM G.C-3

[To be submitted on Bidder's Letter Head]

General Manager (Engineering),
Haldia Dock Complex ,
Syama Prasad Mookerjee Port, Kolkata
Jawahar Tower Complex ;
P.O.: Haldia Township;
Dist.: Purba Medinipur ;
PIN: –721607
West Bengal, India.

Dear Sir,

Subject : “ Supply, Installation, Testing and Commissioning of 3.3 kV HT Panel, 415 Volt LT Panels, 3.3 / 0.433 kV Transformers, 3.3 kV grade HT & 1.1 kV grade LT cabling work and other allied works for augmentation of Lock Sub-Station at Lock Entrance of Haldia Dock Complex, SMP, Kolkata ”

Reference : i) **Work Order No.:**/...../...../O-... dated
ii) **Contract No./ Agreement No. :**/...../...../ AGMT /
...../

I/We do hereby declare that I/we have received full and final payment from Haldia Dock Complex, SMP Kolkata, for the execution of the subject work, and I/we have no further claim against Haldia Dock Complex, Kolkata Port Trust in respect of the above mentioned job.

Yours faithfully,

(Signature of Contractor)

Date :

Name of Contractor :

Address :

(OFFICIAL SEAL OF THE CONTRACTOR)